Sydney Institute of Agriculture

Georgika

Image courtesy of Kristy Faris - Llara Farm, Narrabri

Edition 7, April 2022

Georgika

Georgika - an online newsletter for those interested in academic aspects of the Ag sector

From the Director

Brent Kaiser

Welcome to the first edition of *Georgika* for 2022.

In February we welcomed the beginning of a new semester with students on campus for face-to-face lectures and practicals. It's been such a long period of time to have a drought of energy across the university landscape. A refreshing change indeed, which will see us return to the privileges and allowances we once took for granted.

As a research institute, SIA is undertaking a review of our performance and capabilities over the past five years. This is ongoing, however presents the opportunity to highlight areas requiring attention as well as reflecting on positive outcomes.

As our main external posting, *Georgika* has become an important conduit to our University of Sydney partners, alumni and general followers. Our intentions are to highlight our activities in agriculture, explain our continued investment in both teaching and research across all areas 'agriculture' and describe the drive to expand and broaden this component of the University of Sydney. As you all know, there is a collective challenge in securing a robust and traditional agricultural footprint across universities in Australia and around the world. Agricultural students are becoming as rare as hen's teeth and the continued prospects using traditional attraction pathways are less effective. The ability to highlight the opportunities associated with agriculture to new students, but also to researchers and the community is all increasingly difficult but we need to persevere.

A key shift in agriculture has been the accelerated move to connected, supply-chain orientated thinking and application across the sector. Integration and engagement up and down this continuum offers huge opportunities to diversify educational and research areas and deliver fundamental improvements to the outcomes we set ourselves to achieve. Education and Research sits broadly across this industry continuum and our breadth as a comprehensive university makes us ideally fit for taking on such an expansion of activities and priorities.

The Sydney Institute of Agriculture future intentions are for growth and expansion, which will represent broad cross-faculty engagement and application to agriculture, that delivers outcomes for community and industry. Agriculture is a growth industry, and the University of Sydney is increasingly poised to meet the increasing challenges that we face, including food security, managing our environmental footprint, and promoting diversification and value adding for greater returns across the sector. I do see a bright and positive path for agriculture at the University of Sydney, one that benefits from the breadth of skill and capability we own, but also the imagination and willingness to create outcomes of benefit and importance to society.

Events

Annual RD Watt Lecture: Save the date

When: 6pm Thursday 16 June, 2022

Where: Great Hall, University of Sydney

This year we focus on the SIA theme of Quality Food. Full details to come.

Digifarm Expo Webinar Series

In case you missed this webinar series in February, catch up online.

Session 1 - Cloud to paddock

Session 2 - Cropping, the good and the bad

Session 3 - Livestock

Session 4 - Farm to International Fashion Week

Theme Leader Updates

Plant Breeding and Production

Richard Trethowan

Congratulations to Richard Trethowan on being awarded the Royal Society of NSW Poggendorff Lectureship for 2021, for his work improving our understanding of the genetic control of heat resistance in wheat, and significant contribution to the development of new technologies including hybrid wheat systems and the application of genomic selection to plants. The Poggendorf Lectureship is awarded periodically for research in plant biology and more broadly agriculture.

Building a local organic vegetable seed industry

Organic agriculture requires organically certified seed produced using guidelines that prohibit the use of synthetic products/chemicals including fertilisers, pesticides, and herbicides. The most compelling reason for using organic seed to grow organically certified crops is the reduced impact of production on the environment and associated health benefits.

The vegetable seed sector in Australia, based almost exclusively on imported seed, has an annual value of approximately $70m, based on 2011 estimates of $56m (OTARE Policy Paper No 1601, 2016). This is expected to grow significantly.

The Plant Breeding Institute at the University of Sydney is investigating the viability of developing a local organic seed industry for several vegetable crops including tomato, cucumber and carrot. This project funded by the Department of Agriculture, Water and the Environment is collaborative with Green Camel, Australia's largest protected environment organic producers. Untreated seed of new locally bred F1 hybrids of tomato and cucumber is being tested under commercial organic conditions at Green Camel with promising initial results.

Organic agriculture should be supported by focussed plant breeding that is independent of vegetable breeding for conventional systems. This will ensure that the new varieties are well adapted to the specific requirements of organic farming. Organic varieties should respond better to organic fertilisers and have high levels of tolerance to environmental stresses. The parallel development of seed processing techniques to control seed-borne pathogens is also vital.

The current research aims to build a platform for the establishment of a local hybrid vegetable seed industry. These hybrids would provide higher yields and better quality than imported seed. However, the availability of locally produced seed would also remove the significant biosecurity risks associated with imported seed and the associated costs of screening seed for exotic diseases.

The Sydney Institute of Agriculture is sponsoring the Wheat Breeding Assembly, WBA2022.

WBA, Australia's wheat breeding forum, brings together breeders, researchers and other industry stakeholders to build a stronger, more resilient and profitable Australian wheat industry. WBA2022 will be held 28 - 31 August at The Crossing Theatre, Narrabri. Registration is now open.

Read further about Plant Breeding and Production

Carbon, Water and Soil

Federico Maggi

I first heard the definition, "soil is the most complex biomaterial on Earth" in a class taught by Daniel Richter, Professor of Soils and Forest Ecology in the Nicholas School of the Environment at Duke University. I was attending his class because I was not (and probably am not yet) a soil scientist, and Amilcare Porporato, my post-doc advisor at that time, told me "... Fede, better you get to know something about soil…go and attend Daniel's class". It took me years to start appreciating that definition of soil. And, yes, I think it is true that soil is the most complex biomaterial on Earth. In 1 cubic centimetre of soil there are 10^9 to 10^11 cells of any possible species and strains, on average more than the number of people on Earth. Likely they fight, cells graze on other cells, and viruses infect bacteria and fungi (..any similarity with us?). Soil microbiota and plant roots also synthesize substances, mobilize minerals and form their own habitat.

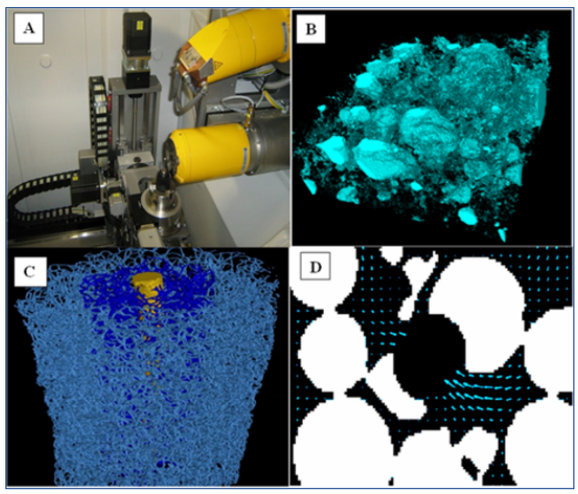
We did not know much about these things some time ago, but technology has gone well beyond the microscope and we are now able to see much finer detail of what happens at the micron and nano scale in soil. This new knowledge invites us to think that the complexity of the environment we live in emerges from the interactions that happen in soil at those scales, and if we think critically, we may want to ask ourselves if all goods we consume that come from soil would not be there if soil were not such a complex biomaterial, the most complex. Sheikh Rabbi is investigating this complexity using the most modern technologies as explained below.

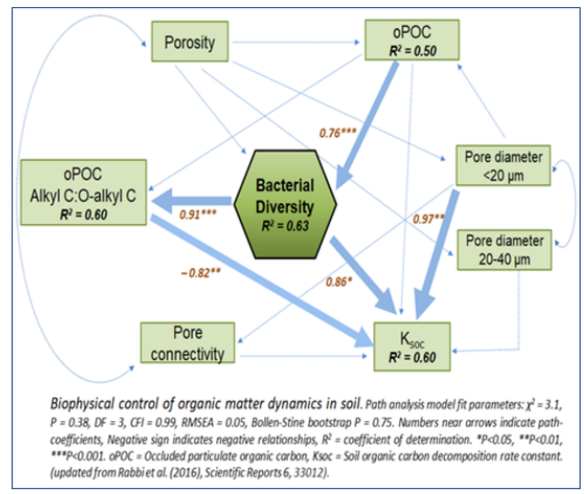
Biophysical control of carbon stabilisation in soil

Our research in the Soil Biophysics group pivots on one central concept that pore-scale heterogeneity regulates the key processes in soil, namely carbon stabilisation and water availability in the soil and the root zone. We are interested in multidisciplinary research to understand the physical and biogeochemical processes of soil-plant-microbial interactions and how these processes are linked to carbon sequestration at field scale.

For seeing through the opaque soil, we use X-ray microtomography (Photo 1A, sample placed in front of an X-ray tube) that allows 3D examination and quantification of the soil pore network (Photo 1B, pores in soil aggregates) and soil-root system (Photo 1C, root (yellow) surrounded by complex web of pores) in undisturbed condition. The variability of pore network creates heterogeneous water and gas flow through soil (Photo 1D, arrows represent water flow through pores (black)). Combining measurement from spectroscopy, nuclear magnetic resonance, gas/liquid chromatography, and DNA sequencing techniques with 3D pore network, we have shown that the interactions between soil pore network, organo-mineral complex, and chemical nature of organic matter mediates the stabilisation of organic carbon by regulating microbial diversity and enzymatic activity in soil (Photo 2).

Carbon stabilisation is also directly and indirectly related with carbon input in the root zone and the engineering of soil pore network by root growth. Our work provided a strong, mechanistic connection between root development, rhizosphere pore geometry and a plant's ability to regulate and design its own local environment to control water dynamics and microbial diversity at the soil-root interface. The physical modification of the pore geometry by plant roots influences the root exudation and relative abundance of specific microbes that changes the wettability of the rhizosphere. These biophysical changes in the soil-root interface have potential to improve carbon stabilisation in the root zone and the plant's ability to recover from drought episodes during the growing season.





Biophysical control of organic matter dynamics in soil. Path analysis model fit parameters: $\chi^2 = 3.1$, $P = 0.38$, $DF = 3$, $CFI = 0.99$, $RMSEA = 0.05$, Bollen-Stine bootstrap $P = 0.75$. Numbers near arrows indicate path-coefficients, Negative sign indicates negative relationships, R^2 = coefficient of determination. *P<0.05, **P<0.01, ***P<0.001. oPOC = Occluded particulate organic carbon, Ksoc = Soil organic carbon decomposition rate constant. (updated from Rabbi et al. (2016), Scientific Reports 6, 33012).

Read further about Carbon, Water and Soil

Digital Agriculture

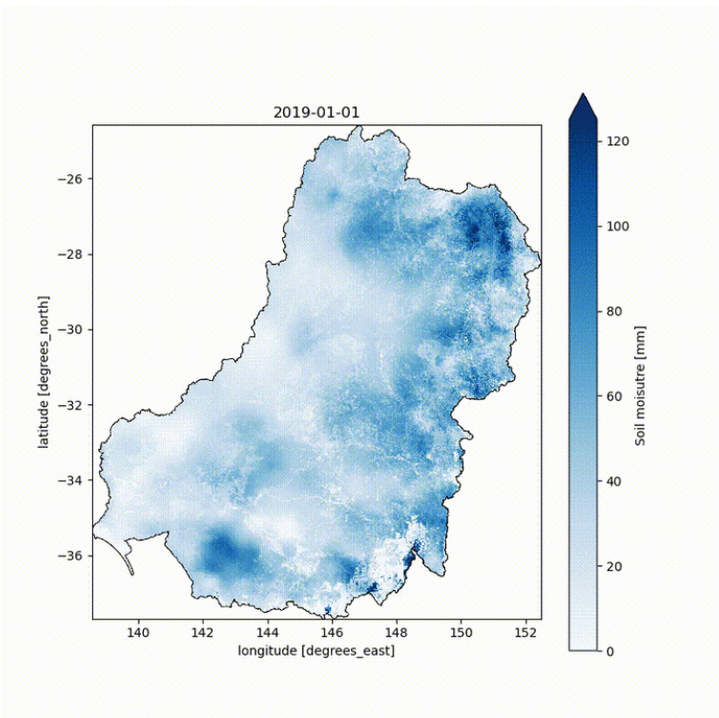
Tom Bishop

The Digital Sciences Initiative was launched in 2021 and Digital Agriculture is one of the themes. It is gathering apace with the recent appointment of Business Development Managers to support academics to build teams of researchers across the university and seek funding opportunities. While it is early days, it has opened up the possibility of collaborations with Engineering academics who offer a fresh insight into research questions related to Digital Agriculture.

In Australia much of our Agriculture comes down to too little or too much water, and managing for this variability. This is highlighted by the awful situation in Queensland and NSW recently which followed a very wet winter harvest. I will highlight two of our larger projects related to water and the application of digital technologies to better predict and manage this variability. The first is focused on paddock-scale predictions of soil water and the second is focused on whole-sector water accounting. Together they could help growers, industry and government understand current and future production which has flow on effects through the entire supply chain.

Soil water nowcasting

One of the larger Precision Cropping projects we have is a soil water nowcasting project funded by the GRDC. It is targeted at developing an approach to predict in near real-time plant available soil water at the within-paddock scale using both on-farm and freely available datasets. It is a collaboration with CSIRO, University of Southern Queensland, Australian National University and the Bureau of Meteorology. An update was presented recently at the GRDC Northern Updates.



This included a prototype soil water product for Murray-Darling Basin for the period 2000-2020. An example animation is shown for plant available water for the drought year of 2019 for the whole-profile (0-1 metres). Soon an interactive dashboard will be released to visualise the predictions for the period 2015-present.

WaterSENSE

WaterSENSE, is a “research in action” H2020 project of the EU, which aims to develop a toolbox to observe components of the water cycle using Copernicus (Satellite) data and use this for different applications, such as water accounting.

WaterSENSE is a collaboration of 6 SMEs and the University of Sydney which received funding from the European Union’s Horizon 2020 Research and Innovation Programme (H2020-SPACE-2018-2020).

The latest progress can be found in their February newsletter

They are doing a lot of interesting work related to using earth observation to improve our estimates of different water inputs and stores. For example, in the newsletter you will find work on using earth observation to better predict spatial patterns of rainfall rather than just relying on interpolation of weather stations.

Read further about Digital Agriculture

Animal Agriculture

Cameron Clark

Sheep production - update from Simon de Graaf

The University of Sydney has a long and storied history of conducting research relevant to sheep production. Our research in reproduction, welfare, health and disease, and many other areas has contributed significantly to the benefit of the sheep industries. Today, SIA members have numerous active projects relevant to sheep production and we are well supported by RDCs (Rural Research and Development Corporations) such as Australian Wool Innovation and Meat and Livestock Australia, in addition to funding provided by a variety of industry sources.

In highlighting the success and industry profile of our sheep production research at SIA, it is also worth noting when our members are recognised by industry for their expertise. With this in mind it was fantastic to see in late 2021 that Sabrina Lomax and Jessica Rickard were both appointed as Directors on key sheep industry management boards. Sabrina was appointed to the board of Australian Wool Growers Association and Jessica to the board of MerinoLink. These are extremely important sheep industry governance and leadership positions and so a great recognition of the high esteem in which the sheep industry views their research credentials as well as the University of Sydney as a whole. At a time when the university sector is being strongly encouraged to engage more with industry, news such as this is a welcome sign that we are well positioned to capitalise and extend strong existing industry-academic relationships.

In other sheep related news, we've had another successful year obtaining Australian Wool Education Trust Honours scholarships. 3/3 of animal reproduction students who applied for 2022 were awarded these prestigious scholarships. Over the years the University of Sydney has had dozens of students awarded AWET scholarships so again it is a great indicator of the belief the wool industry has in the University's pipeline of students and research programs.

On a personal note, I'm happy to report a successful Discovery Project application in the most recent ARC funding round titled 'Targeting TGF-beta proteins to control animal reproduction'. This Monash led DP aims to develop novel biologics to control the ovulation rate of ruminants and will see us conduct much of the in vivo trial work on that greatest of laboratory animals, the sheep.

To end with, the University of Sydney was recognised as the top research institution in Australia for 'Animal Husbandry' in The Australian's Research Magazine in 2021. Just one of many indicators that research in animal agriculture continues to go from strength to strength at The University of Sydney.

The Sydney Institute of Agriculture is sponsoring the 2022 MerinoLink Conference and Field Day, to be held in-person and online on 6-8 June in Wagga Wagga.

The Hour of Power is an hour long session dedicated to showcasing early career researchers, PhD/Masters and undergraduates passionate about their research and the sheep industry. Details, tickets, and applications are available on the MerinoLink website.

Read further about Animal Agriculture

Development Agriculture

Daniel Tan

The geo-spatial database aiding recovery efforts in Tonga

Researchers Eleanor Bruce, Kevin Davies and Floris van Ogtrop, have an ACIAR funded project focused on Climate-smart landscapes for promoting sustainability of Pacific Island agricultural systems. In partnership with the Ministry of Agriculture, Food and Forests (MAFF) Tonga, SPC and School of Agriculture and Environment, University of Western Australia and University of Auckland, they have developed an open-source mobile, cloud-based geospatial app for monitoring coastal smallholder agricultural landscapes in Fiji and Tonga. Adopting collaborative information and communication technology for development processes (ICT4D), this has resulted in a powerful decision support tool currently aiding recovery efforts in Tonga following the recent volcano and tsunami. In late December 2021 the project team completed a high resolution geo-spatial database of cropping systems and farm plots across the Kingdom of Tonga.

Researchers are currently assessing how the geospatial tools and plot scale data can be used by MAFF and FAO to support recovery efforts.

The project also involves understanding the role of coastal ecosystem services in supporting local livelihoods of small-hold farmers including mangrove case study sites in Viti Levu, Fiji.

Recent Ag Alumni working in Development Agriculture

Recently Daniel met (on Zoom) with Ag Alumni working in Development Agriculture.

Scarlett Crawford

After moving to Paris to do a masters in development economics (which complemented her Environmental Systems Bachelors from the University of Sydney), Scarlett interned and then consulted with the OECD Agriculture and Environment Directorates, building and developing her policy related research and analysis skills. This led to her current position with the Commission on Sustainable Agricultural Intensification (CoSAI), which sits within CGIAR. As a Project Officer for CoSAI, she is working with researchers to build a portfolio of evidence that supports better innovation in agricultural investment.

The aim is to provide the agricultural community with the tools and knowledge on how to incorporate environmental and social objectives into successful innovations and what are the factors that help these types of successful innovations get to scale. Here CoSAI are not only producing research on which approaches, instruments, and pathways can help agricultural innovation to achieve environmental and social outcomes, though also CoSAI is producing principles and metrics to help innovators in agriculture include environmental and social objectives in their work. Together, CoSAI hopes that this work can underpin the needed transformations of global agricultural systems to bring about equity within planetary boundaries.

Lisa and Zoe Paisley

Lisa and Zoe Paisley (known as the Aggie Twins) graduated in 2018. After studying Science in Agriculture, Lisa and Zoe moved to Fiji to build their business Aggie Global. The Aggie Twins reconnect humanity through the gift of food by empowering smallholder and remote farmers to access new markets. Within Fiji, this is focused on connecting local farmers to the tourism industry, to boost farmer income and alleviate poverty.

During 2020, Aggie Global's all women team begun distributing sponsored food boxes to families in need due to lockdown, isolation and the mass unemployment resulting from tourism having to close. During this time, over 75 food boxes were delivered with all produce being sourced locally from Fijian farmers.

Agricultural development is hugely needed in Fiji to alleviate food insecurity and poverty in remote villages. Approximately 1 in 3 Fijians rely on agriculture as their source of income (higher now due to the pandemic), yet 70% of fresh fruit and vegetables available in supermarkets are being imported. This disconnect in the food supply chain is something Lisa and Zoe are striving to address through Aggie. Since they started Aggie in 2018, they have been able to redirect over $66,000 to smallholder Fijian farmers and supported approximately 421 families.

Lisa and Zoe also opened an Australian branch for the business, called Aggie Gifts. This branch aims to help Indigenous Australians take back their voice in the bush food industry. Currently, Indigenous suppliers only represents 1% of commercially available Bush Foods. Of Aggie Gifts network 36% of suppliers identify as Indigenous Australians. This is something the Aggie Twins aim to grow as the business is developed further.

Since founding Aggie, Lisa and Zoe have been able to create huge social impact by working directly with community in both Australia and Fiji. They have met with officials in the Fijian Ministry of Agriculture, United Nations and have won international recognised awards such as the Secretary General's Commonwealth Innovation Award for Sustainable Development in Prosperity for the Pacific in September 2021. There is so much scope and opportunity for impact within Agriculture, and although Lisa and Zoe did not have the immediate network, they used their work experience from university to connect with those in Fiji to kick start Aggie Global.

Read further about Development Agriculture

Urban Agriculture

Floris Van Ogtrop

Pocket City Farms is a registered charity which can be found close to the heart of the city in Camperdown. The market garden is on a converted bowling green and has a growing space of around 1200m² where vegetables, herbs, and leafy greens are grown organically using compost produced on site. The farm provides fresh produce to residents who are experiencing food insecurity, organisations such as Oz Harvest, and local businesses. Importantly, the site is there to educate people, young and old, about growing fresh produce while promoting urban agriculture.

Pocket City Farm in full production.

Image courtesy of Rob Haggett from https://www.pocketcityfarms.com.au/our-farm

Patches of lower productivity on Pocket City Farm. Image courtesy of Floris van Ogtrop

Visiting the site, I was immediately made to feel at home by Rob, the CEO, and Rich, the farming and community manager. Rob explained that there have been challenges with establishing the farm through the pandemic and with production and logistics around where the farm is situated. However, it is also made clear that the farm has been a success which can be seen through many school visits, a successful volunteer program, and farm productivity. While this farm alone may only be able to produce a small and possibly insignificant fraction of the produce required for the surrounding communities, it adds considerable value in education, connecting people to the land, and wellbeing. Furthermore, the intention is to expand to other locations, and we might start to see more produce coming from urban sources such as we see in countries like Cuba. Watch this space!

I was excited to see some of the innovations that the team were trying out such as planting mixed cover crops to improve soil condition as well trialling different composting systems such as wire mesh composting units that are constantly online monitored using UbiBot sensors. This led the discussion to synergies in the research SIA members do and how we might work together on some of these challenges. For example, while the team has managed to improve the soil considerably from the sandy bowling green soil of the past, there are still issues related to organic matter and nutrients that are impacting yield. While these are small plots and not the scale of large horticulture that we often work with, I believe we can still learn a lot from working in these systems and there is a clear drive by councils and different not-for-profit and for-profit organisations to create more of these farms because of there social and environmental benefits.

Read further about Urban Agriculture

Quality Food

Tom Roberts

The food and beverage sector is the largest manufacturing sector in the Australian economy. In 2019-20, the sector consisted of 14,400 businesses, employed over 229,000 people, and generated $28.4 billion in gross value added. The Australian Government Food and Beverage National Manufacturing Priority road map began in 2020. The vision for this 10-year initiative is that:
By 2030 we will double the value of Australia's Food and Beverage manufacturing through a focus on:

* smart food and beverage manufacturing

* innovative foods and beverages

* food safety, origin and traceability systems.

The food and beverage sector is one of six National Manufacturing Priority Sectors for the Federal Government. The Food and Beverage National Manufacturing Priority roadmap describes the structure of food and beverage manufacturing in Australia, explains the reasons why food and beverage manufacturing is being supported and promoted by the government and the barriers to scale, outlines the specific growth opportunities for Australian food and beverage manufacturing, the factors that will enable its success, and the benchmarks for that success.

Indigenous Food Research Park (IFRP)

In 2020, a multidisciplinary research team from the University of Sydney investigated a production system for native grains from 'paddock to plate'. This work was led by Angela Pattison and was supported by an SIA grant. The research highlighted the potential and current bottlenecks for developing a modern take on traditionally important food production systems. What set this research apart was that a range of different aspects of the whole paddock-to-plate system was considered, including growing, harvesting, and threshing of grass, nutrition, food development and marketing.

The team focussed strongly on developing research questions in collaboration with Aboriginal stakeholders, and the study identified tangible benefits for both Indigenous and non-indigenous people (see public report). A recent review (A review on the use of Australian native grains as a food in a global grains context) published in the Rangeland Journal by honours student Anna Drake (Bachelor of Food and Agribusiness student in 2020) in collaboration with Angela Pattison and Claudia Keitel, highlights some of the research gaps in the use of native grains in modern food production systems and the importance of involving Aboriginal stakeholders from the beginning. To promote research in the area of Indigenous foods and to develop networks of researchers and stakeholders, the research team regularly speak at seminars and conferences and supervise undergraduate and postgraduate student projects.

Food products made with blends of native grain flour and wheat. (a)Basic fire-roasted dough (flour cakes) with ~50% Panicum decompositum flour(left) and ~50% Dactyloctenium radulans flour (right). (b)Sweet sultana biscuits (33% Microlaena stipoides flour). (c)Flat crackers (33% roasted and ground seeds of Atriplex nummularia),presented with Portulaca oleracea tzatziki and Chenopodiumnutans greens. (d) Pizza (base of 25% ground Atriplexnummularia seeds, paste a combination of ground Solanumcentrale with tomato and garlic, toppings are field-foraged nativeAustralian grassland leaves and fruits with cheese). (Source: Drake et al.2021)

Read further about Quality Food

Alumni

Class of 1971 celebrate

In late March the agricultural class of 1971 celebrated their 50th anniversary in the Hunter Valley (delayed from 2021 due to Covid restrictions). All are still passionate about agriculture and about their time spent at the University of Sydney. SIA Director, Brent Kaiser, and Executive Officer, Claire Kennedy, joined our alumni for dinner to hear their fond memories and how their collegial connections have lasted for 50 years.

Some described a 'scenic degree' that they had followed, which in the end generated some very distinguished and accomplished graduates later in life. The diversity of careers that evolved from their initial degree is compelling and highlights the flexibility and adaptability such degrees offer young graduates, a characteristic which continues today.

Images courtesy of the reunion organising committee

Vale Trevor Scott BScAgr PhD
Trevor Scott was a distinguished alumnus of the university, from which he graduated BScAgr in 1959 and PhD in 1962. His PhD thesis is entitled “Biochemical studies of semen and of the epididymis”. The project was supervised by Ian White and Ray Wales in the then Department of Veterinary Physiology, with some input from a young Frank Annison (now Emeritus Professor of Animal Nutrition), who was then at the UNE. As summarised in a tribute, Trevor had a distinguished career in research, including a lengthy role as Chief of the CSIRO Division of Animal Physiology (later Animal Production) from 1975 to 1989. He retired from CSIRO in 1994, but continued working with colleagues until his death on 25 March 2022.

Vale Bernie Bindon PhD

Professor Bernie Bindon, a distinguished animal-science researcher, died on 26 March 2022. After undergraduate and Masters training at UNE, Bernie came to the University of Sydney to do his PhD on animal reproduction, in the Department of Veterinary Physiology, under the supervision of Professor Cliff Emmens. He graduated in 1969, with a thesis entitled “Studies of the mechanisms of [embryo] implantation”. After some ground-breaking research with CSIRO on the high fecundity of the Booroola Merino, Bernie ended up as Assistant Chief of the CSIRO Division of Animal Production, based in Armidale. In 1993 he took on the very demanding role of Director of the first and second beef Cooperative Research Centres (CRCs), and was appointed Professor at UNE.

University Farms

Narrabri

In March the Hon David Littleproud MP, Minister for Agriculture and Northern Australia and the Hon Mark Coulton MP, Federal member for Parkes toured the Narrabri facilities and farms to learn about the diverse research being undertaken by our passionate staff.

Grass trees on the biodiversity block

Cotton in flower

Cotton crop at Llara

Narrabri images courtesy of Kristy Faris

Camden

Kenaf in flower

Kenaf crop at Landsdowne

Images courtesy of Lynne Gardner

The Sydney Institute of Agriculture recently established a partnership with Defugo Technologies who have challenged us to develop a Kenaf (Hibiscus cannabinus) industry for Australia. The famous fibre crop sits within the Malvaceae family and is closely related to Jute (Corchorus sp). It is grown in many regions of the world, mostly tropical and subtropical regions. Kenaf is now getting a guernsey for an Australian audition as a potential rotational crop with common grain production systems, but also as a crop destined for more challenging Australian marginal soils. The high-quality fibre that is derived from Kenaf stems (phloem cells called Bast fibres) has a long list of potential uses and markets. The fibre program is being driven to help test its potential for green energy creation (electricity, hydrogen and biodiesel) and ultimately its ability to capture C (supposedly the most productive cultivated land plant for CO2 capture) and sequester it through its excessive biomass deposits (roots) in the soil or as an effective biochar after high temperature pyrolysis.

We have partnered with the Faculty of Engineering to diversify the research questions and explore the functional properties of the edible protein (up to 30% protein) and oil (omega 3 containing) components produced from either the leaf canopy or the abundance of seed produced on each plant. One of the exciting aspects of this project will be the path taken for its targeted genetic improvement to identify and create lines suited to Northern NSW, and further north into tropical Northern Australia. Australia retains a wealth of germplasm from prior attempts in the 70s and 80s to test its functionality as a fibre alternative to cotton. Other economic drivers now suggest Kenaf may find a new home in select Australian locations to provide new economic opportunity across the farming system.

Social Media

The Sydney Institute of Agriculture is on Instagram (Sydney_Sia) and we are also on Twitter (Sydney Agriculture). Follow us at the links in the box below.

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