

## *A Smorgasbord of Agribusiness Careers but Too Few Students: Reflections from Higher Education*

### **Abstract**

A perplexing conundrum exists within the Australian agribusiness sector: there are strong career opportunities and a healthy number of job vacancies but fewer students entering higher education (HE) to study in this area. A lack of responsiveness, inflexibility and the undesirability of current HE courses have been suggested as one reason for this enigma. It is time for some reflection on how HE can meet the needs of the agribusiness industry in producing job-ready graduates. This study reflects on the issues at hand having canvassed the views of other major stakeholders, including employers, students, careers advisers and academics. It identifies the role of the agribusiness industry to the Australian economy and its growing need for highly trained and educated professionals. The criticisms of HE that are preventing students from enrolling in agricultural related courses are explored and recommendations for improving student participation are made.

### **Introduction**

‘A major challenge will be attracting people into an agriculture-related career and academic discipline to replace the present number of baby-boomers nearing retirement’ (Wilsmore 2008, p.3).

The shortage of highly skilled and educated labour for the agriculture business sector in Australia is well documented (NFF 2008, Wilsmore 2008, Agribusiness Employer Guide 2008). Despite there being strong career opportunities, the number of people choosing a career in this area is declining. The decreasing number of students entering into agribusiness and agriculture is reaching a crisis stage in some universities, as courses will be forced to close, and the resulting collapse of tertiary graduates could create even further major problems for farming and associated agribusinesses. This paper mainly concentrates on the decline of agribusiness education in Australian universities. Agribusiness is recognised as being largely ‘post farm gate’; for example, in the agricultural support and service industries such as banking, insurance, grain marketing, futures trading, fertilisers, farm machinery.

The peak body of the Australian agricultural sector is the National Farmers’ Federation (NFF), a non-profit organisation representing farmers and industry specific associations at a national level. In 2008 the NFF released a report outlining future labour requirements for the sector and a proposed action

plan (NFF 2008). Tertiary institutions have been identified as not meeting the needs of the farming community in relation to the development of highly skilled and educated professionals in business management, agricultural scientists and farm production. To date NFF efforts have largely focussed on improving the vocational skill base of farm labour workforce (NFF 2008). The priority is to now improve the business and management skills of farmers through appropriate agri-professional tertiary qualifications

At the same time higher education institutions have been trying to grapple with how to attract more students into their agriculture courses. Reflection within the home institution of the authors, Charles Sturt University (CSU) has sought to establish how CSU was catering to the needs of the sector given that there is healthy job and career prospects but too few students coming in to study. Product analysis and suitability was an obvious step as part of an internal review process. In addition, many external factors had to be considered: e.g. cost of study, effects of the prolonged Australian drought, competition from other institutions, and competition from mining and services sectors of the strong Australian economy, as well as the migration from rural and regional centres to the major urban areas.

This paper is a reflection on how CSU is performing within the wider agricultural HE sector. It has involved gathering information from the main stakeholders: by interviewing agribusiness employers, discussions with the NFF, a survey of graduating students from agribusiness courses, a revisit to previous research conducted on farmers' attitudes to tertiary education, and reflections from academics involved in designing and teaching of agribusiness courses at Charles Sturt University, Orange campus.

### **Agriculture within the Australian economy**

There is a natural bias to consider agriculture largely at a farm gate level. However, this sector now only represents a small portion of the total agricultural sector in the Australian economy. While Australian farm production represents approximately 3 percent of Australian GDP and employment, the first stage and second stage agriculture processing sectors of the sector contribute a further 9 percent of GDP and 14 percent of employment. Total agricultural sector contributes some 12 percent of Australian GDP and 17 percent of total employment. Furthermore, approximately 51 percent of sector employment is located in metropolitan areas. Thus many of the graduate opportunities will be pre and post farm employment (ABARE 2007; NFF 2008).

The role of the processing component of the sector is further highlighted by the fact that of total Australian farm production; 18 percent is exported, 14 percent consumed immediately and the remaining 68 percent utilised in other stages of production, either for domestic consumption or export of processed goods (ABS 2007). Furthermore, the agriculture sector has become more diversified. For the financial year ending 30 June 2006, total Australian farm production totalled gross \$37.3b. Of this cattle production contributed \$7.7b, wheat production \$5.1b, dairy \$3.3b, wine \$3.0b, horticulture \$2.5b and wool \$2.2b.

Agricultural exports, as a percentage of total Australian exports, have remained largely unchanged over the past two decades, i.e. from 18 percent of total exports in 1982/83 to 14 percent in 2006/07 (ABS 1985) (DFAT 2008). However the composition of these exports has changed, supporting the structural change in the Australian agricultural sector. In 1982/83 wool, wheat and beef exports comprised 17 percent of the total 18 percent in agricultural exports however in 2006/07 these three commodities only comprised 4 percent of the total agricultural exports of 14 percent. Wine, dairy, cotton and rice exports had increased to be largely similar in size to the original three commodities (ABS 1985) (DFAT 2008).

In 1982/83 total farm debt was \$5.4b against a total gross value of farm production of \$11.7b across 178,000 farming enterprises. In contrast in 2006/07 total farm debt was \$53b against total gross value of production of \$34.4b across 130,000 enterprises (ABARE 2008).

In short, over the last two decades agriculture in Australia has diversified, developing in industries that require significant capital infrastructure (irrigation for cotton and rice and development of vineyards for wine), associated financing requirements, increased business and management skills in logistics, people management skills, marketing (as wine and dairy are not homogenous commodities and thus require different marketing skills), and inventory management. The farm gate sector now only constitutes one third of the agricultural sector.

### **The need for highly educated and skilled workers**

The agricultural sector requires a labour force with the appropriate skills and attributes at all levels – entry level, skilled labour, research and development, entrepreneurial, management and leadership. Agricultural and agribusiness professionals are crucial in the ‘ability for farming to feed and clothe the world as it adapts to climate variability’ (Wilsmore 2008, p.4).

Entry level labour generally relies on on-the-job learning for skill development. If they need further formal training it is gained through short courses, either within industry participants or by vocational educational providers. These latter providers are linked to rural traineeships and deliver certificate and diploma programs. This is the preferred Australian model for vocational occupations such as plumbers, electricians, builders, hairdressers etc. These courses tend to be more flexible to meet the demand of its learners (time and location and length of course) but are competency based (NFF 2007).

Universities provide higher level training and professional education in agribusiness and agricultural science careers e.g. commodity traders, agricultural economists, agribusiness managers, marketers, veterinary scientists. There is a clear division of provision.

### **Higher education and agriculture**

In Australia there are 38 universities, of which 16 use the University Admissions Centre (UAC) for undergraduate admissions into their courses. Of these, six offer courses in agriculture (UAC 2008). Based on their titles, 61 courses are related to the science/production side of agriculture and 21 courses relating to agribusiness, management and agricultural economics.

In their report to the Council of Australian Agricultural Deans, Pratley & Copeland (2007) suggested that the number of agriculture (science and technology) graduates dropped by 30 percent in the five year period 2001-2006. This report provides similar findings to an unpublished internal benchmarking report by Morgan et al. (2005) that suggested that between 1998 and 2003 total Australian university enrolments in agricultural courses had fallen by 41 percent from 2,941 to 1,751 students.

This decline in university enrolments creates uncertainty in the future supply of suitable graduates in the agricultural sector. Holmes Sackett Farm Staff Report (2008) indicates that annual available agricultural graduates now total 1,000 students against some 2,200 available positions. Even adding graduates from agribusiness related courses and other areas, there was significantly insufficient graduates to meet the demand from the industry. The NFF acknowledge there is anecdotal evidence 'confirming there are two to three jobs for every agricultural graduate' (Wilsmore 2008, p. 17). The NFF (2008, p.45) identified that

The expected collapse of tertiary graduates would create major problems for farming, especially in research and agronomy and will have debilitating effects on our international competitiveness...

While these comments focus largely on science and production, the shortage is widespread across all agricultural industries and all skills. Holmes Sackett (2008) also suggest that over the next few years some 92,400 new staff will be required in the agricultural sector together with a further 15,600 staff needed to replace existing staff expected to retire. These figures highlight the perplexing conundrum. There is growing demand for qualified and professionally trained graduates in the agricultural sector but universities are facing declining enrolments.

The interviews with employers outlined that there are many contributing factors to the shortage of labour. Firstly, the ageing population means that many of the baby-boomers will be leaving the workforce in the near future. Secondly, the continuing drought conditions highlight the hardships facing the agricultural industry and thus making it a less attractive career choice for some. Similarly, some parental and careers advisers' attitudes towards recommending an agri-career: parents (it is all too hard on the land; go and do something totally unrelated to agriculture; the less academically gifted child is encouraged to stay and work on the land); careers advisers (farming is in drought and there are no jobs). This is despite findings that agribusiness salaries and lifestyle are comparable with similar occupations in other industries (NFF 2008). The research commissioned by the NFF (2008, p. 23) has highlighted that 'the majority of Australians still hold the old-world view of farming. It is perceived a 'sunset' industry with no future'.

A review of literature suggests that the dominant attitude of farmers towards HE is basically negative, and has not changed much over the last thirty years or so. For example, studies by Hawkins et al (1974), Lynch (1977), Bell and Pandey (1987), Clarke (1987), WRTAC (1995), Johnson, Bone and Knight (1996), all identified a generally negative attitude. The studies identified a general reluctance towards tertiary education with a preference for shorter courses and 'hands on' learning methods, solving problems as they arise rather than accessing more formal courses (WRTAC 1995, Johnson, Bone & Knight 1996).

These prevailing attitudes remain at odds with the changes occurring in the agribusiness industry. For example, increased mechanisation, volatile commodity markets, technological advancements, and deregulation of markets are making agribusiness a much more highly skilled industry than ever before. Holmes Sackett (2008) indicated that within the agriculture industry only 7 percent of the workforce has tertiary qualifications compared to 22 percent across all industries. There is a growing need for more highly qualified agribusiness professionals.

The term 'agribusiness career' is not an oxymoron but many people interviewed in this research study, including prospective students, careers advisers and parents, do not 'see' the potential of pursuing a career in these areas.

### **Criticisms of current higher education courses**

Many agricultural courses remain focussed on agricultural science but there is a growing recognition that farms are businesses and the agricultural service industry is huge and a growing sector of the economy (Bone 2005). Many technology skills become dated very quickly or many can be learned on-the-job. Increasingly, financial, marketing, and economic skills are needed. An area long neglected, and often avoided, is people management. Employers are looking for graduates who have good communication skills, organisation and time management skills, the ability to work as a team, have a customer focus, a flexible attitude and the ability to learn quickly. This is highlighted by the agribusiness graduate selection processes of employers such as ANZ Bank, National Australia Bank, Graincorp Limited, and Elders Limited. These businesses all have graduate processes that involve simulations that involve group work, problem based decision making, communication and critical thinking (Agribusiness Employer Guide 2008).

NFF (2008) report summarised three key criticisms of current HE courses: the lack of responsiveness, inflexibility and the undesirability of current HE courses. These criticisms have been levelled at the entire HE sector and it is difficult to determine if specific criticisms are pointed at all universities or some criticisms are more relevant to some universities. This paper seeks to address these criticisms.

#### *Lack of responsiveness of courses*

One of the criticisms of HE has been the seemingly unresponsiveness to new ideas and change. Johnson et al. (1996) found that a study by WRTAC (1995) identified that many farmers want information about, and access to, the latest technology promptly, but suggest that the time to develop new technology into courses is not meeting farmers' needs. They believe that 'large systems such as universities or TAFE are inherently reactive rather than proactive' (WRTAC 1995, p.57) in responding to this need. Clarke (1987) made similar observations.

More recent studies (e.g. NFF 2008) found that there is keen interest by educators in modern farming, especially when it is related to the environment and sustainability. However, there is still a long way to go before the university programs offer more than ad hoc studies within their agriculture programs. There have been some attempts to introduce a triple bottom line (financial, environmental and social outcomes) approach, but with mixed success, and tend to be part of individual subjects rather than providing an overarching course philosophy. Bellotti (2009) warns governments, universities and industry that population growth and demand for food make the shortfall of agricultural graduates a national concern. He stresses the benefits of an agricultural education that meets these changing needs. The challenge for universities is to design new courses with sustainability issues at the forefront; where agriculture is part of the solution rather than the cause of the environmental problems.

Our experience has shown that attempts to change curriculum can be limited by internal processes such as the long lead time needed to have changes progressed through the approval hierarchy. On average, a course review process will take 12 months and then a further 18 months to have the changes approved. Universities need to act quickly to re-design courses to reflect the key issues that face Australia: climate change, water allocation and food security. Graduates are needed in agriculture and agribusiness to address these issues. At the present time, universities are not responding quickly enough.

### *Inflexibility*

The university is, and was already, addressing many of the issues raised by the NFF. The 12 hour face-to-face in some courses belies the hours that are required outside of the class room. The minimum expectation of the university is that the student will spend the equivalent hours in self-directed study and assessment preparation. There is a misconception that the 12 hours of contact time per week is all that is required for a university degree. Vocational educational providers have greater face-to-face contact but their courses are largely competency-based training. Such courses provide the much needed skilled labour. However, the industry also needs the leaders and professionals in the field that are the products of universities. Furthermore HE develops generic attributes such as critical thinking and communication skills that facilitates life-long learning.

Contact with students in rural and regional areas reveals requests for the design of the university year to take into account the seasonal work of farm businesses. There may be possibilities for 'fast tracking'

degrees as more universities employ a three session per year model. Moving away from the traditional 13 week semester models to more seasonal friendly models is being considered.

Charles Sturt University has promoted itself as Australia's inland university, with several campuses in regional New South Wales, and prides itself on offering an excellent learning opportunity to rural and regional students. As the majority of its students study by distance, the university has invested in an innovative online learning program. This program is used by all students, regardless of mode, and has opened up much needed opportunities for using the internet for course delivery and for keeping in contact with students. Access to the internet and the speed of the internet in some areas are still issues that the university is dealing with. However distance students study part time and an undergraduate degree is completed in six years of study, compared with three years full time study. An inability to exit with a minor award earlier from the course can be a deterrent from enrolment.

#### *Undesirability of current courses*

This is arguably the most critical of the key issues and questions the prevalence of science and production based courses for a segment that only constitutes one third of total employment and economic contribution of the agricultural sector.

Graduating students from CSU agribusiness courses have high employment rates and receive comparable starting salaries compared to other new graduates. Graduating students are required to undertake an exit interview and prepare a course portfolio. The courses have identified seven key graduate attributes; including creative and critical thinking, communication, ethical values, self-efficacy and sustainability. Students are required to monitor their development through their portfolio and present this at the exit interview with industry and academic representatives. This process gives the students a solid preparation to starting their career. Feedback from industry representatives and the students on the usefulness of this exercise has been extremely positive (Bone, 2007).

Analysis of CSU retention rates show that the agribusiness courses retain some 80 percent of the students over their enrolment, which compares favourably to an average retention of 59 percent for the CSU agricultural production and science based courses. The retention rates are supported by evaluations received from students at the completion of the interview and portfolio process. Part of the evaluation seeks feedback on the benefit of their agribusiness management or agricultural production course as part of their employment efforts. In 2008 only 16 students on campus students have



graduated, which is the smallest number to date for the campus. This compares with a typical cohort of around 35 graduates. Two-thirds of the students stated that they would recommend their course and a future in agribusiness for the following reasons:

- *Excellent teachers with a broad knowledge and life experience*
- *Good insight into the agricultural industry*
- *The course was very broad – production to business based*
- *It's a great degree that can open many doors into the agribusiness industry*
- *The opportunities that the course offered*

Most students commented that they would like to more business related subjects, particularly financial subjects. Only two students recommended more technology subjects in livestock breeding and crop management.

Notwithstanding this, the agribusiness courses at CSU still suffer from declining enrolments. This is a reflection of the wider conundrum, namely, once they enrol, students have a high retention rate and, upon completion, are highly sought. However, there remains a perception that agricultural related courses are staid and “old school”. In short, the issue is to get them started into the course and make agribusiness related subjects attractive and relevant to potential students.

## **Recommendations**

There are several potential solutions to increase the number of agribusiness students into HE studies. These could include:

- Greater links between the university and industry through cadetships, internships, and/or industry experience. There are many successful models that can be utilised but industry must have proactive role in providing opportunities for students – the future of the industry rests with Generations Y and Z. More needs to be done in catering to the career needs of these generations and an acceptance that their needs will differ from many of the baby-boomers that are retiring from the workplace. The younger generation has increased mobility and the desire to change jobs many times and careers several times.

- The NFF is proactive in its work to improve the education and training opportunities in the agricultural sector. To assist the NFF has developed working relationships with the Australian Institute of Agricultural Science and Technology, the Australian Council of Agricultural Deans and other key stakeholders. The NFF need to expand its relationships to include the Australian Business Deans Council as this would recognise the importance of business management education within agribusiness. The current focus on science is limiting in understanding the full needs of agribusiness education.
- A national plan for the provision of agri-related courses ‘whereby universities specialise in different agricultural disciplines, allowing undergraduates to mix and match to suit their needs through online courses – one might have irrigation technology, another agricultural economics’ (Meacham, 2009).
- Redesign of existing agriculture courses that ensure the ‘employability’ of graduates so they can ‘hit the ground running’ as well as developing the discipline expertise required by their professions. This means careful redesign of the curriculum and its delivery. These job-readiness initiatives need to be embedded within the curriculum and not an ‘add-on’ as most students maximise their learning when it is contextualised. Industry will need to play a collaborative and supportive role in this initiative. The NFF stated that the HE sector needs closer alignment with industry and become more receptive to marketplace needs and pressures (Wilsmore, 2008).
- Easier pathways into HE. Johnson, Bone & Knight (1996) concluded that farmers do not have the stamina to work very long hours in the field and then come ‘inside’ and switch to study. The same could be said for other employees in the agricultural sector. A pathway consisting of University Certificate (1 year of study), Advanced Diploma (2 years) and Degree (3 years) could be constructed that facilitates a building block approach. This approach would assist mature age and other non-school leaver students into HE and assist transferability between different segments of the agricultural sector.
- Promoting the agriculture sector as an industry and career path as well as highlighting the advantages of studying at inland and regional universities. This could reduce the natural attrition to metropolitan areas given that once a regional student departs for a city-based

education there is only a 40 percent likelihood that they will return to their regional area. (Wilsmore 2008, p. 22)

## **Conclusion**

The increasing difficulty many in the HE sector are experiencing in attracting students into agribusiness related courses is in contrast to the strong employment and career opportunities in agribusiness. There is a real need is for universities to review their courses they have on offer in order to attract more students. Training for the professions is the domain of the universities and the degree remains the 'common currency' when seeking graduate placement. Therefore, university academics must look at how to deliver timely, relevant and leading-edge agriculture courses that meet the changing demands in the agricultural sector.

With the strong employment and career opportunities in agribusiness, with competitive salaries and lifestyles, the real need is for universities to review their courses they have on offer in order to attract more students. Training for the professions is the domain of the universities and the degree remains the 'common currency' when seeking graduate placement. Therefore, university academics must look at how to deliver timely, relevant and leading-edge courses that will prepare graduates for not only the workplace but wider society.

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