CSIRO SUSTAINABLE ECOSYSTEMS

What could the future hold?
Scenario planning for the grains industry

CSIRO has been working with the Australian grains industry to enable the industry to take an informed look at the future.

The report *Future sustainability of the grains industry* was based on the recently completed study *Decision Points for Land and Water Futures* which looked at the future of Australia's land and water resources for agriculture.

Three scenarios

The grains report describes three 50 year scenarios: all are very different from each other and from the current status of the grains industry in Australia.

The scenarios have different mixes of social, economic and environmental outcomes, but in each the grains industry remains a critical part of the Australian landscape.

Water water everywhere

The first scenario 'water, water everywhere' is a scenario that recognises that rainfall is a vast and largely wasted resource for dryland agriculture and that more natural flow regimes are required to restore river and wetland health.

In this scenario there are improvements in dryland farming yields and some reductions in land degradation through more effective use of rainfall and retirement of marginal croplands.

There is also a large contraction of irrigation for low-value commodities and substantial increases in environmental flows.

Give and take

A second scenario 'give and take' sees substantial value in shifting the emphasis of agricultural production from low-value highly-variable production to high-value irrigation.

In this scenario there is a reduction in the area of dryland crops and sown pastures with most of the retired land either used for forestry or returned to native vegetation. Production of high-value irrigated commodities expands considerably, low-value production contracts and water use efficiency increases, allowing considerable increases in the total area irrigated.

The scenario achieves substantial reductions in the rates of increase of land degradation, however, river health remains an issue in many catchments in southern Australia.

Brave new regions

The final scenario, 'brave new regions' seeks to move regional Australia beyond its dependence on 'European-style' agriculture. Large areas of crops and sown pastures are revegetated for forestry and conservation, and environmental flows are increased significantly in stressed catchments.

New agricultural systems are developed that are better suited to Australia's unique landscapes and climates. Increasingly farmers make their livelihood from both managed and native ecosystems through value-adding and new products and services, and regional economic growth is enhanced by new non-rural businesses attracted by increased amenity.

What do these scenarios mean for the grains industry?

The scenarios demonstrate that future development of agriculture in Australia might be markedly different from past development, and industry strategies need to look to future issues, not just past issues, to help ensure a vibrant and sustainable future.

Implications of the scenarios

What are the implications of these scenarios for the grains industry?

Past change

The historical rate of expansion of agriculture is such that about half of Australia's cropland and sown pasture has always been less than 35 years old hence relatively unaffected by degradation. This has helped mask the effects of sustained losses of landscape function in older lands.

When new land stops being added at ever faster rates, the proportion of degraded land will increase dramatically unless future rates of loss of landscape function are reduced substantially.

Future change

Change has been a significant feature of agriculture, and this is likely to continue, however the nature of change will be different as new arable land becomes limited, technology changes and societal demands evolve.

Successful strategies for the grains industry will recognise that change is inevitable, then seek to capitalise on the opportunities and minimise the costs - while ensuring those benefits and costs are shared across the whole community and across generations.

The alternative is strategies that seek to resist change or minimise its short-term costs, but lead to adverse long-term impacts and significant clean-up bills for future generations.

Production factors

There is considerable scope for continued gain yield increases, with new technologies and smarter use of inputs, despite increasing degradation and reducing availability of new land.

Environmental impacts

The history of cropping has left a legacy of many significant and increasing impacts on Australian rural landscapes, such as expanding salinity, stressed waterways and threats to biodiversity. Such off-farm environmental issues are difficult and expensive to deal with, but addressing them may become increasingly important as society continues to scrutinise agriculture and the threat of regulation looms.

Energy availability

Future reductions in the availability of cheap oil and natural gas would have a significant impact on the costs of grain production due to the importance of transport and nitrogen fertiliser. Farming systems that have lower energy intensity may be significantly advantaged.

Climate variability and change

Climate change is likely to change how and where grain crops can be grown, and the quality and quantity of harvests. Better understanding of climate variability offers significant opportunities to improve the performance of cropping and to increase the grain industry's ability to adapt to climate change.

Regional development

Declining terms of trade will continue to weaken the ability of agriculture to support economic growth and vibrant communities in regional Australia, which will inturn negatively affects the costs and lifestyle of farming. Growth of new non-rural industries, attracted by increased amentiy and lower costs, may mitigate this trend.

This report is available on the Internet at
www.cse.csiro.au/research/grainsfutures

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