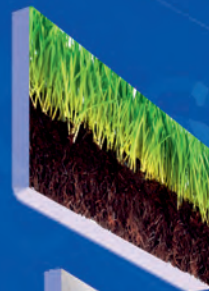


AgScience



Inside

Government science funding

The future of foods

Forum at Massey



NZIAHS for Now and the Future!

I HAVE TAKEN THE liberty of borrowing the title from our Canterbury Forum in October 2013 and modifying it to suit this article. As well as trying to link with the feature article in this issue of *AgScience*, this allows me to highlight some of the work the council has been doing recently in terms of future strategic directions. As outlined in a recent letter to members, we are looking at the activities that we are involved in, what we do well, what we could look to improve, and how we can attract new members. One of the things we do well is the Forum and credit must go to previous national councils and the Canterbury section for recognising the value of the format. A one-day event fits well with busy schedules, a well-planned programme allows sufficient time and focus to tease out key ideas, and can be used to link with groups outside of our existing members.

The forum on Foods for Now and the Future was very successful and highlighted a number of key points:

- No matter what we do in agriculture and horticulture, the end product is food. This has been discussed over the years, but perhaps not given due attention. For me at least, the end product was a kiwifruit or apple being exported, rather than what

might be useful in a jam, ice cream or other processed food products.

- There are some talented and dedicated people doing interesting things with food and food technology and this forum was an excellent showcase for them.
- The quality of our food products and the processes that are in place to maintain that quality and reputation are paramount
- Seafood products and processing, despite the differences, face similar challenges as agricultural/horticultural products and have come up with interesting solutions.

The Forum was run with the New Zealand Institute of Food Science and Technology. The feedback I received was that a combined meeting worked well, changing the mix of speakers and topics from meetings organised separately and giving an insight into topics and approaches that otherwise would not have been included. So not only was this particular meeting interesting and broadened our knowledge, it also gave us some directions for the future. We need to remember that the different science disciplines are not mutually exclusive, that we do need to deliberately look at how we interact and it is beneficial to involve one another in meetings and conferences.

We also don't know where people interested in agricultural and horticultural science may be working and that over time, this has changed somewhat from just universities or research institutes. For instance in discussions with some students at Massey it was clear that we can't assume they will be studying in the Institute of Natural Resources in the Horticulture and Agriculture departments but may also be in the Institute of Food, Nutrition and Human Health at the Centre for Postharvest and Refrigeration Technology

or perhaps in the Institute of Molecular Biosciences if bioinformatics is their research area. So when we put out invites to seminars or for applications for travel scholarships and so on we need to be thinking a little wider.

I have appreciated feedback from members about what the Institute does and how we stay relevant. A number of suggestions have been made and they are being included in our discussions. A very positive note is the loyalty and affection that people do feel for NZIAHS.

We note with sadness the passing of Colin Little and Ian Baumgart both Foundation Members of the Institute (see their obituaries in this issue).

It was pleasing to see some extra funding for science in this year's budget, especially money targeted at students studying science, with agriculture and horticulture getting specific mention. There is also extra money for the Centres of Research Excellence although both the Riddet Centre at Massey and the BioProtection Centre at Lincoln were not successful in retaining funding, at least in the first round. We await the outcome from a second round of tenders, which will bring the number of CoREs up to ten. The continuity of funding is key if we want to see these institutes maintain their reputations and capability. Given the importance of both the Riddet and the BioProtection Centres to our agricultural and horticultural industries, the decision to not fund them was puzzling.

In terms of what we do as an Institute, the International Horticultural Congress being held in Brisbane later this year (17-22 August) is one of the biggest horticultural conferences ever held in the southern hemisphere. NZIAHS is one of the host organisations for this event and we are keen not only for the Congress as a whole to be successful but for individual New Zealanders to get the most out of it. NZIAHS will have a stand in the exhibition stall. We invite you to stop by, whether you are a member of NZIAHS or not, use it as a meeting point, or as place to decide on the best talks for the day.

David Lewis
President



The 29th International Horticultural Congress
Brisbane, Australia 17-22 August, 2014
<http://www.ihc2014.org>

GOVERNMENT PUMPS MORE MONEY INTO SCIENCE

by Bob Edlin

EARLY IN THIS YEAR'S Budget speech, Finance Minister Bill English said the Government's investment in tertiary education, research and innovation – crucial for sustained economic growth – was being increased. This investment includes \$83 million of operating funding over four years to raise tuition subsidies in science, agriculture and health sciences.

The Budget provided an additional \$53m over four years to establish another three Centres of Research Excellence, bringing the total number to ten. The Budget also provided an additional \$57 million over four years for contestable research in science and innovation.

Along with investments made in previous Budgets, the Government expects its total funding of science and innovation to reach \$1.5 billion by 2015/16.

English also mentioned support for innovation through two new tax measures. These two measures are budgeted to return an estimated \$58m in tax to innovative companies over four years.

Science and Innovation Minister Steven Joyce later said the Government had set a goal of increasing public expenditure on science to 0.8% of GDP "as fiscal conditions allow" and is targeting an increase in business R&D to 1% of GDP.

He issued a series of media statements:

- **Contestable science funding:** The Government will increase its investment in contestable science with \$56.8m of operating funding over three years starting from 2015/16. Joyce said contestable science funding is an important component of the overall science funding system and this additional funding will provide more opportunities for more research projects of scale across institutions and industry.
- **Tax measures to support business R&D:** R&D-intensive start-up companies will have early access to all or part of their tax losses in the form of a cash receipt, rather than carrying these losses forward. All capitalised costs on depreciable, intangible assets (for example, patents) will be deductible over time. Previously only the legal and administrative costs of registering the asset were treated as depreciable. Additionally, a one-off tax deduction will be allowed for capitalised development expenditure on intangible assets that are written-off for accounting purposes. This will relieve "black hole" expenditure on R&D projects that ultimately turn out to be unsuccessful to ensure businesses are not discouraged from undertaking R&D programmes simply because of the tax treatment of their expenditure. Both new policies will take effect from the 2015/16 income year.
- **R&D Student Grants:** Innovative businesses are being invited to apply for funding to hire students for internships and work experience as part of Callaghan Innovation's R&D Student Grants scheme. Grants, administered by Callaghan Innovation, are available to R&D-active companies to employ up to 70 Masters and PhD graduates and 200 undergraduate, honours, and postgraduate diploma or certificate students with science, technology, engineering, design, or business qualifications. Changes to this year's grants round include an emphasis on providing students with increased professional development opportunities. More student qualifications are now eligible, providing businesses with a greater

range of students to choose from. Grant names have been altered to reflect these changes. They are:

1 **R&D Experience** (previously undergraduate internships), to provide companies with funding of \$16/hour for 400 hours of work during the summer student break or on completion of a student's qualification. The range of eligible qualifications has expanded from undergraduate degrees to include honours and conjoint undergraduate degrees as well as postgraduate diplomas and certificates.

2 **R&D Career** (previously postgraduate internships), intended as an entry into permanent employment for Masters or PhD graduates. Based on an annual salary of \$60,000, they provide companies with 50% of annual salary costs up to \$30,000 (plus GST) to cover the salary of the postgraduate for the first six months. In previous years, companies were able to apply for just one R&D Career student, but this year they may qualify for more depending on their R&D spend and number of R&D staff.

Later in May the Government released the first draft of its National Statement of Science Investment, which sets out the current settings and proposed future priorities for its science investment, for public feedback.

The draft NSSI proposes a series of key priorities for action over the next five to 10 years.

"This government has introduced a number of new initiatives including the National Science Challenges, Callaghan Innovation and the Primary Growth Partnerships," Joyce said.

"Now is a good time for a stocktake on the overall shape of the science system to consider where the next investments should be made."


The draft NSSI reviews the entire cross-government investment in research and development and proposes potential reforms to sector-specific research funds administered by the Ministry of Business, Innovation and Employment.

"We're after feedback from everybody who has an interest in the science system to assist us in focusing our efforts," Joyce said.

"We want a broad conversation about the overall direction of Government's science investment and the balance of that spend, between investigator-led, mission-led, and business-led research."

It was important that the evaluation framework for science investment be developed, too, along with the focus on the amount invested.

Just before the Budget new Research and Development Growth Grants worth more than \$21m over three years were approved by Callaghan Innovation for another 15 high-tech companies. These grants pay 20% of each company's R&D costs and are intended to help high-value manufacturers and service providers to innovate faster and grow further.

R&D Growth Grants were introduced last year as part of changes to R&D funding. To apply for them, companies need to commit to spend at least \$300,000, and at least 1.5% of revenue, a year on R&D occurring in New Zealand. Once approved, a company can claim for funding quarterly in arrears. 

–Science leaders react to Budget on page 6

FOODS

for now and the future

- *What will the consumer of the future look like?*
- *What sort of food will they want?*
- *Can New Zealand produce it?*
- *Where does science fit into all of this?*

THESE WERE AMONG THE questions addressed during a day of food-based presentations to the Canterbury section of the New Zealand Institute of Agricultural and Horticultural Science. Fifteen speakers provided political, academic, research, marketing and factory floor perspectives on the role of science in food and beverage development and production.

The political perspectives came from Food Safety Minister Nikki Kaye (in a speech delivered by her colleague Kate Wilkinson) and from the opposition spokesperson for Research, Innovation and Development, Megan Woods. Both pushed the importance of investing in science and innovation, and adding value, to drive economic growth.

Kaye said meeting the Government's goal of doubling the value of exports by 2024 will require a 5.5% increase in growth by primary industries each year. She highlighted the High Value Nutrition Science Challenge and Primary Growth Partnerships as areas where research investment will help deliver the increased value.

Woods commented on the importance of continuity between governments in the area of food and beverage innovation, saying this is an area which would benefit from bi- or multi-partisan agreements. She also underscored the importance of genuine scientific collaboration, saying "competition and endless bidding is destructive of good science culture" and noting the ability of the Centres of Research Excellence (COREs) to bring together the best people, from any organisation, to work on problems.

Although the speakers were from diverse backgrounds and covered very different topics, several science-linked themes emerged from the presentations. These included health and nutraceuticals, utilisation of waste streams, the role of regulation, production efficiency and, not surprisingly, food safety and quality assurance.

Dieter Adam, from New Zealand Trade and Enterprise, talked about the state of research, development and innovation in New Zealand's food and beverage industries. He said New Zealand overall has good R&D and is good at manufacturing, but more investment is required to find ways to add value and market products to meet diverse consumer needs.

His ideas for increasing export earnings include diversifying away from protein production, developing high-value specialty products for hotels and restaurants and investigating precision seafood harvesting. But he said he believes there is a place for volume as well as value, suggesting that best management practice can consistently and sustainably increase production volumes.

Adam said all food industries should keep an eye on international trends such as the call for sustainable food production and demands for healthy nutritious food.

A new food standard to regulate nutrition content and health claims on food labels and in advertisements became law in January 2013. Under the standard, Australia New Zealand Food Standards

Code – Standard 1.2.7 – Nutrition, Health and Related Claims, all health claims are required to be supported by scientific evidence.

Dr Roger Hurst, from Plant & Food Research, outlined work his Food and Wellness Group is doing to develop health claims around blackcurrants and physical fitness and performance. The team has analysed 2,500 types of berry fruit for composition of anthocyanins and polyphenolics and carried out human intervention trials to see how blackcurrant intake affects performance. The work has found that eating blackcurrants before exercise can modulate oxidative damage and inflammation, assist immune function and aid recovery. In short, more blackcurrants means less muscle damage.

Health claims also featured in a talk by Plant & Food Research's Dr Susan Marshall, who leads the Processing & Marine Products, Seafood Technologies group which works on "everything from fundamental science to fish soup". Marshall is particularly interested in peptides and hydrolysates, as "you can do a lot with these broken down bits of protein". Her group is also working with marine enzymes (which have different characteristics to mammalian and plant enzymes), collagen products for use in wine-making, biomaterials, cosmetics and nutraceuticals, and also with fish lipases for use in cheese-making. They also look at fish waste ("blood and guts and a few other things") as a source for high tech-high value products such as biomaterials, catalysts, chelators and adhesives. Much of their work is market-defined, with companies and industries seeking to determine potential health benefits before going on to develop products.

The Proteins & Biomaterials Team at AgResearch is also interested in the role of proteins in food and food quality. Its use of mass spectrometry to analyse proteins was outlined by Dr Stefan Clerens, who explained that modifying proteins during processing can, among other things, lengthen a product's shelf life, increase its nutritional value and improve its consumer appeal as well as adding to its dollar value. His group is interested in understanding how product quality can be detrimentally affected by protein modification and, conversely, how it might be used to initiate improvements in product quality or in the development of new products.

He said that until now, evaluating protein modifications had only been possible at the holistic, empirical level, but that next-generation protective and mitigation technologies will require a detailed understanding at the molecular level.

Proteomics is also a research focus within the Food Science Group at Lincoln University, a group which Professor Charles Brennan suggested was Lincoln University's "best kept secret". Brennan said the profile of the group, which has staff and students working on a broad range of projects (including food for health and wellness, antioxidants, plant phytochemicals and oxalates, bioactive peptides, smart processing technologies and food safety and proteomics) will improve with the introduction of new undergraduate courses.

Current food trends which Brennan regards as important include liquid nutrition, non-meat proteins, high pressure processing, bioactives, nanotechnology and waste utilisation.

Marine waste was the main focus of a presentation by United Fisheries founder and managing director Kypros Kotzikas, who explained that 60% of harvested fish is not suitable for human consumption and thus becomes waste which is generally converted, in a high energy process, into fish meal. His company, Bio Marinus, is the first in the world to use enzymatic hydrolysis to break down this waste to produce an emulsified slurry which has no smell and can be applied through standard nozzles. The company also produces a fish silage for feeding to livestock.

Meadow Mushrooms' general manager operations, Wayne Collingwood, outlined the way science and innovation had streamlined production efficiency in their business which produces 150 tonnes of mushrooms every week. Two major innovations have impacted on production in recent years. The first was the introduction of a specifically formulated growing medium, imported from Holland. The second was the building of controlled environment growing rooms. Conditions in the growing rooms can be monitored and adjusted by computer at any hour of the day or night, and any problems are automatically communicated to the manager.

Science has also played a role in finding an economic outlet for waste streams from the factory. Spent mushroom compost (SMC) is high in nutrients and has been found to increase yields in arable crops. The company hopes to increase production of SMC to 190 tonnes a week by mid-2015 because it can't keep up with demand. It is also researching new mushroom-based products (mushroom beer anyone?) and looking at options for the 45 tonnes of mushroom stalks which are discarded each week.

Food safety and quality was a central theme of the Neil Betteridge's Synlait presentation which listed the components of company's quality-assurance programme. These included risk-management planning, third-party quality testing and audits, real-time quality testing, ingredient traceability, independent certification and regular mock product recalls.

Betteridge said there was a lot of science behind making food. For Synlait this included four food technologists who worked to develop product 'recipes' to meet consumer requirements as well as any regulations for the importing nation.

The role of good scientific training and methodology was outlined by Nick Haslett of Deep South Ice Cream. Haslett, a biochemist, said the basic scientific principles of observe, measure, analyse, hypothesise and test, had helped him to ensure that Deep South ice cream was of a consistently high quality. He said ice cream making required an understanding of food science, physics, microbiology and chemistry.

Peter Bray told a similar story, outlining the role of science in ensuring Airborne Honey is "honest, undamaged and traceable". The Leeston company analyses pollen content in its honey to ensure it meets industry standards. To market a honey as 'manuka' – for example – it must be 70% manuka based. Pollen analysis can prove this. Laboratory analysis also measures sugar types, pH, colour, conductivity, water content and pollen, allowing them to blend lines for quality and consistency.

Quality and consistency are also key for Westland Milk Products. Nutritional specialist Dr Kate Arnold explained that Westland aims to produce good quality, safe nutrition. The company is still mostly commodity-based, but is looking to develop innovative new products in the future and has formed the Westland Innovation Centre, which combines research, nutritional expertise and process engineering to meet customer demands for new products.

Innovation is the key to the ongoing success of Bakers of Geraldine, said chief executive Michael Barker. Bakers is a family business which, over the past four decades, has produced everything from fruit wine to pre-mixed bakery fillings. Barker said much of the business's early innovation was of the good old Kiwi number 8 wire variety, but it now employed 12 food technologists whose job is to ensure quality control and to develop new products for new and existing customers. The company keeps an eye on international consumer trends and is looking at ways of coming up with grocery, bakery and food ingredient products that contain more fruit and less sugar.

The workshop concluded with a presentation from John Morgan, director of the Food Innovations Network in the South Island, part of a national food and beverage export growth initiative. Morgan outlined the aims of the network's Southern Centre which was formed in July 2011 to be the "go to" place for South Island-based food and beverage businesses wishing to develop new products and to grow their sales and exports. 📌



GREATER FUNDING WELCOMED

but not unreservedly

SCIENCE LEADERS WELCOMED THE increased spending for science, research and innovation in this year's budget – but not without quibbles.

Dr Nicola Gaston, President of the NZ Association of Scientists, credited the Government with clearly understanding the economic benefits of investment in science. But she said the balance between the science that produces outputs in the short term and the science that creates significant advances in understanding in the long term – including the development and maintenance of capability in New Zealand – “is something that we need to keep an eye on.”

Gaston welcomed the funding for additional CoREs. But she said it was disconcerting the goalposts in any contestable funding process were being moved, although the CoRE process to date had been well run. The funding of one of three new CoREs out of the previous allocation would amount to a funding cut for the CoREs that had already been selected.

The boost to contestable science funding was “excellent”, Gaston said. The impact of moving funding to the National Science Challenges from the pool of contestable funding “was always an issue of some considerable concern”. Moreover a shift towards industry-facing projects from this funding stream had increased the pressure on the Marsden Fund, “so additional support in this area is also well-justified”.

While the boost to support of tertiary students in the sciences was well justified, Gaston said the Government's focus on STEM subjects should not be used to question the value of arts degrees. Interdisciplinary work in many areas of research was producing real

world outcomes with increased impact, and the creation of a false competition between science and arts subjects was “very unhealthy”.

Shaun Hendy, Professor of Physics at the University of Auckland, said this was a good budget for science and he welcomed funding for another three Centres of Research Excellence. But he said it was frustrating that science funding was being budgeted in the absence of a coherent national science strategy.

“Although the science sector will be pleased with what is on offer this year overall, we are still very much in the dark on where our science system is headed in the long term,” he said.

He cited the future direction of Callaghan Innovation as an example. Its capacity for research and development continued to be wound down and the significant numbers of Callaghan's researchers transferred to universities were now at the mercy of an over-subscribed contestable funding system.

Federated Farmers president Bruce Wills said the primary sector welcomed the \$40 million budgeted for irrigation investment, the increased funding for research and science, and \$8.5 million more for agriculture tuition subsidies at tertiary institutions. “It's good to see initiatives that will advance the primary industry,” he said.

“In particular, we welcome the \$20 million in funding for freshwater and environmental initiatives. The implementation of the National Policy Statement on Fresh Water Management will be all the better for the \$12 million to help councils and communities in their decision making and implementation processes, and consequently the \$3 million for the Ministry for the Environment to implement RMA reforms.”

“we are still very much in the dark on where our science system is headed in the long term”

BIRTH OF THE NZIAS

THE LATE DR COLIN LITTLE, reminiscing about his long life, described himself as “a survivor” among the 30 or so scientists who had attended the first meeting of The New Zealand Institute of Agricultural Science.

He wondered how many of the others were still alive.

He recalled the meeting being held in a small lecture theatre at Victoria University College. But he could remember the name of only one other attendee – Douglas V. Gordon, manager of the ICI Agricultural Section, who was one of Little's colleagues.

Organisations involved in R&D for agriculture had been circulated to a send a representative to the meeting because it was considered time to form a scientific society devoted to agricultural science.

The meeting agreed that all members should have a minimum qualification of a B.Sc. or Diploma in agricultural science or related subjects like biology, chemistry, and so on. There should be an annual conference and some kind of journal.

Gordon had offered to act as secretary and treasurer until the formation of the Institute was formalised. He produced a receipt book and invited everyone to pay up.

Little had been in the front row and produced a one pound note.

He was given a receipt and wished he had kept it as proof he was the first financial member.

An account by the late Paul Lynch, president of the Institute in 1959, included details from records of the first proceedings.

14 MAY 1953:

Meeting at Victoria University College held in response to a letter from the late Doug Campbell. Thirty four agricultural scientists present; F.R. Callaghan was elected chairman and D.A. Campbell secretary. A Promotion Committee was set up to prepare a draft constitution and explore the possibility of forming the Institute. Members were F.R. Callaghan (chairman), P.B. Lynch, J. Bruce Brown, D.V. Gordon, D.K. Whitten and D.A. Campbell.

21 JULY 1954:

Inaugural meeting of the Institute at Victoria University College. Thirty six present. The NZIAS was formally set up a constitution adopted and officers and council elected as follows: President, F.R. Callaghan; vice presidents, Prof A. W. Hudson, Dr C. P. McMeekan; secretary, D.A. Campbell; treasurer, J. Bruce Brown; council, D.V. Gordon, P.B. Lynch, P.T.Y. Mitchell, Prof T.W. Walker

The meeting placed on record the initiative of Doug Campbell in the Institute's formation.



Inaugural President NZIAS, Frank Callaghan, pictured here in 1966

PHOTO: The NZ Electronic Text Collection

IAN LAWRENCE BAUMGART



Before the Institute of Agricultural Science was established in 1955, there was little cooperation – but there were great rivalries – among some agricultural organisations in New Zealand. It was only through the leadership of people like Ian Baumgart, a foundation member of the Institute and its president in 1962, that this was rectified.

Ian was born in Hastings and spent his early years on the family orchard near Havelock North. He and his younger brother, Moore, biked to Hastings High School each day. (Moore became Superintendent of Horticulture for the Department of Agriculture in the Nelson region.) Ian was both head prefect and Dux at the school in 1937 and 1938.

Despite losing an eye in childhood, Ian served in the army in the Pacific during World War II. He held a commission and was stationed on Norfolk Island. After the war he graduated from Victoria University College and began his career as a soil scientist in DSIR in Rotorua.

He was quickly promoted to head office as Senior Principal Scientific Officer and became Assistant Director-General where he played a significant role in determining the shape and direction of agricultural and biological research.

Later he was instrumental in advancing environmental and scientific programmes both in New Zealand and internationally.

In 1962 he was awarded a Harkness Fellowship to study science administration at the Brookings Institution in Washington DC.

In 1973 he was appointed New Zealand's first Commissioner for the Environment. In that role he made a major contribution and set standards for future generations to follow.

After retiring he took up several UN and OECD assignments in Africa, Asia and the Pacific.

He was awarded the Royal Society of New Zealand Thompson Medal for services to science, the Queen's Jubilee Medal and the Queen's Service Order (QSO).

Colleagues will remember him as a proud and loyal New Zealander, dedicated to his family and his work and a gracious colleague and manager. ☒

—Geoffrey Moss, HFNZIAS

DR. EDWARD COLIN SELBY LITTLE



Dr Colin Little was a foundation member of the NZIAS and took much pride in recounting he had been the first to pay a subscription at the inaugural meeting.

The true scientist, always experimenting and trying new ideas, Colin was involved in matters as diverse as weed control (a specialty area of his), to engineering and to writing romantic novels. He was a prolific writer and recorder who

wrote up almost every meeting held by the Auckland Section of NZIAS, an organisation to which he was highly committed, but also wrote for many other organisations and gained worldwide respect.

He came to New Zealand from Britain in 1934 to manage his grandfather's farm and orchard estate in Kerikeri for four years, then accepted a technical job with the DSIR in Shortland Street before its shift to the newly acquired site in Mt. Albert in 1939.

After a briefly working in Australia, Colin returned to the UK but World War II broke out during his homeward voyage. He joined the Royal Army Service Corps, was commissioned and went to France in 1940, engaged in heavy transport and munitions. He served also in Northern Scotland, India and Burma (Acting Lt/Colonel) before being repatriated to New Zealand.

He was technical officer for Imperial Chemical Industries (NZ) from 1949 – 1957, then returned to England where he enrolled at Oxford for a DPhil (PhD) investigating the movement of growth regulators in plants.

He worked on many projects around the world for organisations

such as the UN Food and Agriculture Organisation, the UK Ministry of Overseas Development and the Governments of Pakistan and Burma and worked with the International Atomic Energy Agency in Burma.

During a visit to New Zealand in 1971, Colin and his wife Margaret bought Aroha Island in the Kerikeri Inlet (now the Aroha Island Eco Centre). They returned to live there in 1974, to ensure the property was kept out of the hands of developers and preserve its natural beauty. They gifted the property to New Zealand through the QEII National Trust in 1991.

His contribution to the advancement of agricultural matters through interpreting local and world research findings for farmers and growers was well recognised. As a freelance ag-hort journalist he wrote more than 1,600 articles for the NZ Farmer and 210 contributions for The Orchardist. He also contributed to the NZ Journal of Agriculture, Growing Today, the NZ Woman's Weekly and several newspapers.

The citation, when Colin was made a Fellow of the New Zealand Institute of Agricultural Science in 1994, highlighted his notable contributions to agricultural development in New Zealand, particularly his innovative use of aircraft to apply fertilisers and herbicides and the use of nitrogen fertilisers. It further acknowledged his services to special projects in weed science and agricultural technology in many developing countries and his spirited direct approach to getting research results communicated to growers and end users through reporting and agricultural journalism.

Colin had a disciplined exercise routine which he practiced every day – the SOOB (straight out of bed) routine which he recommended be followed every day for a strong, healthy, and useful life. And that he did. Born in September 1913, he died in February 2014 aged 100. ☒

—Ian Rodger, Auckland Section

NZIAHS FORUM

Wednesday 16 July 2014 – Russell Room, Wharerata, Massey University, Palmerston North

NATURAL CAPITAL AND ECOSYSTEM SERVICES – NEW SCIENCE FOR BETTER LAND & WATER POLICY

The assessment and quantification of Ecosystem Services provided by Natural Capital is an emerging area of research which attempts to recognise the direct benefits provided by the natural environment for human enterprise and well-being. This work is of direct relevance to future natural resource policy development as it integrates existing knowledge from a number of disciplines to give a whole-system perspective on the impacts of human decision-making on service provision in the context of environmental change.

The seminar will cover an outline of the Natural Capital-Ecosystem Services (NCES) approach from the research community, and how the approach is being applied by policy-makers in central and local government.

10:00am	Science – Describe the NCES framework & current research	1:05pm	<i>Beat Huser</i> , Waikato Regional Council
10:05am	Overview of NCES <i>Dr Brent Clothier</i> , Plant & Food Research	1:20pm	<i>Tony Rhodes</i> , PGGWrightson
10:30am	International context <i>Dr Estelle Dominati</i> , AgResearch	1:35pm	<i>Richard Munneke</i> , Horizons Regional Council
10:50am	Putting NCES into practise <i>Dr Alec Mackay</i> , AgResearch	1:50pm	<i>Helen Marr</i> , Perception Planning
11:10am	Mapping Ecosystem Services <i>Dr John Dymond</i> , Landcare Research	2:05pm	The New Zealand Natural Capital Assessment Project <i>Rebecca Bird</i> , Department of Conservation
11:30am	Cultural Ecosystem Services of forestry <i>Dr Richard Yao</i> , Scion	2:25pm	Discussion/panel
11:50am	KEYNOTE – How MPI might view the concept of NCES <i>Dr Ian Ferguson</i> , Chief Science Advisor to MPI		
12:15pm	Discussion/panel		
12:30pm	LUNCH		
1:00pm	Policy and Industry application of NCES		

POLITICAL FORUM Free of charge

3:00pm - 4.30pm

Political Forum Introduction

Chair: Steve Maharey,
Vice Chancellor, Massey University

QUESTION SESSION

Shane Arden, National Party
Hon Damien O'Connor, Labour Party
Steffan Browning, Green Party
Richard Prosser, NZ First Party

New members We welcome

Craigie Cameron (Waikato)
Andrew East (Manawatu)
Megan Outram (Canterbury)
Kim Strang (Otago)

Corporate members

- AGMARDT
- AgResearch
- Ballance Agri-Nutrients
- Catalyst R&D
- Plant & Food Research
- DairyNZ
- Federated Farmers of New Zealand
- Horticulture New Zealand
- Lincoln University
- Massey University
- PGG Wrightson Seeds
- Ravensdown Fertiliser Co-op

The New Zealand Institute of Agricultural & Horticultural Science Inc

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