Training and Visit Extension

by Daniel Benor and Michael Baxter

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TRAINING AND VISIT EXTENSION

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Foreword

The World Bank is the largest single source of external funding for the development of agriculture in developing countries. Currently, it is financing around six hundred agricultural projects in more than one hundred countries and has an agricultural portfolio of a little over US$22 billion. Projects assisted by the Bank have a development orientation, much of it related to institutional development and the transfer of technology between and within countries. Within the agriculture sector, one of the most important objectives is the development of suitable technologies and their dissemination for use by millions of farmers.

The training and visit (T&V) system of agricultural extension, as discussed in detail in this book, has been strongly supported by the World Bank. It has successfully been introduced in practically most of India and all of Indonesia and Thailand, and in many other countries in Asia; in recent years, the application of its principles has been extended to several countries in Africa, Latin America, and other parts of the world. In our view, it provides a sound institutional framework for reaching large numbers of farmers, and it has many elements that can be adapted to be effective in a range of different environments. T&V is based on a set of managerial and organizational principles that are of broad applicability and which, when applied together, constitute an extremely powerful managerial tool.

The Bank is grateful to Daniel Benor and Michael Baxter for writing this book that is based on considerable experience with training and visit agricultural extension in several countries over a long period. It is our hope that it will help practitioners in the developing world make systems of agricultural extension more effective and so will assist a great number of producers -- especially small-scale producers -- in raising their output and incomes. In this way, we hope that the T&V system of agricultural extension designed by Daniel Benor will contribute further toward fulfilling our joint mission of improving the lives of millions on the land.

Montague Yudelman
Director
Agriculture and Rural
Development Department

Preface

Much has happened in reformed agricultural extension since Daniel Benor and James Q. Harrison released their paper Agricultural Extension: The Training and Visit System (The World Bank, May 1977) seven years ago. The training and visit (T&V) system of agricultural extension that was initiated by Daniel Benor has been adopted in either an explicit or implicit form by some forty developing countries in Asia, Africa, Europe, and Central and South America. Eight countries and thirteen major states in India have adopted the system in their entire area covering all farm families; other countries have adopted it in more limited areas in conjunction with agriculture and rural development projects assisted by the World Bank or by using other resources.

The system emphasizes simplicity in organization, objectives, and operation. It has a well-defined organization with a clear mode of operation, and it provides continuous feedback from farmers to extension and research, and continuous adjustment to their needs. It has spread rapidly because of its attractiveness both as a means to increase the agricultural production and incomes of farmers, and as a flexible management tool that is well suited to the needs of departments of agriculture in many developing countries.

As interest in the training and visit system of agricultural extension is widespread both in developing and other countries, and more information on its operation in different countries and under varying conditions has become available, there is a need for a detailed reference work on the system. The experience of many countries in implementing the training and visit system has suggested areas where a change in emphasis, clarification, or adjustment is required. These adjustments do not alter the basic precepts and objectives of the system, but they do take full advantage of one of the key features of an effective extension system: feedback from the field.

The very success of the system has contributed to some difficulties in implementation. While the preface to the 1977 paper cautioned readers to reflect on the reasons for the system's success before hastening to initiate similar measures, this advice has not always been heeded. In the process, some fundamental requirements for the effective introduction of the system -- such as a decisive setting of priorities, a single-minded concentration of efforts to ensure success right from the start, relevant training, and the development of appropriate technology -- have often been ignored. There has also been some confusion about central aspects of the system -- for example, the role of contact farmers and subject matter specialists, and the primacy of field work and farmer contact by staff at all levels -- that has sometimes resulted in a less effective operation. In the light of the experience of

the many departments of agriculture that have adopted the system and of the Bank's experience in working with these extension services, this is an appropriate time to prepare a detailed guide to the training and visit system of agricultural extension.

Two main lessons from the experience over the past several years in implementing the training and visit system have been particularly influential in producing this book (and also in revising the 1977 paper). One lesson is the continuing need to adapt any extension system, in this case the training and visit system, to the agricultural and administrative structure of a country. The objective of reforming extension is to establish an effective, professional agricultural extension service. For many countries, the training and visit system has proved to be such a means. For others, different systems, or adaptions of the training and visit system, may be more appropriate. A second important lesson is that, if a decision is made to adopt the training and visit system, and while acknowleging the need for adjustment to local circumstances, it must be clear that the basic principles of the system must be well understood and that there is no room for significant variations in its basic features. Examples of these features are: fixed, regular visits to farmers' fields by all extension staff; the primacy of able subject matter specialists and of strong, two-way linkages between farmers, extension, and research; the development of specific, relevant production recommendations to be taught to farmers; frequent regular training of all extension staff; and exclusivity of function (that is, all extension staff should concentrate on extension work only).

This book provides a comprehensive explanation of the organization and operation of the training and visit system. A briefer, more general account of the system may be found in Agricultural Extension: The Training and Visit System by Daniel Benor, James Q. Harrison, and Michael Baxter (The World Bank, 1984). This booklet is a substantial revision of the earlier-mentioned paper under the same title by Daniel Benor and James Q. Harrison published by the World Bank in 1977.

Training and Visit Extension had its origin in a series of "operational notes" prepared for the guidance of extension field staff and management, particularly in India. It is intended to be used mainly by extension staff, agricultural researchers, trainers, and staff of agricultural development organizations as both a methodological guide to professional extension and a source for training. The book is based on experience with the system's implementation by extension services in India, Indonesia, Thailand, Kenya, and elsewhere over the past ten years. While the strong influence of experience in India will be noted, particularly in terminology used for administrative units and staff positions, it is hoped that the appropriate local equivalents can be readily identified.

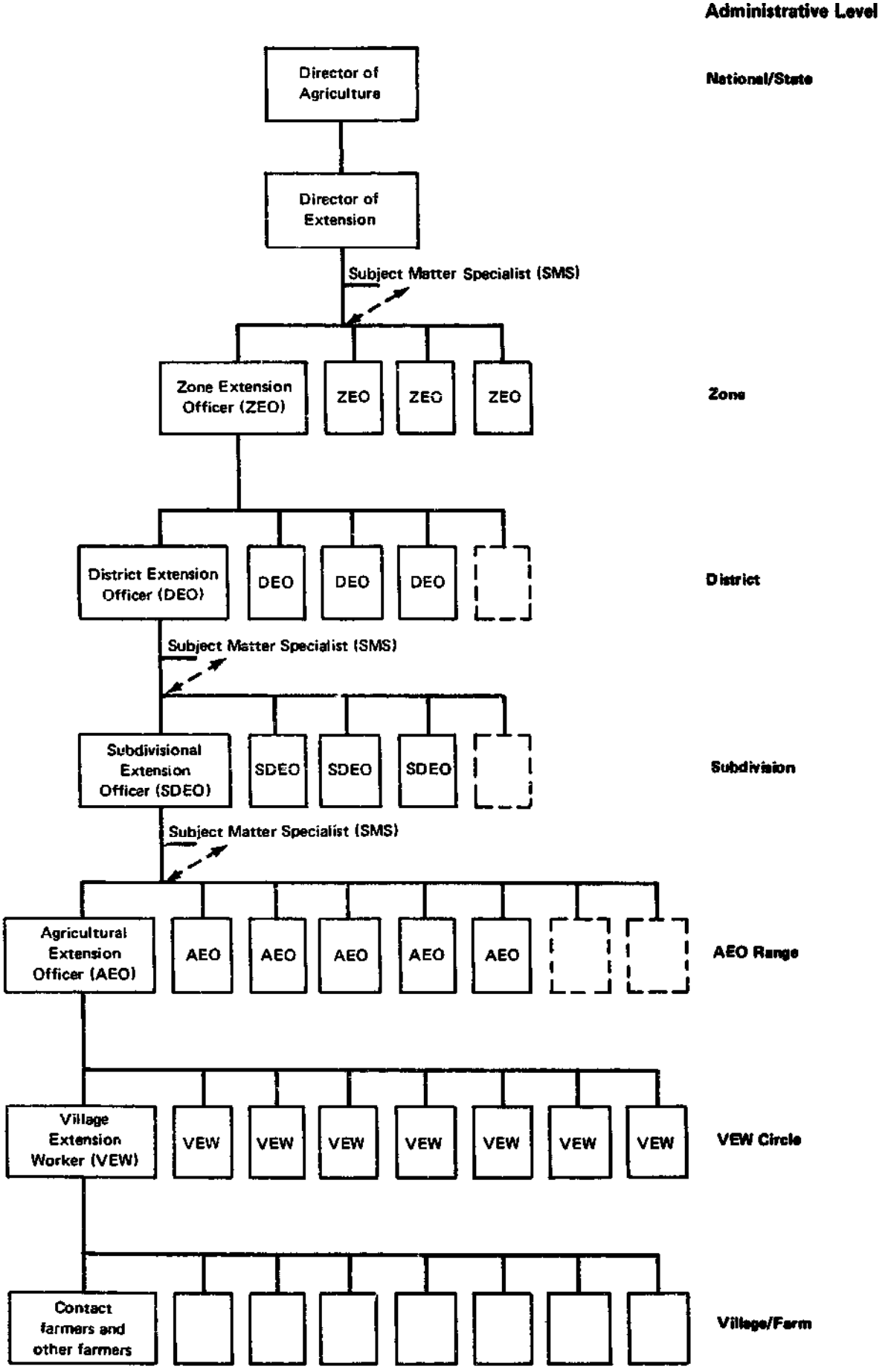
It is not our intention to lay down definitive rules on how to establish or operate an extension system. Rather, the book explains the complexity and interrelationships of training and visit extension, and draws attention to the range of considerations that are important when implementing the system. Just as experience has dictated revision of the 1977 paper on the T&V system and indicated the need to place renewed emphasis on its salient points, so will progress with extension reform and local administrative structures and agricultural conditions suggest which parts of this book require particular emphasis for an extension service.

Acknowledgments

A number of officers of the World Bank and of agricultural extension services contributed significantly to the preparation of this book. The idea for the book came in part from discussions with C. M. Mathur and some notes he had developed on aspects of extension. C. M. Mathur and G. R. Galgali discussed freely ideas and different aspects of the system, and also reviewed and commented on draft versions of many chapters. O. R. Rahman and S. L. Ghosal also reviewed some chapters. R. J. G. Le Breton reviewed the first twelve or so chapters after the Introduction, while Jacob Kampen reviewed all and assisted greatly with painstaking comments. The chapter "Applied and Adaptive Research" is largely an unpublished paper on the same topic prepared in 1980 by Bengt A. Nekby, who suggested that it be included in a series of "operational notes" on the training and visit system (which became this book). The chapter "Agricultural Extension and Farm Women" owes much to the spirited interest in this subject by T. Scarlet Epstein, who wrote a note on the topic and to whom we are indebted for a number of ideas. Margaret de Tchihatchef labored as editor over a task that at times surely seemed beyond end. Bill Fraser designed the cover.

We gratefully acknowledge and thank all for this assistance, without which the task would have been considerably more difficult.

ORGANIZATIONAL PATTERN OF THE TRAINING AND VISIT SYSTEM OF AGRICULTURAL EXTENSION



TRAINING AND VISIT EXTENSION

Chapter 1

Introduction

Sustained high levels of agricultural production and incomes are not possible without an effective agricultural extension service supported by agricultural research that is relevant to farmers' needs. Although there can be agricultural development with weak agricultural extension and research services, continued and widespread improvement requires professional, effective extension and research. It may not always be possible precisely to quantify the contribution of extension to agricultural development, but there is little doubt that an effective extension service contributes significantly to agricultural production.

The role of extension (and, to some extent, of research) in agricultural development is often overlooked. This is due in part to the difficulty of isolating the impact of extension activities on agricultural production from the many other factors that have a direct or indirect impact. Where investment funds are limited, as they are in many countries, it is especially tempting to overlook the contribution of extension, with the result that the limited available resources are channeled to other more traditional investments. Inadequate funding not only hinders the development of staff and other resources of the extension service, but has the more insidious effect of portraying extension as a low-priority area and, thus, an activity of questionable benefit. Such a perception can only lessen the impact and effectiveness of the extension service.

Contrary to these ideas, recent experience proves that an extension service organized -- or, as is usually the case, reorganized -- along strictly professional lines can have a significant and rapid impact in increasing agricultural production. Many of the extension services that have recently been organized professionally have followed a system called the "training and visit (T&V) system of agricultural extension." The purpose of this section is to highlight key features of this system and its operation.

The particular approach to agricultural extension by means of the training and visit system is but one of many ways in which extension services may be organized along effective, professional lines. The training and visit system is discussed here because of its proven results and adaptability to a wide range of agricultural and administrative environments in developing countries. If any other system of extension can produce better or similar results in the field, it should of course be tried.

The training and visit system of agricultural extension has been widely adopted. It has been taken up either explicitly or implicitly at a national or local level by about forty countries in Eastern and Western Africa, South and Southeast Asia, the Middle East, Europe, and Central and South America; a number of other countries are preparing to introduce the system. One reason for the rapid spread of the system -- it was developed into a coherent system only in the mid-1970s -- has been the impressive increases in agricultural production that have been associated with its introduction.

Early and significant evidence of such benefits came from Turkey and India. In the Seyhan project in Turkey, farmers increased cotton yields from 1.7 tons to over 3 tons per hectare in three years after the introduction of T&V extension. In India, in Chambal (Rajasthan), farmers increased paddy yields from about 2.1 tons to over 3 tons per hectare in two years; in Chambal (Madhya Pradesh), average wheat yields (irrigated and unirrigated) rose from 1.3 tons to nearly 2 tons per hectare after two seasons, and have since risen higher.

Elsewhere in India, the country where the system has been most widely established, T&V extension continues to contribute to significant changes in agricultural practices and production, be it the introduction of new crops (soybean in Madhya Pradesh, summer groundnut in Gujarat, summer pulses in Orissa) or the adoption of new practices (such as acid delinting of cotton seed in Rajasthan, basal application of fertilizers, and the use of zinc sulphate for paddy in Haryana). It is difficult to isolate exactly the effect of all the factors responsible for these changes, and extension is certainly not solely responsible for the increased agricultural production. It is, nonetheless, clearly evident that a professional agricultural extension service developed on similar principles in each of these diverse areas was a major force behind these changes.

Production statistics are impressive, but they provide an incomplete measure of what has been achieved. Numerous visitors to regions served by an extension service organized along training and visit lines have been impressed by the visible evidence of agricultural improvement. Where previously wheat was scarcely known, paddy was cultivated haphazardly, or large areas were left entirely fallow, fields are now well tended and highly productive. Farmers are proud of their achievements and are continually asking the extension service for more assistance. Extension workers, who previously had poor morale and were regarded by many farmers as useless, are now proud of their work and are respected by the farmers they assist. Throughout many of these areas, a more general prosperity is evident as farmers use their higher incomes to construct better houses and to purchase a variety of goods and services. However, a description of even these claims, just as the data cited earlier, cannot fully convey the actual and potential impact of the system. To understand the T&V system's potential, there is no substitute for visiting areas in which it operates, seeing the fields, and talking with farmers and extension personnel.

In addition to the quick and visible results of the training and visit system of extension in both rainfed and irrigated areas, the system has a number of indirect consequences that are appreciated by farmers, extension staff, and Departments of Agriculture. Most significant are the changes in

attitude of extension staff. With their role and regular training in a professional extension service, they feel, and are treated like, the technical specialists they must be if the extension service is to make any impact. Farmers respond favorably to extension field staff who serve them regularly and predictably, and who teach relevant technical advice. Links between extension and agricultural research are strengthened, which results in research being encouraged to spend more time working on the actual and immediate production constraints faced by farmers. Many researchers welcome the applied orientation this brings to their work. Finally, the systematic and efficient deployment of personnel and other resources, which is a basic element of the training and visit system, is frequently imitated by other organizations as a means for more effective delivery of rural services.

Another reason for the rapid spread of the training and visit system of agricultural extension is that the principles underlying the system are basically simple and can be widely applied in different situations. The approach contains few, if any, new ideas, but involves the systematic application of well-known management principles. This apparent simplicity has had an unfortunate effect of leading to many attempts to introduce the system without first obtaining a clear understanding of its vital features. As a result, many so-called "training and visit" extension systems have, in fact, little in common with the actual concept of the system. If adoption of the T&V system is to be successful, extension staff and others in the Department of Agriculture and other departments, and the community at large, must understand and support both the basic approach and philosophy of the system and the actual mechanics of its operation.

The system is deceptive in its simplicity for, although it is simple, to be effective a number of simultaneous activities is required. If any one of these is not performed, the effectiveness of others is diminished. For training and visit extension to have an impact, research must support it strongly, coordinate with extension, and tackle farmers' immediate problems; production recommendations taught to farmers must be relevant to their needs and resource conditions, be economically viable, and require only inputs that are actually available; and regular and special training of extension staff must be timely and specific to their needs. Most importantly, hard decisions have to be made in setting priorities, requiring concentration of efforts on a small number of feasible goals and a commitment to this system of professional agricultural extension. If any one of these requirements (or any of a number of other basic features of the system) is ignored, or is weak relative to others, the impact of the entire system is compromised.

The training and visit system of agricultural extension offers many advantages and, if properly adopted, can be successfully implemented under most conditions. The main idea of the system is to have competent, well-informed village-level extension workers who will visit farmers frequently and regularly with relevant technical messages and bring farmers' problems to research. The methods to achieve this may change from place to place to suit particular agricultural, social, and administrative conditions. But the essential features -- continuous training and regular, fixed visits by staff solely occupied with agricultural extension, built-in supervision, continuous upgrading of staff, monitoring and evaluation of all extension activities, and minimal office and paper work -- must be closely followed everywhere. If this is not done, the potential effectiveness of the

system -- which, in such circumstances, can no longer be called "training and visit" extension -- is drastically curtailed.

Leadership of the extension service must be strong, active, innovative, and field oriented. Work of the extension service must predominantly take place with farmers in their fields and be manageable for the staff concerned. All staff must receive training that is frequent, regular, and relevant to their needs (and, hence, to those of farmers). Links with research must be strong and research must be oriented to the priorities of farmers. The mechanics of the training and visit system -- the precisely delineated areas of staff responsibility, fixed work schedules, regular training of extension staff, and regular and frequent meetings of extension and research -- have been designed to meet these basic requirements. To serve effectively the ever-increasing sophistication and specialization of agriculture and farmers and to suit particular local conditions, methods of work may -- and must -- be changed, so long as these fundamental organizational features are retained.

The training and visit system is designed to achieve results rapidly and at as little cost as possible. Impact can often be seen in farmers' fields before the end of the first crop season after initial implementation. Two or three seasons later, most farmers are following all, or part of, the newly recommended, economically viable practices on at least part of their fields. The extension service is normally reformed along training and visit lines largely by the systematic redeployment of existing staff. The incremental cost of adopting the system, therefore, varies considerably depending on the existing extension service. Where an extension service is already operating, the cost of implementation is normally around $0.50 to $1.50 per hectare a year. Even minimal (and readily attainable) increases in productivity result in rates of return on this investment well in excess of 50 percent. As an example of the potential impact of the system compared to its cost, the Department of Agriculture of Gujarat state in India calculated that the estimated increased production of one crop that was actively promoted by extension (summer groundnut) over one year was equivalent to about twenty times the total incremental cost of the reformed extension service for five years.

The financial cost of the system to farmers is also very small, since its initial focus is usually on the improvement of low-cost basic agricultural practices (such as better seed, seedbed preparation, cultivation, and weeding) that require more work but little additional investment. It is for this same reason that smaller cultivators who have an abundant supply of labor and can, therefore, easily implement labor-intensive practices, appear to benefit (in relative terms) at least as much from the reform of an extension service as larger farmers.

The concern here is with the ideas behind the training and visit system of agricultural extension, its methods of operation, and its impact. The intention is not to suggest that extension in isolation can enable farmers to maximize their incomes. Improved seeds, fertilizers, and pesticides, new crops and cropping patterns, effective credit institutions, soil and water conservation, and irrigation investments, as well as appropriate marketing and price structures, and other basic agricultural support services are also critically needed. However, in most developing countries it is

essential to give priority to the development of an effective agricultural extension service, because significant and urgently required production gains may be achieved by using the available resources (including inputs and services) more efficiently, which in turn may generate, at the farm level, demand and pressure for improvement in the availability of inputs and other services. Even in areas where such gains have been realized, an effective extension service is needed to ensure a continually higher standard and productivity of agriculture through increased and efficient use of all available resources.

Chapter 2

Some Key Features of the Training and Visit (T&V) System of Agricultural Extension

Summary

The training and visit (T&V) system of agricultural extension aims at building a professional extension service that is capable of assisting farmers in raising production and increasing incomes and of providing appropriate support for agricultural development. The system has been widely adopted in many countries. Considerable variation in the system exists within and between countries, reflecting particular agroecological conditions, socioeconomic environments, and administrative structures. To be successful, the training and visit system must be adapted to fit local conditions. Certain features of the system, however, cannot be changed significantly without adversely affecting its operation. These features include professionalism, a single line of command, concentration of effort, time-bound work, field and farmer orientation, regular and continuous training, and close linkages with research.

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The purpose of the training and visit (T&V) system of agricultural extension is to build a professional extension service that will be capable of assisting farmers to raise production and increase their incomes and of providing appropriate support for agricultural development. A key means to this end is the creation of a dynamic link between farmers, professional extension workers, and researchers. This is done through the training and visit system of extension, the impact of which is readily apparent over a

wide range of agroecological conditions in farmers' fields, whether irrigated or rainfed.

Given the broad range of conditions and administrative structures in the areas covered and the number of staff and supporting institutions involved, variations in the system of extension must be expected. Indeed, to be successful the training and visit system must be adapted to fit local agroecological, socioeconomic, and administrative conditions. Nonetheless, certain features of the system cannot be changed significantly without adversely affecting its operation. Some of these features are outlined below.

Professionalism

Appropriate advice to and support of farmers to enable them to increase their incomes can only come from an extension service that is professional at all levels. Extension staff must keep in close touch with relevant scientific developments and research in order to formulate specific recommendations that will be useful to farmers in all kinds of resource situations. Extension workers must have the ability to identify production constraints in the field and to develop appropriate measures to counter them. This can be achieved only if each extension worker is fully and continuously trained to handle his particular responsibilities in a professional manner. In this way, credibility will be built within the farming community. In addition, the requisite physical support for training and visit extension must, of course, be supplied.

Single Line of Command

The extension service must be under a single line of technical and administrative command. (This is commonly within a Ministry or Department of Agriculture.) Support is required from teaching and research institutions, input supply and other agricultural support organizations, and local government bodies, but all extension workers should be responsible administratively and technically to a unit within only one department. The department within which the service is located should be solely accountable for the operation of the extension system, notwithstanding the required coordination and liaison with other organizations.

Concentration of Effort

Effective training and visit extension is based on a concentration of effort. Only by concentrating on the tasks at hand can the impact of extension become visible and can progress be sustained. Concentration of effort is a feature of all aspects of the system. All extension staff work only on agricultural extension. Staff are not responsible for the supply of inputs, data collection, distribution of subsidies, processing of loans, or any other activity not directly related to extension. Not only do nonextension activities dilute the concentration of effort, but they undermine the professionalism of the service and its credibility among farmers, hinder the single line of command, interrupt work and training schedules, and weaken the required two-way linkage with research. The supporting activities are, of course, important to agriculture, and successful agricultural extension relies on them. But they are the responsibility of, and are best done by, other specialist staff who are trained and work full time in specific fields,

just as agricultural extension can and should only be carried out by professional full-time extension workers.

All extension staff perform specific duties that complement and support the activities of staff at all other levels. For instance, the basic extension worker -- the Village Extension Worker (VEW) -- works only on agriculture, only on those crops and practices that are relevant to a particular season in his locality, and primarily -- though not only -- through a small number of contact farmers who are conscientious and skilled and are sufficiently representative of their community to be imitated; in this way, relevant useful practices are spread quickly to other farmers.

Each staff position has its own clearly defined and realistic job responsibilities directed towards supporting the work of the VEW. There is no duplication of activity by staff at different levels, as this would undermine the efforts of all staff. It is assumed that the effective span of control for supervision or guidance is about eight. Hence, no extension officer should have more than about eight staff (or offices), which he must personally supervise and for whose performance he is specifically accountable. A similar principle of realistic responsibility and work effectiveness is followed in making VEWs responsible for a limited number of farmers' groups, and for dealing primarily with a smaller number of farmers within these.

In training sessions, attention is concentrated on important major points. Similarly, extension-oriented research concentrates on key constraints to increased production and income that are faced by farmers. In sum, concentration of effort means that the entire extension system is focused on bringing about the greatest (and earliest) possible increases in the production and incomes of the farmers it serves.

Time-bound Work

Messages and skills must be taught to farmers in a regular, timely fashion, so that they will make best use of the resources at their command. The VEW must visit his farmers regularly on a fixed day (usually, but not necessarily, once each fortnight). All other extension staff must make timely and regular visits to the field, as required, to fulfill their job responsibilities. Recommendations for a specific area and for particular farming conditions for each two-fortnight period are discussed and learned by Subject Matter Specialists (SMSs) at regular monthly workshops; the recommendations are then presented to VEWs and Agricultural Extension Officers (AEOs) at the next two fortnightly training sessions. Any break in this time-bound system of training and visits makes effective extension difficult.

Field and Farmer Orientation

To serve farmers effectively, an extension service must be in contact with them. Moreover, contact must be on a regular basis, on a schedule known to farmers, and with a large number of farmers representing all major farming and socioeconomic types. The farmers served by a VEW are divided into groups; each group is visited on a fixed day once every two weeks by the VEW. All other extension workers, including SMSs, also spend a large part of their time in farmers' fields, generally on regularly scheduled visits.

Researchers and trainers, as well as District Extension Officers and other senior staff, must visit the field often and regularly to understand the problems faced by farmers (and by extension workers). To enable extension workers to spend time in the field, their administrative and report-writing responsibilities are minimal. The VEW and AEO, for example, complete a daily diary but do not write reports. Finally, while spending almost all of their time in the field meeting with farmers, extension workers must attempt to understand farmers' production conditions and constraints in order that appropriate production recommendations are formulated: this can only be done if extension workers listen at least as much as they talk.

Regular and Continuous Training

Regular and continuous training of extension staff is required both to teach, and discuss with them, the specific production recommendations required by farmers for the coming fortnights and to upgrade and update their professional skills. Moreover, the basic training sessions (fortnightly training and monthly workshops) are a key means of bringing actual farmers' problems to the attention of research, of identifying research findings of immediate relevance to farmers, and of developing production recommendations that fit specific local conditions. Without regular training, extension workers have very little of use to say to farmers and are without an established channel for referring farmers' problems to the appropriate specialists for advice or further investigation. As well as imparting the necessary extension knowledge to trainees, training has the added benefits of assisting in the exchange of information among staff and helping them learn from each other's experiences.

Linkages with Research

Effective extension depends on close linkages with research. Linkages are two-way. Problems faced by farmers that cannot be resolved by extension workers are passed on to researchers for either an immediate solution or investigation. During seasonal and monthly workshops and joint field trips, extension and research staff formulate production recommendations that will be adapted by extension workers, as necessary, to make best use of the specific local environment and actual farmers' resources. Without the technical content of recommended practices that comes from research, extension has little to do in the long run. Research's awareness of and reaction to actual farm conditions is increased through responding to problems that have been put forward by extension workers, through the training of extension staff, and through field visits. This heightened awareness and taking account of local conditions has the beneficial effect of helping to orient some of research's attention to the important practical matter of farmers' production conditions and constraints.

Village Extension Worker cycling to meet farmers

B. Z. Mauthner

Farmers gathering around the Village Extension Worker in the field listen to production recommendations

S. L. Ghosal

Chapter 3

Role of the Village Extension Worker

Summary

The Village Extension Worker (VEW) is the only extension worker who teaches production recommendations to farmers. He is just as specialized and professional as other extension workers. The responsibility of all other extension staff is ultimately to make the VEW more effective in his work. The task of teaching farmers suitable technical practices and convincing farmers to try them is not easy. Hence, the VEW must receive intense support and guidance, and must not be burdened with nonextension functions. Moreover, the nature of his work and his achievements must be recognized personally and in terms of opportunities for professional growth and technical upgrading. The main responsibility of the VEW is to visit regularly each of the eight farmers' groups of his area of jurisdiction (the "circle"), and to teach and try to convince farmers to adopt recommended production practices. He must also advise farmers on the price and availability of necessary inputs and market conditions. He should report farmer response to recommendations, production problems, input demand and availability, and market conditions to his supervisor (the Agricultural Extension Officer) and in training. Days without a regularly scheduled visit or training are used for makeup visits, farm trials, and field days. In addition to making field visits for at least eight days, each fortnight the VEW must attend a fortnightly training session given by Subject Matter Specialists (SMSs) and a review meeting with his Agricultural Extension Officer (AEO).

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The Village Extension Worker (VEW) is the base-level extension worker in the training and visit system of agricultural extension. While frequently less educated than other staff, his role is no less professional and specialized: he is the only extension worker who teaches production recommendations to farmers. The work of all other extension staff should make the VEW more effective in this task. While all staff in the extension system are equally important in terms of the job they perform, the role of the VEW is frequently stressed, since of all extension staff his function is both the most exposed -- to the farmer -- and critical -- teaching and persuading farmers to adopt production recommendations, and feeding back to the extension and research services information on actual farm production conditions and constraints and farmers' reactions to recommended practices.

It is not easy to be a good Village Extension Worker. For one, the agricultural technology that must be passed on to farmers is not uncomplicated: if it were, there would be no need for Subject Matter Specialists, for frequent training for all extension staff, or even for a single-function extension service and single-function extension workers. Extension is not merely a matter of telling farmers about a production recommendation learned in training. Not only must each recommendation be explained in terms of the particular circumstances of the individual farmer, but farmers must also be persuaded to try a recommendation, or at least an adaptation of it, on some of their land. The job of the VEW is made more difficult because it is not uncommon for recommendations that seem promising in training not to be viable in the field -- if, for example, the required implement or seed variety is not available to farmers. Moreover, VEWs frequently are less experienced in agriculture than the farmers they serve, which may lead to some reserve and doubt on the part of farmers.

To compound these problems that make his work difficult, the VEW often lives and works in isolated areas with facilities that are inadequate for himself (not to mention his family); he usually has no more than two days of contact a week with his supervisor or other colleagues, 1/ generally receives poor compensation, and has only limited prospects for professional growth. In spite of such disincentives and the difficult, specialized nature of their job, VEWs can have a significant impact on the production and income of the farmers they serve.

While as much as in any other function in the extension service the success of a VEW results to a large extent from his own initiative and effort, the VEW also depends on a number of basic supports for the effective implementation of his job. Among the most important is that the VEW should be engaged exclusively in agricultural extension work and should not be charged with any nonextension responsibilities. Nonextension functions not only force a VEW to break the tightly scheduled program of visits and training. Such functions also undermine a VEW's specialization as an agricultural extension worker, both in practice and in terms of his image in the eyes of

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1/ One day in the field with the AEO (usually once every two weeks) and one day each week at either a fortnightly training session or a review meeting with his AEO.

the farmers. The VEW requires close and regular in-field guidance from his supervisor, the Agricultural Extension Officer (AEO), both to help him influence the farmers of his jurisdiction (the "circle") and to encourage him in his work. In addition, the VEW should receive guidance and training from other staff -- especially Subject Matter Specialists (SMSs) -- in formal training sessions and in the field.

To ensure the VEW's effectiveness, the nature and quality of his work should receive recognition from his co-workers and supervisors. Where due, such recognition should be demonstrated during training sessions and by supervisory staff when they visit the VEW in the field. Recognition should also be in evidence in terms of employment conditions, incentives (including promotion prospects), and opportunities for professional upgrading through training, including undergraduate or postgraduate courses. As much as for any other extension worker, the VEW's need for professional upgrading must be continually reviewed and means to this end implemented that fit the nature of his work and the expectations held of him.

Field Visits

The main activity of the VEW is visiting farmers and their fields. To enable him to perform this basic activity effectively, it is very important that the VEW's circle should be properly delineated. Each VEW has a fixed number of farm families for whom he is responsible to pass on production recommendations and to advise on their agricultural activities and field problems. This number, which usually ranges between 800 to 1,000 actual farm families, is determined broadly on the basis of the number of farmers a VEW is likely to be able to serve effectively. The farmers are divided into eight discrete, approximately equal-sized groups. In each group, about ten representative, active, and interested farmers are selected as contact farmers. The area of a group should be of a size that permits the VEW to cover most of it during a day's visit and to get to know most of the farmers over a few months; recommendations taught to the contact farmers and some other farmers in a group should be known quickly by all other farmers. Usually, 80 to 120 farmers are a suitable group size.

Although he will work primarily through a small number of contact farmers in each group, the VEW should also on each visit deliberately meet with, and promote recommendations among, other farmers. All farmers must know the day of the fortnight on which the VEW is scheduled to visit their group. Wall signs (showing the fixed day of visit to that group or the complete fortnightly schedule of the VEW), special attention given to village leaders, and radio messages are some of many effective means of creating this awareness. Where group formation or selection of contact farmers needs adjustment (because, for example, settlement patterns change or a contact farmer loses interest and does not perform as expected), the VEW should propose an alternative group organization or individuals to his AEO for guidance and consideration.

If he is to be effective, it is essential that the VEW should reside within his circle. By doing so, he will not waste time traveling, will become well acquainted with the farming community and its resources, will be more readily accepted by the farmers of his circle, and will always be readily available when required by farmers.

During each visit, which should last five or six hours, the VEW spends most of his time in the fields of farmers discussing with them the range of their agricultural activities, explaining to them the current recommendations, and encouraging them to try some on at least a small area. While these visits should focus primarily on contact farmers, the VEW should ensure that other farmers join the discussions in contact farmers' fields and that he visits the fields of as many other farmers as time permits. The contact farmers and other farmers he is able to reach directly should be encouraged to discuss the VEW's recommendations with their neighbors and friends.

In addition to field visits, particularly when the extension system is being established in an area, there is a widespread pest or disease problem, or it is the beginning of a season, as part of his scheduled visit the VEW may hold a meeting with all farmers of the group, usually in the afternoon or evening. If they are well organized and wanted by farmers, and are used in a secondary role to support visits to farmers' fields, such meetings can help extension serve farmers better. However, once attendance falls and such meetings clearly are not serving many farmers, they should not remain a regular feature of a VEW's visit.

The VEW's task is not completed by making visits as scheduled and teaching farmers the production recommendations relevant for the period and the skills involved. These activities are merely a means to an end of the VEW's job: to increase the productivity and income of farmers in his area of jurisdiction. The recommendations learned at fortnightly training must be adapted to take account of seasonal and resource conditions (including the availability of required inputs) prevailing during the period that a recommendation is relevant. New practices need to be demonstrated and taught to farmers, and farmers must be convinced of their utility and encouraged to try each one of them on a small area so that they can see for themselves the difference between the recommended and usual practices. The VEW may also need to prepare some charts and specimens to help convince farmers of the usefulness of recommended practices.

All the time, the VEW should be evaluating his own work. If a recommendation is known by farmers but not adopted, he should attempt to establish the reason for this through observation and discussion with farmers and his AEO. If the reason is not apparent or if suitable remedial measures cannot be undertaken, the problem should be raised with the SMSs during the next fortnightly training session (or earlier, if it is urgent) to consider the need for adjustment of the recommendation. If a suitable solution is not known and the recommendation is not adjusted, the problem should be referred to research (usually by SMSs at the next monthly workshop). Similarly, recommendations readily adopted by farmers should be discussed with AEOs and SMSs in the field and in training sessions to determine the lessons they might hold for other extension work.

In addition to the main function of transmitting and teaching recommendations that increase production, the VEW advises farmers on field problems they face and also on the local market conditions and the availability and cost of inputs required for recommended practices. If the

VEW is not confident of a solution for a problem raised by farmers, he consults with other officers. The VEW is responsible for seeing that all significant production problems that he himself cannot solve are brought to the attention of his supervisor.

As well as making the four fixed visits weekly during which he discusses recommendations and field problems, the VEW has a number of other responsibilities in the field. These are generally undertaken on the one extra visit day included in his weekly schedule (unless this is being used for a makeup visit to a group that was missed during the week). These additional tasks include: conducting the farm trials (field experiments) on farmers' fields that each VEW undertakes under the guidance of his AEO and subdivisional SMSs (which may be dealt with on a scheduled visit to a farmers' group so long as this work does not interfere with his regular extension activities); holding field days to show the farmers of one or more groups an outstanding area under a recommended practice; or even having extra farmers' meetings that might, for instance, focus on a new variety, crop, or cropping system, or perhaps pest control measures that extension intends to promote. These other field activities must be just as closely supported and guided by the AEO and other officers as the VEW's regular visits and contacts with farmers.

Training

Aside from field work, the other main responsibility of the VEW is to receive training. The training most frequently and regularly held for the VEW is the fortnightly training session. It is here that the VEW, together with his AEO, learns the recommendations and their impact points for the coming fortnight. The function of fortnightly training, however, is not merely to teach VEWs and AEOs production recommendations. They are also an important venue for feedback from the field to other extension staff and to research and input organizations. The VEW must report thoroughly on the field situation of his circle, unseasonal problems faced by farmers, and farmers' reactions to the recommendations of the previous fortnight. He and the AEO must also report on local market conditions and the demand for and availability of recommended inputs and other agricultural support services in his circle. This information is vital to the development of useful recommendations and their subsequent adoption by farmers. The VEW should make a note of these points in his diary (which he always carries with him in the field) so that he can make sure they are pursued with the authorities concerned.

On the same weekday as the fortnightly training session but in the alternative week, the VEW attends a fortnightly meeting conducted by his AEO. The main purpose of this meeting is for the AEO to review with his VEWs together as a group the difficulties that farmers may have in implementing the fortnight's recommendations and other problems affecting the VEWs' work, as well as administrative matters concerning VEWs. The meeting is also a good opportunity for VEWs to exchange ideas and experiences. Like the fortnightly training session, this meeting should often be held in one or other farmers' group rather than only at the AEO's headquarters or an office.

The VEW should attend special short courses from time to time. These may include one- or two-day preseasonal and orientation workshops held

by district staff, or other short courses organized by local staff on particular agricultural topics. Sometimes they may be seven- or ten-day agricultural courses or courses in extension methods held at local training institutes. Where initial training of VEWs was brief or was held many years previously, VEWs should undergo a substantial (usually three- or six-month) refresher course. Such special short and refresher courses are important not only to enable VEWs to perform their expected functions satisfactorily but also to upgrade their professional competence as is required to meet effectively the increasingly professional and complex nature of their job.

As agriculture becomes more specialized and complex, there is a continual need for more highly trained and specialized VEWs. VEWs without university education should be sent for degree studies. In that VEWs will stay in the Department of Agriculture for thirty years or more, it is never too early to have as many VEW recruits as possible with relevant undergraduate degrees. Sooner rather than later, the quality of agriculture will require extension workers with university education. The work of the VEW in the training and visit system of agricultural extension is, or will quickly become, sufficiently arduous and specialized to justify incentives to enable good extension workers to remain in the field. While opportunity should be given for VEWs to be promoted to AEOs, VEWs should also have the possibility of being promoted to levels equivalent to that of the AEO or even higher while remaining VEWs.

Chapter 4

Role of the Agricultural Extension Officer

Summary

The importance of the Agricultural Extension Officer (AEO) in good agricultural extension is frequently underestimated. The AEO has two basic functions. The first is to review and assist in the organizational aspects of the job of the Village Extension Worker (VEW); the second, to provide technical support to the VEW, in particular to see that production recommendations are effectively taught to farmers and that field problems encountered by a VEW, and which he himself cannot resolve, are passed on immediately to appropriate authorities. Like the VEW, the AEO is primarily a field worker. He spends at least eight days each fortnight in the field visiting each of the eight or so VEWs of his area of jurisdiction (the "range"), in particular to make sure that farmers are being visited regularly by the VEW, and that the recommendations they receive are appropriate and are adopted. He reviews whether contact farmers have been correctly selected, farmers' groups are properly delineated, and all farmers are aware of the VEW's visit schedule and activities. The AEO should also conduct some farm trials in farmers' fields, participate in fortnightly training sessions, and hold a fortnightly review meeting with his VEWs. In addition to these specific tasks, the AEO should take any steps that may be necessary to fulfill his main responsibility of helping the VEW increase his effectiveness as an extension worker.

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An extension agent holds a meeting with farmers

Directorate of Extension, Government of India

Extension worker teaches farmer in his field

B. Z. Mauthner

The critical nature of the role of the Agricultural Extension Officer (AEO) in the effective functioning of the training and visit system of agricultural extension is often overlooked and its importance underestimated. Attention is frequently focused on the primary extension worker -- the Village Extension Worker (VEW) -- or on the specialist staff responsible for technical support and training, rather than on the AEO. It is the AEO, however, who is immediately responsible for the quality of field extension: the AEO must supervise, support, and guide the VEW. Without an active and effective AEO, it is unlikely that the VEW's work, or the extension service at large, will have a lasting and significant impact. After all, no other officer is directly responsible, or as suitably placed as the AEO, to guide and supervise the VEW in his day-to-day work.

The work of the AEO falls in two distinct areas, neither of which is to duplicate the work of VEWs by teaching production recommendations to farmers. One area is to review and give assistance in the organizational or methodological aspects of the VEW's work: formation of farmers' groups and VEW circles; selection and change of contact farmers; organization of farmers' meetings and field days; an appropriate schedule of VEW visits and its adjustment; VEW attendance at fortnightly and other training sessions; VEW coverage of contact farmers and interaction with other farmers; VEW relationships with farmers and the degree to which farmers are willing to accept the VEW and his advice; and, most importantly, whether the VEW is following his regular schedule of visits. The second main area is technical support. Here, the AEO reviews the VEW's contact with farmers to ensure that production recommendations are properly transmitted and adjusted to fit the circumstances of individual farmers, and are adopted by some farmers; that field problems are resolved or passed back to Subject Matter Specialists (SMSs) and/or research for a solution; and that extension's messages are disseminated widely among all farmers.

These two areas of responsibility are not always easy to distinguish in practice. A main point to bear in mind, however, is that the AEO is responsible for maximizing the impact of extension by helping to increase the effectiveness of the VEW in all possible ways. To do this, he clearly must do more than merely check whether the VEW is visiting his eight farmers' groups and attending training as scheduled. In addition to these two main responsibilities, the AEO should also review in the field, and discuss with his VEWs and superior officers, agricultural market and input demand and supply conditions, and ensure that farmers receive advice from their VEW on the availability and cost of suitable inputs and market conditions.

Field Work

The AEO is as much a field worker as the VEW. He spends eight days each two weeks on fixed visits (to a schedule that is set each month). In addition, one day is taken up with the fortnightly training session which he attends along with his VEWs, another in a meeting with his VEWs to review their field experiences and deal with administrative matters, and the two remaining workdays in each fortnight by extra visits and other field activities.

Being responsible for the impact of his VEWs on the farmers in their circle, the AEO must be closely associated with their work. To

facilitate this, each AEO works with no more than eight (or at the very most, ten) VEWs who have contiguous circles. The circles of these VEWs comprise the AEO's "range." Like the VEW, the AEO has his residential headquarters within his area of jurisdiction. Also like the VEW, because he has practically no record-keeping responsibilities, he does not have an office: indeed, provision of an office for an AEO may be counterproductive as it can divert him from the field work that must remain his foremost priority.

The reason for strictly limiting the number of VEWs for whom the AEO is responsible is to ensure that the AEO has adequate time to achieve his prime objective, which is to upgrade the effectiveness of each of his VEWs as an extension worker. It is for the same reason that he must concentrate on his VEWs' extension skills. The AEO should spend not less than one full day (or two half days) a fortnight in the field with each of his VEWs. To a preset program that covers a four-week period and which is normally known to the VEWs, he visits each day the farmers' group where the particular VEW selected for guidance that day is scheduled to be. The visit schedule -- approved ahead of time by the Subdivisional Extension Officer (SDEO) -- should be adjusted systematically to enable the AEO to provide more frequent support to weaker VEWs, follow up interesting developments or field problems, conduct and monitor farm trials, make occasional surprise visits, and so on. It is not necessary for the AEO to visit systematically all the farmers' groups of each of his VEWs, since the quality of a VEW's work and the areas in which he needs assistance will be readily apparent from contact with only a few of his groups.

Like the VEW, the AEO maintains a daily diary in which he briefly records his activities, field problems, farmer reaction to recommendations, and special points discussed in the field with the VEW visited that day.

The purpose of an AEO's visits to his VEWs is not to "supervise" in the sense of merely checking whether the VEW is visiting, as scheduled, the assigned farmers' group on the specific day of the AEO visit. In this respect, the AEO's concern should be whether the VEW has been visiting the groups regularly over the previous weeks and months -- not just on the day of his visit (which is usually known by the VEW anyway). The long-term regularity and effectiveness of VEW visits will be apparent from the farmers' knowledge of the scheduled VEW visit day and of the VEW himself, as well as the field evidence of adoption of recommended practices: all of this can be determined even in the absence of the VEW.

The main purpose of the visit is to support and reinforce the field work of VEWs, and to help build up their professional competence. This is done by accompanying a VEW throughout the day to observe his interaction with farmers, assisting only where the VEW appears to lack information or does not seem to have the ability to communicate and explain effectively a recommendation or answer farmers' questions. The AEO should ensure that the recommendations relevant to that particular period are well understood and competently presented to farmers, and are adjusted to take account of the land, labor, and financial resources of particular farmers. Where problems are posed to the VEW in the field or at a farmers' meeting, the AEO should assist in offering answers only where necessary. During each visit, the AEO should review the VEW's diary and write a substantive comment in it, where necessary

making suggestions for improvement. VEW (and AEO) diaries are not checked in the office or during training sessions.

The AEO should continually review whether contact farmers are adopting at least some recommendations, and guide the VEW on how to achieve more effective support from them and other farmers. He should ensure that the VEW covers all contact farmers regularly on his visits and also as many other farmers as possible. Where a recommendation is not adopted or is adopted by only a few farmers, the AEO should work with the VEW to determine reasons for this and decide on appropriate action. This might be arranging for an SMS to visit the area for further investigation; discussing the problem in the next fortnightly training session or during his review meeting with his VEWs that is held between such sessions; or helping the VEW persuade a few farmers to try the recommendation or an adaptation of it on a small area. The AEO should also use the field visits made with VEWs to become thoroughly familiar with local production practices and constraints, including the availability of agricultural inputs. In sum, during field visits the AEO should ascertain -- usually indirectly in the course of his general contact with farmers -- whether farmers are being visited regularly in their fields by the VEW and are being taught, and are adopting, appropriate technical recommendations. It should, of course, also be ascertained whether contact farmers have been properly selected, and whether an adequate number of other farmers is being met by the VEW.

In addition to helping the VEW overcome problems raised by farmers, the AEO has an important role in ensuring proper feedback from farmers and VEWs to relevant agencies. At the fortnightly training session, the AEO with his own field experience is able to ensure that his VEWs report field conditions and problems as well as farmers' reactions to recommendations. It is the AEO's job to see that urgent problems that cannot wait till the next scheduled training session are immediately reported -- orally rather than written -- to competent authorities: Pest and other production problems should most likely be reported to the subdivisional SMSs, while input constraints will be reported to the SDEO and, through him, to input agencies. The AEO must continuously watch for situations in the field that require referral. Similarly, it is the responsibility of the AEO to see that solutions to problems provided by SMSs and research (or input or marketing agencies) are speedily forwarded to the VEW and concerned farmers. The fortnightly meeting of an AEO and his VEWs provides an opportunity to encourage and collate feedback.

The AEO supervises (and sometimes himself conducts) farm trials -- or field experiments -- on farmers' fields. The type and number of such trials to be conducted in a particular area is normally determined at the seasonal zonal workshop. Time spent on trials should not be at the cost of routine extension responsibilities, but all extension staff should undertake some under the guidance of SMSs. Suitable sites must be selected and the cooperation of farmers ensured. Trials must be properly conducted and the results passed on to SMSs and research staff for analysis. Work on farm trials in a particular area may normally be done by AEOs and VEWs on scheduled visits to that area: where necessary, extra visit days should be used for the purpose.

Another field responsibility of an AEO is to help the VEWs of his range organize and hold field days. Where good progress has been made in the adoption of a recommendation or with a farm trial, a field day should be organized for farmers of that group (as well as of other groups and sometimes even for some extension workers) on either the fixed visit day for the group or on an extra visit day.

Training

In addition to field visits, the AEO has two other main tasks. One is to attend fortnightly training sessions and the other is to hold a fortnightly review meeting with his VEWs. While the VEW and AEO both attend fortnightly training sessions essentially as trainees, they do so for different purposes. At fortnightly training, the VEW learns and practices recommended techniques so that he can teach them to farmers accurately and effectively. The AEO learns and practices the techniques so that he can check in the field whether the VEW is teaching them as required, and to assist VEWs who have difficulty in understanding or justifying a practice and, hence, in convincing farmers to adopt it. The AEO should ensure that all his VEWs participate actively in training sessions, that they report on field conditions and problems in their circles and on farmers' reactions to their recommendations, and that all reported problems are adequately covered during the training session. He should suggest ideas for farm trials and on-station research that can be raised by the SMSs at monthly workshops and elsewhere. Progress in the adoption of recommendations, special achievements of VEWs, field problems, and operational difficulties should all be drawn to the attention of the SMSs and SDEO. If a VEW misses a training session, the AEO must see that he immediately receives the appropriate recommendations and advice for his operations during the period covered by the training. Sometimes, an AEO should give training in a topic in which he has particular expertise.

The AEO's second main task outside field visits is to hold a fortnightly meeting with his VEWs. This meeting is held in the alternative week of the fortnight to that in which the fortnightly training session is held. The main purpose of this meeting is to review in greater detail than is possible at the fortnightly training (since each fortnightly training session is attended by about 30 VEWs and AEOs) the work of each VEW and to discuss common problems and lessons of extension work. The meeting provides, between fortnightly training sessions, a useful interim forum where VEWs may bring urgent problems to the attention of the AEO. The AEO's fortnightly meeting with his VEWs may also be used to deal with minor administrative matters. The AEO should not consider the meeting as an opportunity to re-teach the fortnight's recommendations to VEWs; rather, it gives VEWs a chance to discuss among themselves and with their AEO specific field activities and problems. It is a particularly useful time for the AEO to review methodological aspects of extension and the impact of his VEWs on the farmers. The meeting may be held at any place convenient to the AEO and VEW, but it should often be held in the fields of a particular VEW circle where examples of good extension work -- or problems -- may be reviewed rather than only at the AEO's headquarters or an office.

Successful agricultural extension work depends largely on judgment. No one recommendation will suit all farmers, nor even necessarily a large

proportion of them, just as there is not any one way to communicate with, and teach, farmers. The main responsibility of the Agricultural Extension Officer is to help the Village Extension Worker in all possible ways to increase his effectiveness as an extension worker. Drawing on his usually deeper experience, as well as special training in agricultural technology and extension methods that he should regularly receive in special training activities, the AEO is able to assist the VEW in making a significant impact on the farmers of his circle and, thus, assist farmers in attaining higher crop production and incomes.

Chapter 5

Role of the Subdivisional Extension Officer

Summary

The Subdivisional Extension Officer (SDEO) has overall responsibility for effective agricultural extension in his subdivision. Through leadership, planning, and supervision, he must ensure that extension has a significant impact on agricultural production and farmers' incomes. To do this, the SDEO must use his initiative to take any action required to increase the effectiveness of the extension service. The SDEO is active in two main areas -- field visits and training -- in addition to coordinating information on the actual and likely supply and demand of agricultural inputs and on market conditions in his subdivision. He makes field visits on at least three days each week to review both technical and organizational aspects of the work of extension staff in his subdivision. He is the organizer, convenor, and leader of fortnightly training sessions. Monthly and zonal workshops and other extension/research meetings are attended by the SDEO mainly to ensure that significant relevant local conditions are taken into account in the formulation of recommendations and research activities. The SDEO should also ensure that extension staff of his subdivision receive adequate and appropriate special training.

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The Subdivisional Extension Officer (SDEO) has, as part of his broader responsibility for coordinating agricultural development activities, overall responsibility for effective agricultural extension in his subdivision. Through appropriate leadership, planning, and supervision, the SDEO must ensure that the extension service has a significant impact on production and farmers' incomes. The SDEO is in a strong position to influence the extension service in that he is in charge of technical specialists (Subject Matter Specialists) and extension field staff (Village Extension Workers) and their immediate supervisors (Agricultural Extension Officers), while having close contact with training and research staff as well as with officers of other government departments involved in agricultural development.

Notwithstanding this authority and support, the effectiveness of the SDEO in maximizing the impact of agricultural extension depends to a high degree on his own initiative and activity. The SDEO is a senior and experienced officer and has adequate authority over all resources assigned to extension; he, therefore, must take initiative without requiring the prodding or prior approval of his own supervisor, the District Extension Officer. The SDEO cannot -- and should not -- merely follow written orders and file requisite reports. He should take any approach or action that he feels could increase the impact of extension. After ensuring regular and effective field visits by his Village Extension Workers (VEWs), Agricultural Extension Workers (AEOs), and Subject Matter Specialists (SMSs), some areas among many where the SDEO must be innovative and active are: organizing local field days, special night meetings of farmers and VEWs (and sometimes AEOs and SMSs, as well as himself), and exhibitions; ensuring that AEOs and VEWs are exposed to examples of good extension; arranging for exchanges of staff and ideas; taking care that inexperienced VEWs are temporarily "attached" to good ones; and managing staff incentives, rewards, and promotions. The SDEO is also responsible for the planning of, and assisting in, orientation training for all extension staff of his subdivision: such two- or three-day orientation training (or reorientation and refresher courses in extension methods or agricultural technology) should be given to all staff once a year.

There are two main places where the SDEO undertakes an important supervisory and leadership role: in farmers' fields and in training sessions and research/extension meetings. In both the field and in training and other meetings, the SDEO is responsible for coordinating information on the actual and likely supply and demand of agricultural inputs (including credit) and on market conditions in all areas of his subdivision. He should ensure the participation of concerned input agencies and marketing organizations in preseason and monthly workshops and fortnightly training sessions and obtain feedback from the field on market conditions and input demand and supply. The SDEO should also meet regularly with marketing and input agencies so that each party is kept informed of demand and supply trends.

Field Activities

The SDEO spends six days each fortnight making field visits. Field visits focus on contact with individual farmers in their fields since one of the SDEO's main objectives is to learn how the extension service is functioning; this can most easily and accurately be done through contact with the intended beneficiaries, the farmers. Through discussions with as many farmers as possible -- not just contact farmers -- the SDEO attempts to find

out whether (1) the VEW has been visiting regularly, over the preceding months, a range of contact and other farmers; (2) the VEW's function and scheduled visit day are well known among all farmers; and (3) extension messages are known to farmers, are relevant, and are being adopted (or if not, why). These visits will also reveal the extent to which AEOs and SMSs are making effective field visits.

The destinations of most visits by the SDEO should be prescheduled and known at least to SMSs and AEOs. Most visits should be to a farmers' group that is scheduled for a visit by a VEW and an AEO and even sometimes by an SMS (which the SDEO will know since he approves the monthly tour program of AEOs and SMSs, while the VEW visit schedule is fixed). Visits on some days each month should be left unscheduled so that the SDEO may select at short notice VEWs, AEOs, or SMSs who require extra attention in the field. The SDEO should occasionally visit places where no visits of extension staff are scheduled for that particular day, since his role is to determine the long-term functioning of the extension system and not just whether extension staff are making a visit on a particular day.

Field visits by the SDEO should often be scheduled to coincide with those of AEOs, since the SDEO must act as an in-field guide and adviser to the AEO, just as the AEO does to the VEW. Since each SDEO has only eight or so AEOs, he should spend a full day in the field with each at least once every four weeks. The SDEO reviews and makes substantive comments in the diary of each VEW and AEO met in the field. Whether a visit coincides with that of other extension staff or not, the SDEO should spend at least half a day in the preselected visit location, talking with a range of farmers in their fields. Meetings of farmers in villages should be avoided, since they may be dominated by nontechnical issues (and even by nonfarmers who want to take advantage of the presence in the village of a senior government official).

On field visits, the SDEO reviews both organizational (methodological) and technical aspects of the work of all levels of extension staff. Field visits are an important source of information for the SDEO on the relevance and acceptability of production recommendations, demand and availability of agricultural inputs, and farm problems in general. In sum, they guide the SDEO in gauging the effectiveness of his extension workers and their training. Although the SDEO is not a technical expert -- SMSs provide this necessary support -- his field contact with farmers should aim, in part, at learning whether key problems facing them are handled by extension recommendations in an appropriate and timely manner, and the extent to which these recommendations are adopted by farmers. This information is a necessary input in the formulation and adjustment of recommendations at monthly workshops and fortnightly training sessions.

The other main area of review undertaken by the SDEO in the field is the organization of extension activities. This is particularly important -- but not only so -- while the training and visit extension system is being established. The SDEO should review whether AEO ranges, VEW circles, and farmers' groups have been appropriately formed; ensure that contact farmers have been properly selected and are active and interested in trying out recommendations and in discussing these with other farmers; and ascertain that other farmers are also being exposed regularly to the VEW. If the VEW

holds meetings with farmers, the SDEO should see to it that they are not held at the expense of field visits. If only a few people attend the meetings, he must determine whether it would not be better to discontinue such meetings, or at least not hold them frequently. While each of these and other organizational issues are primarily the responsibility of the AEO, it is the SDEO's job to review them. The relative importance of such issues will change as the extension system becomes more established (although some issues like the selection and suitability of contact farmers and the diffusion of recommendations among all farmers in a farmers' group will continue to be important). The review of organizational matters always remains a crucial part of the SDEO's work -- and of an effective extension system.

Although the SDEO should concentrate his attention on farmers while making field visits, he should keep in mind that it is the AEO (and, in technical areas, the subdivisional SMSs) who are immediately responsible for the quality of a VEW's work. Just as the SDEO is responsible for the quality of work of each of his AEOs, so is each AEO responsible for each of his VEWs. The SDEO must make sure that each of his AEOs works properly; if they perform their job as required, the VEWs of the subdivision will similarly be working effectively. Weak extension work in a particular area (which will be apparent from the SDEO's contacts with farmers and VEWs) should be brought to the attention of the AEO concerned, along with suggestions on how the quality of work could be improved.

Training Role

The second main area of activity of the SDEO is training. Days not spent on field visits are largely devoted to organizing, attending, or giving training. The SDEO is responsible for the effective organization and operation of all fortnightly training and other routine training sessions in his subdivision, as well as for short special training courses as needed by his VEWs and AEOs; he also participates in the regular monthly and seasonal extension/research workshops.

The SDEO is the organizer and convenor of fortnightly training sessions held in his subdivision. Although he may be assisted in this task by a subdivisional Training Officer, the SDEO remains ultimately responsible for the quality and effectiveness of this training. As far as is feasible, all the fortnightly training sessions required for a subdivision in each fortnight should be scheduled on different days (for different groups of VEWs and AEOs) so that the SDEO and all SMSs can attend as many as possible. In addition to ensuring that all key participants (VEWs, AEOs, SMSs, Training Officer, and representatives of input and marketing organizations) attend and actively participate in the appropriate training session, the SDEO should see to it that suitable special participants (such as innovative, representative farmers and other experts in a topical area) attend as appropriate. Prior to each fortnightly training session, the SDEO ensures that the necessary teaching aids and materials, including facilities for practical work, have been prepared and are available. With SMSs, he should identify fields near the training location that may be used as examples of good (or bad) extension and to illustrate pest, disease, and other problems. From time to time, the entire training session should be held in a village with such suitable fields.

The training of VEWs and AEOs in production recommendations and impact points should be given mainly by SMSs on the basis of their own training and discussion at monthly workshops and their field observations. The SDEO -- or the Training Officer in his absence -- should act as leader of the fortnightly training session to ensure that all instructors and trainees actively participate and that the correct general format of the training session is followed. In particular, he should see to it that the field situation and farmers' reactions to recommendations are discussed; that VEWs and AEOs learn for each main crop for the coming two-week period a series of specific, relevant impact points to teach farmers; and that the skills farmers need to implement these impact points have been practiced by all trainees in the training session. At the end of the session, the SDEO should summarize the lessons learned and make suggestions for improvement in field work based on his visits during the preceding fortnight. He must ensure that any VEW or AEO absent from the training session receives -- and understands -- the fortnight's impact points before the start of the period to which they apply. One other important but often neglected role of the SDEO in fortnightly training is to ensure that achievements of VEWs and AEOs over the previous two weeks (as well as problems) are discussed, and that examples of their outstanding successes (or failures) are reviewed at other relevant training sessions.

The SDEO attends monthly workshops not so much to learn specific production recommendations to teach VEWs (which is the responsibility of SMSs), as to see that these recommendations take into account the resources (including available inputs) of his subdivision, are timely to common cultural practices and seasonal conditions, and are suited to farmers' resources. The reaction of farmers to earlier recommendations and unusual field conditions must be brought to the workshop's attention. The SDEO should suggest how to adjust recommendations to suit the general development trends and policies of the subdivision (in which his contact with other agricultural staff and developmental agencies provides guidance): SMSs from the subdivision or district who attend monthly workshops are unable to provide this overview of the agricultural situation and needs of the subdivision. In monthly workshops, the SDEO should also ensure that the farm trials conducted in his subdivision are discussed and that their results are taken account of in the formulation of production recommendations.

The SDEO's role at the seasonal meetings of the zonal workshop is similar to his role at monthly workshops. 1/ Rather than developing ideal technical recommendations, the SDEO should see that local resources and market and input conditions, results of recent trials, and experience with earlier production recommendations are taken into account when planning seasonal extension strategies and farm trials. The SDEO's continuous exposure to field conditions throughout the subdivision and his

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1/ In some places, a District Technical Committee operates in place of the seasonal zonal workshop. The District Technical Committee has a similar function as the zonal workshop, though in a more limited area. Both zonal workshops and District Technical Committees may meet, but their functions are large duplicative. Throughout, reference is made only to the zonal workshop.

monitoring of input demand and availability are important contributions to these workshops.

Another responsibility of the SDEO in the area of training is to ensure that his staff, and particularly the VEWs, receive specialized, appropriate short-term training in addition to the routine training of fortnightly, monthly, and preseason sessions. This will require the identification of the training needs of individual staff and the organization of their participation in special short (usually two- to ten-day) courses. For VEWs and AEOs, special training may be required in both extension methods and particular areas of agriculture. Special training should complement routine training sessions in the continual upgrading of the professional skills of all extension staff. Where other appropriate trainers cannot be arranged, the SDEO (along with suitable subdivision and district extension staff) should give the training. As a guide to the necessary frequency of such special training, each extension staff member, including all VEWs, should attend at least one special short training course each year.

The SDEO has a number of specific responsibilities concerning field supervision and training. In fulfilling these, however, he should not lose sight of his basic responsibility -- to maximize the impact of the extension service in his subdivision. The field and training activities as described here are means to this end. They are not the end of the responsibilities of the Subdivisional Extension Officer. In fact, the extension service in any subdivision is most likely to have a significant impact only if the SDEO is able to go beyond his basic required functions and act on his own initiative to strengthen extension's activities in all possible ways.

Subject Matter Specialists practice skills at a monthly workshop

Directorate of Agriculture, Government of Thailand

Farmers' meeting place in Indonesia

D. Benor

Chapter 6

Role of the Subject Matter Specialist

Summary

The Subject Matter Specialist (SMS) provides technical training and guidance to extension workers, has an important role in the formulation of production recommendations, and is a focus of links between extension and research. An extension service's ever-increasing requirement of technical specialization is met primarily through increasing the number of SMSs and improving their degree of specialization. SMSs are usually present at three levels (subdivision, district, and headquarters), at each of which they have three common functions: to make field visits, to train extension staff, and to be trained by and exposed to research. Approximately equal time is devoted to each function. In field visits, their main concerns are the correctness of recommendations taught to farmers by Village Extension Workers (VEWs), farmers' reactions to production recommendations, and aspects of agriculture that require additional recommendations or referral to research. SMSs are the trainers at fortnightly training sessions as well as for some specialized short courses. SMSs are trained by research staff at monthly workshops and elsewhere. They also visit research stations, attend specialized training courses given by research, and conduct farm trials. This regular contact with research helps ensure that proposed recommendations take account of local production conditions. To perform their vital function effectively, SMSs should be hired, trained, and promoted within a specialized staff cadre.

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Subject Matter Specialists (SMSs) are in a sense the pacesetters of agricultural extension. It is they who provide the technical training and guidance to extension workers, who are a focus of links with research, and who have a central role in the development of production recommendations to be taught to farmers. To fulfill this role effectively, the SMS must be involved in extension in a flexible and professional manner. The degree of technical specialization required by an extension service will continually change in response to the increasing sophistication and complexity of farming. The number of SMSs and their level of specialization cannot, therefore, be fixed inflexibly: as the need for specialized support to farmers develops, even in a local area, it should be met with additional or more highly trained SMSs. Like other extension staff, SMSs should be continuously trained and upgraded. To ensure that the specialized skills of SMSs are used to full advantage, they should be members of a specialized staff cadre in which they are hired, trained, and promoted in recognition of their skill as specialists in a particular agricultural field.

Within an extension service, SMSs are located at different levels (usually subdivision, district, and headquarters, although in some circumstances they might also be employed at the zonal level). They have similar responsibilities at each level, although these differ slightly to reflect the particular area of operation. At all levels, SMSs have three basic jobs: (1) to make visits to farmers' fields; (2) to train extension staff; and (3) to be trained by, and exposed to, research. Approximately equal time should be devoted to these activities: that is, in each two-week period, three or four days should go to each activity. At all levels, there is, as a minimum, a team of two or three SMSs -- usually for Plant Protection, Agronomy, and special subjects such as Water Management at the subdivision level, and for some other areas (where widespread technical and training support is not needed) at district and headquarters levels -- as well as a Training Officer. SMSs will perform most of their required tasks as a team and work closely with the administrative head of the local extension service (Subdivisional or District Extension Officer or, at headquarters, Director of Extension).

Field Activities

The basic function of field visits by SMSs is frequently misunderstood. In the course of field visits, SMSs may solve particular problems raised by farmers, explain recommendations to farmers in greater depth than was done by the Village Extension Worker (VEW), and even learn whether the farmers are being visited regularly by the VEW. SMSs of all levels must follow up immediately on production problems that are reported to them by extension staff or farmers, or that they themselves come across, and provide technical support to VEWs and Agricultural Extension Officers (AEOs) in the field. These are important parts of their work and ones that their continuous training and contact with research makes them able to handle.

These concerns are not, however, the foremost reason for the field exposure of SMSs. The basic interest and most important function of SMSs in the field is to see whether recommendations taught to farmers by VEWs are correct, to what extent recommendations given to extension workers to teach

farmers are, in fact, being adopted -- or adapted -- by farmers, and whether the recommendations address the main production problems faced by farmers in a timely, feasible, and profitable way.

In the course of their field exposure, SMSs will, of course, also become aware of organizational aspects of extension operations -- frequency and regularity of visits by VEWs and AEOs, effectiveness and interest of contact farmers, the formation of farmers' groups -- but SMSs are neither trained nor meant to investigate these aspects or advise on them. SMSs should report glaring anomalies in organizational aspects of extension to the appropriate officer (the AEO or Subdivisional or District Extension Officer), but it is not their responsibility to inspect the operation of the system in this way: they have too many other important functions to perform.

The appropriateness of recommendations and farmer reaction to them can only be ascertained by spending time in farmers' fields reviewing crops and agricultural practices and by speaking with farmers. SMSs should determine the reasons for yield variations and for different agronomic practices in a village, and be continuously on the lookout for practices or conditions that need to be taken account of in the formulation of recommendations or discussed with research staff. Subdivisional SMSs are particularly concerned with farmer response to recommendations taught to VEWs in fortnightly training sessions. District and headquarters SMSs are interested in farmers' reactions to specific recommendations, but they also have a general interest in farm production problems, since more of their time (in comparison to subdivisional SMSs) is taken up with seasonal state and zonal workshops, and monthly workshops where general recommendations and extension/research concerns are discussed and priorities of extension and research are established.

Training Duties

SMSs at all levels attend fortnightly training sessions regularly, but subdivision SMSs are most involved since, under the guidance of the Subdivisional Extension Officer (SDEO), they comprise the training team for the sessions. District and headquarters SMSs should participate in fortnightly training sessions for at least two days each fortnight in a systematic way so that they cover the different parts of their area of jurisdiction and can have an effective role in the training sessions in which they participate.

The training team for the fortnightly training sessions should follow the recommended format, giving particular attention to three points. First, the VEW and AEO participants should be encouraged to recount their experiences with the recommendations of the previous fortnight, and to advise on field conditions in their areas that may need to be taken into account in finalizing recommendations for the coming fortnight. Second, the recommendations learned by SMSs at the previous monthly workshop should be adapted to reflect particular resource (including input supply and demand) and seasonal conditions of the subdivision, and be arranged into a series of impact points. A summary of recommendations and impact points should be distributed in printed form to all participants. Third, participants should, where appropriate, have the opportunity to practice the skills involved in recommended practices, rehearse delivering these (to other trainees), and visit selected fields as part of their practical work. To ensure that the training

is properly organized, the training team should meet with the SDEO at least three days before the fortnightly training session (sometimes it will need to be much earlier) to discuss the training content and format, to select suitable fields for practical work, and to prepare necessary teaching aids.

The training of extension staff by SMSs is not confined to fortnightly training sessions. SMSs should also give short courses in their own fields of specialization. For example, the SMS (Plant Protection) may give a two-day special course on plant protection in rice to VEWs and AEOs. Because they are not as directly involved in fortnightly training as SMSs at the subdivisional level, headquarters and district SMSs should take the lead in giving such special training, both alone and with the assistance of suitable research and training specialists. Training is not, of course, confined to routine or special training sessions. In their contacts in the field, SMSs should guide extension staff in the technical aspects of their work. SMSs are primarily responsible for building up the technical skill of extension staff at all levels and should lose no opportunity to do this.

Contact with Research

The main regular training session for SMSs is the monthly workshop. All district and subdivisional SMSs must attend the monthly workshop held for the area in which they work. Headquarters SMSs should participate in as many monthly workshops each month as workshop scheduling allows. (There will always be at least one that they can attend.) Attendance at monthly workshops is required because these workshops are the forum at which production recommendations for the coming two fortnights are finalized and they are a main source of know-how for SMSs. Attendance is also necessary because workshops -- which are deliberately not called training sessions -- are the main points of regular, frequent contact between extension and research. At monthly workshops, SMSs are able to discuss with research workers field problems and conditions they themselves saw in the field or that were raised by VEWs and AEOs during the preceding month, and which need to be taken into account in the recommendations for the coming month.

Progress and results of farm trials conducted by extension staff will also be reviewed in monthly workshops and similarly be taken into account. It is quite likely that, as a result of field exposure, SMSs will suggest crops or practices that need to be given greater emphasis in recommendations or by research than the workshop resource persons might otherwise have felt necessary. Active participation of SMSs in monthly workshops not only is vital for the development of suitable production recommendations, but, handled constructively, will also increasingly facilitate the orientation of research to relevant field problems and practical solutions (and of extension to the possibilities and limitations of research).

Active participation by SMSs in other extension/research committees and workshops -- seasonal zonal and state workshops are the main ones -- has a similar purpose and value as participation in monthly workshops. These other meetings are a venue for encouraging research input into extension work and for facilitating extension's contribution to and demand for research. Of course, such participation by SMSs can only be profitable if it is based on extensive field exposure and their taking part in the training of extension

staff at all levels (and, consequently, on their understanding of actual production conditions).

In addition to participating in regularly scheduled workshops, SMSs maintain contact with research in three main other ways. One way is to visit research stations to meet researchers in their own particular field of specialization. These visits should normally be concentrated on research facilities in an SMS's area of jurisdiction, but some visits should also be made to other appropriate institutions. During these visits, which may be largely individually organized and conducted, SMSs keep abreast of developments in their area of specialization through discussions with researchers, observing experiments, and using library and other resources. A second way is for SMSs themselves to be formally trained by researchers. As a basic principle, each SMS should attend once a year one special course (of usually up to fifteen days' duration) in his area of specialization. In special circumstances and particularly for district and state-level SMSs, courses may be longer and may sometimes be held abroad. The training needs of SMSs should be carefully evaluated by senior SMSs, Training Officers, and extension management to ensure they are met in an efficient, regular manner.

A third main way for SMSs to maintain contact with research is to conduct trials on farmers' fields. Each season, the zonal and state workshops should decide on a general program of farm trials to be conducted by SMSs and by other extension staff under their guidance. As well as supervising some trials conducted by other extension staff, SMSs at all levels should be assigned some trials to be conducted personally on farmers' fields. Results of these trials should be analyzed jointly with research staff and should be discussed at monthly and seasonal workshops. Account should be taken of the results of these trials in both research programming and the formulation of extension recommendations.

Much of the above applies particularly to SMSs specialized in agricultural fields and not to the Training Officer, although in many respects he functions as an SMS. The Training Officer organizes and participates in training at all levels and in field work as part of the SMS team. His concern, however, is to develop effective training for extension staff (including training in the field of communications and extension methods) rather than to resolve technical problems or to develop production recommendations. He should be particularly active in identifying staff training needs and in planning to meet these by ensuring that training sessions are conducted effectively, by coordinating contacts between SMSs and research, and by seeing that researchers identify and teach impact points correctly. These responsibilities of the Training Officer are in addition to his own specialized tasks of teaching extension and communications methods to all extension staff (including SMSs) and in promoting the understanding of training and visit extension within and beyond the Department of Agriculture.

Subject Matter Specialists at all levels have a vital role in the training and visit system of agricultural extension. Every effort must be made to ensure that they perform their three basic functions -- of making field visits, training extension staff, and being exposed to and trained by research -- correctly and effectively. SMSs are the pace setters of extension specialization. As farming in a particular area becomes more specialized, or the extension service covers additional fields, more appropriately

specialized SMSs are required to train extension field staff to handle additional topics and to help develop recommendations. The extension service in any particular area is only as specialized as its SMSs. Given this role, the ability of the individual SMS and the quality of the SMS cadre as a whole must be continuously upgraded. This can be done to some extent through carefully designed and administered training activities. However, a basic requirement to assure an effective, continuous contribution by SMSs to the agricultural extension service is the establishment of a specialized cadre of Subject Matter Specialists to which appropriately qualified specialists may be recruited and within which they are further trained and promoted.

Chapter 7

Village Extension Worker Circles, Farmers' Groups, and Agricultural Extension Officer Ranges

Summary

Effective agricultural extension depends on extension messages reaching many farmers, and farmers' problems reaching extension staff, quickly and regularly. A key means towards this end are regular, fixed visits made by extension workers to specific groups of farmers within a precisely defined area. The groups of farmers for which the base-level extension worker -- Village Extension Worker (VEW) -- is responsible comprise the VEW "circle." The size of the circle is derived from a broad ratio of effective operating farm families to a VEW, which is based mainly on the compactness of settlement, the ease of communications, and the intensity of agriculture. There is no standard rule for determining the number of operating farm families to be served by one VEW. The number should not be so large that the VEW's messages are unable to reach quickly most farmers. A common ratio is one VEW to about 800 operating farm families. The farmers of a circle are divided into eight "farmers' groups," each of which will be visited on a fixed day by the VEW. VEW circles that are the responsibility of one Agricultural Extension Officer (AEO), the immediate supervisor of the VEW, comprise the AEO "range." A range should be sufficiently small (usually comprising not more than eight VEW circles) so that each VEW in it can be closely and effectively guided by the AEO. The areas of circles, farmers' groups, and ranges must be compact and contiguous.

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A basic requirement of effective agricultural extension is that extension messages reach many farmers, and farmers' problems reach extension staff, quickly and regularly. To do this, the extension worker should visit a manageable number of farmers regularly. One way to achieve regularity is to follow a fixed schedule. During his visits, the Village Extension Worker (VEW) will teach farmers production recommendations that he has learned in fortnightly training sessions and the skills required to put the recommendations into practice, and motivate farmers to adopt at least some of the recommended practices on a small area of their land. He will also review, in the field, the adoption of previous recommendations and discuss field problems he notices or that are raised by farmers (and note those he himself cannot solve for subsequent discussions with the appropriate training or research authorities). Because of the importance of effective visits, it is essential to define carefully the VEW's area of jurisdiction -- the "circle" -- and to assign all farmers within the circle to groups that can be systematically served by the VEW. Good extension is not possible if a circle or farmers' group is too large or if, for some other reason, it is difficult for the VEW to cover a circle or group effectively.

Formation of Circles

The first step in organizing the visit schedule of a VEW is to define the circle of his operation. The circle should be a compact, contiguous area; if the area is too large, the VEW will find it difficult to visit regularly the farmers' groups in it. Each VEW should be responsible for a manageable number of farm families. The optimum number depends on a variety of factors, but the chief consideration is that the number should be such that it will enable extension recommendations, once taught by the VEW to a small number of farmers, to reach most farmers quickly. At the same time, the number should not be so small that too many VEWs would be operating in an area and so would not be fully occupied. Another main reason, of course, for keeping the number of VEWs as low as feasible is to keep the cost of extension low.

The number of farm families that a VEW can cover (so that his messages will reach most farmers either directly or indirectly) will vary from place to place. Some of the major considerations in determining a reasonable average number of farm families that can be served by a VEW -- that is, the "VEW:farm family ratio" -- are type of farming (rainfed, partially irrigated, intensively irrigated with a few crops, intensively irrigated with diversified crops, and so on); size of holdings; population density; settlement pattern (Are farm holdings scattered or compact? Do farmers live in villages or on farmsteads?); and the VEW's mobility and the facility of communication (road and path networks, communication obstructions caused by rivers, swamps, hills, and so on). Significant obstructions to communications may be seasonal or last only a few days occasionally; nonetheless, account should be taken of all obstructions when deciding the limits of an area that can be reached regularly without too much difficulty by a VEW.

There is no simple or rigid rule to weigh these factors. Settlement pattern, population density, and ease of communication are usually the most critical. The District Extension Officer (DEO) and Subdivisional Extension Officer (SDEO) should make extensive field visits to observe conditions.

They should then use their judgment to arrive at a realistic and manageable broad ratio of VEW:farm families for a subdivision or district. The ratio is not fixed. It is primarily a planning guide to the number of extension workers required in a region. Even a ratio that has been carefully determined for a small area (such as a subdivision) should not be fixed; it should not be applied uniformly across the area, if local circumstances suggest that a larger or smaller number of farmers should be handled by a VEW. The number of farm families per VEW may range from 300 to 1,500 even within the one subdivision, depending on the actual field situations.

In areas where many small farmers live close together, communications are good, and only a few crops are grown, one VEW may cover effectively 800 to 1,000 farm families and even up to 1,500 farm families. In irrigated and other areas of intensive agriculture with small farms, 600 to 800 farm families per VEW may be more appropriate, particularly if a larger number of crops are grown. Where farms are scattered and difficult to reach -- as in some tribal, rainfed, and mountain areas -- each VEW may only be able to handle effectively some 400, or even fewer, farm families.

To determine the VEW:farm family ratio, the number of effective operating farm families, and not farmholdings, is taken into account. The number of farmholdings recorded in revenue or census sources is almost always considerably larger than the number of effective operating farm families. The VEW is primarily concerned with the person who operates the farm and who makes the decisions on when, what, and how to produce. A family with grown-up sons may be recorded as having as many farms as sons, although the lands are operated as one under the father or a son. For the VEW, this is effectively one farm. Similarly, a farm owner may rent out land for cultivation by tenants, and one tenant may cultivate land on a number of different farms. To the VEW, the tenant represents one farm family, and it is he with whom he deals since the actual owners have little or nothing to do with day-to-day operations. The number of effective operating farm families is usually not readily available. However, from local experience or sample surveys, it is generally possible to calculate the proportion of recorded farm families that are effective operating farm units. In many places, it has been found that only about 70 percent of farm families recorded in census or other official records are usually effective operating farm families; in the absence of evidence to the contrary, such a proportion should be used for planning purposes when estimating the number and location of staff required.

Once the VEW:farm family ratio has been determined, the next step is to demarcate the circles of operation for VEWs. To do this, maps showing village boundaries, roads and rivers, canals, and other natural features are required. The number of operating farm families should be marked next to the name of each village. Research stations, government farms, or large farms operated by corporations or similar organizations should be excluded from the circle demarcation, as they will not be the responsibility of the VEW. Taking ease of communication into account, adjoining villages should be grouped into discrete circles, each having approximately the number of farm families in the agreed-upon ratio. The delineation of circles (and of farmers' groups) is based on the location of a farmer's land and not of his residence. For example, in an irrigation command area, the area served by an outlet may be taken as a circle or group, depending on the number of farmers working within the outlet command.

Circles are best delineated by the DEO, assisted by other staff (e.g., SDEOs and AEOs) who have sound knowledge of local conditions. It will take up to a week to complete the initial demarcation of circles in an area to be served by twenty or twenty-five VEWs. Once the circles have been demarcated, the number should be checked against the provisionally approved number of VEWs. As this number of VEWs is derived from the agreed-upon VEW:farm family ratio, the number of circles should coincide with the provisional number of VEWs if the ratio has been more or less followed; if not, the number of VEWs should be adjusted. It may also be necessary to adjust the area of circles slightly during the first few months of operation of the extension system in light of the experience of the VEWs (particularly with respect to the number of operating farm families). Once any necessary initial adjustments are made, circles should not be altered without reason.

One circle should be assigned to each VEW. If some VEW posts are vacant, their circles should be left uncovered rather than more than one circle being assigned to a VEW. If a VEW is asked to cover more than one circle, he cannot visit farmers on the necessary fixed, regular schedule; as a result, work will be ineffective not only in the additional circle but also in his own.

The location of the headquarters where the VEW will live should be decided once circles have been demarcated. A VEW's headquarters should be in a place where he can live comfortably with his family in either government-owned or rented accommodation, and enjoy basic amenities. The headquarters must be inside a VEW's circle, preferably at a central point, so that most of the area can be easily covered, and the VEW is not required to spend too much time traveling to visit farmers (or farmers would have to visit the VEW at his house).

Formation of Farmers' Groups

The operating farm families in each VEW circle should be divided into eight groups. Each group -- a "farmers' group" -- will be visited by the VEW on one of the eight days that are assigned to regular, fixed visits each fortnight. The main criteria for delineating farmers' groups include the proximity of farms and a manageable number of farm families. The criteria do not include the location of farmers' homes, the size of farms (unless some farms are very large), or "progressiveness" or other socio-economic characteristics of farmers. To as great an extent as possible, the fields of farmers in each group -- like the area of a VEW circle or AEO range -- should be contiguous.

The number of farm families in each of a VEW's eight farmers' groups need not be exactly the same; it may vary considerably among the groups of one VEW, but usually any one group should not comprise more than one-fifth of the number of farm families in the circle. The VEW should be able to meet many farmers in one group with ease and with minimum traveling on a given day. His messages will reach most of the farmers through the contact farmers and other farmers that he meets on his visits; the size and compactness of the group and of the group area should make this wide coverage possible. Aside from compactness and manageable size, the size of farmers' groups does not depend on any rigid rule but rather on how the VEW, under the

guidance of the AEO, can best meet the objective of having the farmers in discrete, manageable groups so that he can visit each systematically.

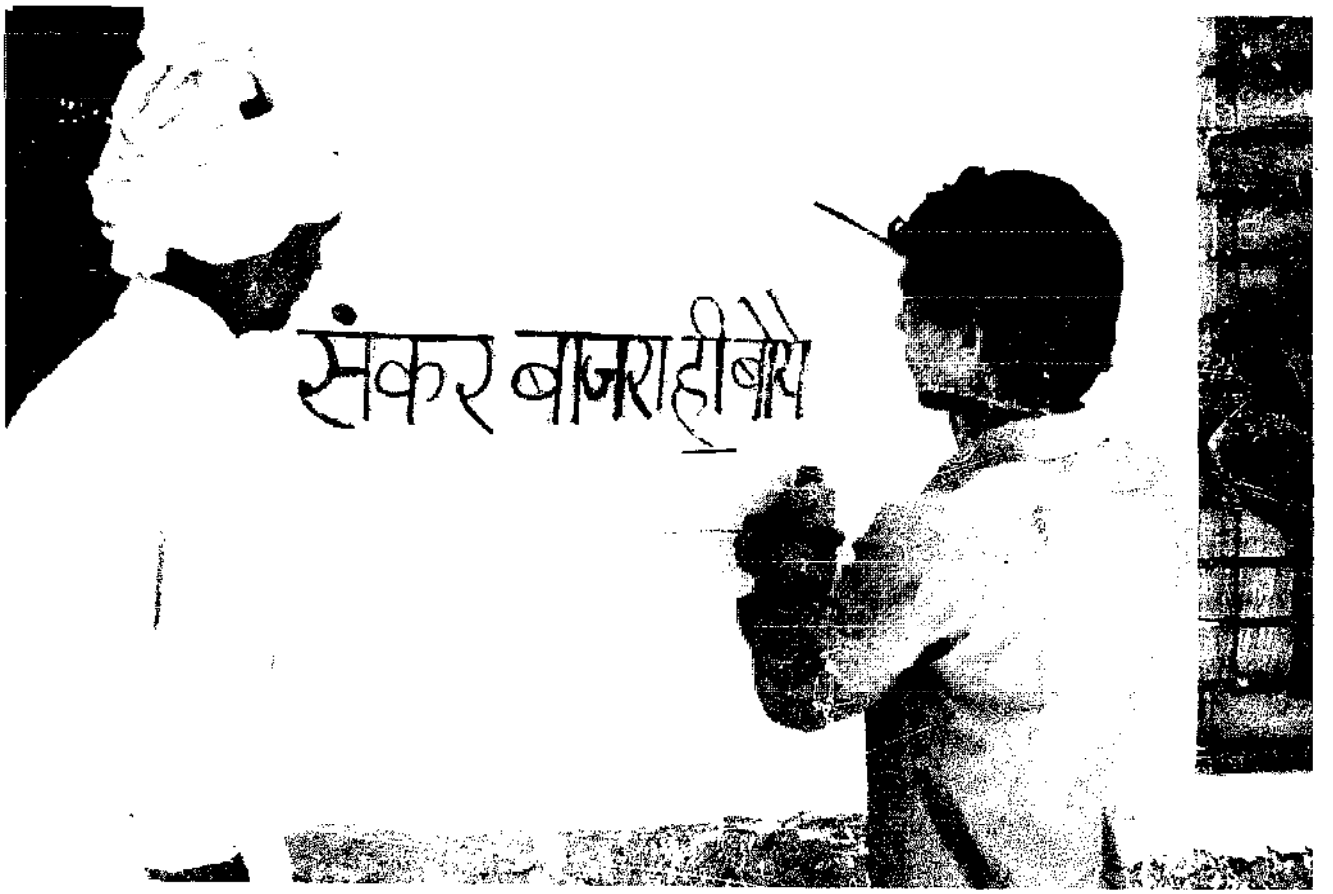
Soon after the VEWs have formed their eight groups, the AEO and SDEO should check in the field that they have done so correctly, since it is not possible for a VEW to work effectively if either his circle or farmers' groups are improperly defined. Any necessary modification should be made within a short time after the VEW starts his regular work. Thereafter, circle and group limits should not be altered, and the VEW's fixed schedule of visits to farmers' groups should continue without interruption, deviation, or change.

The following example shows some factors that are taken into account in delineating farmers' groups within a VEW circle. A VEW circle has 960 operating farm families who live in four villages. One village has 500 farm families, another 240 farm families, and the other two 145 and 75 farm families. There are no major communication problems in the area and the VEW lives in the largest village, which is central to the circle. Most farmers have their lands contiguous to the village in which they live. The 500 operating farm families in the large village are divided into four groups of about 125 farmers each, based on the proximity of landholdings (and not on the location of residence in the village). The village with 240 families is divided into two groups of 120 farmers, and the remaining two villages (145 and 75 farm families) are each treated as one group.

AEO Ranges

The Agricultural Extension Officer is expected to supervise and guide eight VEWs in the same way that VEWs are responsible for eight farmers' groups: he must visit in the field each of his VEWs regularly, at least once a fortnight. The area of responsibility of an AEO -- a "range" -- should comprise adjacent VEW circles that can be conveniently reached from the AEO's headquarters, which should be within his range and as near to its center as feasible.

Contact farmer explains practices to interested farmers *Directorate of Extension, Government of India*



The visit day is widely advertised by the Village Extension Worker in farmers' groups *B. Z. Mauthner*

Chapter 8

Contact Farmers

Summary

Frequent contact between a Village Extension Worker (VEW) and all farmers in his circle is not possible. Instead, while being responsible to all farmers, on each fortnightly visit the VEW focuses on a small, selected number of farmers -- "contact farmers" -- in each farmers' group, and meets with any other farmers who are willing and interested to attend his visits and seek his advice. Contact farmers are identified by the VEW and the Agricultural Extension Officer (AEO) with assistance of the local villagers, especially village elders. Contact farmers are selected according to the following characteristics: (1) they should represent proportionately the main socioeconomic and farming conditions of their group and be regarded by other farmers as able and worthy of imitation; (2) they should be practicing farmers; (3) they should be willing to adopt relevant recommendations on at least a part of their land, allow other farmers to observe the practices, and explain the practices to them; (4) as far as size and composition of farmers' groups permits, they should come from different families; and (5) their farms should be dispersed throughout the group area. Tenants, sharecroppers, young farmers, and women farmers may be contact farmers if they possess these characteristics. No major type of farmer should be over- or underrepresented among the contact farmers of a group. Once a contact farmer becomes disinterested in the work of the VEW or becomes in other ways ineffective, he should be replaced.

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The training and visit system of agricultural extension aims at establishing effective, systematic, and regular contact between a professional extension service and farmers. The regular training of extension workers, fixed fortnightly visits to farmers, and the establishment of manageable areas of operation (farmers' groups, VEW circles, AEO ranges) all contribute to effective contact with farmers. The Village Extension Worker (VEW) is responsible for teaching technical production advice to all the farmers of his circle and motivating them to adopt it. He does this mainly through focusing his attention on a part of each farmers' group -- namely, the identified "contact farmers" and other interested farmers. Even if farmers' groups are relatively small, it may not be possible, and even not desirable, for the VEW to maintain frequent contact with most farmers personally. The VEW should only make sure that his messages reach quickly most of the farmers in the group.

The VEW does not concentrate on the small number of contact farmers to favor the few, but rather to focus on the impact of recommended practices and spread them to the majority of farmers quickly. If contact farmers represent the range of socioeconomic and farming conditions in the farmers' group to which they belong, the results of recommended practices adopted by them should convince most other group members of what can be achieved. Imitable contact farmers become demonstrators of introduced recommended practices and their example leads to the wider adoption of these practices among other farmers.

While performing a key role in the extension system, the contact farmer does not hold a formal position. The contact farmer is not an extension agent. He (or she) should promote extension activities by adopting recommended practices and by explaining them to interested farmers, but he is not expected to promote the practices actively among the other farmers (although if he does, it is a great help). Contact farmers are not paid either in cash or in kind. The chief advantage of the position is that they have regular, direct access to professional technical advice. Contact farmers do not belong to an "exclusive club" but are accessible to everyone. In the sense that by so doing he receives all the benefits of a contact farmer, any farmer who decides to attend the VEW's visits and adopt some of his recommendations becomes automatically a "contact farmer."

Identification of Contact Farmers

The proper identification of contact farmers is extremely important given their pivotal role in good extension. Contact farmers are selected to represent the range of socioeconomic and agricultural production conditions of a particular farmers' group. They must be reasonably good farmers. They should command respect as farmers and as people. A contact farmer should be a farmer with whom other farmers in his group can identify and who can be imitated by them. Large-scale farmers, or those who are politically active or interested in the "status" of contact farmer, should not be selected unless it is likely that they can fulfill the required imitable role for other farmers. (Where such farmers are not selected as contact farmers, they should nonetheless be met regularly by the VEW so that they are kept informed of extension activities and are able to understand and support the service.) Another consideration is that "progressive farmers" are generally regarded by

other farmers as exceptional and not as imitable; they should, therefore, be contact farmers only in the proportion to which they are present in a group. That is, if some ten farmers in a farmers' group are selected as contact farmers, normally about 10 percent of the farmers of a group should be "progressive" for one of them to be identified as a contact farmer, although local considerations may sometimes justify a slight relaxation of this rule of thumb.

Farmers, including tenants, sharecroppers, youths, and women, identified as contact farmers should generally have the following characteristics:

1. Contact farmers of each farmers' group should proportionately represent the range of farm size (small, medium, large), cropping patterns, and farming situations (e.g., irrigated, rainfed, upland, lowland) found in the group. Farmers' responsiveness to try and adopt recommended practices must be taken into account. In some areas (where, for example, some farmers do not grow a crop in one season), there may be different contact farmers for each season and even for different major crops.

2. Contact farmers should be practicing, skilled farmers. Absentee landlords and people with a major occupation in addition to farming (like teachers, shopkeepers, businessmen, and politicians) should not be selected as contact farmers, although extension workers should pay attention to them.

3. Contact farmers must be willing to consider the practices recommended and taught by the VEW, to adopt some of them on at least part of their land, and to let other farmers observe the practices. They should also be willing and able to explain to farmers what they did under the recommended practice. A contact farmer preferably should take an active role in promoting a practice he has tried and found successful.

4. Contact farmers, as far as the size and composition of a farmers' group permit, should come from different families, as this will help ensure a wide diffusion of the practices recommended by the VEW.

5. Contact farmers are identified on the basis of the location of their fields, not of their homes: their farms should be widely dispersed throughout the group's area. As the VEW meets with contact farmers mainly in their fields, he will be able to assess quickly the general farming conditions of the whole group even when working primarily with contact farmers.

Contact farmers are identified and selected by the Village Extension Worker with the help of his Agricultultural Extension Officer (AEO). To do this, the VEW should first spend some time establishing rapport with the farmers of a group and reviewing the local farming system and pattern of landholdings. Local villagers, including elders, should be consulted. They can provide valuable information on the main socioeconomic features of a farmers' group and on significant agricultural practices and land-use patterns that should be represented among contact farmers. They can also advise the VEW on the likelihood of particular individuals maintaining an active interest in meeting extension staff and in learning and adopting extension's production recommendations. The involvement of villagers at this early stage will also contribute to community support of both the extension system and the selected contact farmers. After some enquiry and observation, the VEW should make a tentative list of contact farmers for review with his AEO.

Contact farmers are identified for each farmers' group separately. There should not be less than eight contact farmers in a group, even if the group is quite small; no group should have more than twelve or so contact farmers. It is not possible for a VEW to work effectively with more than twelve or so contact farmers on the one day of his fortnightly visit to each group, especially as he must also deal with other farmers who approach him for advice or information, or with whom he meets on his own initiative.

It is not always easy to identify contact farmers that share all desired characteristics, but the VEW must ensure that all the main types of farmer of the group are included. Agricultural conditions will vary within any group's area and it will not always be possible for each to be represented among contact farmers. The VEW should, therefore, attempt to identify contact farmers proportionately from the dominant farming patterns so that all farmers in the group can benefit from the VEW's advice to those who farm in a situation similar to their own. In particular, great care should be taken that large-scale and progressive farmers, and also farmers using irrigation, are not disproportionately represented among the contact farmers compared to their representation among the farmers of the group as a whole.

Changing Contact Farmers

If contact farmers have been selected properly, it should not be necessary to make a change frequently. However, as soon as a contact farmer is no longer interested in meeting the VEW on the VEW's regular visit day, or to adopt some recommendations or show these to other farmers, he is no longer an effective contact farmer and should be replaced. If possible, the change should be made before a season begins. Because contact farmers are not "appointed," it is not difficult to make a change. The VEW need not formally appoint or demote a farmer; all he need do to change a contact farmer is to give more time to another farmer (who as far as possible shares the representational characteristics of the one he replaces). In this way, a replaced contact farmer is not offended -- especially since his lack of interest or cooperation is the reason to replace him -- and the VEW continues to work with the same number of contact farmers.

Two other points should be noted. First, contact farmers should not be routinely rotated -- for example, on a yearly basis. A farmer should remain a contact farmer as long as he has good rapport with the VEW and is

willing to innovate and to show and explain his activities to other farmers. Second, when a VEW is transferred, for the sake of continuity his successor should try to continue to work with the same contact farmers (although, depending on the new VEW's relationship with a group, contact farmers may be changed gradually).

Working with Contact Farmers

Four points relating to the way in which a VEW should work with contact farmers should be kept in mind. First, on each fortnightly visit to a farmers' group, the VEW should not visit contact farmers only. He should talk with all contact farmers who are available and with as many other farmers as time permits. Contact with farmers should take place primarily in their fields. Second, on meeting a contact farmer -- or another farmer -- in the field, the VEW should invite as many other farmers as possible to come and participate in the discussion and learn the recommendations. He should present the relevant recommendations of that fortnight and attempt to convince the contact farmer -- and other farmers present -- to adopt them on part of their land. The contact farmer should be encouraged to explain the recommendations to other farmers. Third, by visiting some contact farmers in the field on the fixed fortnightly visit day, the VEW establishes in the minds of all farmers a series of "contact points" where he may be seen and met on each visit. Finally, while a VEW will work primarily with ten or so "official" contact farmers, any farmer interested in meeting him and trying and explaining to others a recommended practice, even if only for one crop and for one season, is in fact operating as a contact farmer. The VEW should make sure that other farmers follow the progress of the recommended practice on that farmer's fields. Such "unofficial" contact farmers may be as effective models and guides to other farmers as "official" contact farmers: they should be sought out and encouraged by the VEW on his regular visits.

Chapter 9

Visits

Summary

A key feature of the training and visit system of agricultural extension are the regularly scheduled visits to farmers' fields by extension staff. Visits are made, on the one hand, to advise and teach farmers recommendations on relevant agricultural technology and to encourage them to adopt these, and, on the other, to establish in extension and research an awareness of actual farmer conditions and needs. All extension staff on field visits should listen as much as they talk. The basic extension worker is the Village Extension Worker (VEW), who visits each of his eight groups of farmers on a fixed day once every fortnight. His visits must be regular, specific, and purposeful. On a visit, a VEW should teach production recommendations to as many farmers as possible, and certainly to all contact farmers, and attempt to convince them to adopt the recommendations on at least a small part of their land. The Agricultural Extension Officer (AEO) visits his eight or so VEWs regularly in the field -- not less than once each fortnight -- guiding, supervising, and giving technical support. The Subdivisional Extension Officer (SDEO) makes field visits for at least three days a week, providing support for VEWs and AEOs in technical and organizational aspects of extension. The SDEO is responsible for the effectiveness of extension in his areas, seeing to it that the VEWs and AEOs work as required. Subject Matter Specialists (SMSs) spend one-third of their time in the field providing technical support to VEWs and AEOs. Field visits by AEOs, SDEOs, and SMSs are an important means of support for VEWs.

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Fixed, regularly scheduled visits to farmers' fields by extension staff are a key feature of the training and visit system of agricultural extension. Field visits are undertaken by all extension workers, including extension staff at headquarters and zonal levels, but the focus of extension activities in the field are the visits made by Village Extension Workers (VEWs) who contact each farmers' group once every fortnight. The VEW is a professional extension worker who is being continuously trained to teach farmers improved agricultural practices. His observations and experience help to improve the quality of the advice given to farmers and make research relevant to a variety of local conditions. The VEW works through visits to farmers' fields. Field visits by extension staff have two chief purposes. One purpose -- which applies primarily to VEWs -- is to advise and teach farmers, and encourage them to adopt, improved agricultural technology that is relevant to their resources and skills. The second -- which applies to all extension staff -- is to enable extension staff and, through them, researchers to be closely and continuously acquainted with farm conditions and problems so that production recommendations and agricultural research are relevant to actual farmers' needs. On field visits, all extension workers should listen as much as they talk.

Visits by Village Extension Workers

Visits by VEWs must be regular, specific, and purposeful. Regular visits mean that farmers know the VEW will be answerable for his recommendations, and that they will have a chance to talk with the VEW again and can ask questions as they arise. Regular visits also show the commitment of extension staff to agricultural development and build up farmer confidence in the extension system. Visits must be specific. A VEW must not waste a farmer's time: Farmers will remain interested in meeting the extension agent only so long as they receive specific, relevant advice on how to increase their production or income. Finally, visits must be purposeful so that the VEW will reach as many farmers as possible in the limited time available for visits on any one day.

Scheduling. Once VEW circles, AEO ranges, and farmers' groups have been established and contact farmers identified, the VEW visits each of the eight groups in his circle for a full day once in a fortnight. With a fixed schedule for visiting a particular group, farmers will expect the VEW on the specific day at the established time. In this way, farmers become a kind of "supervisor" of a VEW. This schedule is fixed once and for all and does not change, except for special reasons. The VEW must visit the same group on the same day of the week. A typical schedule of visits of a VEW is shown in Table 9.1 on the next page.

Visit Schedule of a Village Extension Worker — Table 9.1

Day of week	First week of fortnight		Second week of fortnight	
	Group no. and name	Starting and contact place	Group no. and name	Starting and contact place
Monday	1 Ganj I	School	5 Ganj II	Temple
Tuesday	2 Ramgarh I	School	6 Ramgarh II	Coop Society
Wednesday	Meeting with AEO		Fortnightly training	
Thursday	3 Rawla	Temple	7 Sayla	School
Friday	4 Patan	Council	8 Gheru	Temple
Saturday	Extra visit		Extra visit	
Sunday	Holiday		Holiday	

Once this schedule is fixed, farmers of each group should be advised of the day that the VEW will always visit. For example, from the fortnightly schedule above farmers in Group 3 in Rawla know they are visited every second Thursday, while farmers in the Patan group know the VEW will visit them every other Friday. The "starting and contact place" of each group is the point from where the VEW starts his field visits and is one of the numerous locations in each farmers' group where the schedule of his visits is displayed. He will return to this place before he leaves the group at the end of the day, staying there a short while in case some farmers want to see him. Meetings with farmers that may be held from time to time will take place at or near this location.

The visit schedule is the same for all fortnights. A new fortnight begins each alternate Monday. The fortnights are calculated according to the days of the week and not according to the date or the month. For example, if the first fortnight of a particular year begins on Monday, December 31, the first six fortnights, as shown in Table 9.2, will be:

Fortnightly Calendar — Table 9.2

1st fortnight	Monday, December 31	to	Sunday, January 13
2nd fortnight	Monday, January 14	to	Sunday, January 27
3rd fortnight	Monday, January 28	to	Sunday, February 10
4th fortnight	Monday, February 11	to	Sunday, February 24
5th fortnight	Monday, February 25	to	Sunday, March 10
6th fortnight	Monday, March 11	to	Sunday, March 24

In addition to the eight fixed visits to farmers' groups, one day in each fortnight is used for the fortnightly training session in which VEWs and Agricultural Extension Officers (AEOs) are taught recommended practices by Subject Matter Specialists (SMSs) and discuss with them achievements and field problems. Another day is used for a meeting of the AEO with all his VEWs to review progress in the field and problems that may have emerged since the previous fortnightly training session, and to further train and guide his VEWs. On the remaining two working days in a fortnight, the VEW should make extra visits to make up for visits that are unavoidably missed due to holidays, illness, and so on; to undertake special extension activities such as field days and special demonstrations of new techniques; or to work on farm trials.

In certain cases (such as in intensively irrigated areas with diverse cropping and good communications and accessibility), a weekly visit schedule may be adopted; the VEW would visit two of his eight farmers' groups each day. As in the case of fortnightly visits, the weekly visits should be on a fixed day and the schedule should be known to all farmers. The VEW will devote one half day (forenoon or afternoon, which also should be fixed) to each group. A schedule of weekly half-day visits may be followed throughout the year, but it may be introduced for a shorter period, for instance, if the cropping season, the introduction of a special practice, or controlling a pest epidemic warrants it. Where the fortnightly visit schedule is changed to a weekly schedule, the farmers of each group should be so informed well in advance, and also be told whether the visit will be in the morning or afternoon. Similarly, timely notice should be given when visits will revert to the fortnightly schedule.

Publicizing visits. All farmers -- not just contact farmers -- must be fully aware of the day, time, place, and purpose of the VEW visit: unless they know all this, extension cannot be effective. They must know when they can expect to see the VEW in their group and fields, and can seek his advice and guidance. Once the day of the visit is established, the farmers know when the VEW is meant to come and will expect him to spend that day with them. In addition to knowing the scheduled day of the visit to their group, farmers should also know where the VEW lives and where he can be contacted on other days so that they can reach him if his assistance is needed on matters that cannot wait until his next scheduled visit. Besides personally conveying this information, the VEW should display, at a few locations in each group, his complete fortnightly schedule and the set day for that group's visit.

Farmers' awareness of the extension system and their knowledge of the days of the VEW's visit can best be achieved through personal contacts and regular visits, but other means of publicity such as posters and painted notices on walls in public places in the group's area will also help. There are many cheap and easy ways of making farmers aware of the fixed day of the week that the VEW will visit.

In addition to publicizing the fixed schedule of regular visits, the VEW must tell farmers in advance of any unavoidable change in schedule. For example, a holiday or leave day may interrupt the schedule. The VEW should advise the farmers of this ahead of time and also tell them which other day will be used to make up for the missed visit. He should explain

the reason for the schedule change, as this will strengthen his credibility and rapport with farmers.

Conduct of visits. Visits should be field oriented; most of the farmers who meet with the VEW should be met in their fields. The time of the visit should be the time when farmers are in their fields, which may vary seasonally. Knowledge of local agricultural practices will suggest the best time. In summer, the most suitable time for visits may be from 7:00 a.m. to 11:00 a.m. and from 4:00 p.m. to 6:00 p.m. In winter, the time may be from 9:00 a.m. to 5:00 p.m. The times of the visits are not necessarily standard government working hours. (In some places, it may also be necessary to change the venue as well as the time of visits to take account of periods when farmers spend little time in their fields.) On each visit, the VEW should go to the fields of as many contact farmers as possible so that other farmers know where he will go during a visit in case they need his advice. In addition, the VEW should make it a point on each visit to meet as many farmers as possible in addition to contact farmers and to draw neighboring farmers into any discussion he has with a particular farmer.

With each farmer he meets, but especially with contact farmers, the VEW should cover five points:

1. He should discuss the field situation -- the condition of standing crops, practices followed, pest and disease problems -- and farming activities the farmer has done and intends to do in the coming weeks.

2. He should ascertain the extent to which recommendations have been adopted, and find out whether problems have occurred in following recommendations. Any problem raised by the farmer should be answered in the field. If this is not possible, the VEW should make a note of the problem to discuss it in the next fortnightly training session (or alert his AEO, if the problem is urgent): The answer will be given to the farmer during the visit of the following fortnight (unless its urgency requires the VEW to advise the farmer earlier).

3. He should teach the farmer the specific recommendations for the current fortnight that are relevant to crops he grows, after having adjusted, if necessary, recommendations to fit the resources of the individual farmer. He may use some simple visual aids to explain recommended technology, but should also demonstrate the operations required for the recommendations, such as plant spacing, fertilizer application, or spraying.

4. He should attempt to convince all contact farmers -- and some other farmers as well -- to adopt the recommendations on at least a small part of their land. If practiced on a small area, risks are limited and each small area acts as a demonstration plot. If

the practice is useful to farmers, it will be more widely adopted in subsequent seasons.

5. He should repeat the messages, summarizing the points of impact of each recommendation, and where possible give other advice on farming activities not covered by specific recommendations. He should also remind the farmers of the day of his next field visit (and of the informal meeting to be held in the village that afternoon, if he has scheduled one).

During visits to various fields, both of contact and other farmers, these five points should be repeated. With farmers who are not contact farmers, visits may be more problem oriented than the recommendation orientation of visits to contact farmers: in such cases, the VEW should also invite these farmers to the fields of contact farmers and encourage them to participate in his visits regularly.

After visits to farmers' fields in the morning and afternoon, a meeting with the farmers of the group may sometimes be arranged. Such meetings should be conducted only if they serve a useful purpose. At meetings, the VEW may discuss field observations and problems, and explain the current recommended practices to a larger number of farmers than can be met in the fields. Such meetings are not compulsory. They should be informal and their timing should be adjusted to fit the cropping season and the availability of farmers. It is often necessary to hold meetings frequently in the early months when the training and visit extension system is first established, so that the farmers become accustomed to the principles and operation of the system. The meeting should be held at a public place (usually the VEW's starting and contact place) -- local government office, school, temple, mosque -- where all farmers can feel comfortable. Private homes should be avoided. At most times, however, it will be more useful to spend additional time in farmers' fields rather than to hold a meeting.

During meetings, the VEW may tell the farmers what he and other farmers have observed in the fields during that day's visit, and also inform them of the recommendations and impact points for the fortnight. He should encourage discussion among the participants of these observations and his recommendations. Farmers who have good plots under recommended practices should be mentioned and other farmers encouraged to visit their fields. Particular attention should be given to the problems observed and solutions suggested. The VEW should also review the recommendations of the particular fortnight, emphasizing impact points. He should supply any useful literature that is available, and show relevant specimens, charts, photographs, and slides.

Visits by Other Extension Staff

In addition to VEWs, all other extension staff make field visits. While these visits are not characterized by the same frequent and intensive contact with farmers as visits by VEWs, and although their purpose varies in accordance with the duties of the person making the visit, they must also be field oriented, regular, specific, and purposeful. Successful operation of

the extension system depends on all extension workers having close and continuing awareness of farm conditions and of the activities of the VEWs. Such awareness can only come through intensive field contact. While all extension staff will deal closely with farmers on field visits, each must follow his own distinct separate role (which for each is ultimately, though in different ways, to support the work of the VEW). Other extension staff must resist the temptation to teach production recommendations to farmers: only the VEW should do this, although other staff may suggest to him appropriate advice or adaptations of recommendations.

Visits by Agricultural Extension Officers. The Agricultural Extension Officer, the immediate supervisor of the VEW, oversees about eight VEWs. The AEO is responsible for ensuring that VEWs visit their farmers regularly and for continually upgrading their technical competence. As he will spend eight days each fortnight making field visits, the AEO is able to spend a full day in the field with each of his VEWs once every fortnight (or two half days, if more frequent visits are scheduled). The AEO should make visits according to a schedule that is known to his VEWs. The schedule may be slightly adjusted in a systematic manner to enable an AEO to provide more support to weaker VEWs or to follow up on interesting developments in some areas, to conduct and monitor farm trials, or to make occasional surprise visits.

The purpose of AEO visits to VEWs is not to "supervise" in the sense of checking whether the VEW is visiting his groups regularly. This will be apparent from the farmers' knowledge of the VEW's scheduled visit day, of the VEW himself, and of recommended practices; all this can be determined even in the absence of the VEW. The main purpose of the visits is to support and reinforce the field work of VEWs. The AEO should ensure that the recommendations of the particular fortnight are well understood and clearly presented by the VEW, including any adjustment the VEW may have made to take account of the land, labor, skill, and financial resources of the farmers. If problems are raised with the VEW in farmers' fields or at informal meetings, the AEO should assist in offering answers where necessary. During each field visit, the AEO should review the VEW's diary and write a substantive comment in it. The AEO should continually review the effectiveness of contact farmers in adopting recommendations and guide the VEW on how to achieve more effective support from them and other farmers. The AEO should ensure that the VEW covers regularly all contact farmers and as large a number of other farmers as time permits. The AEO should also use the visits made to the field with VEWs to become thoroughly familiar with local production practices and constraints, including the demand for and availability of inputs.

Visits by Subdivisional Extension Officers. Subdivisional Extension Officers (SDEOs) are responsible for the overall implementation and supervision of the training and visit extension system in their subdivisions. Whereas the AEO is a guide for the VEW in both technical and organizational aspects of extension, the SDEO focuses mainly on the organizational aspects of the extension system. In his field visits to observe the work of VEWs and AEOs, he reviews two main points: first, that VEWs make regular fixed visits to farmers' fields and that most farmers are aware of the day and purpose of these visits; and second, that the messages taught to farmers are relevant and do, in fact, increase their production and income.

The SDEO spends at least three days each week in the field visiting farmers, VEWs, and AEOs. As the AEO is the guide to the VEW, so the SDEO is the guide to the AEO. His visits should, therefore, be prescheduled to reinforce and support the work of the VEW and AEO, but, if necessary, there can be surprise visits guided by VEW and AEO visit schedules. At the end of each visit, the SDEO should review the diary of the VEW (and of the AEO) and write substantive comments in it on his own field observations and ways in which the VEW (or AEO) might strengthen his work.

Visits by Subject Matter Specialists. Subject Matter Specialists provide technical support to VEWs and AEOs. SMSs of all levels (subdivision, district, and headquarters) should spend at least one-third of their time making field visits. Before reviewing the purpose of field visits by SMSs, it is useful to note that it is not to check the regularity of the field visits by VEWs and AEOs, the selection of contact farmers, or other organizational matters, although their regular field contact will give them insights into these aspects.

Field visits made by SMSs have two main purposes. One is to examine field problems brought to light at fortnightly training sessions or monthly workshops, to check if production recommendations are being taught correctly to farmers by VEWs, and to establish the extent to which the recommendations, once taught to farmers, are adopted by them. Visits for this purpose cannot be scheduled in advance and, by necessity, will be somewhat random. A second purpose is to review local farm production practices and constraints. Visits for this purpose should be planned so that the range of production types and environments in the jurisdiction of the SMSs is covered systematically. Such visits are as important as the problem-solving and recommendation review visits because it is from them that SMSs gain the appreciation of the production system that is needed to make research and recommendations relevant and effective. Of course, any visit made for a particular purpose need not exclude the other function.

Visits by Senior Staff. District and Zonal Extension Officers and the Director of Extension also make regular visits to farmers' fields. Each of them should spend at least six days a fortnight on such visits, during which they review organizational and technical matters. Senior officers visit farmers in their fields -- rather than attend review meetings in the district, subdivision, or AEO range, or even prearranged meetings of farmers in villages -- because the achievements and shortcomings of extension are nowhere as apparent as in farmers' fields.

The visible impact of extension in farmers' fields is the ultimate indication of the performance and worth of an extension system. If farmers are being well served by extension (for example, they are receiving appropriate technical advice, constraints to their production are brought to the attention of research, and their production and/or incomes are increasing), this will be apparent in their fields. Similarly, problems in the field will point to the part of the extension system that requires attention: irregular performance by a VEW normally means his AEO (and, consequently, his SDEO and his supervisors) is working inadequately; limited adoption of recommendations suggests that feedback (and hence training) is at fault, or that

SMSs and research are inadequately involved in field activities and the formulation of recommendations.

Because the impact of extension is immediately apparent and its strengths and weaknesses can most readily be identified in the field, it is as important for senior staff to visit farmers' fields as it is for all other extension workers. These visits by senior staff may be made alone, or with subordinate officers (including SMSs), to a village scheduled for a visit by a VEW or by a VEW and AEO, or to one without a scheduled visit. How the visits are arranged is not as important as that they be made regularly and frequently, and that they be so organized as to expose senior staff directly to a range of farmers and extension workers. One of the few certainties of training and visit extension is that, unless senior staff visits the field frequently and regularly, it is most unlikely that the extension service will operate effectively.

Chapter 10

Monthly Workshops

Summary

The monthly workshop is the main venue of in-service training for Subject Matter Specialists (SMSs) and of regular contact between extension and research workers. A main purpose of the two-day workshop is to build up the technical skills of SMSs regularly in the field of their specialization, so they can meet effectively the actual technological needs of farmers. Another purpose is for researchers and SMSs to discuss and formulate relevant production recommendations for subsequent transferral to Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) by SMSs at the next two fortnightly training sessions. To be effective, monthly workshops must have a strong practical orientation and encourage discussion among participants. The learning that takes place through extension and research workers' discussing each others' experiences is as important as the formal learning of recommendations and solutions to farmers' problems. Monthly workshops should be held at a district level, if possible. They require considerable advance planning. Monthly workshops may be organized in a variety of ways, although there are basic activities that must be covered in each.

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Given the important role of Subject Matter Specialists (SMSs) in the training and visit system of agricultural extension -- a professional extension

S. L. Ghosal

Monthly workshop session

B. Z. Mauthner

Practice of skills during a monthly workshop

service is not possible without technically competent, skilled, and highly motivated SMSs -- it is critical to train them effectively. In addition to their initial university training and occasional long- or short-term specialized courses, training of SMSs is done primarily through a workshop held each month. Not only do the monthly workshops provide SMSs with the continuous technical training and orientation required to make the fortnightly training of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) effective and to provide continuous support to extension workers; they also reinforce other training and are the chief method to upgrade SMSs into real specialists in their disciplines. Monthly workshops build up the technical skills of SMSs regularly in their particular field of specialization and enable them to meet effectively the technological information requirements of the farmers of the subdivision or district of their jurisdiction. The workshops are also an important point of regular contact between extension and research. Through feedback and discussion of the reactions of farmers to recommendations, they can be as helpful to research as they are to extension.

Objectives

The main objective of monthly workshops is to train Subject Matter Specialists, particularly in the production recommendations that extension workers will teach farmers over a four-week period that usually starts some two or three weeks after the workshop (that is, the fortnight following the first fortnightly training session after the workshop). To do this, a workshop should cover six basic activities:

1. Review the rate of adoption of recommended practices by farmers and of problems regarding the adoption of recommended practices that have been brought to the attention of SMSs by extension workers and farmers or noted by SMSs or research workers during their own field visits.

2. Note difficulties faced by SMSs in presenting and explaining recommendations to extension workers during fortnightly training sessions.

3. Formulate and discuss recommended practices for major crops for the coming two fortnights, and sometimes for a longer period, if necessary; select for each recommendation, a few impact points on which extension workers should focus farmers' attention.

4. Review the climatic, input, and marketing situation of the area that may affect the adoption of recommendations, and ensure that recommendations take account of such conditions.

5. In practical and field sessions, train SMSs to carry out recommended practices themselves (by field demonstration and practice), and to present them effectively to extension workers in fortnightly training sessions; make field visits to review topical

field situations and to develop SMSs' diagnostic skills.

6. Discuss the progress and results of farm trials that have been carried out by SMSs and other extension staff under their guidance.

Two other important functions of monthly workshops are to provide a forum for extension and research to become familiar with each other's work and priorities, and for extension and research to learn from each other's experiences through informal individual and group discussions -- the learning that takes place through such discussions is as important as the formal learning of recommendations and solutions to farmers' problems.

Venue, Frequency, and Location

Monthly workshops should be held at a research station that is conveniently located in the area from which participants are drawn. If a suitable research station is not available, an agricultural university or seed farm of the Department of Agriculture with appropriate facilities may be used. The facility must have adequate land nearby for practical work; a room that can comfortably hold all participants is also needed. The room should be suitable for informal group discussions rather than for formal and less participatory "teacher:student" presentations. Appropriate teaching aids (overhead projector, black board, specimens, and implements for practical work) must be available at the location. If an important practice or technique can be discussed and practiced better elsewhere (for example, in another research station or area), the venue may be changed. Arrangements for changes from the normal venue of a workshop should be finalized at the preceding workshop so that all participants can receive adequate notification.

The monthly workshop will be held on fixed days every month. (Ideally, monthly workshops should be scheduled during each fourth week, irrespective of the month.) The days chosen for the workshop should not be the days that have been fixed for fortnightly training sessions in the subdivisions and districts from which the extension participants are drawn, since they will be involved in these training sessions. Weekends should also be avoided as they are often holidays.

Two full consecutive days are required for a workshop. Participants need the two full days to discuss carefully the topics presented and their own work experiences, review current field problems and farmers' reactions to earlier recommended practices, do practical and field work, and finalize recommendations and impact points for the next two fortnights. If SMSs have too much to cover in the time available, or if the period is too short because of late session starts or early closures, there will be little discussion and only limited time for practical work, either of which will adversely affect the workshop's usefulness. If necessary, the day immediately preceding or following a workshop can be devoted to working with some SMSs who need additional training or, occasionally, to present special subjects.

Monthly workshops should be held at the district level, if possible. The maximum number of participants should be about thirty-five. A larger number of participants will prevent some from joining discussions. If there is not an

adequate number of research experts within a district who can participate (or who can come from nearby research stations), then the workshop should be held for a group of districts, so long as the limit of about thirty-five participants is not exceeded. As far as possible, districts grouped for the purpose of monthly workshops should share similar agroecological conditions.

Participants

Participants will be both from the extension service and from universities and research agencies. Participating extension staff will be SMSs at the subdivision and district level (including Training Officers) and the Zonal, District, and Subdivisional Extension Officers (ZEO, DEO, SDEO). The workshop coordinator will be the senior participating officer of the Department of Agriculture -- the zonal or district officer, as the case may be. The workshop coordinator is responsible for the overall effective planning of the workshop. (In some places, a research officer, often the District Extension Agronomist, is responsible for organizing and coordinating the workshops, in which case he will work in coordination with the senior Agriculture Department officer.) The coordinator will ensure that the necessary teaching aids (including those needed for practical work and demonstrations) are available, and that all intended participants attend and actively take part.

The main trainers (or "resource persons") will be researchers from agricultural universities and research stations who are thoroughly conversant with local crops and technology, as well as other suitably experienced persons who are working on major crops in the area. They should be selected by the workshop coordinator in consultation with senior extension and research staff. Each main crop requires a lead trainer, but the number of trainers at a workshop should be kept to a minimum.

Most resource persons should be able to attend training sessions regularly throughout the season. They should not be changed during a season, because useful and effective discussion will develop only gradually as participants become familiar with the objectives of the workshops and with each other. Resource persons should attend the full two days of the workshop, even if they are scheduled to give only a short presentation on their specialty. Problems faced with particular crops and practices often require input from experts from a variety of backgrounds, and the workshops must be multidisciplinary if they are to be effective. In addition to the main cadre of resource persons that should not be changed frequently, "guest trainers" for specific topics should be encouraged. Guest trainers can include SMSs, staff of the Department of Agriculture or related departments, or farmers who are familiar with particular topics.

Planning

Monthly workshops require considerable advance planning. The general planning for all the workshops of one season should be done ahead of the season. Specific arrangements are made immediately before each workshop.

Approximately two months before a season, a meeting should be held to do the general planning of the topics to be discussed in the workshops during that season. This meeting normally follows immediately the seasonal zonal

workshop meeting. The monthly workshop coordinator convenes the meeting. Participants at the meeting will include senior extension staff and potential resource persons from agricultural universities, research organizations, and the Department of Agriculture and elsewhere. The Training Officers of the area covered by the workshop, as well as from state headquarters, should participate. Preseason planning should include the following points:

1. The crops, and the proposed general recommended practices, to be covered during the season. The choice should concentrate on the main crops and practices of the area, as well as on relevant research results. Care should be taken that proposed recommended practices cover rainfed as well as irrigated farming and that nonmonetary and low-cost practices are given high priority.

2. Proposed impact points for recommended practices.

3. The sequence and schedule of topics to be covered in the season's workshops.

4. Identification of able resource persons who can cover these topics, including guest trainers.

5. The dates and venue of each workshop.

6. Farm trials to be undertaken by SMSs (and other extension staff under the guidance of SMSs) during the season.

Some fifteen days before a workshop, the workshop coordinator should meet with the resource persons and the Training Officers to decide on the provisional recommendations and impact points to be discussed in the workshop. Adequate planning of field and practical work is most important. Topics should be allocated to appropriate trainers. A detailed program for the two days of the workshop should be worked out. Field and classroom activities and required teaching aids should be decided. The choice and assignment of topics and the responsibility for a workshop will in part have been organized in the preceding workshop when future needs were discussed. These arrangements are confirmed and refined at this preparatory meeting in light of seasonal conditions and other considerations.

Three main types of teaching aid are required. First, fields are needed for practicing some recommendations; enough tools and equipment (for all participants) must be available. Second, basic teaching aids should be at hand, including chalk and flannel boards, easels, and overhead and slide projectors. Third, trainers need to have ready the charts, slides, specimens, and models required to support their presentation. A short field trip should be made (to diagnose crop conditions, pest problems, or production constraints actually faced by farmers, or perhaps to inspect an example of good -- or bad -- extension or farming); suitable fields for this should be selected before the workshop. The workshop coordinator should review all these arrangements the day before the workshop.

Workshop Organization

Although a workshop can be organized in many possible ways, there is a basic pattern of organization (see Table 10.1 on the next page): this may be adjusted according to experience and local circumstances, but the ten main topics noted in this table should be covered in one way or another. While each workshop must cover a wide range of topics, within each topic it is best to deal with a few important points in depth rather than with a large number superficially. At all times, the importance of field work and the need to adjust recommended practices to specific farm conditions must be stressed. About two-thirds of a workshop should be spent on reviewing, discussing, and practicing the recommended practices (Topics 4, 7, and 8 in Table 10.1), and about half of that time should be devoted to practical and field work -- demonstrating and carrying out actual recommended practices and making visits to research stations, farm trials, and farmers' fields. The time spent on each topic will vary in relation to the extent of participation in the discussions by workshop participants and the degree to which recommendations need be modified. The discussions between extension staff and resource persons that take place in the workshop are as important as the formal training. Every effort should be made to encourage discussion -- by arranging group discussions, question-and-answer sessions, and so on.

In the table, topics to be discussed in the workshop are described in the suggested order of presentation.

Organization of a Monthly Workshop — Table 10.1

Topic	Comment
	FIRST DAY
1. Climatic conditions Rainfall, humidity, and temperature; abnormalities requiring modification in recommendations.	Review by resource persons; abnormalities are reported by SMSs and other field staff.
2. Crop situation Field situation of main crops over the past month.	Each main crop is presented for each subdivision by a designated SMS; other participants comment. Particular attention is paid to main problems; those unresolved at the workshop will be referred to research staff for further investigation (and possibly farm trials). Irrigated and rainfed crops are treated separately. Extension and research staff are encouraged to discuss relevant experience.
3. Inputs and market conditions Availability of main inputs (seed, fertilizer, weedicide, pesticide, irrigation water, credit, etc.); market conditions.	Field staff report, focusing on unusual demand and supply conditions that may affect recommendations.
4. Previously recommended practices Recommended practices of past month. Difficulties faced in presenting recommendations to extension workers (in fortnightly training) and by extension workers to farmers. Farmer response to each recommendation.	Field staff report by practice and subdivision. Trainers guide response to problems and possible modification in recommendations or presentation. Irrigated and rainfed practices are treated separately. Extension and research staff are encouraged to discuss relevant experience.
5. Previously reported problems Progress on unresolved problems reported in previous workshops. Where solutions available, suggestions for modification of practices.	Report by research staff or SMSs as appropriate. Extension and research staff are encouraged to discuss relevant experience.

Topic	Comment
6. Farm trials Significant relevant progress in farm trials; suggestions for modification of practices.	Report by SMSs and other extension staff, as appropriate; comment by research staff.
7. Field operations and recommended practices, particularly for next two fortnights Expected field operations by major crop. Recommendations and impact points for major crops. Discussion of recommended practices in light of Topics 1-6.	Recommendations for a particular crop are presented by designated resource persons; discussion of recommendations before finalizing them is very important.
SECOND DAY	
8. Practical and field work Demonstration and practice of recommended skills. Visits to research farms, farm trials, and farmers' fields to observe relevant practices, problems, and extension/research achievements.	In addition to practicing skills needed to teach in fortnightly training, particular emphasis should go to the training of extension and research staff in diagnosing, in the field, crop conditions, pest problems, and production constraints felt by farmers.
9. Lesson plans for fortnightly training Outlines of lesson plans for next two fortnightly training sessions: topic outline, impact points, aids required (specimens, tools, charts, slides, etc.).	Lesson plans are prepared by research and extension staff together working in small groups. The presentation of recommendations for major crops should be rehearsed in these in these groups.
10. Plans for next workshop Broad outline of topics to be covered in next workshop, assigning individual responsibility to their preparation.	This general planning enables participants to discuss the topics in a general sense in fortnightly training sessions, if necessary, and to come prepared to contribute actively in the next workshop.

While monthly workshops focus on recommendations for the two fortnights after the next fortnightly training session (at which SMSs will teach the recommendations to AEOs and VEWs), some attention must be given to the period beyond because of the time required for recommendations to be passed on to farmers and the continuing implications of some recommendations. The following example (Table 10.2) about seed selection gives an idea of the sequence of the identification and teaching of a recommendation in monthly workshops and fortnightly training sessions, its presentation to farmers, and their subsequent adoption of it.

Sequence of Recommendations, Identification, Teaching, and Adoption — Table 10.2

Fortnight	Week	
1	1)	SMSs learn and discuss recommendation about seed
	2)	selection and planting (at monthly workshop).
2	3)	VEWs are trained (at fortnightly training
	4)	session).
3	5)	VEWs teach recommendation to farmers. Farmers
	6)	prepare seed.
4	7)	VEWs repeat recommendation on planting.
	8)	Farmers plant.

Chapter 11

Fortnightly Training

Summary

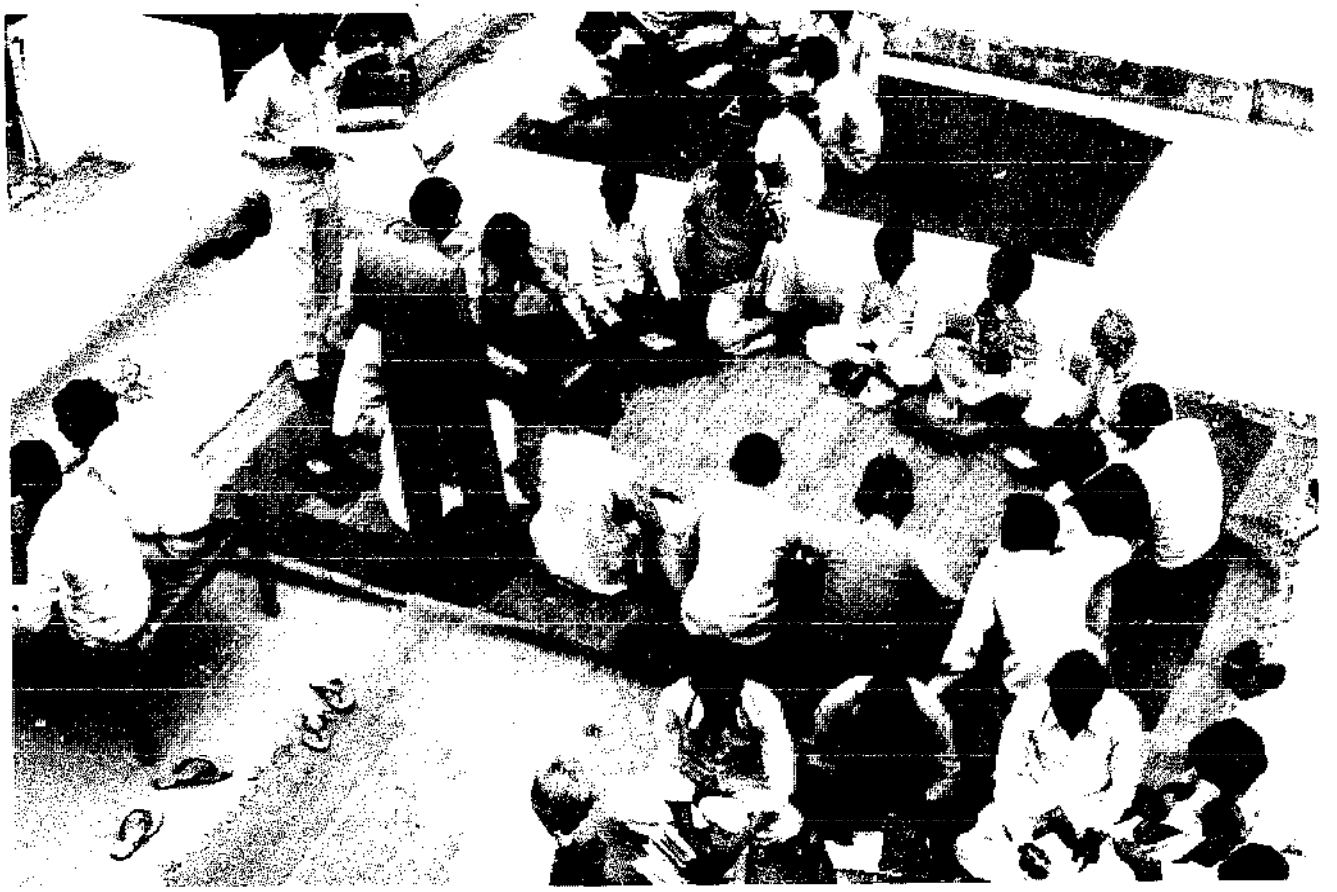
The chief means of continuously upgrading and updating the professional skills of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) is the fortnightly training session, which is held for one full day each fortnight. At fortnightly training, VEWs and AEOs review farmers' reactions to previous recommendations, are taught specific recommended practices that will be taught to farmers during the coming two weeks, report field problems or conditions that need to be taken into account in these recommendations or which are to be passed on to research for investigation, and discuss, and learn from, each other's experience. The organizer of the training session is the Subdivisional Extension Officer (SDEO), helped by the Training Officer; the trainers are primarily subdivisional Subject Matter Specialists (SMSs). No more than about thirty VEWs and AEOs should attend a fortnightly training session. Representatives of local input and marketing organizations should also attend, and some local farmers may be invited. Training should emphasize a small number of production recommendations and impact points and encourage practical work by the VEWs and AEOs. Fortnightly training sessions can be organized in a number of ways, although each should include some common activities and involve approximately equal time in teaching and in practical work.

* * * * *

All Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) participate in one full day of training each fortnight, the

Fortnightly training class

D. Benor



Group discussion in fortnightly training

Somer Mathur

"fortnightly training session." Fortnightly training is the chief means of continuously upgrading and updating the professional skills of extension workers and of infusing them with confidence to meet farmers. Effective extension work depends on good regular training, as it is mainly through this training that extension workers learn the specific recommendations that will be discussed with farmers over the coming fortnight: without these recommendations, their visits are likely to be generalized and undirected and, therefore, of little use to farmers.

Fortnightly training sessions have two main objectives: One objective is to present specific recommended practices -- in a series of key impact points -- for the coming fortnight to the VEWs and AEOs for them to teach farmers of their groups. Extension workers should also be advised during training how to adjust these recommended practices to take account of specific local conditions. A second objective is that the training sessions should act as a link between field-level extension staff and research, via Subject Matter Specialists (SMSs). At fortnightly training sessions, VEWs and AEOs report field problems and conditions that should be solved at the training session and taken into account in formulating recommended practices for the coming fortnight; problems that cannot be satisfactorily answered by SMSs are taken to research staff at the next monthly workshop, or earlier if circumstances warrant. Fortnightly training sessions should be organized to allow for a frank interchange of ideas among all participants, as they also have the important function of providing extension field staff with the opportunity to discuss professional experiences and to learn from each other.

An important feature of fortnightly training is that representatives of local input supply and marketing agencies are present for part of relevant sessions. Extension workers report on the current supply situation in their areas of jurisdiction and the likely short- and medium-term input requirements on the basis of the forthcoming production recommendations. Extension staff are in turn advised of the availability of inputs, alternative materials, supply points, and market trends. Recommendations will be adjusted, as necessary, to incorporate this information, which extension workers will also discuss with farmers.

Location

Fortnightly training should be held at research stations, departmental farms, or on farmers' fields, depending on the facilities available and those required for a particular session. Only in rare cases should training be held in a classroom. As VEWs and AEOs must learn and practice the skills involved in recommended messages if they are to teach them with confidence to farmers, adequate land must be available at the training location for practical field work. Materials and equipment needed for teaching should be brought to the training site for each session if they are not available locally (as they will not be if training is, for example, held in farmers' fields).

The training location should be decided by the Subdivisional Extension Officer (SDEO), Training Officer, and SMSs involved. The location may be changed for particular sessions, depending on the requirements of the topics to be covered. Whatever location is to be used, however, it must have

good facilities for practical work. All participants at a training session should be told where the next session will take place.

Duration and Scheduling

A fortnightly training session will last one full day, starting as early as convenient for participants to reach the training location and ending in time for VEWs to be able to get home.

Fortnightly training is held every two weeks, not on the basis of twice a calendar month. Training is always held on the same day of the fortnight for a training group. Where there is more than one training group in a subdivision, the training days of each group must be different, since the trainers will be the same for all the groups in a subdivision. Moreover, training should preferably not be held on consecutive days, as the Training Officer and SMSs should use the day following a training session to make field visits to review problems raised by VEWs and AEOs and to observe how extension staff are presenting the recommended messages to farmers.

Participants

The number of participants should not be more than about thirty VEWs and AEOs. (It is always useful also to invite a few farmers to participate in the training.) Larger groups will not allow all VEWs and AEOs to participate in discussions or to practice skills, and the SMSs will not be able to pay appropriate individual attention to the trainees. Where a subdivision has more than thirty VEWs and AEOs, they should be divided into groups of fifteen to thirty on the basis of the location of their areas of operation. Each group would be trained separately, on different days and at different locations. An example of the fortnightly training and visit schedule, when there are four training groups in one subdivision, is given in Table 11.1.

Subdivisional Extension Officer. The SDEO is the organizer and leader of all fortnightly training sessions held in his subdivision. He is helped by the Training Officer. The SDEO should ensure that all participants (including appropriate representatives of input and marketing agencies) know where the training is to take place, and that they are present at a predesignated time. He is also responsible for arranging the necessary teaching materials and aids. The SDEO encourages all trainees to participate actively in discussions and practical work, and makes sure that the program planned for the training session is followed. Key impact points for the coming fortnight should be clearly understood by VEWs and AEOs so that they are later able to conduct field visits effectively.

Fortnightly Training and Visit Schedule for a Subdivision with Four Fortnightly Training Groups

Table 11.1

	Week 1							Week 2						
	M	T	W	Th	F	Sat	Sun	M	T	W	Th	F	Sat	Sun
Group 1	Trg	V	V	V	V	EV	H	Mtg	V	V	V	V	EV	H
Group 2	V	V	Trg	V	V	EV	H	V	V	Mtg	V	V	EV	H
Group 3	Mtg	V	V	V	V	EV	H	Trg	V	V	V	V	EV	H
Group 4	V	V	Mtg	V	V	EV	H	V	V	Trg	V	V	EV	H

Abbreviations:

Trg = Fortnightly training of VEWs and AEOs given by SMSs.

V = Visit of VEWs and AEOs to farmers' groups; also, field visits (and other professional activities in the field) of SMSs, Training Officer, and SDEO.

EV = Extra visit by VEWs and AEOs.

H = Holiday.

Mtg = Meeting of AEO with VEWs of his range.

Subject Matter Specialist. Subdivisional SMSs are the principal trainers. District or state-level SMSs (and other extension staff) and research scientists should participate occasionally. The trainers should work as a team and deal with the session's topics in an orderly sequence. Production recommendations for each crop should be presented according to lesson plans that the SMSs have prepared prior to the session and which they have discussed with the SDEO and Training Officer.

Agricultural Extension Officer. AEOs should participate actively in training. They should report on field conditions, encourage VEWs to discuss relevant professional experiences, learn production recommendations, and ensure that the VEWs under their jurisdiction understand the messages properly and acquire, through practical work, the skills necessary to teach them to farmers. In addition, AEOs should help the SMSs identify weaker VEWs and concentrate on their training. They should also assist VEWs in preparing any visual aids that will be used to explain recommendations to farmers.

Village Extension Worker. Each participating VEW must thoroughly learn the production practices and impact points that are to be recommended during the coming fortnight. Any doubts the VEW may have about the suitability of the recommended practices and impact points for the farmers of his circle should be raised with his trainers. VEWs should practice the

step-by-step skills required to teach recommendations to farmers. They should also discuss the availability and requirements of inputs in their circles with representatives of input agencies.

VEWs and AEOs should make notes of all relevant points mentioned in the session. In addition, the Training Officer should distribute brief handouts, prepared ahead of time, outlining the impact points for the coming fortnight's recommendations.

Training Organization

A recommended organization for fortnightly training is shown in Table 11.2. The organization for fortnightly training may be adjusted in light of local or seasonal conditions, but the balance between problem and field review, presentation of recommendations, discussion and practical work, and recommendation rehearsal that is presented here should be maintained. In sum, about half the training session should be spent in teaching and half in practical work.

Organization of Fortnightly Training — Table 11.2

Activity	Comment
1. Opening remarks The day's program, and a look ahead at farm activities during the next one or two fortnights.	By SDEO (15 minutes).
2. Problems and field review Seasonal and crop conditions; farmers' receptivity to recommendations of previous fortnight; problems encountered; exchange of experiences and lessons learned in the field.	VEWs discuss in small groups of five to eight under AEO guidance; each group's main points are later presented to a general meeting, summarized by SMSs (45 minutes to 1 hour).
3. Field operations Important field operations for major crops in next fortnight.	Each AEO presents information for his range; discussion (30 minutes).

Activity	Comment
4. Recommended practices Practices that are to be recommended in next fortnight for each crop.	Presented in informative lectures by SMSs working as a team; visual aids and specimens are important. SDEO focuses attention on impact points of recommendations and ensures adequate discussion and proper understanding. Recommendations must be presented to trainees in a language (including units of measurement) used and understood by farmers. Written summaries of recommendations should be given to trainees. Training Officer trains VEWs on communication techniques suited to topics discussed and to farmers (1-1/2 to 2 hours).
5. Input and marketing situation Main supply and demand features in local areas.	Input organization representatives report and extension staff discuss (15 minutes).
6. Practical work Practice of skills required to implement recommendations.	By trainees under guidance of SMSs; can be done in groups, but all trainees must actually practice (2 hours).
7. Message preparation and rehearsal Preparation of simple visual aids required to present messages. Rehearsal of presentation of messages for coming forthnight.	A few VEWs rehearse in front of group; SMSs, AEOs, and other VEWs comment (1/2 to 1 hour).
8. Summary Summary of training session, focusing especially on impact points to be presented in coming fortnight.	By SDEO (15 minutes).

Lesson Plans

- SMSs must thoroughly prepare their material for their teaching in fortnightly training sessions to be effective. The most certain way of doing this is for an SMS to prepare a detailed "lesson plan" (based on the broad lesson plans prepared in the previous monthly workshops) for each topic for which he is responsible. This should be done at least three days before a session and be reviewed by the SDEO at that time. Such a plan is a written statement containing an outline of the specific topic, including the lesson's main aim, and a list of the materials and teaching aids that are required. If a practical skill needs to be taught, this should be included in the lesson plan with an indication of the place where the practice is to be held, the materials that will be needed, the time required for each step, and the preparatory measures to be taken. In reviewing each lesson plan, the SDEO will ensure that the SMS has made allowance for local farming and input conditions and has identified a small number of key impact points, so that the recommendation may be easily understood by VEWs and AEOs and, subsequently, by farmers. An example of a lesson plan is shown in Table 11.3.

Lesson Plan: Testing the Viability of Seed — Table 11.3

A. BASIC FACTORS

Topic (skill to be developed): Testing the Viability of Seed (Germination Test).

Aim: To teach VEWs and AEOs how (a) to conduct a germination test, (b) to determine the germination rate of seed, and (c) to calibrate the seed rate in response to the germination rate.

Equipment and materials: 15-20 germination boxes. Blotting paper and cotton/jute/coir wad. 15-20 pieces (15 x 20 cm) of moisture-absorbent cloth. 30-40 rubber bands or pieces of string. 15-20 sticks (30 cm long). Composite sample of seeds. Jug or pot containing water. Labels. Wax pencil.

Time required: 25 minutes explanation and 20 minutes practice.

B. OUTLINE

Time (minutes)	Important steps	Content	Visuals or equipment
5	Introduction	Need to know germination rate (percentage) of seed before sowing. Optimum plant population and its advantages.	
6	Different methods of conducting germination tests	Germination box and rag-doll methods. Simplicity and usefulness of these.	Germination box. Rag doll.
6	Procedure	Details of conducting germination test: step-by-step demonstration.	Parts of germination box. How to prepare rag doll.
5	Calibration	Normal germinated seeds, abnormal seeds (hard and decayed). How to adjust seed rate according to germination percentage.	Samples of seeds, slides, charts. Examples on chalk board.
3	Conclusion	Test is simple and helps to obtain optimum plant population.	

This outline is followed by all participants practicing the skill (either the germination box method or the rag doll method, outlined below) for about twenty minutes, individually or in pairs.

C. PRACTICE OF SKILL

Important steps	Key points	
	How	Why
	Germination Box Method	
Prepare box	Clean and dry the box. Spread 1 cm of cotton/jute/coir on bottom and cover with blotting paper.	To avoid mould growth. To hold moisture needed for germination of seed.

Lesson Plan (continued) Table 11.3

Important steps	Key points	
	How	Why
Select seed	Draw seed sample from the seed lot as per sampling technique. Divide sample with divider or spread seed on paper, divide diagonally, and pick seed in opposite quadrants (to get 50 grams of seed). Count two lots of 50-100 seeds.	To obtain representative sample of lot for testing.
Label seed box	With wax pencil, write a label with name of crop variety, testing date, replication number, and worker's name. Paste or tie to lid of box. Number the lid and bottom of box with same number.	To identify samples and avoid mixing up.
Place seed	Mark line on blotting paper, dividing into two. Place 50-100 seeds in each portion, leaving enough space between seeds for counting. Gently moisten blotting paper. Close lid of box, leaving enough air for seed germination. Place box in convenient place where it receives appropriate shade, temperature, and air.	To identify two replications. Encourage germination. Easy counting.
Let seed germinate	Moisten seed with small quantity of water twice a day. (More water may cause rotting, less may hinder germination.)	For germination, seeds need moisture.
Count germination	After 5-7 days (depending on seed variety), count seeds having plumule and radicle. Remove them from seed box and continue germination test, if needed.	For full germination, a few more days may be needed.

Important steps	Key points	
	How	Why
Record result	Record separately number of germinated, hard and decayed seeds. Work out germination percentage in both replications. Determine average germination percentage.	To work out average germination percentage. For future reference, when needed.
Recommendations	Should have 80% germination rate or better. If germination is lower than 80% but more than 60%, adjust seed seed rate to make up for low germination. If germination is lower than 60%, do not use seed for sowing.	Seed rate is worked out normally with 80% germination. Low germination needs adjustment of seed rate.
	Rag Doll Method	
Dampen rag	Soak the cloth in water and squeeze out excess water. Spread cloth on flat surface.	Excess moisture hinders germination.
Place seed on cloth	Select seed as per box method. Place 50-100 seeds evenly in 5-10 rows, leaving 2 cm around all the edges of the cloth.	Easy for counting. No displacement of seeds.
Prepare rag doll	Place stick along the longer border of the cloth, press the border against stick, and roll the stick so that cloth is rolled around it. (Do not disturb seed arrangement while rolling.) Tie both ends of the cloth with rubber bands or string. Attach a label to the stick.	Loose rag doll will not encourage proper germination. Labeling is needed to identify seed sample.

Lesson Plan (continued) Table 11.3

Important steps	Key points	
	How	Why
Let seed germinate	Moisten the seed by dipping the rag doll into water. Keep seed moist (about 3 dippings a day, usually). Store ragdoll in a shaded place at room temperature and protect from rats and insects. Seeds should germinate in 4-5 days.	For germination, seeds need moisture.

The remaining steps -- Count germination, Record result, and Recommendations -- are the same as for the Germination Box Method.

Chapter 12

Production Recommendations

Summary

Production recommendations are the specific agricultural practices that extension teaches farmers. They represent the most suitable and economically viable production technology for a crop under a farmer's production conditions. Without production recommendations, it is impossible to plan, implement, monitor, or evaluate extension work, and extension staff are unlikely to be able to assume their desired active, diagnostic role. All major crops and practices should be covered by production recommendations, although at any given time extension will emphasize selected key points from the recommendations. Recommendations should be so designed that farmers would be willing and able to follow them. Therefore, recommendations that represent a new practice for a farmer must be financially feasible, result in increased production and income, and entail minimum risk. Recommendations are provisionally developed at seasonal zonal workshops of extension and research staff; they are refined and modified at monthly workshops and fortnightly training sessions to take account of local field and production conditions. To be useful to farmers, recommendations must be continually reviewed and adjusted in light of changing production conditions.

* * * * * *

Production recommendations are the specific agricultural practices that farmers are taught by extension workers. Numerous factors are taken into account in the formulation of production recommendations, including the government's broad agricultural development goals. Recommendations for each crop represent the most suitable and economically viable technology for that

Demonstration of sugarcane planting
Directorate of Extension, Government of India

Sugarcane planting is explained
Directorate of Extension, Government of India

Sugarcane is planted following instructions
Directorate of Extension, Government of India

crop under prevalent production conditions, and make operational the agricultural development strategy for a particular area. Extension's work is unfocused without specific messages to promote among farmers, and difficult to plan, implement, monitor, or evaluate. Without specific and timely production recommendations, extension workers may advise farmers during field visits on the availability of inputs and, on the basis of their general knowledge and training, make suggestions on agricultural practices, but such visits are generally purposeless, a fact soon realized by Village Extension Workers (VEWs) and farmers alike. The availability of suitable production recommendations for all major crops is crucial to effective, professional extension.

All significant aspects of production of major crops (and, ultimately, of most crops and other farm-based production activities) in each VEW circle should be covered by recommended practices. Many of these may be standard and acceptable agricultural practices in the area; others may be practices unknown by farmers or practices that are known but not followed. Although extension workers will not teach practices that are already followed by farmers, they should at least know these to ensure that those practices they do promote, or the implications of these, are not contradictory to existing practice. From among the recommended practices for a particular crop or activity, extension workers should be taught to advise farmers which points need emphasis at a particular time in light of production conditions.

Recommended practices taught to farmers can vary from the broad and complex (for example, the introduction of a new crop, with all its requisite practices) to the specific (such as an adjustment in seed rate to compensate for late sowing). Particular care should be taken that important production conditions, such as those of rainfed agriculture in low-rainfall areas, are not ignored because, for example, there are inadequate research results: Until specific research data are available, extension and research staff should develop together recommendations based on the most successful practices of local farmers, combined with whatever appropriate general research findings are available.

Recommendations are not static. Although basic recommended practices for a crop will be similar from season to season, they should be adjusted to reflect recent research findings, newly available inputs, changing market conditions, the experience of farmers and extension with the crop in previous seasons, weather conditions, and so on. Similarly, the points to be emphasized by extension -- impact points -- will often change between and even during seasons in response to production conditions, and to reflect priority concerns of the farmers and the extension service. The range of recommended practices and the selection of impact points for one crop is illustrated in Table 12.1, at the end of this chapter, by the example of monsoon-sown pearl millet prepared for a northern Indian state. (This example is included for illustration only. Actual recommended practices may vary considerably -- for example, in response to local conditions, crop and customary cultural practices.)

Characteristics of Production Recommendations

A production recommendation that is to be passed on to farmers should have a number of characteristics. It should significantly and visibly increase farmers' incomes and efficiency, make work easier and less costly, and produce better crops. It must be feasible for a farmer to adopt a recommended practice. It must fit his skills and needs, involve only available inputs, and be taught to him when he is able to implement it. If a new crop or variety is recommended, it should fit into a farmer's cropping sequence, or allowance should be made in a subsequent crop (which, for example, may have to be changed to one of a shorter duration to accommodate a recommended crop that is of longer duration than that previously sown). If it involves an implement or a particular input, that implement or input must be readily available. A recommended practice, no matter what its potential, for all immediate, practical purposes is useless to a farmer unless the inputs required for it are readily available locally.

A recommended practice actively pushed by extension (as distinct from being part of the local repertoire of recommended technology) should be a practice that farmers do not usually follow. For example, where 85 percent of farmers are growing a particular hybrid maize variety that is recommended by the extension service, promotion of the variety -- while it should still be recommended -- should not be a major recommendation. Similarly, if most farmers adequately plough and puddle land prior to transplanting paddy, or if they already transplant at the recommended distance, there is no point in emphasizing these practices from among those on which extension will focus. In the selection of recommended practices and impact points and, consequently, in field visits, extension must focus on those aspects that limit production or result in undue production costs. Production recommendations and impact points taught farmers need not be new in the sense of coming from the cutting edge of agricultural research (although they should incorporate the latest useful research findings). But they should be new in the sense of involving a practice different from that usually followed by most farmers.

Another characteristic of a suitable production recommendation is that it should be within the financial resources of a farmer. Given the range of financial resources that will be encountered among farmers, this will mean that recommendations involving monetary inputs should be presented where possible with alternative doses and even nonmonetary or low-cost alternatives. With fertilizers, for example, extension workers should be familiar with response rates to different elements so they can suggest a dose suited to a farmer's resources and that will give a reasonable return on investment. At the least, extension should learn from research a range of profitable fertilizer recommendations for each crop, which farmers can use depending on their financial resources. Where monetary inputs are not variable per unit area (as, for example, with a seed variety), farmers with fewer resources should be encouraged to try the recommended practice on a small area of their land. Where many farmers have meager financial resources, highest priority must be given to developing and promoting nonmonetary or low-cost production recommendations.

Recommendations should lead to increased income through either increased production above the incremental cost of a recommendation or by

reduced costs. As an example of the latter, it is not unusual for expenditure on pesticides and other purchased inputs to decrease as a result of farmers' learning appropriate dosages and correct application methods and frequencies (integrated and need-based pest management in cotton may halve the number of pesticide sprayings); or for the amount of fertilizer used to decrease once farmers are advised of the appropriate nutrients, doses, and times and methods of application. A related consideration is that recommendations must take into account the market situation. The widespread promotion of a new crop for which a suitable marketing structure is not available must be accompanied by careful coordination with marketing organizations. Without market outlets, farmers will be left with an unprofitable crop and their attitude to extension will be adversely affected.

One other significant characteristic of suitable production recommendations is that they should entail minimal risk for the farmer. Recommended practices must have been tested and observed in appropriate research situations, including farm trials. Some recommended practices may entail considerable expenditure in comparison to the resources of small farmers. Where the expenditure per unit area is high or inflexible, or a recommended practice is largely unknown locally, farmers should be advised to adopt the recommendation on only a small area of their land. There, they themselves will be able to evaluate the impact of the recommendation and the risk entailed.

Formulation of Production Recommendations

The formulation of specific technical messages through which agricultural development goals may be attained, while at the same time taking into account the variety of local resource conditions, is a complex process. It is further complicated by the fact that recommended practices must be continually reviewed and altered to reflect changing production conditions (including, for example, unusual weather). To be useful to farmers, production recommendations must develop in a process of continuous adjustment to changing economic and environmental situations.

The starting points in the formulation of production recommendations are the technical and economic needs of farmers and government's general agricultural goals and policies. At a preseasonal meeting of the State Technical Committee of research and extension officers, these are translated into objectives for particular crops, and general means for achieving them are identified. By taking account of farmers' needs and wishes, previous extension work, recent research results, market conditions, and the likely availability of inputs, broad objectives and strategies for the coming season are determined for each zone (i.e., a number of contiguous administrative units with similar agroclimatic conditions); subjects requiring investigation are referred to universities and the Department of Agriculture for inclusion in their research programs.

The zonal objectives and strategies are then discussed at a seasonal zonal workshop of extension and research workers, and with a small number of representative local farmers. Taking account of local agricultural resources and practices, research findings -- including those of farm trials -- and likely available inputs and markets, and the significant variations of each of these throughout the zone, the zonal workshop draws up a

series of provisional general recommended practices for each major crop for the coming season. Many of these recommended practices will, in fact, be adjustments of previous recommendations to reflect changed priorities and resource positions. These production recommendations are arranged in chronological order with particular reference to the period that will be covered by each monthly workshop held throughout the season. The zonal workshop also suggests problems that may be included in research programs and finalizes the seasonal farm trials program that will be undertaken by extension staff.

A main role of the monthly workshop is to translate the provisional general recommendations that come from the seasonal zonal workshop into production recommendations that are specific to the area and period with which the monthly workshop is concerned. These recommendations must be relevant to the farmers and resource situations of the area of the workshop's jurisdiction (which is normally smaller than the zonal workshop's area). On the basis of participants' local knowledge, it may also introduce other recommendations (most likely adaptations of zonal workshop suggestions). In discussion led by research specialists but in which the active participation of Subject Matter Specialists (SMSs) and Subdivisional Extension Officers (SDEOs) is essential, the general recommendations of the zonal workshop are adapted to take account of local resources and practices, crop and weather conditions, prevalent pests and diseases, and available inputs and markets. The recommended practices that extension will teach to farmers must be specific to local conditions and, where necessary, have alternatives to reflect different production situations (for example, rainfed and irrigated conditions and limited monetary resources).

Extension Subject Matter Specialists have a very important role in monthly workshops. They are not only there to learn recommendations from research. It is extension staff who should ensure that production recommendations are feasible and relevant to farmers, and that all main crops and production conditions of their area are served by some recommendations. SMSs must relate farmer experience with former recommendations, key production constraints faced by farmers, and unusual field, input, and market conditions that should be taken account of in current recommendations. Extension and research staff together are responsible to see that VEWs have a continuous supply of useful, relevant recommendations to discuss with farmers. It is not possible nor necessary that there be production recommendations for every conceivable resource situation. Monthly workshops should result in SMSs knowing a series of specific key recommendations, and the way they may be modified to fit particular farming situations. Once the recommendations for the coming four-week period have been agreed upon, a series of key impact points -- new or crucial practices from the recommendations that extension will stress to farmers -- should be determined for each. Clearly, the two days of a monthly workshop will be fully utilized.

Subject Matter Specialists undertake frequent field trips and so are aware of production conditions in their area of jurisdiction; if they participate actively in the monthly workshop, little further adjustment of recommendations will be required at fortnightly training sessions. Nonetheless, SMSs should not come to a fortnightly training session with a finalized list of recommendations and impact points for the coming two weeks. They must encourage the field workers attending the session (VEWs and AEOs, as

well as farmers who sometimes attend) to discuss their experience with earlier recommendations and the field conditions and input and market situation of their individual circles, as these will directly affect the relevance of, and farmer response to, recommendations.

Only after local conditions have been taken into account should production recommendations and their impact points for the coming two weeks be finalized and given to VEWs and AEOs, along with guidance on how they may be further modified in the field to take account of unforeseen conditions. Many recommendations will be relevant for more than one fortnight and some will be applicable in more than one of the periods for which a monthly workshop develops recommendations. Feedback from extension workers on their own experience and farmers' reactions to such recommendations should be taken into account before extension workers are advised to continue promoting the recommendation in the coming fortnight or month (and, of course, during the next season).

While a basic principle of recommendation formulation is that only major crops and activities need be covered by specific recommendations, particular care should be taken at fortnightly training sessions that each VEW has appropriate recommendations for each of his farmers' groups. It is possible that some groups perform specialized activities that are not common on a large scale: these activities can be overlooked for if "major crops" in a general sense are overemphasized, the result will be that the VEW has little of use to teach the farmers of a particular group.

Agricultural extension cannot operate without suitable production recommendations. Care should be taken throughout the formulation process to see that recommendations are feasible and are attractive for farmers to adopt. This requires ensuring that farmers' production conditions and reactions to earlier recommendations are thoroughly considered and are taken into account at extension/research workshops and training sessions as well as in the field by researchers and SMSs (both of whom should spend a considerable time in farmers' fields reviewing these aspects). Feedback from extension workers to SMSs and researchers is an important input in the formulation of recommendations, but direct field exposure of SMSs and researchers complementing the feedback is equally vital for formulating production recommendations that can have a significant impact on farmers' production and incomes.

Monsoon-sown Pearl Millet
Production Recommendations and Impact Points — Table 12.1

Recommendation	Impact point	Time when taught to farmers 1/
Selection of Fields Light (sandy-loam to loam), well-drained soils. Rainfall zone: 300-800 mm.	Suitable field	Preseason
Crop Rotation Avoid millet after millet; preferably millet after pulses.		Preseason
Land Preparation Two ploughings followed by planking. Summer ploughing in heavier soils. In double-cropped area, plough after harvest of winter crop.	Summer ploughing	All May
Varieties BJ 104, BK 560, WCC-15, composite, local improved.	Hybrids to replace local varieties, even in rainfed areas	May-June
Time of Sowing 1. For rainfed, onset of monsoon.	Early sowing	Early June
2. With presowing irrigation, mid-June.		Early June
3. For nursery sowing for transplanted millet, end June-early July.		Early June
Seed Treatment 1. In nonendemic ergot areas or as low-cost input, 10% salt solution.	Appropriate seed treatment	Early June
2. In endemic ergot areas, mercury compound.		Early June

Recommendation	Impact point	Time when taught to farmers 1/
Seed Rate		
1. Normal sowing: 3-4 kg/ha.	Plant population -- seed rate	Early June
2. Delayed sowing: 4-5 kg/ha.		
3. Nursery: 4 kg/ha (1/15 ha nursery for 1 ha field).		
Sowing and Transplanting		
1. Drill seed in lines at about 45 x 12 cm. Plant population should be about 200,000 per ha.	Plant population -- sowing	June
2. Plant more seeds in one corner of field to have spare plants for gap filling.	Plant population -- gap filling	June
3. Plant on ridges with ridge seeder.		June
4. Transplanting. Healthy disease-free 18-22 day-old plants; cut 1/2 inch off top; uproot with care; transplant during rainy days or with light irrigation; ensure recommended plant population (about 200,000 per ha). If plants are 30 days old, transplant two plants per hill.	Transplanting	July
Depth of Sowing		
2-3 cm.	Correct sowing depth	June
Interculture		
1. Nursery should be weed free.	Weeding	June-July
2. For fields known for heavy weed infestation, apply 1,000 gm Atrazine (50% WP) in 600 liters of water per hectare immediately after sowing.		June

Monsoon-sown Pearl Millet (continued) Table 12.1

Recommendation	Impact point	Time when taught to farmers 1/
3. One or two hoeings 15 days after planting.	Weeding	July
4. Weed-free field at least up to 4 weeks after planting.		July
Thinning and Gap-filling Do 15-25 days after sowing; maintain plant population at about 200,000 per ha.	Optimal plant population	July
Irrigation One or two irrigations as needed, depending on rainfall -- one at tillering (20-25 days) and one at ear initiation (40-45 days).	Irrigation	July
Plant Protection 1. Insects Ascertain threshold levels. If control warranted, apply 20-25 kg/ha carboryl 10% or BHC 10% dust against blister beetle and earhead caterpillar and Malathion dust or carboryl 10% against hairy caterpillar.	Threshold levels	July
2. Diseases Downey mildew: rogue-out diseased plants 15-20 days after sowing; spray with 320 gm Blitox and 80 gm Zineb in 250 liters water and repeat after 45 days at double concentration.	Roguing and spraying	July
Ergot: Remove affected ears immediately (early planting reduces incidence of ergot).		July

Recommendation	Impact point	Time when taught to farmers 1/
Fertilizers		
1. Dose General recommendations per hectare: Irrigated 120N 60P 30K Rainfed 40N 20P Apply at least: Irrigated 40N 16P Rainfed 20N	(Range of possible doses	June
Zinc sulphate (25 kg/ha) in areas of zinc deficiency if not applied in previous crop.	Zinc sulphate in zinc-deficient areas	
2. Application One-third N and full P and K doses as basal application; remaining in two equal parts after 20-25 days (tillering) and 40-45 days (ear initiation). For late sown crop, half dose applied as basal dose and half at flower initiation.	Basal dose and top dressings.	June

1/ The time farmers will first be taught the recommendation and impact points under normal weather conditions. Village Extension Workers and Agricultural Extension Officers will be taught these recommendations during training in the fortnight prior to this period: the recommendations will be discussed at the monthly workshop held immediately before this fortnightly training session.

During a monthly workshop, research and extension staff meet with a farmer in his field *B. Z. Mauthner*

Postharvest technology is covered by extension
Ministry of Agriculture, Government of India

Chapter 13

Linkages between Extension and Research

Summary

Extension and research are dependent on one another for their successful operation. Extension needs research's findings and its solutions to technical problems to teach to farmers as production recommendations. Extension should serve as a main source for research to develop an orientation to, and maintain an awareness of, actual farm problems. While close linkages between extension and research are a necessity, they are not easy to achieve. Under the training and visit system of extension, systematic procedures have been established to promote and strengthen the necessary linkages by means of periodic meetings of research and extension staff in the monthly workshop, as well as through seasonal zonal workshops and the State Technical Committee. Through its frequency, activities, and composition, the monthly workshop is the most important of these meetings. Research/extension linkages are also promoted through the training of extension staff by research staff, by collaboration in farm trials, and through visits of research staff to farmers' fields and of extension staff to research facilities.

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Agricultural extension and research are mutually dependent. Extension requires the findings of research to teach to farmers, as well as the support of research in solving farmers' problems. Without research's involvement, it is unlikely that extension will be able to teach the significant improved practices (including new varieties, crops, and cropping patterns)

that lead to the marked increase in productivity required for rapid, sustained agricultural growth. Similarly, research requires extension's guidance on problems that farmers face and on new issues that become apparent from field exposure and on which research attention should be focused.

For either extension or research to be fully effective, strong linkages between them are essential. While this is obvious, it is not always easy to achieve. One cause of difficulty is that research and extension are frequently the responsibility of separate organizations. Extension often comes under a Department of Agriculture. Research is usually the responsibility of agricultural universities or other organizations, which are both autonomous and often located at a considerable distance from departmental headquarters. 1/ Another factor that works against close linkages is the different traditional orientations of each: extension's field orientation in contrast to the common laboratory and on-station orientation of research. Moreover, the prestige frequently attached to theoretical orientations -- as contrasted to the limited recognition or importance granted to practical field work -- contributes to a perceived difference in status that does not encourage coordination between extension and research (especially in cases where effective extension work is limited).

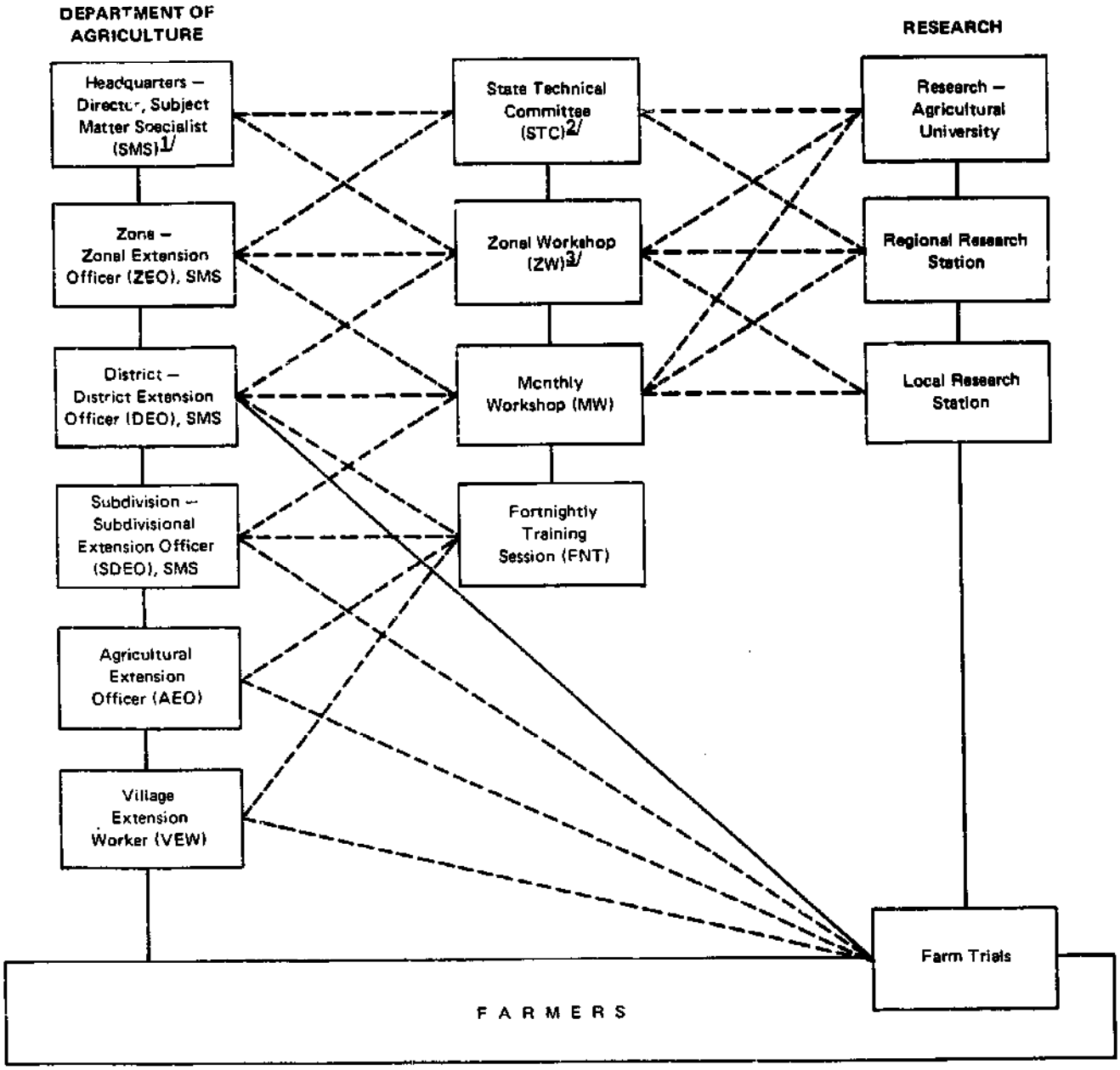
The dynamic, regular contact of extension workers with farmers under the training and visit system of extension makes effective linkages between research and extension even more important than would otherwise be the case. Consequently, to support training and visit extension, the linkages between extension and research should be strengthened by a number of systematic procedures that encourage interaction between extension and research staff. Figure 13.1 summarizes the main extension and research bodies involved and the chief linkages between them.

The most formal of the procedures facilitating extension/research interaction are joint extension/research committees and workshops where production recommendations and applied research and farm trial priorities and programs are established and evaluated. Such committees and workshops provide a framework for extension/research interaction, but effective linkages depend at least equally, if not more so, on a number of less formal measures. These include informal contacts between extension and research staff; exposure to one another during training programs when extension staff are trained by research; collaboration in field testing and farm trials; and visits of extension staff to research stations and of research staff to farmers' fields. Some possible systematic and less formal means of linkage are reviewed below.

1/ Adaptive research (the transfer of technologies established through applied research and their verification on farmers' fields) is often the responsibility of the Department of Agriculture, while basic and applied research are generally done outside of it. The location of research (in or outside the Department of Agriculture) varies among countries. Even when it is in the one organization, however, close linkages between extension and research do not necessarily exist.

EXTENSION / RESEARCH LINKAGES

Figure 13.1



1/ SMSs at all levels include Training Officer.

2/ Representatives of related development departments as well as agriculture and input and marketing organizations and representative farmers participate in STC, ZW, MW, and FNT. In addition to STC, ZW, MW, FNT, and farm trials, important venues of interaction are joint extension/research field trips, participation in special training courses and workshops, extension input into research programming (and vice versa), and extension visits to research stations.

3/ District Technical Committees may operate in place of, or in addition to, the Zonal Workshop.

——— = control.

– – – – = participation (only regular participation indicated).

Formulation of Production Recommendations and Research Proposals

The formulation of both production recommendations and research proposals must be a two-way process. Recommendations must be based on the findings of research (both applied and adaptive research) and on actual field and production conditions as reported by extension staff and farmers and in light of the field experience of researchers. To help ensure that recommendations benefit from the input of both extension and research and, consequently, are relevant to farmers, they are established through a series of meetings of different groups, each of which includes representatives of research and extension and representative farmers. These groups usually include a State Technical Committee, seasonal zonal workshops, and monthly workshops. Whether the preseasonal meeting is at a zonal or district level may vary between extension services, and is not in itself significant. The main point is that once before each season, the best available extension and research staff should meet to review last season's recommendations and research and extension activities, and to formulate plans and general production recommendations for the coming season. The more localized the meeting, the more effective it is likely to be; the degree of localization depends frequently on the availability of suitable research and extension participants, but significant zonal variations in agroecological conditions that warrant a separate meeting should be taken into account.

Monthly Workshops

The frequency, activities, and composition of monthly workshops make them one of the most important forms of extension/research linkage. Monthly workshops serve mainly to train Subject Matter Specialists (SMSs), but they also play a critical role in the formulation of production recommendations, in the planning of farm trials, and in the analysis and interpretation of the results of the trials. The importance of monthly workshops is suggested by the fact that, in some areas, a District Extension Agronomist (at a university or research station) has as his main responsibility the task of organizing the workshops and of ensuring that appropriate research and other training staff participate.

The two-day multidisciplinary monthly workshops are attended by SMSs, Subdivisional, District, and Zonal Extension Officers, as well as resource persons (or "trainers") who, generally (but not always), come from research. At monthly workshops, recommendations are adjusted in the light of experience with existing recommendations, the results of farm trials, and prevailing seasonal and field conditions. Workshop participants review the findings and progress of field trials and suggest topics for new trials; they evaluate the success of fortnightly training, and indeed of production recommendations, by determining how well previous recommendations have been understood and accepted by Village Extension Workers, Agricultural Extension Officers, and farmers; and they select recommendations and impact points for the coming fortnights. Selecting appropriate production recommendations and their impact points is a main function of the workshops. To ensure adequate and specific treatment of all the points, monthly workshops should be held at a district level if possible. A resource person should be appointed for each main crop to coordinate production recommendations and research activities relating to the crop.

Seasonal Zonal Workshop

The evaluation and programming of research and extension activities at a zonal level -- a common agroecological zone, which usually comprises the area of several monthly workshops -- are the responsibility of the seasonal zonal workshop. The workshop is normally organized by the state Director of Research in collaboration with the Director of Extension, and comprises both senior research staff and district and zonal extension staff, including Subject Matter Specialists. The main functions of the zonal workshop (which meets before each season) are to review for the zone as a whole: (1) proposed production recommendations for major crops in the light of research findings, field experience, and the results of farm trials; (2) research priorities and research proposals; (3) plans for and results of farm trials; and (4) plans for applied research activities, including verification trials at a number of locations. In the same manner that the seasonal zonal workshop takes account of state-wide priorities and adapts these to the agricultural production realities and priorities of the zone, so will monthly workshops adapt the findings and recommendations of the zonal workshop to local conditions.

State Technical Committee

The State Technical Committee provides guidance and direction to all research and extension activities in the state. The Committee meets before each season under the leadership of the Secretary of Agriculture. Its members include senior staff of research organizations and the Department of Agriculture. Through both the review of material from seasonal zonal workshops and independent initiative, it is able to coordinate and guide the work of research and extension on a state-wide basis. The State Technical Committee reviews and revises, as necessary, research plans (including guidelines for farm trials), objectives, and results. It establishes the general concerns of the extension service by approving sets of general zonal recommendations derived from state agricultural priorities and experience. Broad recommendations will subsequently be refined at seasonal zonal workshops and monthly workshops to fit specific local conditions before being presented at fortnightly training sessions. Similarly, general research directions established by the State Technical Committee are refined to fit both broader research priorities and local circumstances at regional research stations (usually by the programming committees of the research institutions) and (for farm trails) in zonal seasonal and monthly workshops.

Research Involvement in the Training of Extension Staff

The Department of Agriculture is responsible for most training of extension staff, but an important role in training is played by research; consequently, training courses can have a secondary role of encouraging professional contact between extension and research. 2/ While research staff

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2/ Preservice, orientation, refresher, and fortnightly training, as well as some special short training courses, are usually organized and conducted for extension staff by the Department of Agriculture.

are often the trainers on short courses for extension staff, the most frequent and regular involvement of research in the training of extension staff comes through monthly workshops. All Subject Matter Specialists and Subdivisional and District Extension Officers attend monthly workshops. Monthly workshop resource persons may be anybody with experience in a particular field, but the main training responsibility falls to research staff. To ensure the consistency and appropriateness of recommendations and impact points, as well as to build up cumulative pressure on research to solve farm problems, resource persons should be available at workshops on a long-term basis (i.e., at least for the duration of a season). Finally, it may be noted that, through contact with extension staff on field visits and during visits to research institutes, research staff also act as informal trainers.

Other Forms of Linkage

In addition to being involved together in the formulation of production recommendations and research proposals and in training, extension and research are linked in a number of other ways. Although generally informal, these ways are no less significant than the formal mechanisms noted above and should be encouraged by extension and research staff alike.

Field visits are an important means of extension/research contact. Research staff must make frequent field trips to review specific field problems raised by extension staff (usually, but not only, in monthly workshops), general field conditions, and farm trials, and to assess farmers' reactions to production recommendations. Extension staff should encourage these visits by inviting research staff to accompany them to the field and by arranging for transport if this is a constraint on the mobility of research staff. Extension staff (especially SMSs) should be encouraged often to visit research stations to review research activities and findings in their particular areas of interest and relevance and, generally, to update their technical knowledge. Extension and research staff should make joint field trips to review the progress of farm and other trials. Finally, extension and research staff will also have informal contacts deriving from areas of individual interest and participation in joint workshops and courses.

The effectiveness of these informal contacts, as indeed of all research/extension linkages, depends on the realization of the significant contribution each field can make to the other. Just as research support is required for effective extension, extension staff have an important role in supporting research. Through ensuring continuous exposure to farm production conditions and constraints, extension should encourage research's orientation toward problems that are relevant to a majority of farmers. Frequent visits to the field and participation in joint meetings, workshops, and farm trials are vital for the necessary close mutual support of extension and research, and every possible step should be taken by extension and research staff to establish and strengthen the formal and informal linkages upon which this support depends.

Chapter 14

Applied and Adaptive Research

Summary

Applied research is the development of new technology and its verification under different agroecological conditions. In many areas, applied research is the responsibility of agricultural universities or other research organizations rather than the Department of Agriculture. Adaptive research -- which is referred to as "farm trials" in order better to represent its nature -- is the adaptation of general recommendations to specific farming situations, in particular to farmers' resources and abilities, cropping patterns, and actual farm conditions. Adaptive research is usually the responsibility of the Department of Agriculture, although farm trials are planned by extension and research together, executed by extension, and analyzed by extension and research. Subject Matter Specialists (SMSs), Agricultural Extension Officers (AEOs), and Village Extension Workers (VEWs) are all closely involved in farm trials, which are also reviewed in seasonal and monthly extension/research workshops.

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As there often is some confusion about the roles and objectives of applied and adaptive research, we propose the following distinction: applied research is the development of new technology and its verification under different agroecological conditions, while adaptive research is concerned with the adaptation of general recommendations to specific farming situations. Adaptive research, thus, adapts the findings of applied research to farmers' resources, abilities, cropping patterns, and farm conditions. It is

the intermediate step between the general recommendations derived from applied research and the specific recommendations discussed with individual farmers. Despite these distinct roles and objectives, adaptive research is frequently in practice merely a replication of complex applied research trials by the Department of Agriculture on its farms or on farmers' fields. Here, we advocate a clearer division of responsibility between the university or other nondepartmental research organizations (applied research) and the Department of Agriculture (adaptive research). Moreover, as the term "adaptive research" is confusing, it is suggested that it be replaced by the term "farm trials."

Applied Research

The responsibility for applied research rests with agricultural universities or other nondepartmental research organizations, usually coordinated by a national agricultural research organization. In India, the state agricultural universities are backed by the institutions of the Indian Council of Agricultural Research and by coordinated research projects, the capacity of which to provide research guidance is being enhanced through establishing or strengthening zonal research stations and substations. In addition, the agricultural universities make use of university and Department of Agriculture farms to verify findings under slight variations in agroclimatic and management conditions. Where university stations or departmental farms are not available for this purpose, the university conducts experiments on farmers' fields. The purpose of such verification trials, which should be few in number, is to confirm applied research findings to varying agroecological conditions. The trials are managed by scientists; where they are on farmers' fields, the farmer makes his land available and does the cultivation under the guidance of research staff, but has no other involvement in, or resonsibility for, the trial. Applied research trials conducted on farmers' fields may be executed in cooperation with the Department of Agriculture. Similarly, on-farm trials are conducted in the case of the prerelease testing of new varieties that require trials at different locations.

With this kind of an organization, there may be considerable research gaps. To improve the feedback on research in India, the role of the Department of Agriculture in the research formulation process is being strengthened, especially in conjunction with the Indian Council of Agricultural Research. The results of applied research are reviewed in the preseason meeting of the State Technical Committee in order to derive general extension recommendations from them on a statewide basis. Some recognition of zonal variations is given in these recommendations. However, the strengthening of the zonal research capacity and the operation of seasonal zonal workshops makes it possible to formulate extension recommendations for each agroecological zone.

Attention must be paid to the economic analysis of applied research results. Such analysis helps extension staff adjust the recommendations to variations in resources, prices, and risk. Zonal research stations are being equipped to provide such data. "Steps-in-technology" experiments that will provide information about the economics and risks of various combinations of local and improved technology with respect to variety, fertilizer use, cultivation practices, pest control, and so on, should be encouraged.

Farm Trials (Adaptive Research)

Adaptive research -- or farm trials -- has often tended to be a replication of complex applied trials on departmental farms and farmers' fields by Departments of Agriculture. Such work is superfluous; moreover, the possibly unscientific design and analysis of these replications, in some instances, can cause confusion. However, great scope for adaptive research exists between the applied research recommendations of universities that increasingly distinguish between variations in agroecological, resource, and risk situations, on the one hand, and the farmers who test themselves whatever recommendations they receive -- normally from the extension service -- on the other. In spite of the increasing refinement of the recommendations emanating from applied research, there is a considerable need to test these recommendations under varying farming conditions. This is best done through a systematic program of adaptive research. However, as adaptive trials should be executed on farmers' fields, designed in collaboration with the farmer and largely managed by him, it is better to call this type of work "farm trials."

Farm trials allow the Department of Agriculture to adjust general recommendations derived from applied research to different farm situations. On the basis of the accumulated experience of such trials, extension staff are in a better position to make appropriate recommendations for the wide variety of farming situations within their area of work. The adjustment is done on the basis of testing:

1. how recommendations fit into different farming systems (cropping sequences);

2. how various management levels, local practices, and variations in local agroclimatic conditions influence the return on recommendations; and

3. what technology best fits a particular resource and risk situation (partial "steps-in-technology" analysis). 1/

1/ Complete "steps-in-technology" analysis on a research station may involve all permutations of

(a) local (V_L) and improved (V_I) variety;

(b) low (F_L), medium (F_M), and high (F_H) fertilizer use;

(c) local (P_L) and improved (P_I) pest control; and

(d) local (C_L) and improved (C_I) cultural practices.

As an example of particular "steps-in-technology" analysis, a farm trial in low resource and risk aversion situations may compare $V_L F_L P_L C_L$ and $V_I F_I P_I C_I$.

Farm trials should be simple. They should compare only two or three alternatives of relevance to the farmer in question, including one alternative reflecting his present practices. There should be no replications, although the same trial should be repeated in a number of similar farming situations within one agroecological zone. The size of the trial plot should vary with the type of trial and with the size of farmholding, but should be large enough to allow normal farm-sized operations. The recommendations being tried should be compatible with the main farming situations in the zone (rainfed or irrigated production, cropping pattern, farm size, other resources, and management levels).

Farm trials are planned by extension and research together, executed by extension on farmers' fields (often by farmers under the guidance of extension), and analyzed by both extension and research. The number and type of trials should be based on the recommendations of seasonal zonal workshops and be discussed at monthly workshops. Village Extension Workers (VEWs), with the help of Agricultural Extension Officers (AEOs) and Subject Matter Specialists (SMSs), should select the farmers on whose fields trials will be conducted. Trials are planned and their results analyzed by SMSs together with research.

The VEW in whose area a trial is conducted is responsible, under the guidance of his AEO, for laying out the trial, recording observations, and harvesting. He should harvest a sample of the area in accordance with normal crop-cutting techniques. The harvested sample should be threshed and the produce, including by-products, should be accurately weighed after drying.

A VEW should be allocated one or two farm trials per season in his circle -- that is, one or two farm trials for about 800 farm families. The farm trials should take place as much as possible near his headquarters or at another convenient site so that he is able to observe critical operations without having to upset his visit schedule.

Participating farmers, who may be either contact or other farmers, should bear the cost of a trial unless the input costs are substantially higher than what they would incur with their current practices and/or unless the risks involved are significant, in which case the extra cost should be borne by the department. (Normally, high-risk trials or those involving high input costs should have a low priority as farm trials.) No other compensation is required by the farmer, although in the unlikely event that a trial results in considerable loss to the farmer, the department may compensate him.

Farm trials must be visited at least three or four times a season by SMSs and AEOs, sometimes in the company of research staff. Such visits are needed in order to record ancillary observations that will help determine whether the trials will lead to valid conclusions. In particular, attention should be paid to damage to the crop. Such damage must be classified as either being inherent in the treatment -- in which case the plot results would be included in the analysis -- or extraneous -- in which case they would be excluded.

For each trial, SMSs should draw up data-recording sheets in conjunction with research staff. The data to be recorded should help identify the various key components that significantly influence yields, but do not necessitate a very large number of measurements. Data recorded should cover the farming situation, observations on the trials during the growing season, yields, economic analysis (giving costs and returns per unit area and output), and farmers' reactions to the methodology and results of the trial. Wherever possible, data from farm trials should be analyzed statistically on a zonal or district basis. Even if the variability is too high to reveal significant differences, the results of farm trials will give SMSs a cumulative experience for use in their work. The results of farm trials should be discussed in monthly workshops; conclusions and recommendations for further trials should be reported in seasonal zonal workshops. Much of the analysis of the trial results should be done by subdivisional SMSs, with headquarters and district SMSs overseeing the analysis in their respective areas, but further advanced analysis of the results may be done later by research staff (including the District Extension Agronomist).

In a situation where responsibility for applied research and farm trials is divided between institutions, university research workers should participate in farm trials, since the trials will include the most appropriate applied research results that are likely to benefit farmers in a particular area, situation, or condition of crop growth. Unintentionally, farm trials do not always include the best products of applied research. This is due in part to insufficient time spent by research and extension workers on looking closely at available research data in order to choose the most useful results for further investigation through farm trials. Participation in farm trials by researchers not only assists them in selecting key recommendations for further trials, but also in the identification of research gaps. To ensure adequate participation by research staff in farm trials (and their exposure to farmers' production situations in general), it is useful to establish a minimum number of trials with which they must be closely associated (as well as a minimum number of days each month that they should spend in farmers' fields).

Related Issues: Demonstrations and Departmental Farms

Demonstrations. Under training and visit extension, "demonstrations" of particular crops or practices, in the sense that they are organized, financed, and conducted by the Department of Agriculture or a university, are not required. Every adoption of a recommendation by a farmer is in effect a demonstration -- and should be promoted by extension staff as such. Moreover, since a farmer adopts a recommendation on his own initiative and uses his own inputs (with the advice of the extension staff), often (and most advisedly) at first on only a small part of his land, other farmers may closely identify with it. The resulting numerous small, local "demonstrations" are more effective than large-scale, externally organized and financed ones, if only for the reason that the practices and constraints involved can be appreciated by all farmers who observe them. The extension agents' organization of field days among farmers to show what other farmers have achieved is welcome: in fact, even where only a few recommendations have been tried by farmers on small areas, these should serve as "natural" demonstration plots during field days organized by extension.

Department of Agriculture farms. Where responsibility for basic and applied research falls outside the Department of Agriculture, departmental farms should not be developed as mini research stations, as this could encourage departmental self-sufficiency rather than cooperation with research and could result in an inefficient use of scarce scientific resources. Rather, departmental farms should be used for verification trials (particularly of new varieties) by research staff and as training grounds for extension staff. They are a good site for fortnightly training sessions, since land and crops are available for the necessary practical work. Departmental farms should also be used by SMSs to test some of their own ideas, though care must be taken that this "testing" does not lead to another research program.

A senior extension officer visits the field *D. Benor*

Technical advice on animal husbandry is part of extension's work
Department of Agriculture, Government of Thailand

Chapter 15

Supervision

Summary

Supervision alone cannot produce good agricultural extension but good extension is rarely possible without effective supervision. Supervision should be tailored to fit the training and visit system of agricultural extension. It must not be based on paperwork or report writing. As supervision takes place at the location of the activity to be supervised, extension supervision is mostly conducted in the field, the only exception being supervision of training. Supervision must be thoroughly planned and thoughtfully implemented. The objective of supervision is to guide staff and help them become more effective not merely to check whether they are doing their assigned tasks as required. Aside from Village Extension Workers (VEWs), all extension staff have some supervisory functions, the nature and intensity of which vary according to their level of responsibility. Extension supervisors at all levels, should check (among other things) the end result of extension's work: whether farmers benefit economically and otherwise from extension.

* * * * * *

While it is obvious that the training and visit system of agricultural extension depends on well-conceived and well-conducted supervision of extension staff in order to be effective, it is not always clear how this can be achieved. Supervision of extension activities cannot be conducted in the same way as supervision of administrative work because of its different nature. Supervision must be tailored to fit the needs of the extension service.

Supervision of extension activities should not be paper-based or report-oriented. Staff are not supervised or evaluated on the basis of the paperwork or written reports they produce. In fact, very few reports are required of any extension staff. Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) are only required to keep a daily diary (with no copies to be sent to anyone) to record their activities and the main problems they encounter in the field, especially with respect to farmers' reactions to production recommendations. These diaries are an important reference source for the VEWs and AEOs themselves. The diaries should not be viewed by supervisory staff as a means to check on or evaluate VEWs or AEOs, although they can help supervisors better to understand the field situation and problems encountered by these officers.

Purpose of Supervision

The purpose of extension supervision is not merely to check that staff do their work in a correct, timely manner; more important is the objective of assisting and guiding staff to do their assigned tasks effectively. While keeping in mind the basic duties of all extension workers, supervisory staff should focus on the quality of the work and on ways to improve the effectiveness of individual staff, which, in turn, will benefit farmers and the extension service at large. At the same time, supervisors should be careful not to take over the job of the staff they are supervising (especially of VEWs), or to contradict them in front of farmers, as this will damage their credibility and limit their effectiveness.

Supervision cannot be haphazard or casual: it must be highly planned. All supervisory staff are expected to spend a considerable number of days in the field each fortnight, varying from eight days for AEOs to four to six days for other staff (excluding the time spent in fortnightly training sessions or monthly workshops). The time in the field should be spent primarily on scheduled visits, although a small number of visits may be unscheduled. The schedule of visits of the supervisors should normally be known to all staff. Unscheduled visits are made to check on staff who may not be performing adequately, or in response to particular field or training problems. Visits by supervisory staff should be so arranged that a broad picture of the performance of all field staff and their activities is systematically obtained and periodically updated.

The main activity of agricultural extension is diffusing improved production technology and providing assistance to solve farmers' technological problems. Since supervision cannot be conducted through a review of written reports, it must be done at the location where the activity to be supervised normally takes place: field activities are supervised in the field, training is supervised in training sessions. As the objective of extension is to help farmers improve their production and incomes, the effectiveness of all extension work should be apparent at the farm level in the quality of the agriculture practiced and in farmers' awareness of the functions and operation of the extension service. Contact with farmers and knowledge of their production techniques with respect to recommended practices, therefore, provides an indication of the quality of most aspects of

extension work -- from the relevance and timeliness of production recommendations to the performance of field staff -- and of those aspects of the extension system that are not operating adequately. For example, irregular visits by VEWs or poor adoption of recommendations by farmers suggest that supervision by AEOs (and, consequently, by Subdivisional and District Extension Officers) is lacking. Similarly, if farmers do not adopt recommendations they have learned from VEWs, this is frequently due to problems in feedback from extension workers to research or of research not taking full cognizance of farmers' production constraints and technological needs.

Extension supervision must take place primarily in fields (as opposed to villages). Contact with "farmers" in villages has limited use as such meetings are frequently dominated by nonpracticing farmers and local personalities, and can lead to an erroneous picture of field practices, production constraints, and the performance of extension workers. Moreover, except in extraordinary circumstances, farmers should not be summoned to attend a meeting with supervisory staff: the work of extension field staff should not be interrupted by supervision requirements, nor should that of farmers. Meetings with individual farmers in their fields invariably attract considerable numbers of other interested farmers.

Method of Supervision

On each field visit, supervisory staff should spend a considerable amount of time at one particular place. Except on the rare occasions when unannounced visits are made to check on staff who it is believed are not doing their work as required, there is no use in quick visits. The AEO, for example, should spend at least one half day in the group of each VEW he visits, observing and guiding the work of the VEW, and talking with farmers of the group. (Where the AEO visits only one VEW a day, it will be a full day.) Other staff usually do not need to spend as much time as the AEO in one group, but a visit to one place of less than two or three hours is rarely adequate to gain an accurate impression of the functioning of extension in a particular area or to provide useful guidance to field staff.

In addition to being aware of shortcomings and constraints in extension work, supervisors should identify the achievements of field staff. Giving credit where credit is due is a necessary recompense for the isolated and difficult circumstances in which VEWs and other field staff often operate. If their achievements are not acknowledged and appreciated, even the best extension workers soon cease, or at least reduce, their activities.

From the point of view of teaching production recommendations to farmers, extension is conducted only by the VEW. The tasks of all other extension staff support the work of VEWs. This support ranges from the frequent direct individual contact of the AEO with all the VEWs in his range to running training programs and assisting in field production problems by Subject Matter Specialists (SMSs), to the support and review of field activities, training, and input coordination by subdivision, district, zone, and headquarters staff. Supervision occupies a good deal of the time of staff at all levels apart from the VEWS, and is an integral part of their functions.

Supervisory visits to the field focus on organizational (methodological) and technical matters: the importance given to either depends on the level of responsibility of staff making the visit. Most important, however, is to check the end result: Do farmers benefit from extension? Do they obtain higher yields and incomes? This check should be done by supervisors at all levels.

Some typical matters reviewed in field visits include:

ORGANIZATIONAL MATTERS

A. Points reviewed by supervisors of Village Extension Workers, Agricultural Extension Officers, and Subdivisional Extension Officers

1. Do AEOs plan and conduct field trips to support the work of their VEWs?

2. Do staff spend sufficient time in farmers' fields on visits?

3. Is the VEW circle and AEO range correctly delimited?

4. Are farmers of the circle correctly divided into groups?

5. Have contact farmers been selected correctly?

6. Are visits by VEWs (and other staff) regular (as required)?

7. Do most farmers know the VEW and the days of his visit?

8. Are all contact farmers active (i.e., meet the VEW regularly) and follow some recommendations?

9. Is the VEW using simple visual aids?

10. If group meetings are held, are they useful to farmers?

11. Are farm trials being conducted?

12. Are field days organized?

13. Does the VEW use the extra visit days effectively?

14. Are VEWs (and other staff) doing nonextension tasks?

15. Are there housing and/or transport constraints on extension activities?

16. Are all VEWs (and other staff) in position?

17. Do all VEWs, AEOs, and SDEOs participate in fortnightly training, and SDEOs in monthly workshops?

18. Does the AEO try to strengthen the work of the VEW, or does he duplicate the VEW?

19. What are the reactions of extension staff and farmers

20. What special training do VEWs and AEOs require?

B. Points reviewed by supervisors of Subject Matter Specialists

1. Do SMSs participate in fortnightly training and monthly workshops, as required?

2. Are SMSs in regular, frequent contact with research workers?

3. Are SMSs spending about equal time in field visits, giving training, and being trained by and in contact with research?

4. What training are SMSs receiving and what other training do they require?

5. Are research staff making field visits?

TECHNICAL MATTERS

1. Are farmers aware of the main recommendations of the particular fortnight?

2. Are the recommendations discussed in training being taught correctly to farmers by VEWs?

3. Are farmers encouraged to try new recommendations on a small area?

4. Are recommendations relevant?

5. To what extent are farmers (contact and others) following recommendations?

6. Why are (some) farmers not following (some) recommendations?

7. Do recommendations and other extension activities adequately resolve immediate field problems?

8. Are farmers receiving satisfactory answers to the production problems they raise with the VEWs?

9. Are farm trials being conducted and analyzed properly?

10. Are recommendations having their intended impact on production and income?

Training activities (particularly fortnightly training and monthly workshops) should also be supervised regularly. The quality of training is readily apparent from contact with extension staff and farmers in the field and, consequently, may be partly supervised in the course of field supervision. Some aspects, however, need be supervised in the training environment. Questions to be kept in mind by officers reviewing training sessions -- normally district-level staff and above -- include:

1. Are fortnightly training sessions and monthly workshops held as scheduled?

2. Do all intended participants (including trainers) attend?

3. Do sessions cover trainees' experience with earlier recommendations, field problems, input supply and market situations, current recommendations, and communication skills for effective transmission of recommendations to farmers?

4. Are training sessions practically oriented?

5. Are training topics timely and relevant with respect to farming practices and field problems?

6. Does training concentrate on a small number of relevant recommendations and on impact points for these?

7. Are recommended practices appropriate for the majority of farmers?

8. Are appropriate visual aids used?

9. Are participants encouraged to raise field problems and discuss their experiences?

10. Do SMSs receive advice on how to teach recommendations to AEOs and VEWs (and VEWs to farmers)?

11. Are there adequate physical facilities for training?

12. Do trainees practice the skills they learn and that they are supposed to teach later to other extension staff or farmers?

13. Do Training Officers perform their required role?

Supervision should determine whether the extension system is operating effectively in both organizational and technical areas, and identify key constraints to its effectiveness. Common constraints may be the result of the fact that the VEW and other staff are not interested in their work or do not undertake the required field activities, the VEW does not have appropriate messages to teach farmers, training is inadequate, or leadership and guidance for extension staff is poor. Supervisory staff should be able to identify the causes of any constraints and suggest appropriate remedial steps.

Subdivisional and District Extension Officers and zonal/headquarters staff review training activities and input coordination, in addition to extension field work; AEOs and SMSs only review extension field work (including farm trials). Research staff should be encouraged and helped to visit the field regularly to review diagnostically agricultural production and to resolve particular problems brought to their attention by extension. During field visits, research staff should review the technical matters noted above.

The frequency and nature of field visits in farmers' fields by supervisory staff (i.e., excluding their involvement in training activities) is summarized in Table 15.1.

Field Visits by Supervisory Staff — Table 15.1

Staff	Frequency of field visits (minimum days per fortnight)	Area reviewed	Comment
Agricultural Extension Officer	8	Organizational and technical	Visits alone: to each VEW circle at least once per fortnight.
Subdivisional Extension Officer	6	Organizational and technical	Visits alone or with SMS team: to each AEO range regularly.
District Extension Officer	6	Organizational, in particular	Visits alone or with SDEO and other officers: to each subdivision regularly.

Staff	Frequency of field visits (minimum days per fortnight)	Area reviewed	Comment
Zonal/HQ officers and Directors of Extension	6	Organizational, in particular	Visit alone or with SMSs and other officers: to each district regularly.
Subject Matter Specialist - Subdivision	4	Technical, including recommendations, field problems, and farm trials	Visit individually, as part of SMS team, or with research scientists; regular coverage of all crop production and agroecological zones as well as visits in response to problems.
Subject Matter Specialist - District	4-6		
Subject Matter Specialist - HQ	4-6		

Supervision alone cannot produce good agricultural extension, but sustained good extension is not possible without effective supervision. If correctly done and a positive personal example is conveyed by supervisory staff to all levels, supervision performs an important guiding and motivational function, particularly for the VEWs and AEOs upon whom effective extension largely depends.

Chapter 16

Diaries of Village Extension Workers and Agricultural Extension Officers

Summary

The only written report required of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) is the daily diary. Properly used, a well-designed diary can greatly enhance the effectiveness of extension work. Diaries are used to record three main items: (1) basic information about the VEW's circle or AEO's range; (2) the extension worker's daily activities and problems encountered in the field; and (3) the main points discussed in each fortnightly training session and AEO/VEW fortnightly meeting. With such information, the diary serves as a guide to VEWs and AEOs in their field work and training, and to supervisory staff in their guidance to extension workers and to the problems they encounter in the field. It should not, however, be used to monitor or evaluate an officer's work. A diary should be relatively small and sturdy, so that it can withstand constant use in the field (where problems and observations are recorded as they arise). It should be available for perusal by officers, who should write substantive comments in it whenever they visit staff in the field. No copies should be made of the diaries and, of course, no copies should be sent to any officer.

* * * * * *

One of the characteristics of the training and visit system of agricultural extension is the virtual absence of written reports, especially at the field level: most reports on extension activities are given orally. The only written record required of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) is a daily diary and possibly a short

summary of their activities and results at the end of each season. Not only must they not be given additional records to keep, but the information recorded in the diaries must be kept to a minimum.

Diaries of both VEWs and AEOs are used to record three main items. First, they serve as a handy record of relevant basic data of the area served by the officer. In the diary, the area of the VEW circle or AEO range is defined, and the basic characteristics of farmers and the agriculture practiced in the area are recorded. Second, they are a daily record of the activities of the VEW or AEO, and of crop conditions, production problems, and farmers' reactions to extension recommendations. The diaries are a personal record of an officer's activities that is useful for his extension field work and for his guidance at subsequent training sessions and meetings with research or extension staff. Third, since the main recommendations and impact points from fortnightly training sessions are recorded in them, diaries are an important day-to-day guide for the VEW or AEO in his field activities. Used to record such information, diaries indicate to supervisory staff on their field visits the activities of the VEWs and AEOs and the problems encountered by them, and so are useful to supervisors in their efforts to improve staff effectiveness.

Diaries are primarily working documents designed to help VEWs and AEOs work effectively and must not be used as a means of evaluating or monitoring the work of extension staff. If diaries are used for evaluation of staff, they inevitably become inaccurate and biased records (and, thus, become invalid as a monitoring or evaluating tool). Extension field staff can be supervised only in the field, and should be evaluated on the basis of the quality of their extension field work. Diaries are only useful if written and treated as frank, personal documents. No copies of their content should be made or required.

Since they will be carried to the field each day by VEWs and AEOs, diaries should be relatively small and sturdy. They need not cover a full year. So long as diary pages have not been dated in printing, an officer may start a new diary as soon as he finishes one. The comments that follow on diary format are suggestions of key features that should be incorporated; additional information should not be recorded without careful reference to the diary's intended function.

VEW Diary

The VEW maintains in his diary basic information on his circle and a daily record of his activities, including training attended. The VEW completes the basic information as he first begins to work in a circle. Where he is replacing another VEW, the information should be based on that of the previous VEW's diary, if possible. When a new diary is started, the basic information recorded in the previous one should be transferred to the new diary (and be updated as necessary in the process).

The basic information section of a diary should start with a sketch map of the VEW's circle. The map should indicate the main features of the circle, as well as the approximate boundaries of each of the eight farmers' groups. The headquarters of the VEW should be marked.

Next to the map should be the VEW's fortnightly visit schedule. Only one such schedule is required since the same schedule is followed each fortnight. The visit schedule should include the name of the group to be visited on each visit day, the day when the fortnightly training session will be held, the day for the meeting of VEWs with their AEO, "spare" days without a preprogrammed visit that will be used for extra visits, and holidays. The AEO and Subdivisional Extension Officer (SDEO) should also have a copy of this map and visit schedule to assist them in their field activities.

Eight pages (one per group) should be used to record information on each of the VEW's farmers' groups. This information will usually (and need only) be approximate, since details are unlikely to be available on individual groups (unless, possibly, a group comprises an entire village). The VEW should record in tabular format for each group: the total population and the number of effective farm families; their distribution according to the size of their operational holdings (the categories used will depend on the average size of holdings in the area, but should reveal the distribution among "small," "medium," and "large" farmers); the number of tenants and of sharecroppers; the total area cropped; the main crops grown by season; and the area irrigated each season. There should be room on this page to include special points about a group. If the land of a group is prone to flooding, for example, this should be noted. If any of the above information is available only for a number of groups together (e.g., for those in one village), it may be recorded as such, although an estimate may be made of each group's share.

The final page of the basic information section is used to record data on the contact farmers selected for each group. Next to the name of each, the size of his operational holding and the area that is irrigated should be recorded, as this will help ensure that contact farmers are representative of other farmers in the group.

The rest of the diary -- the part to be completed daily by the VEW -- has two different types of pages. One is a record of each fortnightly training session; the other is a daily visit record. The training page is repeated after every eleven pages of daily visits, pages not being included for the two Sunday holidays in each fortnight. 1/ The eleven pages for daily visits cover the eight scheduled visits each fortnight, two unscheduled ("extra") visit days, and the day of the AEO/VEW meeting. In sum, the diary is arranged as shown in Table 16.1.

1/ An alternative arrangement is to have sufficient training pages for the entire period covered by the diary located after the basic information section and immediately before the daily visit pages.

Format of Diary of a Village Extension Worker — Table 16.1

Diary page number	Contents
	Basic information
1	Map of VEW circle
2	Fortnightly visit schedule
3-10	For each of the eight farmers' groups (one per page), basic information and names of contact farmers
	Daily record
11	Fortnightly training record
12-22	Daily visit record
23	Fortnightly training record
24-34	Daily visit record
and so on	

Note: Where training pages are grouped together before the daily visit pages, the format for a one-year diary would include: pp. 11-36, fortnightly training record; pp. 37 onwards, daily visit record.

On the fortnightly training page, the following information should be recorded: the date of the fortnightly training session and the dates of the fortnight for which the training is relevant; main topics discussed; recommendations and impact points presented; special points to note; and answers to questions raised by farmers in the previous fortnight for which the VEW did not have an answer. The special points should include information that could encourage farmers to adopt particular recommendations, such as the expected costs, benefits, and risks of recommendations. The VEW completes this page during and after each training session. In conjunction with any printed material distributed at the training session, these notes will serve as a guide to the VEW on field visits.

On the daily visit page, the VEW should record the day's date and the number of the group visited, as well as field conditions and the names of contact farmers with whom he met and discussed recommendations. The number of other farmers (not their names) with whom he met should also be noted. A most important part of this page is the record of the recommendations the VEW

discussed with farmers and of the problems raised by them or which the VEW observed independently, particularly as they relate to recommendations. The VEW need not write on each visit page the recommendations passed on to farmers as they will be fully recorded on the training page. But he should note any modifications he makes in the messages that he teaches and discusses. Farmers' reactions to both previous and current recommendations should also be noted. The VEW should record the advice he gave farmers in response to their problems. Finally, a section of the page should be set aside for comments by extension or research staff who visit the VEW in the field. An example of a daily visit page of a VEW diary is given in Figure 16.3 on page 121.

The VEW will complete this daily visit page in the field during each visit. On the unscheduled visit days, the VEW should record his activities -- make-up visits, visits to research stations, work with farm trials, and so on. Important points from the fortnightly meeting with the AEO are recorded on the appropriate daily visit page. When on leave or absent for other reasons, the VEW should note this on the appropriate page, which otherwise is left incomplete.

AEO Diary

The format of the AEO diary is similar to that of the VEW diary. A first section of basic information, comprising a map, visit schedules, 2/ and general information is followed by daily visit pages -- that is, one page recording the recommendations and main points of a fortnightly training session, followed by eleven pages for field visits and the AEO/VEW meeting. 3/ The basic information section should be completed by the AEO as he is posted to a particular circle, on the basis of estimates from available material; the training, AEO/VEW meeting, and daily visit records are completed during the day in question. The SDEO should have copies of the map and visit schedules.

The map should indicate the main features of the AEO range, as well as the location of each VEW circle and headquarters, the approximate limits of farmers' groups within each circle, and the location of research stations and other institutions relevant to extension. The AEO should also keep with his diary a copy of the map of each VEW's circle, list of contact farmers, and visit schedule.

The monthly visit schedule should include the VEW circle and farmers' group (or groups) to be visited on each visit day, as well as other scheduled (for example, fortnightly training or the fortnightly meeting with VEWs) and unscheduled (such as make-up visits) activities. The AEO's visit schedule will be established and written-up before the end of the preceding month after consultation with the SDEO. A summary format of the AEO diary is shown in Table 16.2.

2/ AEOs generally visit to a schedule set in advance for each month. Sufficient pages should be allowed to record all the monthly schedules of the period covered by the diary.

3/ The fortnightly training (and also the AEO/VEW meeting) pages may be grouped together and come before the daily visit pages.

Format of Diary of an Agricultural Extension Officer — Table 16.2

Diary page number	Contents
	Basic information
1	Map of AEO range
2-3	Range details
4-15	AEO monthly visit schedule (one month per page)
	Daily record
16	Fortnightly training record
17-21	Daily visit record
22	AEO/VEW meeting record
23-27	Daily visit record
28	Fortnightly training record
29-33	Daily visit record
34	AEO/VEW meeting record
35-39	Daily visit record
and so on	

Note: Where the fortnightly training records and AEO/VEW meeting records for the period covered by the diary are grouped together before the daily record, the format of a one-year diary would include: pp. 16-42, fortnightly training records; pp. 43-69, AEO/VEW meeting records; and, pp. 70 onwards, daily visit records.

Basic information is recorded separately in tabular form for each of the eight or so circles in the AEO's jurisdiction. The information required is similar to that recorded by VEWs. It will probably be obtained from the same source as, and should be consistent with that in, the VEWs' diaries. For each circle, the AEO should record the total population and number of effective farm families, the distribution of these farm families according to the size of their operational farmholdings (in a small number of holding-size categories), the number of contact farmers in each group, the total area under crops, and the main crops and area irrigated each season. He should also record the chief input supply points for each circle.

The page completed for each fortnightly training day should be similar to the training page in the VEW diary. Date of training, recommendations and impact points discussed, relevant other points, and answers to problems raised by farmers should be noted. In addition, the AEO should record the name of any VEW of his range absent from the training session so that he can pass on to him, without delay, the main points of the training (on a special visit, if necessary).

Another page should be used regularly for the day the AEO holds his fortnightly meeting with his VEWs. This page should be designed so that there is room to record points discussed, queries raised by VEWs, and other relevant matters. These pages, like the fortnightly training page, can either be grouped together before the daily visit pages or included at appropriate places.

The daily visit page will have room to record: date of visit, VEW circle and farmers' group visited, number of contact farmers and other farmers met, whether the VEW was working in the group as scheduled, and the work done by the AEO. It should also include questions raised by farmers and the response given, a description of field conditions, and some general estimate of farmers' reactions to and adoption of recommendations, including comments on factors affecting their adoption. In addition, the AEO should note relevant factors about the VEW's performance, as evident from the visit and contact with farmers; space should be left on the page for comments by visiting officers. An example of a daily visit page of an AEO diary appears in Figure 16.4 on page 122.

Both VEW and AEO diaries are only as useful as their compilers and other staff wish to make them. If they are completed routinely and are used by supervisory staff to monitor the compiler's work, they are more of a hindrance to extension than a help. But, if they are filled out thoughtfully and are used by the compilers as reference documents, daily diaries can contribute significantly to improving the quality of individual extension officers and, through them, of the extension service.

Village Extension Worker's Diary

Figure 16.3

Daily Visit Page: An Example

Date _____ Group _____

Contact Farmers Met in Fields

No. of Other Farmers Met
In fields _____
In meeting (if held) ____

Name	Name
1. _____	6. _____
2. _____	7. _____
3. _____	8. _____
4. _____	9. _____
5. _____	10. _____

Field Situation (weather, pests/diseases, unusual production constraints):

Recommendations Taught to Farmers (record only variation from standard fortnight recommendations):

Farmer Reaction to Previous Recommendations (extent of adoption, problems in adoption raised by farmers and other adoption constraints, adaptations suggested):

Problems Raised by Farmers (note own response):

Other Activities (farm trials, field days, meetings, etc.):

Comments by Visiting Officers:

Agricultural Extension Officer's Diary — Figure 16.4

Daily Visit Page: An Example

Date: _____ VEW Visited: _____ (headquarters) and today's group: _____

VEW Met: Yes___ No ___

No. of Farmers Met: Contact ____ Other _____

Farmer Awareness of -- Visit Day: good ___ poor ___

VEW's Work: good ___ poor ___

Field Situation (weather, pests/diseases, unusual production constraints):

Recommendations Being Taught by VEW (record only variation from standard fortnight recommendations):

Farmer Reaction to Previous Recommendations (extent of adoption, problems in adoption raised by farmers, and other adoption constraints, suggested adaptations):

Problems Raised by Farmers (note VEW and own response):

Quality of VEW's Field Work (involvement of contact and other farmers, field visits, teaching of recommendations):

Other Points (farm trials, field days, meetings, other AEO/VEW work):

Comments by Visiting Officers:

Tree crops are of importance to many farmers *T. R. Rao*

Chapter 17

Monitoring and Evaluation

Summary

Monitoring and evaluation is a management tool that can contribute significantly to effective extension. Monitoring keeps track of extension activities and progress in the implementation of the extension system. Evaluation determines the impact of extension activities, particularly on the production and income of farmers. Monitoring and evaluation of training and visit extension entails three functions, the first being done by extension management and the other two by a monitoring and evaluation unit: (1) routine monitoring of extension activities and their impact (staff employed, training conducted, field visits made, and so on); (2) monitoring and evaluation surveys of farmers covered by the extension service, focusing on visits made by extension staff, recommendations taught to farmers, and crop yields; and (3) special studies of particular aspects of the extension system. Reporting of all monitoring and evaluation must be done concisely and quickly if it is to be of use to management. To do their job effectively, monitoring and evaluation staff must be properly trained, be autonomous from the extension service, and have adequate mobility to conduct survey and other work as scheduled.

* * * * * *

Effective monitoring and evaluation contributes significantly to the quality of agricultural extension activities. Monitoring and evaluation is a tool that helps ensure the extension service operates efficiently, enables management to take the necessary corrective action regarding

shortcomings in extension operations, and provides policymakers with appropriate information on which to base decisions. It is not a substitute for direct field supervision, which is an integral part of training and visit extension, but it is an independent cross-check of the progress of field activities. Monitoring and evaluation is not a fault-finding mechanism, but rather a positive means to suggest areas requiring attention that may not be readily apparent through the regular in-field review of extension activities. It can create an atmosphere of trust, honesty, and self-criticism upon which effective extension depends.

Here, the essential features of a montoring and evaluation system for extension are outlined. A broader discussion of the basic issues involved in monitoring and evaluation and guidance on how to undertake monitoring and evaluation of extension activities may be found in M. M. Cernea and B. J. Tepping, "A System of Monitoring and Evaluating Agricultural Extension Projects," World Bank Staff Working Paper No. 272 (The World Bank, December 1977), and R.H. Slade and G. Feder, "The Monitoring and Evaluation of Training and Visit Extension in India: a Manual of Instruction" (The World Bank, October 1981). 1/ Cernea and Tepping cover a range of monitoring and evaluation procedures. The report is particularly useful for a review of approaches to and issues in monitoring and evaluation. Slade and Feder focus on sample surveys, especially the main monitoring and evaluation surveys, and the analysis of data derived from these.

There are numerous conceptual and methodological problems in the definition and implementation of monitoring and evaluation, particularly in evaluation. These are not discussed here. Staff involved in monitoring and evaluation, or who use data generated by monitoring and evaluation units, should be aware of these problems, however. They are advised to refer to the papers noted above.

Definitions and Means

Monitoring and evaluation are closely related activities. Monitoring keeps track of extension activities and progress; the information generated is also a basis for ongoing and ex post evaluation -- the assessment of extension's impact and overall results. The monitoring of extension activities should consist of timely gathering and analysis of data on the organization of the extension service and its performance (transmission of messages; feedback between farmers, extension, and research; training activities), as well as on farmers' acceptance of extension advice. Monitoring should reveal whether the components of the extension service are operating as intended. Evaluation assesses the overall effects of the extension service on production and farmers' welfare in order to determine the degree to which the extension service is reaching its economic, technical, and social targets. Evaluation should assess the extent of farmers' acceptance and use of recommended practices, as well as the actual effectiveness of the recommendations.

1/ World Bank Staff Working Paper No. 272 is available from the Bank's Publications Sales Unit (price $5.00); the "Manual of Instruction" is available from the authors.

Monitoring and evaluation of extension involves three main activities: (1) routine monitoring of how extension activities are carried out; (2) monitoring and evaluation of field activities and the impact of extension; and (3) the preparation of special studies focusing on particular parts of the extension system. Successful implementation of these activities depends on the analysis of data for only a small number of key indicators. For example, given the nature of training and visit extension, the indicators of field activities and extension's impact may be limited to the visits of Village Extension Workers (VEWs) to farmers, the extent to which production recommendations promoted by VEWs are adopted by farmers, and the yields and income obtained by farmers (which would reflect the impact of extension recommendations).

Routine monitoring. The routine monitoring of how extension activities are carried out focuses on the physical infrastructure of the extension service. Staff appointments, training activities, vehicles and equipment procured, and civil works are all areas in which both physical and financial progress should be monitored. This is done internally by extension management, usually at the headquarters level but also on a local basis, if necessary. Such data should be compiled at regular brief intervals (three months is a maximum, monthly is desirable). In some countries (like India), a central monitoring and evaluation cell has an important role in supporting and monitoring the quality of local monitoring and evaluation efforts. Where such a coordinating organization exists, summaries of internal monitoring results should be forwarded to it on a regular, usually six-monthly, basis.

Compiled in a regular and timely manner, information on routine monitoring provides extension management with a ready picture of the actual state of extension's infrastructure. The compilation of data does not require special surveys: it is normally readily available in the headquarters or district offices of the Department of Agriculture, or at the nondepartmental implementing agencies (e.g., as is frequently the case for civil works). It is collected, compiled, and analyzed by regular extension office staff rather than by the staff of the monitoring and evaluation units. To keep staff reporting requirements to a minimum, routine monitoring data should be compiled, as far as possible, from oral rather than written reports.

Monitoring and evaluation of field activities and the impact of extension. The regularity of field activities and the impact of extension is reviewed routinely by extension staff as well as through field surveys that focus mainly on VEW visits, extension recommendations, and crop yields. Analysis of these three indicators can give an accurate picture of the functioning and effect of extension so long as proper attention is given to sample selection and survey design. Farmer awareness of the VEW's scheduled visit day and the actual frequency and regularity of visits is primarily a concern of monitoring, although the effectiveness of the visits is a matter of evaluation. Changes in crop yields and farmer income are chiefly a concern of evaluation. Recommendations are reviewed as part of both monitoring (the extent to which farmers are exposed to recommendations) and evaluation (the impact of recommendations on production and income). Data on field activities and impact are collected through sample surveys conducted and analyzed by staff of the monitoring and evaluation unit. As these surveys

are basic to monitoring and evaluating extension activities, priority should be given to their proper design, planning, and execution.

There normally will be one monitoring survey early in a season and a monitoring and evaluation survey tied to a crop-cutting survey at harvest time. Different samples are used for each survey and for each season. The formulation of a relevant, concise questionnaire for the sample surveys is most important, as is the selection of an appropriate sample. The selected sample must produce results with an acceptable rate of error, yet the sample cannot be so large that it cannot be conducted (and analyzed quickly) by the staff of the monitoring and evaluation unit. If a survey is so large that staff are unable to do a complete analysis, or if it has an unacceptably high rate of statistical error, it is of little use.

Special studies. Another means of monitoring and evaluation are the special studies that investigate, in depth, particular aspects of the operation of the extension service. The studies are performed by staff of the monitoring and evaluation unit (or by consultants), as time between sample surveys permits. Through their intentionally ad hoc and semi-independent nature, the studies provide flexibility in monitoring and evaluation work. They are a vital continuous component of extension monitoring and evaluation. Topics for special studies may come from the staff of the monitoring and evaluation unit, extension or research staff, or participants in zonal workshops or the State Technical Committee. Among the many topics that may be investigated by special studies are: selection and effectiveness of contact farmers; quality of training (in fortnightly sessions, monthly workshops, special courses, etc.); case studies of the impact of extension in selected villages and on the production of particular crops, or of the spread of technology or practices advocated by extension; and factors affecting the quality of the work of VEWs and AEOs. Specialist staff on monitoring and evaluation teams (such as rural sociologists) can contribute significantly to the identification of topics for, and the execution of, special studies.

Data Processing and Reporting

As noted with reference to routine monitoring, and as implied by the fact that monitoring and evaluation is essentially a tool for management to review and improve extension performance, it is important that the main findings of all monitoring and evaluation activities be quickly analyzed and promptly released. Of course, this should not result in a mechanical -- and, consequently, often inappropriate -- approach to analysis and interpretation: seasonal and other unusual conditions that may affect extension performance should be taken into account in the analysis and noted in the report.

To be useful, monitoring and evaluation findings must be made available to management with minimal delay. Routine monitoring is designed to point out potential and actual bottlenecks. Results of monitoring surveys regarding visits and recommendations (which may reveal areas where visits are not made regularly or where they are ineffective because few farmers are aware of recommendations) are of little practical use unless they can be used by extension management to help identify and rectify problems as early as possible. Similarly, evaluation data may indicate that particular recommended practices appear to have little effect on production or income:

Unless such information is made available to extension and research staff as soon as possible and, as a result, the recommendation is reviewed and adapted as necessary, extension would continue to promote the apparently ineffectual recommendation, thus lessening the service's effectiveness and credibility.

To ensure that reports are timely and that they are read, they should be brief, nonrepetitive, and to the point. Statistical data should be presented in tables with concise notes, explaining the main conclusions derived from the data and indicating trends from previous findings. Each report should begin with a clear one-page summary of its main findings and conclusions. As monitoring and evaluation work becomes established, the monitoring and evaluation unit should devise a systematic reporting procedure in which main findings are summarized regularly (at least once every three months), preferably in tabular form. A brief annual summary of the findings of the monitoring and evaluation unit should also be prepared.

Staff

In addition to senior staff and data processors in the headquarters of the monitoring and evalution unit, a team of field investigators and supervisors should be stationed throughout the extension service's field area. A main consideration in determining the number of field staff required is the number needed to conduct surveys that will produce statistically significant results at a useful level of administrative unit. Both monitoring and evaluation headquarters and field staff must be administratively autonomous of extension staff, and must have adequate mobility to enable them to conduct their surveys and studies to the requisite strict schedule. The importance of appropriate selection and thorough training of all monitoring and evaluation staff cannot be emphasized too much. All must have a thorough understanding of the training and visit system of extension and of the general operational aspects of monitoring and evaluation and survey work (which will be an area of focus for field staff): all will need intensive, specially designed training in each of these areas. It is also advantageous for senior staff of the extension service and the Department of Agriculture to know how monitoring and evaluation functions, and how to use and interpret its results: they may need orientation training to this end.

In countries with independent state extension services (and, hence, monitoring and evaluation units), a central organization (such as India's Directorate of Extension) has an important role in the monitoring and evaluation of extension activities. Central monitoring and evaluation staff, who will receive copies of all monitoring and evaluation reports and summaries produced by state units, should:

1. ensure that the procedures used by the state monitoring and evaluation units will yield results that are reasonably comparable;

2. provide technical advice to the state units on the scientific acceptability of procedures used in data collection, processing, and analysis;

3. facilitate the transfer of monitoring and evaluation results, experience, and procedures between state units;

4. prepare seasonal or annual syntheses of evaluation findings in different states, based on comparative analysis of local data and reports.

In light of such responsibilities, it is as important for the central monitoring and evaluation group as for the state units to include staff that are competent and experienced specialists in statistics, survey design and analysis, and agricultural economics. A rural sociologist may also be useful to focus on the sociological aspects of extension's operation and impact.

The system as outlined above is a basic model for monitoring and evaluating the training and visit system of extension. The actual monitoring and evaluation system of any extension service should evolve to meet the operational realities of the service and its objectives as they change over time. In particular, the means of evaluating extension will require frequent review in light of the methodological difficulties in isolating the various effects of extension activity. Whatever the form of the monitoring and evaluation system adopted, however, it should take account of the basic considerations set forth above.

Chapter 18

Planning Extension Activities

Summary

The organizational structure and fixed schedule of activities of the training and visit system of agricultural extension enable extension to operate in a systematic way. For extension to be truly effective, however, extension goals (and strategies to achieve these) must be continuously reevaluated and their implementation planned. Planning of extension activities takes place at different levels, but at each level there is the same concern for making general goals specific and for identifying strategies to achieve these goals. Agricultural extension and research staff dominate the extension planning process, but farmers and representatives of agricultural input and marketing agencies are involved at all levels. Effective planning depends on feedback from lower levels of strategy implementation; this is particularly important at planning levels closest to the farmer where objectives and strategies are the most detailed. Targets of activity are a vital part of the planning process, but care should be taken that the criteria for the targets are defined in terms of extension's specific goals.

* * * * * *

The training and visit system of agricultural extension provides a comprehensive structure for the operation of professional agricultural extension. Farmers are visited regularly by extension workers who teach them specific technical practices learned in regular training sessions taught by research staff (or by Subject Matter Specialists who have been taught by researchers or other competent specialists). Production problems faced by

farmers are fed back through the same system to extension and, if necessary, research or other relevant organizations. Extension staff receive frequent and regular training to improve their professional skills, and regular contact is maintained between extension and agricultural support services.

The interconnections within the extension system, linkages with research and input organizations, and the fixed schedule to which the various preset activities must be performed may suggest that, once the training and visit system is established, there is little need for further planning of extension activities. While the need for operational planning (training sessions to be held, field visits to be made, and so on) is relatively limited, there is a continuing need for strategy planning. Unless extension goals and objectives are established and concomitant activities appropriately planned, the impact of extension is likely to be below its potential. An extension system cannot be passive; it must identify and react to changing government and farmer priorities and environmental and market conditions. Appropriate reaction and the development of a responsive extension system require effective planning to coordinate the diverse parts of the extension system and the external agencies involved in agricultural development, as well as advance organization of technical and administrative support.

With its organized field-based staff supported by regular training and contact with research, the training and visit extension system is particularly responsive to strategies for increased agricultural production -- provided adequate planning is done in a timely manner, objectives are broken up into specific, feasible extension initiatives, and the required nonextension support is clearly identified so it can be provided by appropriate agencies as required.

Planning Objectives

Planning of extension activities takes place at various levels. While different participants are involved, the objective at each level is similar: the reconciliation of national and state goals affecting agricultural production with farm, research, and market realities, in the form of specific objectives and strategies relevant to extension. However, effective planning of extension activities is made difficult by two factors. First, numerous nonagricultural goals may have a significant bearing on agriculture. Policies to promote the interests and development of particular disadvantaged classes or regions are examples. Second, an effective means must be established to take account of farmers' priorities, which may either be directly expressed by farmers or interpreted by extension workers in light of field experience. Examples of such priorities may be crops and crop varieties suited to particular conditions, control measures for specific pests and diseases, or a more general need for new technology to increase yields in a given crop.

Other needs of farmers -- such as the provision of inputs and markets -- will have a bearing on extension's work plans, even if they are not the direct responsibility of extension. The contribution of research to the planning process will consist of both providing improved technology for agricultural operations and solutions to production problems, and the delineation of areas where additional research support is needed.

An initial objective of the planning process is to develop a feasible strategy for extension to help achieve the goals and objectives of agricultural development. A first step is to distinguish the elements of these goals for which extension has responsibility. Nonextension components (for example, agricultural input requirements) are passed to the organizations that are responsible for them. Extension components are those that ultimately can be passed on to farmers in the form of specific production recommendations. A strategy to increase the production of pulses, for example, must be broken up into location-specific components regarding seed, fertilizer, and plant protection requirements, and recommended cultural practices (land preparation, time of sowing, seed rate and treatment, weeding operations, intercropping or mixed cropping, and so on). Each of these particular means of achieving increased production must also be considered in terms of inputs required from outside extension and its bearing on existing cultivation practices. Appropriate support should be sought from other organizations as well as from extension.

Participants in the Planning Process

The participants in the planning process and the responsibilities of planning bodies are indicated in Table 18.1 at the end of this chapter. Representatives of agricultural input (including credit) and marketing agencies and representative farmers should be included in planning bodies at all levels.

The highest-level planning organization for extension is a combined extension and research committee at the state or national level, often called the State Technical Committee. This committee meets before each main season. (An interdisciplinary and interdepartmental national or state agricultural development coordination committee that focuses on administrative and organizational matters may also meet; sometimes, this committee and the State Technical Committee are one and the same.) Members of the State Technical Committee are extension and research officers at the state and regional level. The committee sets the general objectives and strategies of the extension service for the coming season. In doing this, it takes account of recommendations suggested by zonal workshops and of problems they report. Government agricultural development priorities and broader planning activities, and extension's achievements or failures during the previous season are also considered.

An important input into national or state-level planning comes from the seasonal zonal workshop. Before the State Technical Committee meets each season, zonal workshops review extension's performance in their region during the preceding year, production problems facing farmers, recent results of research, the likely availability of agricultural inputs and market conditions, as well as national and state goals for agricultural development. On the basis of this review, zonal workshops determine tentative objectives and strategies for extension over the coming season in their areas of jurisdiction. Zonal workshops should meet at least four weeks before the State Technical Committee so that their own identified priorities may be considered and incorporated into the overall program. Zonal workshops (or a smaller working committee of the workshop) meet again after the deliberations of the state or national body so that objectives and strategies agreed at that level

may be developed into zone-specific operational guidelines and production recommendations.

Production recommendations developed by a zonal workshop should cover all major crops of the area of its jurisdiction and take into account the likely availability of inputs and markets. These recommendations will be the basis of discussion at the monthly workshops of extension and research staff that are usually held at a district level. At both seasonal zonal and monthly workshops, representatives of input and marketing agencies should participate: They must be kept advised of probable production trends and input demand, and their advice on input availability and market conditions should be taken into account in formulating production recommendations. Particularly where a zone comprises several districts, a preseasonal "campaign" meeting of extension staff may be held at the district level to review proposed strategies and recommendations for the coming season.

The effective planning of extension activities requires more than a translation of general objectives and strategies into specific production recommendations and an attempt to ensure the availability of inputs required by farmers to implement these recommendations. Strategy plans are likely to be successful only to the degree that broad objectives and strategies coincide with local priorities, needs, and resources available for implementation. To achieve this, it is essential to have feedback on local conditions and needs into the planning process. At the higher levels, where feedback comes from the planning body at the level below, this is relatively easy. It is often more difficult to ensure feedback at lower levels, especially at the fortnightly training session, where Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) must report on farmer resource conditions and reactions to production recommendations. Farmers' problems and reactions to recommendations must be continually taken into account in the formulation of specific recommendations at monthly workshops and fortnightly training sessions. To help ensure this, farmers should be included in planning committees and workshops at all levels, although care should be taken that the farmers involved have empathy for the production conditions of most farmers.

Targets

An integral part of planning is the establishment of targets. Targets are required to give staff an objective toward which to work and also to gauge performance. Unless properly defined, however, targets may be self-defeating in that they divert staff from truly significant activities and can provide a false indication of performance. An example of the latter type of difficulty follows.

A basic objective of extension is to teach farmers improved technological practices and to encourage farmers to adopt them. Extension is responsible for teaching recommendations to farmers, advising research of areas in which suitable technology is lacking and of constraints to recommendation adoption faced by farmers, informing input agencies of the anticipated demand for inputs required to implement recommendations, and advising marketing organizations of probable significant changes in production. It is also responsible for trying to convince farmers to adopt recommended practices. Key indices of extension activity are, therefore, the number of farmers

taught and made aware of recommended practices and the number who adopt them (even if, initially, on only a small portion of their land).

Rather than being indicative of such extension-related items, however, targets are often expressed in production or input terms (such as the area under a particular practice, or the quantity of seed, pesticide, or fertilizer consumed). Not only do such indicators not measure the full impact of extension, but if undue attention is given to them, they are likely to lead extension staff to concentrate on a few large or "progressive" farmers and on supply functions in order to achieve these readily measurable targets, either of which action limits whatever impact extension might have. The number of farmers adopting a recommended practice is the best indication of the impact of the extension system. If production recommendations are useful and profitable, they will spread quickly to more farmers on larger areas.

Extension services do need targets for their staff at all levels, but the setting of targets for extension must be approached with great care. Targets can become an artificial form of the measurement of progress, particularly when extension is being reformed from a multipurpose, supply-oriented service to a single-function technical organization. Attention may be given to achievements against unrealistic and inappropriate targets (continuing, for example, emphasis on area covered rather than the number of farmers served), and the reporting required for this. Management must be aware of general trends in extension activity while professional extension is being established, but must be careful with specific targets at that time so that they do not become dislocating and counterproductive. Appropriate targets for the measurement of performance may include the number of farmers contacted, the spread of knowledge of recommendations and their adoption and, of course, increases in production and income related to recommended practices. Targets such as these should be set for the medium and long term and then broken into annual and seasonal targets. Ultimately, of course, since extension's objective is to increase agricultural production and income, its impact should be evaluated against changes in the production and income of the farmers it serves.

Forums for Planning Extension Activities — Table 18.1

Forum	Participants	Input	Product
State Technical Committee (STC) Meets: preseason	- Senior Agric. Dept. and extension staff - Senior research staff - Selected senior staff of other development departments - Input and marketing representatives - Farmers	- Government development goals - Agricultural development goals - Zonal agricultural priorities (from ZW) - Research findings - Agricultural and extension experience - Input and market situation (present, projected)	- Agricultural development objectives for season on state and zonal basis - General strategy (including recommended practices) to achieve objectives - Gross estimated input demand and market requirements - Suggested research activities
Zonal Workshop (ZW) Meets: preseason	- Agric. Dept. headquarters, zone and senior local district staff - Senior research staff of zone - Input and marketing representatives - Farmers	- Seasonal objectives and strategy (from STC) - Zonal agricultural situation and production trends - Extension objectives and achievements - Recent research findings - Adaptive research (farm trials) results - Input and market situation (present, projected)	- Seasonal objectives and strategy for zone - General production recommendations for zone and subareas - Suggested research activities - Seasonal farm trials program - Estimated input and market requirements
Monthly Workshop (MW) Meets: monthly	- Agric. Dept. technical (SMS) and administrative (SDEO, DEO, ZEO) staff - Researchers and other resource persons - Local input and marketing representatives - Farmers	- General production recommendations for area (from ZW) - Relevant research and farm trials results - Seasonal and field conditions - Agricultural and extension activities of previous month, including experience with recommendations and farmer feedback - Input and market situation (present, projected)	- Recommendations and impact points - Problems solved or forwarded to research - Problems solved or forwarded to research - Estimated input and market requirements
Fortnightly Training Session (FNT) Meets: fortnightly	- Extension trainers (SMS, SDEO) and trainees (VEW, AEO) - Local input and market representatives - Farmers	- Recommendations and impact points (from MW) - Field experience of previous fortnight - Field and seasonal conditions - Farmer reaction to previous recommendations - Input and market situation (present, projected)	- Specific, modified recommendations and impact points - Problems for referral to MW - Estimated input and market requirements

Extension agents must keep in touch with the local input situation

P. N. Seth

Composting also concerns extension

S. L. Ghosal

Chapter 19

Agricultural Input Supply and Extension

Summary

Agricultural input supply and agricultural extension are mutually dependent. Confusion over the responsibility of extension with respect to inputs is common although the relationship is clear: extension workers at any level do not handle any inputs and are not responsible for their distribution or sale. Extension does have an important role, however, in advising input agencies of the input supply situation in the field and anticipated demand. It also has an interest in the accuracy of this information as it will affect the timely availability of inputs. Farmers should not be advised of production recommendations involving inputs unless those inputs are available to them. To ensure this necessary coordination, representatives of input agencies participate in preseasonal, monthly, and fortnightly extension planning and training meetings.

* * * * * *

The timely supply of agricultural inputs -- seed, pest and disease control materials, fertilizer, credit, power, fuel, irrigation water, implements, and so on -- is as important to agricultural development as supplying suitable technical advice. Extension cannot make a significant impact on agricultural production if the inputs required to implement its advice are not available (although there are, of course, many productive technologies that do not require additional inputs aside from a farmer's labor). Extension advice is also important for input utilization, since little can be achieved by farmers who do not know how to use inputs efficiently and profitably.

Because of this interdependence of extension and inputs, and also because professional extension along the lines of the training and visit system often replaces a multifunction system in which extension agents handle inputs, there may be confusion about the linkage between agricultural inputs and the training and visit system of agricultural extension. The linkage, however, is simple and explicit: extension workers at all levels, but particularly Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs), neither handle inputs nor are responsible for their distribution or sale. This does not mean that inputs are not needed and that extension has no interest in their availability. In fact, extension has an important role in advising input agencies of the actual supply situation in the field and anticipated demand and thereby coordinating input supply with farmers' needs. Before examining in greater detail extension's role with respect to inputs, it is useful to consider why direct handling of inputs by extension is not desirable.

No Responsibility for Input Distribution

The role of an agricultural extension service is to supply technical support to farmers to help them increase their productivity and incomes. To be able to serve increasingly sophisticated farmers effectively, the professional skills of extension must not only be continually upgraded; they must also not be diluted with nonprofessional tasks. Just as a doctor is not required to supply the medicines he recommends (because he does not have the necessary training in this area and because such a responsibility would diminish the time available for his crucial task of diagnosing and treating illness), so too the agricultural extension specialist's efforts should not be diverted to nonextension activities. Not only does the extension worker have no training in these areas, but such areas are the responsibility of other organizations. Why should extension staff duplicate the functions of cooperative societies, agroindustry corporations, seed producers, private sector wholesalers and retailers, banks, and the like?

Because extension workers in the training and visit system are generally well organized and field based, and systematically meet the entire farming community of their jurisdictions, there is often a temptation to saddle them with input distribution functions. Not only does this prevent them from doing their required work, but it also encourages other agencies to avoid their responsibility to establish effective distribution systems and enables them to blame extension for what is ultimately their own failure. Moreover, given the common nature of administrative targets and evaluations, involvement in the supply of inputs quickly becomes an end in itself. Before long, an extension service entrusted with distributive functions is likely to be asked to report, for example, on how much seed treatment material has been disposed of and not whether it is actually used, or whether it is used to any effect. This dilutes extension's concentration on the extent to which recommendations on seed treatment have been promoted among, and adopted by, farmers, and on the constraints to adoption once the recommendations are known by farmers.

There are other reasons why extension should not be involved in the distribution of inputs. Some farmers tend to regard advice not accompanied by (or not requiring) inputs as of little value. Since nonmonetary or

low-cost practices are often a significant part of extension's work, extension agents must not allow such feelings to develop -- among farmers or even themselves -- as is likely to happen if they are also responsible for input distribution. Moreover, the distribution of scarce inputs inevitably creates enemies, or at least dissatisfaction, among those not served (since scarce inputs are frequently cornered by a small number of usually better-off farmers). The collection of money by extension agents can lead to personal danger. All involvement with input distribution, of course, also results in accounting and reports, the bane of effective agricultural extension.

Extension's Role with Inputs

While not responsible for input distribution, the extension service has both a specific responsibility and a strong self-interest with respect to inputs. The responsibility is that of advising input agencies of the supply situation in rural areas and of the anticipated demand, as well as of advising farmers on the availability and prices of inputs and input outlets. The self-interest is to ensure that production recommendations that are taught farmers take into account local input availability, and that projected input demand is intimated to the respective agency so that it is met as needed.

Through its role in the formulation of production recommendations that will be taught to farmers and its field orientation, the extension service is in a unique position to advise input supply agencies of the likely demand for inputs and the local supply situation. Its involvement starts in the preseasonal meetings held at the state and zonal levels where extension priorities for the season are determined. From these meetings, a general estimate of likely demand for key inputs in local areas can be estimated. Preseason information on the actual and probable demand for inputs, about which farmers will be advised as part of routine production recommendations, is vital for planning effective input support of agriculture. Similarly, the advice of input agencies to extension of likely input availability will help in the identification of feasible priority areas for the extension service. While extension staff should carefully advise input agencies of anticipated demand, they cannot be held responsible for unsold stocks of recommended inputs. Field staff of input agencies bear responsibility for verifying supply and demand trends reported by extension.

Representatives of input agencies should attend both monthly workshops and fortnightly training sessions for at least the period in which input requirements and the supply situation are being reviewed. At both, recommendations can be adjusted to reflect likely input availability; input agencies can attempt to meet likely demand or try to overcome reported local supply problems. The contribution of input representatives to monthly workshops and fortnightly training sessions will be more effective if they also meet separately at least once a month with the District or Subdivisional Extension Officer who should encourage such meetings. Urgent input-related problems should, of course, be reported directly to the appropriate agency between meetings. It is the responsibility of extension to encourage representatives of input agencies to participate in monthly workshops and fortnightly training sessions.

VEWs and AEOs should review the local availability of inputs on a deliberate and continuing basis. Not only should serious shortages be

reported in the next training session, if not earlier, to their supervisors, but no recommendation should be given to farmers (save perhaps in a general information sense to increase their knowledge and built up the demand for inputs and agricultural development) until the required inputs are locally available. If a recommendation depends on an input that is not locally available and there is no substitute, it should not be recommended. Extension staff are, of course, similarly responsible for discussing market conditions with farmers and in training sessions, and taking these into account when developing and teaching recommendations.

This restricted involvement of extension staff in inputs -- no involvement in distribution but an important coordination and information role -- is a radical change from the close involvement with inputs that typifies multifunctional extension systems. However, three points concerning the relation between inputs and extension that have become apparent with the operation of professional extension should be kept in mind. First, while many production recommendations may depend on purchased inputs, the absence of these inputs does not mean that extension is impotent. A basic responsibility of extension is to guide farmers on how to make better use of available resources to increase their production and income. Recommendations dependent on inputs are only useful if the inputs are available and farmers have money to purchase them. If extension staff undertake their field work as required, they will be aware at the time of fortnightly training of the availability of most key inputs, and so VEWs and AEOs will not be taught to teach recommendations to farmers requiring inputs that are not available. Alternative inputs or recommendations will be promoted.

Second, extension can build up demand for inputs that will result in pressure being applied on the respective agency to fulfill its intended role. It can also encourage farmers to use inputs wisely in light of their cost and scarcity. Good extension advice can lead to a reduced consumption of inputs (for example, irrigation water, pesticide, and fertilizer) by teaching correct applications and doses.

Third, once farmers and extension workers see the results of extension's exclusive concentration on technology -- linked with timely advice on input requirements and availability -- they rarely demand extension's involvement in the distribution of inputs. Farmers recognize that this would detract from the time the extension worker is available for contact with them and for his training, and that input supply is the responsibility of other agencies. The VEW, having savored the recognition farmers give him as a realistic and able technical specialist, is rarely willing to take on the role of storekeeper or salesman.

Chapter 20

Training for Extension Staff

Summary

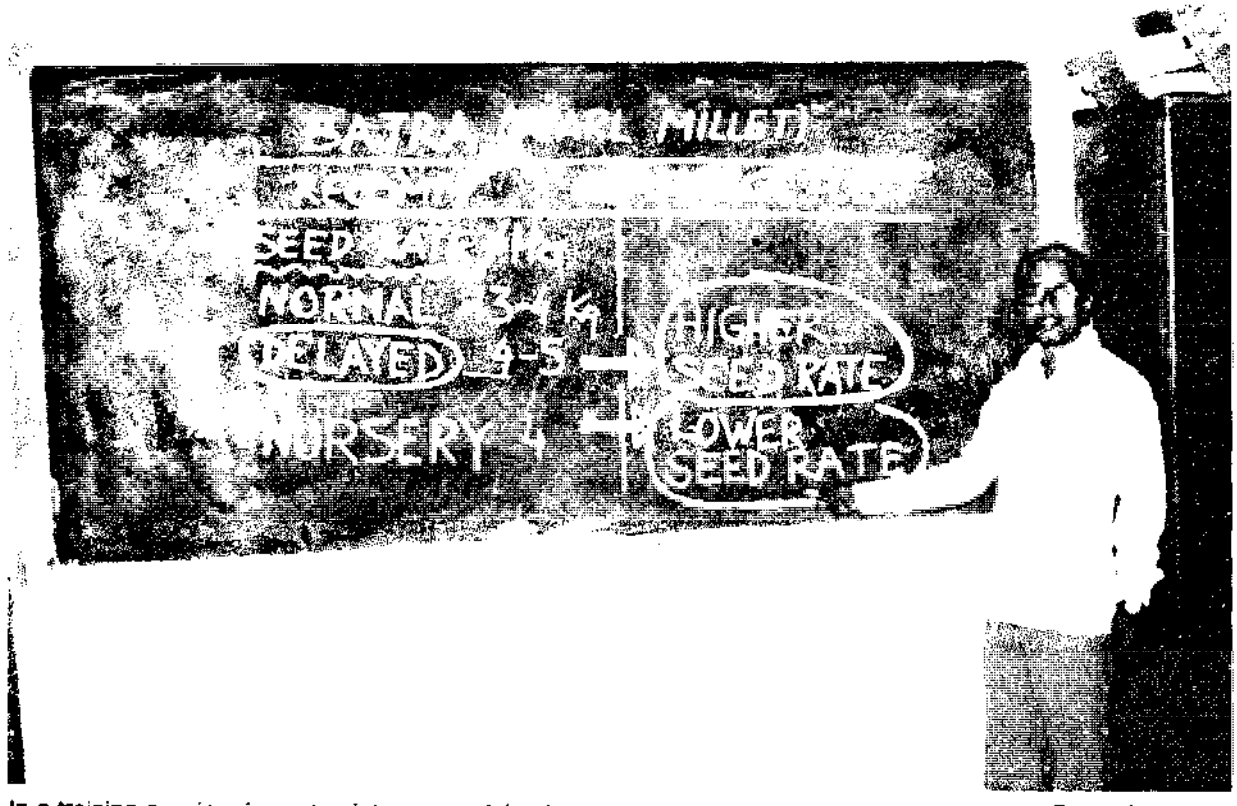
Professional agricultural extension depends on the continuous upgrading of staff through training. As well as regular fortnightly, monthly, and seasonal training, specialized training of extension staff is required. Special training requirements should be determined under the guidance of extension management and Training Officers by evaluating the skills and training needs of all staff individually. The extension service must have a professional atmosphere in which a staff member who does not attend regular and specialized training and who does not improve professionally, feels out of place in the service's environment of learning, training, and know-how. Training priorities must be established, and long-term and annual programs to meet these drawn up. As a guide, each staff member should participate in at least one special short course each year. Some training requirements may be met through short courses held by universities and other training institutions. Others should be organized and given by extension staff. In addition to short courses, some staff will require longer-term upgrading through refresher training or university degree studies.

* * * * * *

Professional agricultural extension depends on the continuous upgrading of staff through training. The most frequent and visible form of training in the training and visit system of agricultural extension is the training of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) at fortnightly sessions, and the participation of Subject Matter Specialists (SMSs), Subdivisional Extension Officers (SDEOs), and other extension staff in monthly workshops.

Practical work at fortnightly training

B. Z. Mauthner



In a training session, impact points are explained

B. Z. Mauthner

Need for Training

High-quality, regular training is a key to effective training and visit extension. When such a system is being established, attention will be justifiably focused on the development of good routine training. However, other training needs should not be overlooked. All staff require training outside these regular fortnightly, monthly, and seasonal sessions. It is important that the nonregular -- or "special" -- training needs of extension staff be given a continuous high priority. This is necessary not just because participation in a suitable training course has a beneficial impact on the interest and motivation of a staff member, but because staff at all levels require frequent specialized training to ensure they have appropriate skills to handle an increasingly sophisticated agricultural technology.

Because of the importance of training, it is preferable for a Village Extension Worker (or other extension officer) to miss a few field visits to attend special training courses rather than for him to stay always in his area and not be sufficiently highly qualified to teach farmers. A chief concern of extension management is to recognize the central importance of having appropriately trained and qualified staff, and to establish and implement a training program to meet this requirement. While attention must be given, however, to the planning and implementation of a suitable training program, this in itself is not the only objective of the extension service in the field of training. An equally important objective is to have a professional atmosphere in which a staff member who does not attend training, and who does not improve professionally, feels ashamed and out of place in the service's environment of training, learning, and know-how.

There is no universal standard of the amount or type of training needed by extension staff; indeed, this must be derived from a systematic evaluation of the skills and training needs of individual staff. However, as a general goal and as an indication of the size of the task at hand, it should be assumed that each staff member should attend at least one special training session each year, in addition to a short orientation course. 1/ Table 20.1, on the next two pages, summarizes for each level of extension staff the main forms of training they should receive, the frequency and duration of courses, and the trainers involved.

An extension service should not suffer from a lack of resources for training. Similarly, the priority training requirements of staff should be quickly identified and courses to meet these be programmed to fit into their work responsibilities. As most courses required for staff development are of short duration, they may be scheduled during off-seasons when the need for the presence of staff in farmers' fields may not be so crucial.

1/ By special training is meant training in addition to fortnightly training sessions and monthly and seasonal workshops. Aside from noting that they must be timely, relevant, practical, and well organized, and that they are the first training priority of an extension service, we are not concerned here with regular fortnightly, monthly, and seasonal training activities.

Extension Training Activities

Table 20.1

Staff and training activity	Frequency	Duration 1/	Trainer 2/
Village Extension Worker			
Preservice 3/	Preservice	12-24 months	Agricultural/rural training institution
Refresher 4/	As required	3-6 months	Training institution, Department of Agriculture (DOA) 5/
Orientation-reorientation	Annual	2-3 days	DOA
Special: technical extension methods	(Annual	(2-10 days	(DOA (especially SMSs), (training institution, (university
University degree (B.Sc.)	As required	As required	University
Fortnightly	Fortnightly	1 day	SMS, SDEO
AEO/VEW meeting	Fortnightly	1 day	AEO
Agricultural Extension Officer			
Refresher 4/	As required	3-6 months	University, training institution
Orientation-reorientation	Annual	2-3 days	DOA
Special: technical extension methods	(Annual	(2-10 days	(DOA (especially SMSs), (training institution, (university
University degree (B.Sc., M.Sc.)	As required	As required	University
Fortnightly	Fortnightly	1 day	SMS, SDEO
AEO/VEW meeting	Fortnightly	1 day	AEO
Subject Matter Specialist			
Orientation-reorientation	Annual	2-3 days	DOA
Special: technical extension methods	(Annual	(Usually up (to 21 days	(DOA, university, (training institution
University degree (M.Sc., Ph.D.)	As required	As required	University
Monthly workshop	Monthly	2 days	Research, others

Staff and training activity	Frequency	Duration 1/	Trainer 2/
Subdivision/District/Zone/Headquarters Officers			
Orientation-reorientation	Annual	2-3 days	DOA
Special: technical extension methods management	((Annual (	(Usually (up to 21 (days	(DOA, university, (training (institution
University degree (M.Sc., Ph.D.)	As required	As required	University
Monthly workshop	Monthly	2 days	Research, others
Other extension staff (Monitoring and Evaluation, District Extension Agronomist, training staff, etc.)			
Orientation-reorientation	Annual	2-3 days	DOA
Special: technical extension methods	((Annual (	(Usually (up to (21 days	(DOA, training (institution, (university
University degree (M.Sc., Ph.D.)	As required	As required	University
Monthly workshop	As required	2 days	Research, others
Fortnightly training	Occasionally	1 day	SMS, SDEO
Other Staff (DOA inputs staff, officers in related departments, etc.			
Orientation	As required	1 day	DOA

1/ The duration of training activities is indicated as a guide only. Aside from monthly workshops and fortnightly training sessions, the duration is likely to vary considerably, particularly for special training activities.

2/ Some training -- for example, special courses and university training -- will be required to take place abroad. Another important means of training -- study tours should be organized regularly for selected staff of each level.

3/ This represents the minimum level of postsecondary training. University training is preferred. An aim of an extension service should be for all staff eventually to have university degrees. Preservice training of other staff is not included, as it is assumed they have university degrees.

4/ Whether refresher training is required would depend on the level of preservice training.

5/ "DOA" trainers could include Department (Ministry) of Agriculture staff, Training Officers, Subject Matter Specialists, and appropriate other staff.

Planning Training

The first step in planning training is to determine the training requirements of individual staff. This is followed by assembling individual training requirements into a number of common course needs and by setting priorities. It is desirable to establish a general long-term program and a specific annual plan, both of which draw on existing training facilities and courses and use special courses and trainers to fill the gaps after all available resources have been utilized. Annual programming of training needs and of the means to meet them will help ensure that allowance is made for the training requirements of each staff member, and that instructors can be oriented toward extension's needs and have time to make adequate preparations.

The training requirements of individual SDEOs and SMSs should be determined by headquarters and district Training Officers, in consultation with the head of the extension service. The training needs of VEWs and AEOs should be determined by the district and subdivisional Training Officers and Extension Officers. In all cases, the training requirements should be established only after consultations and discussions with individual staff, and the qualifications and ability of staff, as well as their job requirements, have been taken into account. In regard to the latter, attention should focus on methodological requirements (the functioning of the extension system, the officer's role in the extension service, communication skills and extension methods, and so on) as well as on technical agricultural areas. The headquarters Training Officer should monitor the identification of training needs and the formulation of long-term and annual training programs, as well as their implementation.

Work experience with extension staff will suggest to Training Officers and extension management those areas where training is required; staff may also suggest areas where they feel they need training. Some training can be met by assigning staff to courses that are routinely offered by agricultural universities and national or international institutions. It is likely, however, that some extension training needs can be met only by courses that are specifically designed and presented for the purpose.

Initially, training required in orientation to the extension system and extension methods, as well as in some technical agricultural subjects, may need to be offered in such specially designed courses. Among the numerous areas where special courses may be needed for extension staff, three are frequently required. One is training in extension methods, adapted for staff of different functions. An example of such a course for AEOs is found in Figure 20.2. Farm management is another important area where extension staff are generally lacking in training. Finally, staff at higher levels frequently require training in management techniques relevant to agricultural extension. A list of possible short special courses in both agricultural technology and extension methods is given in Figure 20.3. (Both figures appear at the end of this chapter.) Adjusted for the different level of the trainees, such courses could be given to extension staff of all levels (particularly VEWs, AEOs, and SMSs) by other extension officers or trainers from outside the extension service.

Trainers and Training Institutions

Given careful orientation, universities and other training institutions may handle a large part of the specialized training needs of extension staff. Universities may specialize in training SMSs and senior staff, while farmer training centers and other local institutes may be best suited for VEWs and AEOs. Since many topics will require only short courses, most can be accommodated within the institutions' other teaching and research responsibilities. Other training resources should be used as appropriate. For example, a new technique in pest control or a series of practices for a new crop may best be taught to subdivisional and district SMSs in a one- or two-day course by research staff or even, sometimes, by staff of an input agency. Management techniques for extension can usually be effectively taught by a management or extension training institute.

Universities and other specialized organizations will not be able to handle all the training needs of extension staff, and indeed they need not, since an extension service itself has able teachers in Training Officers, SMSs, and other officers. For example, training in extension methodology is frequently best handled by an experienced senior extension officer because teaching in this field by training institutes is often out of touch with farm-level realities. It is desirable that highly qualified extension staff should teach at training institutions from time to time, where they will assist in teaching extension staff and in upgrading and making relevant the courses taught extension. The extension service itself should give much of the specialized training required by VEWs and AEOs (including, for example, the course on extension methods for AEOs noted above). Even where courses are not being given directly by extension staff, such staff should review course objectives and content to ensure they are appropriate. This is particularly important in the preservice and refresher training of VEWs and AEOs, since this training is frequently given on the basis of a condensed syllabus by staff of a local rural training center who may not be adequately familiar with the procedures and priorities of the extension service.

Much of the necessary professional upgrading of extension staff can be achieved through special short courses. There is also a need, however, for some longer and more intensive training than is possible through such courses. For many staff, an appropriate means of significant professional upgrading is their enrollment in undergraduate or postgraduate studies. If the number requiring this type of training is likely to be considerable and the demand continuous, special arrangements may be made with universities to ensure that entry prerequisites and course content are compatible with the students' experiences and needs.

Another area where longer training is often appropriate is refresher training, particularly for VEWs. VEWs typically receive little special training after their initial preservice training. This training in many cases was received many years earlier and often lasted only six or twelve months (and usually after a high-school education). The professional competence, and hence upgrading, of VEWs is as important as that of any other extension staff. This is usually best done through suitably tailored refresher courses in agricultural technology and extension methods of three or six months' duration. Suitable VEWs should, of course, be encouraged and enabled to undertake university degree courses.

Farmers' Training

One area of training that is frequently subject to confusion once the training and visit system of extension is introduced is the training of farmers. Prior to the introduction of the training and visit system, extension services frequently train farmers in production technology at meetings in villages, as well as through short courses held at farmer training centers. In training and visit extension, farmers are trained by the VEW. In fact, by teaching current production recommendations to at least the contact farmers in each farmers' group every two weeks, the training and visit system results in a much more extensive training coverage than any other feasible training method. Farmer training centers cannot compete with the VEW in either coverage or effectiveness in the training of farmers in specific production technology.

At times -- for example, when there is a critical disease problem -- the VEW (assisted by his AEO or an SMS) may teach farmers remedial measures at a special training class in a village. Clearly, however, the VEW has the broadest and most systematic training coverage of farmers in the course of his regular work (that is, even without formal training meetings in farmers' groups). It is sometimes felt that AEOs, SMSs, and others should "contribute to extension" by teaching production recommendations to farmers. While this interest in training farmers and in diffusing recommendations is laudable, such involvement is likely to lessen in farmers' eyes the ability and reliability of the VEW and, of course, detract from the vital in-field support these officers should provide to the VEW.

While farmer training centers are not required to give specific agricultural training to farmers once the training and visit system is established, they do have a role in upgrading the general knowledge of farmers about science, economics, and other areas not dealt with directly by agricultural extension. This training should complement that given by the extension service. The extension service should ensure that full, appropriate use (including the training of extension staff) is made of the teaching support available at farmer training centers to complement its own field and, in effect, farmer training activities.

Extension Methods for Agricultural Extension Officers — Figure 20.2

Orientation and/or Refresher Course

Objective: To familiarize and/or reacquaint Agricultural Extension Officers (AEOs) with important aspects of extension methods, especially as they apply to the training and visit system of agricultural extension.

Structure: A five-day course of lectures, discussions, and practical work. Approximately, nineteen hours of lectures and discussions -- three hours for each topic, except topic (4) which requires four hours -- and two days in the field for practical work. The practical session should be held on days three and four, and involves trainees in small groups accompanying AEOs in their normal course of work in order to evaluate the effectiveness of their work with specific reference to topics (1) to (5). At the end of each day in the field, all trainees review their observations in a group discussion for 1 to 1-1/2 hours.

Participants: Trainers -- Senior extension staff (Training Officers, zonal, district, or subdivisional officers) and appropriate staff of farmer training centers, etc. Trainees -- AEOs, either newly appointed or (in a refresher course) with longer experience with training and visit extension, to a maximum of twenty-five.

Materials: Examples of VEW and AEO diaries (from local staff).

Content:

1. Concept of Extension (Training and Visit System)

   Objectives of extension.

   Principles of T&V extension: professionalism, single line of command, concentration of effort, time-bound work, field orientation, regular and continuous training, linkage with research.

   Role of extension staff: VEW, AEO, SDEO, SMS.

2. Area Jurisdiction and Farmers' Groups

   VEW area jurisdiction: determining number of operating farm families -- VEW:farm family ratio -- delineation of VEW circle -- formation of farmers' groups (how, why) -- group delineation (including mapping), review and adjustment -- diary record -- headquarters location.

   AEO area jurisdiction: number of VEWs -- delineation of AEO range -- location of headquarters -- diary record.

Extension Methods for AEOs (continued) Figure 20.2

3. Contact Farmers

Role of contact farmers -- selection considerations -- how to work with contact farmers -- when and how to change -- role of other farmers.

4. Visits

VEW visits: purpose -- schedule -- farmer awareness of visit schedule -- schedule of activities on a visit day -- work in farmers' fields vs. village meeting -- involvement of contact and other farmers -- presentation (including adjustment) of recommendations -- diagnostic skills -- communication techniques -- recording and reporting field conditions and production problems -- nature and role of demonstrations -- use of diary -- extra visit days.

AEO visits: schedule -- purpose -- activities.

5. Supervision

AEO supervision of VEW: focus on improving VEW's ability to communicate, and teach and convince farmers to try recommendations -- identification of production constraints in fields with VEW and farmers -- extra support for weaker VEWs -- support for VEW on farm trials, group meetings, and field days, including preparation of suitable aids -- identification of VEW success stories -- use of own and VEW diary.

Role of SMS and Training Officer -- technical support for VEW and AEO -- field activities of SMS and Training Officer.

6. Training

Fortnightly training session: role of AEO (ensuring VEW participation and feedback on field conditions, farmer reaction to recommendations, and input supply situation) -- local relevance of recommendations -- success stories -- skill practice -- input availability and demand -- market situation.

Fortnightly meeting with VEWs: purpose (organizational and technical issues) -- VEWs' progress with recommendations -- constraints on adoption of recommendations -- input availability and demand -- field problems requiring solution before next fortnightly training session.

Topics for Special Training in Agricultural Technology and Extension Methods: Some Examples — Figure 20.3

1. For Staff of All Levels

Farm management
New and special crops (individual crops)
Mixed cropping
Mixed farming systems: livestock and crops
Cost/benefit analysis of fertilizer use
Use of organic fertilizers
Rhizobium culture
Water management: agronomic aspects
Fodder crops
Paddy nurseries
Seed treatment
Agronomy of improved and local crop varieties (individual crops)
Pests and diseases (of individual crops or of a season)
Local and improved implements
Animal husbandry
Village fisheries
Kitchen gardens
Farm forestry
Extension activities for farm women
Extension activities for tribal people
Postharvest technology (by crop or in general)
Planning extension activities
Monitoring and evaluation: interpretation and use of results
Extension methods (orientation and refresher training)
How to conduct a field day
Production and use of visual aids
Field visits: objectives and methods
Communication techniques
Media support for extension
Management techniques for agricultural programs

2. For Subject Matter Specialists (SMSs) (in addition to the above courses)

How to conduct fortnightly training sessions (and other training courses)
Developing production recommendations
SMS role in monthly workshops
Farm trials: preparation, conduct, analysis
Field visits and liaison with research
Specialized courses (relating to SMSs' specialization)

R. Paul

Mass media should be used to complement extension work in the field

Chapter 21

Information Support

Summary

Dissemination of information about extension operations is important within the extension service for the training and motivation of staff and as input for policy decisions. Externally, it builds up understanding and support for extension's objectives and achievements. Information support activities must be carefully planned, implemented, and monitored. Staff are available for the task, particularly Training Officers. Success stories from staff, farmer reaction to extension, general data on extension's activities and achievements, and monitoring and evaluation results are chief subjects for dissemination. Suitable verified stories on these subjects should be publicized and made available to newspapers and radio and at exhibitions.

* * * * *

The dissemination of information about extension operations -- as distinct from the information on production recommendations taught to farmers and feedback from farmers -- plays an important part in sustaining an effective agricultural extension service. Such information is important within the extension service itself for information, training, and motivation, and as a source for policy and planning decisions. Information dissemination also has a significant external role, since publicity of extension's objectives and achievements, both areas where public misunderstanding is not uncommon, can help gain outside understanding of and support for the service.

The collection and dissemination of relevant information should be carefully planned, implemented, and monitored. Information support is not a

seasonal, campaign-type activity. It must be undertaken continuously and designed to be cumulative in effect. Extension services have adequate staff available for information support. The essential production requirements are slight and are rarely a constraint: a few still cameras, mimeograph machines, and a simple press are the main needs. The most common constraint on effective information support is unawareness of its potential contribution to better understanding (by staff of the extension service, staff of other government departments, and the public at large) of the role, goals, and achievements of extension. Staff frequently do not appreciate their responsibility in this field and the impact of effective information support. Where they are active, it is likely to be in the general field of publicity directed to audiences outside the service rather than to the substantial internal information needs. Proper planning for and organization of information support is often lacking.

The officer most directly involved in developing information support for extension is the Training Officer, who may sometimes be assisted by an Information Officer. One of the responsibilities of the Training Officer is to assist staff within his area of jurisdiction in collecting, verifying, and publicizing suitable case studies of extension work for use in training, to motivate and inform extension staff, and to increase the general public's awareness and understanding of the activities of the extension service.

Case Studies

A main component of the information support work of the Training Officer is the case study. Case studies may come from all areas of extension activity. They may be on achievements of individual workers (such as the success of a Village Extension Worker with recommendations in one of his farmers' groups), or focus on a particular production recommendation (outstanding farmer response to a recommended seed variety, for instance), successful farm trials, or even on an innovative worker.

In training and work-review sessions, staff of all levels should report and discuss their own successes and failures from which lessons may be drawn. At fortnightly training sessions, the Training Officer should ensure that all Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) are encouraged to relate specific unusual work activities (failures or successes) of the previous fortnight. For VEWs and AEOs, an appropriate example might be the first two or three farmers in a group adopting a particular practice, almost an entire group following another recommendation, exceptionally high yields or savings, changing cropping patterns, introduction of new varieties, and so on. For SMSs, a success story might be the appropriate adjustment of a recommendation in light of actual farm conditions, or the solving of a particular disease problem in the field. For a Subdivisional Extension Officer (SDEO), a success might be his helping an AEO and VEW change some contact farmers to farmers who are more interested in working with extension staff or who better represent the farmers' group. A District Extension Officer (DEO) might claim a significant increase in production because of the efficient operation of the whole district staff, including proper training and regular visits.

The range of useful case studies is endless. To the detriment of the extension service, however, few of the success stories among these are

likely to become widely known without the direction and encouragement of the Training Officer. Each Training Officer should prepare and circulate a specified number of such short case studies (perhaps four or five) each month. The case studies should be circulated to all staff in the Training Officer's jurisdiction; the more interesting case studies should be circulated to extension staff in other areas and to selected nonextension staff, after screening and selection by a Training Officer at a higher level.

Other Information

In addition to case studies of extension activities, Training Officers should collect as a matter of routine other types of information. One is farmer response to extension activities. Reactions should be sought not only from farmers who have been suggested by extension staff. The Training Officer should visit on his own initiative areas where extension is active and consult farmers there. He should not seek to elicit only positive responses. Farmer endorsement of extension work can be used to publicize the system. Problems raised by farmers, or criticisms of extension, are valuable guides to extension management and useful material for training sessions. Sound recording of such responses is often more effective than written reports.

Another type of information collected by the Training Officer is information on the progress of extension: the main recommendations of a particular season, impact of these, extension response to agricultural production emergencies, and so on. Supported by verified figures, such information will be in frequent demand by agricultural and other administrators, as well as by the press and public.

The extension monitoring and evaluation unit will undertake special short studies of different aspects of extension that will provide useful material for internal and external circulation, but its main work is to conduct regular field surveys that focus on extension coverage of farmers, the dissemination of recommendations, and the effect of recommended practices on farmers' production and income. Such surveys and studies are useful only insofar as the results are available for extension staff to take into account in their work and for the public to learn of extension's progress. The reporting requirements for these two audiences will vary somewhat. Readers outside the Department of Agriculture and government will rarely be enough interested (for example, in details of sample selection and survey techniques) to justify the publication and widespread circulation of each complete monitoring and evaluation report. The highlights of surveys are normally included as a summary in each report; this summary, illustrated where appropriate, should be circulated to interested parties outside the extension service. As with the success stories prepared by Training Officers, these summaries must be accurate but need not be exhaustive: they are highlights of extension's work.

Circulation of Information

Within the extension service, case studies, innovative activities, survey findings, and other highlights of extension's work in a season or with a particular crop, should be widely circulated in the form of mimeographed or printed sheets and pamphlets. Relevant figures must be included in each

item, as should photographs where possible. Particularly interesting examples should be collated into a regular series by Training Officers and possibly presented in the form of a magazine directed specifically at the interests and needs of the extension service. Printed case studies and stories of achievements are easily distributed to extension staff as well as to the press. Slide stories and even short films may be produced in an addition to printed stories. Training Officers at all levels are responsible for making such stories available to the press, including rewriting them for publication as necessary. The Training Officer should ensure that such stories are also received by all involved training and research staff, input agencies, and other government departments and development organizations. Stories and other information releases on accomplishments produced at a local or state level should be sent to all such extension services and to national extension headquarters on a regular exchange basis.

Two areas that require particular attention in information support are exhibitions and the use of radio and television. Some main considerations concerning these follow.

Exhibitions. Exhibitions publicizing development activities are frequently held. At whatever level they are held, the extension service must ensure that exhibitions clearly demonstrate its chief activities and achievements. It may even occasionally arrange its own exhibitions, and should certainly establish and maintain permanent small exhibitions at local extension offices. As Training Officers are unlikely to be able to cover effectively all exhibitions, other extension staff should also be trained to design and mount exhibitions. At either a temporary or permanent exhibition, key production recommendations (and results of these), achievements of individual workers and of the service as a whole, and farmers' opinions of extension should be attractively displayed. Without careful preparation, the contribution of extension to agricultural development is likely to be lost in the welter of publicity on new varieties, implements, market supports, credit and input distribution, and so on, that often dominates agricultural exhibitions.

Radio and television. Radio -- and, in some areas, television -- is a potentially powerful means of information support for agricultural extension. Used effectively, radio can provide general information about agriculture quickly and accurately to a large number of farmers and create awareness of extension's production recommendations. Radio cannot, however, replace extension's necessary personal contact with farmers to teach them how a particular technology should be used in their own resource conditions. It is in extension's interest to use effectively radio (and television) to complement and support its intensive field activities. Like all other means of information support, the potential benefit of radio to agricultural extension only accrues when the material for its use is carefully and specifically prepared. Most radio stations will use interesting, concise material on rural activities. Through the Training Officer, the extension service must see that appropriate material is always available for broadcasting. The Training Officer should, of course, also ensure that the information broadcast on agriculture from other sources -- for example, on agricultural practices, input requirements and availability, and reactions to agricultural emergencies -- is in line with the advice given to farmers by extension field workers.

Radio can provide extension with support in the sense of providing the public, and especially the farming public, with general information about the service's proposed operations for a particular season (such as the introduction of new crops or varieties), as well as publicity on its objectives and achievements. Radio can also give more specific support than this to extension. For example, the farmers' groups scheduled for a visit by VEWs may be announced for local areas each day, as can the general production recommendations for the current period that are being promoted by extension workers and the inputs likely to be required by farmers in the coming weeks, and where they are available. In agricultural emergencies -- pest and disease outbreaks, droughts or incessant rain -- radio has an obvious role. Market information is best broadcast by radio given the range and immediacy of broadcasts. Similarly, radio should be used to broadcast weather forecasts designed especially for farmers.

The prime responsibility for information support both within the extension service and with farmers and the general public falls to the Training Officer. To work effectively, he must be carefully trained and spend a considerable time in the field observing the work of farmers and extension staff. One of the challenges to any extension system is to establish an appropriate mix (which is always changing) of field work and mass media. With proper training and field exposure, the Training Officer should be a prime source of advice in this regard.

Chapter 22

Communication Techniques

Summary

Without an effective system of communication within the extension service and between it and farmers, agricultural extension can achieve little. The training and visit system of extension establishes a broad structure to facilitate such communication, but equally important are the communication skills of extension staff. Five communication techniques have proved to be particularly effective in training extension staff: practical orientation, skill teaching, trainee involvement, samples and examples, and visual aids. These techniques have some application in extension's contact with farmers, but there the use of contact farmers and initial implementation of production recommendations on small areas are important communication techniques.

* * * * *

Agricultural extension is the means by which the Department of Agriculture advises and teaches farmers relevant production technology, and keeps in touch with farming conditions and farmers' problems and needs. Given these advising, teaching, and informational functions, an extension service can achieve little without effective communication within the service and between extension workers and farmers.

Effective communication depends on both a suitable structure and appropriate techniques. The training and visit system of agricultural extension establishes a structure to facilitate communication in the linkage of extension, research, and farmers, created through planning and training sessions and the frequent, regular field contact between farmers and extension. To complement this structure, appropriate techniques for communication

within the extension service, and between extension and farmers, must be identified and used.

A number of communication techniques have proved effective in the training of extension staff, and also in convincing farmers to adopt production recommendations or in teaching them particular skills on a person-to-person or group basis. To be effective, communication techniques used by extension must stimulate extension staff and farmers to become receptive to new ideas, and encourage feedback from farmers to extension staff and within the extension service to trainers. Effective communication skills must be deliberately taught and learned. There is considerable overlap between communication techniques suited for training of extension staff and those more suited to interaction between extension workers and farmers. For clarity, however, here they are dealt with separately.

Communication Techniques for Training Extension Staff

Five communication techniques are particularly effective in training agricultural extension staff. None is confined to, or even originates in, extension, but each fits well the combination of theoretical and practical training required by extension, and each shares a number of common characteristics. The use of any should be well chosen and planned, as each suits best a particular situation and, to be effective, requires careful preparation. The techniques are basically simple, requiring few elaborate aids; indeed, necessary aids can generally be prepared locally. Techniques should be adjusted to suit the particular audience and to take advantage of local examples in order to stimulate and maintain the audience's interest.

While the communication techniques described below will in themselves be useful in the training of extension staff, their effectiveness will be enhanced if they are used by trainers familiar with the particular topic of training through their own experience, and who have been trained in teaching and communication skills. To acquire this necessary experience, extension trainers, as much as extension staff, should make frequent field visits and be involved in some farm trials on farmers' fields.

Practical Orientation. Agricultural extension cannot deal only with theory. Its chief concern is farmers' actual resources and ways to increase production and incomes within the constraints on these. A recommendation of the optimal dose of fertilizer, for example, is of little use to a farmer who cannot afford it. Similarly, there is little point in promoting among farmers (except sometimes for farmers' general awareness) the many useful seed varieties known to research and extension, for example, if they are not locally available. Training of extension staff must be kept practical; it should focus on recommendations relevant to a majority of farmers. Case studies based on local experience -- both successes and failures -- must be an integral part of training.

A most effective way of making training practical is to ensure that training sessions are not confined to classrooms. As much of a training session as possible -- and frequently the whole session -- should take place in fields of a reseach or seed farm or in farmers' fields selected to show either good or bad examples of agriculture and extension. The purpose of this field exposure is not to transfer lecture sessions to the field, but to

enable trainees to identify relevant points in the field through actual practice. For example, if one point of training is the determination of plant population in a particular crop, all trainees should themselves determine in the field the plant population of that crop and, in cases of inadequate plant population, suggest reasons for the situation.

Skill teaching. Much of what extension workers advise farmers requires specific skills. Spraying methods, fertilizer application, and line-sowing are examples of such skills. It is impossible for an extension worker effectively to teach farmers new skills or how to modify their existing skills, unless he can himself do them. This is not so much because the extension worker should do it for the farmer (which he should not, apart from a brief demonstration of a method), but so that he is able to explain and demonstrate the new method accurately and confidently to farmers. Farmers are often reluctant to change a practice or adopt a new skill if they believe the extension worker himself is unable to do it or cannot demonstrate it accurately to them. Moreover, in doing it himself during training and in the field, the extension worker is more likely to come across actions or input requirements that he may think will not be accepted by farmers but which are not readily apparent when the skill is merely described to him. In addition, an extension agent generally establishes a better rapport with farmers when they see that he is willing to practice what he preaches. Trainers must ensure that all equipment needed for teaching skills is available both in training sessions and for extension workers to use in the field, and that Village Extension Workers (VEWs) have adequate time to learn and practice skills before they take them to farmers.

Trainee involvement. It is tedious for instructor and trainee alike if all the work of a training session is done by the instructor, not to mention that trainees are unlikely to learn much this way. Trainees must take part in discussions, practical work, and skill training activities; effective participation in all of these requires considerable planning and organization. Some ways to encourage active involvement by trainees, particularly in fortnightly training sessions, are to:

1. have participants discuss, with the class as a whole or in smaller groups, the field situation and their achievements and failures since the previous training session, and the lessons that can be drawn from these experiences;

2. encourage trainees to bring to training samples and specimens (of diseased plants, for example) and, before the session, suggest nearby fields where part of the session's practical period might be held;

3. have all trainees practice skills;

4. request trainees with expertise in a particlar topic to lead discussion on it;

5. have trainees rehearse the presentation of production recommendations, using other trainees as "farmers";

6. break the training group into small groups, each of which will review particular topics and present a summary of discussions;

7. encourage relevant discussion and seek response from all participants.

Samples and examples. Every production recommendation and problem discussed in training should be accompanied by relevant samples and examples. Diseased plants, insects, seeds, implements, and so on, may be shown and passed around among trainees, who should be encouraged to bring such items to all training sessions (and to use them in their contacts with farmers). Discussions of recommended practices should be accompanied by factual accounts of the implications of the recommendations, including costs and benefits based on research work, field trials, data collected from farmers, and the experience of trainers and trainees. This information is necessary to convince trainees of the feasibility and advantages of a recommendation; without confidence that their teaching is correct and will have results, it is difficult for extension staff to convince farmers to adopt a recommendation.

Visual aids. Visual aids tailored to the needs of a particular audience have an important role in extension training. They are needed to emphasize key points of recommendations, safeguard messages from distortion, promote effective communication, and act as guides to field extension workers for their own aids to be used in their contacts with farmers. Charts, specimens, models, and photographs are usually adequate, but, where facilities exist, overhead projectors, slides, and films should also be used in training sessions. Visual aids should not, however, become a substitute for practical work and the trainees' own practice of new skills.

There are numerous sophisticated devices available to aid communication and teaching. Most of these are expensive to purchase and operate, and require spare parts and skilled maintenance, neither of which is readily available where extension training is usually held. It is generally easier and more reliable to use simpler, cheaper aids that, given the right training, extension staff can use as effectively as sophisticated aids. As far as is feasible, visual and other teaching aids should be prepared by the communicator himself, and the production and effective use of teaching aids should be an important part of the training of extension staff. Trainees should prepare most of the visual aids that they wil use in their contacts with farmers (or in other training sessions); examples are to be kept for future training sessions.

Communication Techniques Used by Extension Staff with Farmers

Techniques to enhance communication between extension worker and farmer are similar to those used in the training of extension staff. Topics discussed -- particularly specific production recommendations -- must be practical (and be adjusted to local farmers' terminology, including units of measurement), and be accompanied by the teaching of skills and use of relevant visual aids, samples, and examples. Visual aids and samples are particularly suited to the meetings the VEW sometimes holds with farmers. After showing a skill to a farmer or group of farmers, the VEW should work

with individual farmers to teach them the skill in detail and to help them practice it. Concise charts outlining the impact points of a recommendation and showing cost and return calculations are especially useful in the field. Slides and even short films on relevant topics may also occasionally be used. While, however, visual aids are used by the VEW and other extension staff in the field, they must not lose sight of their basic function, which is to meet farmers in their fields to analyze their production situation and needs, and to suggest appropriate recommendations based on their field/resource situation: visual aids should support this work, not replace it.

There are a number of communication techniques that will be used by the VEW alone. One is the use of selected farmers -- contact farmers -- as points of contact and innovation diffusion within a farmers' group. A number of interested and representative farmers should be selected as the point of contact in a group. Other farmers may, in essence, act as contact farmers for a particular crop or practice through their willingness to try recommendations, but the VEW's efforts on each visit should start with the available, active contact farmers. He must ensure that all contact farmers, and always some other farmers as well, try some recommended practices on at least a small area of their land, and that other farmers are encouraged to observe, understand, and follow that practice, both while the VEW is present and at other times. As contact farmers are crucial to innovation diffusion in the training and visit system, their appropriate selection and effective use by the VEW is central to good extension.

A VEW should never ask a farmer to adopt a new recommended practice (except in cases like emergency pest and disease control measures or obvious practices like weeding and clean cultivation) on all his land or even on a major part of it. He should aim at getting a large number of farmers -- contact and others -- to try the practice on a small area, for example, perhaps a few rows of maize planted at the recommended spacing, or planting a field corner with a new seed variety.

This approach minimizes risk, establishes a series of scattered "demonstration" plots, and provides extension and research with numerous plots of field experiments. Moreover, it will provide much assistance and support to the work of the extension service and the VEW in the following season. If the recommendation is successful and profitable, farmers who tried it on a small area will not require further extension efforts to adopt it on a larger area, and many other farmers, having seen it adopted under conditions similar to their own, will need little convincing. If it is unsuccessful, farmers lose little as they have tried it only on a small area. Whether the recommendation is successful or unsuccessful, extension has gained a large amount of information on which to base action on the recommendation in future years (including referring it back to research, or adjusting or dropping it). With farmers themselves trying recommended practices on small areas, there is no need for large-scale organized demonstrations, which anyway are costly and time consuming to organize, and which rarely are as effective in encouraging farmers to adopt new practices, crops, or varieties as are small plots tried by farmers themselves.

A field extension worker relies heavily on convincing farmers through demonstration. This will take place when he teaches skills required in particular recommendations, but the best opportunity for demonstration is

a large number of small plots where farmers themselves try recommendations. The VEW, under the guidance of his Agricultural Extension Officer (AEO) and other officers, should spare no effort in showing these plots to other farmers, both in the course of regular visits and by organizing local field days. Part of a fixed visit day in a farmers' group may be devoted to taking farmers to such plots to discuss the method followed in each and its results. Extra visit days may be used for field days involving farmers of other groups and sometimes other extension staff. A VEW may suggest a farmers' group where a range of recommendations have been tried with greater or less success as the site of a fortnightly training session or the fortnightly meeting of the AEO with his VEW. All support and encouragement should be given to the VEW and AEO to organize field days.

A variety of communication techniques may be used in training extension staff and in extension's contacts with farmers. The technique or combination of techniques most suited for each particular occasion should be used. It should be kept in mind that the communication techniques described here are only techniques and, by themselves, will not guarantee effective communication. It is possible to use a suitable communication medium, method, or skill without assuring good communication. Unless the trainee or farmer understands and is motivated to try the taught practice, communication is ineffective. The ultimate test of the suitability of communication technique is its impact on the audience: trainers and other extension staff should not get so involved in a technique for its own sake that sight is lost of this test.

Extension agent discusses maize cultivation with a farmer

Peter Muncie

Water management is an important concern for many farmers and extension

S. L. Ghosal

Chapter 23

Incentives for Extension Staff

Summary

Staff of an agricultural extension service should receive appropriate incentives to work well. The most effective incentive to good work is that a job be purposeful and satisfying, and that good work be recognized and rewarded. Appropriate incentives are particularly important in extension, since the effectiveness of the system depends to a large extent on the contribution of lower-level staff. The employment structure of an extension service must provide material and intangible encouragement for staff at all levels. An attractive, flexible remuneration structure, access to training on the basis of need and ability, promotion in response to responsibility and ability, and the establishment of professional staff cadres, all under effective management, are necessary. Selective incentives such as awards and study tours are most useful in the context of a well-managed system that caters to the overall professional development of all extension staff.

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Once a professional agricultural extension service is established and its impact on agricultural production and incomes becomes apparent, a government is often encouraged to reward staff both for their achievements and to encourage continued good work. Rather than using incentives that are accessible and realistic for the majority of staff, however, awards are often given only to a few staff. Extension workers should be rewarded for good work, but this must be done through an appropriate system of incentives and not by the occasional award of special prizes. After all, even if the selection criteria are objective, the award of a prize to "the best Village Extension Worker" means that all other Village Extension Workers are not awarded a

prize, whereas by most reasonable criteria many are probably as eligible for the award as the selected winner.

The strongest incentive to high performance in any activity is that work is purposeful and satisfying, and that good work is recognized and rewarded. Work must be purposeful in the sense that it will produce obvious results that contribute to known objectives. In extension, one does not attend training sessions or make daily visits to farmers for the sake of the training or visits alone. Staff are involved in these activities to help ensure that farmers' production and incomes will increase: work is purposeful when it has the potential of making a contribution to this end. Work satisfaction comes from its apparent results and the recognition and appreciation received for work.

Recognition and reward for work may come in two ways. One is through sincere credit being given privately and individually, as well as in public places (like training sessions and in the field). Selective awards may also be used to grant such recognition and express appreciation. In awarding these, however, the scale and relevance of the achievement should be kept in mind. For example, it is often more difficult to convince the first three or four farmers to take up a new practice than it is to have "all the village" adopt an improved variety of seed for an established crop. A second way of giving staff appropriate recognition is through attractive conditions of employment and service. The creation and maintenance of appropriate employment conditions is generally a more effective incentive than selective awards. However, because employment conditions are part of an intricate, established system with ramifications well beyond the extension service, attention usually focuses on a more easily implemented award system, even if the very effectiveness of this system is weakened because the work environment in which it operates is ignored.

The work environment of the extension service has two basic aspects, the material and the intangible. For extension staff, material aspects include salary, promotion prospects, opportunities for training and learning, and provision for housing, transport, and related allowances. The chief intangible support to staff is that they are given adequate professional and social recognition for their work. It is the responsibility of management to ensure that both material and intangible aspects of employment are appropriate, and that they are objectively and actively administered. With respect to extension, this will include seeing that extension staff receive salaries and other compensation that are on a par with those of staff with similar functions and responsibilities in other departments.

The success of extension depends to a large extent on the work of its lowest-level staff, the Village Extension Worker (VEW). As in many other fields, lower-level extension staff generally have less material recognition or prospects for professional growth than staff at higher levels. It is not unusual for base-level workers in some extension services to spend their entire career at one level without significant salary improvement, in-service training, or promotion. The consequences of this for a worker's outlook, commitment, and productivity are obvious.

One challenge facing extension management is to establish and maintain an employment structure that provides appropriate support and

encouragement to workers at all levels. A basic requirement for this is a professional cadre for extension staff with adequate levels for promotion, and a recognition that as much as other areas of agriculture, extension is a profession requiring particular training, skills, experience, and aptitude. A professional extension cadre will help ensure that only people with appropriate qualifications join the extension service and, equally important, that skills and experience gained in extension are not lost to the service through promotion to positions in other cadres. On the other hand, a cadre will facilitate the filling of positions by promotion with appropriately qualified candidates. Within an extension cadre, there may be further specialized cadres, for example, of Subject Matter Specialsts (SMSs) and of VEWs. The responsibilities and skills required of a VEW are different from those of other extension staff. There should be sufficient promotional opportunities for a good VEW to be promoted and remain as VEW and not become, for the purpose of attaining a promotion, for example, an Agricultural Extension Officer (AEO), whose function and responsibilities may not fit his abilities. Similarly, SMSs should be able to be promoted and remain SMSs so that the extension service as well as they themselves can take advantage of their specialized skills.

Salaries commensurate with responsibility and ability are of primary importance. Attention should also be given to salary gradation at levels where staff are likely to work for some time. Longer time scales, open-ended grades, and intermediate salary scales between positions are ways of achieving this. Field work and field residence should be made eligible for special pay. Allowances for travel and for the purchase of transport by staff members not only should ensure that staff do not suffer financial loss in this regard during the course of duty, but also that the allowances themselves are an incentive for staff to travel. Housing or attractive rental allowances must be provided to staff, particularly to those living in rural areas.

All staff should be given opportunity continually to upgrade their professional skills, both to enable them to perform their work more efficiently and to help them qualify for promotion. The training needs of individual staff members should be assessed regularly and a program established to meet these needs. Specialized short courses, held both locally and in special cases overseas, should be developed and deliberately used to upgrade extension staff. Suitable staff should be encouraged to attend undergraduate and postgraduate university courses; they should be fully supported financially during these studies.

When promoting a person in the extension service, two points should be kept in mind. First, promotion in terms of salary gain should be distinguished from promotion resulting in additional responsibilities, although the latter will usually involve salary gain. The first may be based on both merit and time at a given level. However, the key considerations in promotion of any staff member should be mainly proven ability and suitability to the new task; seniority should be an important but lesser consideration. There must be a sufficient range in salary scales at any one level to allow staff who perform best at that level to remain there without suffering undue financial disadvantage. Second, while every opportunity should be given for internal promotion -- including reasonable promotion quotas for staff from lower levels -- allowance should be made for the direct recruitment of

appropriately trained and skilled staff from outside. Direct recruitment should be possible at each level, although it will mostly occur at lower and specialized levels where, for example, staff with degrees are directly recruited as Subject Matter Specialists and Agricultural Extension Officers (in addition to Village Extension Workers, of course).

Individuals must have the opportunity for their ability and achievements to be recognized among farmers, the public, and their colleagues. Much of the recognition among farmers and local leaders will come on an individual basis, particularly for VEWs, as the effectiveness of their advice becomes apparent and benefiting farmers advertise it. Other staff that provide appropriate technical and organizational support (particularly AEOs, SMSs, and Subdivisional Extension Officers) will share some of this recognition during their own field work. The news media will help create awareness of the extension service's contribution to agricultural development and of its technical and professional role, especially if suitable exposure for the media is organized by the extension service through informative handouts, field tours, and exhibitions. In addition to the recognition that comes from promotion and properly administered awards, one sure way of recognizing a staff member's present and potential contribution is to involve him in meaningful discussions and decisionmaking. This should be done individually and informally in the field, as well as in formal meetings. Of course, good work by staff should be publicized in training sessions and elsewhere not merely for the sake of publicity but as examples of effective extension and to guide and encourage other staff.

Many material and intangible aspects of employment apply to all staff uniformly; others, however, are perforce selective. These latter incentives are not a substitute for a sound, well-managed employment structure, but properly administered they are an important complementary part of the management system. They provide valuable flexibility in the usual career development channels. It is important, however, that the selection of "winners" for awards should not be disruptive of staff work or self-esteem, and that the awards have some long-term benefit. Selection criteria must be well-known, relevant to extension goals, objective, and capable of being applied to all eligible staff.

The proper award for consistent good work is promotion. A requirement for most promotions -- or, at least, a factor that favors many promotions -- is additional relevant training. In this way, participation in study tours and attendance at special courses (including university studies) are often appropriate selective incentives. However, all training should not be done as the result of a reward. Study tours and training can usually be most efficiently arranged for a number of staff at one time, and so some of the selectiveness and difficulty in judging a single worker of a particular level "the best" may be avoided. Access to training and study tours for consistent good performance against relevant and measurable objectives is a more significant incentive to staff than occasional, seemingly random, "best worker" awards of cash prizes, bicycles, plaques, and the like.

Extension staff require incentives to work well as much as do the staff of any other service and, in some sense, even more so given the isolated and difficult conditions under which many work. The most effective incentive is a satisfying and purposeful job. Material benefits must bear an

adequate relation to work expected and performed and to those of other jobs. Staff must have realistic prospects of professional growth. They must receive appropriate social and professional recognition for their work. For such a system to operate, effective and strong management is required to develop staff within the service and to project, as necessary, the staff's needs beyond those for which the service can provide. In addition to this responsive employment structure, there is a place for selective incentives in recognition of outstanding work at all levels. Such incentives must be awarded on the basis of objective and relevant criteria, and contribute to the long-term upgrading of the recipients: they are not a substitute for sound management within a supportive organizational structure and personnel management system.

Chapter 24

Agricultural Extension and Farm Women

Summary

Women have an important role in agriculture. Their involvement in agriculture varies between cultures, but in most there are few major agricultural operations in which women do not participate. To be truly effective, an agricultural extension service must deal with the activities handled by women. This is not often done, however, because of sociological constraints and inadequate focus by extension on women's agricultural activities. An agricultural extension service can adopt a number of strategies to improve its support for farm women, among other by developing with research suitable production recommendations for activities solely or largely performed by women, orienting staff to the activities and needs of farm women, having some Subject Matter Specialists (SMSs) concentrate on women's activities, and employing women in all positions in the extension service for which they are qualified. These steps are important, but by themselves achieve little unless extension staff regularly meet farm women. Ways to ensure this contact include the selection in each farmers' group of some female contact farmers. Whatever approach is adopted to have extension serve farm women, local agricultural, sociological, and administrative considerations should be taken into account, and involvement of extension, research, and training staff at all levels is required.

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Agricultural operations performed by women differ between cultures, yet certain generalizations about the involvement of women in agriculture are

For agricultural activities performed largely by women, such as vegetable gardening, extension should develop specific recommended practices *Kay Chernush*

possible. One is that farm women have an important role in agriculture. Many women are solely responsible for the operation and management of a farm. In most societies, there are few major agricultural operations in which women do not participate as decisionmakers (we are not concerned here with women in nondecisionmaking roles), and for some they are exclusively respousible. A gender-specific division of labor may allocate certain tasks to men (ploughing, for instance), and some to both men and women (such as harvesting), but even in such circumstances women participate in a broad range of agricultural activity. Women take part in decisions on what crops to grow and which foods to eat, what seeds and planting stock should be selected, and how production activities like seed selection, planting, weeding, fertilizing, plant protection, and harvesting itself should be organized and undertaken. Women often have an active role in the storage and processing of farm products and, in some areas, in land preparation. Even where their role in field crops may be limited, women often have sole care for kitchen gardens, and are responsible for aspects of animal husbandry, particularly for the feeding and care of animals such as poultry, sheep, goats, and cattle. Moreover, as either wives or household heads, women often have an important decisionmaking role in other agricultural activities in which they are not directly involved.

Another generalization concerning the role of women in agriculture is that, given their involvement in a wide range of agricultural activities, full production potential is difficult to achieve unless the activities performed by farm women receive adequate technical support. One does not expect agricultural activities executed primarily by males to achieve their productive potential without professional technical support; neither should one expect that of women's activities. Moreover, the effectiveness of an agricultural extension service -- which is responsible for providing technological support to farmers -- is likely to be curtailed if it cannot deal with the agricultural interests and activities of farm women: not only because women have an important role in agriculture, but also because in many societies women represent a majority of the population.

Difficulties in Serving Farm Women

For an extension service effectively to meet the needs of agriculture, it is essential that it serve farm women as well as men. While this need is recognized by management in many extension services, it has often proved a difficult goal to achieve. One reason for this failure concerns the sociological environment in which farm women and extension agents operate. In some societies, it is difficult for agricultural extension workers, especially if they are men, effectively to interact with farm women. Technical advice in activities performed by women may have to be channeled via male family members. A related difficulty is that even in tasks for which women are largely or exclusively responsible, male family members often have a not insignificant role in decisionmaking. It is easy to imagine, in such circumstances, the difficulties of reliable message transmission, not to mention the absence of practical teaching to, and direct feedback from, the intended beneficiaries.

The tendency of extension services to cater chiefly to men is often apparent in the selection of contact farmers in areas implementing the training and visit system of extension. Even where no such directive exists, it is not unusual in some areas for all contact farmers to be men. As this

often occurs in the absence of sociological barriers to male extension staff working with farm women and in cases where the Village Extension Worker is a women, it suggests that extension management does not see the need to attempt to reach farm women or is uncertain of the most effective way of doing so.

The agricultural extension service, and often almost equally so the Department of Agriculture, is male dominated in many countries. In some, it is unusual for a significant number of either extension field or management staff to be women. Not only may it be difficult sociologically for a male-dominated extension service to deal professionally with farm women, but it is most likely that its interests, aptitudes, and exposure are primarily directed to farm operations performed by men. In addition, if such an extension service has difficulty in involving female farmers in its activities, it may even fail to recognize the importance of dealing with farm women. This attitude is both cause and symptom of inadequate technical recommendations and advice for agricultural activities decided upon and performed primarily by women.

In the absence of a decision to handle the production interests of farm women (which is exacerbated by poor feedback from extension workers), agricultural production recommendations and research activities are likely to concentrate on the activities performed by men. Even discrete, significant activities performed and decided upon largely by women, such as kitchen gardens, may be ignored in the production recommendations that research and extension formulate. Without useful technical advice on women-oriented production activities, extension is unable to serve the technological requirements of farm women. It is perhaps not surprising in such circumstances that the "extension" needs of women are often seen mainly in terms of home science -- sewing, clothing, cooking, and the care of children.

Possible Action

As a first step to begin to serve farm women, the managers of an agricultural extension service should determine the key agricultural production activities in which women have a significant decisionmaking role, and review whether such activities are adequately covered by extension field activities and recommendations. Particular attention should be given to those activities performed largely or exclusively by women, and for which it is assumed that recommended technology will be disseminated to women by the male farmers who are in contact with extension. Such reviews should be undertaken periodically to reflect changes in production activities, available technology, the capabilities and organization of extension staff, and sociological conditions. If it is indicated that the agricultural activities in which farm women play an important decisionmaking role require explicit attention by extension, a number of approaches may be used. These approaches should be adjusted to the particular agricultural, sociological, and administrative environment within which the extension service and the farmers it serves operate. There is no single approach that will fit all possible circumstances. An extension service must select a method, which may be one or a combination of the approaches described below, that will specifically tackle the constraints it has identified as preventing effective extension support from reaching farm women.

One area where action can be taken to strengthen extension support for farm women is the production recommendations taught to farmers by extension. Aspects of agricultural production that are largely the responsibility of farm women must be covered by feasible, worthwhile recommended practices and impact points. Such areas might include, for example, kitchen gardens and possible other vegetable production; seed selection, sowing, weeding, and pest scouting; postharvest technology; and aspects of nutrition and care of poultry and other livestock. The attention of research should be focused on these activities so that extension staff can finalize, during seasonal and monthly workshops, specific recommended practices for them. The agricultural production recommendations developed by extension and research are not general welfare operations of the type that are generally handled by women's programs in rural areas. These welfare activities are important, but they should not be confused with the specific agricultural technology requirements of farm women.

Another prerequisite to improve extension's service of farm women is to ensure that extension training activities enable extension staff to identify, and subsequently handle effectively, the extension needs of farm women. Even where they are themselves women, staff of an extension service -- as well as their research and training counterparts -- who have focused on contact with male farmers are likely to require orientation to the agricultural activities and needs of farm women. Such orientation, which should be carefully tailored to the actual functions of different extension and other staff, should follow a review (by trainers and trainees alike) of the decisionmaking role of women in local agricultural production. It should aim not only at making staff aware of the need to take account of farm women and serve them effectively, but should also guide staff to identify those areas where women need extension support. This support would include preparing suitable production recommendations for activities undertaken by women, and ensuring adequate feedback to extension and research on the production conditions of farm women and their reactions to recommended practices. Such training courses, which could be of two or three days' duration, should be given to all extension staff on a regular and repeated basis. After the first season or so of extension activities directed specifically towards women, the courses will provide a forum for discussion of actual field experiences as a basis for review and adjustment of possible strategies to serve farm women more effectively.

Another way to help facilitate extension support for farm women is for women to be employed in the extension service. Sociological conditions permitting, men and women extension workers in the one extension service should serve farm men and women alike. Field and managerial positions should be filled by candidates of suitable qualifications and experience, regardless of their sex. The recruitment of women to appropriate positions in the extension service should be tackled as a matter of priority. However, the presence of female staff in itself does not mean that shortcomings in extension support for farm women will be readily overcome. With good management, an extension service staffed by both men and women in field and supervisory positions can better serve farm women, but even then specialized support will be required to focus the attention of extension and research on the needs of farm women. This will be particularly so where farm women have been outside the ambit of the extension service and where few extension, research, or training staff are women.

Subject Matter Specialists (SMSs), like all other extension staff, should be trained and directed to handle the technological requirements of farm women as well as men. Where the activities of farm women have long been ignored, sociological barriers are significant, and few extension staff and researchers are women, it is likely that there are few useful recommendations of improved practices for activities in which women decide upon inputs and practices. It may, therefore, be necessary to establish within the Subject matter Specialists cadre a position of SMS (Farm Women) -- which does not necessarily need to be filled exclusively by women. The prime responsibility of such an SMS (Farm Women) would be to ensure that the extension service, and through it research, develops and promotes feasible, appropriate production recommendations to meet the needs of farm women. This task would be done at seasonal zonal and state workshops, as well as regularly in monthly workshops and fortnightly training sessions. Much of the research support for farm activities organized and undertaken by women could come from the existing research system, provided that it receives adequate and continuous guidance to farm women's needs. SMSs (Farm Women) would have a key role in ensuring this.

SMSs (Farm Women) could be present at all levels of SMS support (i.e., subdivision, district, and headquarters), but in the absence of suitable candidates should be concentrated at the subdivision level where there is most regular direct contact with extension field staff. They should have general qualifications in agriculture, as well as in extension, rural sociology, or related fields. In the absence of an SMS exclusively responsible for ensuring that the extension service recognizes and handles the needs of farm women, other SMSs, and particularly Training Officers, can be trained to ensure that extension deals effectively with farm women. This approach, however, in many circumstances will be less desirable and effective than having some SMSs solely responsible for the task -- i.e., SMSs (Farm Women).

Extension Must Meet Farm Women

The training of extension staff to identify and handle the agricultural needs of farm women, the development of suitable production recommendations for extension to teach them, the recruitment of women into the extension service at all levels and functions, and the establishment of Subject Matter Specialist positions to focus on the concerns of farm women are all important steps to improve extension coverage of farm women. However, they will all, individually or together, have limited impact on this goal unless extension staff actually meet farm women.

Interaction between extension and farmers in the training and visit system is to a large extent, at least initially, channeled through contact farmers. Consequently, to ensure that farm women are regularly and systematically served by extension, each Village Extension Worker (VEW) should work with some women contact farmers. Even where extension field staff have already selected and are working with male contact farmers, steps should be taken to include women among the contact farmers. This can be done with no disruption to the existing system if the VEW adds three or four women contact farmers to the ten or so contact farmers in each farmers' group.

As much as possible, extension contacts with farm women should emulate those with farm men. Particular care should be taken that female contact farmers are broadly representative of all farm women, and that not only the most vocal or sophisticated women are selected. Contacts should mainly take place in fields, and be focused on specific production recommendations. In the course of regular visits to each farmers' group, the VEW should visit all female contact farmers, and ensure that each receives both the general production recommendations that are taught to all farmers, and also the production recommendations that have been specifically drawn up for their relevance to the activities of farm women. The VEW and his supervisors, in particular the Agricultural Extension Officer (AEO), should see that the recommendations designed for farm women do, in fact, reach farm women -- contact farmers and others -- and that problems and successes encountered with the recommendations are reported in training sessions and to research.

Where it is not possible for the VEW to have effective contact with individual female farmers (as, for example, may happen with a male VEW, even with female contact farmers), other arrangements can be made that will enable the VEW to have regular, direct contact with farm women. One such possibility is to have local female village opinion leaders help organize women of the village into groups that can be met by the VEW in the course of his regular visits to the village. Such leaders, who might be called Farm Women Extension Group Leaders, could be wives of the VEW or local village officials, or the local school teacher, as well as female leaders of the village who themselves are involved in farming. In some places, women are organized under a female leader into women's labor groups; such a leader could be the contact person for the extension worker. It is unlikely that there will be difficulty in finding adequate, able volunteers to act as Group Leaders.

A Farm Women Extension Group Leader would advise interested farm women of the role of the extension service, and help ensure that women come together in a group to meet with the VEW on scheduled visit days. These female leaders will probably not be needed after some time, since, once they are aware of the role and utility of the VEW, the women themselves are likely to be willing and able to meet him individually or in small groups. Before they start work, the Farm Women Extension Group Leaders will need orientation to the role of the agricultural extension service and its aims for farm women. This orientation can probably be most effectively organized for small groups of potential leaders at farm training centers or the like, although it might also be done individually by the VEW or AEO under the guidance of the SMS (Farm Women).

Whether the extension service uses female contact farmers, Farm Women Extension Group Leaders, or a combination of these to reach farm women, the system will require close in-field guidance and review. Not only VEWs, but extension workers of all levels, must be advised how to undertake field activities that will effectively serve farm women. Even where Subject Matter Specialists (Farm Women) are in position, all other SMSs also need to focus in the field and in monthly workshops and fortnightly training sessions on the relevance and success of the chosen strategy to transfer technology relevant to the agricultural activities of farm women.

The activities suggested above are only some of many that might be adopted by an extension service attempting better to meet the agricultural production needs of farm women. Whatever method is selected, it should take into account local agricultural, sociological, and administrative conditions; be explicitly directed so that each level of extension, research, and training handles appropriate areas of women's agricultural decisionmaking activities; and ensure that extension field workers have direct, regular contact with women farmers. In view of the lack of experience of many extension services in dealing with the agricultural needs of farm women, whatever approach is adopted should be closely monitored and adjustments made as required. One final consideration should be that any attempt effectively to serve farm women cannot be left to lower-level staff alone. Each level of staff of the extension service and also of research and training, must undertake its own activities with an appropriate perspective on the needs of farm women. Unless this is done, a large number of key agricultural activities may be left unserved by the agricultural extension service.

Adoption of a recommended practice can be a demonstration in itself *D. Benor*

The importance of the depth of sowing is demonstrated in the field *D. Benor*

Chapter 25

The Training and Visit System and the Department of Agriculture

Summary

When a training and visit (T&V) system of agricultural extension is initially established, the attention of extension management is rightly focused on the mechanics of the system. Sight should not be lost, however, of the need for flexibility in the extension system, and of the broader implications of the T&V approach for a Department of Agriculture and for agricultural development activities in general. The organization of an extension service must over time adapt to increasingly complex and sophisticated demands of farmers, technological and research developments, changes in the supply of agricultural inputs and market conditions, and to the changing ability of its staff. Adaptations can include changes in the operational organization of the extension system, increased upgrading and specialization of staff, the establishment of professional staff cadres, enhanced use of mass media to complement field extension work, and a broader range of operations covered by the extension service. The adoption of T&V extension has significant implications for a Department of Agriculture's functions, programs, and staff; farmer participation in development activities; agricultural support services; and relationships between farmers, extension, and research. Properly exploited by extension management, these implications can significantly broaden the impact of a professional extension system.

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While a professional agricultural extension system is being established, attention is focused on its mechanics: VEW:farmer ratios, visit and training schedules, links with research, workshops and meetings, and so on. Although an extension system cannot operate effectively without the proper organization of these aspects, the broader perspective should not be lost. These features are, after all, only a means to the end of increasing farmers' production and incomes. The main way of doing this is having regular contact between extension staff and farmers, developing appropriate technology and practical recommendations for farmers, and maintaining significant feedback between farmers, extension workers, and researchers.

The training and visit (T&V) system of agricultural extension is one method of organizing extension to achieve these ends. It is specifically designed to overcome the major operational difficulties of reaching effectively hundreds of thousands of farmers, often scattered over wide areas, through thousands of equally scattered staff, by using a method that is readily understood by staff and farmers alike, and that can be easily supervised and monitored.

Flexibility of Organization

An extension system must be well organized to operate effectively in such circumstances. However, the approach to extension should never be rigid, and its organization must be flexible. Many aspects of the training and visit system can and should be changed as local agricultural, socioeconomic, or administrative conditions warrant. For example, it is not necessary that everywhere the visit and training cycle of the Village Extension Worker (VEW) be of two weeks' duration. It might be one week, three weeks, or even four -- as long as it is on an established, regular, and known cycle, and addresses farmers' seasonal and time-bound requirements. Neither is the number of Subject Matter Specialists (SMSs) and their specialization sacrosanct, because the extension system must change and develop to reflect progress and change in agriculture, technology, and farmers' attitudes, not to mention in extension staff themselves.

If the system of extension does not adapt to changing circumstances, it cannot be effective. However, any change in the system must ensure that there is regular interaction between farmers, extension, and research; farmers know the time when they are to be visited by extension workers; all staff receive adequate training regularly; and extension's work is organized in such a way that each staff member has an identifiable task for which he alone is responsible. It should also be kept in mind that any change that complicates the system is less likely to be successful than one that simplifies it.

Improving the Quality of Staff

The most important way in which the extension system develops to function effectively is through improving the quality of its staff. The Village Extension Worker will continue to be a key staff member; only he is in regular, direct contact with farmers. The VEW's task is not merely to transmit messages to farmers. He must also be able to evaluate and understand a farmer's total farm-based production system, diagnose production situations and constraints, recommend appropriate action on the basis of his

training and experience, and communicate clearly his advice. To do this well, the VEW must become increasingly capable and specialized. There may be a need for a number of streams of specialized extension agents within the one extension service: for instance, one farmer may be served by different extension agents for different components of his farming enterprise. Specialized and general VEWs will require skills in a number of common areas. Depending on the area, these skills could include, for example, farm and water management, animal husbandry, farm forestry, and water management. In addition to training, a key to improving the specialization of extension workers, including VEWs, is their increased involvement in farm trials and access to laboratories where they can work on applied soil, pathological, and entomological questions.

Training must become so central to the extension service that staff who are not adequately and continuously educated and brought up-to-date on the latest techniques will feel out of place and will demand participation in suitable courses, not just because career development depends on receiving training but also because their limited training makes them feel inadequate in their dealings with farmers and, of course, with other extension staff and researchers. In addition to courses in specific technical areas, training in extension methods should be given regularly to all staff, and all supervising staff should also receive management training. Recruits to the extension service must have appropriate university degrees. Ample provision should be made for staff without degrees to attend a university, and for suitable staff to undertake postgraduate studies.

Mass Media Support

Mass media should be made well aware of the role and activities of extension so that they will provide adequate support. The field-level worker is responsible for the educative role of extension -- advising farmers of appropriate technology and teaching them how to use it -- and for disseminating new practices among farmers. There is no replacement for regular and direct field exposure by the extension service, both to transfer technology and to ensure that the extension service (and, through it, research) remains focused on farmers' problems and priorities. However, the service should be supported by mass media, because properly coordinated media support that complements and reinforces field activities can greatly increase the effectiveness of field extension.

Personnel Policies

Personnel administration of the extension service is another vital area in which progressive change and development is necessary for extension to continue to be effective. As the value of a professional, well-organized extension system becomes apparent through its impact in farmers' fields, overcoming many years of stagnation in this area increasingly becomes a reality. Developing a professional extension staff cadre, and within it a cadre of Subject Matter Specialists, must be given priority, including the rationalization of recruitment and promotion policies this entails. Staff must be able and encouraged to stay in one position or field location for a meaningful period. A large part of extension's success depends on farmers' acceptance of staff and the staff's familiarization with local conditions: a frivolously applied transfer policy can quickly undo years of good work. It

should also be recognized that field extension work requires skills and aptitudes quite different from those needed for other extension posts: there should be opportunity for staff to remain field-level workers and yet have access to appropriate salary increases and opportunities for career development.

Organization and Management

The extension system must continually adapt to reflect changes in agriculture, technology, farmers' attitudes, and the ability and specialization of extension staff. But the establishment of an effective professional service also has far-reaching implications for the organization and management of the Department of Agriculture. Numerous duplicating activities and the resources for them are normally transferred to extension when this service is initially organized on professional lines, but the amalgamation and streamlining is rarely completed at so early a stage. Further consolidation will become desirable as the effectiveness of the system becomes apparent. All extension-related activities must be channeled through the extension service. Duplicate field activities as well as planning procedures should be abolished. The prime role of the extension service in implementing programs of the Department of Agriculture requires that extension staff are involved in policy decisions. Seasonal extension/research meetings can readily become the focus of the Department's planning activities.

Relations between Farmers, Extension, Research, and Other Services

Two other consequences of professional extension have important implications. Properly exploited by extension management, these can significantly broaden the impact of extension. One relates to farmer participation. Not only through the T&V system is the farmer closely drawn into the formulation of production recommendations, the setting of priorities for agricultural research, and the planning of an agricultural strategy, but he also becomes to some extent a supervisor of extension staff. Knowing the regular work programs of staff, particularly of the VEW, the farmer is able to monitor whether he is receiving the service from this section of government that he is meant to receive.

A second consequence is a significant change in the relationship between extension staff and researchers (and farmers). Extension staff become virtual partners of researchers: it is extension staff who ensure that farmers' production conditions and constraints are known to researchers and are taken into account when setting research objectives and programs, who implement farm trials, and who assist in the formulation of production recommendations to be taught to farmers. Without this support from extension, research is not likely to serve well extension -- or farmer. Unless extension performs these functions, it is failing in one of its main responsibilities, namely, of ensuring that there is meaningful feedback between farmers and research.

Extension work can be effective in the long term only to the extent that it is supported by strong agricultural services. Although initially attention goes to developing an effective extension system, this is not to deny the importance of these other vital functions. However, success in these other activities may be more quickly attained by having one essential

aspect of the total agricultural support system work effectively, and in this way provide an example of how sound management principles can be applied in the field. Once the basic extension system is established, and even simultaneously with this process, attention should go to strengthening coordination between extension and technology, and credit, marketing, and other agricultural support organizations, and also to improvement in each of these. Some of the principles of successful reorganization of extension will be applicable to the strengthening of other support services, but the particular needs to strengthen each of these associated services should be tackled separately.

Extension Coverage

An agricultural extension service organized on training and visit lines is likely to focus first on field crops (and perhaps some tree crops), and within these on the few most important crops of farmers. However, once the concept and structure of professional extension have been consolidated and are well understood by government and farmers, the extension service should be expanded to cover most farm-based production activities for which farmers require technological guidance. Animal husbandry (particularly nutrition aspects), horticulture, and farm forestry are examples of particular activities that are usually not served at first by a professional extension service but which over time should be covered. To do this, the extension service will need to become increasingly specialized. This is not to say that one extension agent should always serve all these activities: the higher the technical level of farmers, the greater is the need for specialized extension agents, all of whom should be in the one agricultural extension service which would coordinate their activities.

Involvement of the extension service in ancillary farm-based production activities must be confined to technology transfer, the basic function of a professional extension service. The technical department concerned should continue to be responsible for policy decisions, input support, research guidance, general training, and so on. The main changes required in the extension service to perform these additional tasks are to provide Subject Matter Specialists and to reorganize training activities (including participation by research) to cover the new specialties, although the number of field staff may also need to be increased in local areas. Where SMSs who can help develop recommendations for, and give training in, the new activities to be covered are not available in the Department of Agriculture, the service of appropriate specialists from the concerned technical departments or elsewhere will have to be arranged. Participation of such complementary SMSs in seasonal and monthly workshops will sometimes be adequate, though it will often also be required in fortnightly training sessions, since it is there that extension field workers learn recommendations to teach farmers.

Where there is a marked seasonality of farm activities, the work programs of extension staff may be arranged so that they can devote time to these ancillary farm-based production activities in periods when work on field crops is less important. In addition to being useful for advising farmers on these other farm-based activities, extension staff have many other uses for periods when farmers are less busy. These periods can be used to provide field workers with additional training, or for field workers to give

farmers more general training than is possible during the time available for visits in other seasons. They are also a good time for Village Extension Workers and Agricultural Extension Officers to check on the diffusion of extension recommendations, to review farmers' experiences of the previous season and reactions to recommendations, and to assess priorities for the coming season. Used efficiently, such periods can give extension workers a good opportunity to strengthen their field activities.

Opening up Opportunities

The drastic reorganization of extension services that is frequently implied in the adoption of the training and visit system is often undertaken when the provision of technical support to farmers has reached a near-crisis point. The previous extension system may be all but inoperative and of limited efficiency. In these circumstances, attention is initially focused on the mechanics and organization and management aspects of the training and visit system because these are vital to its successful operation, and they are usually radically different from the system that is replaced. Although this is the correct priority, the potential benefits of the system will not be reaped if the reorganization is limited to this. Rather, the framework of the training and visit system opens up opportunities to the continued upgrading of the extension service, other services, and the Department of Agriculture, so that the increasingly complex and sophisticated demands of agriculture and farmers can be met. Unless this is realized and advantage is taken of the inherent flexibility of the training and visit system to make significant and sustained progress in agriculture, a rare opportunity is lost.

ANNEX

Annex

Work Responsibilities of Extension Staff

Summary

For any system of agricultural extension to be effective, it must be well organized and have a cohesive structure. All participants must perform, and be held accountable for, a basic set of duties. Because of variations in local administrative conditions, a common set of comprehensive job descriptions may not apply to all extension services. However, basic duties for each level of participants in the training and visit system can be defined. Whatever local adjustments are made, the duties of staff at each position should conform to those of the equivalent officer as elaborated here.

Job descriptions are outlined for:

- Director of Extension
- Zonal Extension Officer (ZEO)
- District Extension Officer (DEO)
- Subject Matter Specialist (Plant Protection, Agronomy, Special Subjects, etc.) (SMS)
- Training Officer
- District (or University) Extension Agronomist (DEA)
- Subdivisional Extension Officer (SDEO)
- Agricultural Extension Officer (AEO)
- Village Extension Worker (VEW)

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Director of Extension

The Director of Extension is responsible for the effective implementation of the extension program in his state (or country), in many cases under the overall control of the Director of Agriculture. 1/ He should exercise appropriate administrative, financial, and technical control over extension staff, and ensure that staff undertake their assigned tasks effectively and efficiently and devote full time to them. He is responsible for building up and maintaining a high level of professional competence among extension workers at all levels. He supervises field activities on a zonal basis; if adjustments or improvements are required in a particular district, it is the responsibility of the relevant zonal and district officers to make changes under the direction of the Director.

Essential Duties

Oversee the upgrading of the professional skills of extension staff, in particular by ensuring that training needs of all staff are identified and met in a timely manner.

Ensure regular visits of Village Extension Workers (VEWs) to farmers, Agricultural Extension Officers (AEOs) to VEWs, and Subdivisional Extension Officers (SDEOs) to AEOs and VEWs, and Subject Matter Specialists (SMSs) and all other staff to farmers' fields.

Make field visits for at least three full days each week, and participate regularly and frequently in fortnightly training sessions and monthly workshops. The visit schedule should be so organized that all zones of the state are visited frequently. On field visits, review extension operations through visits to farmers' fields, paying particular attention to farmers' awareness of the extension system, the extension workers' understanding of the system, the professional knowledge and skills of extension staff, the relevance and adaptability of extension messages, and the adoption of recommended practices by farmers. Suggest to zonal and district officers ways to improve the effectiveness of extension.

1/ The actual title of the officer in charge of the service varies between extension services. In an Indian state, it usually is the "Additional Director of Agriculture (Extension)." The expression "state" is used throughout as the physical area of jurisdiction of an extension service: it will often be an entire country rather than one of its states or provinces, and the overall administrative body a "ministry" rather than "department" or "directorate."

Organize, and participate in, meetings to support and develop extension activities, in particular of the State Technical Committee, seasonal zonal workshops (or, where they operate, District Technical Committees 2/), and monthly workshops.

Review periodically the activities and findings of the extension monitoring and evaluation unit, and take appropriate findings into account in order to improve extension activities.

Liaise with organizations (including research, credit and input agencies, marketing organizations, training institutions, and government departments) whose support is required for effective extension, through formal meetings as well as individually. Where necessary, arrange for the participation of representatives of these organizations in planning and extension training activities at the appropriate level (e.g., seasonal and monthly workshops and fortnightly training sessions).

Ensure that materials required for extension and extension training are prepared and available as needed.

Ensure that all extension staff devote their time exclusively to extension activities and live in their areas of jurisdiction, and that equipment, vehicles, and other resources assigned to extension are used only for the intended purposes.

Determine physical and financial requirements of extension activities, obtain necessary financial and administrative sanctions, and ensure that resulting authorizations are received by appropriate officers in a timely fashion.

Supplementary Duties

Attend to any other work assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not conflict with the essential duties outlined above.

2/ In some places, a District Technical Committee operates in place of the seasonal zonal workshop. The District Technical Committee has a similar function to the zonal workshop, though in a more limited area. Occasionally, both District Technical Committees and zonal workshops meet, but their functions often largely duplicate each other.

Zonal Extension Officer

The Zonal Extension Officer (ZEO) has overall responsibility for effectively implementing and coordinating the extension program in the districts under his jurisdiction. 3/ He should provide leadership and exercise appropriate administrative, financial, and technical control over extension staff in his zone. He is responsible for a high level of technical competence being built up and maintained among extension workers at all levels in his zone. He directly guides and supervises the work of District Extension Officers (DEOs).

Essential Duties

Make field visits for at least three full days each week to review extension operations and meet with farmers and extension workers. In particular, visit farmers' fields and focus there on organizational (methodological) matters, farmers' awareness of the VEW's day of visit, farmers' understanding of the system, knowledge and skill of extension workers, relevance and adaptability of technical messages, and adoption of recommended practices by farmers. In light of field visits, suggest to DEOs ways to improve the effectiveness of extension activities in their areas of jurisdiction.

Plan, organize, and convene monthly workshops (where this is not done by DEOs), in collaboration with research experts of agricultural universities and research institutes. Attend all monthly workshops held in the zone and ensure that they are conducted effectively. The workshops should focus on relevant technology, practical training, the selection of appropriate recommendations and impact points, training and teaching support, and the progress and results of farm trials.

Participate actively in (and, if necessary, organize and convene) meetings of the seasonal zonal workshop, ensuring that the general recommendations and farm trials identified are suited to the needs of local farmers.

Ensure that the recommendations of seasonal zonal workshops on agronomic practices for selected crops and farm trials are forwarded to the State Technical Committee for review and then are passed on to monthly workshops in a timely manner for consideration and appropriate adjustment to take account of local conditions.

Review, in conjunction with the Training Officer, the comprehensive training programs of each district and ensure that they are implemented effectively and include appropriate guidance and financial, technical, and administrative support.

3/ The Zonal Extension Officer is often known by another title, such as "Zonal (or Regional) Joint Director of Agriculture." The title itself is of little importance, so long as there is one officer at this level performing the duties described here.

Liaise with input and credit agencies, marketing bodies, research institutions, Department of Agriculture headquarters, and training institutes for their effective support of and coordination with extension activities.

Keep in close touch with the activities of the extension monitoring and evaluation unit and make use of its findings to increase the effectiveness of extension.

Coordinate the production and distribution of appropriate extension literature, teaching aids, and equipment to districts where facilities for their production do not exist.

Supplementary Duties

Attend to any other work assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not conflict with the essential duties outlined above.

District Extension Officer

The District Extension Officer (DEO) has overall responsibility in his district for the effective implementation of the extension program. 4/ He should provide leadership, as well as exercise administrative, financial, and technical control over extension staff in the district. He is responsible for building up and maintaining a high level of technical competence among extension workers at all levels in his district. The DEO directly guides and supervises the work of district-level Subject Matter Specialists (SMSs) as well as Subdivisional Extension Officers (SDEOs).

Essential Duties

Visit farmers' fields on at least three full days each week to review extension operations in the field and meet with farmers and extension workers. In particular, review organizational (methodological) matters, including farmers' awareness of the VEW's day of visit, the appropriate selection of contact farmers, farmers' understanding of the extension system, the knowledge and skill of extension workers, the relevance and adaptability of technical messages, and adoption of recommended practices by farmers. As necessary, suggest ways to improve the effectiveness of extension activities to the SDEO. The schedule of field visits should be rotated so that as many

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4/ The District Extension Officer is often known by another title, most commonly "District Agricultural Officer." The title itself is of little importance, so long as there is one officer at this level performing the duties described here. In some circumstances, it may be appropriate to have a second officer at the district level responsible for all nonextension agricultural activities to ensure that the District Extension Officer can devote sufficient attention to extension.

AEOs as possible in all SDEO areas are visited in as short a time as practical; most visits should be prescheduled, but some may be unscheduled.

Plan, organize, and convene monthly workshops, where they are held at the district level, in collaboration with research experts of agricultural universities and research institutes. Attend all monthly workshops held for the district, and ensure their effective conduct. The workshops should focus on relevant technology, practical training, the selection of appropriate recommendations and impact points, training and teaching support, and the progress and results of farm trials. Ensure effective participation in monthly workshops by the SMSs and SDEOs of the district, and that due attention is given to priority areas (e.g., extension activities to serve farm women).

Participate actively in seasonal zonal workshops, ensuring that recommended practices and farm trials developed for later consideration by monthly workshops suit the needs of local farmers. If a District Technical Committee meets (rather than a seasonal zonal workshop), arrange and chair a meeting of the Committee before each season.

Review the input demand and supply situation (seed, fertilizer, weedicide, pesticide, irrigation water, power, fuel, credit, and so on) and market conditions, drawing on contacts with farmers, extension staff (including at monthly workshops), and input and marketing agencies. Advise, and coordinate with, input agencies to meet probable demand trends in a timely manner. Inform headquarters (through the Zonal Extension Officer) of major existing and potential problems in the availability of required inputs.

Coordinate and exchange relevant information with other development departments (for example, Irrigation, Command Area Development, Soil Conservation, Animal Husbandry, Forestry, Fisheries, Cooperation, and Land Settlement), agroindustry corporations, marketing organizations, banks, and administrative and local government bodies. Where necessary, arrange for the participation of representatives of these and input and marketing organizations in planning and extension training activities (e.g., seasonal and monthly workshops and fortnightly training sessions).

Spend at least one day every fortnight participating in a fortnightly training session. Assist, as necessary, the SDEO and SMS teams that lead the sessions to make the training practical and effective.

With the assistance of the district Training Officer, determine the training requirements of the district's extension staff. Draw up detailed training programs to meet these requirements and ensure, in collaboration with the district Training Officer and zonal and headquarters staff, that appropriate long and short courses are organized (at agricultural universities, other agricultural training centers, and national and international institutes) to meet these needs.

Ensure that farm trials are conducted in accordance with the district program, and that results are discussed at monthly workshops and seasonal zonal workshops and are taken into account when formulating production recommendations.

Keep in close touch with the activities of the extension monitoring and evaluation unit and take into account its findings to increase the effectiveness of extension.

Ensure the timely preparation, publication, procurement, and supply of appropriate extension literature and teaching aids and equipment, and their effective use.

See that all extension vehicles and equipment are maintained in proper working condition, and that all extension staff have access to them when required. Also make certain that extension staff devote their time exclusively to extension and live within their areas of jurisdiction, and that resources intended for extension are used only for that purpose.

Supplementary Duties

Attend to any other work assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not conflict with the essential duties outlined above.

Subject Matter Specialist
(Plant Protection, Agronomy, Special Subjects, etc.)

Subject Matter Specialists (SMSs) are responsible in their respective disciplines for providing technical guidance and support to extension workers, for training, and for maintaining close links with research. SMSs normally operate at three levels (headquarters, district, and subdivision); at each level, they perform generally similar functions adjusted for their range of authority. 5/

Essential Duties

Spend approximately equal time in each of three basic activities: training, making field visits, and being trained by research staff and others and being exposed to research.

1. In training, give practical training to VEWs and AEOs on an individual basis during field visits, and by conducting fortnightly training sessions and occasional special short courses.

2. In making field visits, visit farmers' fields (not only their villages and houses) to a fixed schedule on at least two full days each week, either individually or with other SMSs and extension and research staff. Field visits should aim at giving SMSs an awareness of farmers' production

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5/ It may be appropriate, in some circumstances, to have SMSs at the zonal level.

practices and constraints, particularly in an SMS's field of specialization, of the accuracy with which production recommendations are taught to farmers by VEWs, and of the extent to which recommendations have been adopted by farmers. If field visits are effective, they will help ensure that key problems are identified and tackled by research, and that resulting recommended practices are relevant to farmers' conditions and are adequately communicated to them.

3. In being trained by and exposed to research, visit research facilities, keep informed of current research developments, and be trained by research staff and others. The purpose of visits to research facilities (agricultural universities, research stations, off-station trials, and so on) is: (i) to keep informed of current research programs and findings relevant to farmers in an SMS's area of jurisdiction; (ii) to bring problems revealed in field visits and fortnightly training to the notice of researchers; (iii) to contribute to identifying topics for farm trials that focus on basic, practical problems; and (iv) to report observations on the appropriateness of recommendations to research workers. Active participation in monthly workshops will be the chief source of current information on developments in research for district and subdivisional SMSs; additional information will be obtained through participation in special courses, by conducting farm trials and visiting farmers' fields together with research staff, and by other formal and informal contacts with researchers. SMSs at higher levels should ensure that SMSs at lower levels have adequate exposure to research.

Participate, as required, in meetings of the State Technical Committee (normally only headquarters SMSs), seasonal zonal workshops (all SMSs of the zone and headquarters SMSs), and monthly workshops (all SMSs of the area of jurisdiction). 6/ Ensure that extension recommendations and research activities and programs proposed and discussed by these groups are relevant to the farmers of their area of jurisdiction.

Subdivisional SMSs, with the help of higher-level SMSs, should prepare draft production recommendations for their subdivision, making appropriate allowances for local conditions, including seasonal conditions and the availability and cost of inputs. Recommendations should be broken down into specific key impact points for presentation at fortnightly training sessions. These recommendations and impact points will be discussed at monthly workshops and adapted as necessary in light of these discussions.

6/ Headquarters SMSs attend as many monthly workshops as workshop scheduling permits: each will attend at least one a month and conceivably two or three.

District and subdivisional SMSs should attend and lead the fortnightly training sessions held in their areas of jurisdiction. Headquarters SMSs should regularly and systematically attend fortnightly training sessions. 7/ With the assistance of the Training Officer and in light of monthly workshop activities and decisions, SMSs should prepare appropriate lesson plans, training materials, and aids for each session; demonstrate and teach recommended practices to trainees; and encourage trainees to discuss their field experiences and the recommendations and impact points they have transmitted or will transmit to farmers.

Guide extension staff in the technical aspects of their work (including lower-level SMSs in their areas of specialization) and help build up their technical skills. Ensure that recommended practices are effectively communicated and taught to farmers, modifying them as necessary to fit specific local conditions. Evaluate in the field the effect of their teaching: inappropriate recommendations or their ineffective transmission should be corrected immediately and be discussed during the subsequent fortnightly training session.

Subdivisional SMSs, with guidance from district and headquarters SMSs, should organize, supervise, and check the farm trials proposed at the seasonal zonal workshop, record observations on the trials, undertake preliminary analysis, and discuss and further analyze results with research and extension staff, as appropriate.

Make field visits and discuss problems encountered in production recommendations with farmers, VEWs, AEOs, and research staff. Find solutions to problems and advise VEWs and AEOs accordingly (both in the field and at fortnightly training sessions). If solutions are not readily available, develop proposals with research staff for trials and/or on-station research that can be considered for inclusion in the applied or adaptive research programs.

Plan training programs and the calendar of operations for crops. Assist the Training Officer in identifying the training needs of extension staff and in meeting these through special courses.

Headquarters SMSs should review, for relevance and appropriateness, the syllabus of any course to be attended by SMSs and other extension staff. Headquarters and district SMSs are also responsible for overseeing the training and guidance of SMSs at lower levels.

Assist in the preparation of extension literature.

7/ Attendance of headquarters SMSs at fortnightly training sessions will depend, to a large extent, on the sessions' schedules. However, each headquarters SMS should attend at least two fortnightly training sessions each month.

Supplementary Duties

Attend to any other duties assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not interfere with the essential duties outlined above.

Training Officer

The Training Officer (also sometimes known as the SMS Training or SMS Training and Information) operates at three levels (headquarters, district, subdivision). At each level, his functions are similar, but they are adjusted for the level of responsibility. The Training Officer at any level should spend at least one-third of his time in the field, where he should review extension activities, identify ways to improve the quality of extension, and assess staff training needs.

Essential Duties

Plan and organize effective training programs. To this end, (1) liaise with SMSs to organize programs (depending on the Training Officer's level of jurisdiction: fortnightly training sessions, monthly workshops, orientation sessions, special and preseason training), select trainers, suggest course topics and content, fix schedules, and provide teaching aids and resources (specimens, charts, slide projectors, and so on) for practical work and demonstrations; (2) in conjunction with the Director of Extension, ZEOs, DEOs, SDEOs, and SMSs, identify and arrange for special training needed by individual staff; (3) coordinate and promote contact with research for extension staff, through formal and informal means; and (4) in consultation with senior local extension staff, ensure that due attention is given in training and by research to priority areas, and that training and research support is arranged as appropriate to serve all main areas of extension activities.

Teach and promote effective training and communication skills among extension staff. In training sessions and in the field, teach techniques for effective person-to-person contact, group meetings, transmittal and teaching of information and recommendations, and use of simple visual aids. Initiate and promote the use of mass media and other communication methods to complement extension field activities.

Promote understanding of the principles and practices of the training and visit system of extension. This should be done systematically among farmers, Department of Agriculture and other government officers, and input suppliers, as well as the public at large. To this end, (1) establish and maintain a small library (including audiovisual materials) on extension and agriculture; (2) produce and distribute literature and other materials (including case studies) on extension; (3) liaise with locally relevant mass media and ensure their appropriate support for field extension activities; (4) organize field days to show extension's achievements; and (5) give courses to extension staff and others on extension methods and the training and visit system of extension.

Supplementary Duties

Attend to any other duties assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not interfere with the essential duties outlined above.

District (or University) Extension Agronomist

Extension services are supported by diverse and scattered research facilities and agricultural universities. It is useful to have an officer -- the District (or University) Extension Agronomist (DEA) -- who is responsible, within a defined zone of operation, for coordinating contacts between extension and research, and for making arrangements for monthly workshops. The District Extension Agronomist is usually on the staff of an agricultural university or research institution rather than of the Department of Agriculture; nonetheless, his work is an integral part of the extension service.

Essential Duties

Act as the prime point of contact between extension and research. Coordinate contact between extension and research through (1) participating in joint meetings (particularly, seasonal zonal workshops and monthly workshops); and (2) encouraging visits of extension staff to research facilities, and the participation of research staff in the training of extension staff and in visits to farmers' fields, generally in the company of extension staff. To perform this liaison and facilitating function, the DEA must keep himself well informed on both research and extension activities.

Coordinate arrangements for monthly workshops in consultation with the ZEO or DEO, district SMSs, and the district Training Officer. This will entail (1) drawing up six-monthly (or yearly) plans for workshop schedules and content (based on the decisions of the seasonal zonal workshops), which should be adjusted, prior to the scheduled date, to reflect priorities and problems identified in preceeding workshops; (2) identifying appropriate trainers, including staff of universities, research institutes, and the Department of Agriculture, farmers, and others; and (3) making certain that workshops are well organized and of high quality, that facilities are appropriate, trainers and extension staff attend, lesson plans focus on a small number of timely and practical impact points for each recommendation, and that participants have adequate opportunity to discuss their experiences and the production recommendations.

Participate actively in meetings of seasonal zonal workshops, monthly workshops, and other research/extension forums, and, whenever possible, attend fortnightly training sessions to obtain feedback on the quality of training and field problems.

Plan farm trials according to the recommendations of the seasonal zonal workshop and monthly workshop, and, in consultation with district SMSs, help analyze and disseminate farm trial results.

Visit farmers' fields on at least two full days each week to a preplanned schedule in the company of SMSs and/or research staff, in order to gain awareness of farmers' production practices and constraints and of the nature and extent of the transmission of recommendations by VEWs. Ensure that problems in message transmission or regarding production identified on field visits, are analyzed in subsequent monthly workshops, referred directly to research, or dealt with by other appropriate means.

Subdivisional Extension Officer

The Subdivisional Extension Officer has overall responsibility in his subdivision for the effective implementation of the extension program. 8/ He should provide leadership and be responsible for the planning, implementation, and supervision of extension activities, including administrative and personnel matters. The SDEO guides and supervises the work of subdivisional Subject Matter Specialists (SMSs), Agricultural Extension Officers (AEOs), and Village Extension Workers (VEWs).

Essential Duties

Spend at least three days each week in the field visiting farmers and AEOs and VEWs. The visits should be prescheduled on a monthly basis, but, where necessary, can be surprise visits (guided by copies of the visit schedules of AEOs and VEWs). The visits will reveal whether the VEWs, AEOs, and SMSs are fulfilling their essential duties, but the main purpose of the visits is to improve the quality of their work by offering constructive advice and guidance.

Adjust the visit schedules and work procedures of VEWs, AEOs, and subdivisional SMSs in light of observations from field visits and other sources.

Where SMSs work in a team that covers more than one subdivision, coordinate with other SDEOs the team's work so that it deals effectively with its entire area of jurisdiction.

In the absence of a Training Officer, ensure that (1) fortnightly training sessions are held punctually, are well organized, and are practically oriented, and all parties (VEWs, AEOs, SMSs, representatives of input

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8/ The Subdivisional Extension Officer is often known by another title, most commonly "Subdivisional Agricultural Officer." The title itself is of little importance, so long as there is one officer at this level performing the duties described here. In some circumstances, it may be appropriate to have a second officer at the subdivision level responsible for all nonextension agricultural activities to ensure that the Subdivisional Extension Officer can devote sufficient attention to extension.

agencies, and any required special trainers) attend; (2) appropriate simple teaching aids and other training materials are available as and when needed; (3) recommendations and impact points are clearly identified; and (4) any VEW and AEO who is unable to attend is fully briefed on the training content as soon as possible after a session.

Meet with AEOs and SMSs early in the day of a fortnightly training session to review progress in the adoption of recommendations by farmers, field problems, seasonal conditions, availability of inputs, market conditions, and special achievements of VEWs. Ensure that the significant points from these discussions are included in the fortnightly training session.

Participate actively in fortnightly training sessions and monthly and seasonal zonal workshops.

Through participation in fortnightly training and monthly and seasonal zonal workshops, as well as through individual, informal efforts, ensure that field problems are brought to the attention of research and that recommended solutions reach AEOs, VEWs, and farmers.

Ensure that AEOs and VEWs maintain daily diaries on their work. When in the field, review the diaries and make suggestions for improvements where necessary.

Estimate possible demand for inputs based on each season's production program and likely technology; review the estimates in fortnightly training sessions with VEWs, AEOs, SMSs, and representatives of input agencies; ensure that estimates of demand are forwarded to appropriate authorities for action.

Seek and collate information on the input supply and marketing position of service agencies, including input prices and places of availability, and pass the information on to field staff and the DEO. The DEO and supply agencies should be made aware of discrepancies between projected demand and supply and be encouraged to make up shortfalls in a timely fashion. Be sure that extension recommendations take into account actual input availability.

Collect information on serious pest and disease problems and natural calamities; report significant occurrences and trends to the DEO, and see that these are discussed at monthly workshops and fortnightly training sessions and that production recommendations are adjusted accordingly.

Make sure that all extension vehicles and equipment are maintained in good working condition and that all extension staff have access to them when required. Also ensure that extension staff are engaged exclusively in extension and live in their areas of jurisdiction, and that all resources assigned to extension are used only for that purpose.

Supplementary Duties

Attend to any other duties assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not interfere with the essential duties outlined above.

Agricultural Extension Officer

The Agricultural Extension Officer (AEO) is responsible for the technical guidance and support of the Village Extension Workers (VEWs) in his area of jurisdiction, the "range." Without strong guidance and support, VEWs are unlikely to function effectively and the quality of their work will suffer.

Essential Duties

Guide and help train the eight or so VEWs in his range. Spend at least eight days a fortnight in the field working with VEWs, visiting all VEW circles according to a monthly schedule. Each VEW should be visited in the field at least once in a fortnight. If a VEW has missed a fortnightly training session, ensure that he receives immediately appropriate advice for his operations for the subsequent fortnight.

On field visits, (1) give technical advice and support to VEWs to build up their professional competence and help them solve technical problems; (2) ascertain that farmers are being visited regularly in their fields by VEWs; (3) confirm that farmers are receiving appropriate technical recommendations and are aware of impact points; (4) determine whether farmers are adopting recommendations and their production and incomes are increasing; (5) check that contact farmers have been selected in accordance with selection guidelines, are interested in meeting the VEW, and are trying some recommendations, and that other farmers are also systematically met by VEWs; and (6) review the VEW's diary and write a substantive comment in it.

Spend one day in each fortnight in a fortnightly training session. Participate actively in it and present, and encourage VEWs to present, problems encountered in the field, obtain solutions, and help determine the best way to communicate solutions to farmers. Also, suggest ideas for farm trials and on-station research that can be noted by SMSs for discussion at monthly workshops and elsewhere. Ensure that all VEWs of his range participate regularly and actively in these training sessions. On the day of the fortnightly training and before the session begins, meet briefly with the SDEO and SMSs to report on progress in the adoption of recommendations by farmers, special achievements of VEWs, seasonal conditions, input availability, and market conditions: this information should be taken into account in the training session. In the training session, production recommendations should be discussed with SMSs in the light of the AEO's perception of farmers' needs.

Spend one day a fortnight (in the week between fortnightly training sessions) at a meeting with all the VEWs of his range to review their activities and discuss their technical and practical problems.

Assist SMSs in organizing farm trials and work with VEWs in conducting them; ensure that farmers are aware of these trials and their results.

Assist VEWs and SMSs in the organization of field days.

Maintain a daily diary in which field activities and observations are recorded.

Note input supply and demand and market conditions, relying both on his own observations and those of the VEW. Report such changes to the SDEO at fortnightly training sessions and elsewhere as the urgency of the matter requires.

Supplementary Duties

Attend to any other duties assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not conflict with the essential duties outlined above.

Village Extension Worker

The Village Extension Worker (VEW) is the cornerstone of the training and visit system of extension. He is responsible for presenting relevant recommended practices to farmers, teaching and demonstrating related skills to farmers, motivating farmers to adopt recommended practices, and bringing farmers' production problems to the attention of SMSs and research. The area of jurisdiction of the VEW is known as a "circle."

Essential Duties

Teach relevant technical messages and skills to the farmers in his circle and motivate them to adopt recommended practices to improve their agricultural productivity and income.

Divide the farmers in his circle into eight discrete, approximately equal-sized groups. Visit each group for one full day each fortnight, each group being visited every fortnight on the same day. The fixed fortnightly visit schedule should be made known by all possible methods to all farm families in each group.

Select about ten farmers in each group to be contact farmers. Concentrate on contact farmers during visits but also reach as many other farmers as time allows. Other farmers should deliberately be sought out and contacted in their fields and elsewhere, and be called upon to participate in discussions and demonstrations of recommended practices. Encourage contact farmers to show the practices they adopt and to spread their knowledge to other farmers. As many farmers as possible, but certainly all contact farmers, should be encouraged to adopt some of the recommended practices on at least part of their land.

Spend most of the time of a field visit in farmers' fields. On a visit, (1) observe the condition of the crop and field operations and problems, and suggest appropriate action (or otherwise, discuss the problem

later with the AEO and SMSs); (2) note to what extent recommendations have been adopted and the reasons why this has not been done more widely; (3) teach and demonstrate to farmers in the field recommendations learned in the previous fortnightly training session; and (4) listen to farmers and encourage them to discuss their problems and difficulties.

Participate actively in fortnightly training sessions on one day in each fortnight. Learn the recommendations and impact points and, under the guidance of the SMSs and Training Officer, work out how to teach and convince farmers to adopt them. Check that recommended practices are relevant and timely for the farmers in his circle, and that all major crops of the circle are covered by some recommendations. Bring any shortcoming or potential difficulty with recommendations -- as would be revealed by previous field visits and knowledge of the production practices and constraints among farmers -- to the attention of SMSs. Report problems encountered in the field and discuss solutions. Arrange for SMSs to visit the field if a satisfactory solution to a problem is not given during the training session.

Use the unscheduled days in each fortnight to (1) make extra visits to farmers' groups that were missed on the scheduled visit day; (2) attend to farm trials; and (3) arrange for special extension activities such as field days and group meetings in conjunction with AEOs, SMSs, and the SDEO.

Carry out a small number of farm trials each season under the guidance of SMSs. Encourage farmers to participate in, and observe, farm trials.

Organize each season field days for each farmers' group to show the results of recommended practices to as many farmers as possible. Encourage farmers to participate in these and other field days.

Maintain a daily diary. Record in it, among other things, field observations on crop and field conditions and farmer reaction to and adoption of recommended practices, along with the remedial measures recommended.

Be familiar with the demand and availability of inputs (e.g., seed, fertilizer, pesticide, weedicide, power, fuel, irrigation water, credit) and also with market conditions, and advise farmers accordingly. Report to the AEO any unusual occurrences in the input supply/ demand situation and serious pest and disease problems and natural calamities.

Supplementary Duties

Attend to any other work assigned by higher authorities of the Department of Agriculture (in accordance with the programs of the department) that do not conflict with the essential duties outlined above.

The World Bank

Training and Visit Extension contains a comprehensive explanation of the organization and operation of the training and visit system of agricultural extension. The system has been strongly supported by the World Bank and governments of many developing countries for about ten years. Emphasizing simplicity and decisiveness, the training and visit system has a clearly defined organization and mode of operation and allows continuous feedback from farmers to extension and research workers, who in turn provide continuous adjustment to farmers' needs. It has been adopted in some forty developing countries in Asia, Africa, Europe, and Central and South America.

This book has its origin in a series of operational notes on aspects of the extension system. Intended mainly for the use of extension staff at all levels, agricultural research personnel, trainers, and staff of agricultural organizations, it is both a methodological guide to training and visit extension and a resource for training. It will also be of interest to all universities and training institutions involved in agricultural and rural development and public administration.

Two other publications on the same subject are also available from the World Bank's Publications Sales Unit:

A booklet—*Agricultural Extension: The Training and Visit System* by Daniel Benor, James Q. Harrison, and Michael Baxter (The World Bank, 1984)—contains an overview of the system's organization and makes suggestions, based on the lessons of a decade of experience, about reform of agricultural extension services. A companion to this book, it is a revision and amplification of the booklet of the same title by Daniel Benor and James Q. Harrison published by the World Bank in 1977.

Agricultural Extension by Training and Visit: The Asian Experience, edited by Michael M. Cernea, John K. Coulter, and John F.A. Russell (The World Bank, 1984), contains keynote papers and comments from a workshop on training and visit extension held in Chiang Mai, Thailand, November 27–December 6, 1982. Five issues are addressed by extension system managers and evaluators: farmer participation, research-extension linkage, training, management, and monitoring and evaluation.

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