

## Irrigating horticulture crops with reduced water supplies

### Basic Strategies to Implement

A major concern for all irrigators are water restrictions this summer. As a result irrigators should **at least** consider the following basic strategies to implement in times of water shortage:

#### ▪ Full cover weed control

including cover crops, both permanent and annual. This aims to direct as much water as possible towards the permanent plantings. Apply herbicide to kill this ground cover as this will then act as a mulch, rather than cultivate.

▪ **Mulch the wetted strip** with any kind of dead organic matter available. This is especially the case for young plantings where surface evaporation makes the most significant contribution to water use. If drip irrigation exists apply the mulch over the dripline.



▪ **Irrigate a wetted strip only.** This is most applicable for citrus irrigators with low level sprinklers and can be accomplished by changing to a sprinkler model which only throws water along the tree line. If trees are young, sprinkler types are available which distribute water in a very small area around the tree only. In this situation one sprinkler per tree is needed. Major water savings are possible with young trees, particularly if soil moisture monitoring is also adopted. Recent observations have found that well monitored young trees require only 20-30% as much water as mature trees.

▪ **Stop cultivation** in order to increase the rootzone available to the trees and vines. Roots closer to the soil surface will make more use of light rainfall, as well as occupy a greater soil volume, allowing more water to be accessed. Carefully consider the use of soil ripping, as root pruning this season is not desirable if water restrictions become severe.

▪ **Irrigate at night.** This will again ensure that as much water as possible is directed towards the permanent plantings. If possible finish irrigating at night, as significant evaporation losses have been measured in daylight hours immediately following an irrigation.

▪ **Use the appropriate irrigation system.** If water restrictions become extremely severe then the most appropriate irrigation system is a partial cover system, followed by low level sprinkler, with overhead sprinklers the least appropriate. Annual water requirements for unrestricted growth can be reduced by a partial cover compared to full cover system, depending on previous water use and management.

The decision to change irrigation systems cannot be taken lightly. A new system requires substantial investment. You may be tempted to move quickly in adopting this conversion, however, efforts should be made to have a thorough design prepared to ensure the system is viable in the long term. The use of a Certified Irrigation Designer (CID) is recommended.

- **Stop irrigating** windbreaks, headlands and un-viable patches, particularly those that have been earmarked for re-development in the next few years. You may choose to bring forward your plans for re-development rather than irrigate patches which are possibly un-viable and have been earmarked for removal. Take steps to stop windbreaks and surrounding vegetation from robbing moisture from the orchard or vineyard. Roots from nearby native trees have been found growing over 50m into irrigated areas.
- **Manage and maintain the irrigation system.** Now is the time to correct any leaks. Install guards on boundary sprinklers to deflect all water onto the planted area. Full system checks are strongly encouraged.
- **Adopt effective irrigation scheduling** (most important). Any form of scheduling is better than none, however, the more sophisticated (and expensive) scheduling tools will allow you to be far more accurate in your irrigation applications. This allows you to observe more confidently just how stressed the crop has become and helps make an informed decision on when next to irrigate. **Many** irrigations can be saved in the spring period with these monitoring tools. The effectiveness of rainfall events as well as leaching losses past the rootzone can be more accurately gauged with scheduling tools. Leaching losses can be minimised while still ensuring that irrigations are fully effective and wetting a substantial portion of the rootzone. If canopy management practices are implemented or irrigation systems altered/upgraded then these tools are the best method to accurately assess the reduction in crop water demand.
- **Water budgeting.** Depending on the level of restrictions some planning may be needed to go towards water budgeting and even prioritising water towards your most valuable crops. Using average water use figures, or your own irrigation history, you can undertake planning towards determining monthly water requirements throughout the season. Appropriate water budget tools are available (see Further Reading section at the end of this Fact Sheet for the Annual Water Budgeting Tool, which is available from the PIRSA Website).

## Other Strategies

Some irrigators will find it more difficult to cope with the restrictions than others. Irrigators with poorly designed, maintained or unsuitable irrigation systems will have most problems. Irrigators who have not adopted effective irrigation scheduling will also come into difficulty.

Crops that have been developed under good irrigation management and thus have encouraged deep, healthy rootzones, will suffer less stress. Plantings with appropriate soil amelioration and ripping prior to establishment will be better able to adjust to reduced water availability.

If restrictions remain severe then more drastic measures may be needed such as tree pruning and decision making regarding un-viable patches.

## Acknowledgments

Adapted from: *Water restrictions in Sunraysia 2003-2004*, Jeremy Giddings, NSW Agriculture.

## Further Reading

Water Budgeting Guidelines (PIRSA Fact Sheets for various horticulture crops)

Seasonal & Weekly Water Budgeting Tools (PIRSA Spreadsheets)

Water Trade Decision Tool (PIRSA Spreadsheet)

[http://www.pir.sa.gov.au/pirsa/drought/irrigation\\_\\_and\\_\\_water\\_management/water\\_budgeting\\_and\\_water\\_trade\\_decision\\_tools](http://www.pir.sa.gov.au/pirsa/drought/irrigation__and__water_management/water_budgeting_and_water_trade_decision_tools)

Monitoring Soil Salinity for Irrigated Horticulture (PIRSA Fact Sheet 31/02/06)

Managing Salinity with Restricted Allocations in the South Australian Riverland (PIRSA Fact Sheet 04/07)

Salinity Impacts of Low Murray River Flows in the South Australian Riverland (PIRSA Fact Sheet 05/07)

[http://www.pir.sa.gov.au/pirsa/drought/irrigation\\_\\_and\\_\\_water\\_management/salinity\\_management](http://www.pir.sa.gov.au/pirsa/drought/irrigation__and__water_management/salinity_management)

Drought Strategy Checklist (PIRSA Fact Sheet 19/06)

[http://www.pir.sa.gov.au/pirsa/drought/irrigation\\_\\_and\\_\\_water\\_management/irrigated\\_crop\\_information](http://www.pir.sa.gov.au/pirsa/drought/irrigation__and__water_management/irrigated_crop_information)

Business Decision Making Tool (PIRSA Spreadsheet)

[http://www.pir.sa.gov.au/pirsa/drought/irrigation\\_\\_and\\_\\_water\\_management/business\\_decision\\_making\\_tool](http://www.pir.sa.gov.au/pirsa/drought/irrigation__and__water_management/business_decision_making_tool)

Irrigators Toolkit, Latest River Murray Information, Government Assistance and Support

[http://www.pir.sa.gov.au/pirsa/drought/irrigation\\_\\_and\\_\\_water\\_management](http://www.pir.sa.gov.au/pirsa/drought/irrigation__and__water_management)



South Australian Government Drought Response Initiative

**Drought Link website: [www.service.sa.gov.au/drought.asp](http://www.service.sa.gov.au/drought.asp)**

**Drought Hotline 180 2020 FREECALL\***

*(\*Mobile charges may apply. Call back available)*

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