Luffa gourd

agriculture, land reform
& rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Luffa gourd

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Immature luffa gourds (Source: www.pinterest.co

Scientific name: *Luffa*

Common names: Sponge gourd; Luffa; Egyptian luffa; smooth luffa; Dishrag gourd; vegetable sponge gourd; Loofah (Europe); Chinese okra; climbing okra and rag gourd.

Family: *Cucurbitaceae*

MOST COMMON SPECIES OF LUFFA ARE:

- Luffa acutangula (L.) Roxb. (ridged): Its surface is covered with ridges that run along its length
- Luffa cylindrica (smooth): Its skin is smooth like that of a cucumber and non-scratching. This species is primarily used as a vegetable and therefore its sponge quality is very low.

N.B. Hybrids of both species are available in cultivation but are inedible.

ORIGIN AND DISTRIBUTION

The species is native to tropical Asia and Africa but has also been grown in Egypt since the late medieval era (Middle Ages). The plant occurs wild in West Africa, but this is often believed to be a result of escape from cultivation, as the plant is known as “white people‘s sponge” in several communities in the region. Indo-Burma is reported to be the centre of diversity for sponge gourd.

The crop is widely used in Asia, particularly in China and Vietnam; the gourd has recently become an attractive commodity on United States vegetable markets, including Asian grocery stores in New York, California and Florida.

PRODUCTION AREAS IN SOUTH AFRICA

The plant is cultivated in the Western Cape and North West. There is lack of information on production of luffa in the country. Luffa sponges are sold by street vendors at market places.

DESCRIPTION OF THE PLANT

Mature plant

Luffa vines have the potential to reach a length of up to 9 m. The mature luffa plant can bear about six to seven fruit in ideal growing conditions.

Stem

The stem is smooth and ribbed and can grow up to 7 m tall.

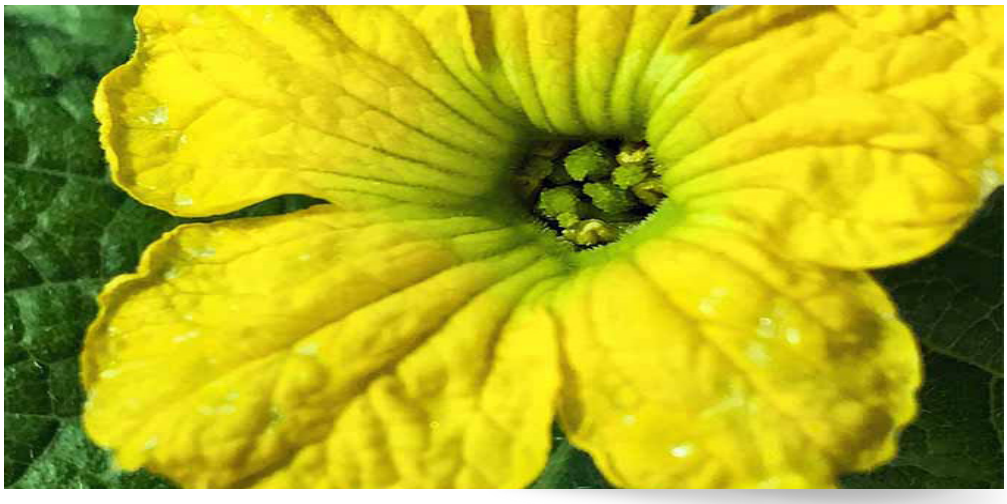
Leaves

Luffa leaves are large, lobed and deep green with fine hairs on their surface. A fully developed leaf is typically up to 26 cm wide and 13 cm long.

Luffa leaves (Source: www.davesgarden.com)

Flowers

Both male and female flowers are yellow or orange in colour and 5 cm to 7 cm in diameter.



Luffa flower (Source: www.gardensall.com/growing-loofah)

Fruit

Fruit are sometimes elongated, straight or slightly curved. Fruit is edible at an immature stage and measures about 10 cm to 18 cm in length.

Seeds

Immature seeds are white in colour, whereas mature seeds are dark brown or black and hard, both resembling watermelon seeds in size and shape.

Roots

The root system of luffa is shallow.

CLIMATIC REQUIREMENTS

Temperature

The plant requires warm summer temperatures and a long, frost-free growing season for maximum yield and does best planted at soil temperatures between 20 ˚C and 30 ˚C. Luffa gourds need a long growing season; from about 150 to 200 successive frost-free days. Germination temperatures should be above 12 ˚C and germination improves as temperatures rise to about 35 ˚C.

Rainfall

Well distributed rainfall during the growing season is needed for optimum crop growth. Excessive rainfall during the flowering and fruiting period can damage yield and lower fruit quality.

Soil requirements

The crop prefers well drained, sandy loams and neutral to slightly alkaline soil conditions with moisture. Luffa prefers a pH of around 6 to 6.8. High levels of potassium and phosphorus is recommended for growth.

CULTIVATION PRACTICES

Propagation

Luffa is grown from seeds.

Soil preparation

The soil should be loosened and piled up, whether in ridges or mounds prior to planting.

Planting

The best months to grow luffa are from September to November. Direct seeding is fast and saves labour, provided it is done at the recommended planting time and under suitable climate conditions. Plant spacing is usually 45 cm to 75 cm apart, whereas row spacing is 1 m to 2 m apart and a plant density of 6 000 to 12 000 plants per hectare is recommended.

Fertilisation

The fertiliser programme should be based on recommendations from soil analysis. At planting, 600 kg 2:3:4 (30) fertiliser mixture per hectare may be applied in the row. The plants should be side-dressed with 200 kg L.A.N. per hectare about six weeks later. Acidic soils should be corrected with dolomitic or agricultural lime.

Irrigation

The plants should be watered deeply if there is no rain for a few days or if the leaves wilt. As a lack of moisture is detrimental to growth and yield, so regular irrigation is necessary at all growth stages. Soil should be kept moist from the flowering stage onwards.

Weed control

Weeds should be kept under control by pulling them out or covering the area with organic mulch.

INSECTS AND PESTS CONTROL

Red spider mites

Dry foliage, particularly in dry summers when drip irrigation is practised, is a favourable condition for this pest. The symptoms include chlorosis and silver upper surfaces caused by the mites on the underside of leaves. Registered pesticides should be used to control mites.

Pumpkin flies

The immature fruit is attacked. The pest penetrates skin and tissue around the puncture mark dries and the area becomes darker and slightly sunken. Registered pesticides should be used to control flies.

DISEASES CONTROL

Damping-off

This disease can be problematic with young seedlings if grown in cool wet conditions. Avoid cool wet conditions during planting to prevent the disease.

Fruit rot

This is a common disease that can lead to losses if fruit are grown near the ground. The use of trellises can prevent fruit from touching the ground.

Downy mildew

Periods of moderate temperatures with high humidity and free moisture promote this disease. Symptoms such as a greyish fungal growth down on lower leaf surfaces that have corresponding chlorotic spots on the upper surfaces may occur. Fruit set and flavour may be impaired. Registered contact and systematic fungicides may be used to control the disease.

Powdery mildew

This disease is dominant in warm, dry areas. White powdery mildew affects areas such as leaf surfaces, petioles and young stems. Infection proceeds from older to younger leaves. Infected leaves dry and fruit ripens prematurely. Registered contact and systematic fungicides may be used to control the disease.

Other cultural aspects

The crop is compatible to be grown with peas, beans, onions and sweetcorn. Growing it close to potatoes should be avoided.

Harvesting maturity and methods

Harvesting for consumption: Only young, immature fruit of about two to three months can be harvested. They must be harvested while they are still tender, e.g., one should be able to pierce the skin easily with a finger nail. A sharp knife or hand pruner may be used to cut the stem between the vine and the young luffa gourd.

Harvesting sponges: Fruit are harvested when they turn yellow in a commercial operation. Dry fruit may be hand-picked in 16 to 20 weeks (four to five months) after planting. Home gardeners may harvest fruit from the vine until the outer shell has dried, then it is cracked and peeled.

Harvesting seeds

Seeds can be collected from mature fruit and laid onto paper to dry.

Utilisation

The use of luffa fruit is dependent on its growth stage.

Human use

Luffa has a mild, delicate flavour and a soft texture; very similar to that of bottle gourd. The flowers can be stuffed and fried and the young fruit (immature gourds) can be eaten in stir fries. It goes particularly well with lentil curry and mixed vegetable stews.

Peeled, freshly harvested ridge gourd may be eaten raw in a similar way like peeled pumpkin, squash, or calabash. However, the whole or partly peeled luffa should

always be cooked as its skin contains unpleasant smelling compounds which make it unappetising raw. Take note, the leaves and vines should be not eaten.

Luffa dish (Source: apieceofrainbow.com/grow-natural-sponge-luffa/)

- ## Industrial use

The dried fruit fibres are used as abrasive/scrubbing sponges in skin care to remove dead skin and to stimulate circulation. The sponges can also be used for cleaning purposes and as a back scratcher.

Luffa sponges (Sources: www.bidorbuy.co.za & www.thisnzlife.co.nz)

- ## Medicinal use

The pulp of the whole plant is used as a suppository against constipation in traditional African medicine. Zulu people in South Africa take a leaf decoction to treat stomach pain.

Nutritional and health benefits information

- Both cultivars compose of phenolic anti-oxidants such as carotenes, etc.
- It is rich in dietary fibres and has smooth flesh, which facilitates easy digestion and easy movement of food through bowels to relieve indigestion and constipation problems.

Table 1. Nutritional composition of raw and fresh luffa per 100g

Nutrient	Nutritive value per 100 g
Energy	20 Kcal
Vitamin A	410 IU
Vitamin C	12 mg
Folate	7 µg
Potassium	139 mg

Acknowledgements

The Department of Agriculture, Land Reform and Rural Development (DALRRD) would like to acknowledge the influence from the luffa farmer, Ms Florah Selebi (Farm: Bodirelo-SEZ SITE, Mobile: 082 792 8485 or 065 851 2073), on the development of this brochure through her luffa produce market challenges.

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Notes

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