

EFFECT OF SOIL SALINISATION AND WATERLOGGING
ON IRRIGATED DAIRY PRODUCTION

David Marston, Kathy Pope,
Department of Agriculture,
Haymarket, NSW.

Salinisation and waterlogging are costing irrigation farmers thousands of dollars each year in lost revenue due to reduced pasture production. Although both problems cause differing degrees of yield loss independently, they are in most cases associated with each other.

Waterlogging is the saturation of soil with water for a period of a day or more while salinisation is the accumulation of salt in the soil. The occurrence of a shallow watertable usually links waterlogging with salinity in irrigation areas. Water, being the transport medium for salt, is responsible for depositing salt into the root zone of pasture.

The control of shallow watertables is extremely important if the incidence of waterlogging and salinity is to be reduced. Although groundwater pumping will reduce the height of the watertable, there are problems associated with it. Pumping is expensive and only influences small areas. Disposal of saline water pumped from the ground also causes problems.

One of the most feasible practices is good irrigation management. This involves matching the amount of water that is applied to a pasture with the amount of water that the pasture requires, plus a leaching fraction.

A physical model was used by Grieve *et al* (1986) to assess the effect of surface waterlogging and salinisation on the productivity of irrigated dairy farms in the Berriquin and Wakool Irrigation Districts of the Murray Valley. Detailed soil descriptions, statistically derived estimates of rainfall and evaporation, in conjunction with loss coefficients for salinity and waterlogging, allowed for estimates to be made on production losses due to salinisation and waterlogging. Some of the results are detailed below.

TABLE 1. Production and economic losses in the dairy industry due to soil salinity and waterlogging in the Berriquin and Wakool Irrigation Districts

	<u>Berriquin</u>	<u>Wakool</u>
Area of land subject to waterlogging	45%	73%
Area of waterlogged land subject to salinity	43%	72%
Losses due to waterlogging and salinity (\$/ha/yr.)	\$290	\$795

In Berriquin and Wakool it is estimated that surface waterlogging reduces yield in irrigated pasture by 12-25%. In some areas up to 55% of irrigated pasture is affected by soil salinity.

The results show conclusively the need for better management of irrigation water in pasture based industries. On-farm management strategies that will reduce the effect of a rising watertable and decrease the incidence of waterlogging and salinisation will benefit the irrigation areas financially and environmentally.

REFERENCE

- Grieve, A.M., Dunford, E., Marston, D., Martin, R.E. and Slavick, P. (1986) - Effect of waterlogging and soil salinity on irrigated agriculture in the Murray Valley: a review. *Australian Journal of Experimental Agriculture* 26: 761-77.