

Seeds of the world

"The earth was not given to us by our parents, it was loaned to us by our children." -- Kenyan proverb

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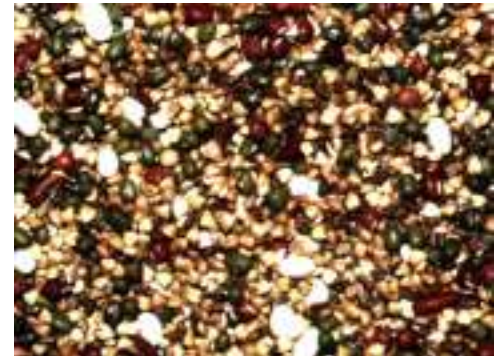
[The Green Revolution](#)

Seeds and our future

Traditional varieties of vegetables and grains are a vital heritage: they could be the key to our food security in the future. But, where hundreds of varieties of a crop were once grown, now there may be only two or three, or the crop itself may have been abandoned.

Plant Patenting Laws have made seeds big business, largely controlled by a handful of big companies. (The top 10 seed companies control about 33% of the US\$24.4 billion global seed trade, with the top three companies controlling 20%.) Varieties that do not have a world market lose their place and may no longer be sold. Soon they vanish, forever.

Yet the lack of genetic diversity in food crops greatly increases their vulnerability to pests and disease -- while breeding new resistant varieties requires the germ-plasm of the old varieties which are being lost.



And at a time when the global climate is changing in unpredictable ways, nobody knows what sort of crops may be needed in the future -- the meagre number of commercial varieties available could prove useless in the new conditions.

The brave new seeds of the "Green Revolution" are hybrids -- so-called



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Green Revolution high-yielding hybrid rice

HYVs, high-yielding varieties that will not breed true and must be bought anew from the seed companies each year.

Others have renamed them HRVs -- high-response varieties, increasingly bred to respond to high levels of chemical fertilizers and for resistance to toxic pesticides. Seldom are the high yields reported in the test fields reproduced on

actual farms, less still on the small farms most Third World people depend on for their food supply. And the new seeds lack the nutritional content of the traditional varieties.

Other tests have shown that old varieties, grown with good soil management and NO chemicals, can equal the yields of the hybrids and far surpass their nutritional quality.

And, unlike the traditional varieties, the new hybrids do not last long -- even with high levels of chemical protection, they succumb to pest attack after a few years and have to be replaced by another newly bred hybrid.

And here lies the problem: the germplasm for the new seeds comes from the old varieties, but the new seeds displace the old -- often where once scores or hundreds of old varieties were grown, now there's only one, the same new variety that now needs replacing.

As one expert commented, it's a strange technology that destroys the very foundation it depends on.

The development of GE (Genetically Engineered) seeds (also termed GMOs -- Genetically Modified Organisms) that contain genes from quite different plants -- or from life-forms that are not plants at all -- has now taken the erosion of sustainable crop varieties to a whole new level of risk.

In collaboration with food crop conservation organizations, Journey to Forever will collect seeds of useful local varieties of



High-yielding hybrid corn -- about as nutritious as tissue paper

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Handmade Projects
Tamba
Japan

food crops wherever we go, saving them for the future as well as redistributing them to other farmers further along our route. We will work with concerned NGOs to ensure that peasant plant breeders' rights are protected.

See: [Seed patents threaten world food resources](#)

Seed resources

The Threatened Gene: Food, Politics, and the Loss of Genetic Diversity, Cary Fowler and Pat Mooney, 1991.

Vanishing seeds: "Loss of genetic diversity in agriculture -- silent, rapid, inexorable -- is leading us to a rendezvous with extinction -- to the doorstep of hunger on a scale we refuse to imagine." 270-page book provides an excellent introduction to the history and geopolitics of genetic diversity. Pat Mooney is executive director of the ETC Group, previously Rural Advancement Foundation International (RAFI). Download PDF (14 MB):

http://www.etcgroup.org/upload/publication/pdf_file/572

"More than 90 per cent of crop varieties have disappeared from farmers' fields." -- **UK Agricultural Biodiversity Coalition**

<http://www.ukabc.org/>

This site has good resources on seed issues and food security.

"One of the world's most pervasive threats to world food and livelihood security is the loss of biological diversity." --

Genetic Resources Action International (GRAIN)

<http://www.grain.org/>

GRAIN is an international NGO, part of a global movement of popular action against genetic erosion.

Publishes the excellent "Seedling" newsletter, books and other materials, briefings and ad hoc publications,

global trade and biodiversity in conflict, an email mailing list.

Site search. Website also in French and Spanish versions.



"In order to have access to a wide diversity of useful plants to meet our

essential needs beyond 2000, we must gather, annotate, and caretake these resources now, before they are further eroded." -- **Seed Savers' Network**

<http://www.seedsavers.net/>

This Australian seedsaving group is involved in projects in Zimbabwe, Cambodia, Tonga, Cuba and the Solomon Islands.



A trainee of the Community Seed Bank Training Program in the Solomon Islands collects long red beans from a subsistence garden (Seed Savers' Network)



Local Seed Network

Manual tells how to establish and run a local seed group. 100 pages on forming a network, promoting and sharing skills, and sourcing, drying, cleaning, storing, testing and distributing seeds. Illustrated. Buy at **Seed Savers' Network:**

<http://www.seedsavers.net/>

The **Heritage Seed Library** run by the HDRA in Britain ("Garden Organic") aims to conserve as much biodiversity as it can and make as many varieties of vegetables available as possible. About 700 varieties in the collection, mostly vegetables. Seeds are supplied to volunteer Seed Guardians who cultivate threatened varieties of vegetables in their gardens. A Seed Swap section encourages informal exchange of rare seeds. The Library also publishes the quarterly newsletter Seed News covering plant genetic resources.

<http://www.gardenorganic.org.uk/hsl/index.php>

SeedSaving Resources -- This comprehensive site is a "one-stop-shop" of Web resources on plant genetic resources, seedsaving and seed swapping, and worldwide sources of organic, heirloom, open-pollinated and non-GE seed and plants.

<http://homepage.tinet.ie/~merlyn/seedsaving.html>

The **Seed Exchange** email list has nearly 700 members from around the world, including university agriculture departments and research stations. Moderated list, no advertising, members' email information kept totally private. To subscribe send a blank email to: seeds@nowonline.net with the word SUBSCRIBE as

the subject of the message.

Native Seeds/SEARCH (NS/S) of Tucson, Arizona, is a nonprofit organization that works to conserve the traditional crops, seeds, and farming methods that have sustained native peoples throughout the southwestern US and northern Mexico. "We promote the use of these ancient crops and their wild relatives by gathering, safeguarding, and distributing their seeds, while sharing benefits with traditional communities. We also work to preserve knowledge about their uses. Through research, training, and community education, NS/S works to protect biodiversity and to celebrate cultural diversity. Both are essential in our efforts to restore the earth."

<http://nativeseeds.org/>

"Growing Diversity: Genetic Resources and Local Food Security", by David

Cooper, Renée Vellvé, Henk Hobbelink (editors), 1992, IT Publications, ISBN 1-85339-119-0

Edited by GRAIN (Genetic Resources Action International), this book presents the experiences of NGOs in managing genetic resources at the local level in the Third World. Fifteen authors document the work of local farmers in developing crop varieties suited to their needs and demonstrate how these approaches can be built upon to promote conservation and development. Buy at Amazon.com: [Growing Diversity](#)



Saving the Seed: Genetic diversity and European agriculture, by Renée Vellvé, GRAIN, 1992, Earthscan, ISBN 1-85383-150-6

"Pandas are cute, tropical rainforests are breath-taking, but how do you mobilize people to save a carrot?" Traces the decline of crop varieties in European farming, and describes what is being done to safeguard genetic resources for the future. The crucial work is being done by individuals and grassroots organizations, who largely go unrecognized and under-resourced. Policies to promote the diversification of European agriculture and an

integrated strategy for safeguarding the genetic base of the food system are urgently needed. Buy at Powell's Books:

<http://www.powells.com/biblio/62-9781853831508-0>

Saving the Seed: Europe's Challenge, by Alvaro Toledo, Seedling April 2002, GRAIN -- 2,800-word article examines how the state of play has changed since the publication of GRAIN's "Saving the Seed: Genetic Diversity and European Agriculture" (Renée Vellvé, GRAIN, 1992, Earthscan, ISBN 1-85383-150-6). "The 1990s have not been a good decade for agricultural biodiversity in Europe..."

<http://www.grain.org/seedling/?id=191>



"Lost Crops of Africa: Volume I:

Grains" by Noel Vietmeyer, 1996, National Academy Press, ISBN 0309049903

Africa has more native cereals than any other continent. It has its own species of rice, as well as finger millet, fonio, pearl millet, sorghum, tef, guinea millet, and several dozen wild cereals whose grains are eaten from time to time. This is a food heritage that has fed people for generation after generation

stretching back to the origins of mankind. It is also a local upon which a sound food future might be built. But this legacy of genetic wealth has largely been bypassed in modern times. The "lost crops" can help provide food security in their native areas, which include many parts of Africa threatened with hunger. At the same time maintaining the diversity of these ancient crops will protect options for the rest of the world to use. Full text online at the National Academy Press:

<http://www.nap.edu/openbook.php?isbn=0309049903>

Buy the book at Amazon.com: [Lost Crops of Africa: Volume I: Grains](#)

Lost Crops of Africa: Volume II: Vegetables, 2006. Full text online at the National Academy Press:

http://www.nap.edu/catalog.php?record_id=11763

Buy the book at Amazon.com: [Lost Crops of Africa: Volume II: Vegetables](#)

Lost Crops of Africa: Volume III: Fruits, 2008. Full text online at the National Academy Press:

http://www.nap.edu/catalog.php?record_id=11879

Buy the book at Amazon.com: [Lost Crops of Africa: Volume III: Fruits](#)

Ethiopia's Living Laboratory of Biodiversity -- In Ethiopia, home of one of the most publicized famines in the mid-1980s, farmers play a pivotal role in preserving and enhancing some of the world's most unique seed genetic material. Amid Ethiopia's diverse topography, climate and soil conditions, local farmers have developed a tremendous base of food-producing seeds. In an effort to ensure Ethiopia's seed genetic diversity, scientists are discovering that farmers are not merely an adjunct to conserving and enhancing this diversity but are key actors.

<http://archive.idrc.ca/books/reports/12ethiop.html>

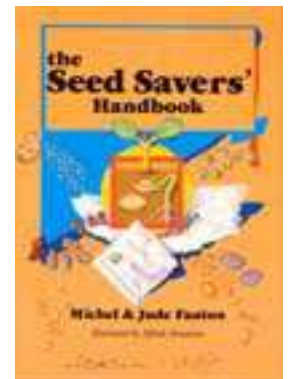
"Lost Crops of the Incas: Little-Known Plants of the Andes with Promise for Worldwide Cultivation" Board on Science and Technology for International Development, National Research Council, 1989, ISBN 0-309-04264-X. Detailed information on more than 30 different Incan crops that promise to follow the potato's lead and become important contributors to the world's food supply. Some of these overlooked foods offer special advantages for developing nations, such as high nutritional quality and excellent yields. Color photographs of many of the crops plus the authors' experiences in growing, tasting, and preparing them in different ways. Full text online at the National Academic Press:

<http://www.nap.edu/catalog/1398.html>

Buy the book at Amazon.com: [Lost Crops of the Incas](#)

"Seed Savers' Handbook" by Michel & Jude Fanton, 1993

Without dedicated seed savers, our staple foods would not exist. Such seed resources are only safe in the hands of people who save and grow them and eat their bounty; they are lost in "collections" or storage, or in hybrids wholly owned by multinationals. The Fantons, founders of Australia's SeedSaver's Network, show how gardeners can protect our global food heritage -- and eat it too. They describe the seed collecting, growth cycles, propagation, cultivation and traditional kitchen and medicinal uses of over one hundred vegetables, culinary herbs and edible



flowers. Buy at ECHO's Global Bookstore:

<http://www.echobooks.org/>



"New Seed-Starters Handbook" by Nancy Bubel, 1988, Rodale Press, ISBN 0-87857-752-1

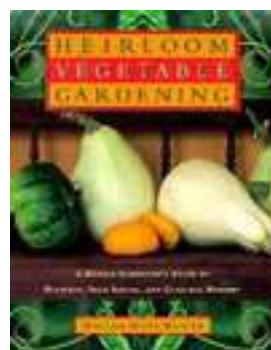
Turn to this book for the most complete, up-to-date information on starting plants from seed. Written by a gardener with 30 years of experience, this easy-to-use reference explains everything you need to know to start seeds and raise healthy seedlings successfully. Buy at

Amazon.com: [The New Seed Starter's Handbook](#)

"Farmers' Seed Production: New approaches and practices" edited by Conny Almekinders, Niels Louwaars, 1999, Practical Action, ISBN 1853394661

This handbook covers a whole range of issues relating to local seed supply systems, including participatory plant breeding, and both technical and practical information on seed production and variety maintenance. It suggests new approaches and methods to support on-farm seed production by small-scale farmers in developing countries. Buy at the Development Bookshop:

http://developmentbookshop.com/product_info.php?ref=13&products_id=456&affiliate_banner_id=1



"Heirloom Vegetable Gardening -- A Master Gardener's Guide to Planting, Seed Saving, and Cultural History" by William Woys Weaver, 1997, Henry Holt & Company, ISBN 0805040250

Lists 280 varieties of vegetables, all organically grown by Weaver. He has researched the traditional kitchen garden over the course of 30 years. Old fashioned recipes, research on the introduction of these vegetables, color photographs and line drawings. Weaver maintains his own collection of over 2,000 varieties of vegetables, herbs and flowers. Buy at Powell's Books

<http://www.powells.com/cgi-bin/biblio?inkey=6-0805040250-3>

The Seed Search, by Karen Platt, 5th edition, November 2002, Black Tulip Publishing, 368 pages -- Sources for 40,000 flowering seeds including all types of flowering plants and over 9,500 vegetables. Includes open-pollinated, untreated, heirloom and organic seed, many rare species. Almost 500 suppliers from all over the world, including many small, unusual seed companies. An alphabetical listing of seed showing which supplier supplies what. Full suppliers details. Buy at Karen Platt's online bookstore:

<http://www.karenplatt.co.uk/books/seedsearch6/>

Genetically Engineered crops

Genetically modified crops (GMOs, Genetically Modified Organisms) have kept exactly none of the many golden promises made for it, and fulfilled most of the fears and cautions raised by the technology's detractors -- they're a disaster, nobody benefits except Monsanto et al.

The UN's landmark [International Assessment of Agricultural Science and Technology for Development](#) (IAASTD) report on world agriculture of April 2008 said GM technology is not a quick fix to feed the world's poor. The report is highly critical of genetically engineered crops and saw little role for GMOs in feeding the poor on a large scale. It said GMOs are highly controversial and would not play a substantial role in addressing the key problems of climate change, biodiversity loss, hunger and poverty. "Assessment of the technology lags behind its development, information is anecdotal and contradictory, and uncertainty about possible benefits and damage is unavoidable." Asked if GMOs could solve world hunger, Professor Robert Watson, the director of the IAASTD study, said: "The simple answer is no." IAASTD website:

<http://www.agassessment.org/>

"Biotech has bamboozled us all -- Studies suggest that traditional farming methods are still the best" Guardian, August 24, 2000: "If anyone tells you that GM is going to feed the world," Steve Smith, a director of the world's biggest biotechnology company, Novartis, insisted, "tell them that it is not... To feed the world takes political and financial will -- it's not about production and distribution." Mr Smith was voicing a

truth which most biotechnology companies have gone to great lengths to deny.

<http://www.guardian.co.uk/Columnists/Column/0,5673,358055,00.html>

"Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world" -- by Miguel A. Altieri, University of California, Berkeley and Peter Rosset, Food First/Institute for Food and Development Policy

<http://www.foodfirst.org/progs/global/biotech/altieri-11-99.html>

"Will Biotechnology Feed the World's Poor?" -- "One of the biggest myths perpetuated by the biotechnology industry is that genetically engineered crops are likely to provide a solution to world hunger" -- Tom Campbell, Development Studies Centre, Kimmage Manor, Dublin, Ireland

<http://www.pmac.net/campbell.htm>

"Genetic Engineering and World Hunger: Food? Health? Hope?" -- "Ensuring food security worldwide requires an approach that is the opposite of that promoted by Biotechnology companies". 16,000-word article from Britain's The CornerHouse, debunks the GE companies' claims that genetic engineering is the key to feeding the world's increasing numbers of people, that it will help to restore a healthy environment and prevent further degradation, and that it will provide farmers and consumers worldwide with more choices and opportunities.

http://www.ukabc.org/ge_wfs.html

The ETC Group, formerly Rural Advancement Foundation International (RAFI), is at the forefront of the battle against GMO crops and biopiracy

<http://www.etcgroup.org/en/>

"GMOs are without a doubt the least democratic and most unpopular new technology since nuclear energy, and their potential to catalyze global ecological and social disaster is terrifying." -- **Friends of the Earth International**

<http://www.foei.org/>

"Say no to genetic engineering" -- **Greenpeace**

<http://www.greenpeace.org/international/campaigns/genetic->

[engineering](#)

GMWatch.org -- Full coverage, daily news by email, the usual suspects of the "Biotech Brigade", and more.

<http://www.gmwatch.org/>

The Campaign to Label Genetically Engineered Foods

-- Campaigns, Action Alerts, information, resources, online bookstore and more:

<http://www.thecampaign.org/>

Genetic Resources Action International (GRAIN)

<http://www.grain.org/>

Biotechnology and Biosafety -- a large collection of reports, articles, publications from the **Third World Network**

<http://www.twinside.org.sg/bio.htm>

UK Agricultural Biodiversity Coalition

<http://www.ukabc.org/>

Open Letter from World Scientists to All Governments:

"We, the undersigned scientists, call for the immediate suspension of all environmental releases of Genetically Modified crops and products; for patents on life-forms and living processes to be revoked and banned; and for a comprehensive public enquiry into the future of agriculture and food security for all."

<http://www.i-sis.org.uk/list.php>

"Genetically Engineered food -- Safety Problems" --

Physicians and Scientists Against Genetically Engineered Food is demanding a moratorium on GE food.

<http://www.psrast.org/intro1.htm>

Resources on biotechnology at the **Institute of Science in Society** website, with reports by Dr. Mae-Wan Ho, Angela Ryan, Prof. Joe Cummins, and others. Newsletters, mailing list, full site search.

<http://www.i-sis.org.uk/>

The Research Foundation for Science,

Technology and Ecology was founded in India in 1982 by **Dr. Vandana Shiva**, scientist, author and a leading opponent of GE crops and biopiracy.

<http://www.navdanya.org/>



Dr Vandana Shiva

Against the Grain: Why poor nations would lose in a biotech war on hunger -- The promise [of biotechnology] of more abundant and more nutritious food appears to hold out the hope that hunger and disease can be alleviated. With potential like this, who wouldn't be in favor of genetically engineered crops? For starters, many of the people they are supposed to help. -- Sierra Club

<http://www.sierraclub.org/sierra/200107/profile.asp>

Dirty tricks

Monsanto's Web of Deceit

http://ngin.tripod.com/deceit_index.html

Corporate Ghosts -- There's a web of deceit over GM food, says George Monbiot -- The Guardian, 29 May 2002

<http://ngin.tripod.com/deceit7.html>

The Fake Persuaders -- Corporations are inventing people to rubbish their opponents on the internet, says George Monbiot -- The Guardian, 14 May 2002

<http://ngin.tripod.com/deceit4.html>

Kernels of Truth -- Virulent criticisms were anything but academic -- The East Bay Express, 29 May 2002

<http://ngin.tripod.com/deceit8.html>

Amazing Disgrace -- A dirty tricks campaign leads straight to Monsanto's PR company -- The Ecologist, May 2002

<http://ngin.tripod.com/deceit2.html>

Seeds of Dissent -- Anti-GM scientists are facing widespread assaults on their credibility. Andy Rowell investigates who is behind the attacks -- Big Issue, 15-21 April 2002

<http://ngin.tripod.com/deceit3.html>

Scientists in a Spin -- How scientists have become embroiled in a PR dirty tricks campaign -- letter to The Guardian, 16 May 2002

<http://ngin.tripod.com/deceit5.html>

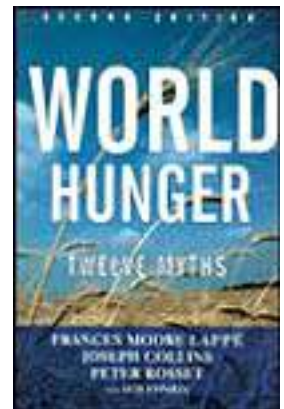
The Green Revolution

"The Violence of the Green Revolution -- Third World Agriculture, Ecology and Politics", by Vandana Shiva, Zed Books, London, and Third World Network, Malaysia; ISBN 983-99573-8-4, 264 pages. Dr. Shiva examines the impact of the Green Revolution on the breadbasket of India, showing how the "quick fix" promise of large gains in output pushed aside serious pursuit of an alternative agricultural strategy. She documents the destruction of genetic diversity and soil fertility that resulted.

Buy at Amazon.com: [The Violence of Green Revolution](#)

"World Hunger: Twelve Myths", 2nd ed., by Frances Moore Lappé, Joseph Collins, Peter Rosset with Luis Esparza, Food First/The Institute for Food and Development Policy, 1998, 270pp.

First published in the early 1970s, the World Hunger report is an authoritative resource on the problem of global hunger -- highly recommended. It debunks 12 persistent misconceptions about hunger, including Myth 5: "The Green Revolution is the answer." Thorough examination of the issue. The book isn't just a damnation of wrong-headed development efforts, it also offers a well-considered way forward. Buy at Amazon.com: [World Hunger: 12 Myths](#)



"Food First" by Frances Moore Lappe and Joseph Collins, Institute for Food and Development Policy (Food First), 1977, 416 pages -- Why do hundreds of millions of people go hungry? Because there just isn't enough food to go round? No - there's more than enough food for everyone. Food First is an eye-opener in exposing the hard realities of how the world food system really works. It confronts the political and economic roots of

world hunger and shows how ordinary people can help to end it. Thoroughly researched, good case-studies, thorough references. Written 30 years ago, the book is as relevant today as it was then, or even more so: a very great help in understanding the contradictions of the food price crisis that is driving millions more into hunger today. Buy at Amazon.com: [Food First](#)

"Lessons from the Green Revolution -- Do We Need New Technology to End Hunger?" Peter Rosset, Joseph Collins, and Frances Moore Lappé, Tikkun Magazine, March/April 2000

<http://www.foodfirst.org/media/opeds/2000/4-greenrev.html>

"Nutrient starved soils lead to nutrient starved people", by Keith Addison, cover story, acres, USA, June 1983, also cover story, Asian Business, February 1983: "Many are the rice terraces hewn with incredible labour from upland slopes and tragically abandoned after only a year when the ground failed to yield a crop at all -- meaning the end for that family. Had they used native rice, they would have got some crop at least. But hybrid seeds are now virtually the only seeds available and they will not grow without the expensive inputs that these people have no access to."

"Treasure in a bowl of porridge" -- Tai Long Wan: Tales from a vanishing village, by Keith Addison. A development project in the Philippines reports a setback to their plans to grow 20 hectares of traditional strains of rice to help small farmers survive the onslaught of the Green Revolution -- they could only find two kilos of native seed in the entire province. Background on the Green Revolution and the seeds crisis.



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