

Water for Profit

BENCHMARK – IRRIGATING STRAWBERRIES



Benchmarking can be an effective way to identify opportunities for improved management. While benchmarking can be conducted on any area of your farming operations, this sheet provides a basis for your irrigation performance.

Crop specifics

Strawberry crops in south east Queensland are typically planted in late March / early April and are multi-harvested from May to October. Overhead and trickle irrigation systems are used in combination or as stand-alone methods. Strawberry plants are susceptible to poor quality water, more so with over-head systems due to direct contact with leaf and fruit. To minimise potential production losses the electrical conductivity of the irrigation water should be less than 0.6 dS/m.

Strawberry plants should be watered via combined systems of over-head and trickle irrigation in conjunction with mulch to reduce evaporative losses. This combined system has the benefits of using less water, avoids chemical wash-off, reduces leaf and fruit diseases, reduces fruit impact damage and allows for effective fertigation.

Over-head irrigation is used as establishment watering after planting for temperature control (5 - 12 days) as well as at times of frost. This also provides a good environment for establishment of predatory mites.

Trickle irrigation is used under mulch for supplying the bulk of the plant water requirements through out the remainder of season as well as nutrients through fertigation.

Strawberry plants have a relatively shallow and fibrous root system with the majority of roots in the top 30 cm.

Moisture stress can seriously impact on strawberry plants in the form of reduced yields, small fruit size and poor quality.

Conversely over-watering can impact on yield through reduced soil aeration, increase in root diseases and reduce fruit quality. Over watering also leaches nutrients out of the root zone, which can impact on plant health and increase fertiliser costs.

It is important to keep soil moisture at optimum condition, especially when the plant is flowering and developing fruit. Adequate water available to the plant during fruit sizing will aid in producing good fruit size and quality.

Crop benchmarks

The total crop water requirement for strawberries is 4.5 - 7 ML/ha depending on the irrigation system used. This total water requirement consists of 3.5 - 4.5 ML/ha for seasonal crop usage and 1 - 2.5 ML/ha for establishment watering.

Seasonal rainfall can vary significantly and often occurs in intense events with plastic mulch also acting as a barrier to rainfall infiltration. Average effective rainfall is often 1.5 - 2.5 ML/ha. Hence the typical irrigation requirement is approximately 3 - 4.5 ML/ha, allowing for inefficiencies and drainage losses. Higher or lower irrigation usage may be necessary depending on seasonal rainfall. Best practice yields are in excess of 40 t/ha.

The numbers below are total water usage (i.e. irrigation plus effective rainfall) for plantings under various climates, rainfall, planting densities, irrigation systems and soil types.

A rule of thumb is that each plant will require 100 - 150 L for the season, depending on irrigation system used.

Best practice guidelines

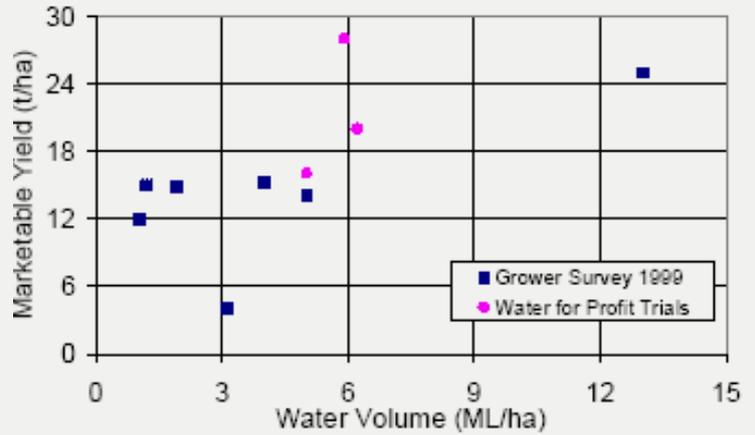
Practices which have been shown to improve irrigation performance growing strawberries are listed below.

- Ensure the irrigation system has the capacity to meet the seasonal and peak water requirements. Regular maintenance and performance evaluations should be conducted.
- Uniformity of application systems is critical, especially if fertigation is used.
- During establishment watering use on-off irrigation cycle (e.g. 10 minutes on, 10 minutes off).
- Low output micro-sprinklers can be used for establishment watering with up to 60 per cent less water used than impact sprinklers.
- Plant into moist soil and maintain moisture via trickle. Substantial water is required to re-wet a dry soil once plastic mulch has been installed.



- Adequate soil moisture should be maintained during plant establishment to ensure a uniform plant stand.
- A monitoring program should be used to schedule both the timing of irrigations and the volume of water to be applied.
- Tensiometers are one option for scheduling. Experience suggests that a 15 cm and 30 cm should be used together.
- Commence irrigation when the 15 cm tensiometer reaches ~15 kPa for light soils and ~18 kPa for heavy soils. Irrigation should cease when the 30 cm tensiometer responds.
- The movement of irrigation water in the soil profile should be monitored to ensure deep drainage is minimised.
- Efficient crop water use and high yield potential can only be achieved if other agronomic factors such as nutrition, disease and pest management are also optimised.

Yields of strawberries compared to total water applied



Crop physiology information in this sheet has been obtained from the QDPI Agrilink series and is gratefully acknowledged

For more details contact the Growcom members access line on 07 3620 3844.

Disclaimer: This information is provided as a reference tool only. Seek professional advice for irrigation specifics.

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