

focus on **NRM** research

How can trees intercept salinity?

Dr Andrew Biggs, QLD Department of Natural Resources & Mines

What are you researching?

We are researching the role of native vegetation buffers in 'soaking up' ground water recharge. We have a number of study sites in the lower Border Rivers and Lower Balonne where we are measuring the water use patterns of common floodplain trees (poplar box, coolabah, brigalow, belah, myall).

At the same time, we are undertaking background investigations into groundwater chemistry and hydrogeology to better understand the risks posed by excess groundwater recharge. We will also be establishing a rehabilitation trial to deal with lateral dam seepage in the Border Rivers. In the Condamine and Border Rivers catchments we have also re-sampled the historical deep drainage study sites established by the late Des McGarry.

What have you found?

Our initial results confirm that whether trees use groundwater depends on the salinity and pH of the groundwater and local variations in the depth to groundwater. We have DNA analysis of tree roots that confirm that myall trees are accessing 30-40 000 uS/cm groundwater at a depth of 13m.

There appears to be a trend of acidification in some groundwater in the Border Rivers (which is not good). In some irrigated areas, groundwater is rising rapidly while in other areas it is relatively steady. It is generally steady under native vegetation. The native vegetation will use more water if it is supplied with more water (and the trees will grow bigger). A strip of about 50 m of

poplar box is successfully soaking up leakage from a ring tank on one farm but bare ground is a critical factor determining how successful vegetation strips are.

Why is it important?

Many irrigation areas currently or will suffer from shallow groundwater. Whether it causes a problem on- or off-farm will vary locally. In the Border Rivers and Lower Balonne/Moonie (and across the Border) the issue is exacerbated by the fact that the naturally present shallow groundwater is extremely saline and often acidic.

Below: Andrew Biggs (QDNR) & Paul Webb (QMDC).



How can I apply the research/what should I do about it?

- Understand the water balance on your farm and know where your water goes
- Access relevant data about groundwater in your district and understand what the risks might be.
- Ensure you maintain any remnant vegetation on farm.
- Where possible (and relevant), increase the vegetation strips around structures and paddocks.
- Establishment of permanent improved pastures (e.g bambatsi) in un-used bare areas can create a positive benefit both from a salinity perspective but also economically (as a grazing resource or harvesting for seed).

Where do I go for more information?

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Local NRM groups can assist with re-vegetation options.

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