



The Crawford Fund 2018 Annual Conference

RESHAPING AGRICULTURE FOR BETTER NUTRITION: The Agriculture, Food, Nutrition, Health Nexus

Scholar Reflections



THE CRAWFORD FUND
For a Food Secure World



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AUSTRALIAN CAPITAL TERRITORY (ACT) COMMITTEE

Annamaria De Rosa, *The Australian National University*

Mentor: Tim Reeves, Crawford Fund Board

The Scholar Program for the 2018 Crawford Conference “Reshaping Agriculture for Better Nutrition - The Agriculture, Food, Nutrition, Health Nexus” has offered many benefits. It was an inspiring and motivating experience to learn about the challenges faced by researchers and policy makers in international agriculture and it introduced us to a welcoming and encouraging network driving change and keen to cultivate and empower the next generation.

The scholar days’ activities provided us with opportunities to network and meet other agriculture students and scientists and share ideas with leading personalities in international agriculture through the mentoring program. It actively facilitated making connections and that in itself is an invaluable experience. I am extremely grateful for the time and great advice which was provided to me by my mentor, Prof Tim Reeves. During the scholar days we were also presented with information on how to achieve our aspirations to enter or progress in the international agriculture world. We heard stories and advice about volunteering and working in developing countries and learnt about some career options both in the public and private sectors.

The main conference day at Parliament House was a unique experience. We heard some background from Prof Andrew Campbell and Prof Glenn Denning on the key agricultural challenges we face in a new green revolution; defined by constraints in agricultural land, increases in productivity, needing to be climate smart and also with a focus on improving food quality. The urgency and devastating impacts resulting from poor food nutrition and unhealthy diets were highlighted by Dr Alessandro Demaio and Dr Jessica Fanzo. They presented some terrifying statistics on the effects of poor food quality, leading to a global malnutrition epidemic where roughly half of the planet is affected by some form of malnutrition and 22 per cent of the world’s children under five years of age are stunted in growth and brain development. Also, a topic of discussion, were the obesity rates which are rising all over the world and the urgent need for better education around healthy diets.

Addressing these nutrition challenges were a range of interesting projects aiming to improve nutritional quality of diets globally. Joanna Kane-Potaka spoke about the importance of diversifying staples and promoted the nutritional benefits of super-foods such as pearl millet and sorghum. Tania Paul and Philmah Seta Waken reported on their efforts to increase the use of traditional and more-nutritious vegetables within communities in Papua New Guinea. A/Prof Alex Johnson talked about the iron-biofortified rice developed in his lab, providing a great example of how biotechnology can be used to tackle the world’s most prevalent micronutrient deficiency.

I am very grateful to have had the chance to attend this wonderful conference, it was stimulating, it offered amazing examples of research responding to current nutrition challenges and it further fuelled my enthusiasm for agriculture.

Demi Gamble, *The Australian National University and CSIRO Agriculture & Food*

Mentor: Tony Fischer, Crawford Fund ACT Committee

The Crawford Fund Conference I was fortunate enough to be invited to attend was one of the most valuable conferences I have attended to date. The topic that directed our discussions – “Reshaping Agriculture for Better Nutrition” – stimulated much debate and collaboration, and, for a niche-driven student such as myself, opened my mind to the possibilities of scientific research. The diversity of speakers was extensive, highlighting not only the extent of the global issues of food security at hand, but also the enormity of possibilities posed to us to improve our future through research, development, policy, legislation, education and initiatives.

As someone who is so consumed in pure, fundamental science, I was particularly intrigued by the policies and practices that have been developed downstream to scientific research in global applications directed at improving agricultural practice and food production. I was particularly amazed by the Smart



Food initiative – encouraging the production and consumption of foods that are sustainable nutritiously, environmentally and economically for farmers. I appreciate that this challenge is enormous and riddled with trade-offs, but to see a group that are actively working towards this was extremely inspiring.

Of course, as a fellow science-enthusiast, I was excited by the achievements presented by Associate Professor Alex Johnson in his development of staple cereals biofortified with essential minerals that are common culprits for malnutrition in Africa. Seeing how fundamental scientific research can lead to the production of nutrient enriched foods to directly improve malnutrition in developing countries was certainly motivating, and I'm excited to watch this field expand further.

One of the main points I absorbed through the diversity of speakers and refreshing, novel approaches each posed to improve future global food security, is that we will rely on collaborative effort from a wide range of disciplines in order to achieve this monumental goal. I particularly liked The Honorable John Anderson's passionate argument that each of us may not necessarily need to solve world hunger as an individual, but work on advancing our own field to collectively, as a global effort, work towards this goal in unity.

I could go on, but these are some of the main messages that struck home for me. I was delighted to see how action-forward the topics discussed at the conference were, something that is lacking in scientific conferences that are considerably more reserved and conservative. As such, I look forward to attending future conferences by the Crawford Fund as an integral way to follow the international movement to achieving global food security.

Evie Packett, CSIRO Land and Water/The Australian National University

Mentor: Robyn Johnston, ACIAR

The Crawford Fund's 2018 Conference revealed the complexities of managing the agriculture, food, nutrition and health nexus to me. As a student and professional working within the water management space, I deal with considerations of agricultural irrigation and water efficiency on farms. However, this conference broadened my understanding of the agricultural space and put my work as a hydrologist in a wider context.

I was able to ask other agricultural research experts how they see water management in relation to their work. This enabled me to reveal links between disciplines. For example, one of the answers I received, was that wastewater management needed to be done more effectively so that treated water could help support the growth of healthy foods. I was able to translate the perspectives of other disciplines on water management back to my colleagues and think about how my future research could assist agricultural goals.

The conference speakers did a fantastic job outlining the successes of the Green Revolution in reducing global starvation. Speakers then highlighted the next frontier for agricultural researchers to target – those still starving, completing the Sustainable Development Goals (SDG) and increasing the nutritional content of food. While fewer people around the world are starving, scores are still micronutrient deficient. The conference explained to me that agricultural research needs to explore food quality, not just quantity, in the future. This century, countries can also have double health burdens, such as obesity and micronutrient deficiencies and solutions will need to holistically tackle both.

Finding integrated solutions was a theme that cross-cut the conference. Speakers emphasised that future research needed to take holistic systems-thinking approaches in order to find solutions to nexus problems. Solutions in agricultural challenges have to be implementable, with an understanding of how the real world works. For example, the International Crops Research Institute for the Semi-Arid Tropics' (ICRISAT) programme focuses on delivering 'Smart Food' - healthy for consumers, good for the planet and economically viable for farmers. This way they ensure that their research solutions deal with the varied demands of the SDGs and can be translated into practical action. The conference also provided a valuable space for field experts to debate how to deliver widescale impacts, such as the viability of genetically modifying the major world food staples (rice, wheat, maize) or to increase the production of



vegetables to diversify people's nutritional content.

Finally, the mentor programme for the conference scholars was deeply valuable for my own intellectual understanding of research for international development. Informal conversation with my mentor, Robyn Johnston (ACIAR), allowed me to explore questions about the nature of development research and how to ethically and efficiently deliver development programmes. This opportunity meant I could explore assumptions in my work with an expert in my field. This will make my work stronger in the future.

I am very lucky to have been given the opportunity to attend this conference and I would like to thank the Crawford Fund, RAID and the scholar funders.

Joseph Vile, Murray-Darling Basin Authority

Mentor: James Quilty, International Rice Research Institute

The Crawford Fund Chair John Anderson began the conference with an impassioned and timely defence of foreign aid. This was in the context of severe drought in NSW and Queensland, with suggestions that foreign aid funding be diverted to Australian farmers suffering severe drought in New South Wales and Queensland. I grew up during the 'millennium drought' on my family's sheep and wheat farm in NSW. Since then I have worked alongside smallholder rice farmers in Vietnam and kava farmers in Fiji. So, this is a debate I am deeply connected to. The 'Australia first' and 'buy local' sentiment is understandable, but it can lead to the demonisation of foreign farmers. There are many long-term benefits of agricultural aid programs and partnerships, some of which return to Australia in the form of new crop varieties, improved farming techniques for semi-arid areas, international university enrolments, and 'soft power' influence. These benefits were echoed by ACIAR CEO Andrew Campbell at the conference and show that agriculture is a star performer within our decreasing aid budget. Could this different and more positive slant on 'boomerang aid' be a way we can bring the Australian public along on the foreign aid journey?

Professor Robyn Alders highlighted the challenges that women face in getting involved in international agricultural work. Looking around the Crawford Conference, it was obvious that there were more men in attendance. I found it really encouraging and also important to see so many young women in the Scholars group. They were able to get first-hand advice from Professor Alders about entering the industry. Professor Alders also explained that the increasing prevalence of pornography and accessibility across the world via smart phones is contributing to young, independent women being viewed in a certain way when they enter communities. This is a new challenge and was not an issue when Robyn was starting her career. Why am I writing about this as a man? Because I have a role to ensure women have the same opportunity as me to be involved. In addition to this, almost half of farmers worldwide are women, and many of them take chief responsibility for their family's nutrition. We need more women involved in the research, policy development, project design and extension that will help lift their sustainability, productivity and health. We cannot do this with only men in the driver's seat.

The conference scholars' days were incredibly valuable to me. As a young scholar I was matched with James Quilty, a senior researcher from the International Rice Research Institute who has 7 years' experience working at their headquarters in the Philippines. James shared valuable experiences of his journey through IT to agricultural research, then to management. He also asked the big questions that a mentor should – 'where do you want to take your career?', 'where does a Masters or a PhD fit into this?', and perhaps most importantly, 'what excites you?'

For future scholars reading this, I'm going to recommend my highlight presentation: Associate Professor Alex Johnson on how wheat as a key global staple is 'letting the team down' with a lack of micronutrients, and the promising role that biofortification can play to correct this.

Finally, thanks to the Crawford Fund for your continued support for young people in agriculture!



NEW SOUTH WALES (NSW) COMMITTEE

Harry Campbell Ross, *University of Sydney*

Mentor: Patricia Lopez, Timothy G Reeves and Associates P/L

The 2018 Crawford Fund Conference has truly shown the value of nutrition in agricultural systems and inspired me to maintain this theme throughout my professional career. The calibre and experience of the speakers at the conference was staggering.

The value of adequate nutrition in regard to public health was expertly laid out by Dr Demaio and Dr Fanzo. They both described the ill effects poor nutrition has on a child's development and the knock-on effects this has on a population. The statistics they presented on the number of people wasted, stunted and undernourished globally were humbling and in truth, quite frightening. These numbers were referred back to throughout the day to further highlight the value of adequate nutrition throughout someone's life. They both also touched on the societal benefit to a healthy population with education levels, health services and the surrounding environment all benefitting. An excellent example of this is the colossal strain put on health services by non-communicable diseases such as type-2 diabetes, cancer and heart disease. All of which are highly prevalent in 'western' populations whose food system is dominated by simple carbohydrates. With the information presented by Dr Fanzo and Dr Demaio, it is no surprise then that heart disease is the biggest cause of death in the developed world.

Andrew Campbell in his opening of the third session touched on the reason for this massive increase in simple carbohydrate consumption during the post-WW2 green revolution. The direction of agricultural production and research at the time is so perfectly embodied in the common crop breeder's adage "yield is king". This essentially meant that the focus on the nutritional worth of agricultural produce was swept aside, diluting the grains with predominantly carbohydrates. The following speakers of the third session, Dr Okello, Ms Kane-Potaka, and Dr Wopereis, all addressed this element of nutrient deficiency in diets from different angles. Dr Okello focused on the importance of meat consumption, outlining the disparity between the developing and developed world. Particularly the gross over-consumption of meat in 'western' cultures and under-consumption in developing populations. Ms Kane-Potaka focused on the potential of alternative grains such as sorghum and millets as a nutritious replacement of corn and wheat in undernourished populations, with particular reference to the semi-arid tropics. Dr Wopereis focused on the role vegetables play in nutrition, and how they provide a readily available source of essential vitamins and minerals.

The conference schedule did well to synthesise these differing angles around the importance of nutrition. It provoked us to think about nutrition as an element within the 'One Health' framework. It was skillfully articulated that being effective in international development work involves embracing other disciplines and skillsets. In this regard, I found the scholar days and activities particularly valuable. I was able to interact with people with vastly different backgrounds to my own, but all with the same goal. In informal conversations with my mentor, Patricia Lopez, she emphasised the importance of 'soft' skills such as the ability to communicate, with particular emphasis on language.

I thoroughly enjoyed the 2018 Crawford Fund Conference and came away with a stronger drive to pursue international agricultural development further. I relished the opportunity to connect with others in this small but vital industry. I returned to Sydney full of inspiration and anticipation for the future. So, I must thank Cathy Reade and the rest of the Crawford Fund team for organising a spectacular 2018 conference, I am immensely grateful for the opportunities you provided.

Isabel MacPhillamy, *University of Sydney*

Mentor: Joanne Daly, CSIRO

The 2018 Crawford Fund Conference was an excellent experience to meet and network with individuals working in such varying fields. The 2018 conference, "The Agriculture, Food, Nutrition, Health Nexus" succinctly brought together the current issues facing food and nutrition security.

The conference brought attention to 'hidden hunger' an issue that has been neglected in the past as well



as the debate regarding red meat consumption and the argument for reducing livestock production. Dr Anna Okello, from the Australian Centre for International Agricultural Research highlighted the danger of providing a blanket statement regarding reduction in livestock production. She emphasised the need to consider the context of production systems and the importance livestock production plays in the role of securing household and village level nutrition in developing countries.

A/Professor Jessica Fanzo's impassioned presentation and subsequent Q&A discussion on the burden of malnutrition highlighted the complexities of malnutrition in society. Such as the current obesity epidemic in developed countries, where this tends to affect those of a lower socioeconomic status, and how chronic undernutrition can have generational impacts on the national economy as the individual earning capacity of individuals who are stunted can be reduced by up to 45 per cent.

Working in a primarily livestock-based field, I was very interested to learn about the biofortification of cereals that is occurring to try to address the hidden hunger issue as well as learning about the community outreach programs run by large private companies such as the Kellogg corporation.

I would have liked to see more discussions on issues such as pesticide and herbicide use in crop production as I feel this is a key issue that needs to be addressed as farmers are trying to produce higher quantities. There was also minimal discussion on utilising fish and insects as protein sources. I feel like some of the speakers recommend substituting red meat consumption with fish-based protein, however the sustainability of fish farming and wild caught fish was not discussed.

I enjoyed the opportunity to network with the other scholars and mentors, meeting different scholars working in the bee industry. This is another area of food production that I feel needs much more discussion and consideration in the future. It was great to meet many of the mentors, and hear about how they have progressed their careers, and it was great to hear more personal stories about how they may have managed their families and 'work-life' balance in their earlier stages. I am one of the luckier scholars as I already am involved directly in international agricultural research, but it was great hearing about the many ways others have entered in to this field. The advice Professor Robyn Alders provided, especially to the female scholars was valuable, as well as reminding us all that international work is not for all, and you can still make a highly valuable contribution doing work based in Australia.

Cooper Schouten, Southern Cross University

Mentor: Bill Magee, Magee Consultancy

What an inspiring and exciting experience to be selected to join 44 other bright and aspiring young researchers enthusiastic about making positive change in the nexus of international agricultural development! Eminent international and Australian speakers presented impactful, insightful and relevant presentations on reshaping agricultural research for better nutrition in context of global challenges spanning agriculture, food, nutrition, health. Our mentors were genuinely interested, engaged and keen to introduce us to esteemed agricultural researchers, parliamentary politicians, ministers and renowned CEOs. A highlight was the opportunity to discuss beekeeping projects with ACIAR's CEO Prof Andrew Campbell – 'We have to use all the tools in the toolkit, with good governance, good design, and good risk management'. It was encouraging to learn that agricultural development is a key driver of poverty reduction and that growth in agriculture is 2-3 times more effective at reducing poverty than equivalent amounts of growth generated in other sectors.

The discussions were nothing short of thought provoking and full of challenging ideas and concepts on how we can best refine our professional practice to be more effective, creative, impactful and resourceful. How can we as individuals in our professions, as a group passionate about agriculture and improving the welfare of our poorer nations and as a global community, overcome the insidious problems that we face now and into the future? There was clearly felt the need for sharing of knowledge and lessons learnt within and between jurisdictions and a desire for more development professionals to become 'jacks of all trades and a master of one'.

Prof Robyn Alders made a memorable speech as she reminded us of the strengths of multidisciplinary



collaboration, the challenges of inadequate investment in agricultural research and the need to work closely with and listen to communities in order to sustain local food systems - 'Our achievements are thanks to farmers, and those who get food to us.'

Meeting Dr Anna Okello was also a highlight. She offered practical advice as we discussed how inclusive problem statements, well defined research questions and therefore solutions, are paramount to effectively overcoming international agricultural problems. The relationships formed opened doors for future work opportunities, research partnerships and collaborations. The friendships made with other scholars will undoubtedly see us working alongside each other as peers for many years to come. The RAID committee were truly supportive and provided a great platform for engaging and connecting an active network of motivated researchers working in international development. It was an honour to meet The Hon John Anderson AO, Chair of the Crawford Fund and Former Deputy Prime Minister and leader of the National Party and to hear from the former Minister for Foreign Affairs, The Hon. Julie Bishop MP, who addressed the conference in parliament with an inspiring speech where she genuinely stated that she "couldn't think of a better investment for our dollar than helping these young people do great things." Thank you to the Crawford Fund and the NSW Committee for the incredible opportunity.

NORTHERN TERRITORY (NT) COMMITTEE

Samantha Nowland, *University of the Sunshine Coast and NT Government*

Mentor: Tania Paul

The 2018 Crawford Fund conference was my first of hopefully many. It was an inspiring experience to be immersed in the world of international agriculture research and development, with presentations from many amazing leaders about the big issues facing our world's poorest regions.

I was extremely impressed with Dr Anna Okello's (ACIAR) presentation on the role of the livestock sector in nutrition. She highlighted the importance of livestock in developing regions and brilliantly navigated a potentially difficult topic, especially following the morning keynote by Dr Alessandro Demaiò (EAT Foundation) who highlighted the need for humans to consume less meat.

The presentations were well balanced (NGO's, government, private sector, etc.) and led me to think with a more global perspective. The atmosphere of the conference was welcoming and everyone was extremely supportive of the scholars' attendance (there were 44 of us!). I was excited to see an aquaculture case study make the program as this is a sector that is often overlooked in agriculture. Dr Jessica Bogard (CSIRO) and Dr Shamia Chowdhury (WorldFish) highlighted the need to take a nutrition-sensitive approach in fisheries and aquaculture, and to investigate the nutrition of the produce we are already consuming. Mola fish are readily consumed throughout Bangladesh but the vitamin A is in the fish eye and head is typically discarded. If whole Mola fish are consumed it could have big impacts on improving micronutrient nutrition, especially in women and young children.

The scholar activities were impressive, and, coming from the Northern Territory there is nothing like it offered locally. All the mentors were extremely supportive and approachable. For people in such senior and important positions to take the time to be genuinely interested in and supportive of young researchers is really something special. I was lucky enough to have Tania Paul (Charles Darwin University) as my mentor. She was exceptional and introduced me to many people I would never have otherwise had the opportunity to meet. A highlight from the scholars' activities were the honest words of Philmah Seta Waken (NARI, Papua New Guinea) about the attitudes of scientists working in developing countries: "don't be a know-it-all". Everyone laughed at the honesty of it but I am sure everyone who has worked in the sector has seen it happen too often.

I really enjoyed the opportunity to meet such a diverse range of passionate people. It amazed me how many early career opportunities there were to get into international agriculture research, as I am sure



this is not the case for many other science sectors. I think everyone immensely appreciated the effort, time and dedication the Crawford Fund and RAID put into all the scholar activities. It is a unique and extremely rewarding team to be a part of, and I will be highly recommending the conference and scholar program to my friends and colleagues.

SOUTH AUSTRALIAN (SA) COMMITTEE

Bonnie Armour, *University of Adelaide*

Mentor: Mellissa Wood, ACIAR

Reading the words, 'Congratulations Bonnie...' on the top of a Crawford Fund email was one of the most breathtaking and lightheaded experiences I have ever had. Literally. I became quite emotional after reading the email describing my acceptance to attend the Crawford Fund Conference. I have always been interested in environmental issues, expanding agriculture, ethics of equality and the links that tie those phenomena together and as soon as I learnt about the themes and focuses of the Crawford Fund Conference, I knew this was the chance of a lifetime.

The opening keynote speaker, Dr Alessandro Demaio, gave an overall 'wow' factor in summarising the task of feeding a growing population a healthy and mixed diet whilst reducing detrimental environmental impacts. Did you know that 155 million children are stunted? Neither did I! I wasn't even aware that this was a significantly dire issue and it wasn't until Joanna Kane-Potaka's presentation on 'Smart Food,' where she further addressed the issue of malnutrition and explored modern examples, such as rice, where I fully comprehended the issue. Joanna presented the issue of rice, even though being a very popular and staple grain in the developing world, containing significantly less amounts of essential nutrients, i.e. iron, calcium and zinc, compared to millet. Alex Johnson presented a slightly different angle on nutrient deficiencies by focusing on biofortified cereals but I found Alex's topic complemented Joanna's and indeed Dr. Alessandro's, by exploring the low-nutrient content of staple foods, i.e. cereals in Africa and how underlying impacts of malnutrition are wide spread and unaddressed. This was perhaps one of my favourite aspects of the conference, where different academics, all with different experiences and knowledge, presented similar global issues but with differing elements of application, i.e. the location, technology, food source used etc. I found this relatability increased my understanding of issues and perceptions on just how diverse problems can be depending on the global region. The need to sustainably implement these projects addressing malnutrition in areas of most need to them, such as Timor-Leste and Papua New Guinea as highlighted in several presented case studies, is crucial to improve quality of life and lessen the occurrences of health impacts related to malnutrition.

The importance of agriculture was admirably discussed throughout the entire three days of presentations. Whether it be, using genetic engineering to biofortify iron in wheat, diversifying staple foods, minimising food waste, improving the nutrient content in farmed fish or even allowing small-holder farmers access into urban markets; the importance of focusing on improving global agriculture and all of its constituents will be the pivotal factor in achieving equality and health for people and the planet.

I can't thank the Crawford Fund enough for allowing me to attend this awe-inspiring event. What I gained from the three days in knowledge, inspiration, ideas and networks does not have any bounds. The opportunities to network were fantastic and allowed me to engage with like-minded people with different ideas and experiences, broadening my own ideas and awareness of the possibilities after I graduate. Attending the Crawford Fund Conference has put the wheels in motion in my head. And these wheels will drive my aspirations and determination to help protect the environment and feed the world sustainably.



Emma de Courcy-Ireland, Flinders University

Mentor: Julie Nicol, Crawford Fund Victoria Committee

I currently work as a Postdoctoral scientist in a lab that is working towards the biofortification of wheat and rice with zinc and iron. This year's Crawford Fund Conference was therefore perfectly themed and I was thrilled and honoured to receive funding from the South Australian Crawford Fund Committee to attend as a Scholar.

The main conference started by highlighting the shocking facts about under-nutrition: 800 million under-nourished and 2 billion lacking key micronutrients, but by the end of the day I was encouraged about the inroads that are being made towards providing more nutritious foods. Hearing so many examples of research, from such a wide variety of disciplines, was encouraging and inspiring. A key take-way for me was that I need to be more proactive in creating collaborations and connections with scientists outside of my area. As illustrated by many at the conference, the scale of the problems caused by under- and over-nutrition require multi-disciplinary research teams to solve them.

The conference also highlighted the lack of prominence surrounding the issue of over-nutrition and the shocking fact that over- and under-nutrition exist side-by-side in many developing countries. Many posed the question: should we be allowing such wide-scale advertising of un-healthy foods? I remember being shocked by the level of advertising for junk foods I observed on billboards beside highways when I visited the Philippines and it seems from the examples given at the conference that this isn't the only country where this happens.

It was thought-provoking to hear about research from disciplines other than my own and what methods they are using to provide solutions to the problem(s) of under-nutrition. From working with farmers to re-introducing the cultivation of indigenous plants, to high level plant breeding and the creation of a reality TV show aimed to change consumer preference in favour of highly nutritious, but not so popular, sorghum and millets, this conference covered a lot of very interesting ground.

Joanna Kane-Potaka's presentation about the Smart Food initiative was for me a highlight and best encapsulated the overall theme of the conference in its mission statement: "Good for You, Good for the Plant, Good for the Farmer". As Joanna mentioned, mainstreaming the use of 'smart foods' seems to me a great way to get people eating healthier options as their staple food.

For me, the other highlights of this conference were the Scholar days that bookended the main Conference. It was wonderful and inspiring, not only to meet so many other young scientists who are also interested in agriculture for international development, but also to meet senior scientists who were so generous in giving their time and energy to help us grow our enthusiasm for working in this area. I have not previously encountered such a warm and welcoming atmosphere at a conference, I wish it was more commonplace. I cannot thank the mentors enough for their participation in these days and for being so willing to introduce themselves to the younger generation of researchers.

I think it was Robyn Alders, in her conference synthesis, who said that one of the most important things we can do after attending this conference is to spread the word; not only about the issues of under- and over-nutrition, but equally importantly, about the amazing research being conducted to provide solutions. As pointed out by Andrew Campbell, agriculture, and agricultural research, is the perfect avenue to achieve healthier, more nutritious food, in an environmentally-friendly way, that benefits the wider community and farmers alike.

Willa Matchett, Viterra, Adelaide Ports

Mentor: Roger Wickes, Crawford Fund South Australia

I feel very lucky to have been given the opportunity to attend this year's Crawford Fund conference and to be able to participate in the scholar activities. The topic, "Reshaping Agriculture for Better Nutrition" is a particularly relevant and intriguing topic that I loved hearing about. I learnt there are so many variables and different approaches to this topic throughout the variety of the key note speakers. The main question people were attempting to answer was; how do we, as scientists and agriculturalists,



make food more nutritious and accessible throughout the world? I found the answers to this question extremely interesting. We were formally concerned that we wouldn't be able to provide enough food for a growing population, but the concern now is whether we will be able to provide enough nutritious food. I have so many examples of people that sparked my interest throughout the conference. Joanna Kane-Potaka mentioned that we need to be giving healthy, nutritious food a good wrap. She explained how nutritious and under-grown millet is. I had never really heard of millet but after hearing her speak, the benefits of this grain seemed incredible. Another speaker that I loved hearing from was the perspective offered by Philmah Seta Waken, who spoke about the importance of nutritional influence in Papua New Guinea. Processed, packaged food has created a lack of knowledge about traditional vegetables and the rich nutritional value they possess. Through their research, Philmah and Tania Paul saw that knowledge about these vegetables was lacking. As a result, cooking classes and school programs were put in place to teach the local community. I loved hearing about this particular story because it illustrated to us that we can find solutions to particular problems and help others. I found it really interesting to get a large, international brand such as Kellogg's approach on agricultural research. Rebecca Boustead spoke well about the approach of Kelloggs in the Asia Pacific area and back home in Australia. As a large corporation that produces a large amount of processed food, I think she did a really good job at answering sceptical questions. It was also incredible to be able to hear Julie Bishop speak and I was in awe of how passionate she was about agricultural research, particularly in developing countries.

The scholar activities were a highlight for me. The atmosphere was extremely welcoming and friendly and the speakers were informative, giving us a lot of inspiration for our future endeavours. It gave us all the opportunity to network which a lot of the time is very daunting for younger people. The opportunity to get paired up with a mentor was fantastic. It was a great way to meet people they knew and feel more comfortable within the space. Overall, the scholar program was an incredible opportunity and I'm extremely grateful I was able to attend.

TASMANIAN (TAS) COMMITTEE

Claire Cunningham, *University of Tasmania*

Mentor: Suzie Gaynor, ACIAR

The Crawford Fund Parliamentary Conference was the first conference I have ever been to. I was initially very apprehensive about attending, it all seemed a bit overwhelming. I was reassured however, by the organisers and my lovely mentor (Suzie Gaynor from ACIAR) whom I found all to be very supportive and helpful. I have a background in agricultural science, and I am currently completing my honours; observing the effects of wood ash as a potassium fertiliser substitute in high pH coral atoll soils. Coral atolls are naturally low in potassium and thus, the people living on these atolls are very restricted in what they can grow and consume. As a result, islander nutrition is severely impacted, resulting in nutrient deficiencies as well as high cases of obesity. From this background I had preconceived ideas about the impacts of nutrition in agriculture. I found the conference reinforced my knowledge of agriculture and nutrition and truly inspired me to continue to pursue my passion for international agriculture and nutrition research. I was overjoyed that so many people are also concerned about this area of research and want to make a difference internationally and within Australia.

The overall structure of the conference and organisation was impressive, and I thoroughly enjoyed networking with a wide range of people from diverse backgrounds. The speakers were very passionate and spoke clearly on a variety of topics, all of which I found both inspiring and interesting. I particularly enjoyed the topic presented by Dr Marco Woperies on the nutritional power of native vegetables, and one of the case studies which was presented by Philmah Seta Waken. The other networking and RAID events were also excellent. I enjoyed meeting other scholars and RAID organisers from around the nation and I am keen to remain in contact. My mentor was crucial to my successful networking as well as making me feel welcome and comfortable in this new environment.



The majority of the speakers at the conference spoke about the 'double burden of nutrition'. This is the fact that there are communities and individuals globally who suffer from either or both malnutrition and/or obesity. The implications of agriculture and subsequently diet on children's development and expecting mothers was extraordinary. I didn't realise the full extent of limited access to high nutritious foods in the first three years of life, which causes severe stunting and permanent brain damage to children. The key take-home message for me was that a lack of rural nutritional education leads to increases in malnutrition and obesity. The focus of international aid needs to shift from increasing quantity of food produced, to increasing the quality of food produced.

I feel so supported and honoured to have received a Crawford Fund conference scholarship and I have grown and benefitted enormously from attending. I could not recommend the scholars program highly enough, as it has changed my outlook and career aspirations for the better.

Nam Ha Duong, University of Tasmania

Mentor: David Gale, Plant Health Australia

Being a Crawford Fund scholar is a distinct experience that I would highly recommend to every young student and early-career researcher in the agricultural sciences. I am an international student and was fortunate enough to be selected by the Tasmanian Committee to attend this year's conference.

My impression of the Crawford Fund conference was truly amazing, in that it gave me more than just a chance to learn about Australian and international agricultural research. It was a perfect platform to engage with research, to glean from real-life lessons from around the world and to be made aware of the expectations in science and labour markets for meeting future demand. An 'extra' gift designed by the organisers was the networking opportunity in both the scholars' days and the Parliament House event, where we were able to learn about the wider learning opportunities and working possibilities. It enabled us to actively engage with students, senior researchers and politicians, an opportunity I would not otherwise have had. As a scholar, I was assigned a mentor, David Gale, who we could share experiences with and to help network more effectively. For all those reasons, I would never regret travelling to Canberra, though many tasks are waiting on my office desk in the final year of my PhD project.

During this year's conference on "Reshaping Agriculture for Better Nutrition", many prominent issues were presented and discussed. Despite our diverse backgrounds, the firm consensus about the future of agriculture was to focus on quality rather than quantity – something that hasn't been sufficiently addressed to date. Several presentations highlighted the insufficient intake of vegetable or lack of micronutrients as a challenge for both developing and developed countries. Stunting and obesity are a global problem and are not restricted to any particular country or region. These findings showed the necessity for the collective action of scientists and non-scientists, stakeholders from both the private and public sectors and all people everywhere.

How do we achieve collective action? We may need to reconsider or revise our mindset; more voices and perspective need to be heard. People of different socio-economic and cultural background with different level of education, experiences and political statuses certainly hold different views. Any future solutions or interventions need to work hard to embrace diversity in practice, to ensure the sustainability.

I was very impressed by, and wholeheartedly agree with, Dr Anna Okello's comment in the Q&A session that technical solutions are somewhat easy to achieve but bringing them into a local community would be much harder since they might not be contextualised enough. Collective action has the potential to be a win-win strategy.

In her ministerial address, the Hon Julie Bishop MP, Minister for Foreign Affairs emphasised that everyone benefits from research in developing countries. Ms Bishop highlighted that: "...for every dollar Australia invests in foreign aid, we receive back from that recipient developing country \$7 through our increase in exports. I think that is a figure worth recalling."

Once again, I would like to express my gratitude to the Crawford Fund, sponsors, speakers and scholars for this wonderful experience that offered me a lot to learn, to think about, and to enjoy.



Md Hasanuzzaman, University of Tasmania

Mentor: Anthony Ringrose-Voase, CSIRO

This year I was fortunate to receive a scholarship from the Crawford Fund to attend the Crawford Fund conference. I would like to thank the Crawford Fund committee for providing me this great opportunity to participate in the conference focused on “Reshaping Agriculture for Better Nutrition - The Agriculture, Food, Nutrition, and Health Nexus” 13-15 August 2018 in Canberra, Australia.

The world’s population is projected to increase to 9.7 billion by 2050 and 11.2 billion by 2100, and to feed this many people, we need a 70 per cent increase in food production by 2050. However, food security does not only encompass the availability of food but also the nutritional value. Multidisciplinary approaches are needed to ensure food security and find solutions to large-scale malnutrition.

The Crawford Fund Conference was a fantastic platform to listen and learn about the global food problem, food quality and nutrition from world-renowned agricultural scientists. This conference was also a platform for me to talk with people of different organisations (ACIAR, World Vegetable Center, ICRISAT, CIMMYT, IRRI, World Fish Center) and scholars from different Australian universities whose research is contributing to global agricultural development. Meeting with my mentor, Dr Anthony Ringrose-Voase was a great experience, and I am very much impressed by his valuable suggestions for my future career.

I was very much impressed by the keynote speaker’s presentations during the conference on the global food problem, food security and different policies to increase global food production to meet the food demand for the rising human population. The Sir John Crawford Memorial Address by Ms Frances Adamson on the malnourishment crisis including the global disparities in nutritional provision and health implications was very impressive and informative and motivating.

I was also very impressed to see that many ACIAR projects are going on to increase the food production for future food security in my country, Bangladesh and many international agricultural scientists are working on it.

Meeting with other agriculture scientists, RAIDers, volunteers and ACIAR in the networking session was another excellent opportunity to discuss the future possibilities in the agriculture field to work with in joint venture. It gave me an opportunity to know about the other people’s work and their future ambitions and also, I got the chance to discuss my work and plans for the future. Suggestions from the mentors further encouraged my wish to carry out research in the field of agriculture for food security. Taken together, it was a great opportunity for me to connect with these world-class agricultural scientists, whom I hope to work with in the future.

Matthew Wilson, University of Tasmania

Mentor: Neville Mendham, Crawford Fund Tasmania

It was my great fortune to be selected as a Crawford Fund Scholar for Tasmania, and to get the chance to attend the 2018 Crawford Fund Conference in Canberra. At the conference, I was so impressed by the exceptional quality of the speakers throughout the event, who expertly covered serious and complex topics in a concise and approachable way. At the beginning of the conference, Alessandro Demaio and Jessica Fanzo outlined the global challenges of nutrition, providing the background for many of the later talks. As someone who has worked in agricultural and food science, a particular highlight for me was the way speakers were able to integrate food nutrition into the context of agricultural production that I’m more familiar with. And for someone just starting my career, it was inspiring to see firsthand in Dr Demaio an example of an Australian researcher who has gone on to take a key role in his field on the global stage.

Key messages from the conference included the critical role of nutrition early in life, and how important it is in shaping future health outcomes. Similarly, the concept of hidden nutrition issues, where people have enough food to eat but not the nutritional balance to flourish. Also, the global over-dependency on the “big three” crops of maize, rice and wheat, and how adding even only two more main crops into



the mix (sorghum and millet were proposed) could increase both productivity and food security. Also, of interest were the possibilities presented by the use of GMO crops, as well as obstacles in the way of their wider use. Most inspiring of all for me though was the conference summation by Prof Robyn Alders, who noted not only the challenges raised by the speakers throughout the day, but also with great skill wove in her own experiences and knowledge (in fact, I think this would make a great TED talk or similar in the future!).

Throughout the conference, it was great meeting so many people from different fields but with common interests, who were approachable, friendly, and willing to share their experiences. Also, the various networking exercises on the first day, and just having a personal mentor to introduce you to others, was a great way of breaking the ice. While the challenges to be faced to provide adequate nutrition for the world's population are enormous, the enthusiasm of my fellow delegates was hugely encouraging. Additionally, learning about the various ways different people have started their careers in international development was very instructive and inspiring, showing the many potential paths to get involved.

My huge thanks to the Tasmanian Crawford Fund Committee for funding my participation at the conference. Special thanks also to Cathy Reade and her team for organising such an informative, wide reaching and smooth-running event. Also, to the RAID network, whose enthusiasm and keenness to share their passion for international development really shone through. Finally, I would highly recommend the conference to anyone with an interest in the role of food, agriculture and other resources management in international development.

VICTORIAN (VIC) COMMITTEE

Maree Bouterakos, *Deakin University and UN FAO*

Mentor: Ted Hayes OAM, Crawford Fund Victoria Committee

Though consensus exists on pathways through which agriculture can influence nutrition, there remain several gaps in evidence on agriculture's contribution to nutrition and how the food system underpins nutrition and food security. My involvement in the 2018 Crawford Fund Conference, "Reshaping Agriculture for Better Nutrition", provided a clearer picture, further closing this gap in research and practice, in Australia and internationally.

All of the panellists presented interesting approaches on how to bridge the link between agriculture and nutrition security. The presentations provided enormous insights into distinguished professionals careers and personal lives, which is often not shared so openly at conferences. I particularly enjoyed listening to Marco Wopereis, from the World Vegetable Center, about his thrilling life and dedication to agriculture and nutrition across Africa and Asia. Jessica Fanzo from Johns Hopkins University, cemented the global nutrition situation, and highlighted the economic cost, and also the current economic investment in nutrition, which is completely unbalanced. This was particularly relevant given the prominent and powerful figures attending the conference. She stressed the need for a multi-stakeholder platform, and forming connections, which is in fact what the Crawford Fund Conference enabled the attendees to do. The main message from Jessica's speech was; 'Improving nutrition is a catalyst for achieving the Sustainable Development Goals'.

It was a privilege to hear from Tania Paul from Charles Darwin University and Philmah Seta Waken representing the National Agriculture Research Institute in Papua New Guinea. I was captivated by their stories and imagery, and innovation in adopting multiple communication strategies in their work in PNG. Their devotion to nutrition security and improving the livelihoods of communities in PNG, is indeed admirable. I have since had the opportunity to present my key learnings and these reflections to a wider audience of academics at Deakin University, which has facilitated many interesting discussions.

It was inspiring to hear from other young scientists, representing a range of professional backgrounds. I was in awe of their education and career journey, their aspirations and motivation to connect agriculture to nutrition security, at home and abroad. I too felt grateful to share my experiences in



international development with those who shared similar commitments and concerns about food and nutrition security. Furthermore, it was comforting to look around the room and see many young women representing this field. This signifies a shift in the sector, but also a shift more broadly of women in the workforce.

Over the three days I spent with the dedicated team that represents the Crawford Fund and fellow scholars, it was clear that much of the strength of the organisation rests on the ongoing investment in mentorship. The commitment of my mentor, Ted Hayes, and all the other mentors, in sharing their knowledge and experiences to the younger generation of scientists, was admirable. I will be forever grateful for Ted's wisdom, his approachable and modest nature, for past and future fruitful discussions and for his willingness in facilitating key connections.

Overall, the Crawford Fund Conference was an inspiring experience and the chance to become part of a thriving network of professionals who share similar passions and aspirations in the field of agriculture and nutrition. I wish to thank the Crawford Fund for this incredible experience and look forward to future engagement.

Stefanie Carino, *Monash University*

Mentor: Tony Gregson AM, Crawford Fund Board

The 2018 Crawford Conference scholar's program was a thoroughly enjoyable, thought provoking and motivating experience. The theme "Reshaping Agriculture for Better Nutrition: The Agriculture-Food-Nutrition-Health Nexus" was well chosen, highly relevant and topical, and particularly exciting as a dietitian.

The parliamentary conference was packed with highly knowledgeable experts in the field, a wonderful selection of both men and women doing very important and useful research in agriculture. It started with the stark reality of the current food system presented by Dr Alessandro Demaio. Food that is currently being produced is not in line with what we should be eating. He addressed the environmental burden caused by the food system and that a healthy planet is vital for healthy people, realising the challenge of feeding a growing population on a healthy and sustainable diet. Dr Jessica Fanzo followed perfectly, providing detail of the consequences of poor nutrition. Malnutrition has a double burden, undernutrition along with overweight/obesity or diet related non-communicable diseases. It also has lifelong social and economic impacts. She called on the audience to act on the SDGs and drive change in the whole food system.

The following speakers detailed innovative and interesting research. Some key messages included that although vegan and vegetarian diets may help with climate change, it does not fit every situation as livestock provides critical nutrition in low and middle-income countries. ICRISAT's concept "Smart Food: good for you, the planet and the farmer" called for the use of millet as a solution to climate change and move beyond the current 3 staples to improve food and nutrition security in developing countries. Traditional vegetables were discussed to help tackle malnutrition in developing countries. Research was presented on the lower concentration of micronutrients in aquaculture produced fish. The impact of increased carbon dioxide levels on crops was highlighted as it results a decrease in iron and zinc levels in C3 grains.

The perfect framing to the conference was the two days of the scholar's program, which was wonderfully well thought out and reaped many benefits. It was invaluable to have a helpful, friendly and knowledgeable mentor - to hear about their career, agriculture experience, and for them to assist with networking and provide advice. Connecting with other scholars and hearing of their roles and research in the agriculture field opened my mind to the work that is currently being done in the field. As I am about to start a PhD, it was very useful to learn of others' experience. As someone without an agricultural background or exposure to the agriculture industry, the conference allowed me to develop a true appreciation for farmers, agriculture and the power of agricultural research for international development, which I hope to share with others. It was good to have the opportunity to appreciate their



critical importance in feeding the world and their potential to impact the environment both positively and negatively.

It can be easy to fall into the trap of feeling alone in tackling a problem that you aim to improve in your career and research, however I felt that the Crawford experience was a great opportunity to be around like-minded people who are achieving and working on very important projects. It helped to inspire and motivate me and realise that we are part of a broader community all working on different projects but together can make a big impact, especially in achieving the SDGs so that no one gets left behind. I have endless thanks to Crawford Fund for providing this experience.

Abbey Dyson, RMIT University

Mentor: Lucy Brown, Australian Volunteers Program

Being invited to attend the Crawford Fund Conference for 2018 as a scholar has been, and will forever be, an unforgettable and beneficial experience. Coming from an environmental science background, I was surprised to find my lack of knowledge in the conference topic did not detract from my experience in Canberra. If anything, I believe it encouraged me to be more open and receptive to the activities held over the 3-day period. Overall, I returned to Melbourne with a new perspective on agriculture as a discipline, science as an industry and communication as a necessary skill. The resounding message I took from the conference and scholarly activities was that in an Anthropocene age of simultaneous over and under nourishment, communication and multidisciplinary skills are vital in working towards the Sustainable Development Goals of 2030.

During the conference, many varying angles of the topic were addressed. The ones of greatest interest to me incorporated sustainability and environmental issues to the nexus. Dr Alessandro Demaio discussed nutrition in the face of a growing population, which I understand was a point of interest for Sir John Crawford himself. He touched on the benefits of a plant-based diet for both people and planet as well as the need to reduce waste in all stages of food production, all of which will lead to improvements within the agricultural industry whilst protecting our water systems and preserving soil quality. Additionally, Joanna Kane-Potaka's presentation on 'Smart Food- good for you, the planet and the farmer' explored the benefits of crops that satisfy a greater spectrum of criteria in terms of nutrient content, recourse requirements and resilience. Environmentally, forward thinking products, like millets, are essential in mitigating the effects of climate change. Finally, Professor Robyn Alders' Synthesis to conclude the conference gripped me. Her frank and realistic manner brought perspective to the challenges faced by the industry and individuals, particularly female scientists. On that note, it was pleasing to see all speakers address the challenges faced by women globally and how their work promoted gender equality and empowerment in developing countries and at home.

I believe that I benefited from the conference and scholarly activities in many ways and I have the Crawford Fund and RAID to thank immensely for that. This program was one of the first professional networking events I have attended, and the mentor pairing provided necessary support in navigating the learning curve. My mentor Lucy Brown, Deputy Program Director for The Australian Volunteer Program, encouraged me to ask questions, network with professionals and recognise my worth and place in such a foreign setting. I have come away from the experience with a greater understanding of the industry, current research and pathways into international development.

Additionally, the friendships I formed with fellow scholars will be invaluable both socially and professionally, most of which is due to RAID and the networking events they organised around the conference.

Furthermore, I would like to take this opportunity to thank everyone that encouraged, facilitated and supported my attendance of the Crawford Fund Conference and Scholars Program. Special thanks to my two mentors, Dr Samantha Grover and Lucy Brown. Without either of these inspiring women, I would not have attended and had the opportunity for such great personal and professional development. I truly believe that the benefits of this experience are unforeseen and exponential.



Stephanie Prado, Deakin University

Mentor: Bosibori Bett, ACIAR

The Crawford Fund Conference (CFC) would have to be one of the biggest highlights of 2018. As a nutrition student nearing the end of the undergraduate study, the inevitable question of, “What now?” lingers. However, being one of the selected scholars has alleviated these concerns.

The CFC was a gratifying and empowering experience in which I was able to open up new doors and opportunities for myself. It was inspiring to be amongst various people with different expertise and walks of life. It truly cemented the belief that we never stop learning, improving, and growing as a person. Furthermore, as a nutrition student, I felt elated in knowing that I had so much more to learn about agriculture science. It also iterated my passion for public health nutrition and made me realise my purpose as a future dietitian.

Empowered, I now have the aspiration to also pursue agricultural science so that I can help make a difference in decreasing the burden of disease on a bigger scale; both in Australia and internationally. Though the conference day was overwhelming with so many astonishing speakers, I have learnt so much. Firstly, it was inspiring to see the impact researchers have on the livelihood of communities in developing countries such as Papua New Guinea. The CFC further iterates the importance nutrition and agriculture research has on tackling hunger, food insecurity, and sustainability. Moreover, it taught me that tackling world problems is a collaborative multidisciplinary team effort. There were many speakers such as Dr Sandro Demaio, Dr Jessica Fanzo, Professor Andrew Campbell, and Dr Anna Okello who showed us recent research and statistics. They also spoke about different terms, which I have learnt in the classroom, and placed them in real-world applicable contexts such as livestock differences between third world countries and Australia. Importantly, the terms environmental changes, climate change, policy governances in food, nutrition, water and health systems, were mentioned a few times. The CFC successfully stuck to the topic ‘For a Food Secure World’.

The conference also taught us the various determinants that contribute to health and nutrition. Additionally, the CFC showed the importance of tackling climate change, and the ways that different sectors can work towards meeting the Sustainable Development Goals. Personally, it created a new goal for me. The goal is to become a food systems policy maker that aids in creating environments where there are sustainable, harmony and biodiverse food supply.

On a bigger note, the biggest lesson from the CFC is the importance of networking, mentoring, and communication. There were so many well-spoken inspirational people that have contributed self-development, growth, and clarity. Lastly, the CFC has embedded the belief in serendipity; the importance of being reactive and proactive in whatever you come across in life. I have learnt to deliberately seek out compelling opportunities that strongly resonate with my beliefs, and my entrepreneurial instinct to continue exploring, discovering, and learning things that fire my passion to make a difference in the world.

WESTERN AUSTRALIA (WA) COMMITTEE

James Bidstrup, University of Western Australia

Mentor: Sam Coggins, ACIAR

As a recent Agricultural Science graduate the chance to attend the 2018 Crawford Conference was a truly spectacular opportunity which has without a doubt helped to improve my knowledge of the international agriculture industry. The theme of this year’s conference was based around the nutrition aspect of our global food production systems and in particular reshaping agriculture to improve the nexus between agriculture, food and health.

In the decades post green revolution agriculture has achieved many incredible feats and yet now with our global society facing new challenges we must collectively set new goals that will help improve the



health of our population whilst still ensuring food security. One of the largest problems we now face is the triple burden of undernourishment, over nourishment and micro nutrient deficiency which is causing a worldwide health epidemic that is in desperate need of the leadership of the next generation of agricultural and health scientists. Listening to the projects being run by members of the Crawford Fund it became obvious that in addition to the work Australia currently undertakes, our nation will play a crucial role in leading the way to improving diet standards and reshaping agriculture not only for a healthier, but also, a sustainable future.

Another important issue discussed at this year's conference was how best the behaviours of our global society can change to incorporate more foods into a healthier diet without compromising convenience, cost or palatability. It is important to analyse ways in which agricultural producers can not only improve the health of the under nourished but also adapt to the needs of the growing population of those who are over nourished due to the consumption of cheaper, highly processed and high calorie food. A personal highlight was the discussion around the potential advantages and disadvantages of integrating genetic modification into our agriculture systems, which featured many differences of opinions and ideas around implementation but always contained facts and stayed entirely respectful.

The quality of all speakers at this event was superb and whilst everyone spoke with great concern surrounding the imminent need to adapt our production systems the atmosphere remained upbeat thanks to the positivity and enthusiasm displayed by both my peers and the speakers. Furthermore, having a mentor to help guide me through the conference was an invaluable resource as they can offer a wealth of knowledge and were perfectly tailored to our fields of interest and future aspirations. I also found it truly inspiring to be able to get to spend time with some of the brightest minds in agriculture and found hearing about their contributions to the international community very motivating.

I am very excited about being able to utilise this knowledge and share it with the greater community whilst continuing to have discussions with members of the agricultural community regarding the global agriculture challenges we face and the roles we can play. I am extremely grateful to have been able to attend this year's Crawford Fund conference and would highly recommend attending RAID and Crawford Fund events to anyone who shows an interest in developing global agriculture.

Alicea Garcia, University of Western Australia

Mentor: Lynette Abbott, Crawford Fund WA Committee

The Crawford Fund 2018 Annual Conference and Scholar Program provided a wonderful opportunity for hearing from leading scholars and practitioners in the field of international agriculture. It also provided a unique platform for networking amongst my peers and the elected mentors. I must extend my gratitude to the Crawford Fund for selecting me as a scholar this year. As an early-career researcher it was a valuable and welcome opportunity, and I strongly encourage other young scholars to apply in the future.

Increasingly the world is becoming aware of the mounting crises malnutrition presents to our health as a global society. This year's Conference theme "Reshaping Agriculture for Better Nutrition – the Agriculture, Food, Nutrition, Health Nexus" brought the complexity of this issue to light. The sobering and incredibly informative presentations given by Dr Alessandro Demaio and Dr Jessica Fanzo at the beginning of the Conference at Parliament House introduced attendees to the multilayered nature of poor nutrition across the globe. This was followed by a day of ardent presentations outlining current projects and initiatives in international health and agriculture aiming to address the array of issues relating to poor nutrition in more specific contexts.

From the perspective of a young researcher, it was interesting to hear from various actors working within intersecting but variant academic and corporate spaces. Further to this, the panel discussions following each session allowed for attendees and speakers alike to critically engage with one another. This encouraged an open and enriching conference environment in which questions were welcomed and productive debate could ensue.

The Scholar Program which commenced in the days before and after the conference accommodated



a diverse range of young people working and studying in international agricultural research. I was fascinated with the range of research interests and pleased to meet a mix of hard science and soft science scholars. I feel this is important for bridging the gap between these fields and forming productive multi-disciplinary collaborations. I enjoyed spending time with my mentor, Emeritus Professor Lynette Abbott, who was both supportive and active in helping me to network and make connections with other attendees and scholars. As someone who works within the gender and agriculture scholarship, I was also pleased to find that gendered issues in agricultural research were addressed throughout both the Scholar program and the Conference. In particular, Professor Robyn Alders eloquently offered an experienced perspective on these issues.

Overall, the Conference and Scholar Program helped me to build my knowledge on the broader field of agriculture and nutrition that relates to my own research. The Scholar Program offered a supportive environment that encouraged young scholars to move forward in the field and gave valuable insight on how to do so. I highly recommend the program for anyone looking to further their career and activism in international agricultural research.

Silke Jacques, CSIRO

Mentor: TJ Higgins, CSIRO

The Crawford Fund scholar program to attend the conference “Reshaping Agriculture for Better Nutrition – The Agriculture, Food, Nutrition, Health Nexus” was a life-changing and unforgettable experience. Meeting so many extraordinary people doing amazing work that makes such a big impact is truly inspirational. I loved that we were teamed up with a mentor who is an established value in the field of international agriculture and who takes the time to get to know you and introduce you to other experienced gurus working in the international field. In my case, I was extremely honoured to be paired up with TJ Higgins, who is not only one of the most remarkable scientists, but also a very passionate and warm character who made me realise even more that this is the direction I want to move forward in.

The best thing about this whole experience was the people. Meeting so many like-minded people covering such a wide range of different subjects and projects all trying to make a positive difference just blew my mind. I was also very happy there was more than one scholar from WA and it was lovely to get in touch with them beforehand and have a bonding dinner on Sunday before the scholar program even kicked off, I will make sure to stay in touch with them!

The location of the conference was perfect, it was my first time in the parliament and it felt like you were part of where all the action is happening. The conference itself was an interesting mix of speakers and as a scientist, I particularly enjoyed the wide range of backgrounds, both in the room and taking the stage. I think it is very important we realize as scientists that doing the science alone in our little field of expertise, won't be enough anymore. We need to engage and interact with scientists from completely different fields, convince policy makers of the necessity of our work and fight for change and most importantly listen to and involve the local communities.

I thought the first two speakers were great to frame and introduce the broader context of the problem and I enjoyed hearing about the new sustainable development goals. I must admit, I also only thought of malnutrition as one equation, the undernutrition, and never really considered it might be time to also act on the other part of the balance, the obesity problem. The conference was food for thought and there were so many questions in my head I previously hadn't even considered and, in my opinion, those are the best sort of conferences, the ones that make you stop for a moment and reconsider your actions and views.

There were also many people in the room that I had previously reached out to but never had a reply from, so now was the perfect time to actually go and introduce myself. The networking was extraordinary and even if nothing comes out of it in the short term, it was an absolute bliss to have met so many great people. A big shout-out to the Crawford Fund for giving me this opportunity and for the RAIDers who are truly a unique bunch of people.



AUSTRALASIAN AGRICULTURAL AND RESOURCE ECONOMICS SOCIETY (AARES) SA

Rida Akzar, University of Adelaide

Mentor: Dr Hassan Warriach, University of Melbourne

I would say the 2018 Crawford Fund conference and scholar program has been “a positive trigger” in my career as a young researcher in the agricultural development sector. Through this event, I have gained a valuable knowledge, skillset, experience, and most importantly, expanded my networking.

The conference theme “Reshaping Agriculture for Better Nutrition” has been delivered well by all the speakers. The conference program was structured comprehensively that started from overview of the nutrition issues both in developed and developing countries to “way forward” to tackle this global issue. What I have learnt from these series of talk is that the nutrition issue is a complex problem, which needs interdisciplinary collaboration among stakeholders in the food chain. Nutrition security can only be achieved, if better practices, for example through technology adoption, are not only implemented at farm level, but also at the whole supply chain. Another thing that most highlighted in the conference is that “food system is the central for achieving multiple sustainable development goals (SDGs)”. It really makes sense if the food system is developed well, it can help in alleviating poverty, ending hunger, ensuring healthy lives, conserving environment and help achieving the other SDGs agendas. There was also a session that showcasing the work international development projects in developing countries on how research and development activities can help feeding people with nutritious food. I learnt that community engagement is an important approach in development activities, to better understand the issues and deliver the benefits of the activities directly to the community.

Besides the one-day conference, another interesting program was the Crawford Fund Scholar day activities. Through this program I have met with my mentor Dr Hassan Warriach who is a Postdoctoral Fellow from University of Melbourne. I am so grateful that I have been matched with Dr Warriach as I can directly learn from technical points on the dairy sector development that I can implement to my PhD project. Beside meeting with my mentor, I also met the other 43 scholars with different backgrounds, experiences and research interests. It was really interesting to exchange ideas and learn what work they are doing and find some overlaps that can be collaborated on in the future. Additionally, this two-day program featured speakers with experiences working in international environments. It was interesting to hear their experience working with local communities, understanding local cultures and customs, and even trying to learn the local language. The take away message from their talks that I think was the most valuable is they started their international career from networks that they have built. There is also a contribution of their mentor in helping them building their career path. Besides networking, enhancing soft skills is also essential, especially communication and team work.

Through this piece of my personal reflection, I would like to encourage other young enthusiasts who are interested in international agricultural development to participate in this event. I proudly claim that I have gained a lot of long term benefits from this event that are useful for my future career. This shows me a career path that I can follow and what skillset I need to develop.

Lastly, a deep gratitude to AARES SA Branch who have considered my application and sponsored my participation in this event. Thanks to the Crawford Fund and RAID for organising this event and the speakers who have shared their knowledge and experiences.

AUSTRALASIAN AGRICULTURAL AND RESOURCE ECONOMICS SOCIETY (AARES) QLD & UNIVERSITY OF QUEENSLAND

Emily Dahl

Mentor: Mike Taylor AO, Crawford Fund Board

I had the wonderful opportunity of attending the Crawford Fund’s 2018 annual conference held in Parliament House, Canberra on 13 and 14 August. The theme of this year’s conference was “Reshaping



Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus” which focused on the challenges and opportunities in delivering healthy diets to the world’s increasing population while also minimising environmental impact.

One of my key highlights was the presentation given by Dr Jessica Fanzo on the challenges and impacts of poor nutrition and the importance of nutrition in achieving the Sustainable Development Goals. Astonishingly, every country is nutritionally vulnerable, and Australia is no exception. There are now 124 countries facing a burden of either two or three forms of malnutrition – stunted, anaemic and overweight. The health, social and economic consequences of the global malnutrition burden are extensive:

- two billion people lack key micronutrients like iron and vitamin A.
- 151 million children are stunted while 51 million children are wasted.
- 38 million children are overweight and 2.1 billion adults are either overweight or obese.
- Undernutrition results in a 22-45% reduction in lifetime earnings.
- The economic impact is estimated to range from 2-3% of GDP to as much as 16% in the most affected countries.

Hence the urgent need to transform food systems to improve the quality and nutritional value of food and develop policy solutions to promote healthy eating. Speakers stressed that solutions require strong leadership and an integrated approach that brings sectors together.

Experts in the fields of agronomy, smallholder farming, livestock, and aquaculture systems presented initiatives that put agriculture at the centre of international development through increasing environmentally sustainable food production, targeting nutrition and alleviating poverty.

Some initiatives aim to encourage a change in consumer behaviour and a shift in eating habits, for example, back towards eating traditional vegetables in developing countries. Dr Marco Wopereis, Director General of the World Vegetable Centre, highlighted the greater nutritional value of traditional vegetables compared to commonly grown vegetables and the environmental benefits: increasing dietary diversity improves biodiversity.

The ICRISAT Smart Food initiative is a program that aims to deliver food that is good for health, the planet and the farmer. This initiative has introduced education programs and even produced a reality TV cooking program to influence consumer behaviour in Kenya. The initiative focuses on the nutritional benefits of crop varieties other than the world’s three main food crops (rice, wheat and maize) that are high in calories, yet low in key micronutrients such as iron.

Another project focuses on developing new innovations to biofortify cereals with iron through agricultural biotechnology. This research emphasises the need to harness modern science and technology to promote climate smart and nutrition-sensitive agriculture.

In addition to the conference, I enjoyed attending the RAID (Researchers in Agriculture for International Development) events and Crawford Fund scholar days where I participated in networking activities, met with my specially selected mentor and learnt about the range of volunteering and training opportunities in international agricultural development. I am grateful to have been mentored by Michael Taylor AO who is one of the Crawford Fund board members and well-connected with key people in his field. I really appreciated his introductions and knowledgeable advice.

Attending the 2018 Crawford Fund conference provided me with an excellent opportunity to engage with experienced international researchers and people who have work experience in developing countries. Learning about other people’s research and pressing issues in the field of food supply has been of great benefit to the research I’m currently conducting for my Honours thesis in economics where I investigate factors that affect agricultural technology adoption in Ethiopia.

I’d really like to thank the UQ School of Economics and the Queensland AARES Branch for sponsoring me to attend the conference as a Crawford Fund scholar. I found it was a worthwhile experience as I feel increasingly inspired and energised to reach my goals and pursue a career in international development.



CENTRAL QUEENSLAND UNIVERSITY

Anita Chang

Mentor: Gerard McEvelly, Aik Saath Program

The Crawford Fund Conference, held in August 2018, was entitled “Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus.” The conference brought together individuals from different disciplines and in varying stages of their careers, with a kindred passion and goal: to feed a growing population with nutritious and sustainable food. The diversity in disciplinary specialty was brought up time and time again throughout the course of the conference, with speakers and chairs citing interdisciplinary collaboration as one of the keys to success in a global nutritional forum.

Having come from a livestock production-based perspective, the 2018 Crawford Fund Conference provided an exciting platform to explore other agricultural and nutritional sectors, and to discuss and understand the role that livestock plays in the wider scheme of global food production. The agricultural, nutrition, and health worlds are interrelated and highly dependent on one another and transdisciplinary interactions must occur for global goals to be met. I gained a greater depth of understanding of the complexities of the global nutrition crisis and learned of the stark differences between developed and developing countries, despite the issue of malnutrition existing in both situations.

Dr Alessandro Demaio presented a series of astounding statistics on global malnutrition, with the conclusion that “88% of countries face a serious burden of either two or three forms of malnutrition” and 41 countries face a triple burden of obesity, anaemia, and stunting. The production of food at an increased yield is simply not enough anymore, there is an increased and urgent need for more nutritionally fulfilling food. However, the issue of malnutrition requires an understanding of the context for the appropriate solution to be applied. Solving the global nutrition crisis is not a ‘one solution fits all’, with different ecosystems requiring varying production systems.

The mentorship aspect of the conference is one that is quite unique and provided an additional network of support and discussion. My mentor, Gerard McEvelly, came from a horticultural background, compared to my livestock production one. The difference in our disciplines encouraged many thought provoking conversations and broadened my perspective on food production. This was also reflected in the numerous conversations I had with the other scholars, all of whom came from varied backgrounds. The Crawford Fund ensured that there were plenty of networking opportunities over the course of the conference, and I have come out with a plethora of invaluable contacts as a result.

The 2018 Crawford Fund Conference was a profound experience that has changed my perspective and approach towards agricultural research. The experience has left me with innumerable contacts and a greater understanding of the required interactions between disciplines to ensure a nutritionally secure future. I am grateful to Central Queensland University for funding my scholarship and for this opportunity to gain a deeper understanding of how I can contribute to feeding the growing population with nutritious and sustainable food.

Eloise Fogarty

Mentor: Lyn Hinds, Crawford Fund ACT Committee

The 2018 Crawford Conference titled “Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus” explored the complexities surrounding food security and environmental impact.

Prior to attending the conference, my biggest concern surrounding food security was ensuring we can provide enough food in the future. However, since attending this conference, I now have an understanding that is it not only a question of quantity, but also delivering quality food that remains a plight for researchers. In fact, it was the keynote addresses by Dr Alessandro Demaio and Dr Jessica Fanzo that really opened my eyes to this issue; citing 1 in 3 people were malnourished globally, with both under- and over-nourishment often residing within the one country.

Throughout the conference, the case study presentations provided a nice link between research and



real-world application. This type of presentation is important as it encourages young scientists such as myself to consider the greater societal impact their work may have and how we should shape our research outcomes to affect real change.

The mentor program provided a fantastic opportunity to meet with established researchers, allowing discussion of common research interests. This was further developed during the Sir John Crawford Memorial address where networking with other Mentor-Mentee pairs was encouraged. Being partnered with a Mentor was also a great way to discuss different career path options, with my mentor in particular becoming a 'sounding board' for my many thoughts and questions surrounding a career in research.

Finally, it was fantastic to attend a conference where women in science were so greatly represented. This was seen not only in the relatively even mix within the scholars and mentors, but also through the numerous presentations at the Conference. Quite often this can be overlooked by conference organisers, but Crawford's obvious consideration of this provided a refreshing perspective and motivated me as a young female scientist.

My sincerest thanks go to Central Queensland University for providing me with the opportunity to attend the Crawford Conference in 2018. I also thank the Crawford Fund and RAID for organising such a fantastic conference.

Simon White

Mentor: Terry Enright, Crawford Fund WA Committee

Firstly, I must thank the Crawford Fund and CQUniversity in being able to attend this year's conference, scholars' days and RAID network event. It has been over 10 years since I was first made aware of the Crawford Fund while working on an ACIAR project in Indonesia. Even back then I was always keen to attend and had heard about how worthy an event it was. To finally get the opportunity to attend, I am very appreciative. I found the whole event well organised, very rewarding and believe it is an invaluable experience for anyone who is or is looking to get into the international aid sector in their career. I would recommend anyone who is reading these reflections to consider attending in future years as I believe they too will find it highly rewarding and worthwhile.

The Crawford Fund conference and scholars' days provided me with the opportunity to connect and engage with students and researchers within my field of interest and across the various other areas of research that is conducted in an agricultural development context. This was achieved through both formal presentation and informal discussions and interactions. The event was invaluable in terms of furthering networks and contacts within the industry and also having exposure to the broader and multifaceted challenges that face us. The broad range of speakers and topics covered over the couple of days was interesting and insightful.

In addition to the conference, the RAID network event and scholar activities were excellent for those new and keen to get into the international aid field. Interaction with current RAID-ers who provided firsthand experience and advice was invaluable to the younger scholars amongst our cohort. Anyone new to this area I recommend you join the RAID network and enjoy the benefits of being involved. Personally, I am excited to be re-introduced to the international aid space and am keen to pursue further collaborative projects in the area after attending the Crawford Fund conference and scholars' days this year.

CENTRE FOR HORTICULTURAL SCIENCE, QUEENSLAND ALLIANCE FOR AGRICULTURE AND FOOD INNOVATION, UNIVERSITY OF QUEENSLAND

Alexander Nilon

Mentor: Madaline Healey, University of the Sunshine Coast

As a PhD student, my area of expertise is virus control in crops. My concern is purely whether or not fruits and vegetables survive out in the field in order to reach the dinner tables of consumers. This work



is focused on popular, everyday vegetables in the western world, such as tomato and lettuce. In short, my work is largely about foods that serve to satisfy the needs and wants of people with access to plenty of food. The 2018 Crawford Fund Conference helped me to realise that this kind of focus in research is not enough to help the people who need it the most.

The theme of this year's conference was "Reshaping Agriculture for Better Nutrition". Many speakers throughout the day stressed that it is not enough to simply focus on feeding the masses with whatever crops are most convenient and calorie heavy. Malnutrition, both in the form of insufficient nutrients and an excess of calories resulting in obesity, are grave concerns for the world over. The main message that I took away from the conference is that while feeding the world is easy, feeding the world with good, nutritious food is a much more noble and worthy goal for us to aspire to.

Two speakers in particular stood out to me. Marco Wopereis of the World Vegetable Centre discussed the potential role of traditional vegetables in providing people with the nutrition they need. Marco spruiked vegetables that I had never even heard of before that day or considered as part of a regular diet. Joanna Kane-Potaka demonstrated her work in Kenya, where millet and sorghum were being pushed as crops that were good for the consumer, the farmer, and the planet. These speakers, among others, have inspired me to consider more traditional crops in my research efforts for virus protection, especially as these traditional vegetables may not have the benefits of years of selective breeding for disease resistance that more common crops have.

Beyond the one-day conference, the experience provided by the Crawford Fund was fantastic. I have never truly participated in networking events before this conference, but the members of the fund and RAID made approaching an otherwise intimidating activity easy. Between getting to know the other scholars, meeting with my enthusiastic mentor Madeline and hearing from the speakers at the half-day events, I was encouraged to present my own expertise and background to the other attendees, while also seeking out people who could help me to expand my insights into agricultural research. Without the opportunity offered to me by this scholarship, I never would have had such a fantastic opportunity to practice my networking skills and make contact with others in my field of expertise.

Overall, I believe that this conference was not only a fantastic chance for me to broaden my own horizons and gain the skills necessary to network with my peers, but also the chance for many passionate and invested people from all aspects of agriculture across the world to come together and share their knowledge. The Crawford Fund conference was a valuable event that will inspire my research for years to come.

CENTRE FOR NUTRITION AND FOOD SCIENCES, QUEENSLAND ALLIANCE FOR AGRICULTURE AND FOOD INNOVATION, UNIVERSITY OF QUEENSLAND

Zeping Shao

Mentor: Alex Johnson, University of Melbourne

I found this scholar program to be stimulating, interesting and an eye-opener in many ways. The scholar days encouraged us to embrace diverse perspectives and learn from different views and provided us an excellent environment that encouraged young scholars to move forward in both research and life. The networking did not seem too difficult even for me an introvert researcher with not exactly the same major. The opportunity to be involved in the scholar day and be paired up with a mentor was fantastic and I particularly enjoyed the workshop style sessions at the first scholar day which require open communication between all participants. During the break time, discussing international food security and the development of agriculture made me consider in greater depth of my contribution to this great challenge. It was truly inspiring to be able to get to spend time with many of the brightest minds in agriculture and food research. I collected many new ideas from both the mentor scientists and young researches that has resonated with my research interests in those days. Feeling like I had made leaps in my knowledge by communicating with scholars all around Australia.



The Crawford Fund Conference enlightened me with what is happening worldwide. It also amazed me hearing the perspectives of so many people who are working in this field. I appreciate the keynote speakers about their professional working in developing countries, especially considering their capacity to overcome difficulties, maintain their research projects and give their contribution to the global sustainability and of course the local society. The works which have been done with ACIAR and associated organisations is clearly providing much needed contributions to the areas in which they work, as well the international agricultural and food industries. I realised that international cooperation projects could really bring a lot of benefits to the researchers from both countries to share new techniques, knowledge and working experience to make significant progress in the agriculture and food area. The keynote speech helped me understand what role I could play in the grand scheme of agriculture and food area and the direction I could move into for the remainder of my PhD.

The Agriculture for International Development (RAID) network event provided awesome opportunities to meet people doing research in different areas of agriculture and food. I learnt a lot about Researchers' experience in RAID. The platform for real promoted research network with some shared interests in international agriculture and food development.

I want to thank Professor Mike Gidley, Director of Centre for Nutrition and Food Sciences (CNAFS), Queensland Alliance for Agriculture and Food Innovation (QAAFI) and Crawford Fund for giving me the chance to go to this extraordinary gathering with an enlightening Scholar Program. I benefited from the Crawford Fund 2018 Conference in many ways, it's a precious experience I cannot speak highly enough of. And hereby, I would highly recommend this experience to anyone interested in next year's Crawford Fund Conference and anyone looking to further their career or be active in international agricultural/ food research.

ELANCO

Rebekah Burns, University of Sydney

Mentor: Helen Scott-Orr

I was delighted to be invited as a scholar to participate in the 2018 Crawford Fund conference. I wanted to begin my reflections by thanking Elanco for sponsoring me to have this experience.

This year's theme was "Reshaping Agriculture for Better Nutrition" where it was quickly highlighted that achieving "Zero Hunger" as part of the United Nations sustainable development goals can not only focus on quantity of produce available but nutritional quality and environmental sustainability. In their opening remarks, Dr Alessandro Demaio and Dr Jessica Fanzo echoed a global double burden, where two billion people do not have enough to eat and two billion people are obese: both groups are undernourished. The question was posed: who is to blame for this double burden? Is it the consumer who buys the food, the market who sells it or the government who regulates the sale? In these opening remarks, large corporations (specifically soft drink companies) were particularly targeted for manipulating people into consuming large amounts of their unhealthy products. Regardless of whose "fault" the global epidemic in malnutrition is, it is clear that it will take efforts from the private sector, governments and consumers working together to find solutions. It was interesting to learn that each socioeconomic group globally is not consuming enough vegetables for their nutritional demands, emphasising the need for nutritional education.

The discussions at the conference further urged my drive to be part of the solution. What is the role of the veterinary sector in ensuring food AND NUTRITION security for all? I think of our global challenge to feed the growing population. Do previous efforts to intensify systems to improve agricultural yield meet human nutritional demands? I was intrigued to learn about Dr Jessica Bogard and Dr Shamia Chowdhury's research in Bangladesh where they found that although intensely farmed fish can provide more protein source for the economic cost and return, they contain far less micronutrients than the small indigenous fish species. With growing demand for protein nutrition across developing nations seeing intensification of animal farming systems, will we continue to see a decrease in micronutrients?



How will we recognise and combat this before it grows to epidemic scale? The challenge for the veterinary sector is to ensure our stewardship of livestock for human consumption does not compromise nutrition for the population, whilst maintaining standards of animal welfare, transboundary disease security, judicious use of antimicrobials and antiparasitics (just to name a few responsibilities). These may all go hand in hand. Society must change to value nutrition so that today's investments can be made into systems which produce high quality nutritional food.

Whilst these problems can get somewhat overwhelming, I can focus now on what I can change, starting with myself. What am I putting on my own plate? How am I supporting farmers for a sustainable future? Perhaps the highlight of the conference was the swapping of stories from others in the field. It was wonderful to meet with a range of experts from diverse branches of the agricultural development umbrella: dietitians, entomologists, agronomists, livestock sectors, vegetable evangelists, water resource specialists and economists. A term that gets thrown around the veterinary sector a lot came to mind, "One Health", where the health of people, animals and the environment are symbiotic to each other. It is through these many disciplines that we can achieve zero hunger and nutrition for all whilst ensuring climate stability and sustainability. It goes to show that whilst we talk about "big picture" earth goals, we have only come this far in providing nutrition to people through hard work and efforts on the ground: trials, errors and successes.

Finally, I wanted to share my excitement for a project ACIAR has pioneered: linking celebrity chefs with in-country ACIAR projects to celebrate successes with the wider community via a television documentary series. What a wonderful idea to celebrate agriculture with the food that it produces!

Alex Howard, *Food Safety and Innovation, South Australian Research and Development Institute*

Mentor: John Radcliffe, Crawford Fund Board

I would like to express my deepest gratitude to Elanco Australia for sponsoring me to attend the 2018 Crawford Fund conference in Canberra, titled "Reshaping Agriculture for Better Nutrition". The central idea posed by the conference of an "Agriculture, Food, Nutrition and Health Nexus" was of particular interest to me as I work in food safety research, which is closely linked to each of these four disciplines. I was also eager to attend because of the opportunity to connect with other young researchers, share my knowledge and experiences and to engage in international agricultural research and development.

The conference opened with the Sir John Crawford Memorial Address, this year delivered by Ms Frances Adamson, Secretary of the Department of Foreign Affairs and Trade. Ms Adamson spoke about the lessons of history and how they have shaped food and water policy both in Australia and abroad. She challenged the scholars and young scientists in the room to take up the fight and innovate our farming systems in the face of climate change and population growth. Her address was followed by a networking dinner, which I found to be a fantastic way to connect with other scholars, Crawford Fund members, industry people, researchers and policy makers in a relaxed and unintimidating environment.

My personal highlights from the parliamentary conference were the keynote address from Alessandro Demai (EAT Foundation) and the address by Dr Jessica Fanzo (UN FAO) which outlined the challenges faced in feeding a growing world population while also highlighting the public health consequences of poor nutrition in both the developed and developing world. I was shocked by the latest world health figures, which show the triple burden of food insecurity, 816 million people suffering from acute hunger, two billion with micronutrient deficiencies and two billion overweight or obese, leaving less than one third of all people on Earth eating a healthy diet.

I also enjoyed Professor Andrew Campbell's (ACIAR) articulation of how the pursuit of food quantity to feed a growing world population has actually come at the expense of nutrition and food quality. He spoke about the challenges that modern agriculture faces in providing sustainable and nutritional food and the need for policy convergence in food, nutrition, water and health to transform our food production systems and deliver better world health outcomes. This core message of embracing diversity in agriculture and agricultural research really resonated with me. As the conference progressed, my



appreciation for the diverse range of scientific disciplines associated with agriculture (biotechnology, nutrition, agronomy, and engineering to name a few) grew, and I began to understand the importance of cross-disciplinary action when it comes to tackling large nexus issues.

The conference was book-ended by two half days of scholar activities, where 44 scholars, a mix of young students and researchers from around Australia were brought together and paired up with mentors with common research interests and experience in international agricultural development. The scholar activities were coordinated by members of RAID (Researchers in Agriculture for International Development) and were a fantastic experience. I thoroughly enjoyed the informal blend of listening to speakers involved in international research projects and conversing with the other scholars and mentors through the various workshop style networking activities. From these conversations and activities, I was again stuck by the level of diversity in the room, with a unique mix of agricultural scientists, nutritionists, environmental scientists, animal scientists and veterinarians all drawn together under the banner of international agricultural development.

Overall, the Crawford Fund Conference experience was one that I thoroughly enjoyed. I intend to take my newfound appreciation for collaboration across agricultural disciplines back home with me to South Australia where I can set my sights on targeting larger nexus issues that converge in the areas of animal health, nutrition, and public health. Thank you to the Crawford Fund for the incredible opportunity to attend and thank you to the organisers of the conference a wonderful, engaging and enriching experience.

GARDINER FOUNDATION

Kiana Barrie-Gresham, University of Melbourne

Mentor: David McGill, Crawford Fund Victoria Committee

The 2018 Crawford Fund Conference - "Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus," epitomised the way in which all disciplines share a common connection in the food that we produce and consume globally. As a current undergraduate student with minimal experience in the international development sector, I was excited by the prospect of understanding agricultural contributions in developing countries and was further delighted when I realised the magnitude of multi-disciplinary collaboration in industry that is essential for ongoing success.

The conference speakers captured all aspects of the supply chain from preliminary research to consumer preference in the double burden challenge of nutrition faced in both developing and developed countries. In addition to overarching sustainability themes, the resonating messages for me were delivered early in the conference, specifically by both Dr Alessandro Demaio and Dr Jessica Fanzo, though were echoed by all speakers. The somewhat bleak image of the current nutrition challenges, specifically the double burden, explored the nexus model of the conference and highlighted the undeniable need for global change in this space. With its inexplicable link to agricultural production, and thus my future career, all speakers alluded to the notion in which the battle of producing better food often with less resources, and in larger quantities, is not one fought alone but rather has a diverse load of responsibility. This resonated with me in the realisation that the animal production or cropping sectors of the agricultural industry within which I hope to work, are only one part of a large team responsible for the success in this challenge, and similar to the conference itself requires the expertise of professionals in nutrition and health sectors, science and marketing.

Bookended by tailored scholar days coordinated by RAID, the networking activities with other scholars and mentors alike fostered an undeniable sense of connectedness, openness and friendship, a feature of the agricultural sector specifically that I have come to appreciate. Surrounded by motivated and in many ways selfless individuals striving to make a difference, the scholar days highlighted the diverse contributions available for students like myself to make, most of which I was not previously aware. My mentor, David McGill, was invaluable in providing initial introductions and platforms for potential



volunteering opportunities and networks, in addition to his wealth of knowledge and approachable sense of humour – for this I am most grateful.

Personally, the conference has been yet another step out of my comfort zone and an inspiring milestone in my studies, provoking questions of future goals and largely guiding facets of my career path which may otherwise have been void of a valuable contribution to global food security. I returned to university with a renewed sense of motivation, and goals to ensure that my fellow peers are enlightened to the opportunities and value in seeking involvement in the international space throughout university study and beyond.

I wish to express my sincere gratitude to the Crawford Fund, its sponsors and speakers for a valuable and rich mentoring and conference experience, in addition to the Gardiner Foundation for sponsoring my attendance at this inspiring event. The diverse network of professionals and scholars and my undeniably broadened perspective of the international sector are invaluable benefits I have been privileged to gain.

Tim Luke, Agriculture Victoria and La Trobe University

Mentor: Jenny Hanks, Crawford Fund Victoria Committee

If I had to summarise my reflections on the 2018 Crawford Fund Conference, “Reshaping Agriculture for Better Nutrition” with a single word, it would be “complexity”. The fact that obesity and over-nutrition are now as big an issue facing the population as under-nutrition, was a stark reminder of how complex a challenge we face in feeding the growing world population well. From debates about the role of Government regulation versus individual and corporate responsibility, to comparisons in the relative merits of global initiatives versus small-scale local projects, this year’s conference clearly demonstrated to me the immense complexity of world food systems, and the equally significant challenges we face in improving them.

One of the most interesting topics for me, that recurred throughout the day’s sessions, was that of responsibility: in very simple terms, whose responsibility is it to ensure that the world’s people are fed, and fed well? In his presentation, Dr Sandro Demaio referenced recent changes to the laws in Norway that ban advertising of junk food to children. He argued that Governments have an obligation to protect their citizens from corporate interests. This was refuted somewhat by former Deputy Prime Minister John Anderson, who raised the issue of individual responsibility, especially in regard to the increasing problem of obesity. The complexity of this discussion increased further, following the presentation by Rebecca Boustead, who discussed the role of the corporate world in improving global nutrition. She outlined the efforts of the Kellogg’s company to improve the nutrition of its customers through breakfast delivery programs, and by improving the nutritional value of its brands. In the excellent Q & A session that followed her presentation, Ms Boustead gave a very insightful account of the challenges and opportunities she has faced trying to effect change from within a large organisation.

Closely related to the issue of responsibility, were several discussions on how to bring about beneficial changes in the eating habits of different sections of society. Again, I was struck by the complexity of the challenge, and by the vastly different scale of projects required to effect sustainable change. This was beautifully illustrated by the contrast between Professor Denning’s presentation on the World Health Organisations Sustainable Development Goals, and that of Philmah Seta Waken on bringing about lasting change in rural Papua New Guinea through local education programs.

A number of the presentations gave me reason to reflect on the complexity of the relationships between researchers and decision makers, often from wealthy developed countries, and those who are ultimately affected by decisions of these people. As a veterinarian, I was particularly interested in Dr Anna Okello’s presentation on the role of livestock agriculture in improving nutrition. A question from the floor focused on whether livestock agriculture should be encouraged in the developing world given its relatively large environmental impact. Dr Okello demonstrated that livestock are an integral part of the socio-economic fabric of smallholder communities, and their value transcends nutrition alone. She also argued that one cannot compare the dietary choices available to wealthy Australians consuming in excess of 100kg of



meat per year, with those of subsistence farmers from east Africa who might consume only 8kg of meat per year. Similarly, Joanna Kane-Potaka's presentation in which she advocated a move away from "the big 3" grains toward other staples such as sorghum and millet, reminded me of an interview I recently heard with Kevin Sieff from the Washington Post. While discussing the situation in the Dadaab refugee camp on the Kenyan-Somali border, he observed that, "For a bunch of bureaucratic reasons, a lot of the food that the UN gets from the US is sorghum. I didn't know what it is. And it turns out neither do the people in Dadaab...It's a kind of cereal that they have no idea how to cook and that they don't like. People usually barter it away."

Despite the potentially overwhelming scale and complexity of the challenge of feeding a world of 9 billion people well, my overwhelming feeling on leaving the Crawford Fund Conference was one of hope. Engaging with so many amazing people from different disciplines highlighted to me that if we break large, complex challenges down into their smaller component parts, we also reduce the complexity and size of the required solutions. Through trans-disciplinary communication and collaboration, each and all of us can help to create small pieces of the big puzzle.

I am very grateful for the opportunity to participate!

GRAHAM CENTRE, CHARLES STURT UNIVERSITY

Matt Champness

Mentor: Peter Wynn, CSU

With thanks to the Graham Centre, I was able to attend The Crawford Fund Scholar Program and The Crawford Fund Annual Conference held in Parliament House.

The scholar program brought 44 keen, young researchers together to network and learn of the work conducted by Australians in international agricultural research and development. Each scholar was provided a mentor for the proceeding two days. I was lucky enough to be paired with Peter Wynn, an adjunct Professor of Animal Production at CSU who has a CV longer than I could ever image, with a research background in sheep, dairy and pig physiology and beef and sheep meat production. He is now working on a project in Pakistan; "Improving small holder dairy and beef profitability by enhancing farm production and value chain management" through the University of Melbourne.

The scholar day began with a very inspirational speech by the Hon John Anderson AO, chair of the Crawford fund and former deputy PM and a sixth-generation farmer from western NSW. In a time of great hardship for farmers across NSW and QLD, it is easy to call for current politicians to cut funding for international agricultural development and invest it locally, however, as a country, we have an obligation to help our neighbours in the Pacific who don't have the mechanisms, systems or education to bring them through times of adversity, whether it be drought, salt water intrusion, pest invasion or other challenges faced with a changing climate. Outlined by the Hon Julie Bishop MP, every dollar Australia invests in foreign aid, we receive \$7 back in benefit. Half of the cities across the world suffer water scarcity, leading to security issues, and on occasions, outbreak of war, something no country has ever benefitted from. Whilst Australia is the lucky country and we perform well in many areas, we have a lot to learn from overseas nations, shamefully ranking high in the number of endangered species we have and disgracefully, taking out gold for the percentage of overweight and obese citizens.

"Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus" was the title of the conference held in Parliament House. The conference highlighted the food security issues we are facing globally and the challenges of overcoming these, exacerbated by climate change. These days, more people die from preventable undernutrition than natural disaster and disease, with poor diets the single greatest risk to poor health. Globally, since 1969, we have halved the number of people going to bed hungry, however, food in the belly doesn't signify proper nutrition. Two billion people are considered malnourished, lacking key micronutrients like iron and vitamin A, 151 million children are stunted and 52 million are wasted, affecting brain development and life expectancy. Simultaneously, 2.1



billion adults and 38 million children are overweight or obese, costing \$2 trillion annually. Not one sector of the global society; low, middle, or high-income individuals are consuming near enough calcium, fruit, nuts, vegetables or whole grains that our bodies demand, instead, overconsuming sugar and salt.

“Nutrition, along with climate change, is the meta challenge for agriculture and agricultural and food systems” – Andrew Campbell. To tackle the challenge of nutrition, we need to develop and support leaders to exercise political will and acknowledge the complexity and interconnectedness of the food system with greater collaboration between agriculture, aquaculture, water, nutrition, social, cultural and health scientists to achieve a productive, inclusive, healthy, sustainable and resilient food system where nobody is left behind. To do this, all tools in the toolbox need to be used, including biotechnology, with more emphasis on science, not emotions.

The conference and scholarship program not only opened my eyes to the severe nutritional issues we are facing, it inspired me and gave ideas about how, upon completion of my Honours in Agricultural Science, to continue post-grad studies and work collaboratively with international and Australian farmers to help solve malnutrition in an environmentally, socially and economically sustainable manner.

Jian Liu

Mentor: Dale Yi, Plant & Food Research NZ

Attending the Crawford Fund annual conference 2018 in Canberra was such a great and exciting experience for me. I really appreciate the opportunity provided by The Crawford fund and support from my university to attend such an inspiring conference. The theme of this year’s conference, “Reshaping Agriculture for Better Nutrition – the Agriculture, Food, Nutrition, Health Nexus” has successfully put a bigger picture of international agriculture research improving human health in front of me. Invited international speakers and government bureaucrats gave stimulating talks on this topic linking agriculture research with human health. The discussion on various aspects related to nutrition explored the complex issues human kind is facing globally.

The talks by Dr Demaio and Dr Fanzo put the complexity of the global nutrition problem at the start of the conference. Food security and global poverty are problems entomologists try to help solve by reducing pest damage to crops, vegetables, fruits, trees etc. Malnutrition, and hidden hunger are the problems I previously hadn’t thought much about. This was thought provoking for me, as an agriculture researcher, having been focused on improving pest management in a few crop systems I hadn’t previously fully appreciated the link between my work and the global nutrition problem.

I was glad to hear Prof Campbell’s presentation in the session ‘How does agriculture respond to the nutrition challenge?’ which suggested agriculture can contribute to nutrition challenge even with difficulty. This session gave encouragement and hope to young scientists to develop and keep the career in agriculture for better nutrition. From these presentations, I think diversified and balanced diets are needed for human health and traditional vegetables, smart food, multi grains etc. need to be brought back on tables more often. There are solutions around! Globally, we need to form a different habit and those who have been doing so are leading the revolution. Education, policies, good habits for better diets need more effort from more sectors in this complex global society. We need a sustainable agriculture for a sustainable eco-system on a green planet.

Back home from the Crawford Fund annual conference I kept on thinking scientists focusing on research should broaden their world view rather than focusing solely on their specific discipline. The world really needs more multi-disciplinary efforts.

The Crawford Fund event also gave opportunities for mixing with scientists and others involved in international agriculture. The two ½ day scholar activities were an excellent experience for me. The mentor and mentee system complemented this by paring ‘old’ scientists with next generation scientists/ early career researchers; sharing their experience, success, challenges and tips in global agriculture research. During the activities everyone in the room was so friendly. The environment in the room reflected the attitude of working together for agriculture research which is so welcoming for young



scientists/early career scientists. This experience has illuminated the pathway ahead for my international agriculture research adventure, especially to contribute more in developing countries. Thank you to the Crawford Fund, ACIAR, RAID and others involved in these activities.

MARCUS OLDHAM

Sophia Hoffenberg

Mentor: Lisa Borthwick, ACIAR

It was my great pleasure to attend the 2018 Crawford Conference and it is an honour to count myself among the 2018 Crawford Conference Scholars. Through attendance at this year's Crawford Conference, I absorbed an incredible amount of information surrounding the food and nutrition crisis prevailing in all societies around the world.

I particularly enjoyed Dr Madaline Healy's presentation on the first scholar day about how to get the most out of mentoring. I was fortunate to stumble upon my now-mentor and it was reassuring to hear that Madeline's experience, top tips and advice were in line with my own actions and experiences in the field of being a mentee. I found the mentoring program to be of further significance to my experience through the exposure my mentor afforded me through introductions to the keynote speakers, presenters and distinguished guests at all functions. I was fortunate to be matched with Lisa Borthwick, Director Outreach Services at ACIAR, who inspired me through her personal career journey and gave me confidence and support in networking throughout the event. The integrated nature of the Conference that enabled me to network with a wide range of key national and international constituents alongside students and young professionals like myself was highly beneficial. This experience enabled me to engage in stimulating conversations of the issues surrounding global agriculture today and debate our continuing efforts to alleviate the burdens of the world with like-minded intellectuals from all levels and areas of the industry.

Approaching this conference from a policy perspective and as a non-scientist, I found my immersion in the global research sphere to be enlightening in broadening my scope of understanding of the significant works conducted to combat nutrition issues globally. A particularly poignant point that highlighted the key messages of the conference for me was that no one individual group or sector can deliver ethical and ecologically sustainable human and animal diets – together we have to. Continually, we as a global society have prioritised economic growth over planetary healthy and it requires collaborative action to find the solutions for a food secure world. We need to drive disruptive innovation to close the nutrition equality gaps and ensure continuing sustainable evolution and management of our global food systems. Education sits at the heart of the nutrition movement as was proved evident by the plethora of case studies presented on the implementation of research projects throughout various third-world countries. Targeted education across all levels of industry is essential to correcting the circulation of misinformation to stimulate truths and generating sustainable impact at scale. The issue of food security is becoming an increasingly heavy burden on today's global society and it is our collective responsibility and moral obligation to do all we can to bring the under- and over-nourished into the nutritionally viable nourishment the privileged experience today.

MELBOURNE UNIVERSITY

Georgia O'Shea

Mentor: Sambasivam Periyannan, Australian National University & CSIRO

The 2018 Crawford Fund Conference and scholar program was centered around the theme, "Reshaping Agriculture for Better Nutrition – The Agriculture, Food, Nutrition, Health Nexus". As a third year Bachelor of Agriculture student figuring where my passion in agriculture lies, this conference was the perfect event. The three days gave us the opportunity to network with other scholars as well as professionals in various industries covering the health, nutrition and agricultural disciplines.



Hearing about all the work that is being done in developing countries to improve their agricultural production systems was utterly inspiring and brought to light issues as well as possible solutions to the world's growing population which is estimated to reach 9.7 billion by 2050. With over 815 million undernourished and over 2 billion obese people currently over the world, we need to find a way to balance nutrition and food with an increase in food quality rather than quantity.

The speakers were truly inspiring, coming from all over the world and from various backgrounds, they shared their wealth of knowledge and findings with us. Dr Alessandro Demaio and Dr Jessica Fanzo talked about the scale and devastation of the undernourished populations over the world and on the opposite end of the scale, also touched on the worrying number of over nourished people in today's world mainly due to the increased choice of food people have.

In particular I found Joanna Kane-Potaka interesting as she discussed her work with Smart Food and their emphasis on 'Good for you, good for the planet, good for the farmer'. Smart Food has chosen millets and legumes that are highly nutritious, rich in nutrients such as iron, calcium and zinc as well as high in fibre and protein with the benefits of reducing the risks of diseases such as diabetes and cardiovascular disease. Smart Food is trying to encourage the growth of these crops in underdeveloped countries where their diets are consistently lacking essential macro and micronutrients. The foods are also suited to harsh environments and are very resilient in times of drought. It became apparent how much of an influence western society has on developing nations, as the foods we choose to eat become popular in poorer nations where they may not necessarily be suited to their diets and food availability. Hearing from these speakers opened my eyes to the work that is being done overseas in developing nations to ensure people are getting the nutrients they need in a sustainable way that suits their lifestyle and climate.

With the knowledge I've gained from this experience, after I graduate from my degree I hope to volunteer for 12 months with Australian Volunteers for International development in a program surrounding plant and soil science, then hope to do my Masters in Agriculture to further deepen my knowledge of global agriculture. I encourage everyone interested in international agricultural development to get involved in RAID and the Crawford Fund and take every opportunity to get out and network as this is how you will connect with like-minded people and discover what truly inspires you to help people and improve global agriculture.

PLANT HEALTH AUSTRALIA

Jenny Shanks

Mentor: Suzie Newman, Plant & Food Research NZ

Having not been truly made aware of international agricultural research, in any capacity, during my university years, I was keen to learn more. I was given the opportunity through my nomination by Plant Health Australia to attend the Crawford Fund Conference and Scholar Program for this year's event "Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus". It was an eye and ear opening experience to learn what is happening in an international space for agriculture in developing locations.

From the starting blocks the opening address by Mr John Anderson made it evident that my knowledge and understanding of the global dilemma of malnutrition was lacking. We have always been inundated and flooded with media and stories around hunger, starvation, and that an improved calorie rich (wheat, rice, maize) intake will assist developing countries. However, we are now seeing increasing numbers affected by obesity, in both developed and developing countries; over 2 billion people.

As agriculturists and scientists, have we shifted the pendulum too far to one side or has it always been quantity over quality? One presentation by Dr Jessica Fanzo, highlighted the lines between malnutrition, long term health impacts and responsibility. I found her presentation interesting and enlightening – wealth isn't everything. It's around availability to nutritious food and not just having easy access to highly-processed food. The discussion should be around education as regardless of income vegetables



are in the low consumption group. The flow on impacts malnutrition has in developing communities is thought provoking. If we can't make a change at some point in the circle, then we may never reach several of the Sustainability Development Goals we have set.

I suppose I never really thought about my role as a scientist, as a researcher and what impact I have or had. In years past we may have walked into locations, with the best intentions, and encouraged change through new products or crops. But have we encouraged adoption for change without taking on board factors related to location and culture? Dr Anna Okello mentioned that what we do in one location, won't necessary work in another and we need to understand our role as scientists and agents of change when we walk into developing countries. Our personal and opinionated views on types of food consumption in developed countries, can have impacts on our messages/ preferences for developing countries.

The case study presented by Ms Tania Paul and Ms Philmah Seta Waken outlined the positive work and outcomes projects which focused on providing capability and capacity for development, education, growth and change; while using traditional methods and foods. These approaches are more likely to succeed longer term and be beneficial to the communities receiving the assistance.

Thinking along the lines of education throughout the conference I found myself mulling over ideas of what can I do, what knowledge do I have and what role can I play in this space. Throughout the event, the conference themes and issues were front and centre; the causes and contributing factors of malnutrition, wealth vs accessibility, meeting Sustainability Development Goals and identifying the responsible body in achieving these goals. But for me, I could see a gap between the first 3-5 years of a project which aims to encourage agriculture change for improved nutrition and achieving the long-term goals in 15-20 years. I feel this gap can be bridged through education and skill training.

Cultural practices suitable to the environment, farming practices that are easy and manageable within limits, crop management practices, pesticide use and pest management, crop processing and post-harvest practices to capture and retain the nutritious value of the commodity need to be included in projects. An upward cycle of improved nutrition, well-being and growth coupled with education for long-term sustainability, should be adopted as goals of projects in developing communities.

In addition to the conference I attended the two half-day scholar workshops. The workshops gave insight into the Crawford Fund, ACIAR and RAID. I was encouraged to hear the applied aspects in past and current ACIAR projects. This tapped into my thoughts around bridging the gap between short and long-term goals and sustainability, through education and training. The discussions, introductions and networking opportunities between my mentor and fellow scholars and other attendees have broadened my view on agriculture and food security. Overall, I am grateful to the Crawford Fund and Plant Health Australia for providing me with the opportunity to attend the 2018 Crawford Fund event.

SUNSHINE COAST UNIVERSITY

Natalia Medeiros De Souza

Mentor: Lester Burgess, Crawford Fund NSW Committee

I have been to many conferences as a student, most of them related to my area of research, but few of them had such a deep impact as the Crawford Fund Annual Conference 2018. The excellent topic of discussion chosen for the conference along with the formidable speakers and the promotion of activities for scholars built a rich environment for debate and development of new ideas. I would strongly recommend any one with interest in agricultural development not to miss the chance of attending the Conference.

Alarming data about the occurrence of malnutrition and obesity in the same countries set up the scenario for discussion: millions of children around the world are stunted, wasted or obese, thus this year's theme "Reshaping Agriculture for Netter Nutrition". It was surprising to me to see some of this data, mostly because I was not aware of the long-term social consequences of malnutrition, barely



mentioned when discussions around food arise. The double burden of malnutrition and obesity and the immense range of impacts presented at the Conference were also eye opening to me, reminding me the role of agriculture is not only providing calories, but also nutrition for society.

Several initiatives around the world have been in development to attend the nutritional needs of the population. From agricultural to livestock management practices, all demonstrated the importance of transdisciplinarity when addressing food systems and their improvement. One of the highlights for me was the project of increasing production of the highly nutritious sorghum and millet crops in Kenya and the brilliant strategy of developing a cooking reality show to promote dishes with these products. In my opinion, engaging the public in this initiative was a fantastic way to strengthen the market for these new nutritious foods and is a good example of how to promote crops.

Traditional edible vegetables were also part of the debate. Often times neglected in benefit of other major crops, the use of these plants, adapted to local conditions, could be an important source of nutrients. In this case, the development of local seed stocks and cultivation techniques along with promotion of their consumption within communities could help tackle malnourishment. I found it particularly interesting to see these crops being shown to children with the use of games and activity books, and a good example of how healthy eating can be promoted.

Overall, I would say that participating at this Conference made me learn a lot, but also made me question many of my personal habits, the relation of people with food and the acute need for a change in society to have a nutritious diet, “leaving no one behind”, as said many times, and with sustainable agricultural practices. I am profoundly inspired by everything I have heard and I am even more motivated to follow my purpose in doing my part to contribute to the development and use of sustainable agriculture. I believe many of the people present in the Conference feel the same and I hope that we can all in our own ways sow the seeds that will nourish the future generations.

Camila Moura Nogueira Ribeiro

Mentor: Federico Davila Cisneros, Institute for Sustainable Futures, UTS

The 2018 Crawford Fund Conference (CFC18) brought innovation to the event, including in its discussion the nutritional component of agriculture. It was an honour to be part of the Conference as a scholar, thanks to the support of USC and the Tropical Forests and People Research Centre. In the next few paragraphs, I report the main content highlights of this meeting, along with personal reflections I made during the sessions. I invite you all to participate in these reflections, at the end of the day, we all need food, fibre and fuel to conduct our lives and as such, these topics are directly related to you. If you are an agricultural sciences student, hopefully I will encourage you to come to next year’s conference by sharing all these amazing experiences.

For the scholars, the event starts even before the Conference. We all met in Canberra one day before and one after CFC18, for not only an excellent preparation/warm up for the Conference but also well-designed activities to promote networking and research interests’ exchanges and opportunities. I met people from fields as diverse as veterinary science to business, agriculture to social sciences and the most amazing was to see that, as different as they all may seem, these fields of study overlap in the food systems realm, and it all interferes on natural resources management and nutrition.

The CFC18 organisers also connect each scholar to a mentor, someone more experienced in each one’s specific field of interest. The mentor guides and prepares the scholars to extract the best from the occasion, and they may also keep in touch throughout the scholar’s career. It was the first event I have ever been to that promotes such interaction and I think other events should adopt this. The mentoring systems strengthens the experience and I am sure that, just like me, other scholars have established a connection with their mentors beyond conference days, which will accompany them into their professional/research careers.

Another highlight was Ms Frances Adamson’s (Secretary, Department of Foreign Affairs) excellent Sir John Crawford Memorial Address. Among other aspects, she emphasised the link between political



conflicts and food security, and the major role that responsible agriculture and natural resource management have in maintaining national and international security. It was a brilliant introduction to CFC18's topic and certainly triggered deeper reflections on all the following Conference sessions.

Sessions 1 and 2 presented some very alarming and worrying stats on the current state of nutrition worldwide. The world is experiencing an unprecedented moment of food-related health and social issues: hunger, malnourished, obese, diabetic children and overall population, among other serious diseases. There is a political social root to that, but certainly an agricultural one too, as most unhealthy foods have as a base, biotech/GMO commodities, mainly for use in heavily processed foods or for livestock feed.

The meat industry, according to Dr Demaio's presentation is producing 468 per cent over the global need and excessive meat consumption is directly related to major diseases such as cardiovascular issues and cancer. So, why is the biggest portion of agricultural subsidies in most of the countries still prioritising the production of commodities that make people sick? And why is there still hunger on a planet whose problem is not anymore meeting a surplus production demand, but reorganising its economic dynamics so nourishment is more equally distributed?

Session 3 focused on case studies of how agriculture can respond to the nutrition challenge. Showing real world experiences is very inspiring and the best proof of what can be done to improve contexts. Presentations focused on ways to address this issue:

- Aligning agricultural management practices with UN's Sustainable Development Goal's;
- Decentralised leadership and decision-making;
- Exploring possibilities in the mainstream media to stimulate behavioural change in food consumption;
- Strengthening local scale production; and,
- Utilising traditional foods to address malnutrition.

Two out of the three case studies drew attention to a need to integrate traditional foods into agricultural projects. Besides having high nutritional content, these foods are also easily available to local communities. Exploring the utilisation of traditional foods (both of plant and animal source) is a recent trend, given their high genetic variability and thus resilience to thrive in adverse environments and climate change.

The case studies on utilising community gardens, children's games and recipe books to promote traditional foods in PNG and using reality TV shows in Kenya on healthy food preparations, opened up the perspective for me that, as an agronomist, technical excellence is not sufficient to engage communities and promote behaviour change on the table and in the fields. Creativity, socially sensible strategies and media means can help a great deal the consolidation of sustainable agricultural practices for food security and nutrition.

Case studies from Bangladesh and East Timor emphasised nutrition sensitive agricultural approaches proposing diversification as a key aspect of strategies to benefit communities improve their nutrition and food security. There was also a presentation on biofortification of cereals, whose ethical and ecological concerns were contested by some members in the audience during the Q&A.

One very interesting aspect of session 4 was the diversity of approaches presented by the case studies, reflecting the broad scope of the Conference. Another plus on CFC18 was the balance of women and men both as scholars and speakers, and the diversity of participants' backgrounds and ages. This reflects a positive change in the agriculture sphere. The event being held in the Parliamentary House is also an excellent emblem of Democracy including these positive proposals and changes in the agenda.

The content on both the Conference and Scholar days covered a broad range of information, from tips/opportunities to leverage your professional career to specific topics on social sciences, agricultural, nutritional and health expertise. Moreover, it drew attention to all future scholars and stakeholders



to improve their skills on how to analyse situations and propose solutions considering contexts from a multidisciplinary perspective. I highly recommend participating in next years' Conference as the dedicated organisers will certainly improve it even more. You will surely widen your perspectives and realize how agriculture, nutrition, health and sustainability have more in common than you think.

UNIVERSITY OF NEW ENGLAND

Ei Mon Thida Kyaw

Mentor: Margaret Reid AO, Crawford Fund Board

For a long PhD Journey, I need motivation, new knowledge, global themes and networking which is important for my future career. This was a right time for me to attend this year's Crawford Fund Conference with the title of "Reshaping Agriculture for Better Nutrition". This conference was an eye-opener in many ways.

The conference also highlighted to me that knowledge concerning nutrition plays an important role to be an outstanding people. In many cases, people can't be recognised between malnutrition and genetic. According to my experience, I am rather short compared with other women and my father explained, that is genetic because my mother and my grandparents were short also. When Dr Alessandro Demaiio demonstrated the nutrition chart recommended by Oxford University, I knew why I am shorter than other people. That is malnutrition and it is the difficult thing to address malnutrition in developing countries. So, it is the important key issue for future projects for developing countries.

It was a pleasure to meet many of the Crawford Fund board members, and the interesting and talented scholars. In particular those scholars who were from developing countries and who were able to share their personal experiences. As a consequence, I was able to meet and build relationships with a wide variety of people involved in agriculture, from undergraduate, master and PhD students, to people working in the private or public sector. I really enjoyed meeting so many people united by their interest in or passion for agriculture and international development.

Another interesting and amazing thing to be a scholar of Crawford Fund Conference was meeting my kind mentor, Margaret Reid, who was the first female President of the Australian Senate. As I am also a woman, I got a lot of knowledge and valuable experience relating to leadership roles from her. I had a wonderful time with my mentor.

Finally, I wish to express my deep gratitude to the Crawford Fund for sponsoring my attendance, RAID for your cosponsoring of many activities and my principal supervisor, Dr Julian for giving me such a great chance. I am so glad I attended 2018 Crawford Conference and believe that the knowledge I acquired would be beneficial in my future career.

Manisha Kolakshyapati

Mentor: Robyn Alders, Crawford Fund NSW Committee

It was my great opportunity to participate as a Crawford Fund scholar for this year's conference that allowed me to think about agriculture and agricultural systems from a different perspective.

The existing double burden to the world and need for collaboration and integration of expertise from different fields to meet the mega challenges of this 21st century was the key focus area at this conference. I feel fortunate to have heard talks from leaders in the field that inspired and guided me towards setting new goals and a career path. A lot of areas of international agricultural research were new to me and it was more overwhelming since they were presented by the pioneers in the field.

I was not aware of the existing situation of stunting and malnutrition in the world. It was heart wrenching to know that 22 per cent of the world's children under five are stunted both in their bodies and brains. Also new to me, was that not only is there the problem of stunting but also increased problems of obesity and overweight throughout the world, a much more complex situation to deal with. But, I was also glad to know that the experts around the world are working to improve the situation and



the percentage of stunting is going down although at a very slow rate.

The day was followed by talks about the opportunities and new approaches to the global problem. With the double burden of malnutrition and obesity, it is important to make changes in our feeding system from rice, wheat and maize to new opportunities such as finger millets. The idea of smart food, inclusion of diversity of vegetables with different nutrient contents, and the promotion of traditional vegetables are worth thinking about.

It became clear from the talks that it is high time now, to follow the holistic approach but not in a traditional way. We have a system that is not fit for the purpose of 21st century and we need more new ideas. So, we need to start including more diversified experts in the field like policy makers, experts from public health, food technologists, microbiologists and work with sectors that we have not worked with before and adopt new system to meet the bigger challenges that we are facing in the present context.

The pairing with my mentor, Dr Robyn Alders, was like finding a gem for me. Her experiences, her advice on my project and ideas enlightened me more. In addition, I am very much impressed by her valuable contribution to the developing countries.

The scholar program where we had such incredible and experienced mentors, with ample networking opportunities and possibilities to connect with people; information regarding international agriculture systems; volunteering options; and, different projects is what I think was a gate opener to new opportunities for all the scholars. The RAID networking event, meeting with volunteers, young scientists from the diversified field, was equally a new platform to build up my network and inspired me to continue working in this field.

It was motivating to hear from the RAID people about their experiences, opportunities and future possibilities. Overall, I am very thankful to the Crawford Fund and UNE for providing me the opportunity to attend the conference, network and meet the experts and broaden my horizons in this field. I will be continuing to keep connected with the Crawford Fund, RAID and other scholars, whom I was able to connect so well with.

UNIVERSITY OF QUEENSLAND

Rebekah Ash

Mentor: Bob Lawn, Crawford Fund Queensland Committee

I was incredibly fortunate enough to have attended the 2018 Annual Crawford Fund Conference as a scholar. As a first year agricultural science student, I walked into the three days in Canberra slightly overwhelmed; but completely ecstatic to be surrounded by such a wealth of knowledge.

Being a first year undergraduate student, there was so much to gain from this experience. Given the fact I have not chosen a specialised area, the Crawford Fund Conference was a fantastic opportunity to hear about the various pathways and career opportunities available in the agricultural science field. Speaking to other scholars in both early and later stages of their research provided a great insight to the path ahead of me and potential areas of interest that I had not previously considered.

The networking throughout the program was outstanding. The chance to speak with other like-minded young scholars pursuing a similar path to myself opened many valuable discussions and friendships. On top of this, receiving mentoring from Professor Bob Lawn allowed me to further discuss and reflect on the best ways for moving forward in the agriculture sector. Sharing a passion and drive with both young and experienced members of the agricultural science community only further fuelled my involvement in the sector.

A particular aspect that I enjoyed from the scholar days was hearing about the volunteer opportunities in international development and the impacts these can have for the involved communities and a career. Learning about the various organisations to initiate involvement was extremely useful as a first year student with much more to learn and experience.



In terms of the conference, one of the most interesting aspects was the focus on international development and food security. In particular, the presentation given by Dr Anna O’Kello was of great value. Dr O’Kello highlighted the importance of considering context when developing management systems and global goals. I thought that this was a very important comment to make with a growing push by communities in Westernised countries to halt livestock production worldwide without recognising the contributions it makes to reducing poverty in developing countries.

Furthermore, a theme explored throughout the conference that I had not previously looked into in depth was the concept of diversifying our food systems. Joanne Kane-Potaka highlighted the nutritional benefits of adding nutrient-rich foods millets and sorghums to the current three staples: maize, wheat and rice. Not only did she explore the idea that these provide nutritional benefits, but also the environmental benefits such as reduced issues with pests and diseases as well as reduced fertiliser and water inputs. Dr Marco Wopereis further built on Joanne’s presentation by introducing traditional vegetable varieties vs. commercial vegetable varieties. Both of these presentations were highly informative and shed light on the potential future of our food systems.

Overall, the Crawford Fund Conference has most certainly been the highlight of my year and experience in the field of agriculture. The opportunity to hear the experiences and career paths of many world leaders in the field as well as those just starting out really was a fuel for my passion. I would attend this event again without a second thought and hope that I do find myself at the conference in a few years’ time benefiting in a completely different way to this year. I hope to see more undergraduate students attending this event in the following years and would highly recommend the Crawford Fund Conference along with their other events to anyone interested in or involved in agriculture.

Anthony Kipkurui Rutto

Mentor: Irene Kernot, ACIAR

I have always had interest in how the Crawford Fund undertakes its activities and how captivating and motivating their activities appear on their website. When I saw an advertisement on the university website encouraging, self-driven, motivated scholars and researchers to apply for consideration for the annual 2018 Crawford Fund Conference, I gave this competitive process a try. I was lucky to be nominated to represent the University of Queensland during the conference.

What followed was magnificent planning - from the program to the speakers, and from research to detailed case studies, nothing was left to chance. The theme was, “Reshaping Agriculture for Better Nutrition: The Agriculture, Food, Nutrition, Health Nexus,” and the Crawford Fund Chair, The Hon. John Anderson, AO gave an exciting view that morning setting the pace of what would be a touching base of science and reality. His statement, “It is unless we confront the truth using facts and ask the hard questions, then we are not telling the truth to ourselves,” was momentous to me as it opened my thoughts on how global challenges were to be addressed at a global arena.

From the outset, it was obvious the panacea for food security and a healthy population has hinged on agriculture and that for the sector to perform measurable targets had to be developed. The success of the agriculture sector from the time of the Green Revolution was explored but from time to time, the interruption of the presentations by an increasing global malnutrition and food insecurity focus in some regions captured my attention. Through this, I realised the world has been too long pre-occupied with food quantity with little attention on the quality. Giving different scenarios particularly from the developing countries, on the role research is doing in addressing food security, I was motivated by the silent voices doing an exceptional role in addressing the double tragedy of poverty and food security and how this war shall be won.

On the second day, a further surgery on food nutrition nexus and the shifting burden of malnutrition was done. I captured the sense on how the world had neglected production of healthy foods and that the role of research and policy through an array of partnerships can still set the bearing of having nutritious food. My interest in the work of Dr Sandra Demaiio and Dr Jessica Fanzo during their presentations on



the role trade, apart from research could offer, in alleviating malnutrition gave me an understanding on how multi-sectoral approaches would be beneficial in addressing these challenges. The key take home message for me was, 'While we concentrate on the common foods driven by market, we forget the ready nutritious foods that are available'.

The other themes echoed by presenters, were that solutions and evidence to these challenges were there, and leadership must come from governments and intergovernmental organisations. Interesting case studies were presented, particularly in Kenya where production of poultry feed using waste was being undertaken and lifting the livelihoods of slum dwellers. For me, this provided hope that solutions were many, and they could come from anywhere. Our work on this field is to have research that is promoting a more inclusive understanding of the challenges we face to be able to offer multi-disciplinary solutions.

The mentoring and networking for me were the most interesting and enjoyable periods during the conference. This gave me a platform to catch up with the day's speakers and to get clarifications from the presenters. I want to sincerely thank my mentor, Ms Irene Kernot, who gave me her valuable time and took time to introduce me to different professionals during the conference. I not only learnt a great fortune from her role in ACIAR, but we shared a common interest in horticulture. She was extremely instrumental during my conference experience and ensured all my questions and clarifications were answered.

The scholarly days were exciting, and captivating as young scholars shared their experience and fears in research to a team of selected panellists. I learned a lot from the team on their different areas of studies, interests and aspirations. While sharing with scholars, I met Dr Mugeru a renowned economist who shared with me his passion and the drive to reach global audiences in research. His words of encouragement on how young scholars would leverage on the potential to reach a wider audience using platforms such as the Crawford Fund activities. With the support of institutions such as ACIAR, DFAT and other global partners, I took it as a challenge that nothing is hard for a determined soul. I intend to use the knowledge, network and the support of the Crawford Fund to improve my Work Plan on Return (WPR) and further my research in science. As a member of the RAID team, I promised fellow RAIDers, to go and build a new team of RAIDers in Kenya in future and to commit fully in contributing and supporting the noble ideas of this wonderful forum.

Once again, I thank The Crawford Fund for the opportunity and support you offered me to participate in the conference. My message of the conference:

"I dedicate this award not to myself, but to the many people I have worked with and the silent voices that have added an input to my work. I carry all your aspirations! Today is their day and, on your behalf, I celebrate you all." Clarisa Collis Winner of 2018 Food Security Journalism Award, during the trophy presentation!



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