

AUSTRALIAN SUGAR INDUSTRY

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QUEENSLAND'S sugarcane crop is the State's most valuable agricultural industry in terms of value of production. Queensland produces almost 95% of Australia's sugar, with the remainder being produced in northern New South Wales and in the Ord River Irrigation Area of Western Australia. The coastal communities of Queensland are largely dependent for their prosperity on the sugar industry, as it is the major industry in many of these communities, and there are limited viable alternative crops.

Until 1924, Australia was a net importer of sugar, but it is now one of the three major raw-sugar-exporting nations in the world. Approximately 85% of annual production is exported to countries such as Japan, Korea, Canada, Malaysia, New Zealand and the United States of America. Australia has a reputation as a reliable supplier of high-quality sugar, and has developed consistent markets for sugar, even in times of world over-production.

World sugar production has undergone massive changes since 1970. This period has seen a production decline in Cuba, and Brazil emerge as the largest exporter of sugar. A major producer of ethanol from sugarcane, the Brazilian sugar industry has the flexibility to produce either sugar or ethanol, so it can

have a major impact on the sugar export market when it decides to switch from ethanol to sugar. The European Union, formerly an importer of sugar, is now a significant producer of sugar from sugar beet, and exports subsidised excess sugar onto the world market. In our region, Thailand has also become an important producer and exporter of sugar.

The Australian sugar industry, both raw and refined, developed under a regulated system that matched production with assured markets. For many years, the industry was largely protected from the vagaries of the world market by the British Commonwealth Sugar Agreement, long-term contracts with countries such as Japan, Malaysia and Korea, an embargo on imports, and a regulated home

price of sugar. When the United Kingdom joined the European Union in 1974, Australia lost its assured market in the UK, and over the past two decades, it has become increasingly difficult to obtain long-term contracts on favourable terms. In addition, Australia's competition policy saw the abolition of the embargo on sugar imports, following a progressive elimination of tariffs. Producers now receive the world price for domestic sugar, as well as for exports. All of these factors have increased the necessity for Australian producers to improve their efficiency and productivity to meet a highly competitive world market.

The productivity of Australian cane farms and raw sugar mills is among the highest in the world. Australian costs of production match those of most major producers despite the high unit cost of labour. Cost efficiencies have largely been achieved through economies of scale by mechanisation in the farming, harvesting and transport sectors of the industry. The last commercial cane to be cut by hand was harvested in 1974; labour use on farms and in mills has been reduced substantially over the past 30 years by the use of improved farm mechanisation and automation.

Growing of sugarcane in Queensland has been largely controlled by State Government legislation since 1930, matching cane supply with mills' crushing capacity through a land assignment system. In that year, gross and net areas were gazetted for each grower. The gross area limited the farmer to a certain area of land on which sugarcane could be grown, and the net area was the area permitted for annual harvest. The net area was defined as 75% of the gross assigned area, but this regulation was changed in 1964 to allow a net area equal to 85% of the gross. Another change in 1975 made the net assigned area equal to the gross assigned area, so that growers could harvest cane from 100% of their land. Subsequently, growers were allowed to 'roam' onto unassigned land, so that they could maintain cane on the gross

area of assignment, but they could leave up to 15% of their land fallow. The assignment system and the gazettal of gross and net areas were restrictive measures then generally supported by the industry in an attempt to limit the production of a large export surplus.

Expansion in the industry was relatively slow until after the Second World War. The first expansion came after the passing of the *Returned Soldiers' (Sugar Industry) Land Settlement Act* in 1946. This was followed in the 1950s with an expansion following the negotiation of the British Commonwealth Sugar Agreement. The productive capacity of the assigned lands increased over the following decade. The next major expansion took place in 1964 following the Government-appointed Gibbs Committee of Inquiry in 1963, and this was followed by irregular increases in assignment until the early 1980s. In 1989, new arrangements were introduced to increase assigned area on an annual basis. This led to a period of rapid expansion during the 1990s.

Figure 1 shows the impressive increase in productivity from 1900 to 1999. Tonnes cane per hectare did not improve rapidly until the end of the Second World War, but has more than doubled since then, despite an apparent yield plateau from 1970 until 1990. Conversely, the amount of cane required to produce a tonne of sugar declined rapidly until the end of the Second World War, but has tended to increase since. Overall, the tonnes of sugar per hectare have increased steadily apart from the period 1970 to 1990, but it is increasing again in the 1990s.

The impressive improvement in productivity since the Second World War has been achieved despite a number of factors that could be expected to reduce yields. Firstly, the area growing cane has increased four-fold, and most of the expansion has been onto inferior land that is inherently less productive. Secondly, the number of ratoons has increased from an average of 1.4 in 1950 to 3.9 in 1998 and the area of ploughout/replant has increased significantly. Thirdly,

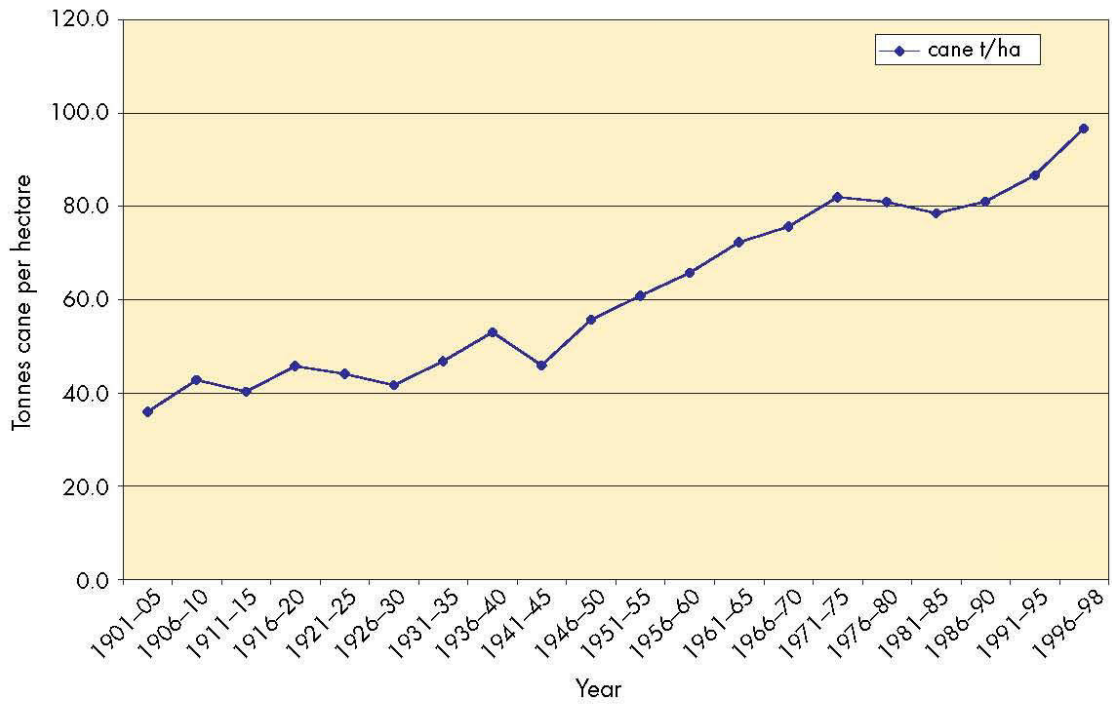


Figure 1a. Increase in production, 1900-1999, tonnes cane per hectare.

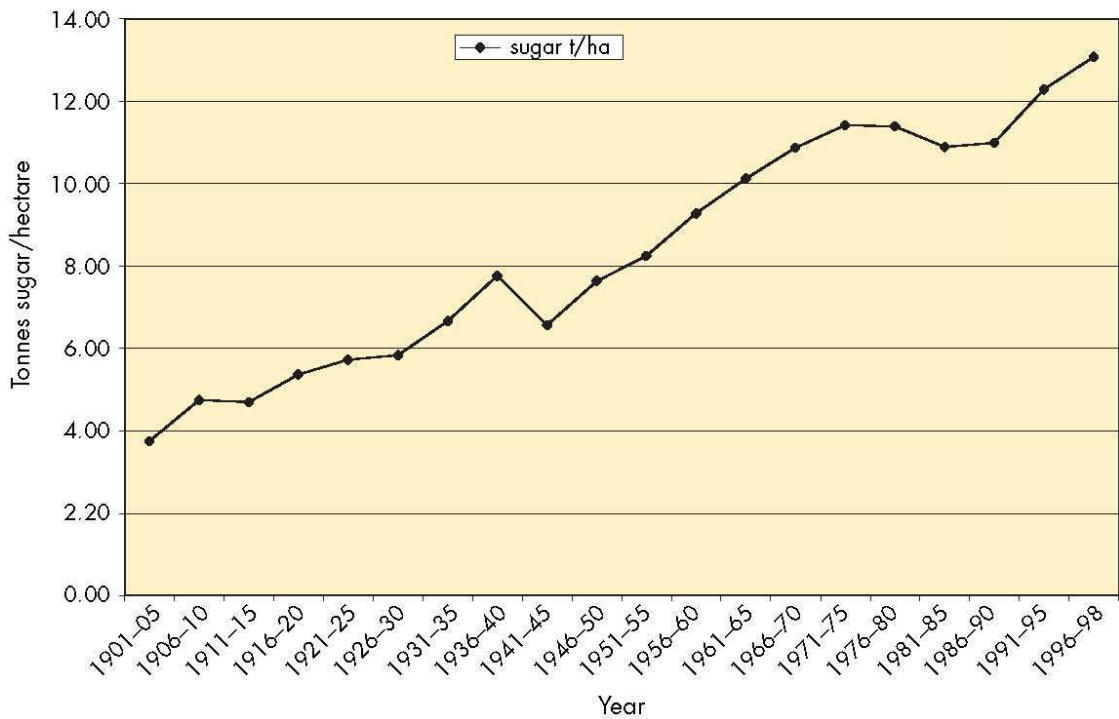


Figure 1b. Increase in production, 1900-1999, tonnes sugar per hectare.

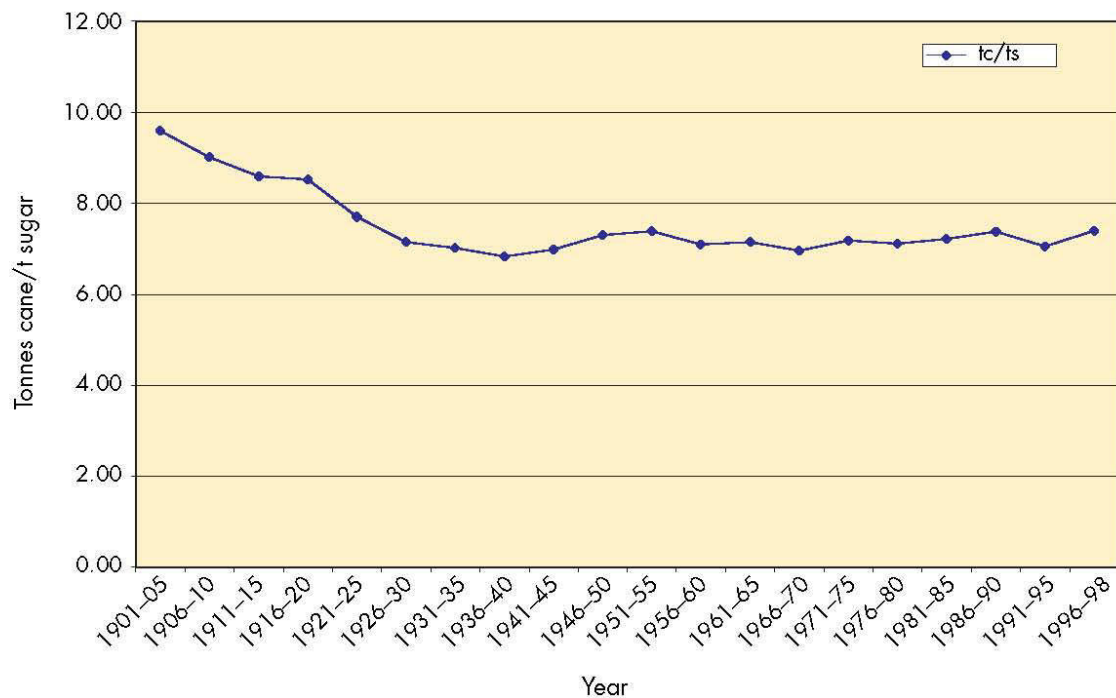


Figure 1c. Increase in production, 1900-1999, tonnes cane per tonnes sugar.

mechanical harvesting was introduced, with harvester losses of 5-10 tonnes of cane per hectare. There has been a steady, serious decline in the quality of harvested cane over the past two decades. Many of these factors are believed to have contributed to the apparent yield plateau from 1970 to 1990.

The gains in productivity have been obtained largely through research and extension. Improved varieties can be planted on land that was formerly considered unsuitable; they can be ratooned more often, are resistant to diseases, and can be harvested mechanically. Greater access to irrigation water has been a major factor, as has improved control of pests and diseases. Improved nutrition and more effective technology transfer have also been important.

The Australian sugar industry has an enviable record of concern for the environment, although, in the past, there have been mistakes such as the introduction of the cane toad to control canegrubs and

inappropriate land clearing. Following concern from growers and environmentalists about soil erosion, particularly in far north Queensland, the industry experimented with green-cane harvesting and reduced burning in the late 1970s. This deposited a layer of trash on the soil, reduced the flow of run-off water, and greatly reduced soil erosion. Green-cane harvesting was so successful that it spread rapidly through the industry. In 1998, 69% of the crop was harvested green; in far north Queensland, the figure was greater than 90%. The reduced run-off minimised soil erosion, and it also resulted in less deposition of nutrients and other chemicals into streams. This has enhanced the quality of these streams and the Great Barrier Reef where these streams run into the ocean. In addition, the CANEGROWERS organisation conducted an extensive environmental audit of the sugar industry, and was largely responsible for developing a Code of Practice for sustainable sugar production.

At the beginning of the 21st century, the export-dependent sugar industry is suffering the impact of the lowest price for sugar in real terms for many decades. It also has major productivity problems in far north Queensland, and the threat of exotic pests

and diseases is ever present. However, the industry has faced serious problems before, and has managed to overcome them with ingenuity and application of relevant research. It will continue to do so.