

Nopalito (*Opuntia ficus indica*)



Nopalito is a multiple use crop valued for its ability to thrive on dry bony soils. Where few other productive crops will survive, the nopalito plant will provide fruit, vegetable, fodder and products with medicinal properties. The fleshy pads (or cladodes) of the cactus are called nopal or nopalito. With the spines removed, they are roasted or boiled and served with Mexican dishes.

A native of the semi-arid regions of South and Central America, nopalito (also called nopal, Indian fig and tuna) is a branched cactus that grows up to 2 m. Nopalito has similar nutritional characteristics to other green vegetables, but is particularly sought after for use in Mexican cuisine. It is mainly produced in Mexico and exported to the US and Japan, while Italy and North Africa produce good quality Indian fig.

Nopalito is related to the infamous *Opuntia* (a genus including several species, including *O. ficus-indica*, often called prickly pear cactus), which has become a serious weed in Australia and South Africa. However, commercial cultivars of nopalito are not recorded as being weedy, but, as with all new crops, it is advisable to monitor the plant's ecology carefully.

The pads, flowers and fruit of the nopalito plant are all claimed to have medicinal properties, some of which have been clinically tested. The plant has been used since pre-

Hispanic times to treat kidney ailments and burns, to induce childbirth and as an antidiabetic. The plant has diuretic, analgesic, cardiotoxic, laxative and antiparasitic properties. The juice of nopalito is used to treat nausea, fever, and ulcers, while the roasted fruit is used to cure coughs and the rind to cure kidney diseases. The antioxidant properties of nopalito are also claimed to have therapeutic effects.

Nopalito pads are a valuable emergency fodder in dry regions. Cattle and goats can thrive on nopalito when other sources of feed have long dried up.

The fruit of nopalito is a juicy green, yellow, pink or red fruit (depending on variety) that is high in vitamins and popular in Latin America, the US, Japan and Europe. Fruit are presently produced in Spain, Italy, northern Africa, Mexico and Argentina. In New Zealand the choice of product to develop from this plant will depend on access to processing facilities and markets as well as cultivars, soil and climate. It is a trial crop in New Zealand. Agronomy,

cropping times and methods, evaluation of different provenances, quality processing and marketing require opportunities further investigation.

Environment

Nopalito is a hardy plant that will tolerate intense drought and heat on poor soils, such as those on warm sunny slopes. Excessive moisture is detrimental and can lead to disease and death, particularly in cool conditions. The plant requires no shelter from wind. Cold hardiness increases with age. A woody base is essential to survive hard frosts. Young plants will survive -2 to -3°C frosts. Hardened plants with a woody base will withstand up to -10°C. Few trials have been performed in New Zealand but regions such as Nelson, Marlborough or Hawke's Bay are likely to be optimal for nopalito. Other regions may prove suitable.

Because it dislikes excessively wet conditions, soils should be well drained. If the climate is very dry, clayey soils are tolerated. In wetter areas, higher pH is preferable (close to neutral or above) whereas in dry areas lower pH may be tolerated. Very acid soils may not be suitable for nopalito.

Management

The nopalito presently available for trial was selected on the basis of vigour, health, good fruit quality and hardiness. Further work on selecting and importing new varieties will depend on the degree of interest and commitment shown by growers. Nopalito has been growing successfully south of Dunedin since the 1990s, with good vegetative growth but no flowers.

Propagation of nopalito takes some time but is straightforward, as long as one remembers that excess water is this plant's biggest enemy. Propagation is best done during late spring to mid summer. Cuttings can also be planted directly in their final position at 30-40 cm spacing (up to 66 000/ha depending on space between rows) for nopalito production. At present, for Otago we suggest planting distances within rows of around 1 m and distances between rows of 3 m or more, depending on the harvesting techniques (manual or mechanical) planned, but experimentation is necessary to optimise yields. Larger

Contacts

Invermay

Stephan Halloy
Crop & Food Research
Private Bag 50034, Mosgiel.
Tel. 03 489 0673
Fax. 03 479 8543
Email Halloys@crop.cri.nz

distances will allow for larger plants, which will be more cold tolerant and produce more pads per individual.

The ground must be prepared for planting if possible at least two weeks in advance by removing weeds in a 1 m wide strip. Light, well drained soils, either sandy or with good organic content, require no further preparation. In hard, compacted areas the soil must be ripped. Blood and bone and other nitrogenous fertilisers will accelerate growth, but amounts must be gauged with experience.

Water sparingly when planting, and control weeds. In the field, no pests or diseases have yet been reported in New Zealand. The plant is palatable to stock and should be protected.

Nopalito planted for fruit, at 3 x 4 m spacing, can be intercropped with other crops such as dryland lucerne, barley, canola (oilseed rape), or dry beans to mitigate the cost of three years of establishment before first fruiting.

Based on overseas experience, vigorous plants can be fertilised with organic manure (up to 6 t/ha) and/or 40-60 kg/ha of N plus 20 kg/ha of P per year. Where growth is slower, fertiliser can be reduced accordingly. No irrigation is needed, but supplementary irrigation and fertilisation is said to enhance production greatly. Plants should be pruned to bushy perennials, i.e. into a multi-branched form.

Harvest and processing

Two harvests of tender pads for vegetables are possible per year in warmer conditions, with plants resprouting rapidly after harvest. A third flush can be left for forage. Mature pads can also be harvested at the end of the season and these will remain attractive and palatable for up to six months if flipped over once or twice to avoid rooting and stored in a dark place at room temperature. Overseas research has shown that total vegetative production, as used for forage, can reach 43-53 t/ha per year, depending on fertiliser use.

German studies suggest that nopalito pads can also be produced in large quantities in glasshouses. The higher cost of set-up is offset by a much higher productivity, over 5 kg/m² in two weeks in summer. Cladodes can be wrapped in plastic film and stored at slightly above freezing temperatures for about a month.

Disclaimer

The above notes are intended to provide growers who have no information with a basic understanding of growth requirements. They are written in good faith using information available to the author at the date of writing. The plants are as yet little-known and experimental results will help us understand their requirements better. No liability is implied in writing these notes for losses or damages from their application or for statements made about the marketing potential of the crop.