Appendix B.

Repositioning the forage base for dairy production in a volatile and risky climate

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Abstract. Climate change projections for warmer and possibly drier conditions will impact on the productivity of pasture based dairy systems. Biophysical modelling tools, such as DairyMod and APSIM, provide a means to assess the impact of a range of climatic changes on pasture systems and develop resilient forage systems. The influence of projected climatic changes will vary according to existing climate and amount of change likely at a site. For example, increased pasture production was modelled in a cool temperate environment at Elliott (NW Tasmania) while lower production was modelled in a temperate climate at Ellinbank (SW Victoria) where there was a tendency for higher winter and early spring growth rates but with a shorter spring growing season. Incorporating deeper rooted and heat tolerant plant traits were shown to be effective in moderating the production decline at Ellinbank. In irrigated regions, supplemental autumn and spring irrigation of annual ryegrass based pastures was shown to be a more efficient use of irrigation water than summer irrigation of perennial ryegrass pastures. 'Double' and 'triple' forage cropping systems based on the heat tolerant and water use efficient maize plant were also effective at increasing DM production per ML irrigation applied. Point based biophysical modelling of forage systems can highlight the biophysical limitation of the systems but need to be put into a farm system context to fully evaluate the impacts on financial performance. Linking the outputs of biophysical models with farming system tools can help to bridge this gap.

See Cullen, BR and Rawnsley, RP and Snow, VO (2010) Repositioning the forage base for dairy production in a volatile and risky climate, Proceedings of the 4th Australasian Dairy Science Symposium, 31 August - 2 September 2010, Lincoln, New Zealand, pp. 144-150.