8 Don't overpump your aquifer

Continually running your pump at rates above it's potential to recharge will increase the risk of drawing in more groundwater from adjacent aquifers which could be of higher salinity. Permanent degradation in aquifer salinity could result.

9 Develop a water budget but don't rely on getting an average yield out of your groundwater pump.

Groundwater volumes and quality will vary, especially if the winter and spring rains haven't been sufficient to replenish the aquifer. Extra pumping activity during a dry season could also mean that the volume you pumped last year may not be available this summer. So have a contingency pasture management plan to allow for reduced aquifer yields.

10 Have your soil tested regularly

It is the salinity of the soil which affects how plants grow. The salinity of the irrigation water affects the salinity of the soil, but they don't relate directly. Soil salinity depends on a whole range of factors such as soil chemistry and leaching ability (downward drainage). Some of your paddocks may be able to handle more saline water than you thought and vice versa.

For further information contact:

Department of Primary Industries, TATURA (03) 5833 5222

Groundwater Extension Officers can provide advice on locating groundwater through the Farm Exploratory Drilling Scheme (FEDS), the management of groundwater and its use for irrigated agriculture, domestic and stock drinking water (eg. Groundwater quality impacts on productivity and stock health).

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Ed works as a Grant Officer assisting with capital grants and upgrades of shallow spear-point systems in the Shepparton Irrigation Region. He also provides advice on the Farm Exploratory Drilling Scheme (FEDS) and the level of financial support available to assist in pump and system upgrades.

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For more information please visit the DPI website at www.dpi.vic.gov.au or the DSE website at www.dse.vic.gov.au or call the Customer Service Centre on 136 186.

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

GOULBURN-MURRAY WATER

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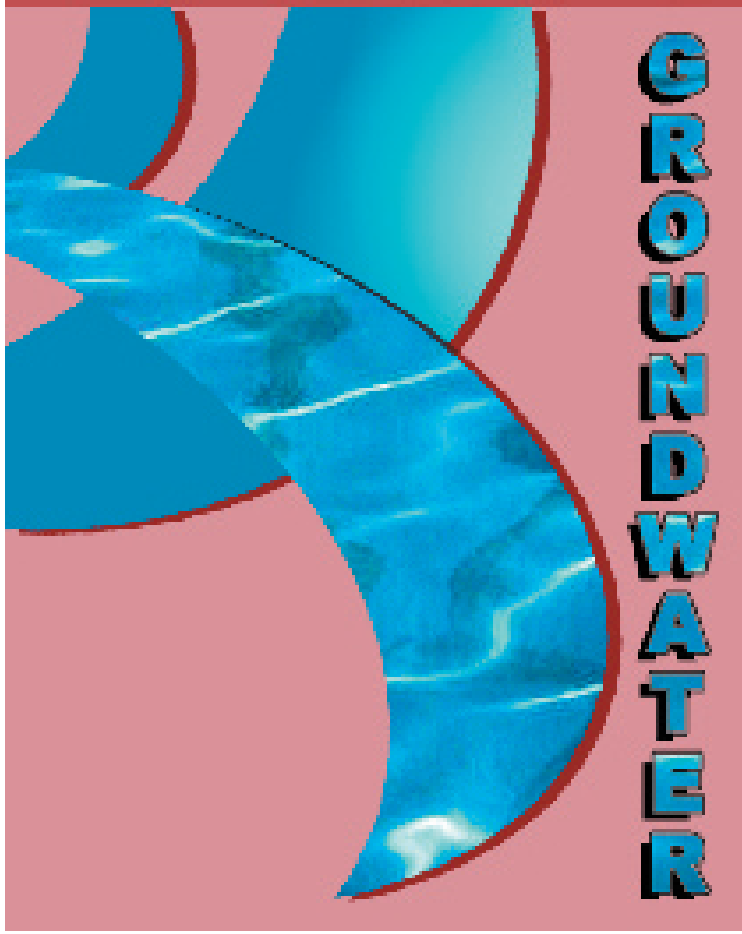
Irrigating with Groundwater

Top Ten Tips



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Pastures are fairly resilient but it is important to be cautious when irrigating with groundwater. Long term deterioration of soil structure or aquifer quality could result from careless or indiscriminate use of groundwater for irrigation. While the risk of long term soil structural problems is not as high on light soils as it is for heavy soils, the relationships are complicated and care should be taken.

1 The recommended maximum salinity of irrigation water used on permanent pastures (white clover / ryegrass mix) growing on loam soils is 800EC (800 µS/m)

If you apply water at a higher salinity level then you risk losing the productive potential of your pasture, especially white clover which is the species most sensitive to salt.

2 Apply groundwater around the groundwater pump as a priority

Save your channel water for areas furthest from the pump. The area around your groundwater pump will have better downward drainage because of the watertable drawdown created by pumping water out of the aquifer. The soil in this area is less likely to accumulate salts in the rootzone, so plants growing in this area may grow quite productively even if the water salinity is higher.

3 Don't use groundwater indiscriminately. Use an EC meter or have your groundwater tested at regular intervals

Ideally each groundwater user should have their own EC meter. Prices start at around $150 up to $500 for portable meters, depending on the model. For information on where to obtain a meter contact your local irrigation equipment supplier, or local office of the Department of Primary Industries.

4 Use Groundwater earlier in the season

The ability of pasture to handle saline irrigation water is made worse by high temperatures. So, use groundwater early in the season when temperatures are milder, not just when you run out of channel water.

You also get the benefits of improving the downward drainage in the area around your groundwater pump which boosts early pasture performance, especially if the winter has been wet.

Using groundwater early in the season means you save your better quality water for later in the season when temperatures are higher and your pasture is less able to tolerate the higher salinity.
Later in the irrigation season there is likely to be more local groundwater pumping occurring. This can cause increased pumping costs and intermittent supply due to lower water levels in the ground.

5 Try to keep the salinity level of the applied water constant for the whole season

Varying the irrigation water salinity can upset your soil structure - particularly if you are swapping from undiluted groundwater to fresh channel water in alternating irrigations.

Drastic changes in salinity will also affect your earthworm population as well as desirable microbes that help maintain soil structure and cycle nutrients.

6 Maintain soil fertility

Don't forgo superphosphate applications on pasture irrigated with saline water - it will help keep your clover productive. Applications of nitrogen fertiliser should be handled with caution as you could reduce the clover component even further. However some nitrogen may be needed if the clover population is very poor as a result of the saline irrigation.

7 Avoid irrigating annual pastures with groundwater at germination time

Pasture plants are most vulnerable to saline water at germination and until they have their first true leaves. Once established, subclover based annual pastures are slightly more tolerant of saline water than white clover based permanent pasture.