University of South Australia

21 September 2015

Committee Secretary
House of Representatives Standing Committee on Agriculture and Industry
PO Box 6021
Parliament House
CANBERRA ACT 2600

Dear Sir / Madam

Thank you for providing the University of South Australia with the opportunity to provide a submission into the Agricultural Innovation Inquiry. Please find below our feedback which has been aligned to specific areas of the inquiry.

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Improvements in the efficiency of agricultural practices due to new technology, and the scope for further improvements.

After a substantial period of relatively incremental advances, agricultural productivity in Australia is in need of quantum leap. The possibilities available to Australian growers and breeders revolve around the incorporation of advanced technologies in farming and allied areas of the agriculture industry.

The areas that are well placed to benefit from the adoption of new technologies include:

- Streamlining of practices (sowing, nurturing and harvesting);
- Effective management of resources (water and nutrients); and
- Optimisation of crops for specific environmental conditions (which vary greatly across the country).

For the farmers this is as much about being cost effective as it is about increasing production. For Australia it is about optimising the use of land and resources for the longevity of Australian agricultural industry, especially in growing competition with the mining industry and expansion of urban settlements. For Australia it is also about being proactive in anticipating the effects of any forecasted climate changes.

Emerging technology relevant to the agricultural sector, in areas including but not limited to telecommunications, remote monitoring and drones, plant genomics, and agricultural chemicals.

Tremendous advances in agricultural productivity have been made through mechanisation of Australia's agriculture over the past 100 years. This revolution is still continuing with a new emphasis that has moved from scale to precision. This new precision focus is based upon efficient use of resources such as vehicle guidance using GPS which is now on the cusp of providing farmers with driverless vehicles for field operations. Mechanisation research is still developing new tools for sowing, harvesting and processing crops with increased operating precision that has the potential to further increase productivity whilst retaining sustainability.

With the world-wide move to rapidly incorporate advanced technology into agriculture, the agricultural sector in Australia must be on the front foot if Australia is to maintain its role as a market leader in sales and production. Advanced technology, specifically crop and field imaging and other sensor technologies, plays a diversity of roles that are all directed to enhancing the yield potential of Australia's farms. Sensor technology, such as RGB, infrared and hyperspectral imaging on the one hand and remote sensing technologies for the quantification of soil (including water and nutrient levels), weather and climatic conditions on the other have the potential to improve the ability and timing of farmer response to abiotic and biotic stresses, whether it be a timely application of herbicides or fungicides or optimised application of fertiliser or irrigation. One of the new areas being considered is the application of mathematical and statistical methods to understand and model correlative effects between yield, genetic and environmental factors. This is an area in its infancy but has tremendous potential if adequately resourced.

Barriers to the adoption of emerging technology.

The main barrier to the adoption of emerging technology is in the area of extension and commercialisation that must occur to make technology applicable to everyday use. This barrier exists because technology (e.g. even that which is patented) needs to be further developed into commercial equipment, products and services. To break down this barrier governments and research funding agencies including but not limited to the Grains Research and Development Corporation need to increase their investment in pre-commercial developments and demonstration of technology products. Renewed investment in agricultural extension based activities, that is not commercial sale based, will both develop new emerging technologies into commercial ready products more quickly and provide farmers with unbiased information on which to make informed judgements.

Thank you again for this opportunity to provide feedback on the role of technology in increasing agricultural productivity in Australia. Should you require any additional information please do not hesitate to contact me.

Yours sincerely

Professor Tanya Monro
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