

By Professor Jim Scott

CENTRE FOR SUSTAINABLE FARMING SYSTEMS*, UNIVERSITY OF NEW ENGLAND



A sustainable Australia needs sustainable science

As governments and land managers struggle to address the gravity of the current widespread drought and its numerous impacts, it is appropriate to reflect that one of our four national research priorities is an 'environmentally sustainable Australia'.

It is timely to consider whether the nation's research efforts are being optimally directed at issues such as efficient and sustainable water use, arresting land degradation, coping with climate variability and climate change, sustainable agricultural production, balancing energy consumption and production, and permitting economic and social development. As well-meaning scientists and agency staff try to come up with solutions, too often the farmer is excluded from the process, leading to low impact on land management practices.

In recent years, various governments and media commentators have become distracted by single issues such as native vegetation, water pricing, ethanol and so on without seeking a holistic solution – one that will genuinely lead to the discovery of what an 'environmentally sustainable Australia' might look like.

Fundamental to delivering on this national research priority is to ensure that the next generation inherits the nation's natural resources in no worse shape than we inherited them. If our water, vegetation and soil resources are degrading, then we are not currently managing the environment 'sustainably'. The environmental scorecard is also linked to social and economic components, which many agencies are attempting to deliver, but in a relatively short-term fashion, towards a so-called 'triple bottom line'.

A dilemma for the nation's farmers in our laissez faire society is that they are expected to survive and prosper under deregulated markets, which place little responsibility on the consumer to help in the delivery of regulated environmental (for example,

native vegetation) or social (for example, occupational health and safety) outcomes. Another concern is the 'skills crisis' in rural Australia, which may be closely linked to the poorer 'quality of life' experienced by many in sparsely populated areas, compared with the superior infrastructure enjoyed by the urban majority.

Current research efforts relating to an 'environmentally sustainable Australia' are dispersed across a broad array of initiatives, usually with short-term horizons, delivered by agencies that are commonly insufficiently engaged with farmers and their communities.

At times, the goals of individual agencies have insufficient dimensions. While industry-focused research corporations and state and federal agencies are addressing an enormous range of issues – greenhouse gases, river and soil health, biodiversity, water-use efficiency, integrated weed management, rural counselling and so on – few are tackling issues in a sufficiently integrated fashion to find new ways for farmers who have to manage their land sustainably and hence need to deliver on all of these fronts simultaneously. One multi-agency project, Grain & Graze, supported by four research and development corporations, is attempting to do this, albeit in a short time frame.

How can these problems be addressed? Those who manage the land need to be fully engaged in asking the questions as well as helping to come up with the answers. In addition, there is a need to seek more sustainable land use in a comprehensive and integrated fashion over a period of time of at least 25 years if we are to understand inter-generational transfer of resources. Projects, if successful, need 'over-the-horizon' funding to allow them to continue beyond the three-year time frame imposed on so much research, especially in this area of 'sustainability' where an understanding of trends over time is essential.

The facts about farming sustainably should be gathered for all agro-ecological regions in Australia and communicated via the internet so that farmers, decision makers, regulators and media commentators can see the facts conveyed in an objective fashion.

Understanding how farming systems can be sustainable within each region can be determined by allowing partnerships of farmers, researchers, extension specialists and consultants to work together to collect objective data over an appropriate scale of time and distance. By measuring, monitoring and benchmarking important elements of sustainable farming systems, we will see farming evolve towards more sustainable practices through co-learning.

The essence of farming sustainably is, over time, to:

- optimise climatic opportunities and manage climatic risks;
- minimise erosion and leakage losses, especially of nitrogen and water;
- efficiently harvest energy and protein (through grain, fibre, oil, sugars, pasture and livestock);
- manage complexity by focusing on key economic and environmental drivers;
- optimise financial returns leading to sufficient net worth; and
- steward the environment.

The creation of long-term 'fact farms' across many agro-ecological regions of the nation, where teams can test and measure different, integrated, whole-farm systems, would yield valuable information leading to a better understanding of how to achieve an 'environmentally sustainable Australia'.

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* Centre for Sustainable Farming Systems: www.une.edu.au/csfs