

Senate Committee Inquiry

Food Production in Australia

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5 February 2009

Focussing national human and physical resources for R&D in food production

This submission addresses the reasons for the shortfall in graduates of university courses in agriculture, horticulture and food, the fragmented national and state resources for R D&E in these fields and proposes holistic solutions for more efficient use of these resources and ways to attract more tertiary students.

The Problem

The Government has recently formed the Rural Research and Development (R&D) Council but its terms of reference do not address education and training of manpower required to implement rural R&D programs. There is only limited mention of capacity building.

The issues and problems associated with agriculture and the environment are increasing in Australia because of climate change, the associated changes in rainfall in Southern Australia and the international economic down turn. These changes raise issues about food security as well as export risks. The need to maintain a highly trained, experienced and innovative work force has long been recognised by industry leaders but at the same time Federal and State Governments have progressively cut funding for R D&E for agriculture and food. In the May 2008 budget, CSIRO's budget was cut by \$63 million over 4 years. CSIRO announced that it was closing some research stations including beef cattle at Rockhampton Qld, the 90 year-old Horticultural Research Centre, Merbein, Victoria and further reducing its footprint at the Food Science Laboratories at North Ryde, NSW. CSIRO no longer conducts work on the postharvest physiology and technology of fresh foods, and technology of refrigerated transport. CSIRO management justified these cuts by stating that it spent 29% of its budget on agriculture whereas agriculture only contributes 12% of GNP. This ignores the fact that agriculture generates 30% of Australia's export income and provides many jobs in food services, processing and distribution. The regional importance of the agribusiness economy should not be understated.

The latest cuts to CSIRO mean that CSIRO has effectively withdrawn from horticultural R&D except for wine grapes and wine. The NSW Minister for Primary Industry announced in November that 8 research stations would be closed over the next three years. There has been some retraction because a fish hatchery at Jindabyne, NSW is to continue and negotiations are underway with local industry groups to save other research stations.

These short term responses of Federal and State Governments to reduce spending on agricultural R&D ignore the fact that our agricultural success and competitiveness depends on comprehensive and cumulative programs, over decades. It cannot be traded from year to year in CRCs and CSIRO Flagships. Once these capabilities are lost it will take decades to recover. It is clear that much of the capability we used to have has already been lost because of the reliance on short term contracts and relatively low salaries for scientists.

The adverse publicity arising from these Federal and State government decisions and the generally bad news about the agriculture sector have deterred students from considering tertiary courses in agriculture, horticulture and food. Since funding of university teaching programs is largely dependent on student numbers, as numbers have fallen universities have not replaced academic staff in agriculture, horticulture and food. This has resulted in the closure of courses at some universities. In 1994 at UWS Hawkesbury there were about 300 students in horticulture including undergraduate, Graduate Diplomas, course work Masters and higher degree research students. Today we have less than 20 undergraduate students, no coursework Diplomas or Masters Courses and about 10 PhD students working on horticultural topics at any one time. Doubling of HECS from 1996 was also a factor that deterred students from choosing expensive agriculture and horticulture courses and postgraduate coursework degrees were made fee paying by the Federal Government.

Universities mostly depend on academic teaching staff to conduct research as they can only afford to employ a small number of full time research staff. The decline in staff numbers in agriculture, horticulture and food has meant that research output in these fields has steadily declined.

The declining interest in agriculture traces back to the schools, especially in the cities where 70% of the Australian population lives. High schools only offer agriculture, horticulture and food subjects when there are viable student numbers and as a consequence there are few teachers trained in these subjects. Experienced, highly motivated, well supported teachers are required to attract and inspire the more gifted students. In NSW, agriculture, horticulture and food are included in the Vocation Education Stream and not the Science stream, which tends to diminish the status of these subject areas.

Solutions

The solutions to these problems require a holistic approach that raises the status of agricultural, horticultural and food science especially to high school children and their parents:

- ***Include agriculture, horticulture and food in the science stream in secondary schools.***
- ***Attract and train specialist high school teachers in agriculture, horticulture and food.***
- ***Cease further reductions in budgets for R D&E in agriculture, horticulture and food by both Federal and State governments and instead increase funding as is being done by the Obama administration in the USA.***

- *Re-focus Federal resources by consolidating all R&D in one new Department (Agriculture Australia or Australian Department of Agriculture) and co locating research laboratories and research staff on or adjacent to university campuses. This change would create the equivalent of the USDA that continues to effectively serve agriculture in the USA.*
- *To further reduce the fragmentation of resources, State governments should be encouraged to continue the process of concentrating and consolidating their R D&E activities by co-location on university campuses. This will provide a continuum from farm advisory services to distinguished academics similar to that in the US Land Grant College system.*

Creating a new Department; Agriculture Australia (or Australian Department of Agriculture)

The objective is to mount a focussed, consistent, cumulative policy and R&D program, aimed at Australia's strategic problems, with a focus on adaptation for the unpredictable future.

Agriculture Australia would consist of two Divisions. One Division would include all the present functions of DAFF and the second Division would conduct R&D in agriculture, horticulture and food.

The R&D Division would absorb the entire R&D in agriculture, horticulture and food remaining in CSIRO. Some of the R&D conducted by CSIRO in these fields is conducted by Divisions or groups located on University campuses and in some cases the universities have conferred joint academic titles on CSIRO scientists. Agriculture Australia would maintain and strengthen these relationships with the Universities.

Complementation of Agriculture Australia full time researchers and academic teaching and research staff in the Universities will restore a critical mass of trained and experienced scientists that has ceased to exist in some universities. This will provide several benefits that include; raising the attractiveness of agriculture, horticulture and food science to students and their parents, arrest the loss of experienced scientists (CSIRO used to be the main national source of scientific advice in agriculture, horticulture and food) and provide an organisation that can quickly develop innovative solutions in a world where changes and challenges can be expected to occur with increasing rapidity. This symbiotic relationship between Agriculture Australia and University Scientists should attract a new generation of students who will become inspirational high school teachers and top flight research scientists.

Formation of the proposed new department, Agriculture Australia will give the whole area of Food Production in Australia the high status that will be essential if we are to meet all the demands now being placed on this sector.

CSIRO would continue its involvement with industrial research in areas other than agriculture, horticulture and food such as extractive industries and energy,

Quotation. President Obama has appointed three leading scientists, one of whom is a Nobel Laureate in Physics, as co-chairs of the President's Council of Advisors on Science and Technology. The President stated "Today more than ever, science holds the key to our survival on the planet and security as a nation. It's time we once again put science on the top of our agenda and worked to restore America's place as the world leader in science and technology."

Personal submission

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