

Multiple benefits from landscape improvement

WAYNE BROWN*

Maintaining, enhancing and extending perennial native vegetation on a property provides multiple benefits, many of which are not fully understood, and renewal of perennial native vegetation is good farm practice, particularly in the Mallee.

Research results clearly indicate potential for direct benefits including yield improvements from establishing or upgrading perennial native vegetation on farms and this and other less easily quantified benefits contribute to the sustainability of farming systems; something not to be underestimated.

Historically, Governments encouraged landowners to clear vast areas of the landscape and considered keeping large areas of native vegetation on the landscape a waste of productive land. Large-scale land clearance continued uncontrolled until vegetation clearance laws were introduced in the 1980s. These control measures, although controversial at the time, were very important. We are now aware that over-clearance of native vegetation contributes to:

- Spread of dryland salinity. This occurs due to the loss of deep rooted perennial vegetation that maintained soil moisture equilibrium within a



DEPTH CONTROL AND SEED-SOIL CONTACT IS JUST AS IMPORTANT WHEN DIRECT-SEEDING NATIVE SPECIES AS THEY ARE FOR WHEAT OR CANOLA. (PHOTO WAYNE BROWN)

catchment area. Shallow-rooted annual plants such as cereal crops cannot do this.

Reports indicate there is an annual economic loss of \$1 million for every 5,000ha of land affected by dryland salinity. It is estimated that 2.5 million ha of cultivated land (5%) is already

affected by dryland salinity in Australia and by 2100 the cost of dryland salinity is expected to rise to \$1 billion annually.

- Soil erosion. Significant soil degradation occurs during flooding and droughts. Changing to minimum tillage programs has greatly reduced the amount of soil erosion in some districts. Maintaining and improving native vegetation is another way to reduce and stabilise soil erosion.
- Loss of habitats. South Australia is the most-cleared State in Australia.

This over-clearance is part of the reason that 17 of 33 native mammal species now thought to be extinct once lived in SA. Only now are we realising that some of these species may have benefitted aspects of soil management and maintenance.

The loss of flowering plants as a result of fragmentation of native perennial vegetation impacts on important pollinators such as bees.

Economics

Results from trials and studies show that native perennial vegetation provides economic benefits to land managers and farmers.



RENOVATING AN AREA OF FRAGMENTED REMNANT VEGETATION LIKE THIS REQUIRES DIFFERENT TACTICS FROM THOSE FOR AREAS WITH MORE NATIVE VEGETATION OR REVEGETATION OF A BARE PADDOCK. (PHOTO WAYNE BROWN)

These economic benefits include:

1. Increased crop yields. A study by Gillespie (2000) estimates there is a 22-46% increase in wheat yields in sheltered areas.
2. Improved pasture growth. Pasture yield increase in areas sheltered by trees and tall shrubs has been estimated at 20-30%.
3. Livestock productivity (live weight, improved fertility, reduced stress and mortality). Over a 5-year trial there was a 31% increase in wool yield and 6kg (21%) live-weight gain in sheep with shelter provided by native vegetation.
4. Crop pollination. The health and quantity of native perennial vegetation has a dramatic effect on bee populations and hence crop pollination, with adequate healthy native vegetation improving crop pollination by bees.

Other benefits provided by native perennial vegetation include maintaining more water in the landscape, reducing soil evaporation, improving water quality, reducing stream erosion and reducing pests by encouraging beneficial insects.

Insights

Understanding the role and mechanics of native perennial vegetation and its interaction with the soil and the wider environment can provide insights to how best to improve and manage our ancient soils. Understanding the principles underlying these interactions can provide insights on how to:

- improve soil structure by encouraging soil microbes to work for us
- increase soil organic matter
- invest in soil carbon/biochar.

These three issues alone can make a big difference in minimum tillage cropping and other farming activities.

Future

There is significant potential for large-scale planting of native vegetation so it can be harvested and used to produce products suitable for soil improvements.

Re-establishing perennial native vegetation in the landscape is essential if we are to economically harvest and add beneficial soil treatments to our soils.

Increasing the area of perennial native vegetation will provide a harvestable product for soil improvements and:

1. reduce dryland salinity
2. reduce soil erosion
3. reduce habitat loss
4. improve crop yields
5. provide habitats for insects including bees
6. open an opportunity for biofuels
7. maintain our green marketing edge
8. improve soil structure
9. improve moisture holding capacity
10. reduce impacts from climate change.

Farm planning

Before restructuring a property it is important to consider all current activities and problems. This requires a stock-take of the current situation including:

- soil analysis
- a review of fertiliser applications (needs and costs)
- issues such as soil salinity, compaction and erosion
- health and quality of current vegetation.

It is also important to consider future soil condition, water and vegetation issues and develop an understanding of the long-term benefits of improving and increasing native perennial vegetation.

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References:

Australian Bureau of Agricultural and Resource Economics (2008), *Australian Honeybee Industry Survey 2006-07 Canberra*, Rural Industries Research and Development Corporation

CSIRO Wildlife and Ecology, and Sidney Myer Centenary Celebration (2000), *The Nature and Value of Australia's Ecosystem Services*.

Williams, D.G., Wallace, P., McKeon, G.M., Hall, W., Katjiua, M., Abel, N., 1999. Effects of trees on native pasture production on the southern tablelands. Publication No 99/165 Rural Industries Research and Development Corporation.

Morton et al. 2002, *Sustaining our Natural Systems and Biodiversity: an independent report to the Prime Minister's Science, Engineering, and Technology Council*, CSIRO and Environment Australia, Canberra.

Salinity Australia State of the Environment Report 2001 fact sheet, Department of the Environment and Heritage, February 2002

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