

Riverland Early Season Apple Project

Situated in the central east of South Australia, the Riverland district is known for its warmer climate that enables apples to be produced earlier than other growing regions. This boutique apple orchard uses liquid sun barriers to significantly reduce the risk of fruit sunburn. In 2008, two Nelson R10 Turbo Evaporative Cooling Systems were installed by Loxton Irrigation Centre. Site One (40 hectares) uses the R10T sprinkler mounted at the top of the trellis posts using the Nelson FT4 adaptor assembly (as pictured below).



Spacing is 13.5 metres between rows by 12 metres down the row. Using the Blue 2TN nozzle operating at 270kPa this gives an application rate of 1.1mm per hour.

Many cooling systems use higher application rates of 2.5mm per hour up to 3.3mm per hour, which can double as a frost control system.

Rather than pulsing, the RIVAPP system is run continuously during the hottest part of the day. This low application rate design enabled the use of the drip irrigation pump and mainlines (i.e. the flow rate is matched), to greatly lower the capital costs. Furthermore, it makes the addition of an evaporative cooling system to an existing drip system, a simple low cost procedure.

According to the designer Richard James C.I.D., they are achieving up to an 8 degree drop in canopy temperature on days over 36 degrees.

This consequently results in a marked improvement in fruit development, as the tree is still transpiring to maintain its own health and vigour. All this leads to earlier seasonal fruit development and ripening with the added advantage of improvements in colour, quality and storage life.

References:

[Evaporative Cooling of Apples by Overtree Sprinkling](#)
Published by the American Society of Agricultural and Biological Engineers, St. Joseph, Michigan Applied Engineering in Agriculture. 11(1): 93-99. @1995 R.G.Evans, M. W. Kroeger, M. O. Mahan

The evaporative cooling effects of overtree microsprinkler irrigation on 'Mondial Gala' apples
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