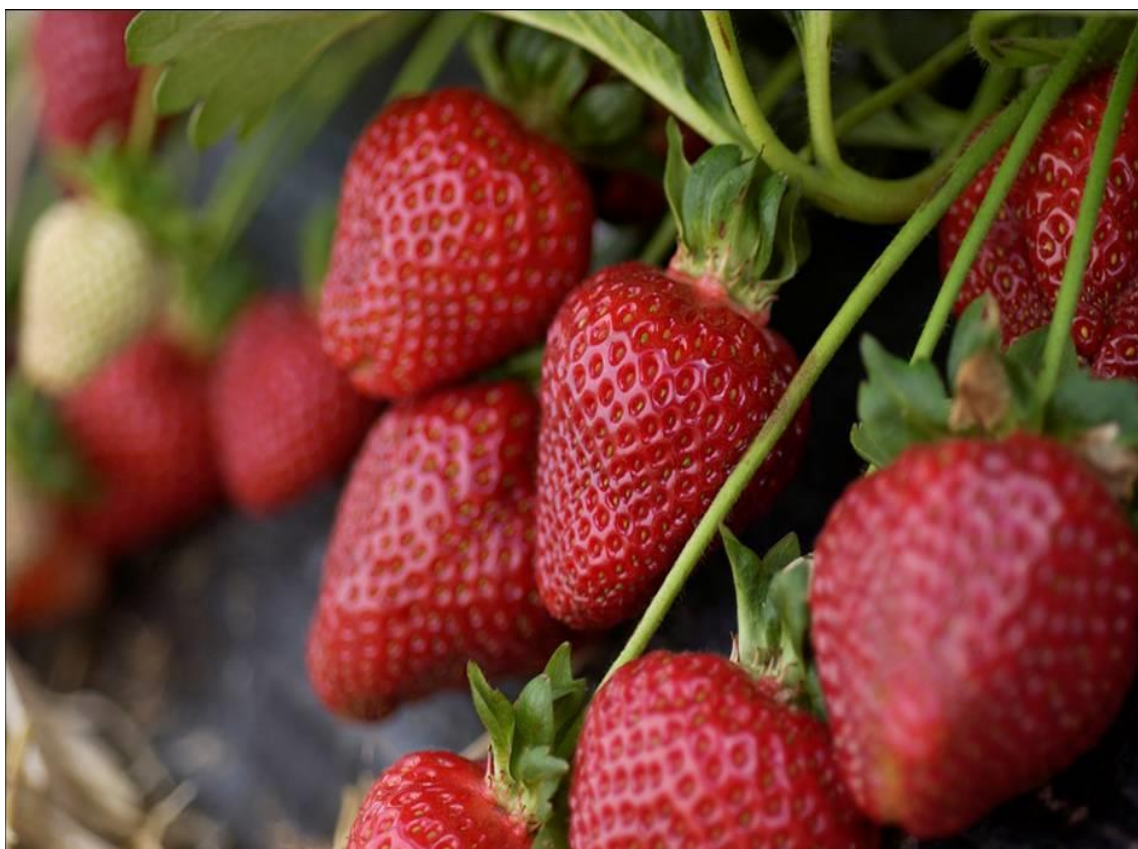


BERRYFRUIT VARIETY DESCRIPTIONS

NEW ZEALAND BERRYFRUIT
PROPAGATORS LTD

Compiled by Geoff Langford



This booklet contains descriptions of all the varieties presently available from New Zealand Berryfruit Propagators Ltd or its licensed nurserymen. It does not include varieties for which the company has no propagation rights.

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STRAWBERRY VARIETY DESCRIPTIONS

The selection of a strawberry variety should start with an understanding of the requirements in the market or markets being aimed at. This should be the main factor in determining variety selection.

The major market segments are:-

Fresh Export

The main export markets historically are Hong Kong, Singapore, Thailand, Taiwan, and Malaysia. In recent years there has been a focus on Asian and Pacific markets but the local NZ market is still the main destination for the majority of the fruit. In general in all markets, the demand is for varieties with bright, medium red skin colour. Flesh colour is relatively unimportant, while size preference is for large fruit which should have a shelf life of at least 7 days after arrival. Firmness is therefore a major consideration, but flavour at the point of consumption is still the most important characteristic in maintaining demand..

Processing Market

There is both export and local demand for processed strawberries used as dairy food flavouring, bakery products and in jams. The requirements vary, in many cases depending on what the particular processor is used to. There is a general swing to fruit with redder flesh but there are no other specific berry requirements, other than for particular end uses.

As processing fruit normally sells for much less than fresh fruit, high yields, easy harvesting and calyx removal are essential to make money from processed strawberries. Most processed fruit used in New Zealand is imported although the surplus fresh market fruit is normally sold to local processors.

Pick-Your-Own, Gate sales, Local market

Pick –Your- Own has declined in recent years as consumers seem less interested in doing the work but the rise in Farmers markets and with gate sales remaining popular, it has meant that these options remain important markets. These sales options are therefore little different than export with large good looking and tasting fruit, being important. The major difference to export requirement is slightly lower shelf life requirement, with riper fruit harvesting possible with local market fruit. While it has taken time to educate the general New Zealand public to varieties that are significantly different from the medium red, mild flavoured fruit which has been produced in recent years, there are strong indications that this has been achieved and the public expectation for particularly good flavoured fruit has increased. Harvesting fully ripe fruit makes a big difference to final flavour with unripe fruit unable to develop the sugar and flavour levels beyond those present at the harvesting date although the colour will change to full red. Fruit, picked before fully red, will have a poorer flavour. Varieties that can continue cropping over extended periods, have an advantage for the local market.

Winter and early spring production

There is a small, relatively high priced local market for fruit produced from May to October. Competition from Queensland and USA, is a constant threat. Placing low polythene cloches over the fruiting beds for early production has lost favour, with the view being that unless high quality fruit can be produced, the damage to the image of strawberries as a market item is greater than the rewards of higher early prices. Strawberries are traditionally associated with warm weather through spring and summer although Central New Zealand and South Island production has traditionally filled the late summer and autumn demand.

The requirement for winter production is for varieties that can produce good yields at low light intensity, pollinate readily and are relatively disease resistant in high humidity situations. Flavour is normally poorer under the low light conditions experienced during winter, which makes competition against overseas outdoor grown, imported fruit more difficult.

Table top production systems

In recent years, there has been a major trend towards table top production systems, both outdoor and under cover. Most of these are grown in coconut coir growing media but hydroponics, where plants are grown in water in channels is also used. Both systems require attention to detail with nutrient solutions as all nutrients required by the plants at different stages need to be added. Some varieties perform better under these conditions than others with Camarosa not performing well but Ventana, Monterey, San Andreas and Albion all becoming popular. Variety performance has not been tested to any extent at this stage but is now a regular part of the NZBP testing process.

Cultural notes

Strawberries have been traditionally grown on raised beds covered with black polythene. Drip type irrigation tubing eg T-Tape, is often laid on top of the mound underneath the polythene. Distances between rows depend on the type of equipment being used as it is important to be able to straddle rows to lay polythene and for spraying. Common distances are 800mm up to 1m. Plant spacing depends on the variety and whether plants are to be kept for several seasons. For one year cropping which is now practised in most northern and central parts of New Zealand, there has been a trend back to a single planted row because of the vigorous nature of popular varieties like Camarosa and Ventana. These varieties are usually planted about 200mm apart. Less vigorous varieties can be planted in a staggered double row 200-300mm apart (10-15cm per plant). For multi-year cropping, plants are usually grown in staggered double rows about 300mm apart.

Wheat or barley straw are commonly used between the rows to keep the fruit free from rain splash and to prevent weed germination. Use rate of straw is commonly around 250-300 bales per hectare.

VARIETY LIST

Varieties are listed as being either Short day, or Day Neutral. While these categories are used, the boundaries between them are not always clear.

Short day varieties are those where flower initiation is triggered by short day lengths, and fruit production is normally limited to the October - December period. However some flowering and fruiting may continue later than this, depending on the variety, climatic and crop loading factors. In climates such as Auckland where the distinction between short and long days is not noticeably marked, it is common for many short day types to continue cropping well into January and beyond. In more southern latitudes like Canterbury, the distinction is quite clear and short day varieties will commonly finish fruiting in early January.

Day neutral varieties are unaffected by day length and will initiate flowers whenever temperatures are high enough to maintain new growth. These types generally have a higher chilling requirement. Historically fruit quality has been poorer and fruit size has been smaller when compared with short day types but this is now changing with the more recently released day neutral varieties.

This list includes only those varieties that are in the NZBP high health scheme as at October 2019. Other varieties exist in New Zealand but are either self-propagated older varieties or those controlled by overseas based corporate entities.

Production and berry size data comes from the trueness to type trials carried out in Auckland for short day types and Canterbury for day neutral types and is the average of the past four years. Data reported is gross production before grading and berry size relates to fruit weights averaged over the season. For short day types production is recorded from the start of the season (normally mid to late September) to the end of December. For day neutral types, the production is from mid to late November to the end of March.

ALBION

| | |
|-----------------------|--|
| Type: | Day neutral |
| General description: | UC variety. Parentage: Diamante x CAL 94.16-1 Consistently large to very large fruit, red colour with red flesh. Outstanding flavour. Firm. Shape mostly conic, can be very long and pointed. Moderate yielding. Strong but squat growing plant. Susceptible to rain damage especially after an extended dry spell. |
| Deficiencies: | Produces numerous runners throughout season |
| Market Suitability: | Export, local, & gate sales |
| District Suitability: | Suited to all of NZ where the day neutral character is desired |
| Plant Availability: | Readily available |
| Cultural notes: | Average annual production in the Canterbury trial plots over the past 9 years has been 448 g/plant with berry size 23.3 g/fruit when planted at 120 mm apart |



AROMAS

Type: Day neutral

General description: UC variety. Parentage: CAL 87 112 6 x CAL 88 270 1
Consistently large to very large fruit, red colour with pale red flesh. Reasonable flavour. Firm. Shape mostly conic to wedge. King fruit on trusses has a tendency to be ridged and have green tips. Heavy yielding. Strong but squat growing plant. Moderately susceptible to rain damage especially after an extended dry spell.

Deficiencies: Moderate flavour.

Market Suitability: Export, local, & gate sales

District Suitability: Suited to all of NZ where the day neutral character is desired

Plant Availability: Readily available

Cultural notes: Average annual production in the Canterbury trial plots over the past 12 years has been 616 g/plant with berry size 18.07 g/fruit when planted at 120 mm apart



CAMAROSA

Type: Short day

General description: UC variety. Parentage: Douglas x advanced selection Cal 85.218-605. Medium – dark red fruit. Flesh medium red. Consistently large to very large fruit size. Firm, shiny and consistently conical fruit. Flavour very good. Good resistance to wet weather. Yield is very good. Plants are vigorous and plant spacing should be wide enough to allow air movement around the plants at least 200mm to 250mm between plants.

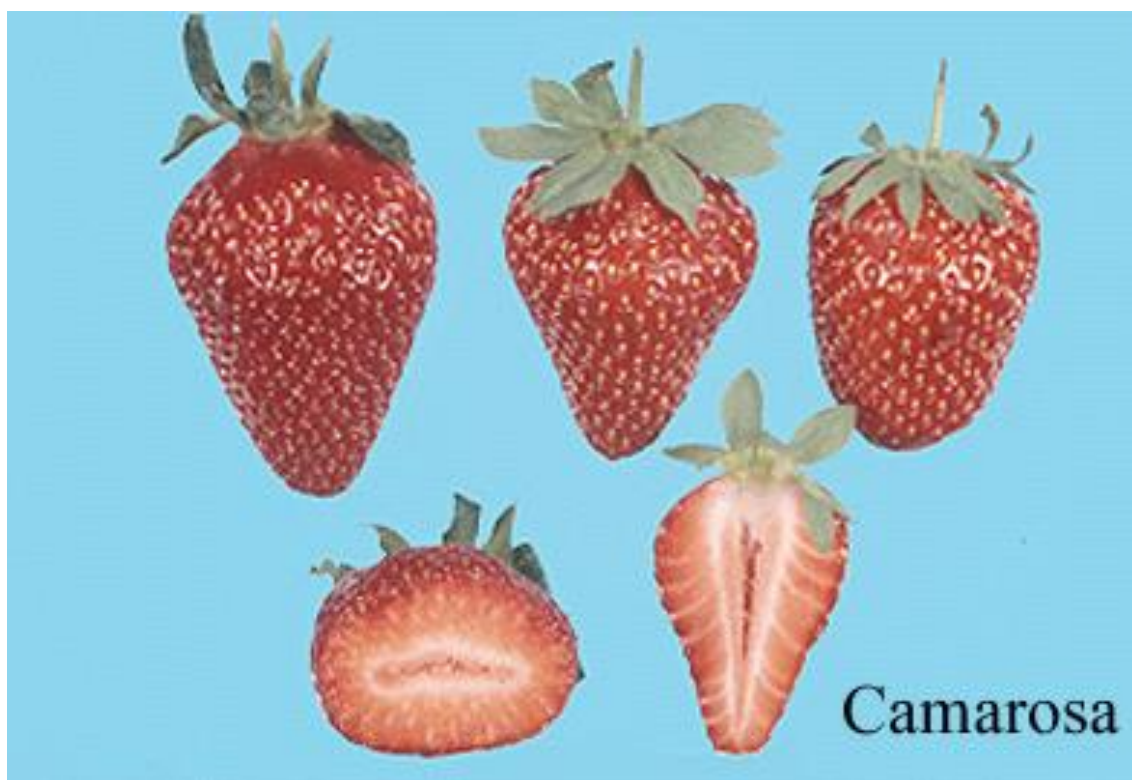
Deficiencies: Flavour can be poor early season and size can drop late season. Subject to post harvest rots especially if grown too close and not clean harvested regularly

Market Suitability: Suitable for fresh export and local, processing and Pick-your-own.

District Suitability: Northern and Central New Zealand. Only suitable in Southern areas where just a spring crop is required

Plant Availability: Readily available

Cultural notes: Average annual production in the trial plots over the past 13 years has been 894 g/plant with berry size 23.8 g/fruit planted at either 200 or 250mm apart.



CAMINO REAL

| | |
|-----------------------|--|
| Type: | Short day |
| General description: | UC variety. Parentage: Cal.89.230-7 x Cal 90.253-3 Medium – dark red fruit. Flesh medium red. Consistently large to very large fruit size. Firm, shiny and consistently conical fruit. Flavour good, but is poorer when small plants are carrying a high fruit load. Very good resistance to wet weather. High level resistance to root rots. Yield is very high. Plants are relatively small and plant spacing should be around 10cm apart. |
| Deficiencies: | Flavour can be poor when heavily cropping and in early season. Production is strong later in the season. |
| Market Suitability: | Suitable for fresh export and local, processing and Pick-your-own. |
| District Suitability: | Northern and Central New Zealand. Only suitable in Southern areas where just a spring crop is required |
| Plant Availability: | Readily available |
| Cultural notes: | Plant spacing should be relatively close for maximum crop loading per hectare. Plant densities of around 100000 plants per hectare are suggested. Average annual production in the trial plots over the past 13 years has been 525g/plant with average berry size of 25.1g/fruit when planted at 100mm apart. |



MONTEREY

Type: Day Neutral

General description: A UC variety. Parentage is Albion x Cal 97.85-6. More productive than Albion, slightly less firm. Medium sized plant. Fruit is, on average, larger than Albion. Medium red skin colour with good appearance. Excellent flavour. Moderately susceptible to root rots including *Phytophthora* and *Verticillium*

Deficiencies: No major deficiencies identified to date.

Market Suitability: Export, local & gates sales

Plant Availability: Readily available.

Cultural notes: Average annual production in the trial plots over the past 6 years has been 515 g/plant with berry size 27.9 g/fruit planted at either 150mm apart in the Auckland trial with data applicable up until late December. In Canterbury average yield has been 637g/plant with average berry size of 22.7g/fruit



SAN ANDREAS

| | |
|----------------------|--|
| Type: | Day Neutral |
| General description: | A UC variety. Parentage is Albion x Cal 97.86-1. More productive than Albion, with slightly firmer fruit. Medium sized plant. Fruit size is similar to Albion. Medium red skin colour with excellent appearance. Good flavour. Performs especially well late in the season. Moderate resistance to <i>Phytophthora</i> and <i>Verticillium</i> |
| Deficiencies: | Only moderate at producing runners which is an issue for propagators. High chill requirement means that Auckland performance is likely to be poor without additional artificial chilling |
| Market Suitability: | Export, local & gates sales |
| Plant Availability: | Limited supplies as demand has not been as great as some of the alternatives. |
| Cultural notes: | Average annual production in the Canterbury trial plots over the past 6 years has been 630 g/plant with berry size 23.8 g/fruit planted at 150mm apart |



VENTANA

Type: Short day

General description: UC variety. Parentage: Cal 93.170-606 x Cal 92.35-601. Medium red fruit. Flesh medium red. Consistently large to very large fruit size. Firm, shiny and consistently conical fruit. Flavour very good. Very good resistance to wet weather. Yield is early and high. Moderately susceptible to root rots. Plants are relatively vigorous and plant spacing of about 20cm between plants is suggested.

Deficiencies: Fruit size and volume declines at the end of the season, more so than for other cultivars. Highly sensitive to *Phytophthora* root rot.

Market Suitability: Suitable for fresh export and local, processing and Pick-your-own.

District Suitability: Northern and Central New Zealand. Only suitable in Southern areas where just a spring crop is required

Plant Availability: Readily available

Cultural notes: Plant spacing should be quite wide. Average annual production in the trial plots over the past 13 years has been 791 g/plant with average berry size of 22.7 g/fruit when planted at 200mm apart



DELETED VARIETIES:

The following varieties have been released and tested in the past 30 years but have been superseded or were not considered commercially viable and are no longer available: Aiko, Anaheim, Aptos, Azena, Benecia, Brighton, Capitola, Carlsbad, Chandler, Cruz, Cuesta, Diamante, Donna, Douglas, Elsanta, Evita, Fern, Gabrielle, Gaviota, Hecker, Irvine, Laguna, Levin, Lincoln, Mojave, Mrak, Muir, Oso Grande, Pacific, Palomar, Pajaro, Parker, Portola, Redgauntlet, Santana, Seascape, Selva, Soquel, Sunset, Tioga, Toro, Tufts, Tustin, Vista, Yolo

Trial Varieties

5 cultivars have recently been released from quarantine in March 2019. Nothing is known as to how they might perform in New Zealand at this stage with first trials being carried out starting in 2019.

Information based on US performance is as follows:

CABRILLO

| | |
|----------------------|--|
| Type: | Day Neutral |
| General description: | A UC variety. More productive than other day neutral varieties. Medium sized plant. Fruit size is similar to Albion. Medium red skin colour with excellent appearance and good firmness. Excellent flavour. Good tolerance to rain and weather damage. Good tolerance to two spotted mites but susceptible to <i>Phytophthora</i> root rot and <i>Verticillium</i> |
| Deficiencies: | Unknown in NZ conditions. |
| Market Suitability: | Expected to be good for export, local & gate sales |
| Plant Availability: | Trial plants available 2020. Moderate availability expected in 2021, full commercial availability expected in 2022. |

FRONTERAS

| | |
|----------------------|--|
| Type: | Short Day type |
| General description: | A UC variety. Very productive with excellent appearance. Large sized plant. Fruit size is very large. Medium red skin colour with excellent appearance and good firmness. Excellent flavour. Good resistance to <i>Phytophthora</i> root rot and <i>Verticillium</i> |
| Deficiencies: | Unknown in NZ conditions. |
| Market Suitability: | Expected to be good for export, local & gate sales |

Plant Availability: This variety is a year behind the others due to the small number of plants released from quarantine. Trial plants expected to be available in 2021. Moderate availability expected in 2022, full commercial availability expected in 2023.

GRENADA

Type: Short Day type

General description: A UC variety. Very productive with excellent appearance. Medium sized plant. Main value is high early production. Fruit size is large. Medium red skin colour with good appearance and firmness. Good flavour. High percentage of first grade fruit. Good resistance to *Phytophthora* root rot and *Verticillium*

Deficiencies: Unknown in NZ conditions.

Market Suitability: Expected to be good for export, local & gate sales

Plant Availability: Trial plants available 2020. Moderate availability expected in 2021, full commercial availability expected in 2022.

MERCED

Type: Short Day type

General description: A UC variety. Productive with excellent appearance. Medium sized plant. Noted for high early production. Fruit size is large. Light red skin colour with good appearance and firmness. Excellent flavour. High percentage of first grade fruit. Main value is high resistance to *Phytophthora* root rot

Deficiencies: Unknown in NZ conditions.

Market Suitability: Expected to be good for export, local & gate sales

Plant Availability: Trial plants available 2020. Moderate availability expected in 2021, full commercial availability expected in 2022.

PETALUMA

Type: Short Day type

General description: A UC variety. Productive with excellent appearance. Medium sized plant. Noted for high early production. Fruit size is large. Medium red skin colour with good appearance and excellent firmness. Excellent flavour. High percentage of first grade fruit. Main value is high resistance to *Phytophthora* root rot and *Verticillium*

Deficiencies: Unknown in NZ conditions.

Market Suitability: Expected to be good for export, local & gate sales

Plant Availability: Trial plants available 2020. Moderate availability expected in 2021, full commercial availability expected in 2022.

In addition application has been made to import into quarantine in 2020 the following varieties:

MOXIE

Day neutral
Similar yields to Royal Royce
Larger average fruit size
Less runners during production season
Excellent post harvest quality

ROYAL ROYCE

Day Neutral variety named after Royce Bringhurst – former UC breeder
Very high yields 20% higher than Cabrillo, 40% higher than Monterey.
Very high marketable fruit %
Larger fruit than Monterey and San Andreas
Better firmness than other DN types

VALIANT

Day neutral variety
Similar yields to Royal Royce
Early season variety
Performs in organic and low input growing systems
Very large fruit (20% larger than Monterey)

VICTOR

Named after Victor Voth – former UC breeder
Short day variety
Better yielding than Fronteras
Compact plant
Good Phytophthora resistance
Firmer fruit than Fronteras

WARRIOR

Short day variety
Mid season
Better yield than Petaluma but not superior to Fronteras
Strong disease resistance – both Phytophthora and Macrophomina