Effect of irrigated primary production on soil condition

Draft issue

From 1962-2012, the world’s agricultural system has grown to feed 7 billion people by significantly increasing food production, while only increasing cultivated land by 12 per cent. Irrigated primary production has made this possible, with a 70 per cent increase in irrigated land (Eadie, L. & Stone, C. 2012).

Although irrigation has many benefits it has also detached primary production from the natural production capacity, increased our reliance on water (quality and quantity). It can also negatively impact environmental, animal and human health if applied inappropriately. The agricultural sector is a significant part of South Australia’s economy, contributing over $15.4 billion each year. Agriculture is heavily reliant on a healthy functioning ecosystem.

Irrigated primary production poses a significant issue for the quality of soil condition in the Adelaide Mount Lofty Ranges (AMLR) region due to limited water quality and quantity and a lack of knowledge around efficient and sustainable irrigation for some land managers. Other key pressures exacerbating this issue in the region are unsustainable water extraction in some areas, high dryland salinity, intensive agriculture practices and climate variability (GOSA 2012).

Some areas of the region are also more intensely impacted due to shallow saline groundwater and low irrigation water availability. For example, rising salinity resulting from irrigation extraction is identified as the greatest risk to primary production in Kangaroo Flat (Northern District of AMLR).

Due to the low groundwater supply, low rainfall and increasing irrigation extraction, soil salinity has increased which causes adverse effects such as reduced plant health, crop yield and ecosystem health (DEWNR 2014). Consequently primary producers are put under significant pressure resulting from limited water availability, increasing water-licensing costs, as well as soil condition and yield concerns. This then detracts business viability, limits business expansion opportunities and restricts producers’ time to educate themselves on sustainable, best practice irrigation management.

It is crucial that improved water use efficiency irrigation technologies are coupled with appropriate application to prevent degradation of soils and water resources. To sustainably manage this, opportunities exist to increase our knowledge and understanding of how much land is affected by irrigation salinity and soil structure decline, the rates of change and a quantification of the trends of land degradation issues impacting on irrigated agriculture such as salinity, sodicity (sodium levels) and acidity (Morgan, S.J. Nichols, C.W. & Payne, R.A. 2005).

Subregions affected by the issue

- Central Hills
- Fleurieu Peninsula
- Northern Coast and Plains
- Northern Hills
- Willunga Basin

Conceptual models related to the issue

- Building capacity of natural resources managers
- Sustainable primary production

What are these draft issues?

The information in this document relates to a list of draft issues that are impacting on the natural resources of the region.

The issues list has been developed based on information collected during a regional planning process, and a range of projects that the Adelaide and Mount Lofty Ranges Natural Resources Management Board has undertaken.

New issues are added to the list as they become apparent, and as issues are addressed by projects they drop off the list. As the issues are constantly evolving, the information in this document may no longer be relevant. Check the current list for the most up-to-date issues:


Date this document created: 16/11/17