# Sustainability in the face of drought

*Quamrul Alam, Marcia Perry, Amrik Sohal* and *Suzanne Zyngier* look at the impact of the drought on cereal farmers' supply chains in the Wimmera region of Victoria.

The cereals industry in Australia has been hit hard by decade-long drought conditions. Regions that are highly dependent on agriculture are experiencing considerable economic losses.

Australian winter crop production of wheat and barley for 2006 – 07 is estimated to have fallen by around 61 per cent to 15.7 million tonnes, reflecting one of the driest winter-cropping seasons on record and making it the smallest winter grains crop since 1994 – 95 (14.7 million tonnes). In the light of further lack of rain due to climate change, the cereal products industry needs to factor in more droughts and other hazards such as flood and fire.

This study, with assistance from the Marketing Manager of Primary Industries Research Victoria, Department of Primary Industries (DPI), looked at sustainability initiatives and industry survival strategies in the upstream supply chain of the wheat and barley-growing Wimmera region of south-eastern Australia. Drawing on the findings, the paper argues that cereal industry sustainability in the region requires an interactive, adaptive supply chain network approach.

Planning for drought survival is a complex and dynamic process for farm managers. Successful preparation ultimately involves trading off risk and return. Strategies include developing moisture-conserving management practices (such as minimum tillage), using climate forecasts to guide planting decisions and building and maintaining financial reserves.

A premise of this paper is that a serious shortage of rainfall over nearly a decade has not only affected the cereal industry, but has also impacted on other businesses in the upstream part of the supply chain and on associated local community groups and individuals.

The study looked at the threats to the grain industry, supply chain and other related businesses, the evolving patterns of supply network relationships, cash flow problems, quality of production, cost of the finished product, skills transfer, the increased dependence on imports and the impact on social capital.

## PROFESSIONALISATION OF ACTIVITIES

Growers relied more on advice mediated through other links in the supply chain, and, according to one agronomist, traditional, informal sharing of information. 'Professionalisation' describes the response of the whole sector and every element of the supply chain to the challenges presented by drought and the consequent decline in quantity and quality of cereal grains and shifts to alternative crops.

Growers pursued business plans, implemented changes to farming practice, and sought advice from agronomists, brokers and handlers. Haulage and storage contractors examined their reliance on too narrow a range of products. Plant breeders pursued innovation in genetic manipulation while closely monitoring grower behaviour to maintain their relationships during difficult times. Exporters reviewed market opportunities worldwide in order to reduce the number of costly steps in the supply chain. Every informant, even where employed by government, behaved as if fully professional and entirely independent of subsidy or assistance. At each step, operators needed to consider diversifying to meet conditions and demand. They needed to adapt existing assets, including equipment, for best use, especially if there was insufficient cash flow to upgrade. Above all, they needed to be 'agile' in responding to the vagaries of the weather and the complexities of a competitive market.

## FARMING PRACTICE AND DEMOGRAPHY

Demographic trends (ageing principal farmer; farm

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support capacity; children seeking education and other occupations; declining skills base; and declining rural and regional centre populations), pressure on costs, shifts in demand, competition from interstate and overseas sources and changes in farming practice towards more sustainable production suggests that dry-land broad-acre farming in Victoria may soon lack critical mass as a component in the cereal supply chain. The story that emerged was one of slow aggregation and transfer of farms but also of constant adjustment through adaptation and diversification by those who pursued a sustainable business.

### RISK MANAGEMENT AND PLANNING

Risk management emerged as a central, essential theme in the supply chain, but principally for the grower. A key variable, the weather, is incalculable except over the very short term, and in the case of a short-term incident such as frost anticipation serves little purpose. Over the medium and long term, weather variability must be factored into all calculations. Strategies for adapting to this inherent risk include planning but must also include capacity to diversify swiftly and effectively. In turn, the grain industry requires long-term infrastructure support, both in material forms, such as water supply, but also in community and social infrastructure, through morale-supporting initiatives and, most crucially, in long-term credit provision.

### RESEARCH AND DEVELOPMENT

Commitment to and benefit from R&D also depended on risk and planning factors indirectly for the most part, when government underpinned the work, but directly when private businesses supplied the R&D. When drought restricted cash flow and debt rose, an early step in curtailing outgoings among growers was investment in new product that attracted royalty costs. Investment in advice was also curtailed, with 'silent' adoption of free rider strategies from neighbours who could fill some of the information void. Over the long term, which is characteristic of plant breeding work, loss of income had extended impacts along the research chain: benefits which might in good times fall within a 10-year time frame now fell over an even more extended period; this deprived growers of commercial advantages of new varieties, threatening their place in quality markets, with effects felt not only in the supply chain in any one year but across a number of years.

### THE RESULTS

This study clearly shows the importance to cereal industry survival in the Wimmera of professional services, farm innovation such as incentive schemes for skills retention and risk management schemes such as insurance schemes against crop failure. The evidence indicates that land use and product type are set for profound change, even if drought conditions are alleviated, because external factors such as input costs, competing markets and consumer-buyer preferences are constantly changing. Ongoing adaptation in various parts of the supply chain and related business networks are likely to affect other steps in the chain, with consequences that are not easily predictable.

Adaptive strategies that address risk and diversification have been found to suit a number of businesses in this difficult industry. A theme that emerges most prominently in this study is that sustainability depends on interrelated factors, each of which can vary suddenly, whether beneficially or catastrophically. Hence long-term cereal supply chain sustainability in the region will require adaptive collaboration throughout the wider business network.

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