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## Comment 1 on ‘Agricultural Innovation’ by Alston and Pardey

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As expected, in spite of a severe space constraint, Alston and Pardey’s (2016) review of the contribution of Australian economists to understanding the impact of research on the welfare of farmers and others and its implications for science policy picks up on most of the key issues.

One reason for measuring the impact of research is to demonstrate that it is a good use of scarce resources – an accountability perspective which dominates the Alston and Pardey paper.

Research evaluation, whether *ex ante* or *ex post*, can also contribute to the development of research programs which have stronger impacts on the sector. I want to point out the contribution Australian economists, especially those in State Departments of Agriculture, have made in working closely with scientists with potential benefits not only to research planning and evaluation but also to the adoption of new technologies.

In the online material (Appendix 2), Alston and Pardey note the gains from scientists and economists sharing the tea room, but perhaps this contribution is understated because little of this work appears in the scientific literature. I cannot give empirical evidence for these efficiency gains, but in my experience, scientists in State Departments are more likely to understand the notion of a plausible causal pathway from the research resources available to them and final outcomes observed on farms and the counterfactual, than scientists in universities or CSIRO. This collaboration with scientists in research processes has been strongest in the WA, Victorian, QLD and NSW Departments. These efforts have been strongly encouraged by economists in the Grains Research and Development Corporation and the Australian Centre for International Agricultural Research.

Unfortunately, these efforts have been highly cyclical, and at present, we seem to be at a low point again. Some reasons for this include:

- The general cutback in public funds available to agricultural research.
- Disenchantment on the part of science managers when they realise that ‘window dressing’ exercises that economists are often asked to participate in are pointless and credible impact assessments are expensive.
- A shortage of economists with practical skills and experience in this work.
- Uncertainty about how to evaluate research that has other objectives additional to traditional productivity gains.

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There is no space to address all these issues here. However, estimating the total gains in economic welfare is the starting point for making judgements about contributions by research, allowing one to compare benefits of agricultural innovation to other objectives science managers might pursue like poverty alleviation and women's empowerment. It is also the starting point for making judgements about the importance of capacity building activities relative to knowledge discovery processes through experiments and other uses of research funds.

Alston and Pardey suggested that poor communication of its benefits might partly explain the lack of support for agricultural R&D. A commitment to carefully measuring and explaining how new technologies impact on farm plans and profit would seem to be an essential component of any improved communication strategy to increase innovation and adoption.

Perhaps another dimension of the communication issue may be that policy makers outside agriculture do not appreciate the breadth of agricultural R&D which underlies better environmental, human health and animal welfare outcomes and is the scientific basis for protecting Australia's interests in areas like phytosanitary trade regulation and clean, green and animal welfare 'certification' processes. Perhaps policy makers interpret agricultural R&D to mean traditional farm production technology R&D, dismissed as the province of Australia's rural R&D corporations.

Alston and Parley's paper begs the question as to why Australians have made such a large contribution in this area of science policy research evaluation. Perhaps because farmers were supporting research through levies as far back as 1936, economists were confronted with questions about the returns from such investments and their distribution much earlier than in other countries, an interesting question for further discussion.

Finally, Alston and Pardey note the slowdown in the growth of multifactor productivity (MFP) in Australian agriculture in common with other countries. According to Hughes *et al.* (2011), from 1978 to 2008, climate-adjusted MFP for broadacre cropping in Australia grew at an annual rate of 1.53%, but since 2000, it grew at a rate of only 0.24%. There seems little reason to expect MFP growth to return to 1.5–2.0% per year unless there is a large increase in R&D over several decades.

## Reference

- Hughes, N., Lawson, K., Davidson, A., Jackson, T. and Sheng, Y. (2011). Productivity pathways: climate adjusted production frontiers for the Australian broadacre cropping industry, ABARES, Research Report 11.5, Canberra.