

Senate Enquiry: Higher education and skills training to support future demand in agriculture and agribusiness in Australia.

Terms of Reference

The terms of reference relate to the provision and content of higher education and skills training for agriculture, the adequacy of current educational arrangements in meeting the Australia's agricultural labour market needs, and the impact of any supply and demand discrepancies on business, research, and the economy more broadly.

The University of Western Australia - agricultural education (overview)

The University of Western Australia has a proud history of teaching and research in agriculture and related areas, such as natural resource management, since its establishment in 1911. UWA is currently ranked 110 in the world (Shang Jai Tong Academic Ranking of World Universities) and is ranked 33 in the world in the 'Life and Agricultural Sciences' category.

The Faculty of Natural and Agricultural Sciences at UWA has four Schools, each with a strong discipline-base related to agriculture (School of Plant Biology, School of Animal Biology, School of Earth and Environment, and the School of Agricultural and Resource Economics). The Faculty has a world-class research base which supports both undergraduate and postgraduate education. The UWA Institute of Agriculture, formed in 1938 and rejuvenated in 2007, addresses the scientific knowledge demand of today's farming community and the organizations that support best agricultural practice. To meet the mandate to integrate the University's research, education, training and communication in agriculture, The UWA Institute of Agriculture draws upon the finest scientific expertise and knowledge stretching across the University and externally.

UWA has continually reviewed and revised its agricultural teaching programs in response to industry needs and student demand. UWA was an inaugural participant in the national PICSE* program and has built a strong presence in high schools in Western Australia. This includes provision of information and support for teachers and students about science in agriculture. More recently, the introduction of the successful Science Investigation Awards by PICSE has expanded the opportunity to expose school students to the science that underpins agriculture.

UWA has revised its undergraduate and postgraduate teaching programs, commencing in 2012, so that our graduates continue to be equipped for success in a global knowledge-based environment. The new degree structure for agricultural education at UWA will expose a greater number of first year students at UWA to science in agriculture and to agricultural resource issues. The new degree structure at UWA also includes new postgraduate masters courses in agriculture. These initiatives will raise awareness of opportunities in the

*PICSE is the **Primary Industry Centre for Science Education**
<http://www.picse.net/HUB/index.htm>

agriculture sector and raise the expectation of students that the minimum standard for agricultural tertiary education is a 3-year undergraduate degree followed by a 2-year masters degree.

In previous years, UWA has taught agriculture and resource economics in parallel with other environmentally based teaching programs (e.g. environmental science, conservation biology, environmental economics, botany, zoology, soil science, geography, geoscience and hydrogeology). The new degree structure will enhance the synergies and strengthen the interdisciplinary expertise of graduates. UWA attracts students with very high entry scores and knowledge of research and science communication are embedded in agricultural teaching.

Despite the initiatives mentioned above, UWA has struggled to maintain a student cohort in agriculture and related areas of study that is commensurate with industry and research needs. The strength of the plant sciences at UWA attracts high numbers of international postgraduate students, but there is a short-fall in undergraduate and postgraduate students from local schools. There is virtually no student entry at UWA from Eastern states, although the educational opportunities at UWA in agriculture and agribusiness are of a very high standard that is relevant to the needs of the agriculture sector.

UWA is committed to supporting student-industry partnerships to enhance engagement of student learning with direct relevance to the profession. The rejuvenation of The UWA Institute of Agriculture in 2007 and purchase of a large farm at Pingelly (UWA Future Farm 2050) demonstrates an ongoing commitment to agricultural education and research partnerships in Western Australia.

UWA already makes a significant contribution to raising the awareness of opportunities for graduates in agriculture and agribusiness. However, National and State funded initiatives are essential to ensure existing efforts are effective in encouraging students into agricultural education. The immense competition from other areas is difficult to override and therefore greater national focus on the importance of agricultural education to Australia's future is essential. There are also opportunities to promote agriculture and agribusiness as attractive options entry for mature-age study.

***Specifically, the committee will consider during the course of this inquiry:
the adequacy of funding and priority given by governments at the federal, state and territory level to agriculture and agribusiness higher education and vocational education and training;***

Priority areas for funding - not currently adequately provided for

Undergraduate level:

- (i) undergraduate scholarships / bursaries / cadetships
- (ii) publicity for undergraduate scholarships / bursaries / cadetships
- (iii) expansion of the PICSE project (for raising awareness of science in agriculture)
- (iv) expansion of advertising careers and opportunities to school leavers and teachers

- (v) support for advertising careers and opportunities to graduates from cognate disciplines)
- (vi) support for cross-university teaching initiatives based on expertise across the tertiary sector
- (vii) support for honours projects with industry (direct and in-kind funding)
- (viii) support for accommodation and living expenses for students from regional areas

Postgraduate level:

- (i) increase the number of postgraduate scholarships / top-up scholarships
- (ii) publicity for postgraduate scholarships / top-up scholarships
- (iii) publicity for careers and opportunities to existing graduates (from cognate disciplines)
- (iv) support for postgraduate student travel scholarships within Australia
- (v) provision of study-leave provisions for staff in state government departments to undertake postgraduate study

the reasons and impacts of the decline in agricultural and related educational facilities;

Reasons and impacts of the decline in agricultural and related education facilities

- (i) negative (inaccurate) image of agriculture
- (ii) lack of awareness of agricultural sector generally
- (iii) competing interests (\$ related) from other sectors (e.g. mining; commerce; biomedical sciences)
- (iv) lack of awareness of the breadth of expertise required in agriculture and agribusiness sectors. Opportunities are not appreciated by potential undergraduate and postgraduate students
- (v) generally lower salaries when compared with professions that require equivalent levels of expertise

Re: solutions to address the widening gap between skilled agricultural labour supply and demand;

Solutions

- (i) raise awareness in schools e.g. expand support for the national PICSE project
- (ii) raise awareness among graduates of opportunities for up-skilling
- (iii) provide support for advertising availability of scholarships / bursaries / cadetships
- (iv) improve salary and related support packages

Re: the impacts of any shortage on agricultural research;

Impacts of shortages in agriculture graduates on agriculture research

- (i) low number of Australian postgraduate students in agriculture and agribusiness
- (ii) reduced skilled research cohort for meeting the needs of industry funded research

Re: the incorporation of animal welfare principles in agriculture education;

Animal welfare principles

- (i) UWA has introduced the unit ANIM 3306 *Clean, Green and Ethical Production Systems* as part of its teaching program in animal welfare principles in agricultural education.
- (ii) UWA's new research farm near Pingelly, Western Australia is being developed as a best-practice farm for 2050 based on the principles of self-supporting, sustainable, clean, green and ethical agriculture.

other related matters.

- (i) The agriculture undergraduate teaching program at UWA is supported by new majors in Agricultural Science, Natural Resource Management and Environmental Science
- (ii) The agriculture postgraduate teaching program at UWA includes Graduate Certificates, Graduate Diplomas, Masters [Coursework (2 year); Thesis and coursework (1 year); Research (2 years)]; and PhD
- (iii) There are opportunities to form strong links between teaching of agricultural and cognate disciplines to enhance awareness
- (iv) There has been a significant decline in funding of university places (which imposes a constraint on universities initiatives)
- (v) There is a need to strengthen industry-tertiary sector partnerships (for student mentoring, career advice, training opportunities, work experience etc)
- (vi) Re-badging of degree programs can lead to a lack of clarity in agricultural offerings or strengths, therefore clear messages to potential students are required.

SUMMARY

The University of Western Australia has made, and continues to make, a very strong commitment to undergraduate and postgraduate agricultural education that is supported by world-class research in collaboration with the farming community.

The University of Western Australia identified the need to promote awareness of science in agriculture within schools and was an inaugural participant in the national PICSE project initiated at the University of Tasmania.

However, promotion of the wide range of disciplines within the agricultural sector as a national priority is essential for building the workforce that will provide higher education and skills training to support future demand in agriculture and agribusiness in Australia.