



IRRIGATION RESEARCH & EXTENSION COMMITTEE

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FOR IRRIGATION CROPPERS

Irrigation management of perennial crops with limited water

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As the current drought continues into uncharted territory, with storages breaking all records with low inflows, farmers are facing the possibility of previously unimaginable situations with regards to their water allocations.

For MIA farmers growing perennial crops, the situation is not completely bleak with at least survival water available for the coming irrigation season. Even with reduced allocations, irrigators with both surface and pressurised systems may be able produce limited crops through enhanced irrigation management and following some simple strategies.

These strategies include:

- Convert from broad based flood or wide furrow to Riverina Twin Furrow (RTF) and irrigating alternate rows
- Ensuring pumps and irrigation systems are running at full efficiency
- Fixing any leaks
- Alternate row irrigation and PRD (Partial Root-zone Drying)
- Soil moisture monitoring/weather scheduling
- Recycle drainage water
- Switch tile pump off while irrigating
- Minimise vegetative growth
- Controlling weeds

A few of these strategies will be discussed in more detail.

Riverina Twin Furrow

With Riverina Twin Furrow (RTF), a narrow furrow is formed close to the vine-line so that a much smaller area is wetted. RTF relies upon quick irrigations, which equates to a short infiltration time (irrigating only to bottom of root-zone), and can achieve up to 35% water savings.

In a NSW Ag/CSIRO Trial at Riverina Wines in the early 90s, Merlot grapes grown on clay soils with a row length of 400 m had a maximum irrigation application depth of 130 mm (1.3 ML/ha), whilst the minimum application depth was 40 mm (0.4 ML/ha). Total water use for the season was 7 ML/ha (4 ML irrigation + 3 ML rain), with a yield of 34 t/ha (14 Baume).

For RTF to be successful you MUST match flow rate to furrow size and length (need enough head to push water down row). Supply flow rate must deliver more than 1.5 l/sec/furrow (0.1296 ML/day/furrow). In order to maximise efficiency you must also keep supply channels and furrows free from weeds and debris.

RTF Case study:

05/06 Season- wide furrows	06/07 Season - RTF
15 ML per irrigation	10 ML then 8.5 ML per irrigation
36 hours to irrigate	Less than 24 hours to irrigate
Total of 278 ML	Total of 219 ML (20% less water in a drier year!)

Switching Tile Drain Off

A 1998 project run by CSIRO and NSW Agriculture, obtained water savings of 33% on a Yenda property by simply switching the tile drain pump off whilst irrigating. The float switch on the pump was also adjusted, with the pump stopping when water in the sump was below 1.2m. Carrying out these two simple steps increased irrigation interval from 11 to 17 days, saving not only water but also labour.

Reusing Drainage Water

Reusing drainage water may not always be possible, but savings of up to 30% have been made for those able to catch and reuse surface runoff/drainage. Re-using sub-surface drainage water is also a possibility but care must be taken to monitor its quality as mixing with fresh water may be needed.

As with many things, management is the key. A good car doesn't make you a good driver. The same goes for your irrigation system.

There are a number of options and actions you can take. With good early planning you can be prepared for whatever the season throws at us.