

Graduate supply for agriculture – a glimmer of hope

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In 2012 the Australian Farm Institute published an occasional paper entitled “Professional agriculture – a case of supply and demand” (3). The paper outlined the decline in the numbers of agricultural graduates each year and the mismatch with the buoyant employment market. It was a depressing picture overall. This article provides an update on that publication and, while graduate numbers have continued to fall, the job market remains positive. So much activity is occurring in this space and there is now much cause for optimism.

The supply chain

In the past we have tended to consider the components of higher education individually. In the 21st century the emphasis generally tends to be on supply chains and agricultural education is no exception. Figure 1 puts the components of agricultural higher education into a simple supply chain to draw out the interactions that take place or should take place.

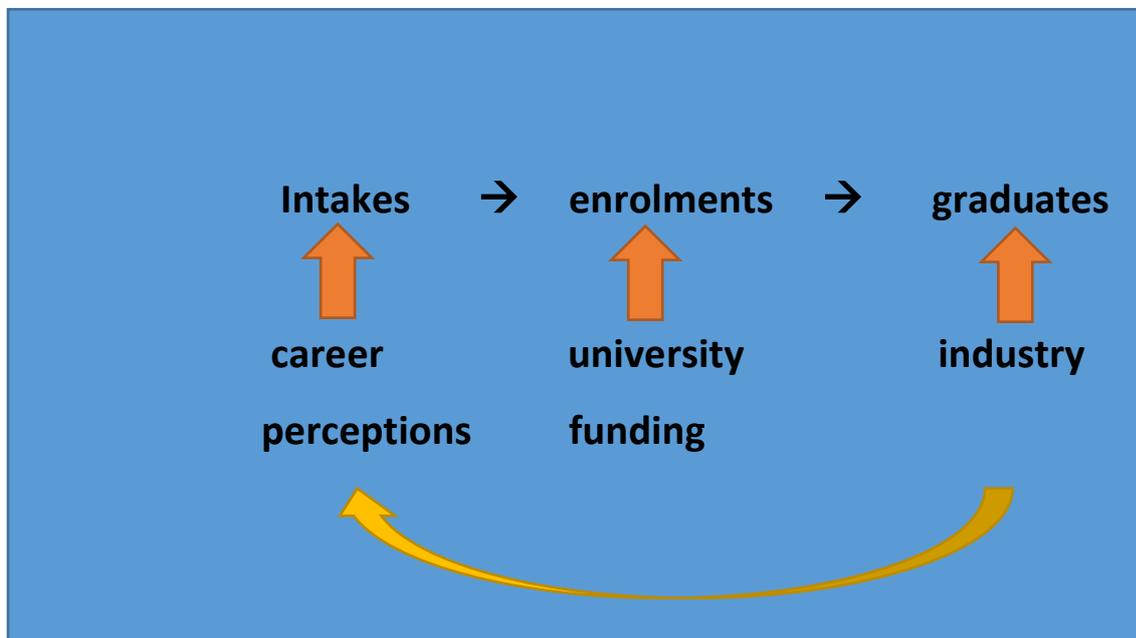


Figure 1. The agricultural education supply chain relating to universities. The feedback loop from industry is critical

The key focus for industries has been on the supply of graduates from universities so that they can have the appropriately trained staff for the efficient, profitable and professional conduct of their respective businesses. For the universities the key focus is on the number of enrolments since university funding is based very largely on enrolments. Courses with low enrolments become

increasingly vulnerable as universities commonly dispense with those programs that do not meet the financial imperatives. In turn, enrolments are determined by student intakes. Intakes are influenced by many factors such as perceptions of good career prospects, appropriate remuneration after graduation and the image of the sector involved. For a long while one of the missing links in this agricultural higher education supply chain was the feedback loop from industry to prospective students in respect of the image of the sector and the clear enunciation of employment opportunities and career paths. That loop now seems to be largely in place but it will need to remain there permanently if the supply of professional entrants is to be sustained.

Graduate supply

The supply of graduates from Australian universities for agriculture and related studies is shown in Figure 2. The number to be used depends on how specific the interest is. In respect of agriculture *per se* the decline in graduate numbers has been from near 900 in 2001 to around 300 in 2014. Similar declines have occurred in horticulture/viticulture and in agribusiness courses while animal science courses have had a slight hump in the middle of the period but have since also declined. When these course areas are combined the decline has ranged from around 1300 in 2001 to around 550 in 2014. It needs to be noted that graduate numbers reflect intake numbers from 3 to 4 years earlier because of the number of years of study involved.

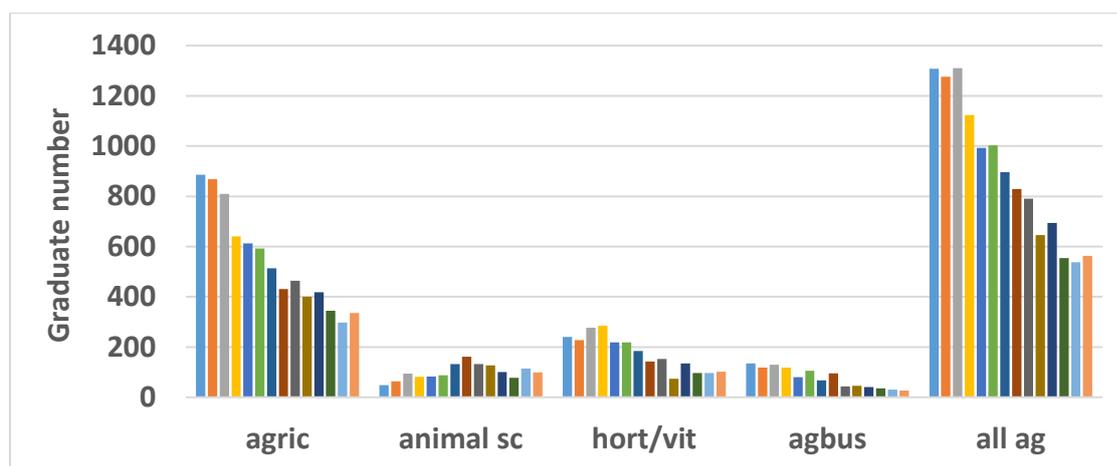


Figure 2. Agricultural and related completions from Australian universities 2001-2014. Columns represent individual years from 2001 to 2014

It follows that graduate numbers reflect the enrolments (i.e. the total number of students across all years studying agriculture courses) in such courses within the universities. For agriculture courses, enrolments have declined from 4300 in 2001 to a low of less than 2300 in 2012 and 2500 in 2014 (Figure 3). This decline of more than 40% has had substantial impacts on the viability of teaching schools, with the reduction in funding equivalent to the loss of around 100 academic staff across the universities. Consequently over the past decade or two there has been significant rationalisation of campuses from which agriculture is offered, loss of specialist staff and loss of separate identities of many agriculture faculties and schools. A glimmer of hope is the increase in enrolments that has taken place in 2013 and again in 2014 suggesting that the trend has been reversed, albeit modestly.

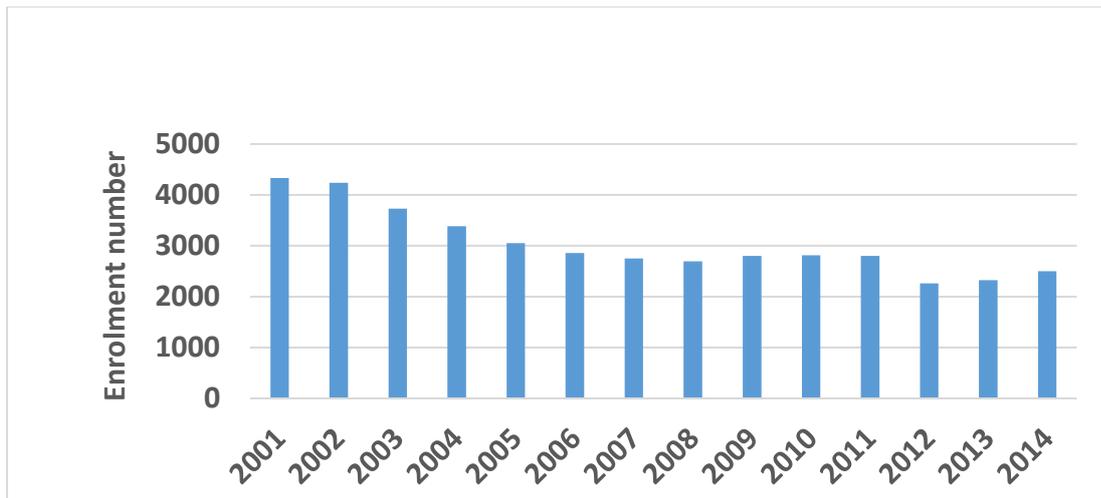


Figure 3. University enrolments in agriculture and agricultural science for the period 2001 to 2014

The enrolment data also show that the ‘blokey’ image of agriculture is not accurate these days, at least not in higher education, with women marginally outnumbering men since about 2003 (Figure 4). This outcome is certainly worth promoting and it suggests that agriculture is perceived to be welcoming to both genders.

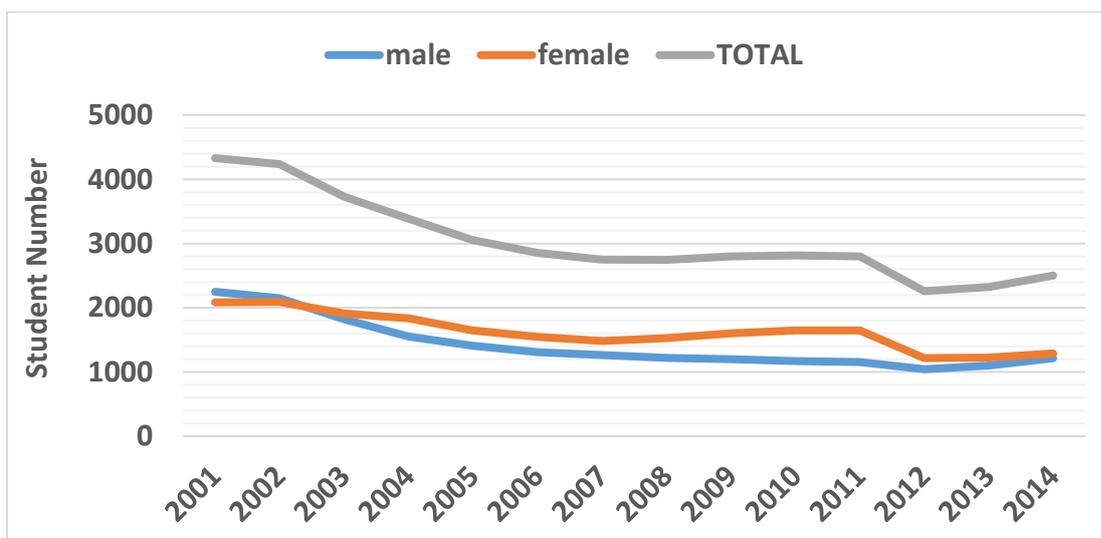


Figure 4 University enrolments for male and female students in agriculture and agricultural science at Australian universities for the period 2001 to 2014

Enrolments alter according to student intakes into the courses but changes will be evident sooner in intakes than in enrolments. Figure 5 shows that Intakes declined from around 1700 in 2001 to a low of 940 in 2012, recovering to 1200 in 2014. Liberties have been taken to include estimates of intakes in 2015 and 2016 based on anecdotal advice from the universities concerned. These data provide cause for optimism that there is ongoing resurgence.

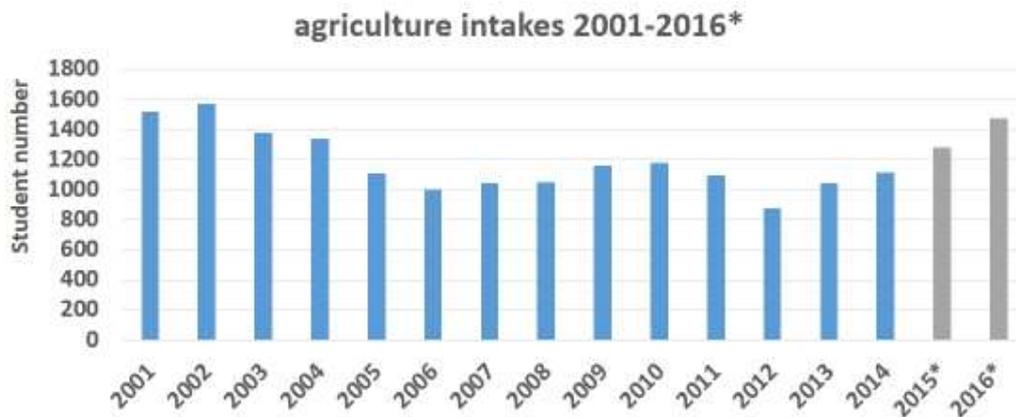


Figure 5. Annual intakes of students into agriculture and agricultural science courses at Australian universities from 2001 to 2014. Estimates for 2015 and 2016 have been added based on universities’ advice

Graduate demand

The question then arises as to whether the demand for graduates is strong relative to their supply. The system used in the initial paper of monitoring the state and national papers and the internet for agricultural employment opportunities has continued and is represented in Figure 6. For the period analysed the number of advertisements has softened from 7000-8000 per annum from 2009 to around 4000 in 2014. The softening can be related to drought incidence in parts of the country, advertising fatigue and, particularly, direct targeting of individuals by employers. Universities continue to report near full employment of graduates with jobs secured in most cases well in advance of study completion.

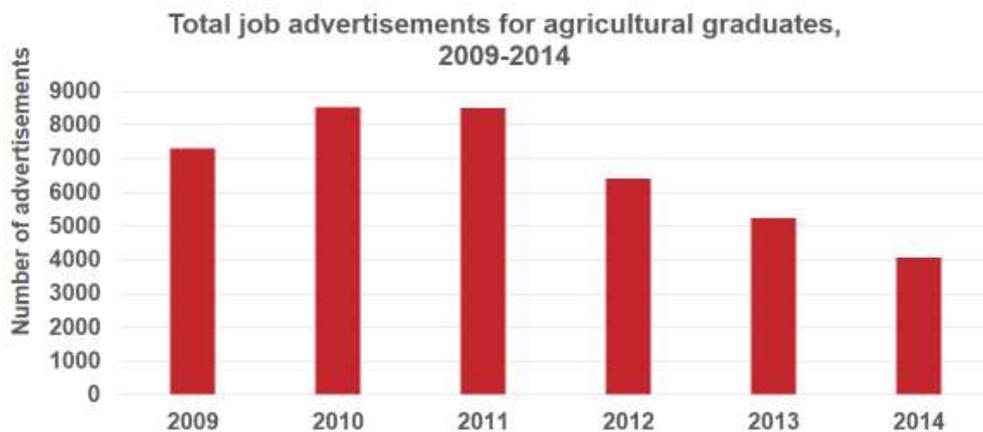


Figure 6. Employment opportunities for agricultural graduates, based on advertisements in national and state newspapers and on the internet for the period 2009 to 2014

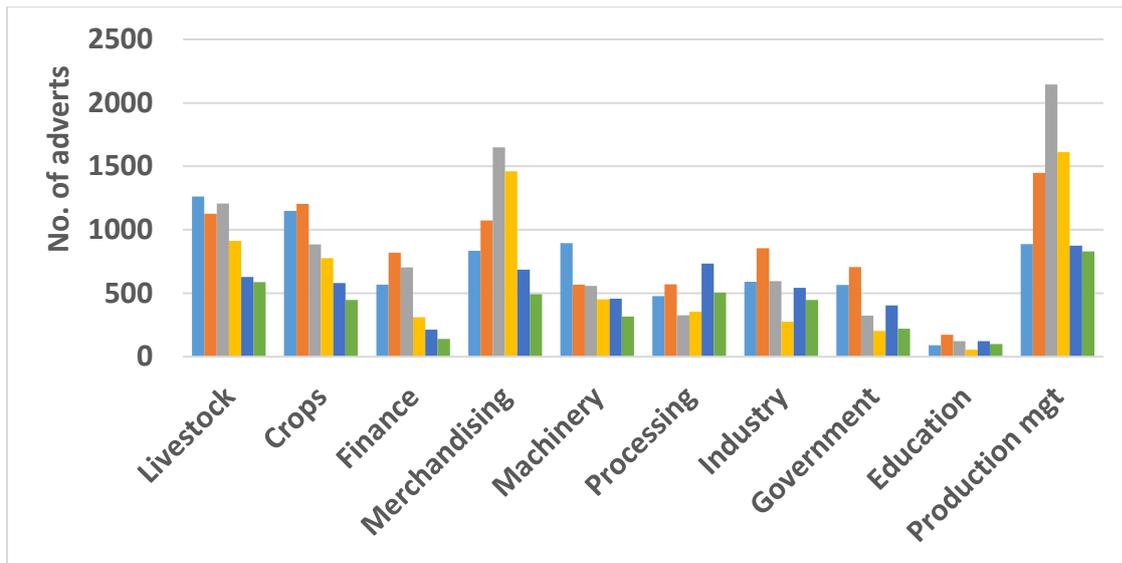


Figure 7. Categorisation of the employment opportunities for agricultural graduates based on advertisements in national and state newspapers and on the internet. Columns represent years 2009 to 2014

Figure 7 shows the employment opportunities in more detail. There is clearly a wide range of choice in career although the softening of demand affects most areas with finance and government being the areas most affected. There is a sustained demand for managers in the production system. The softening is also geographically widespread (Figure 8) with Queensland in particular experiencing prolonged drought conditions that presumably would be influencing availability of employment.

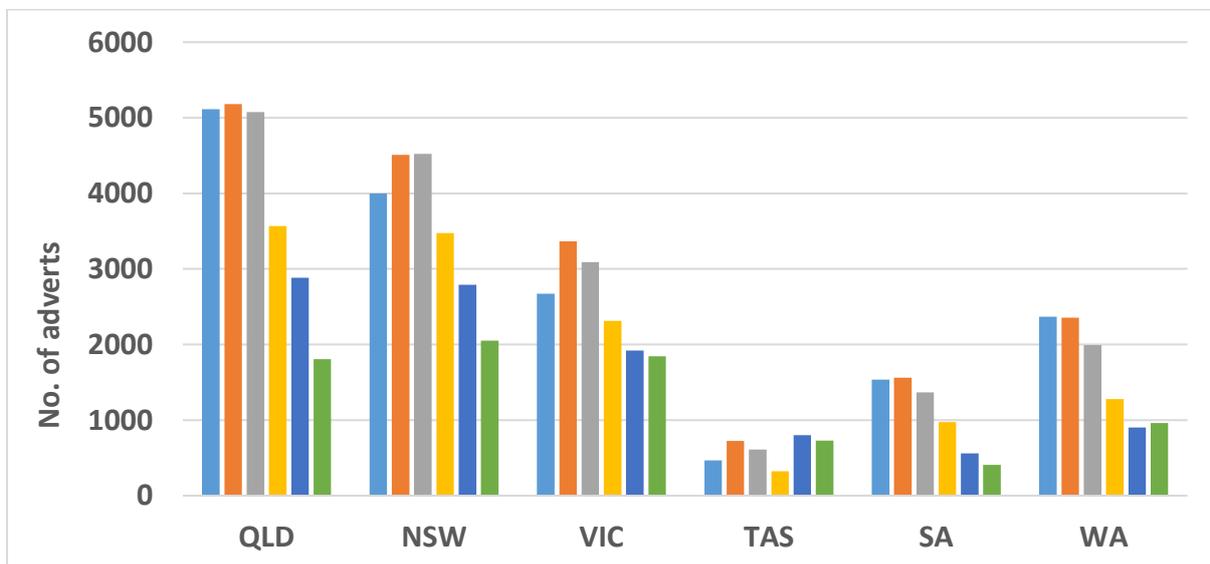


Figure 8. Employment opportunity by state for agricultural graduates based on newspaper and internet advertisements. Columns represent years 2009 to 2014

The advertisement data as shown above has drawn criticism as to whether the numbers are robust. It raises the question then as to what other measures would be useful to validate the claims made. Pratley and Copeland (2008, 4) estimated that about 624,000 people were employed in the agricultural sector, about 320,000 of whom were on farm. ABS statistics as reported in Pratley (2013, 2) indicated that around 12 % had higher education qualifications. If the assumption is made that the average working life in agriculture is around 20 years then just sustaining that level of qualified

workforce would require an annual introduction of 3,700 graduates. Of course they do not have to be agricultural graduates although they would comprise the majority. If the average working life was around 30 years then the graduate requirement for maintenance would be around 2,500. These estimates are not dissimilar to the numbers in the advertising analysis.

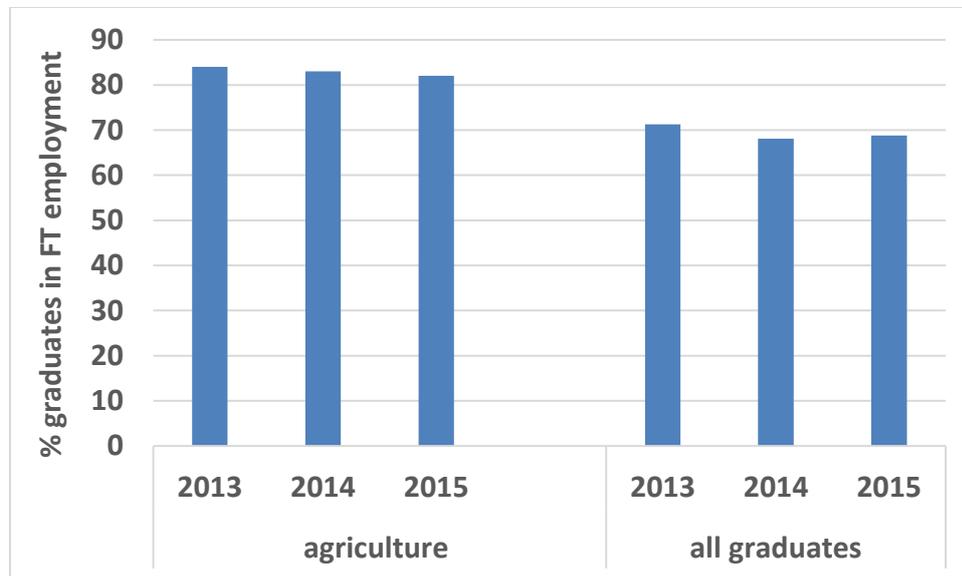


Figure 9. Proportion of graduates in the year of survey in full time employment relative to those in full time employment + seeking full time employment (Graduate Careers Australia, 2013, 2014, 2015)

A further reinforcement of the demand for agricultural graduates is the employment status of the graduating class in the year following course completion. Graduate Careers Australia conduct a survey 4-6 months after graduation to test the employment status of the annual cohort. The responses for the three years 2013-2015 are provided in Figure 9. It is clear that the proportion of agricultural graduates in full-time employment is 12-15% higher than the proportion of all graduates. The rule of thumb is that 90% in full-time employment represents about full employment and previous papers on this have consistently shown agricultural full-time employment as being in the mid-80s to early 90s (2). These data do not include those who have gone onto further study or are not seeking work for whatever reason.

On three measures then there is consistent indication that graduates are in high demand and seemingly with better prospects of employment than other career pursuits. Such data provide the confidence that the employment market for agricultural graduates continues to be buoyant. The mathematics presented here strongly suggests that there are upwards of 5 jobs per graduate. If the projections of 3,500 to 4,000 jobs per year are accepted as a reasonable estimate, then the supply of 300-550 graduates produced each year is nowhere near enough to satisfy the market for these professionals. The glimmer of hope is that university intakes have been rising since 2012 and a larger number of graduates should be in the employment market from the end of 2016. The increase will be modest at best but will continue to rise for the next few years. The challenge then is to maintain the momentum that has been building over recent times.

So what has changed?

In 2007 the then Australian Institute of Agricultural Science and Technology (now Ag Institute Australia) organised a symposium about the lack of agricultural students. During proceedings,

universities were berated by industry for not training enough graduates. It was at that meeting that the Australian Council of Deans of Agriculture (ACDA) was initiated and, at an early meeting in Canberra, advice from government indicated that there were plenty of graduates and no jobs. As this was not consistent with the experiences of academia, ACDA, together with Rimfire Resources, set about creating the data to correct the perception. It was this work of the ACDA that provided the tipping point – the dearth of graduates and the strong employment market. This provided good copy for the media and the *actual* situation was put before the public. It was a catalyst for the various governments to become involved and precipitated *inter alia*, a Senate enquiry, two Victorian Parliamentary enquiries and a NSW Ministerial Review. The political forces were engaged in the issue.

Fortuitously food security became a public issue during this period and social licence to farm was also in the news. The outcomes of the school children survey (1) commissioned by the Primary Industries Education Foundation Australia (PIEFA) were released showing that most students were unaware of the origins of their food. There was realisation by industry that their future workforce was not guaranteed unless action was taken to improve the image of the sector and promote agriculture as a career choice. The supply/demand relationship came into play and salary levels increased such that agriculture became an attractive career option. These changes have been heard in the education sector and students are now voting with their feet as intakes continue to rise in higher education programs. The response by the agricultural industries has been amazing. In most cases there has been a strong effort in rebuilding the image and addressing social licence. There has been extensive development of educational materials and promotion of careers. In most cases education is now in the strategic plans of industry bodies. That is healthy progression over a decade.

Maintaining the rage

There is a danger that those involved might consider the problem solved. That would be a mistake. As the data show, the supply of qualified people still does not anywhere match what is needed, even to maintain the *status quo*. There are now quality activities in place but these require continual support both morally and financially. These include the provision to schools of educational materials that are embedded in the curricula of all subject areas (undertaken by PIEFA), projects that engage students in agriculture (as done by Art4Agriculture in the Archibull contest), the career website (Career Harvest), the career expos (e.g. AgVision) and the excursion activities (such as provided by the Royal Agricultural Societies and some industry bodies). One area incomplete is the professional development in agriculture of teachers in primary and secondary schools so that they utilise the educational materials confidently and competently. Good progress is being made on many fronts although we need to coordinate efforts rather than compete. If there is competition for the scarce support and funds, the fragmentation will create confusion and significantly limit what progress can be made.

What has been demonstrated at all levels is the imperative of industry involvement. The beneficiaries of the success of this agenda are the industries themselves and so it remains in their best interests to maintain their involvement. Their response to the cause though is commendable.

Conclusions

Agricultural education in universities has been through a near death experience. The ability to articulate the problem through robust data has been the catalyst for changing the paradigm and empowering many people and organisations to come on board with energy to address the challenge. The current indications are that the sector has now factored in the need for a strong positive image

and good career paths in order to attract its workforce in the future. This in turn has attracted the attention of many young people who are now actively considering agriculture as a future career option. The prospects are encouraging but there is an ongoing need to continue the promotion.

References

1. Australian Council for Educational Research (2011). Food, fibre and the future. Report on surveys of students' and teachers' knowledge and understanding of primary industries. October 2011
2. Pratley J (2015) Agricultural education and damn statistics II: graduate employment and salaries. *Agricultural Science* 27 (1), 51-55
3. Pratley J (2013) Review into agricultural education and training in New South Wales. NSW Government, ISBN 978-0-646-59653-2
4. Pratley J (2012) Professional agriculture; a case of supply and demand. Australian Farm Institute Occasional Paper 01-12,1-8
5. Pratley J and Copeland L (2008) Graduate completions in agriculture and related degrees from Australian universities, 2001-2006. *Farm Policy Journal*, 5 (3), 1-11