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RICE

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KEY MESSAGES:

- The rice industry has been highly successful in increasing water use efficiency over its history, and must continue to do so in adapting to climatic change. Rice farmers will need to consider a wide range of potential farming system changes (new varieties/crops, rotations, water priorities, irrigation methods, farm layouts, use of seasonal climate forecasts in management) to adapt to predicted changes in on-farm climate and water supply over the coming century. Research into the viability of new farming system ideas, in comparison with traditional systems, is urgently needed to allow for future farm planning.
- Projected declines in irrigation water supply under climate change are likely to have a significant negative impact on Australian rice production due to a total dependence on irrigation.
- In addition to reduced water supply, water demand may increase in response to greater rates of evapotranspiration during the rice-growing season. However the exact increase on water demand is still unclear due to potential offsets through faster development of the crop and a shorter growth period.
- The risk of low-temperature damage during the reproductive phase, one of the major historical limitations to rice production, is likely to be reduced under climate change. However, the net impact of increased temperatures and CO_2 on rice remains largely un-researched in Australia.
- There is some scope to adapt existing rice production in an attempt to reduce irrigation demand through reduction in the duration of ponding via operational (direct drilling) and breeding (yield/duration) means, as well as reduction in deep percolation losses through enhanced definition and regulation of rice-suitable soils.
- Significant improvements in water productivity will be difficult to achieve under existing production systems, and the immediate consequence of less water will be reduced rice production. However aerobic and alternate-wet-and-dry (AWD) rice may present the Australian rice industry with new options, and may allow increased water productivity (kg grain/ML) in a changing climate. The viability of these novel rice production systems for the Australian environment warrants immediate research.
- Potential new methods of rice production (aerobic culture) may allow expansion of rice growing to new areas or regions.

Introduction

Rice was first commercially grown in Australia in the early 1920s near the townships of Leeton and Yenda in the New South Wales Riverina. The current industry in Australia has a restricted geographical range, encompassing the irrigated regions of southern NSW and northern Victoria (see Figure 5.1). Recent years have seen a small number of farmers experimenting with rice in