Defining the key attributes of resilience in mixed ration dairy systems

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Abstract.

Dairy feeding systems in Australia and New Zealand have seen an increase in the use of mixed rations to manage variability in climate and market conditions and enable a certain degree of resilience in the operating environment. In this review, resilience was defined as the ability of the farm system to respond to challenges, optimise productivity and profitability for a given set of circumstances, and persist over time. Specific attributes of a dairy system that contribute to resilience were considered as flexibility, consistency, adaptation, sustainability and profitability. A flexible forage base that uses water efficient forage species provides a consistent supply of nutrients from home-grown forages across the year and is a key driver of resilience. Consistent milk production from purchased concentrates adds value to the forage base will ensure the system is profitable in the long-term. Appropriate investment in infrastructure and careful management of debt has a positive impact on technical and financial efficiency and improves overall economic performance and resilience of the system. Nutrients, feed wastage, cow comfort and welfare were also identified as key areas to focus on for improved sustainability. Future research investigating the interaction between forages and concentrates, and the subsequent milk production response will be important for the future resilience of mixed ration systems. Adaptive management at a tactical and strategic level across a number of technical areas will further underpin the resilience of a mixed ration dairy system and minimise the impact of climate and price variability. This will have flow on benefits in animal welfare and resource sustainability which will have a positive impact of the public perception of these systems within the Australian and New Zealand dairy industries.