Unsustainable Agriculture

Background

Agriculture within the Mid Murray LAP is dominated by irrigated horticulture, the majority of which occurs on the highland areas adjacent to the River.

Small in comparison with other irrigated regions (i.e. Riverland), the 1600 hectares of irrigated vegetables, vines, citrus and stone fruit makes a significant contribution to both regional and state economies, and is a major source of employment for people living within the Mid Murray Region.

Irrigated horticulture began around 1920, and continues to grow at a rapid rate. Unfortunately many of the practices associated with it have been unsustainable and have contributed directly or indirectly to increased salt loads to the River and floodplain. Subsequently the riverine habitat has become increasingly degraded.

If current and future irrigation developments are to reverse this trend, they must be managed to:

- maintain the water quality in the River Murray; and
- have minimal impact on the natural environment.

In an effort to strive towards such an outcome, the Mid Murray LAP has identified a number of contributing factors that will need to be addressed before such results are realised. They include:

- Land capability – refers to the capacity of land to sustain a particular enterprise. Inadequate consideration of land capability can lead to the development of perched water tables, waterlogging problems, soil salinisation and soil degradation. Planning in the Mid Murray Region needs to ensure that areas suitable for irrigation are utilised where possible, and that crop type and irrigation infrastructure are matched to the capability of the land.
- Inadequate property management planning – at a property scale can lead to a mismatch between crop types, irrigation practices and land capability. Apart from soil degradation, excessive irrigation drainage may also be generated, the resultant effect being detrimental to both floodplain and aquatic environments.
- Irrigation efficiency – a measure of the amount of water applied to a crop through irrigation/rainfall over the amount of water utilised by the crop – this is expressed as a percentage. Irrigation efficiencies of less than 85% (normally arising from poor irrigation practices) are known to contribute to:

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increased salt loads; water logging and/or; and perched water tables.

- Irrigation drainage – generated from inefficient irrigation or the leaching fraction, irrigation drainage has a profound effect upon the river, its floodplain and wetlands. Groundwater modelling indicates the pre-irrigation discharge of salt to the river / floodplain of 168 tonnes per day, has increased to current levels of 194 tonnes per day due to the impacts of irrigation. Modelling indicates that the salt load in 50 years time could increase to 201 tonnes per day.

Links to other Issues

The issue of unsustainable agriculture is linked to:

- Declining Water Quality – point source and non-point source nutrients are generated from fertilisers, herbicides, pesticides and grazing. Groundwater mounds generated beneath irrigated plantings, and recharge from cleared dryland farming areas influence saline discharges to the riverine environment.
- Natural Habitat Degradation – clearance of native vegetation for irrigated horticulture and dryland farming has significantly contributed to natural habitat degradation. River regulation and diversion of flows for irrigation has severely disrupted vital in-stream and floodplain processes.

Extent and Severity

A study by AWE (1999) has shown that:

- the average district irrigation efficiencies within the Mid Murray Region have been calculated to be 89% and 82% for the 1995/96 and 1996/97 irrigation seasons, however individual efficiencies have been calculated to range from less than 50% to more than 120%. The presence of very low efficiencies, and efficiencies less than 85% indicates that there is scope for reducing the volume of drainage water generated. Irrigation efficiencies of more than 100% indicates that some crops are grown in a water deficit, a potentially deleterious situation that can cause soil salinisation due to the build-up of applied salts in the root zone. Irrigators should be encouraged to achieve 85% efficiency at the property level. It is also important to note that the current data is incomplete and landholders should be encouraged to respond to surveys;
- current salt loads to the River and floodplain are 194 tonnes/ day, of which 26 tonnes/day is due to irrigation;
- if current water allocations are fully utilised, in 50 years time a salt load of some 201 tonnes/day is predicted. This equates to an increase in river salinity of 9 EC units at an annual cost to downstream users of $1.00 M; and
- the impacts of dryland recharge has the potential to cause an additional salt load of 219 tonnes/day by the year 2050 resulting in an annual economic cost to downstream users of about $6.6 million.

Key References

The following report provides an excellent overview of the issue of Unsustainable Agriculture:

- Australian Water Environments Pty Ltd 1999, A Study to Underpin a Land and Water Management Plan, report prepared for the Mid Murray Local Action Planning Committee.

Inadequate or poor planning at a property scale can lead to a mismatch between crop types, irrigation practice and land capability.

Individual irrigation efficiencies have been calculated to range from less than 50% to more than 120%.