

The ARGOS project and the role of GIS

Tanja Maegli¹, Martin Emanuelson²

¹Centre for the Study of Agriculture, Food and Environment
University of Otago, Dunedin, New Zealand
Phone: +64 3 479-9242
Email: tania.maegli@stonebow.otago.ac.nz

²The Agribusiness Group, PO Box 4354, Christchurch
Phone: +64 3 3656808
Email: martin@agribusinessgroup.com

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ABSTRACT

The paper introduces ARGOS, the Agriculture Research Group on Sustainability and discusses the potential role GIS can play within.

The ARGOS programme examines the environmental, economic and social sustainability of New Zealand's farming systems and compares the different approaches such as conventional, organic and integrated farming with each other. The project focuses on five sectors that are lowland sheep and beef, high-country sheep, dairy, kiwifruit orchards and Ngai Tahu farms.

To be able to assist the landholders increasing the whole-farm sustainability and resilience, a transdisciplinary approach over a wide range of scales (from a national to a paddock level) has been applied.

Research activities over three different objectives have been carried out since the project started in 2003, such as habitat and biodiversity surveys (environmental objective), account, labour and energy analyses (economic objective) and interviews with the landholders about their goals, identity and attitudes (social objective).

Due to its strong spatial component and complexity, the GIS offers itself as an obvious and valuable tool for a variety of different reasons:

- **Database:** The aim of the ARGOS GIS database is that data is stored in a way that it can be easily linked to an Access database and that it can be used by ARGOS workers from all research objectives. The ability of the ArcGIS geodatabase to store/save changes of landcover and management units in a timely fashion is a key factor.
- **Visualisation:** each participating farmer receives a baseline map of their farm/orchard showing the land management units (incl. area), woody vegetation and other relevant information.
- **Analyses:** Simple queries to calculate areas and distances as well as more complex analyses to determine factors such as the patchiness and connectivity of vegetation elements will be carried out.

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