The Crawford Fund Queensland 2017 Seminar

Theme: 'Doing Well by Doing Good': Queensland's Impacts and Benefits in Agricultural research

Purpose of event:

- highlight the great work that Queenslanders do in international agriculture science and training
- bring attention to the mutual benefit of this effort to the professional and personal lives of the Queenslanders involved, to Queensland agriculture and to food security in the developing world
- 2017 awards will be launched at the event.

Audience: 80-100 Queensland agricultural scientists and consultants, private sector representatives, farmers, students and media. Parliamentarians have also been invited.

Professor Suzanne Miller's opening address

Date: Wed 15 February 2017

Time: 3.05 – 3.20pm

Topic: Queensland Science for Food Security

- highlights and impact at home and abroad of the extensive involvement of Queensland researchers in international agriculture.

Notes

- Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability[1].

- About 765 million people are undernourished globally, down 167 million over the last decade and 216 million less than 1990-1992. The Global Food Hunger Index was reduced by 29% from 2000-2016.

- However, more than 790 million people worldwide still lack regular access to adequate amounts of dietary energy[3] and malnutrition causes the death of 2.6 million children every year[4].

- For us to achieve the United Nation's Sustainable Development Goal 2 - aiming to end hunger and all forms of malnutrition by 2030 and committing to universal access to safe, nutritious and sufficient food at all times of the year.

- Agricultural systems across the world will need to become productive, requiring an integrated perspective on sustainable agricultural practices and food systems. Some of the targets for this goal include:

- ensure sustainable food production systems and implement resilient agricultural practices that:
  - increase productivity and production
  - help maintain ecosystems
  - strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters
  - progressively improve land and soil quality

- there will also need to be increased investment, including:
  - enhanced internal cooperation
  - rural infrastructure
  - agricultural research and extension services
  - technology development
  - plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries.

- Land, water, soils and plant species are key inputs into food production, all of which are likely to become scarcer in the coming years. Therefore it is imperative that these resources are utilised effectively.

[1] Report of the Secretary General on agriculture development, food security and nutrition (A/70/333)
[2] Food and Agriculture Organisation: The State of Food Insecurity in the World 2015 http://www.fao.org/3/a-i4646e.pdf.
[3] https://sustainabledevelopment.un.org/sdg2#targets
[4] Organisation for Economic Cooperation and Development.

- In Australia we are faced with challenges such as[5]:
  1. Climate change impacting on agricultural production
  2. Variations affecting food prices (e.g. Cyclone Larry in 2006 affecting 90% of banana crops and increasing prices by 500%)
  3. Changing seasonal availability of foods
  4. Disruptions in food supply
  5. International competitiveness.

Queensland

- The excellent news is that here in Queensland, we have a long and strong history of agricultural science research and I am delighted that this strength continues to grow.

- Queensland has more than 40 institutes, facilities, precincts, laboratories and other research organisations that are involved in the food and agriculture science sector[6].

ACIAR

- The Australian Centre for International Agricultural Research (ACIAR) has:

  - 18 partners in Queensland including universities, research groups, state departments and businesses

  - 65 active and pipeline projects with Queensland commissioned organisations with budgets totalling approximately AU$47 million to those organisations.

- ACIAR helps foster partnerships that create opportunities for Australian researchers to work with overseas agricultural researchers on issues of common concern, and facilitates sharing of knowledge and expertise internationally. For example:

  - The University of Queensland hosted the first Lao scientist to receive specialist training in plant virology and this training helped to diagnose disease and record plant viruses. These new skills will help to provide the foundation for disease control strategies for Laotian farmers.

  - Dr Philip Moody from Department of Science, Information Technology and Innovation led two workshops on soil fertility analysis in 2015 and included participants from Thailand, Indonesia, Vietnam, Laos and Cambodia.

- The international research collaboration between the Queensland Department of Agriculture and Fisheries (QDAF), ACIAR and the Indonesian Government on integrated disease management strategies for the productive, profitable and sustainable production of high quality papaya fruit in the southern Philippines and Australia is ensuring that Australia and Queensland are prepared in the event of Bacterial Crown Rot incursion. An incursion which could cost the

[5] Climate Council. 2015. Feeding a Hungry Nation: Climate Change, Food and Farming in Australia.
[6] https://www.qld.gov.au/dsiti/about-us/business-areas/science-precincts-projects/food-agriculture/

$30 million Queensland Papaya industry up to 30% in lost production if the disease became established in Australia.

Whilst the nine year collaboration between the Philippines and Australia on mitigating the threat of banana Fusarium wilt ensured that when Panama TR4 made it to Queensland in 2015, DAF researchers were well prepared. This integrated management between the two countries gave the Australian industry the confidence to see a future growing bananas successfully in the presence of TR4.

- Having sound, evidence based biosecurity practices have allowed us to develop farm security systems that are world's best.

- This ACIAR project also gave Australian researchers the opportunity to develop integrated management systems ready to use a combination of partially resistant cultivars in a disease suppressive soil management regime.

- And the confidence that the ACIAR experience gave DAF and in turn the Australian industry led to investment in quarantine containment and, to date, keeping the infestation to one property.

The Queensland Government, through the Department of Science, Information Technology and Innovation (DSITI), also plays a very key role in supporting agricultural science research by increasing understand of:

- soil resource and land capability to increase productivity for regional development, industries, businesses and governments, both in Queensland and internationally

- issues of soil fertility and soil carbon, soil management, erosion, agricultural greenhouse gases, and soil health which are very contemporary issues facing a range of agricultural sectors across Queensland .

And, of course, soil scientists from state government, CSIRO and the universities have been involved in and supported by activities through the Crawford Fund. These include co-investment in international projects, training on soil laboratory analyses to international and mid-career students, technical advice on soil health, supervision of postgraduate students, support for regional land use planning, and advice on science-policy interactions.

And our Queensland universities have real strength in this area

- The University of Queensland based research team which discovered that 'Bioclay' will contribute to global food security and a greener agriculture approach by protecting plants from specific disease-causing pathogens.

- Researchers from Queensland Alliance for Agriculture and Food Innovation (QAAFI) are working alongside QDAF and the Ethiopian Government to improve the drought tolerance of sorghum and enhance breeding capacity in sub-Saharan Africa. This researcher consortium was also the recipient of a $4 million grant from Bill and Melinda Gates Foundation to support these aims.

- James Cook University JCU provided funding for students to explore the development of sustainable food systems in northern Queensland and how they can become more stable in the future[7].

- Griffith University, through their Environmental Futures Research Institute, are researching biogeochemistry and sustainable landscapes including agriculture and forestry production, impacts of global change, degraded land rehabilitation, carbon sequestration, forest and catchment management, landscape derived environmental services and threats to food security.

- In 2015, after working with Chinese scientists in dry land rice production, Central Queensland University signed a Memorandum of Understanding (MOU) with Zhongkai University of Agriculture and Engineering to enable the universities to work together on food security matters.

- University of the Sunshine Coast's Tropical Aquaculture research group develops industries and programs that are profitable, sustainable and culturally appropriate in South East Asia and Northern Australia.

- And in October 2016, University of Southern Queensland's research into improving the sustainability and efficiency of food production was recognised on the global stage at the Engineering and Technology Innovation for Global Food Security Conference in Cape Town.

And The Crawford Fund Queensland has played a very significant part in directly supporting our agricultural science research:

- Over the last two years alone, the Crawford Fund has been involved in 18 projects in Queensland, including:

- delivering multi-disciplinary training in mango research, held during the International Mango Symposium

- sponsoring two sweet potato scientists from Papua New Guinea's National Agricultural Research Institute to attend a virus diagnostics workshop here

- And a partnership with the Global Crop Diversity Trust, Biodiversity International and the Indian Council of Agricultural Research to support the Genebank Operation and Advanced Learning training in New Delhi in 2015.

Food trust and provenance

- And in looking to the future, an emerging focus area for our state, and indeed our nation, should be the issue of food trust and provenance.

[7] B.L. McCarthy (2014) Sustainable Food Systems in Northern Queensland – *Journal and Economic and Social Policy*, Vol 16, 1, Article 4.

- There is a disconnect in the supply chain of most food products that leads to inefficiency, with limited scope to optimise and drive value-add and cost efficiency gains.

- Examples of data collection in the beef sector from conception, through identification, medication, traceability, genetics, production techniques and features including site monitoring and behavioural studies are all commonplace.

- Capturing this information and using it for marketing and product quality purposes will significantly improve product differentiation and add value in the eyes of the consumer. Differentiated product with provenance, romance and history provide reasons why consumers should support the product in the market place. Deftly marketed product, such as fine wine, adds value along each step of the supply chain.

- True to the statement by Michael Ossipoff, Director of Capability and Innovation, Telstra 2015 "In today's global world you can compete in two ways, one is on price, the second is on information…".

- We will need to be creative in the way in which such information is derived, managed and used – with platform technologies such as advanced sensors, big data analytics and block chain ultimately playing a huge role in creating this value-add. This is a huge opportunity for us to build on our key strengths and become a global leader in this field.

In concluding

- I would like to congratulate the Queensland Committee on stimulating cross-sector interactions in agricultural science.

- Indeed, I have heard first hand that our scientists working at the EcoSciences Precinct have themselves been inspired by your events promoting the achievements of students involved in international training, volunteering and mentoring programs, and through your forums.

- I wish you a very stimulating and equally inspiring afternoon.