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SUGARCANE

SE Park, S Crimp, NG Inman-Bamber and YL Everingham

KEY MESSAGES:

- It is likely that the greatest direct climate change impact (and adaptation challenge) on Australian sugarcane production will be the projected change in the amount, frequency and intensity of future rainfall. In many of the sugarcane growing regions the amount of effective rainfall available to the crop will be reduced, while demand is likely to increase due to increased rates of evapotranspiration linked to atmospheric warming.
- A range of adaptation strategies (both tactical and strategic) is needed across the entire sugar cane industry value chain if it is to remain sustainable under a changing climate. Strategies must be tailored to individual mill regions to take account of location-specific biophysical and logistical impacts.
- Adaptation options available to the sugarcane industry include improvements to the management of limited water supplies; technological fixes based on reductionist analysis; engineering design principles, or computer-aided modelling; altered cropping system design and agronomic management; enhanced utilisation of decision-making tools, and effective institutional change (Park *et al*. 2007a).
- Building capacity through targeted extension, improving skills and providing a more industry-wide knowledge base are all essential for future adaptation.
- Many adaptation strategies involve an enhancement or extension of existing activities aimed at building resilience to climatic variability. Additional longer-term adaptation options will also need to be iteratively developed and evaluated in an adaptive management context if the industry is to remain sustainable into the future.

Introduction

Although sugarcane can be grown in a relatively wide range of climatic conditions, the time-critical nature of processing from crop harvest to juice extraction typically results in the evolution of discrete production regions containing a centralised mill, dedicated transport infrastructure and communities of farmers that all contribute to a tightly integrated supply chain. The Australian sugarcane industry reflects this, being made up of pockets of production spanning nearly 2100 km of eastern Australia, from Mossman in the Far North of Queensland (16° 27′ 37" S, 145° 22′ 22" E), to Grafton in northern New South Wales (29° 41′ 28" S, 152° 55′ 59" E) (Fig. 6.1). Production occurs in four climatic zones, from the wet tropics in the north through to the dry tropics and humid subtropics. The majority of these regions are within 50 km of the coastline and in close proximity to tidal rivers and creeks. Approximately 94% of the country's raw sugar production occurs in Queensland, occupying approximately 380 000 ha of land (CANEGROWERS 2007; Australian Sugar Milling Council 2006). Northern New South Wales (NSW) accounts for around 4% of production while the remainder, prior to 2008, occurred in the Ord River Irrigation Area in Western Australia (but