Western Colorado Orchards

Orchards first arrived with irrigation in the Grand Valley in the 1880s. Initially fruit production boomed throughout the area, mostly in apples. As disease and pest problems took over, the industry collapsed in the 1900s.

The development of affordable and safe treatments for diseases and pests after world war two led to a gradual revival of orchards in the Palisade area. During this period of replanting, orchardists have preferred peaches, due to climate, soil suitability, and marketability. Orchard Mesa is one of the few irrigation Districts in the Lower Colorado / Gunnison basins where users deal with the threat of water scarcity. As a result local orchardists have been early adopters of micro-irrigation technology.

History of Regulated Deficit Irrigation (RDI)

RDI was developed at the Tatura Research Center in Victoria, Australia under the leadership of David Chalmers, PhD. It has been adopted widely throughout the fruit growing world when fruit varieties allow and irrigation water scarcity or water quality issues dictate. The driving principle is that certain fruit varieties require far less water during certain fruit growth phases.

In peaches, this is with late maturing peaches such as Cresthavens and O'Henrys. In these varieties fruit and trees respond well to withholding irrigations during the middle phase of growth (pit hardening). This period also has the advantage of typically providing the warmest weather, when other crops are at their thirstiest.
Methodology

Plots

One irrigation zone was used from the Talbott Orchards of Palisade in both 2009 and 2010. Each row’s irrigation line was fitted with an isolation valve so half the zone could be withheld from irrigations during the critical Phase II (pit hardening), while the other half received the full irrigation apportionment. Other orchards in the area have also been testing variations on deficit irrigation e.g. 12 hour versus 24 hour sets.

RDI

Phase I ends and Phase II begins when peach pits or stones begin to harden. This is checked by opening a small random sample of fruit in each orchard to examine pit hardness. Once Phase II begins irrigation is then withheld from the RDI plot trees. Irrigation water is only applied when soil moisture stress at a depth of ~2 feet approaches 200 cbar of soil tension. Peach fruit diameters will begin to increase as the tree enters Phase III at which point full irrigation is applied to all trees to promote full fruit maturation.

Results

For more information or to trial RDI in your orchard call: Denis Reich of CSU, 201-8467 –OR– Wayne Guccini of Mesa CD, 216-5379

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