

SUBMISSION TO:

Inquiry into research training and research workforce issues in Australian universities

FROM THE AUSTRALIAN COUNCIL OF DEANS OF AGRICULTURE

Summary

- Agriculture is one of very few sectors that contribute wealth;
- Agriculture contributes substantially to the Australian economy and export earnings;
- Australian agriculture maintains its position as a world leader through its research effort;
- The research effort enables agriculture to have higher productivity than the rest of the Australian economy;
- Australian agricultural research becomes even more important with the challenges of climate change and food security;
- The research fraternity is ageing and the supply of new scientists through postgraduate training is inadequate;
- The supply of postgraduates is low because the stipends and other conditions offered are not commensurate with other opportunities in the workforce, particularly to attract the best of the best into research.

Recommendations

- The ACDA recommends that the Government changes its policy of doubling the number of scholarships in favour of better funded scholarships, on the grounds that we have difficulty in filling the existing number of scholarships at the current stipend rate.
- The ACDA recommends that the level of stipend be raised to at least graduate employment salary levels, ie an increase of 70-120%, and perhaps abandoning the tax-free status.
- The ACDA recommends that associated research support funds need also to be tripled, at least, to provide reasonable assistance towards the costs of the research and research training.

Australian Universities struggle to attract the best minds to postgraduate study. This is particularly the case in agriculture where the pool of graduates in agriculture is highly inadequate to meet the job market needs and these numbers continue to deteriorate. Because they are in high demand, the top students readily gain attractive employment opportunities and ***the attraction of postgraduate study is no longer competitive.***

The case in agriculture is of national significance because research has kept the agriculture industry at the forefront of global agriculture and has enabled high productivity gains to sustain farm

production in Australia. ***It is an imperative to ensure innovation in agriculture is healthy because the challenges of climate change and food security are critical to Australia's future.***

THE CASE TO SUPPORT HIGHER REMUNERATION FOR RESEARCH STUDENTS

Innovation workforce

Professional societies, research funders, universities and other research providers, including governments, have a vested interest in attracting the best minds into the agricultural profession. For a person to become a research scientist, there is the requirement of a 4 year undergraduate qualification plus usually a 4 year PhD, ie a total of 8 years. At the postgraduate level, students commonly have a scholarship. The Australian Research Council sets a stipend benchmark of around \$20K per year tax free but Grains RDC and some CRCs elevate the stipend to \$25K - \$28K with the intention of attracting better students. However there is a dearth of postgraduate students in all disciplines, including agriculture.

Figure 1 shows the evolution of the Australian postgraduate award (APA) stipend as it relates over time to equivalent taxable incomes, average weekly earnings (AWE) for males and the consumer price index (CPI), relative to 1994 levels. Several aspects become apparent. Until about 2001, there was a 1:1 relationship between stipend and equivalent taxable income but recent changes to the tax scales have reduced the value of the tax-free status.

The data show that stipends have not maintained parity with the CPI, were that to be used as the measure of relativity. Most starkly however is the discrepancy between stipend and average weekly earnings which has substantially diverged from scholarship relativity. Australian average weekly earnings since 1994 have increased by about 75% compared to **only 37%** for stipends in Australian postgraduate awards. These stipends are unattractive as they are less than half the starting salary for new graduates.

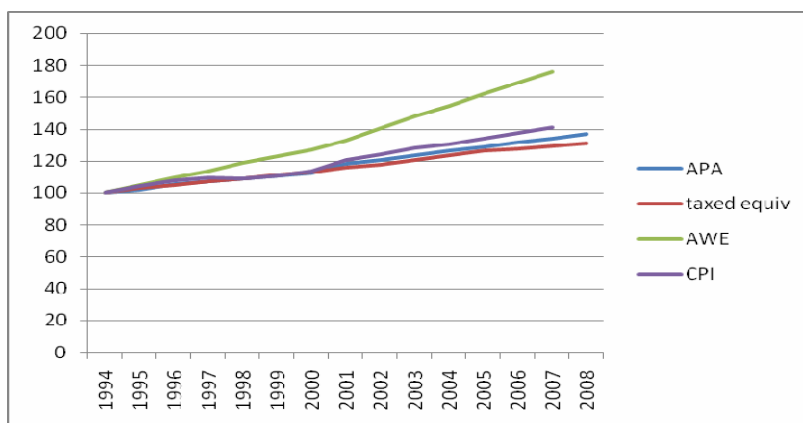


Figure 1 The relative increase in value of the Australian Postgraduate Award stipend in relation to the equivalent taxable income (Australian Taxation Office, 2008), the average weekly earnings in February for males (ABS, 2008) and the consumer price index in February (ABS, 2008), from a base of 100 in 1994

The value of the scholarship would need to be around \$25,780 (or around \$30,000 taxable) to have parity with AWE. However there is a question mark over whether such stipends would be attractive in a full employment market where opportunities and salary packages are so much more attractive.

Table 1 *The relationship between taxable income, based on 2007-08 tax rates, and postgraduate stipends*

TAXABLE INCOME	TAX PAYABLE	NETT INCOME	SCHOLARSHIP EQUIVALENCE
\$20,000	\$2,100	\$17,900	
\$22,000	\$2,400	\$19,600	APA scholarship
\$24,000	\$2,700	\$21,300	
\$26,000	\$3,000	\$23,000	
\$28,000	\$3,300	\$24,700	GRDC scholarship
\$30,000	\$3,600	\$26,400	
\$32,000	\$4,200	\$27,800	CRC scholarship
\$35,000	\$5,100	\$29,900	
\$40,000	\$6,600	\$33,400	
\$45,000	\$8,100	\$36,900	Salaries for new graduates
\$50,000	\$9,600	\$40,400	

Table 1 shows the relativities between taxable income and the value of the tax-free scholarship in 2008. What is quickly apparent is the low level of real income provided to research students. It is worth noting that an Australian Postgraduate Award (APA) is considered prestigious and requires first class honours. Yet it is the equivalent of around 80% of the current Australian *minimum* wage of \$27K per year, and around the *poverty* line. The GRDC award is about the minimum wage level.

It comes as no surprise that the brighter, highly employable graduates are attracted to immediate employment in the workforce, particularly as the low level of unemployment provides attractive opportunities to new graduates. Clearly innovation and research capability are now not properly valued in Australia and paradigms need to be adjusted to working conditions in the 21st Century. The notion that there is eventual personal gain and hence stipends can be less than market value would seem outdated when the nation needs to invest in the best for the nation's benefit. The likelihood of short term contracts post higher degree is a more common scenario than in the past and the changes in superannuation conditions to those in employment is a further disincentive. All this is on top of a \$20,000 to \$30,000 HECS debt (Table 2) which increases in size during the period of the PhD.

The imbalance is further explained by the common scenario of a research student working alongside a recently graduated technical officer. The TO will be on a salary in excess of \$40K and will be accumulating superannuation whereas the research student will receive only their scholarship stipend which is not even incremented annually or on a performance basis.

Table 2 *The annual student contribution fee for fulltime study in the range of disciplines available at Australian universities (DEEWR, 2008)*

STUDENT CONTRIBUTION BAND	ANNUAL STUDENT CONTRIBUTION FROM 2008
BAND 3- law, dentistry, medicine, veterinary science, accounting, administration, economics, commerce	\$8499
BAND 2- mathematics, statistics, computing, built environment, health, engineering, science, surveying, agriculture	\$7260
BAND 1 – humanities, behavioural science, social studies, foreign languages, visual and performing arts	\$ 5095
National priorities – education , nursing	\$4077

This discrepancy has evolved through the stipends not keeping pace with the costs of living or the increase in salaries. The value of the stipend has also been compromised by the significant adjustments in taxation rates, such that tax-free status is of little consequence at this salary level, and the developments in superannuation over the last decade or so.

Research Support to Postgraduate Students - Such scholarships are usually accompanied by research funds of \$5K per annum for science-based programs. This value has not changed for more than a decade and makes very little contribution to real costs of the research and research student development. Such support needs to be adjusted appropriately so that postgraduate students maximise their learning experience and their contribution to innovation.

WHY IS AGRICULTURE AN IMPORTANT CASE?

It is important to note that agriculture has been, and continues to be, very important to the nation's economy. Whilst on-farm production is about 3% of the economy, the farm-dependant economy represents over 12 %, making it the largest sector. It contributes over 20% of the export earnings of Australia and remains one of the few sectors which actually **creates wealth**. Its performance to date and its future depends on a highly productive research activity but there are concerns for the availability of supply of research students and thus the supply of scientists to replace the large proportion that are approaching retirement in academia and state agencies.

The following summary explains the position of agriculture in Australia and the importance of research in maintaining Australian agriculture at the forefront. This becomes even more important in the emerging contexts of climate change and food security.

Australia's competitiveness in agriculture

Australia competes on the world market for many agricultural commodities and products. It has a reputation for delivering consistent quality of product and it is relatively free of pesticides *ie* 'clean and green'. The international market is distorted by government subsidies despite the best intentions of the Australian Government to 'level the playing field' and to enter into bilateral free trade agreements. It is very clear that Australian and New Zealand farmers are lightly supported by government relative to their international counterparts but continue to remain competitive.

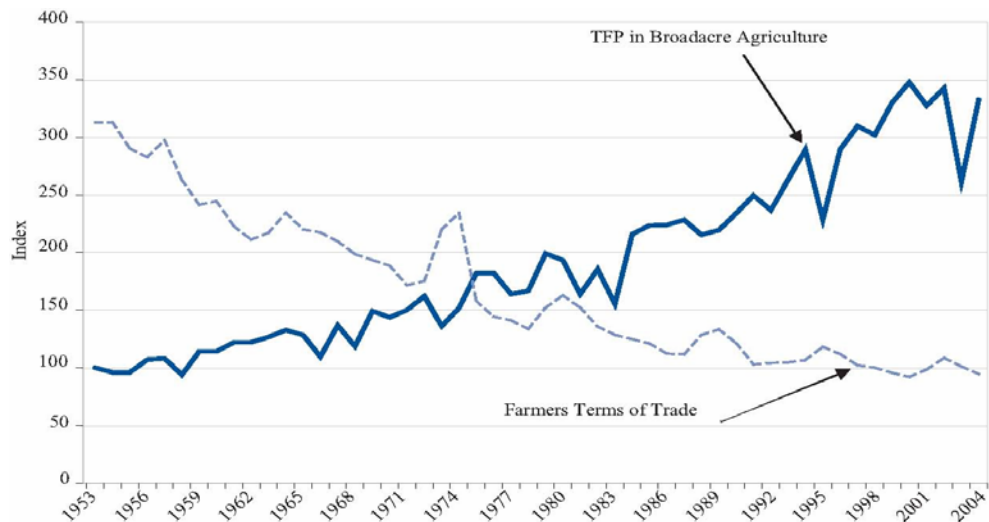


Figure 2: Total Factor Productivity in Australian agriculture and farmers’ terms of trade 1953-2004 (Australian Farm Institute 2007).

It is also well promoted that farmers’ terms of trade have been in continual decline for a long period of time. Costs have increased at a faster rate than the value of the product but farmers have counteracted that by productivity gains. Figure 7 shows that dramatic relationship (AFI, 2007). What is evident however is that the terms of trade have not deteriorated to any extent (*ie* <1% per annum) since about 1990 (Figure 2) and so declining terms of trade ceases to be a real issue generally for agricultural profitability. Farmers are thus benefiting from the productivity gains of the recent past.

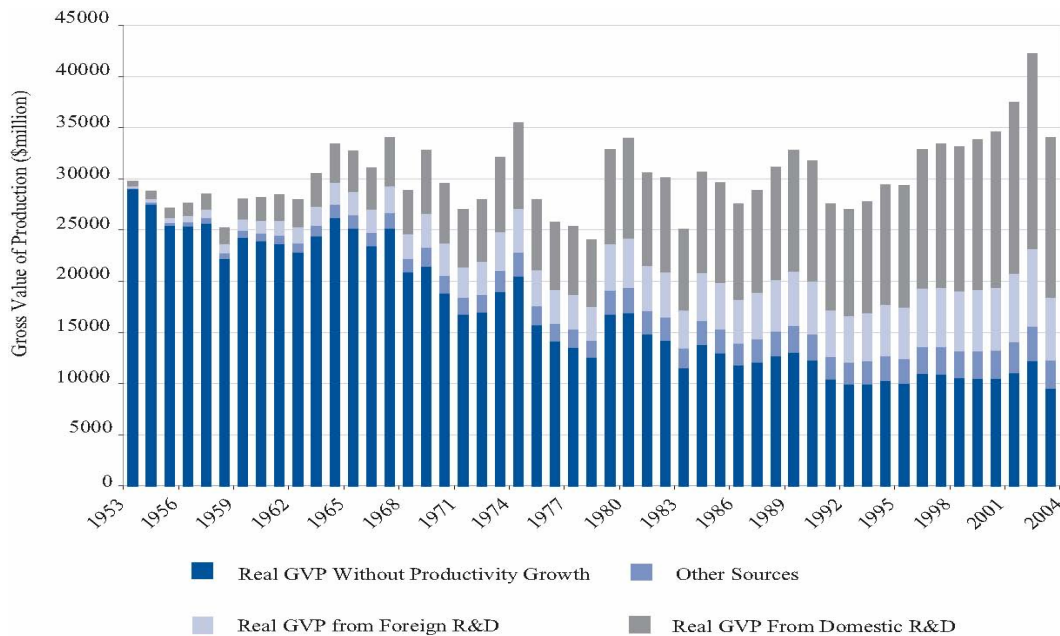


Figure 3 The value of productivity growth in the Australian agriculture sector, 1953-2004 and the role of research in its achievement (Australian Farm Institute 2007).

A recent report of the Productivity Commission (2005) describes an expansion in production agriculture in absolute terms and there are good prospects for a sound rate of growth. The report indicates that one of the *key drivers for productivity growth will be appropriate tertiary training.*

Figure 3 shows how Australian farmers have managed to maintain their production in dollar terms by productivity growth and the contribution of research to that effort. Whilst there is an impact from R&D done overseas, the greatest impact comes from the R&D done in Australia. It is clear from these data that *without such research the Australian industry would be in significant decline*. It is pertinent to note that the agricultural industry invests heavily in its own future through industry levies that are directed to research effort, albeit matched by the Federal Government. Studies have shown that research investment provides a positive return on that investment.

The Productivity Commission (2005) found that, over the last 30 years, productivity growth in agriculture outstripped growth in all other ‘market’ sectors of the economy, except for the communications sector. During the 1990s, productivity in agriculture outstripped that in all other sectors and its relative performance has improved since the mid 1980s. Such data are provided in Table 3 based on Australian Bureau of Statistics (ABS) sectoral data from the National Accounts.

Table 3. *Productivity growth in sectors of the Australian economy: 1975-99 (Australian Farm Institute 2007)*

	1975-82 ^a	1994-99
Agriculture	1.6	4.3
Mining	-1.7	1.2
Manufacturing	2.1	1.3
Electricity, Gas & Water	2.0	1.8
Construction	1.4	0.4
Wholesale Trade	-0.7	3.2
Retail Trade	1.0	1.0
Accommodation, Cafes & Restaurants	-0.9	-0.3
Transport & Storage	2.2	1.9
Communication Services	6.5	3.7
Finance & Insurance	-2.0	0.8
Community & Recreational Services	-1.4	-3.3
Market economy	1.1	1.8
<i>Agriculture/Market Economy TFP</i>	<i>1.4</i>	<i>2.4</i>

In absolute terms real agricultural output has doubled in the last 40 years. Agricultural exports have tripled in value in real terms since the mid-1970s and comprise 20-22% of Australia’s export earnings. Two-thirds of Australia’s agricultural production is exported.

This analysis shows the healthy position of agriculture in the Australian economy, the substantial contribution it makes to GDP and export earnings and the very positive prospects for this industry into

the future. It needs to be supported to continue the world class research to enable it to underpin the quality of life of Australians and to make a difference elsewhere on the globe where food is in scarce supply.

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