

Luffa - the sponge gourd



Luffa (*Luffa aegyptiaca* Mill syn. *L. cylindrica*), also commonly called Loofah or vegetable sponge, is a member of the Cucurbitaceae family. It is an annual climbing vine which produces a fruit containing a fibrous vascular system. When separated from the skin, flesh and seeds, the system can be used as a bathroom sponge. Luffa can also be used as packing material, for making crafts, and as filters

The main commercial production areas for luffa are in China, Korea, India, Japan, and Central America. Luffas are imported into New Zealand and sold mainly for bathroom use. Some preliminary trials have been carried out to see whether we could produce Luffas in New Zealand.

Growing environment

Luffa is a sub-tropical plant which requires warm summer temperatures and a long frost-free growing season when grown in temperate regions. Consequently it is a crop which is best suited to the warm summer conditions of the North Island and northern South Island or sheltered home gardens. Out- of-season frosts severely damage Luffa and in our first year of sowing in the Waikato a cold spring and out-of-season frosts resulted in few fruit being set. However in the past two years we have grown good crops. The growing season can be extended by using transplants grown under glass earlier in the season. Luffa is also a crop which would grow well in greenhouse conditions. Luffa will grow on many soil types but free-draining sandy loams are preferred.

Agronomy

Luffas are closely related to the cucumber family, and many of the production requirements are similar. Luffa prefers a pH of around 6.0 to 6.8. High levels of potassium and phosphorus are recommended in the United States. Overseas literature suggests that large quantities of organic matter may also be beneficial. Weed control is best achieved by cultivation, followed by spraying with a desiccant weedicide before planting. After planting, mechanical cultivation or mulching are commonly used to control weeds. Weedicides used for weed control in cucumber may be suitable for Luffa but have not been evaluated in New Zealand conditions. To establish Luffa by transplants, seed should be sown about eight weeks before planting out. Seeds need to be germinated at 25EC and grown on and transplanted when the soil temperature is about 18EC. Recommendations for plant spacing vary, but in the United States Luffas are grown 1 to 2 m apart in rows 2 to 3 m apart to give a final plant population of 2000-5000 plants/ha. This requires about 1.5 kg seed/ha. In single rows in a house garden, Luffas could be planted at a 30-50 cm spacing. Although Luffa can be left to grow

along the ground, best yields and fruit quality are obtained by using a support structure or trellis system. At Ruakura, an upright structure running the length of the row as well as a canopy support structure which supported the vine between the row have been used. Whatever system is used, it must be strong enough to allow the fruit to hang free. Any constriction will result in deformed fruit. Irrigation is essential for good growth during dry periods but excessive water can result in poor growth and root disease. Generally there have been few pest and disease problems growing Luffas in the Waikato. Damping off can be a problem with young seedlings if growing in cool wet conditions, and fruit rots may cause losses if the fruit are allowed to grow on the ground. Problems with aphids and, subsequently, viruses have been reported overseas.

Yields

In the United States, yields are reported to be 20 000-25 000 fruit/ha. Yields of 60 000 fruit/ha have been reported in Japan.

Preliminary trials in the Waikato

In 1992, three unnamed varieties were obtained from the United States for evaluation. These were sown in 1992 but two varieties failed to set seed. The third variety survived and was used for further study in 1993 and 1994. In the preliminary research in the Waikato the average yield has been 8 fruit/plant with fruit averaging 38 cm in length and a wet weight of 750 g. Some individual plants have produced over 50 fruit.

Processing and quality

When the fruit starts to brown it should be removed and allowed to dry. When completely dry, the cap on the bloom end of the fruit should be removed to extract the seed. The fruit is then soaked to remove the skin and pulp. The water needs to be changed frequently to avoid staining the fruit fibres. A weak chlorine bleach can be used to whiten the fibres further if necessary. When the water remains clean, the sponges can be removed, trimmed, and dried. Fibre density, texture, and appearance are the main quality parameters. A dense, fine- to medium-textured fibre is preferred. The price paid for each sponge usually depends on quality and sponge length.

Further reading

Davis J.M.; DeCourley C.D. 1991: Luffa sponge gourds: a potential crop for small farms. Pp. 560-561. *in*: New Crops. Janick, J.; Simon, J.E. *ed*. New York, J. Wiley & Sons.

Martin F.W. 1979: Vegetables for the hot humid tropics, part 4. Sponge and bottle gourds, *Luffa* and *Lagenaria*. Science and Education Administration U.S. Department of Agriculture, New Orleans, 19 p.



Conclusions

Luffas have been successfully grown in trials in the Waikato in the past two warm summer seasons. In a cold year, Luffa production appears to be marginal in the Waikato. Luffas are an exotic crop for home gardeners and for possible supply to local outlets. The economics of Luffa production have not been studied and it is not known whether the locally grown product can compete with imported Luffas. There is also an international market for Luffa sponges, but the quality of the New Zealand-grown Luffas and the economics of exporting them have not been investigated.

Seed source

Luffa seed can be obtained in New Zealand through the following companies:

P D Dow & Co., Box 696, Gisborne

Kings Herbs Ltd, Box 19084, Avondale, Auckland

Contacts

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