RIVERLINK
Linking Horticultural Centres in Sunraysia - Riverland

REDUCED WATER ALLOCATIONS THIS SUMMER 2006

Jeremy Giddings
NSW Department of Primary Industries

A major concern for all irrigators at the moment is the introduction of water restrictions this summer. At the time of writing (late 2006), NSW high security irrigators in the lower Murray Darling have an allocation of 40-50% depending on prior usage, and South Australia 60%. As a result many irrigators will need to consider drastic measures to save water, however, all irrigators must be considering the following basic strategies to implement at this time;

- **Full cover weed control** including weeds and cover crops, both permanent and annual. This aims to direct as much water as possible towards the permanent plantings. Control should now occur as soon as possible to make the most of any rainfall that occurs. Apply herbicide to kill this ground cover as this will then act as a mulch, rather than cultivate, which will increase the surface area of the soil and increase soil evaporation.

- **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'.

- **Irrigate a wetted strip only.** This is most applicable for citrus irrigators with low level sprinklers by changing to a sprinkler model which only throws water along the tree line. If young trees exist 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 50-60 % water compared to 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.

- **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 irrigation.

- **Use the appropriate irrigation system**. Although it is getting well into the season, many irrigators are still seriously considering converting to drip irrigation mid summer. The level of restrictions have necessitated this more significant action, even in the knowledge that crop health problems can occur, particularly if a large gap in water availability occurs between the disconnection of the existing system and re-connection of the new system. If this can be avoided, with careful management and existing crops are strong and healthy, success is reasonably likely.

Annual water requirements for unrestricted growth are approximately halved for citrus but generally reduced by only 10-20% for vines under drip irrigation compared to full cover systems, depending on previous water use and management. The decision to change irrigation systems cannot be taken lightly. A new drip system requires substantial investment, particularly if a permanent system is installed. You may be tempted to move quickly in adopting this conversion, however, efforts should be made to have a thorough design conducted to ensure this system is viable in the long term. Certified Irrigation Designers preferred. Single season drip systems will need less planning and design.

- **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 to be removed. You must make this decision now rather than continuing to irrigate a patch and later decide to abandon it prior to harvest. This is a waste of allocation. 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 50 metres 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 systems checks are strongly encouraged.

- **Adopt effective irrigation scheduling** is the most important strategy. 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. 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 methods 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 prioritising water towards your most valuable crops. Using average water use figures such as that attached, or your own irrigation history, you can make some planning towards determining monthly water requirements throughout the season.

Average water requirement for mature sultana, moderate vigor vines in Sunraysia region

MONTH	EVAPOTRANSPIRATION PER DAY (mm)	CROP COEFFICIENT FOR FULL PRODUCTION	MONTHLY WATER REQUIREMENT (ML/Ha)
July	1.5		
August	2.4		
September	3.6	0.18	0.20
October	5.8	0.25	0.45
November	7.4	0.45	1.03
December	8.6	0.5	1.33
January	8.8	0.5	1.36
February	8.3	0.5	1.29
March	5.8	0.45	0.81
April	3.5	0.35	0.38
May	2		
June	1.4		

TOTAL CROP WATER USE: 6.9 ML/Ha

Note: Evapotranspiration figures are based on 15 years of data taken from NSW DPI, Dareton. These figures do not include a leaching component, which is usually an additional 10-15%. Assumes full cover irrigation system. Crop water use does not include rainfall.

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.