

**Use**

The fleshy red sepals (the outermost layer of the flower) should be picked when about 1" long and can be used in jellies, sauces, and herb teas. Although the leaves and stems are sour, they are high in Vitamin A and may be eaten raw, cooked or dried.

Leaves of roselle are stripped of the plants and cooked as spider plant. The red petals are sometimes peeled off the bolls and dried. When pounded and covered with boiling water, these petals produce a red tea.



**Cultivation**

Roselle is quite easy to grow. The plants establish well when grown from the large seeds. The plants are quite drought resistant and continue the growth long into the dry season.

**Information adapted from various articles in "Traditional African Vegetables". Proceedings of IPGRI Workshop on Genetic Resources of Traditional Vegetables in Africa: Conservation and Use, 1997**

# LOCAL LEAFY VEGETABLES

## Improve food security and nutrition



### Introduction

Local leafy vegetables include many species which grow in the wild or are partly cultivated. Others are species that are mainly cultivated for their pods, fruits, roots or tubers, but whose leaves are used as a vegetable.

Most rural people in Zambia rely on traditional vegetables for their relish. In a rural survey, it was found that between 50 and 95 % of the households use

traditional vegetables. The diversity in traditional vegetables gives variety in the diet and helps to ensure food security. More than 175 different species have been documented as local vegetables in Zambia.

The main species are amaranth (pigweed), spider plant, jute, black nightshade, sweet potato, cassava and various cucumber and melon related plants.

## Cultivation and use of traditional vegetables

### Pigweed

(*Amaranthus spp.*)

Botswana: Thepe

Namibia: Ekwakwa

Zambia: Bonko

Zimbabwe: Mova, Imbuya

### Description

Amaranth is an erect annual herb, up to 60 cm high. The dark-green leaves are oval and 2-4 cm long. The leaves often have a characteristic dark ringspot. The flowers are very small and placed close to the stem. The underside of young plants are often purple spotted which makes the entire seedling look red.

Amaranth species are found wild or as weeds in the fields.

### Cultivation

Seeds take 4-6 days to emerge. Thinning may be done at about 2 weeks where needed. Once established amaranth can effectively smother most grassy

weeds and is remarkably drought-tolerant.

So far, no major pests and diseases have been observed on amaranth.

Seed collection is very easy for this species, by pulling upwards along the stem when the seeds are mature.

### Use

Harvesting of leaves and shoots starts about a month after sowing - or 2-3 weeks after the first rains - and ceases with flowering. Picking the leaves stimulates growth.

Shoots and tender leaves are eaten in much the same way as spinach or together with sorghum or maize meal to



A moderate harvest of cowpea leaves and stem tips (about 2T/ha) at flowering increases seed yield, while removing over 4 t/ha reduces seed yield.

When grown strictly as a leaf vegetable, a dense sowing of seedlings is harvested 3-6 weeks after planting by cutting at ground level or by uprooting. Planting for leaf yield should be at least twice as dense as a normal planting for bean yield. Cowpeas cut at 20 cm above the ground will regrow quickly but those cut at 5 cm will regrow slowly if at all.

### Use

The leaves are dried for later use and cooked as spinach. In Malawi, leaves are dried for 2-3 hours then packed tightly into jars and boiled for 20 minutes. The softened leaves are then spread in the sun again for 2-3 days; then they are rolled into 2 kg balls and stored for the dry season.

The intercropping of 4 rows of cowpeas between rows of bananas and plantains has shown a lot of promise. Since the weeds need to be cut from between the banana rows anyway, it makes sense to use that space for a nitrogen-fixing crop.

### Roselle

(Sorrel, Bissap) (*Hibiscus sabdariffa*)

Namibia: Omutete

### Description

A 50-100 cm tall herb. The young leaves are oval, while older leaves are clearly three-lobed. The flowers are bell-shaped and bright yellow with a red-brown centre.

When the plant grows older the deep red or purple colours of the stem and the sepals dominate and the entire plant ends up looking purple.

Leaves are commonly chopped or pounded and mixed with groundnut flour or cooking oil. Smoked or sun-dried leaves can be stored for a long time for future use.

#### Importance

Fresh pumpkin leaves are rich in calcium, protein and vitamin C. Dried leaves are high in protein and iron and moderately high in vitamin C.

### Cowpea

*(Vigna unguiculata)*

Botswana: Morogo wa dinawa;  
Zimbabwe: Nyembe, Indumba

#### Cultivation

Cowpea is widely cultivated and its leaves are a popular vegetable. A significant amount of leaves can be harvested from the plant without greatly affecting its seed yields.

The types that are first erect and later spread on the ground (semi-spreading) are suitable for use as a vegetable. The

leaves are picked 4 weeks after planting, and this continues until the plants start to flower.

Both beans and edible greens can be economically produced from the same field by planting cowpeas in rows 16 inches apart and letting them grow till the leaves begin to touch. Then every other row is harvested for greens without lowering bean yield.

Cowpea is perhaps the best plant for intercropping with grains like sorghum and maize because they cover the ground and keep weeds down (after one weeding), and they fix atmospheric nitrogen and thereby improve the growth of plants nearby.

Two hectares of maize and cowpeas intercropped will usually produce about 30% more than one hectare of maize and one hectare of cowpeas.

make porridge. The cooked leaves may be eaten with milk, and salt or fat can be added. Leaves may be dried and stored for use in later periods.

It can also be used for small stock feed.

#### Importance

The leaves are a source of protein and vitamins A and C. They are also rich in the minerals calcium, potassium and iron.

Amaranth is an easy crop to propagate as it produces abundant seed.

It is a readily available vegetable in the rainy season, when exotic vegetables become scarce.

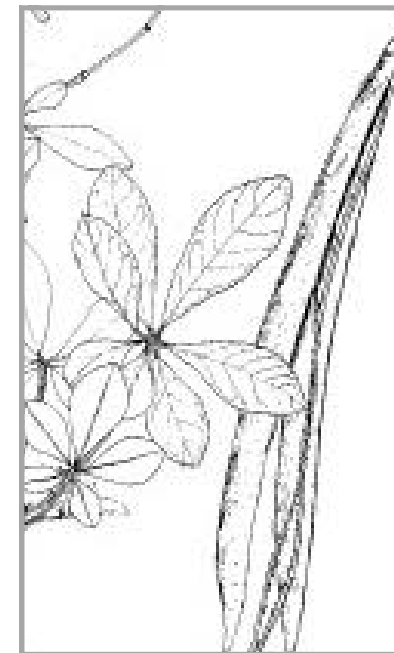
### Spider Plant

*(Cleome gynandra)*

Botswana: Lothue  
Namibia: Ombidi  
Zambia: Shungwa  
Zimbabwe: Nyevehe, Elude

#### Description

The Spider flower (Cat's Whiskers) is an annual herb



which can grow up to a size of 60 cm. The older leaves are divided into five leaflets (like a hand) and the plant is easy to identify on its white flowers. The fruit is a 8-10 cm long capsule. It splits open when mature and scatters the seed. Spider plant occurs wild, as a weed of arable lands or as a semi-cultivated species.

The first leaves are ready to eat 4-6 weeks after the first rains.



It is best when flowers have not yet developed, but young tops can still be used.

### Cultivation

Spider plant is a promising species for cultivation. The plant produces many leaves and is found in large numbers in most fields and gardens.

In pure stands, thinning is done at 4 weeks after sowing where density is too high. Weeding may be carried out in the early growth stages to encourage vigorous growth, which is desirable in reducing the bitterness of leaves, making them more palatable.

Picking of leaves and shoots commences in the sixth week after sowing. Picking the leaves stimulates growth.

A number of pests, including beetles and Harlequin bugs attack the crop. Control includes dusting with ash.

Seed collection is very easy for this species, just by picking mature capsules and air dry them.

### Use

Fresh leaves and tender shoots are boiled whole or chopped and mixed with groundnut flour and other ingredients to produce a tasty relish.

Preservation of leaves is done by blanching followed by sun-drying.

The leaves and the flower buds are washed and boiled in water with a little salt. A relatively long cooking time (2 hours) is normally used to remove the bitter flavour. For drying, the boiled leaves are made into small balls and placed out in the sun. To reconstitute the dried material, which can be stored indefinitely, it is soaked in water and then prepared in the usual manner.

### Importance

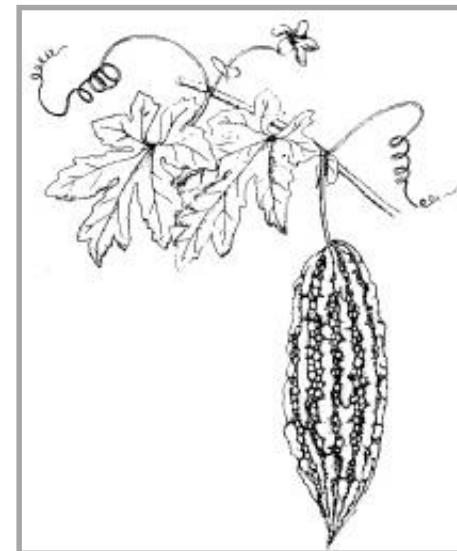
Leaves are rich in vitamins A and C, and contain moderate levels of calcium and iron.

### Use

The leaves may be mixed with groundnut flour, fats or dried fish or meat. They are preserved for use by blanching followed by sun-drying or may be dried directly in the sun.

### Importance

Fresh leaves are a good source of proteins, calcium and iron and are moderately rich in vitamin C. They are sold in urban markets and provide a reliable source of green leafy material in the rainy season.



### Cucurbits

*(Cucurbita maxima and other species)*

Zambia: Lupusi

### Cultivation

Cucurbits such as pumpkins, local cucumber and melons, are grown mainly for their fruits during the rainy season.

Farmers usually extract their own seeds from mature fruits after harvesting and store them for later use. Seeds are directly sown a few centimetres below the soil surface. Picking of pumpkin leaves only commences after the plant has started to fruit. This can continue for several months if there are few pests and diseases, because plants often continue to produce new leaves long after the rainy season is over.

### Use

Leaves and young fruits are boiled and mixed with various ingredients and used as a relish.

**Use**

It is mainly grown for its tubers, but leaves are also an important vegetable. It is in fact regarded as one of the most convenient vegetable species. Leaves and tender shoots are chopped or ground and boiled with groundnut flour, fats or fish to make a relish.

The young, fully expanded leaves can be eaten cooked and contain 11-39% protein on a dry weight basis. Both the leaves and roots contain cyanide so the leaves should be cooked fifteen minutes and the water drained. This reduces cyanide to a very low level. Leaves are at times preserved for future use by drying either in the shade or in direct sunlight.

**Importance**

Cassava provides a full meal of starch from the tubers ground as flour and a protein-rich relish from the leaves. The leaves are rich in vitamin A. It is important for food security

because it can survive water stress by shading its leaves and quickly grow again when conditions improve.

**Sweet Potatoes**

*(Ipomoea batatas)*

**Cultivation**

The sweet potato is widely cultivated in the rainy season, primarily for its tubers. Propagation is by stem cuttings planted on mounds about 30 cm high. Commercial fertilizers are not usually used, but surrounding vegetation is generally buried in the mounds. In urban gardens under irrigation, the crop is now grown throughout the year to provide leaves for relish. Leaves are picked over several months. Leaves of wild *Ipomoea* spp. are also utilized as vegetables. Sweet potato has a few serious pests, such as sweet potato weevil.

**Bush okra**

*(Corchorus spp.)*

Zambia: Delele  
Zimbabwe: Nyenje, Idelele, Derere  
Bush okra is known by various other names like long-fruited

jute, vegetable jute, jute mallow and jews mallow.

**Description**

The plant is an erect annual herb with angular stem and branches without hairs and leaf blades with toothed margins. Harvesting starts when plants are 20-30 cm high. Leaf yield is increased by removal of the terminal shoot. Picking can continue for up to 3 months. The bush okra virtually disappears in the cold season, having flowered and set seed. This vegetable is particularly important because it comes at a time when rape is scarce.

**Cultivation**

Bush okra has a wide distribution in Zambia, but is mostly found in areas receiving less than 1000 mm of rainfall per year. Two different species grow wild or as weeds of cultivated lands. The plant grows and is gathered in the rainy season, though it is also common

during summer months in irrigated fields. Villagers tend to protect Corchorus plants growing as weeds among cultivated crops.

No major pests or diseases have yet been reported.

### Use

Tender fresh shoots mixed with soda and with added salt are cooked to produce a relish of slimy and slippery consistency. Fresh leaves are sun-dried either whole or pounded to preserve them for future use. As a common practice, whole plants are dried in the shade and the leaves removed later.

### Importance

Fresh leaves are a source of vitamins A and C. The small amounts of protein present are rich in methionine. This is a popular local vegetable in rural areas. The slimy property of the preparation makes it easy to take with nshima/sadza (thick maize porridge).

## African Eggplant

(*Solanum macrocarpon*,  
*S. aethiopicum*)

Zambia: Impwa, Zhilo

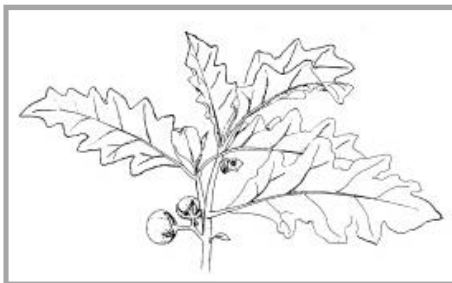
Zimbabwe: Musungusungu  
(umsobo)

### Description

African eggplant are sturdy, herbaceous annual or perennial crops. (see also drawing on front page)

### Cultivation

Growers in the villages collect seed from the preceding crop. Seed extraction involves fermenting longitudinally cut mature fruits (4 weeks from set) to facilitate separation from the pulp. Fermentation is by soaking the fruit in water for



1-2 days. Seeds are then squeezed out by hand. The seeds are then dried in the shade and stored in calabashes for the following season's planting. Seeds may show dormancy a few weeks after extraction. Under this system of cultivation, the seed is broadcast near homesteads in pure stands or in mixture with other traditional vegetable species.

Seedlings can also be raised in nursery beds and later transplanted. The crop is planted in pure stands in gardens at a spacing of 100 x 30 cm. Commercial fertilizers and manure are used in much the same way as for the European eggplant.

### Use

Only the unripe fruits are eaten. These are chopped up and cooked with cooking oil or soda and used as a relish. They may be prepared together with other vegetables. The immature fruits are at times

eaten raw. Fruits are preserved for future use by sun-drying.

Importance. The fruits are a source of small amounts of starch and protein and appreciable amounts of vitamin A and iron. It is a remunerative crop, as it is a popular vegetable sold on streets and markets in urban areas.

The leaves are more nutritious than the fruits and are sometimes consumed in the same way as spinach

## Cassava

(*Manihot esculenta*)

### Cultivation

Cassava grows well under most soil conditions. Propagation is by stem cuttings at the start of the rainy season. Plantings are often mixed with other crops like finger millet, sorghum, maize and pumpkins.

Leaf harvesting starts once the plant is established and continues for a couple of years.