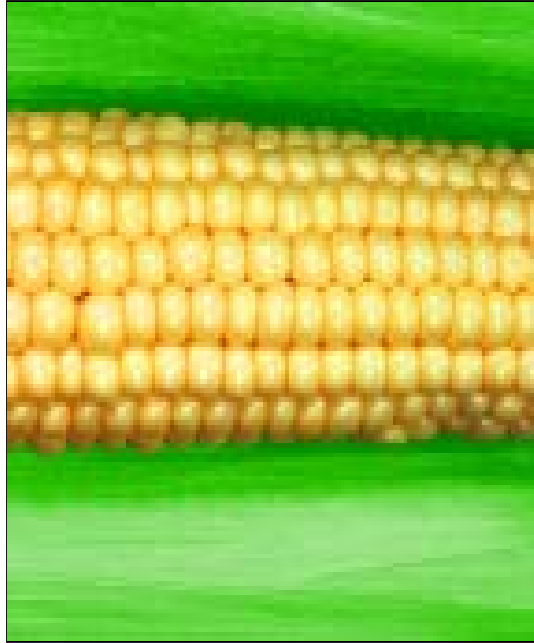


# Supersweet corn - *Zea mays*



Supersweet corn is a new form of corn. It was first observed as a chance occurrence in the US in 1962 and was first produced commercially in 1965.

Supersweet corn differs from standard sweet corn in its higher sugar content in the kernel. The retention of sugar in the kernel gives the corn a sweet taste that is normally lost in standard sweet corn when sugar is converted to starch. Further advantages of supersweet corn are that it keeps better, both on the plant and in the store, and it does not need extra sugar when canned.

Disadvantages result from the supersweet attribute. A toughening of the pericarp (outer skin) of the kernels accompanies the extra sweet attribute. A toughness to the bite results. Some consumers consider the toughness as crispness and prefer the texture of supersweet corn over sweet corn. Higher than normal sugar content in the seed also leads to leaching into the soil, which can increase disease problems.

The range of cultivars is extensive but includes Marika Extra, Honey 'N Pearl, Sweet Perfection and Temptation. Honey 'N Pearl is a bi-coloured (white and yellow) cultivar that gives extra 'eye appeal' for freshmarket purchase. Cultivars vary in their maturity schedule and in their cold tolerance.

## Uses

Main uses of supersweet corn are consumption in fresh or processed forms. When used fresh, cobs should be cooked very lightly - only enough to heat the kernels. It may be eaten raw in coleslaw or similar dishes. Processed products may be frozen, canned or dehydrated. The latter may be used to flavour and thicken soups, sauces and ice cream.

## Growing environment

Supersweet corn grows most successfully in the Hawke's Bay, Poverty Bay and Auckland regions. It can be grown in other areas, such as the Wairarapa, but crops are generally less successful in these conditions.

## Agronomy

New Zealand seed companies keep a good range of seed.

About 10 kg of seed is required for a plant population of about 66 600 plants/ha. Seed requirements will vary

according to seed lot and cultivar. Germination is less reliable than standard sweet corn especially if temperatures are low. Seed should be planted in a well-prepared seedbed with soil temperatures between 12 and 15°C. Moisture content of the soil must be maintained during germination but care should be taken not to overwet the soil. Distances between rows should be 75 cm. Wider spacings allow for a larger number of cobs per plant with a better cob length and weight and a better cob fill.

Our understanding of when to apply irrigation and how much is still developing. Sweet corn has a shallow root system that makes it susceptible to moisture stress especially during silking and when the kernels are filling. Poorly filled cobs will occur if the plant is exposed to hot, dry winds and drought conditions during these stages. Water stress may occur during two months preceding the harvest (January and February). Stress likely occurs when available soil water falls below 50% quantity at field capacity.

Cross-pollination between supersweet corn types will reduce the number of 'sweet' kernels in supersweet corn cobs. Growers must grow supersweet types away from normal sweet corn by about 50-100 m, especially where windy conditions prevail. Pollen of standard sweet corn will cause the supersweet corn to taste like maize and the qualities of the supersweet corn type will be lost. If isolation by distance is difficult to achieve, isolation by time may be better and can be obtained by staggering sowing dates to give at least 10 days difference in flowering between supersweet and normal sweet corn plants.

A partially-filled tip that is at times evident in supersweet corn cobs can be overcome with appropriate spacing and fertiliser treatments. A general broadcast of 400 kg/ha of Nitrophoska 12:10:10 should be applied just before final cultivation. Side dressings of either urea or potassium nitrate may be required.

For export, the crop must be kept insect-free. Advice about sprays should be sought from your agricultural chemical consultant.

## Processing and quality

The crop usually takes 900-1200 Growing Degree Days to mature with a base temperature of 6°C (i.e. the crop does not grow below this temperature).

## Contacts

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## Yields

Time from sowing to harvest ranges from about 85 to 90 days, which is considered early, and 110-120 days is a more suitable range for late maturing cultivars. Sweet corn harvested at early maturity may keep better than when it is harvested later. Field temperatures at harvest will affect storage life.

Most yields range from 16 to 22 t/ha, with an average number of cobs of about 1-1.5 per plant. The potential yield, however, if all plants grow well, could be in excess of 40 t/ha at a density of 53 000 plants/ha.

## Markets

Around 1500 ha of supersweet corn is grown in New Zealand for both fresh and export markets. Opportunities to export supersweet corn is good, either fresh or vacuum-packed, processed or frozen.

## Crop economics

Markets, seasons and cultivars grown affect the economic viability of growing supersweet corn. The following details are estimates only.

Cobs/plant	1.1
Spacing between row	0.75 m
In-row spacing	0.20 m
Minimum temperature	16°C
Base temperature	6°C
kg/plant	0.44
Production costs	\$5212
Expected yield	29.3 t/ha
Income per kilogram	\$0.44
Gross income	\$10 971

## On-going C&FR effort

Scientists are investigating how to improve the storage life of supersweet corn along with packaging methods for fresh export. Spacing and fertiliser research is underway to improve cob quality. Cultivars are being further evaluated for their performance in colder areas as well as their ability to mature earlier. Quality improvements are directed at producing cobs longer than 20 cm and with well-filled tips.