



30 • Local Leafy Vegetables

Introduction

Local, leafy vegetables include many species which grow in the wild, or are partially 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 these households use traditional vegetables. The diversity in traditional vegetables gives variety to the diet, and helps improve food security. More than 175 different species have been documented as local vegetables in Zambia.

The main species are amaranth (pigweed), spider plant, bush okra, the leaves of sweet potato and cassava and various cucumber and melon-related plants.

Amaranth (Pigweed or African spinach)

(*Amaranthus spp.*)

Botswana: *Thepe*

Namibia: *Ekwakwa*

Zambia: *Bonko, Bondwe*

Zimbabwe: *Mova, Imbuya*

Description

Amaranth is an erect, annual herb growing up to 60 cm high. The dark-green leaves are oval and 2-4 cm long. The leaves often have a characteristic dark ring/spot. 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 grass weeds, and is remarkably drought-tolerant.

So far, no major pests or diseases have been observed of amaranth.

Seed collection is easy for this species, by pulling simply 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 make porridge. The cooked leaves may be eaten with milk. Salt or oil can be added. Leaves may be dried and stored for use in later periods. They can also be used for smallstock feed.

Importance

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

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

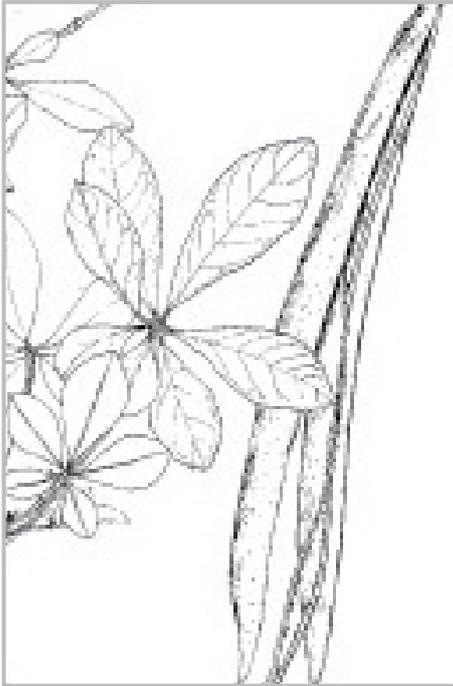
It is a readily available vegetable in the wet season, when other vegetables become scarce.



Amaranth
- very
common
in Africa



Spider plant



(*Cleome gynandra*)
 Botswana: *Lothue*
 Namibia: *Ombidi*
 Zambia: *Shungwa*
 Zimbabwe: *Nyevhe, Elude*

Description

The Spider plant (Cat's Whiskers) is an annual herb which can grow up to 60 cm. The older leaves are divided into five leaflets (like a hand), and the plant is easy to identify by its white flowers. The fruit is an 8-10 cm

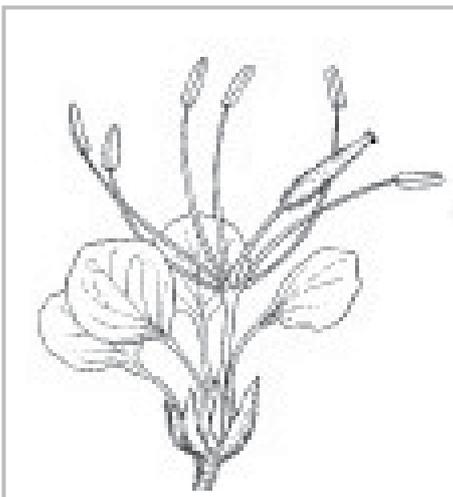
long pod. It splits open when mature, and scatters its seed.

Spider plant grows in many places, and occur as weeds in 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 the flowers have not yet developed, but when the younger tops can still be used.

Spider plant leaves and fruit

The Spider plant flower



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 4 weeks after sowing where density is too high.

Weeding may be carried out in the early growth stages to encourage vigorous growth. This is recommended to reduce the bitterness of leaves, making them palatable.

The picking of leaves and shoots starts in the sixth week after sowing. Picking the leaves also stimulates growth.

Certain pests, including beetles and Harlequin bugs, attack the crop. Pest control includes dusting with ash.

Seed collection is easy for this species; one need only pick the mature pods 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.

The leaves are preserved by blanching and then sun-drying.

The leaves and 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, it is soaked in water and then prepared in the usual manner.

Importance

The leaves are rich in vitamins A and C and contain moderate levels of calcium and iron.

Bush okra

(*Corchorus spp.*)

Zambia: *Delele*

Zimbabwe: *Nyenje, Idelele, Derere*

Bush okra is known by various names like long-fruited jute, vegetable jute, jute mallow and jews mallow.



Description

The plant is an erect annual herb, with an angular stem, branches without hairs, and leaves with serrated edges.

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 grows at an altitude at which rape and other leafy vegetables are scarce.

Cultivation

Bush okra is abundant in Zambia, mostly found in areas that receive less than 1000 mm of rainfall per year. Two different species grow both wild and as weeds in cultivated fields.

The plant grows and is harvested in the rainy season, though it is also common during summer months in irrigated fields. Villagers tend to protect bush okra plants growing as weeds among cultivated crops. No major diseases or pests have yet been reported.

Use

Tender fresh shoots are traditionally mixed with soda (NOT recommended since this spoils the vitamins!) and salt, and cooked to produce a relish. 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. This is a popular local vegetable in rural areas. The viscosity of the preparation makes it easy to mix with nshima/sadza (thick maize porridge).

African eggplant

(*Solanum macrocarpon*,
S. aethiopicum)
Zambia: *Impwa*, *Zhilo*
Zimbabwe: *Musungu-sungu* (*umsobo*)

Description

African eggplants are a sturdy, herbaceous crop. They may be annual or perennial.

Cultivation

Growers in rural villages collect the seeds from the previous crop. Seed extraction involves fermenting longitudinally cut mature fruits to facilitate separation from the pulp. Fermentation is done by soaking the fruit in water for 2-3 days. Seeds are squeezed out by hand. The seeds are then dried in the sun and stored in gourds for the following season's planting. Seeds may show dormancy a few weeks after removal. Under this system of cultivation, the seeds are spread 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 near homesteads at a spacing of 100 x 30 cm. Chemical fertilizers and manure are applied 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 (NOT recommended since this



Bush okra- the leaves are nutritious



destroys the vitamins) and used as a relish. They may also be prepared together with other vegetables. The unripe fruits are sometimes eaten raw. The fruits are preserved for future use by sun-drying.



Importance

The fruits are a source of small amounts of starch and protein and

substantial amounts of vitamin A and iron. It is a profitable cash 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 eaten in the same way as spinach.

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. The leaves are picked over the course of several months. The leaves of wild species of sweet potato

are also used as vegetables. Sweet potato has some serious pests, such as sweet potato weevil.

Use

Only the unripe fruits are

eaten. These are chopped up and cooked with cooking oil or soda (NOT recommended since this destroys the vitamins) and used as a relish. They may also be prepared together with other vegetables. The unripe fruits are sometimes eaten raw. The fruits are preserved for future use by sun-drying.

Importance

Fresh leaves are a good source of protein, calcium and iron and are moderately rich in vitamin C. They are sold in urban markets, and provide a reliable source of nutrients in the wet season.

Cassava

(Manihot esculenta)

Cultivation

Cassava grows well under most 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 or pumpkins.

Leaf harvesting starts once the plant is established and continues for several years.

Use

It is mainly grown for its tubers, but its leaves are also an important dietary resource. 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 may be eaten cooked, and contain 11-39% protein on a dry matter basis. Both the leaves and roots contain cyanide, so the leaves must be cooked for at least fifteen minutes and the water thoroughly drained. This reduces the cyanide to a safe level.

Leaves and fruit of the African eggplant. More details can be seen in the drawing below.





The leaves are sometimes preserved for future use by drying either in the shade, or in direct sunlight.

Importance

Cassava provides a full meal, as its tubers can be ground as flour and its leaves provide a protein-rich relish. The leaves are also rich in vitamin A.

It is important for food security because it can survive without water by shedding its leaves and can quickly grow again when conditions improve.

Cucurbits

(*Ipomoea batatas*)

Cultivation

Cucurbits, such as pumpkin, local cucumber and melon, 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 future use. Seeds are sown directly into the soil, 2 to 5 cm deep. Pumpkin leaves are picked only after the plant has started to bear fruit. This may continue for several months unless there are pest and disease challenges, because the plants often continue to produce new leaves long after the wet season is over.

Use

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

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.

Roselle

(Sorrel, Bissap) (*Hibiscus sabdariffa*)
Namibia: *Omutete*

Description

Roselle is an herb that grows to a height of 50-100 cm. The young leaves are oval, while older leaves are clearly three-lobed. The flowers are bright yellow with a red-brown centre.

When the plant grows older, the deep red and purple colours of the stem and the sepals (the outermost layer of the flower) dominate and the entire plant appears purple.

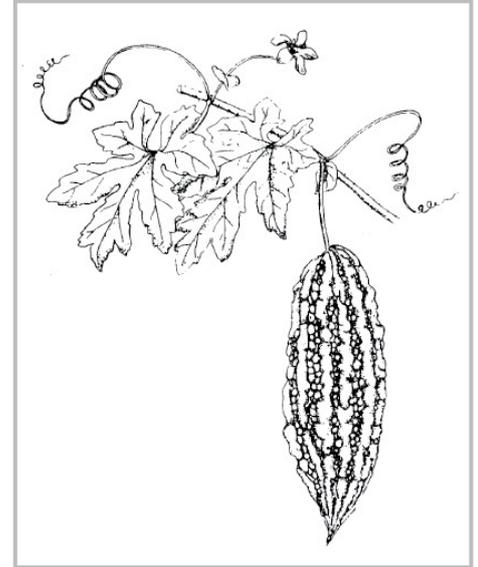
Use

The fleshy red sepals should be picked when about two centimetres long, and may be used in jellies, sauces, and herbal teas. Although the leaves and stems are bitter, they are high in vitamin A, and may be eaten raw, cooked or dried.

The leaves of the roselle are stripped from the plant and cooked in the same manner as spider plant leaves. 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 relatively easy to grow. The plants establish well when grown from large seeds. The plants are quite drought resistant and continue to grow long into the dry season.



There are many species of pumpkins with nutritious leaves



Cowpea

(*Vigna unguiculata*)

Botswana: *Morogowa dinawa*

Zimbabwe: *Nyembe, Indumba*

Angola: *Feijão-macunde*

Cultivation

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

The cultivars 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 40 cm apart, and letting them grow until the leaves begin to touch. Then every other row is harvested for greens without lowering bean yield.

Cowpea is arguably the best plant for intercropping with large grains like sorghum and maize, because they shade the ground and keep weeds down (after one initial weeding), and they fix atmospheric nitrogen thereby improving the growth of neighbouring plants.

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

A moderate harvest of cowpea leaves and shoots (about 2T/ha - 40 large sacks) at flowering increases seed yield, while har-

vesting double that amount 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 future use and cooked in the same manner 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 and left for 2-3 days; then they are rolled into two kg balls and stored for the dry season.

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

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

Roselle
- supplies
leaves
during the
dry season



A balanced diet

A healthy and balanced diet does not need to be expensive. Much traditional and cheap food is very healthy. The way the food is prepared is equally important. A healthy diet includes proteins for building up the body, carbohydrates and fats for energy and vitamins and minerals to keep the body strong.

- Good sources of proteins include: Soybeans, cowpeas, beans, kapenta and other fish, eggs, groundnuts, meat and milk.
- Good sources of vitamin/minerals include: Various types of green leaves (rape, amaranthus, leaves of pumpkin, cassava and cowpea), carrots, fruits and pumpkins.
- Good sources of oil and fats include: All sorts of nuts and seeds (for example sesame, sunflower and groundnuts), fish.

Good cooking methods

- Do not overcook the food. Cook the vegetables until they are tender - leafy vegetables only few minutes. The longer vegetables cook, the more vitamins will be lost.
- Steam the vegetables. Use as little water as possible.
- Stir fry or boil. Avoid deep frying.
- Never add soda or ash to the food as these destroy the vitamins.

Healthy recipes:

1. Soybean or cowpea sausage

Ingredients:

- 2 cups of soybeans or cowpeas,
- 1 (green) onion,
- 1 cup of flour, 2 eggs, salt,
- garlic, curry or other spices - optional.

Method:

- Soak soybeans or cowpeas overnight.
- Boil them until tender.
- Pound in a mortar together with the (green) onion.

- Mix with eggs and spices.
- Form sausages by adding flour.
- Fry in a pan with cooking oil.
- Serve with nshima and vegetables.

2. Soya porridge

Ingredients:

- 3 table spoons of cooked soy flour,
- 1 cup of mealy meal,
- 2-3 cups of water,
- salt and sugar.

Method:

- Add the soya flour to boiling water.
- Stir and let it boil.
- Add water to the mealy meal to make a paste.
- Add the paste to the boiling soya.
- Stir all the time to prevent sticking.
- Let the porridge cook for 20 minutes.
- Add salt and sugar.

3. Vegetables with soya flour

Ingredients:

- 1 cup of cooked soy flour or one cup cooked and pounded soybean mash,
- vegetables, tomatoes, onions, salt.

Method:

- Add water to the cooked soya flour or soya mash to make a paste.
- Wash and cut the vegetables.
- Start to cook the vegetables and add the soya when the vegetables start to boil.
- Let it cook for about 5 minutes until vegetables are tender.
- Add salt to taste and serve with nshima.

Use leaves from the moringa (drumstick tree) see section 31. They can be pounded or cut and used as any other green leaves.

Recipes and information from Development Aid from People to People (DAPP) in Zambia Child Aid and Hope Projects.