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Senate Enquiry into Higher Education and Skills Training to support future demand in agriculture and agribusiness in Australia

Submission from the School of Agricultural Science, University of Tasmania

The Australian Council of Deans of Agriculture (ACDA) identified a national shortage of graduates in agriculture which has developed over the last 10 years. This is set in a situation where a large proportion of agricultural professionals are approaching retirement. Data from the ACDA indicate that graduate numbers are <300/year in agriculture and <700/year in agriculture and related courses, while the job market for graduates indicates that there are in excess of 4000 positions/year. They also advise that the number of campuses in Australia providing agriculture/agricultural science degrees has declined from 23 in the 1980s to around 9 in 2011.

It appears Industry is not well informed of how serious the shortage is and yet expects Government and universities to continue to provide agricultural graduates, but have so far failed to engage and support universities effectively.

The community wide image of agriculture is an impediment to young people taking it up as a career and agriculture in the Tasmanian school system is in serious decline. Associated with this is the low number of HSC students taking mathematics and science and this has the effect of reducing the numbers able to come into agricultural degrees at University.

Thus, a key challenge facing Government is the need to increase the profile and the supply of agricultural science and agribusiness graduates and to maintain skill sets in educational institutions to deliver suitable graduates. In universities, the latter is being lost to rationalist agenda as student supply falls. If the Commonwealth and State Governments are serious about Food Security, Climate Change Adaptation and related discipline areas, it should declare Agricultural Science a National Priority Area and reduce student contribution to University costs e.g. as it has for Nursing.

It is a sad fact that research higher degrees students (PhD and Masters) receive a stipend that is close to the poverty line with no superannuation, whilst interest on their HECS debt continues to increase. There is a dire need to increase the value of these stipends if we are to attract the best and brightest to agricultural research. In addition to this, the research workforce in agriculture has been contracting and now does not provide the career paths it once did. Doctoral graduate employment is increasingly limited to short-term contracts on research projects as state agencies are no longer providing many places for researchers on a secure basis. This greatly reduces the attractiveness of the sector to the best and brightest students. Added to this is the increasing number of our higher degree students who are international students and so we need to consider how to retain the expertise developed within Australia and how to assist these graduates in moving into the industry, i.e. what other transition into employment programs are needed? Also, how might we underwrite industry links during their training at postgraduate level to stem leakage back to other countries that are our trading partners but also our competitors?

The trend in graduate numbers has implications for the productivity of the industry, for access to quality tertiary agricultural education and for the sustainability of agricultural R&D. Universities provide services such as core RD&E, in addition to tertiary education and training. Universities also provide research and teaching staff for international aid and development programs which are undergoing significant expansion at present.

Agricultural research and development has led Australia to productivity gains double the national average for over 50 years. However, this has slowed in recent times in part due to a decline in investment in production R&D. Unfortunately, this productivity slowdown is an international phenomenon following on from a global reduction in funding for agricultural R&D and will hamper our response to the emerging global food security issue. Immediate action is required if we are to meet Australia's needs let alone provide a contribution to the international effort. Also, agricultural production is only one part of the equation as there are many sides to the supply chain besides agribusiness and food manufacture (where the innovation supply in Australia is falling), including resource use, land management and environmental management.

The complexity of modern agriculture, the high levels of compliance, the high and increasing expectations on environmental management, including new demands on emissions and climate change, make the case for higher levels of education and training in agriculture compelling.

The issues facing the national and international agriculture sector are immense and require the best minds and actions. They include, but are not limited to, meeting the increasing global food demands while adapting to climate change in an environment where there is increasing competition for water resources, energy and fertilisers and a growing demand for land from urban, biofuels, forestry and the need for land conservation, including carbon sequestration. These demands will place greater pressure on arable lands prone to erosion, acidification, nutrient decline, salinisation and structural decline requiring improvements in land management practices.

Promotion of agricultural degree(s) is needed in an increasingly urbanised society. The UTAS-developed and lead PICSE (Primary Industry Centre for Science Education) program is only part of the solution. There is greater need for support for agricultural degrees so as to "be seen" as well as being moved to HECs Priority Band – i.e. make them more affordable. We strongly support the efforts of the PICSE program.

Industry peak bodies need to sell agricultural careers, they need to be the ones in the market promoting the sector to students, least the universities appear self serving.

School based career advisors need to be educated too; they do not necessarily present agriculture in a positive light and are lobbied by other sectors and affected by the media which often present negative images of agriculture. There is a need to highlight the broad, complex and changing national and international agricultural food and fibre system.

Articulation from the VET sector to University needs to be enhanced; it was realistic and beneficial prior to the Units of Competency Scheme, but now it is nigh impossible to map VET qualifications or course content onto University programs for credit. This greatly disadvantages students and universities.

Currently there is funding discrimination against agricultural science in that mathematics and science are listed as 'National Priorities' for the purposes of HECS discount, but agricultural science is excluded from 'science' in this definition. We suggest this ought to change with agricultural science being included in the priority band.

We need to support and maintain the distinctiveness of Agricultural Science degrees to ensure they are not lost in a broader science degree and diluted down and then underfunded. We also need universities to support and maintain the profile of schools of agriculture and agribusiness at both a national and international level.

The School of Agricultural Science set the national trend in 1997 with the partial co-location and merger with the state agency research facilities via the Tasmanian Institute of Agricultural Research (TIAR) Joint Venture Agreement. This has allowed for staff consolidation, the sharing of specialist facilities and the maintaining of a critical mass of staff involved in agriculture within the University. In 2008 this expanded to include DPIPWE extension and development staff leading to one of Australia's largest University-based agricultural organisations capable of delivering across RD&E, Education and Training. The School of Agricultural Science is currently developing a 5-year Strategic Plan to ensure the delivery of relevance and excellence in agricultural science learning and teaching. This strategy includes the development of a modernised curriculum, closer engagement with industry and promotion and support of agriculture via philanthropy and scholarships.

The School of Agricultural Science at UTAS is part of the ACDA and so is fully aware of the recommendations made in their submission and fully endorses them in particular:

1. *Making agricultural science a national priority area and thus including the discipline in the HECS discount and National Priority category.*
2. *Modifying or waiving the time for establishing independence for student support for agricultural students (due to cost of moving from rural areas).*
3. *That postgraduate scholarships be increased substantially to attract the best and brightest into agricultural research.*
4. *That government exert influence on Rural R&D Corporations to address the unsatisfactory short term salary funding for postdoctoral researchers.*
5. *The establishment of an Agribusiness Council of Australia which could work with the ACDA and NFF to promote agricultural education and training.*
6. *That in the school system all curricula should,* inter alia, *provide contexts and examples of agriculture and food production.*
7. *The need to promote science, and particularly agricultural science, in secondary schools more vigorously and acknowledge the efforts of the Primary Industry Centre for Science Education (PICSE) based here at UTAS.*
8. *The need for better support and training for teachers in respect of agriculture and food production and also for careers advisors in schools.*
9. *Ensure that a minimum of 40% of federal funds provided for agricultural education are allocated to the schools for staffing to reduce the siphoning of funds to other university activities.*
10. *Ensuring that student:staff ratios do not exceed 15:1 for the applied subjects to ensure appropriate instruction and supervision by qualified staff.*