



# CLIMBING PLANTS

Climbers are plant species with long, clinging stems, sometimes lignified, while herbaceous plants are not lignified and are plants whose aerial portion is most often annual. While climbers by definition have a clinging stem, herbaceous plants may possess all sorts of stems – erect, clinging or creeping. We have grouped together in this chapter all the plants, whether climbers or herbaceous, that have a long stem that is either creeping or clinging. In Vanuatu the most important plants in this group are yam and sweet potato, but these have been treated in the earlier section on root crops because they are cultivated for their roots.

Before the 16<sup>th</sup> century few climbing plants were cultivated in Vanuatu. There was, however, the gourd *Lagenaria siceraria*. All the others have been introduced. Some, such as the cucumber, watermelon and choko, have been integrated into the cultivation systems in the rural areas and are found in all the gardens. Others, such as the giant squash and the hairy melon, are mainly grown close to urban areas for sale in the markets.

**Note for English translation**

Many of the following species have a variety of English names, not always consistently applied. The names given here are those most commonly used.

## Genus

# *Benincasa*

## Family

### Cucurbitaceae

The genus comprises only one species, which is present in Vanuatu.

## Species present

### *Benincasa hispida* (Thunb.) Cogn.

Hairy melon, Chinese winter melon, wax gourd

Cheap and delicious, the hairy melon appears more and more often on the market stalls and in local cuisine. Its fruits are most often cylindrical and of medium size.

## References

Barrau (1962), de Candolle (1883), French (1986), Ochse & Bakhuizen van den Brink (1980), Parham (1972), Philipps & Dahlen (1985), PROSEA (1993), Purseglove (1991), Smartt & Simmonds, eds (1995), Viard (1995), Walters & Decker-Walters (1989), Zeven & de Wet (1982).

---

Plant occasionally eaten, introduced

---

### *Benincasa hispida*

Hairy melon

---

## History

This hairy melon is mainly cultivated in India and throughout tropical Asia. Because it becomes naturalised in places easily, it is hard to work out its true centre of origin and domestication. Most authors propose Java as the cradle of this Asian vegetable. The Chinese mentioned it in 500 BC, but said that it came from the south. Introduced into the Pacific by Europeans, the hairy melon is nowadays cultivated in all tropical, subtropical and even temperate regions.

It is eaten increasingly often in Vanuatu.

## Description

Climbing herbaceous plant with a long, robust stalk, crenellate (i.e. with repeated indentations) and hairy; tendrils opposite to the petioles. Leaves large and simple, heart-shaped, with five not very distinct lobes, hairy (10 x 20 cm); long yellowish petiole, **stipule** oval. Large, solitary, yellow flower, hairy. Fruits cylindrical or globular, dark green, covered with silky hairs and waxiness, variable in length. Flesh thick, white, crisp but spongy in the centre. Numerous flat seeds, elliptical, yellow-brown.

## Morphological variability

Forms exist with ovoid fruits, cylindrical fruits and fruits that are almost round. In the Pacific some authors have reported the presence of a form with small fruits, resembling those of *Lagenaria*. The cultivated forms can be divided into four groups: Unridged Winter Melon, with long, dark green fruits 1 m long; Ridged Winter Melon, identical to the previous form except that it has crenellate seeds; Fuzzy Gourd, with small, green, cylindrical fruits that do not exceed 30 cm in length, and with crenellate seeds; and Wax Gourd, with oblong fruits, flattened at both ends, light green. The forms in Vanuatu belong to this last group.

## Cultivation and production

The plant prefers dry, lowland zones. It is grown from seeds in nursery beds. The vine is supported by a solid trellis because the fruits are heavy (up to 8 kg). They may also be left to lie on the soil, but this then tends to damage the smooth appearance

of the epidermis. They reach maturity in 3–5 months. In Vanuatu cultivation is mostly aimed at the Asian population, which buys these melons in the markets. Yields are high, and no serious pests or diseases are known. It is thus a cheap and tasty vegetable that is finding an ever-increasing place in the green belts of Port Vila and Luganville.

## Alimentary uses

The fruits and the young leaves are eaten. The fine and soft flesh has a delicate taste, especially in the young fruits. It is generally cut into small cubes, then incorporated in the preparation of numerous dishes. The hairy melon may also be cooked whole with meat or with prawns. The flowers and the seeds are edible, the latter being fried and served as an appetiser. In Java the Chinese cut the flesh while it is still green into small sticks which they cook in sugar. The ni-Vanuatu only use this vegetable a little, cut into pieces and then boiled.

## Genus

# *Citrullus*

## Family

### Cucurbitaceae

The genus comprises three species (possibly four) originating from tropical Africa, one of which is edible. This edible species is present in Vanuatu.

## Species present

### *Citrullus lanatus* (Thunb.) Matsum. & Nakai

#### Watermelon

Watermelon was introduced to Vanuatu as early as the first half of the 19<sup>th</sup> century by ni-Vanuatu returning from plantations in Fiji and Australia. It is nowadays found in all the gardens where it is planted after yams. It is a very popular fruit that is also sold in the markets.

## References

Herklots (1972), Jeffrey (1980, 1990), **Jeffrey *et al.* (1986)**, Pangalo (1944), Purseglove (1991), Robinson & Decker-Walters (1997), Singh & Yadava (1977), Smartt & Simmonds, eds (1995), Walters (1989), de Winter (1990), Yang & Walters (1992), Zeven & de Wet (1982), Zohary & Hopf (1994).

---

Complementary food plant,  
introduced

---

### *Citrullus lanatus*

Watermelon

---

## History

Watermelon is originally from Southwest Africa, where a form with small, bitter fruits still exists. According to a recent hypothesis it may have arisen from *C. colocynthis*, with which it is able to produce fertile hybrids. Whatever the situation, the

watermelon as we know it has resulted from selection and domestication of sweet forms from a wild species with bitter fruits, and this domestication probably occurred in Hindustan. From ancient times it has been cultivated and domesticated in Egypt, around the Mediterranean coast and in India. China received it around the 10<sup>th</sup> century via Xinjiang, and explorers introduced it to America. After further improvement it has now reached the entire tropical world, including Vanuatu. It is grown from commercially imported seeds.

## Description

Scrambling herbaceous plant with a long, thin stem, crenellate and hairy, tendrils bifid. Leaves lobed (3–4 pairs), with divided lobes; margins dentate; petiole 10 cm long. Flowers unisexual, axillary, solitary, with five pale yellow petals. Fruits large, smooth, shiny, variable in shape, colour and size, exocarp thick but relatively flexible. Flesh watery, red or yellow, containing black, green, white or reddish seeds.

## Morphological variability

The number of cultivars of watermelon is significant, and the Chinese recognise four ecological types according to whether they grow in the north, the east, the northwest or the south of the country. From a morphological point of view they vary in shape (round or cylindrical) and in size of the fruit, in colour (cream, light or dark green, with the colour solid, flecked or striped), and the thickness of the exocarp, the colour (red, yellow, green or white) and the texture of the flesh, and the size, number and colour (black, reddish, yellow or white) of the seeds. The Japanese have also developed seedless cultivars.

## Cultivation and production

Watermelon likes dry climates and sunny locations in which it can develop a high sugar content

in the fruits. It is a popular plant and is grown in gardens both for family consumption and for sale in markets. It is cultivated most on the leeward sides of the islands, and particularly in young volcanic soils whose texture allows rapid drainage. The large seeds of the watermelon can be kept from one year to the next. They are planted in seed holes three at a time and germinate quickly. After thinning, care is taken to protect the young seedlings from weeds. Later on their growth is vigorous, and their crawling habit allows them to cover the soil quickly. If the plants are planted in 2 metre squares, control of weeds becomes quick and easy. The plant cannot survive in soils saturated with water because the excess water suffocates the root system and encourages development of rots. Consequently the farmers of Ambrym, the island that offers the best conditions for watermelon cultivation, have embarked on commercial production to supply the markets of Port Vila.

## Alimentary uses

When mature, watermelons are eaten raw as they are picked, and are a drink as much as a food. They are cut into quarters or fat round slices, and then the flesh of each slice is cut away from the skin and cut up further. It is eaten as a snack or at the end of a meal.

## Genus

# *Cucumis*

## Family

### Cucurbitaceae

The genus comprises 32 species, most originating from Africa, some of which are cultivated or gathered for their fruits or for their seeds. Vanuatu has two species.

## Species present

### *Cucumis sativus* L.

Cucumber

### *Cucumis melo* L.

Melon (Imported from overseas and rarely grown in Vanuatu)

Cucumber is nowadays a common plant in Vanuatu gardens, cultivated for family consumption as well as for sale in markets, where it may be purchased throughout the year. Melon is imported from Australia, although a few farmers grow it with some success in Vanuatu.

## References

De Candolle (1883), French (1986), Helbaek (1966), Jeffrey (1980), **Kirkbride (1993)**, Leppik (1966), Ochse & Bakhuizen van den Brink (1980), PROSEA (1994), Purseglove (1991), Sauer (1993), Singh (1990), Smartt & Simmonds, eds (1995), Viard (1995), Yang & Walters (1992), Zeven & de Wet (1982), Zohary & Hopf (1994).

---

Complementary food plant,  
introduced

---

### *Cucumis sativus*

Cucumber

---

## History

Cucumber, which does not exist in the wild state, is originally from the foothills of the Himalayas. Domesticated from a wild ancestor in northern India, it reached

the Mediterranean region via Iran in 600 BC. Known by the Hebrews, the Greeks and the Romans, it reached China relatively late along the Silk Road, about 200 BC. Present in the 8<sup>th</sup> century on the tables of Charlemagne, it was introduced by the Spanish to America where it spread very quickly. It is found nowadays throughout the entire world. The first missionaries brought it to Vanuatu, where it spread quickly.



## Description

Climbing herbaceous plant with a quadrangular stem. Leaves triangular, rugose, with three to five not very well defined lobes; margins dentate; veins palmate. Cluster of bell-shaped flowers with five pilose (hairy) petals, yellow. Fruit pendulous, variable in shape, colour and size. Flesh pale green, containing numerous flat, white seeds.

## Morphological variability

This species contains numerous varieties according to the shape, colour and size of the fruit, the thickness and the colour of the skin, and the presence or absence of spines. The main varieties distinguished are:

- varieties with spines, *Cucumis sativus sensu stricto*, grown in Vanuatu, whose fruits are relatively squat, yellow or green, sometimes white. They tend to be picked fairly large for the local markets, and when they have become yellow. Over several decades farmers have developed the type Vanuatu through simple selection among their plants, collecting the seeds of the selected plants. This local type is very large, squat, and has a very yellow skin.
- varieties with long, green, smooth-skinned fruits (over 50 cm long), seedless, grown in greenhouses, *Cucumis sativus* var. *anglicus*, which are very hard to grow in Vanuatu. They are imported from Australia or Europe.

## Cultivation and production

Cucumber does not like cold and grows poorly at higher altitudes. It is propagated from seeds planted into small seed-holes, then thinned out after germination. It is easily intercropped with other plants in traditional gardens, but is unfortunately the host of cucumber mosaic virus (CMV) which also affects other species such as kava in which it causes dieback, a very serious disease. It is better, therefore, to grow these plants at some distance from others that might become infected.

## Alimentary uses

The flesh of the locally grown varieties is very watery (less than 5% dry matter), and slices are very popular in kava bars for removing the disagreeable taste of the kava drink from the mouth. Often munched raw between meals, cucumber is also cooked in a *marmite* like a vegetable. It is then served as an accompaniment to dishes of root crops, or is used as an ingredient in casseroles, most often of chicken. The young leaves and the growing tips are likewise eaten, and the raw seeds are nibbled by children.

## Other uses

The plant, known from ancient times for its cosmetic properties, can also serve as a diuretic and a sedative. However, in Vanuatu it does not seem to be used medicinally.



© V. Lebot



*Benincasa hispida*, the hairy melon.

## CLIMBING PLANTS

*Citrullus lanatus*, watermelon.



© A. Walter



© V. Lebot

*Cucurbita maxima*, the giant squash. It is difficult to grow in Vanuatu.

Raw or cooked, popular in kava bars, cucumber is nowadays a common vegetable in gardens in Vanuatu.

Vanuatu cucumber (*Cucumis sativus*) is short and squat.



© D. Creindl

© V. Lebot



© V. Lebot

*Cucurbita moschata*, butternut pumpkin, the most often grown of the three *Cucurbita* species present in Vanuatu.

Butternut pumpkin keeps for quite a long time if its skin is not damaged.

Leaves of *Cucurbita moschata* are eaten as a vegetable.



© D. Greindl





Two different cultivars of *Cucurbita pepo*.



© D. Greindl

*Ipomoea aquatica*, water spinach or kangkong, is a prized vegetable.



© D. Greindl

Water spinach, gourd, bitter melon...  
colourful words and colourful products.

*Lagenaria siceraria*, the gourd, is probably the oldest cultivated plant in the world.



© D. Greindl

Small fruits of *Momordica charantia*, bitter melon.



© D. Greindl





*Lablab purpureus*, hyacinth bean.



© V. Lebot

## Four species of beans introduced to Vanuatu.

Bunches of mauve winged bean (*Psophocarpus tetragonolobus*).

*Phaseolus vulgaris*, green bean.



© D. Greindl



© D. Greindl

Yard-long bean or snake bean (*Vigna unguiculata*) is the bean most often eaten by the ni-Vanuatu.



© V. Lebot



White choko.



Choko, a familiar plant in gardens in Vanuatu.

Leaves of choko (*Sechium edule*).



© D. Greindl





*Trichosanthes cucumerina*, the snake gourd.



© A. Walter



© V. Lebot

Yellow and purple passionfruits  
(*Passiflora edulis*).





## Genus

# *Cucurbita*

## Family

### Cucurbitaceae

The genus comprises close to 25 species (reduced to 13 by Nee, 1990). All originate from America (mostly from Central America). Five are cultivated and many are edible. Three species are present in Vanuatu.

## Species present

### *Cucurbita maxima* Duchesne ex. Lamk

Giant squash, Hubbard squash

### *Cucurbita moschata* (Duchesne ex. Lamk) Duchesne ex. Poiret

Winter squash, butternut pumpkin

### *Cucurbita pepo* L.

Pumpkin, squash, courgette, zucchini, vegetable marrow

Coming from the continent of America (Mexico and Southwest United States), *Cucurbita* species were first of all grown for their seeds, and not for their flesh which was bitter. Over time, varieties with dense and tastier flesh were progressively selected and spread throughout tropical regions. In Vanuatu the main species cultivated is the butternut pumpkin, which is better adapted than the other species to lowland tropics.

## References

De Candolle (1883), Decker-Walters (1990), French (1986), Heiser (1989), Jeffrey (1980), **Lira-Saade (1995)**, Messiaen (1998), **Nee (1990)**, Ochse & Bakhuizen van den Brink (1980), Paris (1989), Piperno & Pearsall (1998), PROSEA (1994), Purseglove (1991), Sauer (1993), Singh (1990), Smartt & Simmonds, eds (1995), Viard (1995), Whitaker & Bennis (1975), Yang & Walters (1992), Zeven & de Wet (1982).

Plant occasionally eaten,  
introduced

### *Cucurbita maxima*

Giant squash, Hubbard squash

## History

*Cucurbita maxima*, a species with very large fruit, arose first in the lowlands between the Andes Mountains and the Pacific, from a wild ancestor (*C. andreana*).



Its seeds have been recovered from sites in Peru dating back to 2600–2000 BC. The Portuguese brought it to Europe and then spread it to Asia and Africa. The species is nowadays present throughout the world. In relation to Vanuatu, Queiros planted giant squash in 1606 in Santo, in the Big Bay region. The species was reintroduced several times by the first missionaries, voyagers and subsequent settlers.

## Description

Plant with a creeping stalk that is round, hairy and flexible. Leaves flexible, cordate, not lobed or only slightly lobed. Flowers with a lobed corolla (5 lobes), bright yellow. Fruit variable in shape and size, with a weak and spongy peduncle, widened at its point of attachment; flesh pale yellow. Numerous white or brown seeds.

## Morphological variability

Among the numerous varieties are recognised:

- the Mammoth squash (var. *maxima*), with an enormous rounded fruit, slightly flattened, white or dark green, sometimes blue-green or orange. It may weigh up to 65 kg;
- the Turban or Giraumon squash (var. *turbaniformis*), with a round fruit surmounted by a large, rounded bulge.

## Cultivation and production

The species is grown from seed, sometimes collected from ripe fruits and sometimes purchased commercially. The fruit reaches maturity in 3–4 months. It is hard to grow in Vanuatu.

## Alimentary uses

The giant squash is eaten as a vegetable, cooked in a *marmite* and sprinkled with coconut milk, or even cooked in an oven of hot stones together with root crops to which it contributes a flavour. In towns westerners use it to make soups. The fresh growing tips and the young leaves are eaten boiled. Fruits and leaves are regularly sold in the urban markets. Finally, the seeds are edible and are nibbled as they are or roasted, but the ni-Vanuatu do not eat many of them.

---

Complementary food plant, introduced

---

## *Cucurbita moschata*

Butternut pumpkin, winter squash

---

## History

The butternut pumpkin is a species from coastal regions of Central America. The wild ancestor from which it arose is not known, but recent research suggests that its domestication occurred on the Pacific coast of Panama and Central America. It was subsequently spread north-

wards and southwards. The first voyagers carried it to Africa and tropical Asia. It was from Asia, which had become a secondary centre for the species, that it reached Europe at the end of the 17<sup>th</sup> century. The butternut pumpkin, which tolerates heat better than other *Cucurbita* species, is the most common in the tropical world and thus also in Vanuatu.

## Description

Plant with a creeping stalk, round or sometimes with five angles, slightly hairy and hard. Leaves rounded with a cordate base, slightly lobed. Large flowers with a corolla that is dark yellow or orange. Fruits bottle-shaped, cylindrical, round and flattened or ovoid; peduncle hard, marked with grooves expanding at the point of attachment; pericarp pliable, colour pale and mottled, marked with grooves; flesh orange with numerous seeds.

## Morphological variability

This is the species of pumpkin best adapted and thus most frequent in Vanuatu. There are numerous morphotypes resulting from the diversity of the seeds purchased in shops and also cross-fertilization between the plants from previously sown seeds. The squashes or pumpkins of Vanuatu may be divided into two major morphological groups

resulting from distinct series of introductions. Varieties with very large fruits (40–50 cm in diameter) – the first to be introduced – were selected locally from seeds collected from plants that the farmers found to be of interest. The varieties with small fruits (20–30 cm in diameter) came from commercial seeds introduced by New Zealand companies at the end of the 1980s with a view to supplying the Japanese market with squash in the off-season.

## Cultivation and production

It is grown from seed. In Vanuatu, commercial cultivation of squash for export to the Japanese market has been jeopardised by the very high inputs required, but certain varieties are always grown and sold in the markets. The plants reach maturity in three months and bear fruits whose skin is very vulnerable to attack by piercing insects. In commercial cultivation small paper supports are placed under each fruit so that their appearance is not spoiled by punctures and abrasions. In traditional cultivation upkeep is limited to simple weeding to allow this creeping plant to become established as an intercrop among other cultivated species. It is not uncommon to find wild escapes from cultivation that keep growing in the natural state thanks to their ability to compete with weeds and other plants.



## Alimentary uses

This common pumpkin, attractive in colour, keeps for quite a long time if its skin is not damaged. It is prepared by boiling, and laced with coconut milk and cooked in an oven of hot stones. The young leaves and the tender growing tips are eaten as vegetables to accompany a dish of meat or root crops.

---

Plant occasionally eaten, introduced

---

### *Cucurbita pepo*

Pumpkin, squash, courgette, zucchini, vegetable marrow

---

## History

*Cucurbita pepo*, originally from Mexico and present in archaeological sites dating back more than seven thousand years, is one of the most ancient of cultivated plants. Its wild ancestry is not known exactly, but it is possible that it was domesticated independently in the United States (from *C. texana*) and in Mexico (from *C. fraterna*). Even before the Spanish conquest the species had given rise to numerous cultivars, some of which had been produced for their flesh, some for their hard outer skins which made excellent containers, some for their ornamental qualities, and some for their oily seeds. The plant reached Europe during the decades that followed the discovery of America by Christopher Columbus, and then Africa and Asia. The plant, which survives

in cold climates, is less common than other *Cucurbita* species in tropical regions and in Vanuatu.

## Description

Plant with a robust stalk, creeping across open soil or fastening itself to and climbing up lattices (except for certain varieties whose stalks have very short internodes), with five clearly-marked angles, hairy. Leaves triangular, cordate at the base, with five lobes; ribs palmate. Flowers with a yellow corolla. Fruits very variable in shape, size and colour; peduncle with deep grooves, not expanded at the base.

## Morphological variability

This is the species with the greatest variability. It provides vegetables that are as different in appearance as pumpkin, marrow and squash. Given the impressive size of the flowers, hybridisation between varieties is within the capacity of amateurs, and numerous crossings have produced a great variety of forms. All the varieties are found occasionally in the markets. The *coucouzelle* squash is an elongate squash with a broad apex and a base furnished with longitudinal ridges. It may be dark green or almost white, sometimes striped. Its skin is rough and thick. The squash (*C. pepo* var. *melo pepo*) is a small squash in the shape of a swollen disc (8-10 cm in diameter), surmounted by a wavy crown, pale

green or golden yellow. It is cultivated on a small scale by a local market gardener. The squash with a twisted neck (crookneck squash) is elongate, and as the name suggests has a recurved apex. Its skin is thick, furnished with grooves and small protuberances. The zucchini (or courgette or marrow), which appeared in Italy, is elongate, with thin, smooth skin, green or yellow, mottled or streaked. It is not grown in Vanuatu, but is imported and may be purchased in supermarkets.

### Cultivation and production

*C. pepo*, propagated by seeds, is grown like all cucurbits in open fields or intercropped with other species, because of their exceptional ability to cover the

ground and thus keep it weed-free. Also, like all cucurbits, it is prone to fungal diseases of the leaves, which greatly reduce their capacity for photosynthesis and reduce their yields. *Cucurbita* species are also susceptible to CMV (cucumber mosaic virus) which produces spectacular mosaic patterns on their broad leaves.

### Alimentary uses

The squash, much less common than the pumpkin and the butternut, is prepared in the same manner. Squash and zucchini are mainly eaten by the expatriate community.

### Other uses

Some varieties are ornamental.



## Genus

# *Ipomoea*

## Family

### Convolvulaceae

This important genus contains about 400–500 species, spread throughout tropical regions. Two species are present in Vanuatu.

## Species present

### *Ipomoea aquatica* Forskal

Water spinach, kangkong, Chinese water spinach, swamp morning glory, water bindweed

### *Ipomoea batatas* (L.) Lam

Sweet potato (see page 97, root and tuber crops)

Water spinach, with soft and stringy leaves, is sold in markets throughout the year, tied up in large bunches. It is used more often in Asian cuisine than in traditional dishes of Vanuatu, but it is a valued vegetable.

## References

Austin (1988), Barrau (1962), Cornelis (1985), Cornelis & Nugteren (1982), **Fosberg & Sachet (1977)**, French (1986), Lin *et al.* (1985), Nishiyama (1971), Ochse & Bakhuizen van den Brink (1980), Philipps & Dahlen (1985), Piperno & Pearsall (1998), PROSEA (1994), Purseglove (1991), Rubatzky & Yamagushi (1997), Sauer (1993), Smartt & Simmonds, eds (1995), Weightman (1989), Worsley & Oldfield (1988), Yen (1974, 1976, 1982).

---

Complementary food plant, introduced

---

### *Ipomoea aquatica*

Water spinach, kangkong, Chinese water spinach, swamp morning glory, water bindweed

---

## History

Originally from tropical Asia, water spinach is spread throughout the tropical world. Grown and eaten regularly in Southeast

Asia and southern China, it is less utilised in Vanuatu to where it was introduced by the Asian population. It is grown in urban areas for sale in markets.

## Description

Hardy aquatic herbaceous plant with a hollow, floating stalk, the roots of which appear at the nodes of the stem and do not produce a tuber. Leaves simple, lanceolate or triangular, bright

green, soft, 2.5–15 cm long; petiole thin, long and erect, standing up out of the water, pale green or purplish. Flowers in the shape of a **cupule** (small cup), pink or mauve, 4 cm in diameter. Small fruits containing two to four seeds.

### Morphological variability

Many varieties of water spinach exist in Asia according to the colour of the stalks (green or reddish) and the size and shape of the leaves. As the species is sometimes grown from commercial seed, it is hard to know how many varieties occur in Vanuatu, but there does not seem to be much variability.

### Cultivation and production

The species propagates itself spontaneously or is grown from

cuttings of stems or from seeds on the banks of rivers, ponds and small lakes. Development is at first slow but then speeds up. The plant grows fast; it is harvested after two to three months, and regularly thereafter.

### Alimentary uses

The tips of the stems and the young leaves are eaten as a vegetable. They are boiled in salted water, sometimes dressed with coconut milk, and served as an accompaniment to dishes of root crops. Asiatic cuisine uses water spinach mixed into various dishes, and sometimes uses it fried.

### Other uses

In Asia water spinach is fed to livestock, to pigs and in aquaculture for fish rearing.



## Genus *Lablab*

### Family Fabaceae

The genus, which is monospecific, occurs in Vanuatu.

### Species present

#### *Lablab purpureus* (L.) Sweet

Hyacinth bean (also lablab, bonavist and various other names)

This species is one of a number of beans eaten in the country and sometimes sold in the markets. The young pods boiled are the part most often eaten.

### References

Barrau (1962), Duke (1983), French (1986), Maréchal *et al.* (1978), Mathon (1981), Messiaen (1998), Ochse & Bakhuizen van den Brink (1980), PROSEA (1989), Purseglove (1991), Rivals (1953), Skerman (1977), **Verdcourt (1970, 1979)**, Von Schaaffhausen (1963), Westphal (1974).

---

Complementary food plant,  
local and introduced

---

### *Lablab purpureus*

Hyacinth bean (also lablab, bonavist  
and various other names)

---

### History

Hyacinth bean is found in the wild state in East Africa, Abyssinia (Ethiopia), Transvaal (northern South Africa) and Asia (from Sri Lanka to the Himalayas and Myanmar). It is not cultivated much in Africa, and was without doubt domesticated in Asia where its cultivation varies according to region. The diversity of well-differentiated varieties in Asia is greater than that found in Africa.

Hyacinth bean is also cultivated in China and Japan. Nowadays the plant is found in all tropical regions. The presence of Asian varieties in Melanesia seems to go back to ancient times, but it has undoubtedly been introduced a number of times to Vanuatu, and commercial seeds are imported every year.

### Description

Climbing plant, winding and branched. Leaves trifoliolate, leaflets oval, pointed at the tips, 10 x 10 cm; petiole thin, slightly flattened, grooved. Long inflorescence (30 cm) with numerous flowers, white, sometimes blue or red; calyx persistent. Pods



subsessile, variable in shape and colour, flattened and curved, 5 cm long; style persistent as a beak-like extension; 3–6 seeds, variable in size and colour (white, cream, reddish, brown or black), some plain and some speckled; **hilum** projecting, white.

### Morphological variability

Around the world numerous varieties are distinguished according to morphological characters of the pods, the seeds or the flowers. They are grouped into three categories:

*Lablab* group: seeds with the suture perpendicular to the main axis, not filling the pod completely;

*Ensiformis* group: suture oblique in relation to the main axis; seeds filling the pod completely. Mainly Asian varieties;

*Bengalensis* group: suture parallel to the main axis; seeds filling the pod almost completely.

Some forms are toxic. The varieties in the first group are found in Africa and in Asia, while those in the *Ensiformis* and *Bengalensis* groups are mainly Asian.

### Cultivation and production

The plant is grown from seeds sown six to ten at a time in small seed-holes. The plants are thinned after one month, and then require staking. Pods are harvested five months later, and seeds after seven months. The plant can continue producing for several years, but is often treated as an annual.

### Alimentary uses

The young pods, seeds and leaves are eaten boiled; the water in which they were cooked must be thrown out afterwards. In Vanuatu the young pods are eaten while still green, and the young seeds, both after cooking. The seed coat is a little tough. The seeds may be dried and stored for later use, though this is not done much in Vanuatu. Likewise the ni-Vanuatu do not seem to use the young leaves or the flowers which are eaten in Indonesia.

### Other uses

The plant may be grown as green manure, as a cover plant during periods of fallow, and as forage for livestock.



## Genus

# *Lagenaria*

## Family

### Cucurbitaceae

The genus comprises six species, five of which grow in the wild state in Africa. The cultivated species grows in Africa, America and Asia.

## Species present

### *Lagenaria siceraria* (Molina) Standl.

Bottle gourd, calabash, spaghetti squash

Only the immature fruits of this ancient gourd are eaten, and sometimes the growing tips and the young leaves. It is not used much as a container in Vanuatu.

## References

Barrau (1962), de Candolle (1883), Heiser (1989), Herklots (1972), **Jeffrey (1980)**, King (1985), Ochse & Bakhuizen van den Brink (1980), Parham (1972), Peekel (1984), Richardson (1972), **Robinson & Decker-Walters (1997)**, Purseglove (1991), Rubatzky & Yamagushi (1997), Smartt & Simmonds, eds (1995), Viard (1995), Walters (1989), Zeven & de Wet (1982).

---

Plant occasionally eaten, local

---

### *Lagenaria siceraria*

---

Gourd

---

## History

This gourd is without doubt the oldest cultivated plant in the world, and the one that is most widespread. It is present in the Old and New Worlds, and was in the New World before the discovery of this region by the Spanish. The oldest traces of it have been found in Mexican and Peruvian sites dating back to 5700–3000 BC (at the latest), and

in Egyptian tombs dating from 3500 BC. It is present in Papua New Guinea, and it is found in the wild state in Malabar, the Moluccas (Maluku) and Abyssinia (Ethiopia). The fruits of the gourd float remarkably well, all the while retaining the viability of the seeds. The species, still wild or maybe already cultivated, probably spread from Africa to the New World by sea currents. However, it may also – and later – have been spread by humans in the course of migrations. It has been present since ancient times in Asia and Indonesia, and quite early on reached the islands of the Pacific as far as

Polynesia. It is utilised as a receptacle and for its edible seeds more than it is used for the flesh of the fruit.

## Description

Climbing herbaceous plant with a hairy stem, grooved, foul-smelling. Leaves simple, rounded with a cordate base, forming barely distinguishable lobes, 10–30 cm wide; margins dentate; petiole almost as long as the leaf blade. Flowers solitary, with a white colour that is characteristic of the species, male and female on different branches, with five rounded petals, 4–5 cm long and broad; calyx cup-shaped with five triangular sepals; petiole of the male flowers long and of the female flowers short and stout. Fleshy fruits very variable in shape, with a thick epidermis, smooth and hard, pale green and then orange, variable in size (10–100 cm long); long peduncle. Numerous flattened, white or brown seeds.

## Morphological variability

Numerous cultivars exist in the world according to the shape of the fruit and the taste of the flesh. The gourds may be round and surmounted by a recurved peduncle (siphon gourd), the size of a pear (powder gourd and snuffbox gourd), in the shape of a bottle with a constricted neck (pilgrim's gourd), long and thick (Hercules' club gourd or trumpet gourd), broad and slightly constricted (calabash), variable in shape with a very

elongate neck (*coucourde*) or flattened neck (Corsican gourd). Selection of the fruits has tended to be for their use as containers, and thus the various forms with a thick epidermis have been most valued. Later on forms with soft flesh were also selected. A distinction is made between varieties from Africa and America (ssp. *siceraria*), and from Asia (ssp. *asiatica*) which are the forms found in Vanuatu.

## Cultivation and production

In Vanuatu this plant is cultivated but is also found growing spontaneously as a garden escape. It is grown from seeds collected from ripe fruits, and is generally planted around houses. The seeds must be sown two or three at a time in small mounds enriched with organic matter. Only the strongest plant is left to continue developing. The plant is then provided with a strong stake that is capable of supporting the heavy and long fruits. The vine fruits after three months, and the fruits are picked while they are still young and tender. If it is intended that the fruit be used as a receptacle, it is only picked when it is fully ripe. All sorts of shapes may be obtained by binding or tying the immature fruit while it is still in place.

## Alimentary uses

The flesh of the fruit is often too bitter to be eaten, apart from some cultivars that have sweet flesh. These last, picked before



maturity while the epidermis is still soft, are peeled, cut into pieces and then boiled. The young leaves and growing tips are sometimes cooked as a vegetable. The oil extracted from the seeds may be used in cooking, but this usage is not found in Vanuatu.

### Other uses

This gourd with a hard shell is usually used as a container: bottle, jug, plate, box or musical

instrument. The fruit is cut near the neck, the flesh is removed completely without damaging the skin, and then the gourd is left to rot in order to remove any residual flesh. After cleaning and drying in the sun, the resulting receptacle is hung over a fire to complete the drying. The gourds may be used also as floats for fishnets. However, these uses are uncommon in Vanuatu where this gourd was mainly used in earlier times as a penis sheath.

## Genus

# *Momordica*

## Family

### Cucurbitaceae

The genus comprises about 45 species, seven of which originate from Asia and the rest from Africa. A single species is present in Vanuatu.

## Species present

### *Momordica charantia* L.

Bitter melon, Chinese bitter melon, balsam pear

Bitter melon is an Asian plant that is mostly found in the markets, though not abundantly. It is also grown in rural areas where the children regularly nibble the small fruits when they are the size of a gherkin.

## References

Barrau (1962), Chakravarty (1990), **Jeffrey *et al.* (1986)**, Morton (1967), Ochse & Bakhuizen van den Brink (1980), PROSEA (1994), Purseglove (1991), Robinson & Decker-Walters (1997), Smartt & Simmonds, eds (1995), Triverdi & Roy (1972), Walters & Decker-Walters (1988), Williams & Ng (1976), Zeven & de Wet (1982).

---

Plant occasionally eaten,  
introduced

---

### *Momordica charantia*

Bitter melon

---

## History

Origin unknown but probably the Indo-Himalayan region. The plant is nowadays distributed and naturalised in the majority of tropical regions. It was spread by humans, and also by birds. This is the species most often cultivated in the genus.

## Description

Climbing plant with a five-angled stem; tendrils bifid or simple. Leaves rounded and palmate, with five to nine clearly marked lobes each further dissected at the edge, 5–17 cm in diameter. Flowers with five petals, yellow and scented, 3 cm in diameter; thin hairy peduncle. Fruits pendulous, **fusiform**, furnished with deep longitudinal grooves and numerous protuberances, green and then orange when mature, 5–25 cm long, containing many white or brown seeds covered with a red **aril**. The fruit opens at maturity.

## Morphological variability

The very numerous cultivars have been classified into several groups but the distinctions are superficial. In Vanuatu the varieties change with the arrival of new seed shipments.

## Cultivation and production

This gourd is mainly cultivated in India, Indonesia and by the Chinese in Singapore. It is grown from seed sown in a seedbed. The fruits are harvested about a month and a half after planting. In Vanuatu it is regularly found in gardens and cultivated close to houses, as well as in the local markets.

## Alimentary uses

The fruits are bitter when fully mature, and can sometimes be toxic. In Pentecost, Santo and Erromango children nibble the very young fruits raw. In addition, the immature young fruits are cleansed with salt and lemon juice, then cooked and served as vegetables. Later it is necessary first to treat the fruit to reduce the bitterness. Sprinkled with salt or immersed in well-salted water, it is then de-seeded and squeezed. It is then cooked with other vegetables or with meat. It may also simply be fried or baked. When fully ripe, i.e. when quite yellow, the fruit becomes too bitter to be eaten. The fruits and the young leaves are a good source of vitamin C.

## Genus

# *Passiflora*

## Family

Passifloraceae

The genus comprises 400 species, about 60 of which bear edible fruits. Three species with edible fruits are found in Vanuatu.

## Species present

*Passiflora edulis* Sims.

Passionfruit

*Passiflora foetida* L.

Wild passionfruit (foraged species; see CD-ROM)

*Passiflora maliformis* L.

(foraged species; see CD-ROM)

Of all the passionfruits introduced to Vanuatu, only *P. edulis* has any real food importance. It is mainly a plant of villages and home gardens, though it is also sold in the markets. It is cultivated, but wild garden escapes are also found.

## References

Coppens d'Eeckenbrugge *et al.* (1997b), **Escobar (1992)**, Holm-Nielsen *et al.* (1988), Knight (1992), Purseglove (1991), Vanderplanks (1991), Verheij & Coronel, eds (1992), Winks *et al.* (1988), Zeven & de Wet (1982).

---

Complementary food plant,  
introduced

---

*Passiflora edulis*

---

Passionfruit

---

## History

This fruit, originally from South America, was spread to other tropical regions during the 19<sup>th</sup> century. Present in Australia before 1880, it was then taken to Hawaii where it is now naturalised. Its commercial production

started in those two countries, and afterwards in Florida. Introduced to Vanuatu, the species is nowadays abundant there.

## Description

A shrubby and vigorous vine, with smooth, woody stems. Leaves with three lobes, 12 x 18 cm; margins dentate; stipules lanceolate, 1 cm long; petioles glabrous, fluted. Flowers solitary and scented, with a tubular calyx that divides into five thick, incurved lobes,

white, alternating with five petals, violet–white; five rows of filaments, white and violet. Fruits ovoid or globular, purple or yellow, 4–6 cm long; pericarp thick, with a central cavity containing numerous flattened black seeds surrounded by an edible aril.

### Morphological variability

Traditionally two types are recognised:

- one with small, rounded, purple fruits, sweet in taste (*P. edulis* f. *edulis*);
- the other with yellow fruits, larger and with a slightly acid taste (*P. edulis* f. *flavicarpa*). It grows better at low altitude than the former variety, and therefore very much predominates in Vanuatu. The yellow passionfruit is more vigorous than the purple one, more resistant to *Fusarium* diseases, and is sometimes used as a rootstock for grafting of the purple passionfruit. Spontaneous or cultivated hybrids are also found.

### Cultivation and production

The plant is customarily grown from seeds, planted while they are still surrounded by the aril. They germinate easily in two to four weeks, and the young plants are then supported on stakes. The plant is grown commercially in the countries of South America, Australia, Florida, Hawaii and South Africa. In Vanuatu the species is grown around dwellings, the plants supporting themselves on the beams of verandas or on the roofs of the houses. It also grows spontaneously in the wild, but the fruits are then of poorer quality, smaller and more acid. The fruits develop better and are more luscious when the flowers are pollinated by hand.

### Alimentary uses

The fruits are eaten raw throughout Vanuatu, most often between meals, or sometimes as an accompaniment to a dish of taro which is considered to go well with the slightly acid tang of a fruit. In urban areas they are mixed in fruit salads or made into jams, juices and ice creams. They are also used as a flavour in many pastries.



## Genus

# *Phaseolus*

## Family

Fabaceae

The genus comprises 50 species, five of which are cultivated. They are all distributed in Mexico and Central America. One species is present in Vanuatu.

## Species present

*Phaseolus vulgaris* L.

Green bean, common bean, French bean, field bean

Although the species is present in Vanuatu and is often planted in kitchen gardens and other gardens (from seeds bought commercially), the Asian varieties of beans are often preferred.

## References

Baudet (1977), **Debouck (1991)**, Debouck *et al.* (1993), **Delgado Salinas (1985)**, Gepts (1996), Gepts & Debouck (1991), Koenig *et al.* (1990), **Maréchal *et al.* (1978)**, Piperno & Pearsall (1998), PROSEA (1989), Purseglove (1991), Smartt & Simmonds, eds (1995), Singh *et al.* (1991), Tohme *et al.* (1995), Westphal (1974), Zeven & de Wet (1982).

---

Plant occasionally eaten,  
introduced

---

## *Phaseolus vulgaris*

---

Green bean, common bean,  
French bean, field bean

---

## History

The green bean originated in Central America, from a wild ancestor distributed from Mexico to northern Argentina. After this ancestor became differentiated into two distinct groups, one in Central America and one in the Andean region, it was independently domesticated in two or three different locations in

Central America. The cultivated beans then spread and crossed with the wild beans that occurred at each location. The plants with small seeds seem originally to have come from Mexico and those with large seeds from the Andes. Introduced to Europe and Africa in the 16<sup>th</sup> century by the Spanish and the Portuguese, and then to China, the plant was very quickly adopted by both tropical and temperate regions. A second centre of diversity subsequently appeared in China, but the rest of Asia did not like these forms as much. In Vanuatu it is also a complementary bean, utilised to a moderate extent.

## Description

Plant with an erect or climbing stalk. Leaves trifoliate, leaflets entire. Flowers not very numerous, white, cream, violet or red, 1 cm in diameter; large **bracts** longer than the calyx. Pods slender, smooth, slightly curved. About a dozen oblong seeds, variable in colour (uniform, streaked or speckled), and 15 mm long at the most.

## Morphological variability

This extremely polymorphic species has given rise to hundreds of cultivars, selected locally or in agricultural stations. The principal distinction is into bushy varieties that do not need staking and climbing varieties that require support. Some varieties have been selected for consumption of their pods, flat, swollen or round among the green beans; others have been selected for consumption of their seeds whose shape, size and colour may then vary (white, pink or red; hilum coloured or not coloured; longer or shorter than 1 cm; rounded or kidney-shaped, etc.).

## Cultivation and production

Beans are not demanding in terms of soil quality, but they do not tolerate frost or excessive rain. In the humid tropics it is easier to grow the forms with edible pods than those with edible seeds, these latter requiring a degree of dryness. Propagation is by seeds, which remain viable for close to two years and germinate quickly. The seeds are planted in the soil three at a time, in holes 30–50 cm apart for plants with bushy forms, or every metre in the case of climbing forms so that there is room for them to be staked. The immature pods (or green beans) are harvested about seven or eight weeks after sowing, the seed beans when the pods become yellow.

## Alimentary uses

Beans are eaten before they are mature, as a green vegetable. They are cut in pieces and mixed with canned meat, or boiled in a soup with other leaves. Once the seeds begin to swell up, and a little before they reach full maturity, the pods are shelled and the beans nibbled raw by children. They are often cooked with a little salt in small bamboo containers and served at times as a snack, or sometimes to accompany a dish of root crops.

## Genus

# *Psophocarpus*

## Family

Fabaceae

The genus comprises nine species originating from Africa and one from tropical Asia. This last is present and eaten in Vanuatu.

## Species present

*Psophocarpus tetragonolobus* (L.) D.C.

Winged bean

Although the winged bean was present in Papua New Guinea before the first contact with Europeans, the species appeared only quite recently in Vanuatu. It is grown in the villages for its edible pod, and is often seen in the markets though only in small quantities.

## References

Eagleton *et al.* (1985), Harder (1996), Harder & Smartt (1992), Harder *et al.* (1990), Hymowitz & Boyd (1977), Khan (1976), **Maxted (1990)**, PROSEA (1994), Purseglove (1991), Smartt & Simmonds, eds (1995), Strathern (1978), Valicek (1989), **Verdcourt & Halliday (1978)**, Zeven & de Wet (1982).

---

Complementary food plant,  
introduced

---

*Psophocarpus*  
*tetragonolobus*

---

Winged bean

---

## History

The origin of the genus is Central Africa and Madagascar, where all the species of *Psophocarpus* may be found. Only *P. tetragonolobus* is present in Asia, the main centres of diversity being Indonesia and

Papua New Guinea. It has never been seen in the wild state, becomes naturalised easily, and is nowadays so widely cultivated that it is hard to say where its centre of origin is. Did it arise from an Asian ancestor that has since disappeared, or did it come from one of the presumed African progenitors? It reached Vanuatu at a date that is unclear, but it was certainly quite recent. Since 1975 a great deal of agronomic research has gone into this plant which is high in protein, and a study of its diversity is in progress.

## Description

Climbing herbaceous plant with a smooth stem, green or purple. Roots thickened to form tubers. Leaves trifoliate, triangular or lanceolate, smooth, 10–15 cm long; stipules lanceolate; petiole long, striped. Inflorescence with few flowers, broad, furnished with a beak-like structure at right angles, mauve, blue or white; style with tufts of hairs, thickened near the ovary; long peduncle. Pods oblong with four longitudinal wings, green or yellow sometimes tinged with purple, 6–40 cm long, 5–21 round seeds, white, yellow, brown or black, without a raised median line.

## Morphological variability

Several thousand varieties are known around the world. In some regions they have been selected for their tubers (Papua New Guinea), in others for their pods (Indonesia). These varieties are distinguished by the colours of the stem, the flowers, the pods and the seeds; by the morphology of the leaves, the pods and the seeds; by the number of seeds per pod; and by the size of the roots. The cultivars also vary in the speed at which they germinate and grow, in their photoperiodicity, in their ability to produce tubers and in their resistance to disease.

## Cultivation and production

This plant likes hot, humid climates. It is sometimes grown under irrigation, in slightly raised beds with the root tips just into the irrigation water but not waterlogged. It is grown from seeds, which take a long time to germinate, and the pods are harvested year-round. It is necessary to wait at least eight months before the swollen root can be harvested. In Vanuatu the villagers grow some winged bean plants in their gardens. The pods are sometimes sold in the markets, tied up in small bundles.

## Alimentary uses

Every part of this bean is eaten. The young pods are cut into segments and boiled; the leaves, flowers and stem tips are eaten as vegetables. In Myanmar and Papua New Guinea, the **tuberised** roots, five times higher in protein than yams, are eaten raw, or are boiled as are the mature seeds. Immature young pods are the richest of all in protein, calcium, iron and vitamin A. This is an excellent food that is insufficiently utilised. In Vanuatu the pods and the seeds are kept for eating within the family.

## Other uses

This bean may be planted as forage, as a groundcover or for restoring soil fertility after a cropping cycle.

## Genus *Sechium*

### Family Cucurbitaceae

The genus comprises ten species, all originating from Central America. A single species is present and grown in Vanuatu.

### Species present

#### *Sechium edule* (Jacq.) Swartz

Choko, chayote

This plant, which is introduced, has been adopted by the ni-Vanuatu who grow it in all their gardens and regularly eat the cooked fruits, stem tips and young leaves.

### References

Aung *et al.* (1990), Bailey (1992), Chakravarty (1990), Jeffrey (1978, 1980, 1990), **Lira Saade (1995)**, Newstrom (1990, 1991), PROSEA (1994), Purseglove (1991), Rubatzky & Yamagushi (1997), Smartt & Simmonds, eds (1995).

---

Complementary food plant,  
introduced

---

### *Sechium edule*

Choko, chayote

---

### History

Originally from Mexico and Guatemala where it had been domesticated, choko was used by the Aztecs before the arrival of the Spanish conquistadors. It is nowadays spread throughout the tropical world. It was introduced to Vanuatu where it has become very popular, present in all the islands and sometimes naturalised.

### Description

Climbing plant reaching 12 m in length; tendrils divided into 2–5 parts. Leaves simple, triangular, oval or slightly lobed, broad (10–25 cm in diameter). Flowers with five cream-coloured petals. Fruits pear-shaped or ovoid, with longitudinal grooves, smooth or rugose, white or pale green, 10–20 cm long. Single seed, large and flat, white.

### Morphological variability

The variability is great and ever increasing, affecting all the morphological characters so that it is difficult to separate out individuals among the groups



*Sechium edule*

of cultivars. From a commercial point of view a distinction is made between chokos of medium size, pale green and pear-shaped, and chokos that are small in size, white and globular. Both are found in Vanuatu.

### Cultivation and production

Choko likes humidity and suffers from winds. It becomes naturalised easily, and one also finds plants that have grown spontaneously and are looked after

by people as well as ones that are being specifically cultivated. It is grown by planting the fruit vertically in the soil. The plant is not staked, but climbs on the surrounding vegetation. Harvesting of the fruits begins after 3–5 months and continues for several months more. Production is interrupted during the hottest months. During the remainder of the year the fruits are sold regularly and abundantly in the markets, and stem tips are occasionally also on sale, in bunches wrapped in *Heliconia* leaves.

### Alimentary uses

The tips of the stems and the young leaves of choko are picked regularly, to be cooked and served as vegetables. They are cooked in small bamboo containers, fried quickly and lightly on the stove or boiled. The fruits are cooked in the same manner, after they have been peeled and deseeded and cut into slices. They are sometimes flavoured with coconut milk or added to chicken casseroles. Once cooked, they can also be made into very good salads. In Vanuatu the tuber is not eaten.

## Genus

# *Trichosanthes*

## Family

### Cucurbitaceae

The genus, which is poorly known, contains 40 or so species that originate from an area stretching from east Asia to Australia and Fiji. At least two species are present in Vanuatu.

## Species present

### *Trichosanthes cucumerina* var. *anguina* (L.) Haines

Snake gourd

### *Trichosanthes dienensis* Merr & Perry

(Foraged species; see CD-ROM)

### *Trichosanthes ovigera* Blume

(Foraged species; see CD-ROM)

The introduced snake gourd is the species which is eaten most. The two foraged species, which are protected by the local communities, have been present in Vanuatu since ancient times.

## References

Chakravarty (1990), Jeffrey (1980), PROSEA (1994), Purseglove (1991), Robinson & Decker-Walters (1997), Rubatzky & Yamagushi (1997), Singh (1990), Singh & Roy (1979), Walters (1989).

---

Complementary food plant,  
introduced

---

### *Trichosanthes* *cucumerina* var. *anguina*

Snake gourd

---

## History

Native and domesticated in India, this gourd is nowadays grown in all tropical regions.

## Description

Climbing herbaceous plant with a long, perennial stalk, ribbed, 5-angled; tendrils bifid or trifid. Leaves with five lobes, downy. Flowers broad, the female flower solitary, the male flowers in racemes, scented, white, opening in the evenings. Fruits cylindrical, elongate and slender, twisted, 60 cm on average but able to reach 1.5 m in length; epidermis grey-green with white streaks then red at maturity; flesh white, fibrous, containing wrinkled brown seeds.



*Trichosanthes cucumerina*

### Morphological variability

This has not been observed in Vanuatu, and is not very important anywhere for this species.

### Cultivation and production

This gourd is widely grown, in both rural and urban areas. It is planted at the beginning of the wet season, using seeds extracted from fruits or bought commercially. The perennial vine must be fastened to a support, or grown

close to a tree, a house or a trellis specially constructed to hold it. The fruits are harvested after two months, while they are still immature and measure about 50 cm.

### Alimentary uses

This popular vegetable is eaten while it is still young, because it becomes fibrous and bitter when mature. After it has been washed it is cut into pieces and boiled. It is then seasoned with coconut milk and served with a dish of root crops. It may also be minced finely and cooked in a type of soup with coconut milk to accompany a dish of rice.



## Genus

# *Vigna*

## Family

### Fabaceae

The genus, which is broad and very variable, has been the subject of numerous revisions. According to the latest it comprises 84 species, only one of which is present in Vanuatu.

### Species present

*Vigna unguiculata* subsp. *unguiculata* (L.) Verde,  
group *sesquipedalis*

Yard-long bean, snake bean, asparagus bean

The yard-long bean or snake bean is the main representative of the species *Vigna unguiculata* in Vanuatu. Its famous parent, the cowpea (*niébé* in French), has also been introduced to Vanuatu but it is less common and is eaten like a green bean. The yard-long bean is the bean that is most often eaten by the local people.

### References

Maréchal *et al.* (1978), Ng & Maréchal (1985), Padulosi & Ng (1997), Panella *et al.* (1993), Pasquet (1993, 1997, 1998, 2000), PROSEA (1989), Purseglove (1991), Smartt & Simmonds, eds (1995), Steele *et al.* (1985), Summerfield & Roberts (1985).

---

Complementary food plant,  
introduced

---

*Vigna unguiculata*  
subsp. *unguiculata*  
group *sesquipedalis*

---

Yard-long bean, snake bean,  
asparagus bean

---

### History

*Vigna unguiculata* originates from Africa where it has been domesticated since ancient times, probably in the northeast of the continent. It reached India via East Africa, then Asia and then

the Mediterranean region. Its main centre of diversity is in Africa. However, the main centre of diversity of the cultivars belonging to the group called *sesquipedalis* is Southeast Asia. In the 16<sup>th</sup> century this group was taken to the New World, and in the 19<sup>th</sup> century to the islands of the Pacific.

### Description

Climbing or semi-erect herbaceous plant. Leaves trifoliolate; leaflets oval, asymmetrical; stipules oval; petiole 5–25 cm. Raceme of several violet or white

flowers. Pod pendant, fleshy, swollen and then narrowed and crumpled-looking when mature, 15–90 cm long, containing kidney-shaped seeds that are variable in size, separated one from another.

### Morphological variability

The species is a complex of wild and cultivated forms whose classification is very difficult. At the last revision *Vigna unguiculata* was divided into two subspecies, one encompassing the cultivated forms and the other the wild forms. The cultivated forms were given the name of *V. unguiculata* subsp. *unguiculata*. This subspecies is itself divided into four groups, all forms of which can hybridise with each other and with the wild subspecies. The species in Vanuatu belongs to the group *sesquipedalis* and is itself very variable. It is characterised by the expression of several recessive genes. Green and purple yard-long beans occur.

### Cultivation and production

The plant is propagated from seeds collected from mature pods, or bought commercially from Asian sources. They are sown directly into the soil in groups of three, the groups being spaced about 1 m apart. Growth is rapid, and the plant is a climber that requires staking. The plant flowers abundantly after a vegetative period of only six weeks, and at fruit-set it generally produces numerous pods 50 cm long. They are harvested when still immature to avoid them becoming fibrous.

### Alimentary uses

Sold in the markets tied together in small bunches, these beans are eaten whole. It is desirable to choose pods that are well swollen and tender. These are cut into small pieces, and boiled in salty water or added to all sorts of stews of meats or vegetables. They are grown in small quantities but are frequently found, on the market stalls as much as on the tables of the local people.