**Cost-effective applied research linking agriculture with better population health**



**Graham Lyons**

**CONSULTANT (Nutritious Food Systems)**

Based in Adelaide, South Australia

With extensive international experience in agriculture and public health, Graham is renowned for innovation, practicality, scientific rigour and timely outcome delivery on tight budgets.

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**CURRENT ROLES**

**Research Fellow:** Nutritious leafy vegetables for Pacific atolls (ACIAR, University of Adelaide [UniAd]); screening of cereals for tolerance to sodicity and salinity (SARDI, SA Grains Industry Trust Fund, UniAd)..

**Principal:** *Chapel Hill* Angus stud, Echunga.

**QUALIFICATIONS**

* PhD (selenium in wheat), UniAd 2004
* M Public Health, UniAd 2000
* B Agric Sci, UniAd 1975

**EMPLOYMENT HISTORY**

**2014-**

SARDI/SAGIT salinity/sodicity tolerance in cereals researcher.

UniAd/ACIAR Research Fellow: nutritious crops advisor to agriculture/health project on Pacific atolls, in Kiribati and Tuvalu.

**2010-2013**

UniAd/ACIAR Research Fellow: agriculture/health projects in Papua (Indonesia), Pacific Islands, Northern Australia.

Consultancy to ACIAR on livestock minerals program in Tibet.

**2005-2009**

UniAd: Manager of *HarvestPlus* international food systems program in China, Solomon Islands, PNG, Australia, Colombia, East Africa

**2001-2004**

UniAd: PhD studies; tutoring

**1999-2000**

Flinders Univ of SA, Dept of General Practice: Research Associate

**1997-1999**

UniAd et al: Public health research, tutoring

**1984-1997**

VA Lyons Investments Pty Ltd: General Manager, farm manager, beef cattle studmaster

**1980-1983**

Solomon Islands Government: Cattle Development Officer, Kira Kira, San Cristobal

**1977-1980**

VA Lyons P/L: Farmhand, assistant manager: beef cattle, sheep, cereal cropping.

**KEY SKILLS**

* Establishing and managing agriculture and human nutrition research and development programs in developing countries
* Conducting agricultural trials with food crops in growth chambers, glasshouses and the field, including screening of cereals for sodicity and salinity tolerance
* Agronomic biofortification of food crops with micronutrients
* Supervision of postgraduate students
* Development of health supplements and functional foods
* Writing and editing scientific books, book chapters, articles and conference presentations; peer reviewing.

**EXPERIENCE & ACHIEVEMENTS**

* Presented four lectures on Se agronomic biofortification and the potential of Se-biofortified *Prunella vulgaris* as an antiviral agent, in Shaanxi and Ningjia Provinces, China in October 2019
* Patent granted in June 2019 on a salt-tolerant bread wheat (ref Genc et al “Bread wheat with high salinity and sodicity tolerance” *Frontiers in Plant Science* 22 October 2019)
* Fact sheet series on *atoll-suitable* nutritious leafy vegetables launched in Kiribati in June 2018.These have been translated into Kiribati and Tuvalu languages
* Review article published in *Frontiers in Plant Science* in June 2018 on the potential of joint agronomic biofortification of cereals with selenium and iodine to reduce hypothyroidism
* An influential article on screening of cereals for sodicity/salinity tolerance published in the high-impact journal *New Phytologist* (Genc et al, 2016), and Dr Yusuf Genc was awarded SARDI’s “Breakthrough Innovation of the Year” for this work. We are currently breeding a salt-tolerant bread wheat
* Discovered the exceptional selenium (Se)-uptake ability of *Moringa oleifera* (drumstick tree)on low-Se soils
* Identified leafy vegetables/N-fixing species with tolerance to drought, salinity and high pH suitable for atolls, including drumstick, hedge panax, chaya, beach cowpea and *Sesbania*
* Developed an innovative method to screen cereals for sodicity/salinity tolerance
* Demonstrated that sodium exclusion is an important tolerance mechanism in sodic/non-saline soils, but not in sodic/saline soils
* Developed a sustainable, low-input, sweetpotato-based smallholder farming system which can be adapted to giant swamp taro pits on Pacific atolls
* Surveyed food crops for mineral nutrients (assisted by the Waite Analytical Services laboratory) in Australia, East Africa, Papua (Indonesia), Papua New Guinea, Solomon Islands, Samoa, Tonga, Kiribati, Tuvalu, Colombia, China, Torres Strait Islands
* Trialled improved sweetpotato varieties and cultivation methods in two high-altitude regions of Papua, Indonesia, and developed guidelines
* Surveyed leafy vegetables for mineral nutrients, carotenoids and protein in the Pacific. Published factsheets featuring the *Top 12 nutritious leafy vegetables* for the Pacific and Northern Australia
* Conducted controlled-environment efficacy trials on fertilisers/soil conditioners for a fertiliser company
* Developed experimental nutrition protocols for adjuvant cancer therapy and a supplement to treat RNA viral diseases
* Supervised PhD and Masters students, lectured in micronutrient deficiencies in humans at UniAd; adjudicated PhDs in Denmark and Finland
* Reviewed 10 years of ACIAR livestock nutrition project activity in Tibet and provided recommendations for future research
* Initiated agronomic biofortification trials with Se and cereals in Tibet to alleviate Se deficiency in livestock and humans
* Introduced the now-popular Beauregard orange-fleshed sweetpotato (OFSP) variety to Solomon Islands
* Surveyed OFSPs and yellow bananas in SI for b-carotene (pro-vitamin A) and conducted 28 workshops in SI and PNG to promote nutritious local crops
* 5 years managing the *HarvestPlus* food systems program, funded by the World Bank, Gates Foundation and USAID. Agronomic biofortification trials conducted in China, Colombia and Australia, and protocols developed for Se, Zn, I
* Demonstrated that optimal Se application can increase oilseed production under controlled conditions
* Collaborated with Laucke Flour (SA) in developing three Se-biofortified functional foods
* Co-investigator in a CSIRO trial which found that Se in Se-biofortified wheat biscuits was more bioavailable than Se in Se-process fortified wheat biscuits consumed by humans
* Surveyed Se levels in wheat and people in SA and found them to be mostly satisfactory on a global scale
* Co-authored 8 books, 5 book chapters and numerous scientific articles/conference presentations
* Peer-reviewed many scientific papers submitted to 26 journals
* Extensive speaking/conference experience
* After completing M Public Health degree, wrote a book which collated and summarised a decade of Australian general practice research (Flinders University, 2000)
* 15 years managing a diversified family agribusiness which included one of Australia’s top Angus studs. “Glen Bold” holds the record for the most champion and reserve champion bulls at the National Angus Show/Sale, Wodonga, Victoria.
* 6 years on the Board of the Angus Society of Australia (1991-1997)
* 3 years developing the Solomon Islands cattle industry (1980-1983): improved productivity of smallholder herds, developed 20 new farms, increased the Eastern Solomons herd by 25%, upgraded 3 holding grounds and a butchery, and trained staff.