

grower solutions

onion update



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Promising new varieties

by Nick Laminski - Product Development Manager -
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Lefroy Valley last season screened seven semi-commercial new varieties in six locations in two different sowing slots from Mt Gambier to Murray Bridge. The aim was to give growers greater options when selecting which cultivar to grow in the late sowing slot, end August to mid September. This sowing slot is very important for growers, particularly when mid season plantings are delayed by rain, as it allows catchup varieties to be sown.

Trials were sown from 29th August through to the 19th September. Harvest commenced at the end of January and concluded during the third week of February.

All the lines trialed were hybrids and included the proven standards, **Staccato & Ironbark**, which excelled in this late slot, maturing up to 7-10 days earlier than the open pollinated lines used as standards. Both sized up very well, producing a high percentage of uniform bulbs in the large/jumbo class.

A new Staccato type on trial, **Dacapo**, stood out in the late sowing slots of mid September. Dacapo had a very vigorous root system producing large bulbs with a slightly darker skin colour compared to Staccato.

Dacapo is slightly later than Staccato by 4-7 days, but has the potential to produce larger bulbs with up to 5 skins. Dacapo has excellent firmness and very similar storage potential to **Staccato**. Further semi-commercial screening trials will be

carried out over the next season from 1st week in September to the end of September.

The new standout variety in the Creamgold/Patrick Brown slot was ONN 1043. This is a hybrid Creamgold with excellent medium thick dark brown skins. Bulb shape is a uniform round to globe shaped, with thin necks and excellent firmness. ONN 1043 has proven to be a flexible variety, suited to a number of different soil types.

Bulb size was consistently around 65-85 mm, depending on plant density. Bulbs are suited to long storage, and have been successfully stored for over seven months.

ONN 1043 has shown intermediate resistance to downy mildew.

Over the coming season it is highly recommended that growers test ONN 1043 from an early August sowing through to 2nd week September.

The other line which impressed was ONN 8740 similar in type to Ironbark, but with improved firmness, and yield potential. ONN 8740 produced very large uniform bulbs, which were larger than Ironbark. Skin colour was a slightly darker brown with 3-4 skins. Storage potential is medium, but approx. 3 weeks longer than Ironbark.

Lefroy Valley would like to thank all the Southern Australian growers for their collaboration and assistance with the above trials.



ONN1043



ONN 8740



DACAPO



ONN1043

key factors in onion establishment & production

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THE ROUTE TO QUALITY...

Climatic Requirements

Various climatic requirements are necessary to ensure a good onion crop with the main requirements being day length, temperature, rainfall and humidity.

The most important climatic condition is day length - here the choice of variety plays an important role. Short day onions require 11.5 - 12.5 hours day length threshold for bulbing. They are generally sown north of 35 degrees latitude.

Intermediate day length onions require 12.5 - 13.5 hours day length threshold for bulbing and are grown between 32 - 42 degrees latitude.

The second most important factor that influences bulb development is temperature. The minimum and maximum temperatures for germination are 2 and 35°C respectively, with an optimum temperature of 24°C. Growth of onions takes place from 10-27°C with optimum temperatures being 18-26°C. Onions are quite hardy and can tolerate



temperatures as low as -6°C. Bulb formation requires temperatures from 15.5°C with an optimum temperature range of 21-27°C, coupled with the correct day length. Bolting can occur under conditions of low temperature during bulbing, e.g. temperatures between 10-15°C.

Rain and humidity are important factors during the seedling stage, bulbing and harvesting. Cool wet conditions at the seedling stage results in more diseases, while cloudy conditions at bulbing increases the risk of bolting. Dry hot weather is beneficial for drying of bulbs at the harvest stage.

Soil requirements

Onions require deep soils, at least 650mm deep that are well drained, shallow soil may be utilized, but with adaptations in management practices. Onions do well in a pH range of 6.0 - 6.8, lower pH levels can result in micronutrient uptake problems. Onions can be produced on a wide range of soil types, although heavy soils may lead to problems such as bad aeration, crusting and a blemished product of lower quality.

Fertilization

Most onion roots are in a 15cm radius from the stem and therefore are shallow feeders. Fertilization applications should be determined from a soil analysis test. If the soils pH is less than 6 or the available calcium is less than 2300kg per hectare, apply and incorporate agricultural lime at the rate of 2500kg per hectare about 8-12 weeks prior to planting. Lime requires time to react with acid soils to raise the pH.

Nitrogen applications are critical in terms of quantity and time of application. The quantity of nitrogen supplied depends on the soil analysis, poor soils could require up to 180kg/hectare for direct sown crops. Average soils would need lower levels 120-140kg/hectare.

Nitrogen applications should be split into three applications. Initially 1/3 of nitrogen (40-60kg/ha) should be broadcast and incorporated into the soil prior to sowing. The subsequent 1/3 of nitrogen should be applied at the three leaf stage, when plants are approximately 10cm tall (plants base diameter of 6.5mm) and a further application four weeks after three leaf stage.

Onions tend to remove less P and K from the soil than other vegetable crops. They do however have shallow roots with low root densities and few root hairs. Consequently there is a need for a higher concentration of P and K in the soil and this drives soil diffusion towards the roots carrying with it the nutrients that onions require.

Nutrient deficiency symptoms of onions

Nitrogen (N) - Leaves are a light green, older leaves die, showing a bleached yellow colour. Leaves are short and small in diameter. Growth is stiff and upright.

Phosphorus (P) - Older leaves wilt, tips die back and green areas are mottled. Dead leaves turn black.

Potassium (K) - Older leaves first show slight yellowing. Leaves than wilt and die; appear like crepe paper, dying and drying begins at tips of older leaves. Bulb formation is poor.

Calcium (Ca) - Tips of younger leaves die back and appear limp. Bulbs may show signs of dry or brown tissue. Poor root formation may also occur.

Magnesium (Mg) - Leaves die back from the tips. Foliage dies prematurely. Growth is slow.

Copper (Cu) - Leaves are chlorotic. Bulbs lack solidity and scales are thin and pale.

Manganese (Mn) - Growth is stunted and production is poor.

Boron (Br) - Leaves are deep blue green, youngest leaves become mottled, yellow and green with distorted shrunken areas. Ladderlike cracks appear on the upper side of the basal leaves, which become very stiff and brittle.



Direct Seeding

Soil preparation is aimed at creating a fine, even, flat and firm seedbed. The seed should not be sown deeper than 1-1.5cm. Avoid high plant population. Densities, greater than 950,000 plants per hectare, will result in torpedo shaped onions that are not marketable. Low population densities, less than 450,000 plants per hectare, result in a high percentage of large onions and an increased amount of splits. In order to achieve the correct population, the germination percentage and seed count of a particular lot number must be known. All Lefroy Valley varieties are supplied with germination percentages and seed counts or sold by seed count.

The final plant population of an onion crop has a major influence on bulb quality and days to maturity. Onions planted at high population densities take longer to mature than onions planted at lower densities. But the manipulation of plant density alone will not achieve the required size grade. Factors such as soil fertility and irrigation play important roles in gaining satisfactory size and quality. Experimental onion yields of 100 t/ha-1 can be achieved, good yields are about half this figure and the average is about 30 t/ha-1. Normally growers aim for a relationship of inter - row distance to within row distance of 8 to 1, i.e. the distance between rows is 8 times that of the distance between plants within the row for main crop onions. Using bed systems allows growers to use closer plant spacing thereby restricting ultimate bulb size at harvest and enabling sales to be made into higher quality markets. Achieving high quality bulbs at the greatest density requires growers to experiment on their own land. Productivity is related to fertility and this varies not only between different farms but also between fields within a holding.

The following formula can be used to determine quantity of seed in kilograms required to achieve a particular final population:

$$\text{Kg seed/Ha} = \frac{\text{population/ha}}{\text{Seeds/gram} \times \text{Germination \%}} \times 1000$$

Example:

Population required	650 000/ha
Seed count	229 seeds/gram
Germination percentage	90%
Field mortality	20%

$$\frac{650\,000}{229} \times \frac{100}{90} + 20\% \div 1000 = 3.78\text{kg/ha}$$

Note: Field mortality should be based on historical data for a particular sowing slot and land.

Where possible seed should be sown with a precision planter.

Drip irrigation for mild onions in NSW

Thank you to Mark Hickey, NSW DPI

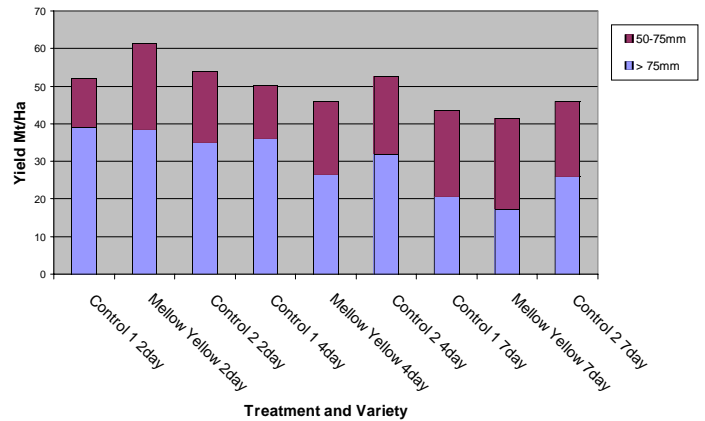
Mellow Yellow was one of the three onion varieties used in the irrigation trial. Three different watering frequencies were looked at: two, four and seven day watering intervals from the five leaf stage.

Yields are shown in the graph below. Note that the two day watering interval showed the highest yield for all the tested

varieties. Mellow Yellow showing the highest at 61.6 tonnes/ha. Larger bulbs were also found at this watering interval in all tested varieties, with an average of 60% of the bulbs being larger than 75mm in diameter.

Pyruvic acid levels were consistently low across all the treatments, with the seven day treatment averaging the lowest at 3.63µmols/g compared to the two day average at

Yield data for different irrigation frequencies



3.84µmols/g. While all the varieties and treatment combinations were below 4µmols/g they were within the acceptable range for mild onions. Storage assessments on each of the treatments were conducted at Gosford. Bulb firmness, external quality and storage rot presence were assessed at monthly intervals. After three months storage Mellow Yellow showed the best bulb firmness.

For more information, contact Mark Hickey, NSW Department of Primary Industries, Yanco Agricultural Institute (02) 6951 2523.

Have the short day markets taken notice?

Queensland short day onion market has shown new market standards for the early season plantings. Early Red has proven itself as being the standard early season red onion variety for short day and in Queensland it has dominated this slot for a

number of years now, with most growers being rewarded with its early season harvest.

Mellow Yellow is renowned throughout the world, it dominates the African market with latitudes similar to the Queensland market in Australia.

It is a relatively new variety in our range and in Queensland should be sown in April. Mellow Yellow is a brown skin onion

with a mild pungency; it is a variety that must be grown or a least trialed.

For mid season onion production we have a new introduction into our range called Orlando. Orlando is an early intermediate day length variety with excellent skins and dark bronze brown colour. To obtain seed or information on these varieties please contact Warren Ford 0407 733 663 or Damon Atkinson on 0409 722 172.



Mellow Yellow



Early Red

onion update from the West

by Allan MacKinley - Technical Sales
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Staccato F1 hybrid onion proved to be the best storing onion variety for Peter Ivankovich from his 2003/04 crop.

The second best variety was Lefroy Valleys' Early Cream Gold. The third best was an opposition Brown type onion. This is a good result with Lefroy Valley onions.

Staccato's bulb quality and storage life were not the only factors that put it ahead of the other varieties grown. Staccato has an excellent root system, which assists the variety through adverse growing conditions. By late October 2004 there was no sprouting or greening, the Staccato bulbs were hard and of good quality, from the crop seeded in October 2003 and harvested in late March/April

2004. Fifty percent of the bulbs were 70-80mm, 30% were 50-70mm and 20% were 70-80mm in diameter, which is an excellent size distribution for the market. The bulbs were stored in a cold store.

Staccato needs to be seeded in late September/early October to reduce the risk of bolting.

Generally the onion industry in WA has had a difficult season, with over supply and reduced demand resulting in low prices. At this stage it appears that there will be a sharp decline in plantings for the 2005/06 season, with some growers vowing not to plant and others cutting back.

The 2004/05 season resulted in many growers producing smaller bulbs as a result of the weather. WA had a very mild Spring and Summer with the only serious hot spell coming in March 2005.

Despite this there were some growers that were happy with their bulb size, so perhaps it is possible to get good size despite the weather. Pink Root certainly



Peter Ivankovich standing in his crop of Staccato

was an issue with some growers this season.

One way of lessening the effect of Pink Root is to use early varieties such as Export Gold and Lefroy Valley Early Cream Gold in their correct time slots. Export Gold should be seeded between mid June and late July.

LV Early Cream Gold should be seeded between mid July and mid September. The Pink Root is not active in the cooler part of the season and allows these varieties to get a good start, before the weather warms up and the Pink Root fungus gets active.

Optimal irrigation and fertiliser regimes also help to keep growth constant and allow for the regeneration of roots as the Pink Root takes hold.



Disclaimer: Lefroy Valley carries out stringent trialing throughout Australia/New Zealand prior to releasing varieties into the market place. We strongly recommend that all varieties be trialed under your growing conditions prior to commercial sowings taking place. For details of up to date trial results in your area please contact Lefroy Valley. Above information is valid 12 months from publication date. All cultural and descriptive information is supplied in good faith, as a guide only. Varietal performance is influenced by many variables, namely climatic, soil conditions, cultural and management practices. No liability will be accepted by Lefroy Valley or its representatives as to final performance based on this information.



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