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Can private sector R&D feed the world?

At its annual conference in October, the Crawford Fund examined the role of private sector R&D in food production, with a focus on the developing world. The conference attracted a range of eminent international speakers.[1]

This year's topic was provocative given the widespread view that the public sector is dominating assistance to smallholders in the developing world. Let me here briefly respond to the presentations from an Australian perspective.

The challenge is considerable: By 2050 we have to double food production to feed 9 billion people, including an expanded middle class who will demand protein-based diets. Over 60% of people will live in large cities. This will drive greater trade in food. Rural communities will need to produce food surpluses to feed this urban population. Farmers will be coping with climate change and possible reduced access to key fertilisers and fossil fuels that supported the green revolution in the late 20th century.

While speakers were from an extremely varied background, all were unanimous in the key role that the private sector will make in developing country agriculture. All highlighted the need for strong partnerships between the private and public investments to ensure that the whole food value chain is brought into existence: from increasing productivity to ensuring that surplus food is transported and stored safely, to the creation of markets.

Changes in private and public spending in agricultural R&D are already evident in the developed world. We know that public spending has been decreasing over the past three decades. This has implications for food production in developing countries as they have historically relied on spillover benefits from publicly-funded research in the developed world. However, some of this public investment has been replaced by private investment as companies are better able to capture value. Professor Pardey (University of Minnesota) indicated that in the US, the benefit of agricultural production that was captured post-farm rose from 69% in 1980 to 81% by 2006.

In Australia we have also seen a reduction in public expenditure in agriculture, particularly by State Governments. Figures presented to the Productivity Commission in 2007 (Public Support for Science and Innovation) however, indicate that, contrary to public perception, overall R&D investment in the agricultural sector rose 20% in real terms between 1996 and 2003. This was largely driven by an increase in private sector investment that compensated for the decline in public spending. The increase is encouraging given that historically the proportion of agricultural research done by the private sector is relatively low (24%) compared with other OECD countries (55%), at least in 2000.[2]

I would argue that the relative shift in investments of public and private investment in Australia is a sign of maturity in agricultural R&D. Indeed, public investment should aim to create opportunities for it to be replaced by private sector investment as much as possible. In this way, public sector R&D can continue to focus on emerging national issues and in areas of greatest public good. What needs to be determined is whether the shift from public to private funding is leaving critical gaps in our R&D capacity.

During the conference, it was fascinating to see that between the developed and developing world, there was much in common in how the private sector was partnering with the public sector to stimulate food production and security. We can illustrate this using Australian examples:

1. During the late 1990's there was an increase in total industry contributions through the R&D levy as the R&D corporation model reached maturity. The levy system allows producers to have a voice in how public investments are best made to benefit their industry. This form of private sector investment is not usually present in developing countries but private foundations such as African Agricultural Technology Foundation or international donor organisations can act as brokers on behalf of smallholders.
2. A range of public sector activities, such as breeding and grain storage, has been progressively privatised in Australia freeing up public R&D funds to focus on more strategic research. In the developing world, we see Governments stimulating the private development of seed markets, and breeding programs in the local regions.
3. In Australia private sector farm advisers and consultants gradually replace the traditional agricultural extension officers. The private sector already plays a key role in countries like India in providing advice to smallholders.
4. There is a strengthening of public-private partnerships between global life science companies, public sector R&D agencies and universities which reflects the increasing development of agronomic traits by the private sector. The recent alliance between CSIRO and Bayer CropSciences; and the alliance between the Department of Primary Industries Victoria and Dow AgroSciences are two examples. Such partnerships are flourishing with a range of international centres such as CIMMYT in Mexico and BECA in Kenya to enable poor farmers access to the latest technology.

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In summary, food production remains a challenging area for agricultural R&D in the coming decades if we are to respond to an increasing population in a period of enormous global change. There are positive signs that the public and private sector will jointly meet this challenge. In this way, small and large landholders can benefit from technological advances and innovation while public funds can be directed to areas of greatest public good.

[1] *www.crawfordfund.org/events/conference09.htm*
[2] *Farm Policy Journal 3(1), 2006, p7*