

Celeriac - a celery with a unique flavour



Celeriac offers growers a good crop that is cheap to produce, has a good storage life and has a taste that will appeal to consumers if more promotion is undertaken to raise awareness of its value.

Celeriac is a type of celery, well known in England, Europe, the Orient and India. It has a unique flavour and is very refreshing even when raw. Celeriac is recognised as a good source of vitamins. It has good storage life both in the field and post-harvest and is a good standby vegetable during winter.

In the Netherlands, more than 1500 ha are grown with a value of more than NZ\$10 million. Three quarters of this crop is exported fresh, and the remainder is either processed or sold locally on the fresh market. It is also grown in France, Belgium, Germany, Denmark and Italy and is now exported to Japan from the Netherlands.

The short stem and upper part of the celeriac roots grow into a round structure, about 10-20 cm in diameter, with a gnarled brown unattractive surface. This appearance detracts from the real potential of celeriac. The flesh is creamy white and firm, but is softer in texture than carrots.

Processors require roots with a high dry matter content, a good flavour, a high aromatic content, and freedom from anthocyanin, which causes discolouration.

Uses

Celeriac is often eaten fresh as a salad vegetable but can also be cooked or used in soup or stews. It can be dehydrated, pickled or frozen.

Agronomy

New Zealand seed sources will supply seed but care should be taken to select a cultivar suitable for local conditions and the intended end use. The cultivars listed in this broadsheet are suitable for fresh market production and processing and have been used in Hawke's Bay trials. Celeriac is usually propagated in boxes, and subsequently planted out because the seed is so small (1500-2000 seeds/g). There is a danger of over sowing, making pricking out time consuming and costly. Precision seeding in cell transplants is, therefore, the most economical way to establish the crop. Direct seeding in the field would require thinning and field germination may be slow. Emergence can be slow - three to four weeks from sowing to full emergence.

Planting is ideally from mid to late spring. Plant populations should be around 40 000 plants/ha or at a distance of 50 x 50 cm. A good soil structure is required with good drainage, preferably a sandy or clay loam. Regular and even water applications will ensure that roots are not hollow.

Harvesting can start in early February when roots are small and have most appeal for the fresh market. Frost damage is a problem and mechanical harvesting can be difficult under wet conditions. Hand harvesting is very easy; roots almost sit on top of the ground and rootlets are severed using a long knife using the foliage to lever the root out of the ground.

Little is known at this stage about herbicides required.

Boron deficiency may occur - a sign is small, hollow roots and yellowing of the youngest mature leaves. A preventative base dressing can be applied to soil if soils are prone to boron deficiency.

Yields

Yield depends upon the required maturity, but can vary between 10 and 30 t/ha. Other factors influencing yields are overall crop health, seasonal influence and grower expertise. Individual roots can weigh between 300 and 800 g.

Processing and quality

After the foliage and hair roots have been trimmed the roots can be washed and stored at around 4-5°C. Storage problems include bacterial soft rots and desiccation. These naturally limit the success of storage procedures. Stored roots will not stand much frost. Some damage can occur at around 1°C frost, although it is possible that a 4°C frost will not damage a crop with a dense foliage in the field.

Cultivar	Source	Comments
Ajax	Rijk Zeann	Strong grower, large leaves, dark green foliage, white flesh
Giant Prague	Northrup King (NZ) Ltd	Strong grower, large leaves, dark green foliage
Iram	Northrup King (NZ) Ltd	Weak grower, light green foliage
Monarch	Numhem Zaden	Some tolerance to celery virus, dark green foliage, anthocyanin-free
Roxy	Northrup King (NZ) Ltd	Strong grower, medium-size leaves, dark green colour
Zwindra	Royal Sluis	Dark green foliage, medium to strong grower, good aromatic content, tolerant to hollowness
Ofir	Rijk Zwann	Medium grower, medium-sized leaves

Markets

Local markets include the fresh market in Auckland and the restaurant trade. The size of these markets is unknown but indications are that the vegetable will be popular if promoted properly. Fresh market export could also be a possibility to the US and Australia and processed celeriac could be acceptable in Japan - Tokyo supermarkets already sell imported celeriac. Information is needed about how to export celeriac in a semi-fresh state, e.g. grated in small trays. Preserved celeriac also needs further investigation. Consumer education is needed in the local market if celeriac is to gain acceptance.

Crop economics

Spacing between row	1.00 m
In-row spacing	0.40 m
Minimum temperature	16°C
Base temperature	8°C
kg/plant	0.400
Production costs	\$4887
Expected yield	10.0 t/ha
Income per kilogram	\$2.00
Gross income	\$17 000

On-going C&FR efforts

Researchers continue to evaluate cultivars and assess ways of processing the vegetable using juicing, grating and bottling treatments.

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