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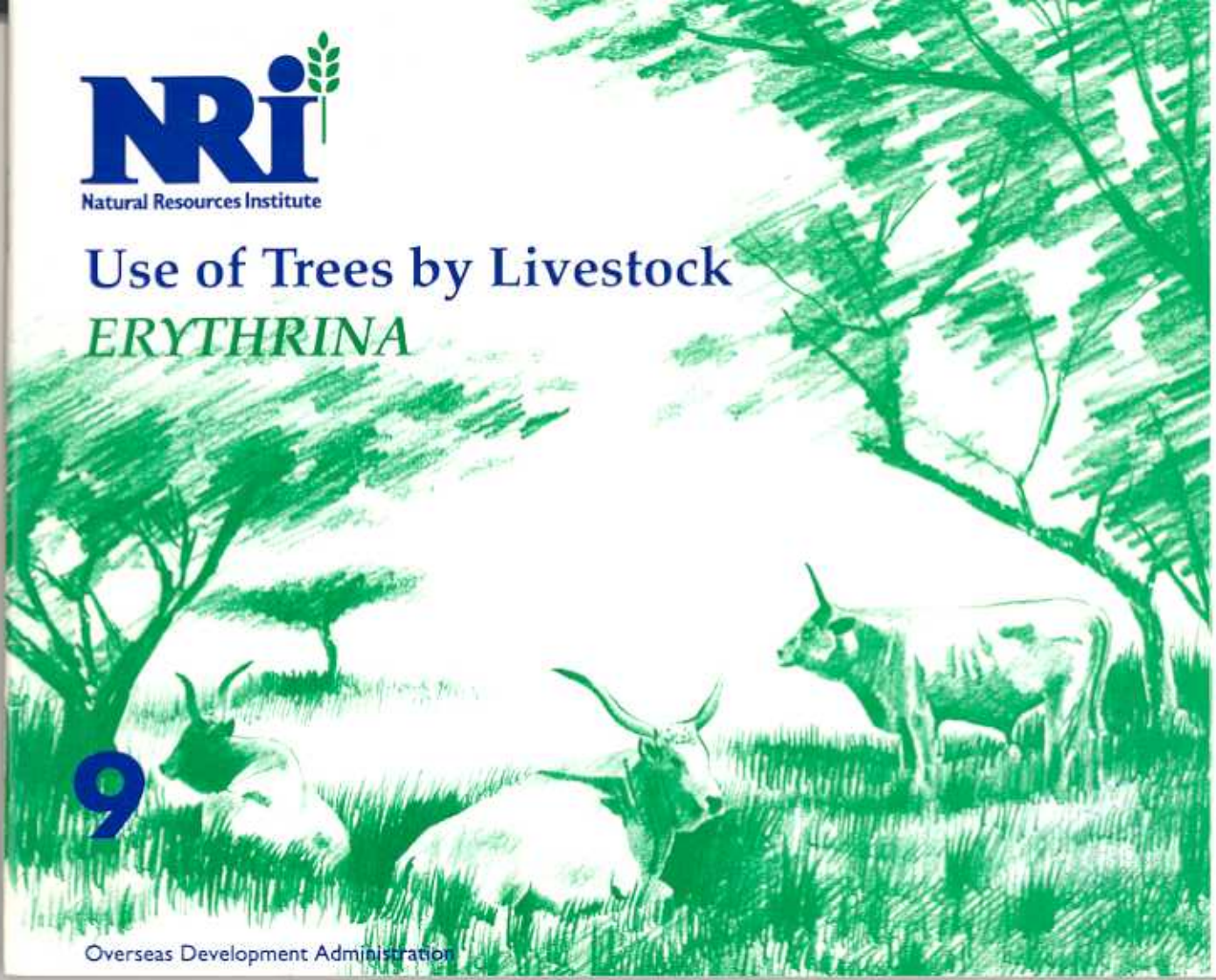
Use of Trees by Livestock
ERYTHRINA



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Overseas Development Administration

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R.T. Paterson

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Contents

Foreword

The importance of trees and shrubs in the feeding of animals in the tropics and sub-tropics has long been recognized by livestock owners. In arid areas where the growth of herbaceous plants is limited by lack of moisture, leaves and edible twigs of trees and shrubs can constitute well over 50% of the biomass production of rangeland. At high altitudes, tree foliage may provide over 50% of the feed available to ruminants in the dry season, branches being harvested and carried to the animals. Even in regions of higher rainfall where grass supplies the major proportion of the dry matter eaten by ruminants, tree leaves and fruits can form an important constituent of the diet, particularly for small ruminants.

In the last two decades interest in the planting of trees as a source of feed for livestock has been encouraged by workers in research and development, but in contrast to the hundreds of indigenous species which are used as fodder, attention has focussed on a limited number of introduced species. Thus there are many publications reporting the chemical composition of *Leucaena leucocephala* leaves and suggesting management strategies for utilization of the tree for fodder, but it is more difficult to find information on alternative genera which might be equally, or more, appropriate.

The aim of this series of publications is to bring together published information on selected genera of trees which have the potential to increase the supply of fodder for ruminants. Each booklet summarizes published information on the fodder characteristics and nutritive value of one genus, with recommendations on management strategies, where available. Further, since the leaves of woody species frequently contain secondary compounds which may have an anti-nutritional, or toxic, effect, a separate booklet summarizes the effects of a number of these compounds. It is hoped that the booklets will provide useful resource material for students, research and extension workers, interested in promoting the use of trees as a source of fodder for ruminants

Further copies of this booklet or others in the series can be obtained by writing to Publishing and Publicity Services at the Natural Resources Institute.

Margaret Gill
Livestock Production Programme

Genus *Erythrina*

Family LEGUMINOSAE
Subfamily PAPILIONOIDEAE
Tribe PHASEOLEAE
Subtribe ERYTHRINAE

Principal species

Erythrina abyssinica
Erythrina berteroana
Erythrina costaricensis
Erythrina crista-galli
Erythrina edulis
Erythrina fusca (syn. *E. glauca)*
Erythrina variegata (syn. *E. indica)*
Erythrina poeppigiana (syn. *E. micropteryx)*
Erythrina tahitensis (syn. *E sandwicensis, E. monosperma, E. montana)*
Erythrina senegalensis
Erythrina subumbrans (syn. *E. lithosperma)*

Main common names

Coral trees (India, southern Africa)
Madre arbol, Madre de cacao, Poró } Central and South America

Summary

Erythrina is a genus of some 108 species of shrubs and trees which are distributed widely throughout the tropics and sub-tropics. Several species thrive on waterlogged, or poorly drained, acid soils which are inhospitable to most legumes. While they have long been used in Africa, Asia and the Americas as ornamentals, living fence posts, supports for vine crops, green manure and as shade trees in plantations of coffee, their use as fodder trees has attracted much less attention until recent years. With increased awareness of the role of trees in animal production interest has focussed on the genus, despite concern over the effects on livestock of a range of alkaloids and flavonoids which are known to occur in the foliage. There are no reports of toxicity in domestic livestock. Indeed, use is made of many *Erythrina* spp. to treat a range of ailments in both human and veterinary medicine.

Erythrina is rich in crude protein but the digestibility of the foliage is only about 50%. Many species are well accepted by livestock, particularly small ruminants, and there is considerable potential for using them as dietary supplements. They may be

of particular use in areas where there is a lack of other high-quality fodder species due to soil acidity and lack of drainage.

Description and distribution

Erythrina is a genus of some 108 species of shrubs and small to medium-sized trees (to about 20 m in height), which are often armed with blunt, conical thorns or sharp, recurved prickles which may occur on the trunks, young branches, petioles, leaf midribs and main veins. The leaves vary in shape, but are often deltoid or rhomboid. They are pinnately trifoliate and the terminal leaflet is often the largest. The lateral leaflets may be asymmetric. *Erythrina* spp. tend to shed their leaves under the influence of moisture stress, and where this happens the flowers often appear before, or with, the first new leaves at the start of the growing season. The flowers are usually red but may also be pink, orange or yellow. They are large and attractive, giving rise to the use of many species as ornamental plants. The seeds are commonly red to orange, or brown in colour, with a contrasting black (or sometimes white) patch at the point of attachment. They are carried, 2-14 at a time, in long, flattened or cylindrical, dehiscent pods with deep constrictions between the segments (Allen and Allen, 1981; Coates Palgrave, 1983).

Erythrina spp. occur over a wide range of natural habitats including open forest, dry brush and scrub, river banks, swamps and coastal regions. One species, *E. tahitensis*, is reported to occur at altitudes of up to 2900 m (Allen and Allen, 1981), and *E. edulis* is commonly found between 1800 and 2500 m. Maximum altitudes for *E. fusca* and *E. poeppigiana* are considered to be 1400 and 1700 m respectively, while *E. tahitensis* occurs naturally only at altitudes up to about 600 m. Those species which are adapted to higher altitudes show some frost tolerance, and most are susceptible to damage by fire (Coates Palgrave, 1983). In the Americas, species such as *E. fusca* are often found on the most acid and infertile of soils, and they thrive in waterlogged and poorly drained areas where fast-growing, nitrogen-fixing trees seldom prosper (Preston and Murgeitio, 1987). In Ethiopia, *E. burana* occurs in a range of situations, including shallow, swampy bogs and dry, rocky hills with slightly alkaline (pH 7.1-7.3), sandy or gravelly soils (Teketay, 1990).

Distribution of the genus is pantropical, with some

70 species found in the Americas, 32 in Africa, 18 in Asia and 3 in Australia and Argentina (Allen and Allen, 1981). See Krukoff and Barneby (1974) for a conspectus of the species.

Fodder characteristics

Brewbaker (1989) suggested that *Erythrina* spp. had little forage potential in the African context. There are a number of reports in the literature (e.g. Jama *et al.*, 1989; Tarawali, 1991) which indicate that introductions of a range of species have not always met with success because of agronomic and biotic problems, such as damping off of seedlings and damage caused by stem borers. Nevertheless, *E. abyssinica* is used in the Wolayata region of southern Ethiopia for dry season fodder, live fences and shade for coffee (Lazier and Mengistu, 1984) and its potential as a fodder tree is thought to be worthy of further study (Larbi et al., 1993). *E. variegata* (syn. *E. indica*) is one of a total of 13 fodder shrubs and trees found to be widely used in ruminant feeding systems in Asia (Chen *et al.*, 1992), while *E. arborescens* is planted by Nepalese farmers in areas of 1000–1500 m altitude (Joshi, 1992). *E. fusca* and *E. poeppigiana* are of growing importance to livestock in Central and South America (Beer, 1980; Preston and Murgeitio, 1987; Preston, 1992; Kass *et al.*, 1992).

In the humid tropics of Costa Rica, *E. poeppigiana* interplanted with King grass (*Pennisetum purpureum* x *P. typhoides* hybrid) in blocks and pruned three or four times per year, gave dry matter yields of tree fodder ranging from 6.4 t/ha/year at a density of 1667 trees/ha to 11.3 t/ha/year with 3333 trees/ha (Benavides *et al.*, 1989). When planted at high density in fertilized, pure stands, E. berteroana produced 19.4 t/ha/year of DM in three harvests (CATIE, 1989). In a similar climatic region, where several *Erythrina* spp., including the native species *E. berteroana*, *E. fusca* and *E. globocalyx*, together with *E. poeppigiana* of South American origin, are commonly used as living fences (Sauer, 1979), four-year-old trees of *E. berteroana*, established from large stakes, yielded 319 kg DM of leaves and stems from 100 m of fence line (169 trees) after eight months growth (Budowski *et al.*, 1985). With typical planting arrangements where trees are grown at spacings ranging from 1–3 m, annual DM yields in the range of 1.8–3.0 t/km of fenceline were obtained (CATIE, 1989).

Many *Erythrina* spp. are well accepted by many classes of livestock. The leaves of *E. variegata* are eaten by cattle in India (CSIR, 1986), while both the leaves and the young flowers of *E. sigmoidea* are relished by zebu cattle in Cameroon (Audru, 1980). Goats consumed leaves of *E. poeppigiana* at a daily level of up to 3.2 kg DM/100 kg liveweight (Samur, 1984), while sheep and goats consumed *E. abyssinica* at levels of 3.0 and 2.8 kg OM (organic matter)/100 kg of metabolic weight (Larbi *et al.*, 1993). The fruit of *E. edulis* is consumed by pigs in Colombia (Preston and Murgeitio, 1987), while in Indonesia (Raharjo and Cheeke, 1985), rabbits ate up to 23% of their diet as chopped leaves of *E. subumbrans* (syn. *E. lithosperma*).

The nutritive value of *Erythrina* spp. is generally held to be good, although published data are scarce. Representative values are presented in Table 1. Crude protein (CP) contents of 30.6, 11.3 and 13.8% respectively have been reported for the leaves, stem and bark of *E. poeppigiana* (Preston and Murgeitio, 1987). The CP content of dried and ground leaf meal of this species, averaged over seven individual evaluations in Costa Rica, was 26.1% (calculated from Kass *et al.*, 1992). The CP content of leaves and stems of *E. berteroana* (at 8 months growth) were similar at 26.3 and 8.1% respectively (Budowski *et al.*, 1985).

The *in vitro* dry matter digestibility of the leaves and stems of *E. poeppigiana* appears to be somewhat variable, but moderate and in the range of 44–53% (Samur, 1984; Preston and Murgeitio, 1987; Rodriguez *et al.*, 1987; Benavides *et al.*, 1989; Kass *et al.*, 1992). The variation could be due to differing analytical techniques, or to varying amounts of stem in the samples, although Salazar and Vasquez (1988) observed considerable genetic variation in morphology between different provenances of this species in Costa Rica. This variability may also be reflected in the nutritional value of the foliage. The bark had a remarkably high level of digestibility which Preston and Murgeitio (1987) reported to be 78%.

The published literature is sparse but available data suggest that some African and Asian species of *Erythrina* may be lower in protein content and higher in digestibility, at least in small ruminants, than the better known American species. Chopped and wilted leaves of *E. abyssinica* from Ethiopia had CP levels of 20.6% with *in vivo* DM digestibility of about 65% in both sheep and goats. This species was considered to

Table 1 Proximate and fibre analyses of *Erythrina* spp.

	Dry matter	Crude protein	Crude fibre	Ash	Ether extract	NFE	*In Vitro* DMD	NDF	Source
E. abyssinica LEAVES									
(chopped and wilted)		20.6		10.3				57.8	1
E. arborescens LEAVES AND TWIGS	37	16.9		19.6					2
E. berteroana LEAVES	26.2	26.3							3
STEMS	27.8	8.1							3
E. corallodendron FRESH AERIAL PARTS	16.9	24.9	33.0	12.8	2.2	27.1			4
E. variegata (syn. *E. indica)*									
DRIED LEAVES	91.1	14.7					38 *(in sacco)*		5
E. poeppigiana (syn. *E. micropteryx)*									
FRESH AERIAL PARTS	32.0	32.6	30.5	13.6	1.6	21.8			4
LEAVES *(chopped)*	23.3	27.6					47.9		6
STEMS	19.5	10.7					45.3		6
LEAVES	26.1						53.0		7
(means of 6 evaluations)									

NOTES: NFE - Nitrogen-free extract; DMD - dry matter digestibility; NDF - Neutral detergent fibre.
Sources: 1 Larbi *et al.*, 1993; 2 Joshi, 1992; 3 Budowski *et al.*, 1985; 4 McDowell *et al.*, 1974; 5 Huq and Saadullah, 1987; 6 Samur, 1984; 7 Kass *et al.*, 1992.

show promise as a cheap source of protein (Larbi *et al.*, 1993). The protein content of a single sample of *E. arborescens* from Nepal was only 16.9% (Joshi, 1992), but this figure could be artificially low if an unusually high proportion of edible stem was included in the sample.

Dried leaves of *E. variegata* showed *in sacco* DM disappearance of only 36% after incubation in cows of 12-72 hours, but 60% of the CP was degraded (Huq and Saadullah, 1987). These results suggest that *Erythrina* leaves may be more effective when used to supplement poor quality pastures than would be predicted on the basis of laboratory evaluation of dry matter digestibility alone.

In Costa Rica, where it is common to supplement dairy cattle with concentrates based on soyabeans, the replacement of the concentrate with *E. poeppigiana* foliage resulted in a linear decrease in daily weight gains in young heifers and in the milk yields of cows. Dry matter intake of grass was also reduced. The growth rate of grazing steers on unsupplemented diets, however, increased when the steers were fed low levels of *E. cocleata* fodder, and growth rates were further improved by the addition of an energy source such as green bananas or molasses. Work with rice bran suggested the need to supply bypass nutrients (both energy and protein) to obtain high milk yields when *Erythrina* fodder was offered to dairy cattle as the main source of dietary nitrogen. It was concluded that under lowland humid conditions, the direct benefits to milk production from the use of *Erythrina* forage would be small where alternative, conventional concentrates were available. There may, however, be important indirect benefits such as increased carrying capacity of pasture as a result of fodder substitution, and improved nutrient recycling within the grazing area. The financial benefits would be site-specific, depending on relative costs and returns. In subhumid regions, supplementation of poor quality roughages with tree foliage may be an attractive method of improving animal productivity and profitability (Kass *et al.*, 1992).

The foliage of *Erythrina* spp. appears to be particularly attractive to small ruminants. Milk yields of dairy goats fed on a basal diet of King grass (*Pennisetum purpureum*) and reject bananas were increased linearly by 84–156% when the animals were given leaves of *E. poeppigiana* at daily levels of 0.5–1.5 kg DM/100 kg liveweight. The percentage increase was similar for goats with both high and low initial

milk yields (Esnaola and Rios, 1990). Animals consumed 16% more foliage of *E. poeppigiana* than *Gliricidia sepium* when offered under similar conditions, and daily milk yields increased by some 15% (Rodriguez *et al.*, 1987). The tree fodder produced lower increases in yields than commercial concentrates with the same level of CP, suggesting that the tree protein was of lower nutritional value than conventional supplements. Using costs and returns from Costa Rica, economic analyses strongly favoured the use of *Erythrina* fodder over concentrates based on soyabeans (Kass *et al.*, 1992).

The weight gains of young, castrated male sheep and goats fed over an 80-day period on a basal diet of Napier grass (*Pennisetum purpureum*) almost doubled when the diet was supplemented with chopped, wilted leaves of *E. abyssinica* at rates of up to 1 kg/head/day (Larbi *et al.*, 1993). Again, the response to increasing levels of the tree fodder appeared to be linear.

In general, with small ruminants fed on King or Napier grass, there was a partial substitution of *Erythrina* for the basal diet, but total dry matter intake increased as a result of the feeding of the tree fodder (Kass *et al.*, 1992).

The high nutritional value of the genus in terms of digestible crude protein is sufficient to justify its use as a protein supplement to improve the feeding value of diets based on poor-quality grass or roughage.

Anti-nutritive factors

A recent bibliography of *Erythrina* (Agishi and Tothill, 1991) contained a total of 344 entries and no fewer than 97 papers referred to alkaloids and medicinal uses, although few of these were concerned with anti-nutritive factors. Alkaloids which have been isolated from members of the genus include hypaphroine, erythroidine (Allen and Allen, 1981), erysotine, erythratidine and epi-erythratidine (Chawla *et al.*, 1988). The presence of physiologically active alkaloids is considered to be characteristic of the genus, although flavonoids including the isoflavones auriculasin and scandenone have also been found in some species (Nkengfack *et al.*, 1989). Some of these flavonoids have been shown to have anti-fungal (Maillard *et al.*, 1978) and anti-microbial (Biyiti *et al.*, 1988) properties, but their effects on higher animals are unknown.

All *Erythrina* spp. so far tested have yielded

alkaloids which have effects on small laboratory animals (e.g. frogs) that are similar to poisoning by curare, the poison used by some Indians in South America on their arrows. The symptoms include drowsiness and muscular paralysis of the neck, extremities and diaphragm. When death occurs, it usually results from respiratory failure. The most potent species are *E. buchii, E. coralloides, E. cristagalli, E. eggersii, E. macrophylla, E. mexicana, E. lanata* subsp. *occidentalis* (syn. *E. occidentalis*) and *E. suberosa* (Allen and Allen, 1981). Toxic effects have been produced by the injection of leaf extracts containing concentrated alkaloids into the bloodstream of the test animals, but Coates Palgrave (1983) thought it unlikely that ingestion of potentially poisonous seeds of *E. abyssinica* and *E. caffra* would have any adverse effects on humans.

The leaves of *E. subumbrans* are palatable to rabbits, although they are less well accepted than those of some other trees such as *Leucaena leucocephala* and *Albizia falcataria* (Raharjo and Cheeke, 1985). It has been reported, however, that some *Erythrina* spp. can cause sterility and even death in rabbits (Martin, 1984). Reports of toxicity in larger domestic animals have not been found.

Erythrina spp. are generally lower in soluble polyphenolic compounds and lignin, and thus decompose more rapidly in the soil, than other tropical legumes such as *Inga edulis* and *Cajanus cajan* (Salazar and Palm, 1987). It has been suggested (Palm and Sanchez, 1990) that polyphenolics bind to nitrogenous compounds in the leaves to form substances that are resistant to decomposition. This may be analogous to the way in which high levels of tannins in the foliage of some browse species protect them from digestion when eaten by livestock. The low level of polyphenolics in *Erythrina* is a positive characteristic from the point of view of animal nutrition.

Management

The seeds of most *Erythrina* spp. are fertile and show little sign of dormancy (Rao and Singh, 1987), some, such as *E. abyssinica*, may be hard seeded, a condition which can be rectified by scarification in either hot water or concentrated sulphuric acid (Laurent and Chamshama, 1987). Mechanical scarification is recommended for *E. tahitensis* (Powell and Nakao, 1992). Vegetative propagation is often favoured since

most species root easily (Napier, 1988). Stakes of a minimum 2.5 cm diameter and 30 cm long will usually gro, but planting is often carried out using larger stakes of 10 cm diameter and some 2–2.5 m in length. Root formation, which usually takes place readily, can be further stimulated by the use of hormonal preparations, or by stripping the bark from the lower end of the part to be buried in the soil (Teketay, 1990). This end is cut obliquely and the upper end is protected against both rain and desiccation by the application of tar or lime. In a number of countries, apicormic shoots (large shoots that grow vertically upwards from horizontal branches) of *E. costaricensis*, *E. variegata*, *E. poeppigiana* and *E. senegalensis* have proved to be particularly successful as planting material (Jolin and Torquebiau, 1992).

Planting densities in the range of 1200–10 000 trees/ha are common. Lower densities are used where groups of trees are intended to provide shade and browse within a pasture, while at the upper end of the range, the trees would form a pure stand with very little understorey. When large stakes are used, growth is rapid and the first harvest can often take place within some 6–8 months of planting (Preston and Murgeitio, 1987).

Erythrina spp. form large, spherical nodules, which tend to be clustered on the central tap root. They are infected promiscuously by *Bradyrhizobium* spp. of the cowpea group, and therefore rarely require inoculation. The list of species which have been shown to nodulate includes all of those which are commonly used in animal production (Allen and Allen, 1981). At the low tree densities employed as shade for coffee and cacao, annual nitrogen fixation rates are 12–40 kg/ha (Budowski *et al.*, 1986). Active mycorrhizal associations are formed which are valuable in soils with low phosphorus contents (Powell and Nakao, 1992).

Grass-based pasture growing under seven-year-old trees of *E. poeppigiana* established as shade for grazing animals (about 60 trees/ha) was compared with similar pasture growing either without shade or under the tree species *Cordia alliodora*, *Albizia saman* (syn. *Samanea saman*) or *Gliricidia sepium* in Costa Rica, grass yields were similar in all cases, but the fibre content of the grass was higher in the unshaded areas. The CP content of the grass was highest under *E. poeppigiana*, and lowest under *C. alliodora* (Daccarett and Blydenstein, 1968). While direct

measurements of the nitrogen fixing capacity of *Erythrina* spp. are lacking for pasture systems, these data would suggest that it is at least comparable to that of *G. sepium*, a much-used fodder tree in tropical regions.

Frequent cutting appears to be advantageous when *Erythrina* spp. are grown for animal production. In a coffee plantation in the humid tropics of Costa Rica (2600 mm annual rainfall) where *E. poeppigiana* was planted for shade at a density of 280 trees/ha, the legume was cut at intervals of 4, 6 or 12 months. The most frequent pollarding produced the lowest total yield of dry matter (woody stems, edible stems and leaves), but the highest yield of edible stems and leaves. With frequent cutting, the edible fraction was some 64% of the total biomass production, and contained about 85% of the total crude protein. The total amount of nitrogen in the cut material was 170 kg/ha at three cuts per year, compared with 230 kg/ha under more frequent cutting systems (Rodriguez, 1985; Russo and Budowski, 1986).

In a study conducted over two years in a similar area of Costa Rica *E. poeppigiana* was planted in association with King grass and neither weeded nor fertilized. The trees were established as large stakes at either 1667 or 3333 trees/ha, and cut three or four times a year. When harvested at varying intervals, on attainment of a height of 2 m, grass production was not reduced by the presence of the trees at either density, but the crude protein content (average over two years) was increased from 4.7 to 6.1%. The higher tree density almost doubled the yield of tree fodder. More frequent cutting of the trees slightly increased tree leaf yield, but had little effect on crude protein content, which averaged 26.3% for the leaf and 11.7% for the stem (Benavides *et al.*, 1989). Since the stems of the trees are of limited feeding value, and leaves may be shed in response to dry weather, livestock production would benefit from management under frequent cutting, although the growth rate of the trees, as influenced by climatic, edaphic and biotic factors, would govern the optimum interval between harvests. A heavy pruning of *Erythrina* spp. not only promotes the yield of leaves and prevents loss of feed resources resulting from leaf fall, it also appears to prevent the early senescence that is sometimes observed in trees after a few years of active growth (Seibert, 1987).

Alternative uses

The alternative uses of the genus *Erythrina* are described by a number of authors including: Dalziel (1937); Uphof (1968); Wickens (1980); Allen and Allen (1981); Coates Palgrave (1983) Budowski *et al.*, (1986); and CSIR (1986).

Young leaves and tender shoots of species such as *E. variegata*, *E. fuseda* and *E. rubrinervia* are eaten raw or cooked in India, Indonesia and Central America. Flowers and buds of *E. rubrinervia* are also consumed as a vegetable. The seeds of *E. edulis* and *E. variegata* are boiled and roasted for human consumption in parts of Colombia and India, although those of *E. variegata* may be poisonous when raw.

Decoctions of the leaves, bark and roots of many species, including *E. corallodendron*, *E. herbacea* and *E. senegalensis*, are used for medicinal purposes in the treatment of wounds and ailments such as jaundice, dysentery, bronchitis and venereal diseases, and to alleviate toothache. The powdered bark of *E. senegalensis* is administered in water to horses as a diuretic, while *E. variegata* appears to have anthelmintic properties.

Because of their alkaloid content and their curare-like properties, the seeds, stems and bark of many species of *Erythrina* find uses as poisons for fish, while the powdered seeds of *E. herbacea* are used to control rats in Mexico. Water extracts of the leaves of *E. variegata* are highly toxic to the nematodes *Meloidogyne incognita* and *Tylenchorhynchus mashhoodi*, offering potential benefits to small farmers for cheap, organic plant pest control (Mohanty and Das, 1988).

The brightly coloured seeds of several species, including *E. abyssinica* and *E. caffra*, are strung as beads for decoration, and a fibre derived from the bark of E. senegalensis is made into scented necklaces and bracelets.

The wood is soft, light (specific gravity about 0.25), spongy and usually pale in colour. While rather woolly to work by machine, it may be carved for toys, statuettes and assorted small items including marimbas (type of musical instrument), drums, ladles, jars, stools and packing cases. The wood of *E. tahitensis* is particularly light and has been used in Hawaii as floats for fish nets and surf boards. It is a favourite canoe wood throughout Polynesia. In general, the wood has little value as either fuelwood or charcoal. The twigs of *E. senegalensis* may be used

as feather dusters.

The bark of *E. suberosa* is used on the Indian subcontinent in the manufacture of cork plugs and insulation boards. The wood, bark and ash of this species are also used in dyeing.

Several species such as *E. berteroana*, *E. cochleata*, *E. costaricensis*, *E. fusca*, *E. poeppigiana* and *E. subumbrans* (syn. *E. lithosperma*), make excellent live fences, shade and green manure trees in plantations of tea, coffee and cocoa, and support trees for vine crops such as peppers. *E. americana* is amongst the most common live fences in the Tabasco region of Mexico (Vera Castillo, 1987). Many species, including *E. abyssinica*, *E. caffra*, *E. crista-galli* and *E. variegata* are valued as ornamental shrubs and trees by virtue of their attractive, brightly coloured flowers.

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