23 November 2012

Emeritus Professor Jim Pratley  
Chair, Review into Agricultural Education and Training  
NSW Department of Education and Communities  
By email: agriculturalreview@det.nsw.edu.au

Dear Professor Pratley,

I write on behalf of the University of Sydney, its faculties of Agriculture and Environment, Veterinary Science and all other areas of the University with interests in addressing the critical resource management, food security and environmental challenges facing Australia, our region and the world.

The University wishes to place on the record its strong support for the objectives of the review of Agricultural Education and Training in NSW you are leading, express our keenness to engage with the review to provide data, advice and other information that may be of assistance, and to work collaboratively with the department and other stakeholders on the implementation of strategies that result from the review.

The review issues paper makes compelling reading. For example:

“The world will need to produce in the first half of this century, double the food produced in all the last century (i.e. a fourfold increase). The world population is projected to be around 9.3 billion in 2050, up from the current 7 billion. At present an estimated 1 billion people in the world suffer from chronic starvation and this is set to rise as the population grows.” (p.4)

“In spite of the increasingly complex and demanding structures that characterise the agriculture industries, it has the lowest proportion of workers with post-secondary qualifications of all sectors of the economy.” (p.10)

“Estimates indicate a potential demand for 6,000 tertiary qualified graduates per year in the sector. However, supply is far from meeting demand. In 2011, NSW universities produced 310 graduates across undergraduate and postgraduate coursework programs in agriculture and related areas.” (p.10)

“In 2011 UAC processed 644 student enrolments for courses in agriculture, environmental and related studies at higher education providers. When the data are disaggregated to only agriculture courses, the numbers are low. (p.22)
“The RIRDC recently identified negative perceptions of rural employment and lifestyle, limited health and education provision, inadequate housing supply and quality, low wages and high costs as significant barriers to growing employment in Agriculture.” (p.27)

As the issues paper noted, various reviews of agriculture over the last twenty years have concluded that there is a poor perception of agricultural careers among students, and that the agriculture sector has failed to promote the courses and opportunities available. If addressing the persistent and apparently growing gap between the supply of suitably qualified graduates and demand for their skills was straightforward, more improvement would have occurred over this period than appears to have been the case.

There is a clear need to achieve greater levels of purposeful collaboration between all levels of government, the education and industry sectors, to ensure that in the future Australia has sufficient numbers of appropriately skilled professionals to sustain a sector that is obviously critical to securing a prosperous and sustainable future for Australia. To this end, we would like to make the following high level points, and would be happy to explore these and related issue with the review team, if that would be helpful.

Enhancing teacher and curriculum quality
Agricultural science is comprised of several integrated science, economic and social science disciplines. School students should be taught by people who appreciate the uniqueness of these disciplines, and their interdependencies, in the context of agriculture and the surrounding ecosystem. The disciplines of agronomy, animal production, agribusiness and/or rural sociology are core to the teaching of agriculture and teachers in all sectors should be able to make the connections between these and the other disciplines related to agriculture.

Wherever possible, opportunities for field work and placements should be core to educational approach as hands-on experience engages and excites students. It also brings to life the connections between theoretical knowledge and tackling real-world problems. Classroom and fieldwork should at all times enable students to consider the connections between agricultural and other issues challenging the surrounding ecosystem. Authentic problems should be provided, stimulating students to solve contemporary and challenging problems as individuals and in groups. This also enables students to learn from their classmates, re-enforcing concepts and developing their inter-personal skills.

In a crowded schooling environment, where disciplines effectively compete for scarce staff resources and student time, moves to a standardised national curriculum would appear to pose potential threats for disciplines such as agriculture. The NSW Board of Studies will need to be vigilant to ensure that Agriculture education is not marginalised further as curriculum policy shifts in this direction.

We would be happy to contribute more detailed advice about how these pedagogical, curriculum content and design issues might be best addressed as a critical part of the Government’s strategy to strengthen agriculture education in NSW.

Improving student awareness, perceptions and interest
Our Faculty of Agriculture and Environment has been interacting with NSW schools, teachers and career advisers for many years. Despite various concerted efforts to reverse student perceptions, agriculture studies generally continue to be regarded as lower prestige and less interesting compared to other options. Australia is already a highly urbanised country and while populations in metropolitan areas continue to grow strongly, this is not the case in many rural and regional communities.
Fewer young people are growing up with meaningful exposure to life in rural and regional Australia, and the diverse opportunities for rewarding and stimulating careers that are offer beyond the sandstone curtain. Students from rural areas, a traditional source of enrolments for university agriculture studies, are increasingly attracted to alternative careers away from regional areas. Moreover, the recent lifting of enrolment caps on all undergraduate degrees other than medicine has provided many additional openings for students in courses where numbers were previously restricted by government quotas. As a result, competition for students between disciplines and institutions is intense, and in some cases has seen a significant lowering of entry standards.

The fact that very few high achieving students from the specialist government agricultural high schools choose to study agriculture courses at university must raise questions about the future role that these schools should play in any NSW strategy to increase the quantity and quality of graduates with agricultural qualifications. Recent moves to make studying agriculture compulsory at Hurlstone Agricultural High School starting with Year 7 in 2013 should make a positive difference. There would be merit in the other schools considering the same approach, as the profound shifts that have occurred in the student intakes at these schools mean that student and familial interest in the pursuit of agricultural studies and careers has reduced. Some of the state’s private schools continue to make important contributions to agriculture education and any reform strategy should take seek to build on that capacity, and find ways for more collaboration between state and private schools.

If as a State we are serious about prioritising the agriculture sector, resources will need to be found to develop and implement long term collaborative strategies designed by experts to convince students of the value, relative to other options, of pursuing agriculture careers and related studies at school and beyond.

**Raising awareness about agriculture workforce challenges**

It is telling that in other, arguably more organised and vocal sectors facing critical skills shortages, most notably and recently in the health workforce area, the Australian and State Governments have taken steps to work together on integrated national strategies. As a result, Health Workforce Australia (HWA) has been established and funded by COAG as an independent statutory agency tasked with implementing national solutions that “integrate health workforce planning, policy, programs, international recruitment and training”. A particular focus of HWA is increasing the supply of graduates for rural and regional areas. This begs the question of why limit this approach to the health workforce? If sustaining a strong agriculture sector is as fundamental to Australia’s future prosperity as the review issues paper suggests it is, and the current and future skills shortages are so acute, the case for a similarly strategic national approach would appear to be strong. The key challenge would appear to lie in raising awareness of the sector’s challenges with all governments and the community more broadly.

**Addressing base funding shortfalls for agriculture and veterinary science courses**

The Australian Government’s recent review of base funding for university courses confirmed once again that the Agriculture and Veterinary Science disciplines are under-funded. Specifically, the review concluded that these disciplines were among a cluster for which funding should be increased significantly and by as much as 25 per cent.\(^1\) We draw to your attention the key recommendations, findings and costing data about the agriculture, veterinary science and environmental science disciplines in that review. We note that the report was released in October 2011 and that the Australian Government is yet to respond to it. We further note that the significant cost to the Commonwealth of its demand-driven funding reforms and other initiatives, have made the task of increasing funding in particular disciplines more difficult.

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\(^{1}\) Lomax-Smith J. et.al., Higher Education Base Funding Review 2011, p.59.
Addressing base funding shortfalls for these disciplines and others remains critical, however, in order to allow institutions to reduce their reliance on cross-subsidies, invest in quality and sustainability, and release resources to support currently ‘non-core’ activities such as community and school outreach and the provision of scholarships to attract outstanding students and improve social inclusion outcomes.

Combined with the regrettable evidence of declining demand for agricultural degrees at universities, the chronic underfunding of places in agriculture and veterinary science is placing universities in very difficult circumstances. The options are to cross-subsidise from other hard pressed disciplines, try to enrol more full fee paying domestic and international students, or close these degree programs. The financial and demand crisis facing many faculties of agriculture around the country imperils the future provision of trained graduates in these fields.

We would be very keen to work with the department to achieve meaningful reforms to base funding for agriculture and veterinary science courses as important part of an integrated NSW agriculture education strategy.

Enhancing linkages and pathways between education providers
All levels in the education continuum (public and private schools, TAFEs, agricultural colleges and universities) should be encouraged to strengthen their connections and share materials, resource, facilities and sites. Where possible the higher education sector should be encouraged to uses its connections with Federal and State bodies to enable placement of high school students to work in agriculture and related settings. This would provide students in junior years with the experience of challenges faced by agriculture and how these are addressed using the knowledge and skills from across disciplines. School students should be encouraged to interact with university students and staff from a young age to gain awareness of study and career opportunities. Such engagement should be supported by regular symposia and master classes for the State’s agriculture teachers. The roll-out of the NBN is also likely to provide enormous capacity to improve engagement between universities and schools, and between geographically isolated institutions. Many excellent programs of these types already exist, but are limited by access to funding. The dedication of a relatively small amount of funding to support these sorts of initiatives would be likely to make a significant positive impact.

Providing incentives and financial support for students
It is difficult for many students to move away from home to study agriculture at university level because of the expense. The NSW Government could make a tangible difference by working with universities and industry to establish prestigious scholarships to assist high calibre students to study agriculture related courses. Other incentive mechanisms, such as HECs reductions for students studying agriculture degrees who commit to working in regional and rural areas for a designated period, could be investigated in collaboration with the university sector and the Australian government.

Maintaining better data about demand for graduates in NSW
It would be useful for the NSW Government to work with industry and bodies such as the Australian Workforce Productivity Agency (AWPA) and ABARE to ensure that the state has access to the best possible data about trends in the supply and demand for agricultural science and economics graduates existing and emerging sectors. For example, high profile issues such as water management, and the impact of coal seam gas mining on rich agricultural areas are only likely to increase the demand for such graduates.

Building on our international strengths
One of the relatively positive elements in the issues paper was section 3.8 dealing with international agriculture education and training. The University of Sydney has a proud history of
engagement in the Asia Pacific region and beyond in relation to agricultural and veterinary science education and research. Many thousands international students have studied undergraduate and research degrees at the University over many decades, returning to careers in their home countries, or settling elsewhere. Moreover, our staff and students are directly engaged in a wide variety of research and education projects designed to improve the agriculture, environmental, human and animal health systems in numerous countries.

While demand for agriculture study from the highest quality cohort of domestic students may be challenging, demand from high quality international students is high, both at the undergraduate and postgraduate level. The problem, as always, is the cost of studying and living in Australia. While many Australian and international scholarships programs exist, and many of them have an agriculture development slant, there is great potential to do more through innovative approaches involving the State Government, industry and universities. We particularly see a need to expand the numbers of PhD level scholarships available to attract the highest quality candidates from overseas, and renew the agriculture academic and research workforce.

We trust that these comments are helpful and look forward to engaging with the review as it proceeds. If you and members of the review team would find it helpful, we would be very pleased to arrange meetings with key staff in our faculties to discuss these and related issues.

If you would like to hold such discussions, please contact Jane Oakeshott, Senior Adviser, Government Relations in the Vice-Chancellor's Office (jane.oakeshott@sydney.edu.au, 02 9036 5273).

Yours sincerely

(Signature removed for electronic distribution)

Stephen Garton
Provost and Deputy Vice-Chancellor