

Evolution of mixed farming systems for the delivery of triple bottom line outcomes: a synthesis of the Grain & Graze program

Animal Production Science 49(10) 966–974

R. B. Hacker ^A, M. J. Robertson ^B, R. J. Price ^C and A. M. Bowman ^D

^A Industry and Investment NSW, PMB 19, Trangie, NSW 2823, Australia.

^B CSIRO Sustainable Ecosystems, PMB 5, PO Wembley, WA 6913, Australia.

^C Kiri-ganai Research, GPO Box 103, Canberra, ACT 2601, Australia.

^D Industry and Investment NSW, Pine Gully Road, Wagga Wagga, NSW 2650, Australia.

Abstract

The continued evolution of mixed farming systems will depend on the development of technology which addresses the basic biophysical constraints of the agro ecological zone within which these systems have developed. However, the application of these technologies will increasingly depend on the extent to which they address all dimensions of the social–economic–environmental system within which mixed farmers operate. The Grain & Graze program has accelerated the adoption of several technologies that can provide a basis for continuing evolution of mixed farming systems (e.g. grazing of cereals, drought containment of livestock, perennial pastures) while initiating the development and exploration of others whose potential will be realised in the longer term (e.g. pasture cropping, integrated pest management in mixed farming systems, cover cropping and alley farming with old man saltbush). Some technologies capable of supporting continued evolution were not addressed comprehensively by the program but remain opportunities for future development, particularly technologies for feed demand management and inter-seasonal feed transfer. The program made considerable progress in fostering the explicit consideration of the ‘triple bottom line’ consequences of new technology. It has confirmed that no universal solution to the question of profitability and sustainability is to be expected but has also demonstrated that methodology is available to make the formal consideration of this question much more robust. Clearer definition of the institutional requirements for support of change in complex systems, and for effective management of large national projects, will provide key underpinnings to ensure that subsequent programs achieve the benefits of scale in RD&E that Grain & Graze has convincingly demonstrated. In addition, we argue that ongoing evolution of mixed farming systems that will deliver triple bottom line outcomes will require policies that achieve appropriate cost sharing for delivery of environmental benefits and increased capacity for structural adjustment within the industry itself, to account for changes in demography, infrastructure and farm management arrangements.

Publication Link: <http://www.publish.csiro.au/paper/AN09091>