RDC Inquiry
Productivity Commission
LB2 Collins Street East
Melbourne VIC 8003

11th June 2010

Thank you for the opportunity to make a submission to the "PRODUCTIVITY COMMISSION INQUIRY INTO THE AUSTRALIAN GOVERNMENT RESEARCH AND DEVELOPMENT CORPORATIONS MODEL".

ACPFG was established in 2003 to provide a national capability in cereal genomics. Our objectives are to discover genes, gene systems and technologies, access technologies from overseas and ensure delivery of these outputs to the Australian farming community as cereal varieties with improved tolerance to abiotic stresses. At that time, it was recognised that the delivery of agricultural research outcomes from conventional Australian university research programs had been quite successful. In particular, the University of Adelaide's wheat breeding program using conventional, and later molecular selection techniques, had led to the development of over half of Australia's modern day cereal crops. The intention of the funding agencies, including the Grains Research and Development Corporation, was to develop a sustainable centre that would use the very latest biological techniques to deliver beneficial outcomes to Australian growers.

Global agricultural research was estimated to be $21 billion US dollars in 1995 (Pardey[1] et al) with Australian expenditure at the same time at only $280 million[2]; being 1.3% of the world's total expenditure. Therefore, to be competitive, Australia needed to be innovative in the way that it accessed technologies and capabilities. ACPFG saw great potential in leveraging its modest funding base, the core of which comes from the GRDC and the Australian Research Council (ARC), to access the huge pool of scientific resources from overseas.

ACPFG has become one of the top research centres in the world for cereal genomics ; it manages over 130 staff including 34 PhD students and has now published over 250 scientific publications. It has filed 30 patent applications and now hosts over 50 short and long term high-calibre scientific visitors each year. There are now many collaborations in place with public and private organizations, within Australia and overseas.

[1] Slow Magic – Agricultural R&D a Century After Mendel, Pardey P,Beintema N, Agricultural Science and Technology Inidcators Initiative, Washington DC, October 26, 2001
[2] The application of sustainability concepts to Australian Agriculture:an overview, G Stoneham et al, Australian Journal of Experimental Agriculture

Hartley Grove
Urrbrae
South Australia 5064

Postal
PMB 1, Glen Osmond.
South Australia 5064

Tel: +61 8 8303 7423
Fax: +61 8 8303 7102
acpfg@acpfg.com.au

ABN: 98 102 769 808

This submission will respond to each of the Commission's Terms of Reference in order. We make specific reference to the GRDC because it is one of ACPFG's funders and because it is the only RDC of which we have first hand experience.

ToR 1: examine the appropriate level of, and balance between public and private investment in rural R&D;

Historically, Australia's cereal industry has been able to maintain its competitiveness by the adoption of new varieties; many have been funded directly or indirectly by RDCs such as the GRDC.

Increasing cost pressures are threatening Australia's market competitiveness as a leading world trader of wheat and barley. New varieties with improved yields or other characteristics take a long time to develop using conventional plant breeding techniques. Over time, it has become more and more difficult to develop new varieties. Typically, it can take between 7 and 15 years to bring a new cereal variety to market. This long development time has meant that cereal breeding historically remained largely dependent on public sector funding. In recent times, the major wheat breeding programs have been "corporatized" with initial income flows for those companies coming largely from varieties developed pre-corporatisation.

An "explosion" in plant genetics and genomics research as well as the quantity of information about plant genome structure, has resulted in a 'technology gap'. Resource development has exceeded the ability to solve practical plant breeding using those resources. This gap is being closed by providing tools and methods to breeders to help them identify, and select, traits and underlying genes.

Whilst it is likely that those new breeding companies will become financially self-sufficient, the development of technologies and tools that underpin many of the breeding processes remain largely in the public sector. The reason for this is that Australia's cereal industry is not large enough to support both private breeding companies and the developers of the tools which the industry needs. Hence public sector investment remains crucial to the industry.

Recently, and driven by the increasing difficulty in obtaining improved yields by conventional plant breeding, there has been renewed international interest in the use of

transgenic technologies, “biotechnologies”, to improving wheat varieties. The cost to introduce new biotechnologies into commercial, adapted varieties is very large and will require even larger investments than are currently in place. It also seems probable that the industry will need to work with overseas groups or organisations that have the experience and resources to undertake the extensive and expensive regulatory process. The time horizon to introduce such technologies will generally still be too long to attract significant private investment without at least co-funding from the public sector.

Whilst theoretically Australia could become a technology “importer”, and indeed there are many technologies available from overseas, quite often they are not housed within the correct crop or indeed even in a variety adapted to Australia’s harsh conditions. Australia must expect to spend a considerable proportion of its research effort in adapting overseas technologies to its own adapted germplasm. This may also need public sector support.

ToR 2: consider the effectiveness of the current RDC model in improving competitiveness and productivity in the agriculture, fisheries and forestry industries through research and development;

The current model has served the industry well; Australian cereal yields have continued to improve and Australia has remained competitive in an increasingly hostile and competitive environment. The GRDC has funded a large number of cereal improvement programs where private sector funding would not have been available; projects with both long and short term time horizons.

The RDC model provides a means to strategically apply grower funds to areas of long-term importance. The GRDC model works particularly well with a series of grower groups, or panels, used to assess industry needs and then place funds toward programs that meet those needs.

The GRDC model ensures that the industry funds projects of a strategic nature, taking into account industry needs as a whole. Whilst individual growers would possibly be tempted to allocate funds to their favourite, and short term, areas of interest, the “checks and balances” in the panel system ensures that a balanced portfolio of projects across all areas is funded. ACPFG sees a balanced portfolio as vital to the long term survival of the cereals industry.

Evidence of the success of the model is that the GRDC panels have been enthusiastically populated by growers from all parts of the country, researchers and people from agri-business; these people have recognized that input into the funding process is critical for the growth, or survival, of the cereal growing industry.

ToR 3: examine the appropriateness of current funding levels and arrangements for agricultural research and development, particularly levy arrangements, and Commonwealth matching and other financial contributions to agriculture, fisheries and forestry RDCs;

As state government funding to agriculture has waned, the GRDC has become more important as a source of research funding than ever before. There are few other avenues from which scientists can secure funding aside from the GRDC. The other significant funders of Australian research are the Australian Research Council and the National Health and Medical Research Council; both fund research activity that is predominantly outside of agriculture.

The overall level of funding for agricultural research is low relative to the value of the industry. The average level of public R&D support for the agriculture sector in developed countries has been 2.64% of agricultural GDP in 1995 (Pardey and Beintema, 2001). Given the significance of this sector for the Australian economy and the need to maintain an efficient and productive agriculture sector, one would hope to see investment in R&D of close to 5% the value of production. Since farm production was around $45 billion in 2009 (ABARE) this would translate a public sector investment of around $2.5 billion, well above current levels.

ToR 4: consider any impediments to the efficient and effective functioning of the RDC model and identify any scope for improvements, including in respect to governance, management and any administrative duplication;

ACPFG sees uncertainty as a large impediment. In recent years, severe drought has impacted on grower levies and hence has provided some uncertainty in the research community about research funding for agriculture. We would recommend the Government underpins the income available to fund research in years where grower levies are lower than expected.

We receive funding of $2 million per annum from the GRDC with a funding cycle of five years. This has been important in developing a broad research agenda and in maintaining a flexible research program. However, most GRDC projects are for small amounts of funding and for three or fewer years. Both research and administrative activities could be considerable more efficient if fewer, but larger and longer term, projects were supported.

Most overseas R&D funding agencies regularly use external assessors. Because some of the RDCs have only limited scientific expertise, we would like to see a similar scientific screening and assessment process adopted in Australia. We would also recommend a more consistent review process and structure for reviews of project progress; it may be possible to bring in external review panels to evaluate a number of projects in particular areas.

We are unable to comment on governance issues aside from saying that the Panel system in the GRDC works particularly well.

ToR 5: consider the extent to which the agriculture, fisheries and forestry industries differ from other sectors of the economy with regard to research and development; how the current RDC model compares and interacts with other research and development arrangements, including the university sector, cooperative research centres and other providers; and whether there are other models which could address policy objectives more effectively;

The "market failure" in securing funding for R&D is not unique to agriculture. However, due to the long times to develop new varieties, and the sizable amount of money required to fund research and infrastructure for research, agricultural R&D fares worst than most. There are few private companies conducting basic long term research agriculture and indeed few companies in agriculture at all. Agricultural research is primarily conducted within Universities and much is funded through the RDC system.

There are almost no agriculturally orientated CRCs now and even the Australian biotechnology industry now has very few companies that invest in agricultural research. This is in stark contrast to the United States where a small number of large private sector firms invest heavily in agricultural research. Monsanto itself reputedly spends around $1billion per annum on agricultural R&D; most of it in biotechnology crops; this is approximately 10 times the size of the whole GRDC budget. Monsanto has demonstrated that there is a direct relationship between agricultural R&D spending and increases in gross

profit. Increasing R&D spending by 9% per year since 2001, Monsanto have increased their seed business gross profit by 24% per year (CGIAR, 2007). Other multi-national companies have made large investments in people infrastructure and germplasm needed to deliver new crops. Germplasm acquired during DuPont's amalgamation with Pioneer is valued at US$975 million amongst its other intangible assets. In its last annual report, as a result of its ongoing investment in agricultural biotechnology, DuPont expected that in 2009, its agriculture and nutrition division would introduce 26 new soybean varieties and 96 new corn hybrids. We do not see such investments in Australia.

ToR 6: examine the extent to which RDCs provide an appropriate balance between projects that provide benefits to specific industries versus broader public interests including examining interactions and potential overlaps across governments and programs, such as mitigating and adapting to climate change; managing the natural resource base; understanding and responding better to markets and consumers; food security, and managing biosecurity threats;

The RDC system as operated by the GRDC ensures that even long range, basic research fits strategically within a portfolio of projects.

ACPFG's work, partially funded by the GRDC, flows directly into cereal breeding programs. As part of the "Pre-Breeders Alliance", established by the GRDC, ACPFG is committed to delivering outputs for conventional plant breeding at no further cost to the industry. Whilst ACPFG predominantly works with abiotic stresses, salinity and drought, other groups work on improving quality, resistance to pests and so on. As mentioned, there are limited sources of research funding within Australia and therefore overlaps, if any, are likely to be small.

The commodity-based structure of the current RDC has led to some unevenness of funding and a reluctance of many research providers to engage in broad research programs that would move across sectors. This has been an impediment to effective use of research capabilities where a large investment is needed in building technological capabilities or where there is an issue of problem that spans commodities or address agricultural plus environment, sociological or other issues. For example, our organization, ACPFG, has built strong technological capabilities in genomics but we are currently only applying these capabilities to cereals. Under the current structure it is difficult for us to develop complementary programs for other crops or animals.

ToR 7: examine whether the current levy arrangements address free rider concerns effectively and whether all industry participants are receiving appropriate benefits from their levy contributions.

Whilst the levies are collected from cereal producers, there are free-riders downstream in the value chain that benefit from much of the work funded by the GRDC. We would like to see a wider application of the levy system to fund research. The estimate is that farm production accounts for less than 20% of the $250 billion total food value chain. This has tended to focus research at the production end of the chain. If significant investment could be generated further along the chain, this would improve whole of chain approaches to R&D and could strengthen the food processing and manufacturing sectors in Australia.

We hope that these comments are of interest to the Commission.

Michael Gilbert/General Manager

Peter Langridge/CEO