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Inside

The New Zealand Institute of Agricultural & Horticultural Science Inc

Waiting for a rainy day

For the first time I can remember there seems to be a degree of uniform political opinion that we need to spend more on science and innovation (or research, science and development). While the sum we might choose to invest appears to vary, the talk is of an extra billion dollars in some quarters, or lifting the investment to 3% of GDP in others. Either sounds fine to me.

No one is saying yet where the money for this will come from. While it is tempting to suggest the easy option of raising taxes, this may stymie the very growth we are trying to promote with science and innovation investment. Increased public investment also sits uncomfortably alongside international calls for governments to show spending restraint, although New Zealand's need for this is obviously somewhat less than say Greece or Spain's. The required funds will not materialise on their own, and regardless of where they come from, they will probably come at a short-term cost.

Given the uniformity of opinion that we need to spend more, one could suggest it is time we de-politicised the amount the state spends on science and innovation. I accept that different political viewpoints would prevail as to how we may encourage or promote private sector spending, but couldn't we set a guaranteed level of public expenditure as a percentage of GDP and reach an across-party accord on this funding level? Politics might then be indulged in deciding the spending priorities, but not in how much is spent. Linkage to GDP would mean the "spend" would reflect the size of our economy, whether it is growing, static or in decline (although in the latter case one could argue we should spend even more).

Legislatively enshrining the public science and technology spend would ensure better stability for our scientists and innovators, making the profession more attractive to young people and allowing long-term thinking to prevail as regards the "big" challenges that include such issues as greenhouse gas mitigation, biosecurity, animal welfare, and water quality and management.

This is not to say we should re-establish large state-run science bureaucracies, because it is still critically important that science should be responsive to changing societal needs and is efficient in its delivery, but many of us now accept that the purely competitive, profit-driven model of the last 20 years was as debilitating to economic growth, if not more so, than the system that preceded it. We may yet reap the "benefit" of what we chose to sow over those years.

Returning to the pragmatic issue of where the money comes from for the "luxury" of a first-world science system, I am throwing caution to the wind with an opinion that might irk some readers.

I am of a generation who have always been told we cannot expect a handout from Government when we retire. While I will accept I am well-paid, I have nevertheless recognised the need to provide for my retirement from the day I started working. I don't expect future generations to pay me a guaranteed retirement income as I suspect their taxes will still need to primarily be directed towards maintaining a first-world health and education system.

I believe strongly in the need for a welfare safety net, but this does not entail those with other financial means still getting handouts from government upon retirement and on top of their various other forms of income. If you dispute this, I would guess you are, first, over the age of 50 and, second, have perhaps naively assumed that the younger generation in New Zealand will both want to, and be capable of, paying sufficient tax to ensure all retirees get a government-derived income.

That doesn't solve the money issue in the here and now, but I also suggest we take a close look at something else that is a bit of a sacred cow, the NZ Superannuation or Cullen Fund. This fund has put away more than $17 billion to date, the majority of which is invested offshore where, presumably, it is helping to grow offshore economies. With this fund, we are in effect saving for a rainy day, hence my title. However, please define "rainy day" for me!

Yes, the elderly (and I plan to be one of those one day) will certainly cost us money in future. That is inevitable. While saving money might protect us, the value of that fund might erode very quickly, especially if we suffer double-digit inflation again. Our only future-proof protection – at least to me – is to ensure we have a country wealthy enough to sustain the public services we desire. That wealth will only come if we invest sensibly, and as a scientist I would argue a sounder investment than putting our money in foreign shares would be investing in science and innovation, here, today, in New Zealand. Please tell me if I am wrong!

Jon Hickford
President

NZIAHS ANNUAL GENERAL MEETING

The New Zealand Institute of Agricultural & Horticultural Science will be holding their Annual General Meeting on
Tuesday 29th November 2011 in the
Conference Room, Level 2, Plant & Food Research, 120 Mt Albert Road, Auckland.

5.00pm Drinks and refreshments
5.30pm Presentation of NZIAHS Awards and Annual General meeting
6.00pm Guest Speaker – John Burke, General Manager, Kiwifruit Vine Health

Retiring Progressive Party leader Jim Anderton addressed the New Zealand Institute of Agricultural and Horticultural Science at Te Papa Museum in Wellington on 4 October. It was the former Agriculture Minister's last speech as MP for Wigram before he gave his valedictory speech in Parliament later in the afternoon and stepped out of national politics. Here are excerpts.

Learning to create, nurture and celebrate a culture of success

I HOPE ONE OF the lasting changes we have made in New Zealand in the past ten years is to increase awareness of the importance of creating new value from the science and intellectual property associated with agriculture, horticulture, forestry and fishing.

During 47 years in politics I've been driven by the desire to ensure every New Zealander has the opportunity and security that a well-paid, satisfying job brings, that everyone has access to the essentials of a strong community – like health care and education, affordable quality housing and a decent standard of living in retirement.

If we want these things, we need a strong economy capable of sustaining them, able to provide a future for young people in their own country and enable us to pay our way in the world. But over the last four decades or so, our economy has been struggling to pay for what we want. We've been slipping behind the rest of the developed world.

Though our markets and our exports have changed, we haven't created enough of the high-value, high-skill innovation-led businesses we need. The problem is we don't have enough businesses that make very large returns per employee. In most developed countries, companies able to make net revenue of $1 million per employee are common. Those figures are virtually unknown here.

We don't have enough high-value, high-skill businesses because we don't have enough investment in science and innovation to lift economic productivity.

Agriculture is probably the most scientifically advanced of all our industries. Our primary industry sectors have the scale, sophistication and the underlying science advantage to be a springboard for much greater things.

When I was the minister responsible for our primary industries, scientists, and primary-sector leaders told me we have amazing creativity in New Zealand. Our scientists have enormous potential to make a difference to the quality and value of our production.

Innovation is crucial to every stage of our food industries and to the sustainability of our environment. Innovation is relevant to soil and to seeds, to varieties and breeds. It is relevant to transport and energy inputs to the products served on plates and packages in the world's consumer market places. Innovation is vital to equipping our primary sector for an age when our climate is changing.

Our agricultural excellence lies in decades of investment in agricultural science. Over the years we have spent tens of billions of dollars. Yet there are huge potential gains still ahead.

Let me give you an example of the difference a commitment to innovation can make. When we launched the Fast Forward Research Fund in 2008 we invited some graduate students from Massey University. One of the science post-grads who spoke that day was off to the UK to take up a scholarship. He made an announcement that no one present knew he was going to make: he said the launch of that fund and its potential to finance brilliant, game-changing science in New Zealand had made him change his mind and when he finished his course in the UK he no longer believed his only chance for a science career would be overseas. He would come back to New Zealand to give it a go. The long-term investment we were to make gave him confidence about a future here, he said.

But we need more than talent. We also need a culture that embeds innovation into company boardrooms. In other words we need to be able to commercialise it!

Compare our largest and most successful company, Fonterra, to a business like the German engineering company Siemens. It started exporting about the same time as New Zealand sent its first frozen meat shipment to the United Kingdom in the late nineteenth century. Today it operates in 190 countries with over 400,000 staff and revenues not immeasurably less than New Zealand's entire GDP. Eighty per cent of its sales, three quarters of its plant and two thirds of its workforce are outside its German homeland.

If we want to succeed as innovators, we have to have global companies as well. This means being open to some of our industries operating in other countries. We need to move more of our focus to owning high-value IP, rather than owning just the lower-value ingredients and services associated with a manufactured product.

Most New Zealanders have never heard of William Saltau Davidson, but he did more to shape our economic destiny through the last century than just about anyone. He sent the first shipment of refrigerated meat to London.

That was in 1882, at a time when most people said you couldn't keep meat, butter or cheese cold all the way through the equator to the other side of the world. They said we would only ever export wool from New Zealand. "New Zealand will never export meat, butter or cheese," the doubters said.

If that tone of cynicism rings a bell, it's because we still hear plenty of people today telling us what New Zealand can't do. But Davidson and others have proved the doubters and the nay-sayers wrong. They proved that as a country it's wrong to focus on what we can't do and right to focus on what we can. We can be innovative, and we are. We can be world-class, and we are.

We can use science and innovation to create prosperity, and we do. And we need to celebrate it. Every day – whether we win the Rugby World Cup or not.

Science and policy – what the politicians think

Agriculture Minister David Carter and the agricultural spokespersons for three other parties – Damien O'Connor (Labour), Kevin Hague (Green Party) and Don Nicolson (ACT) – were questioned at the NZIAHS Political Forum at Te Papa Museum in Wellington on 4 October. Here's an edited account of their replies.

What ranking do you think the Minister of Agriculture should have in Cabinet and why?

DAMIEN O'CONNOR

Somewhere in the top 10. Ranking in cabinet does have some influence on your ability to get money but your influence on policy is not solely dependent on it. Your ability to put up an argument and build support from colleagues within cabinet is important.

The case for funding or changes in policy is partly dependent on the relevant industry building public support for it. Most politicians don't like doing something that is not supported by industry or by popular opinion.

KEVIN HAGUE

You are going to get four of us saying agriculture should be relatively highly ranked in the cabinet so I will be more specific and say that it should be six.

The Greens make decisions by consensus, so if we were forming the government we would look to change some of the ways government makes decisions. Executive ranking therefore doesn't matter nearly as much, because forming a consensus decision comes down to the strength of argument. This suggests a strong role for scientists in providing the evidence for an argument.

DON NICOLSON

Agriculture is bringing in the bulk of our merchandise export receipts and at the very least the minister should be on the front bench. I couldn't pick a number – I don't think that is entirely relevant. But we do need the highest cheer-leading position we can get on the front bench of the Parliament. That brings visibility. You need competency around the minister and I would have a Ministry for Primary Industry.

DAVID CARTER

Let it be put on record that I don't want it to be number 1. The ranking doesn't matter. What you require in cabinet is a good connection with cabinet colleagues. To be listened to sensibly around the cabinet table, they have to respect you and be sure you know what you are talking about. The second thing you need is a cohesive caucus and a cohesive cabinet. We have a caucus of 58 MPs, and at least a quarter of them either are from a farming background or represent rural electorates where agriculture is probably the most important issue they have to deal with.

What are New Zealand's priorities in growing earnings from agriculture and horticulture and can we sustain a first-world economy on the back of these sectors?

DAMIEN O'CONNOR

Firstly, we must sustain it. Otherwise we go down the gurgler as a country. So we must focus on our competitive advantages and they have been based on two things: sunshine and rain and our ability to turn that into grass. Those will be our competitive advantages for a long time. But we will depend on our people, and our ability to attract the best people into every level of the industry will drive our success. If people continue to leave this country with a great education and their talents, we will not realise the potential we have to take the industries forward.

We need to concentrate on a few areas. First, we need to improve monetary policy, to settle down the variability of the dollar across the sector. We need to sort out water policy so we have certainty of supply and efficient and effective utilisation. We need to have better structures across a number of sectors so we can better capture the value we are generating but not bringing back to the farm or to the owners of the industries. We need better infrastructure across the economy – we are seeing the rundown of the rural roading network. We need effective broadband rolled out. And we need to continue to focus on branding, increasing the reputation backed up by the quality and reliability of everything we produce.

KEVIN HAGUE

Agriculture and horticulture exports have got to be an important part of our economy. The problem is that the direction we are taking is the wrong one. We are trying to export largely raw commodities and compete largely on price in markets where that is going to become less and less tenable for several reasons. First, there are real, physical limits to the extent to which we can intensify production without massive environmental degradation. We are already experiencing that. Ultimately, the law of diminishing returns kicks in – you can intensify and intensify and get less and less out of the increasing intensification.

The successful strategy is to look for niche markets, such as organics. Value-add comes from the knowledge input into our agricultural and horticultural products.

DON NICOLSON

First, we have to break the culture of ridicule in this country, a culture that says "you can't do". You need a culture of "can do". The sector has to flourish on innovation and proper R&D, not on discussion that is perhaps based on pseudo-science.

So we need proper economic education, we need proper environmental education, we need wise innovation investment

and we need to remember the damage we are doing to ourselves at home where we have had bureaucratic inflation at four times the rate of open market inflation since the early 1990s. New Zealand farmers are producing more. Animals are doing better, farmers are doing better. The reason we are standing still is that every time we get our head above water, we get it chopped off with bureaucratic inflation. But the export of services and things like aquaculture development are something we should be looking to as well.

DAVID CARTER

The short answer to whether we can sustain a first-world economy when we have a dependence on agriculture is absolutely yes. Most developed countries are under serious strain but New Zealand is coming through the global crisis reasonably well because of our very significant dependence on primary production. So the outlook for this country is absolutely perfect.

The biggest challenge facing the world is around food security and to meet it New Zealand has positioned itself extremely well, no longer recognised as a mass producer of food, but as a producer of quality product. That is where we have to put our attention.

Our priorities are certainly around environmental sustainability. As we ask our primary sector to produce more, we must acknowledge the environmental impact and find ways to invest more in science to find solutions. So science and innovation is another absolute priority for the sector.

Another issue, often forgotten by many people in the primary sector, is the importance of biosecurity in this country. You've only got to look at what is happening in the Te Puke region now with Psa to acknowledge how serious a biosecurity incursion could be to the outlook of our economy.

We as a nation have to take every opportunity to diversify into the many knowledge-led value-added opportunities around health technology as we continue to look to diversify our economy. Having said that, the very foundation of the economy for the foreseeable future will rely on primary production.

What is your party's view with respect to the employment of experienced scientists within the policy development sections of government departments and ministries?"

DAMIEN O'CONNOR

This is what they call a "patsy" in parliament. We absolutely support science and evidence-based research across all policy areas and we have tried to move in that direction, be it in alcohol abuse and trying to reduce the harm from that or be it across the sectors in business development or in the areas in agricultural science. The appointment of Professor Gluckman has been a smart move and we need to do more of that across all the sectors of policy development. We have two agricultural scientists in our caucus – Ashraf Chaudhary and Moana Mackey, both of whom have input into the ideas we kick around.

It is the only way we can go forward – base our decisions on the best evidence that we have before us and rely on the integrity of the science from this country, not necessarily imported science which can sometimes be tainted through sponsorship or through payment of the research. I rely on the integrity of our science fraternity here. I am not sure we can rely on that throughout the whole world.

KEVIN HAGUE

My background is in physics and maths originally and then in the health sector. The Greens don't have a formal policy on this specific point, but we are very much in favour of evidence-based policy. That means placing science at the heart of driving decision-making.

I am not sure if that means it is best then to put scientists in government departments. There are some competing forces. One is that we don't want ministerial interference in the work of science being done and the second is that if you are reliant on one or two scientists embedded in the policy-making process, then policy-making becomes hostage to the views of those particular scientists. This has some risks associated with it. But the plus is that if we can make science central to policy making, then we end up with better decisions. I agree Professor Sir Peter Gluckman has been largely a success but there are pitfalls too.

DON NICOLSON

I hope we are employing experience scientists at the levels you are talking about and I don't have any qualifications to make any other assertions. I do think, though, that there is a risk of politicisation of science and I agree with Damien we need evidence-based decisions.

But I read a paper about pseudo science's threat to agriculture by Dr Douglas Edmeades presented to the 26th Annual Conference at the Grassland Society of New South Wales this year. He quoted Carl Sagan, one of the greatest astronomers and thinkers of the 20th Century, who summed it up succinctly with what I hope will be immortal words: "The only antidote to pseudo science is science itself.

It is imperative that science must be asserted and it must regain its proper moral high ground in society. To achieve this there must be changes to science policy and to how science is managed… Science works best for society if scientists are free to speak openly on matters of public importance without fear of losing their jobs or their funding or both. The principal of academic freedom must prevail because it is only when these changes are made that scientists and their managers will once again have the courage and confidence to speak for science".

DAVID CARTER

I believe we need more scientists, not only through government departments but through commerce and business. I say that because the arguments scientists bring to many of the debates are helpful in us making final decisions. I think we have a systemic problem in this country in that we haven't been training enough people into science for too long. That starts right back in our compulsory education system, so there needs to be a far better focus there within our schools.

I have kids at school and they haven't been given the focus on science I personally would have hoped they would have had. Consequently I am not sure whether any of them will advance on to a science career but that is to their disadvantage.

The appointment of Professor Sir Peter Gluckman has been a very good step in the right direction and his assistance from Dr Stephen Goldson has also been important and well regarded.

Good progress has been made around the re-vamp and development of the Ministry of Science & Innovation, getting it far more focused on the delivery of science and its views respected in cabinet decisions. We have also got a far better linkage between the Ministry of Agriculture & Forestry, Ministry of Science & Innovation and Ministry of Economic Development and to some extent Treasury – this linkage is far more functional than I think it has been in the past. Personally, I am a great fan of seeing more science develop right throughout our society.

From R&D to student funding – what the parties promise

What are your policies to implement research in the farming area?

DAMIEN O'CONNOR

Our policy is being finalised. But I can say there will be a commitment to look at what has been called extension services. Whether it be the ETS, better water quality or nutrient management, we have to work harder to get the knowledge we have out to the percentage of farmers who choose for, whatever reason, not to participate.

I come from the dairy industry where discussion days were a way of passing and transferring information from one to the other. We need to spread that structure across the whole farming sector and not just rely on the market forces where the smart ones will go and get the information but those who need to know don't know what they don't know.

KEVIN HAGUE

The kind of innovation and research I think is of critical importance is that which is adding value and adding to the knowledge component of our products. The implementation will sell itself because it will add competitive advantage to those farmers that have technology, coupled with the dissemination techniques that Damien has spoken about. I think that largely works. It's harder where the science is in areas that don't necessarily provide competitive advantage. For example, I'm very concerned about some of the environmental damage occurring as a result of some agricultural practices.

Unless what we want to happen is aligned with profit motivation then it is hard to get that science taken up. In those areas it may be important for government to play a role. Regulation is among the measures available to government to ensure implementation.

DON NICOLSON

Good science is readily taken up by the farming fraternity all the time. It has been since farming began in this country and will continue to be deployed, and long may that be the case. Profit is a motivation. There hasn't been much of it in farming for a long time. We are getting to a better paradigm hopefully. But we have innovated and deployed research that has come from good science institutions over time. Some science has been developed by farmers themselves who bring it back to you guys and grow it into something better again. And that is how it will be. I trust in evolution, it will evolve into something continually.

DAVID CARTER

My first point is that we have got to get the science under way, and there has been a lack of primary sector science for some time. There has been a complete under-investment by successive governments. One initiative I am proud of is the Primary Growth Partnership – we've got millions of dollars worth of research under way totally focused on the primary sector.

So part of Don's answer is right: I think farmers are prepared to pick up technology. But they have got to feel confident about their industry. And if you step back to 2008 there was no confidence among our sheep and beef farmers. It's hard to believe but there was very little confidence among our dairy farmers either. Now we have got the profitability and the confidence.

The next challenge I have, if I am in this role after the election, is to look for ways to ensure that as we get results from the Primary Growth Partnership projects, we find a way to get the information to the farmers. We are looking at what roles MAF plays and we have to use the industry-good bodies in that regard such as DairyNZ and Beef & Lamb New Zealand.

We are very much focused on looking for ways to get technology back to farmers because if you look at the difference in performance between high-performing and poor-performing farmers, we think there is as much as $3 billion of productivity left in the paddock. So the government has a duty to work with scientists and farmers to find a way to harness that $3 billion, because I want it in export sales.

Damien O'Connor and David Carter mentioned the need for government to intervene in what is happening in the apple industry, where apple growers are having difficulties. Would you extend that to look at the meat industry, where many people would say leadership needs to be shown to restore profitability – would you think the government should intervene in that?

DAMIEN O'CONNOR

Absolutely. The strategy [for the meat industry] that half a million dollars was spent on has been a waste of money, given that venison was left out of the mix. Arguably one of the success stories of the meat industry was completely ignored by the study. The industry needs intervention, it needs clear leadership, and you need to find the right individuals to sort that out.

There are a number of levers available. The quotas in quota markets are effectively owned by the government, because they result from government to government agreements. They have been allocated to the Meat Board and its successor. That is one of the things we can look at to ensure the privilege obtained from government-negotiated trade agreements, to opening up opportunities, is reciprocated through attempts to maximise the value of products exported from this country. If traders undercut one another in the marketplace, the full value from that opportunity is lost. We have to move forward, we cannot allow the ebbs and flows of returns to the meat industry to continue and see it run down while the dairy industry expands to the point where we have environmental issues. We have lost opportunities with lamb exports and I think a better mix of land use for the economy is a good thing.

DAVID CARTER

I certainly agree with Damien's final comment. It would not be in New Zealand's interest to get an economy over-dependent on dairy. I say that with a vested interest because my hill country farms can never be converted to dairy. It is absolutely critical that our second largest export earner, the red meat sector, performs better.

I don't accept Damien's comments around the venison industry. The red meat sector study was an initiative funded by MAF but largely was led by Beef & Lamb New Zealand and the Meat Industry Association which clearly represents the whole of the red

meat sector. What came out of it are opportunities for far more collaboration. I went to the AGM recently of the Meat Industry Association and Beef & Lamb - they held it together for the first time ever. There is a genuine desire now within the sector to work together far more collaboratively than there was three years ago.

Meat quota is not quite the prize carrot it has been in the past. We are failing to fulfill some of our quotas because of strong demand elsewhere in markets we have developed over a period of time. The red meat sector is well positioned in that internationally sheep numbers have dropped dramatically. Wool has been completely re-positioned as an absolute premium product in the time that I have farmed. Provided we maintain the very credible positioning of the lamb market, particularly, I think the outlook for the meat sector is very good indeed.

DON NICOLSON

The re-balancing of the red meat sector, especially lamb and sheep meat, has happened over my entire farming life. We had massive over-capacity in the industry, the meltdown from 70 million sheep to 32 million sheep and only 22 million breeding ewes now.

I think we are getting to a point where the balance has been struck – 18% of the land in New Zealand is in dairying, the rest is in beef, sheep, venison, horticulture, forestry. I think, like the Minister said, we are into a brighter future because of that re-balancing. My generation has paid for that restructuring at least three times and the next generation is going to inherit something much better.

KEVIN HAGUE

I think we are going to learn the lessons of history if we imagine the point we have reached is the final balance. The reality is that it is very likely we will go through this trauma again and again.

I want to pick up a different aspect to the question, which was about government intervention. It relates back to the kind of strategy we are pursuing by default. Not only is it a short-sighted strategy that will fail – in the short term it leaves our industries incredibly exposed and fragile, and that is what is happening in the apple industry. Obviously a Green government would shift the sector in a different direction. But meanwhile it is important for government to step in and support industries that have been left exposed by the direction we have been taking.

Will you oppose the entry of GE ryegrass into New Zealand?

DAMIEN O'CONNOR

Labour doesn't have a policy position on it. We support ongoing research in this area and I trust the scientists in New Zealand. I am not sure I trust some of the research coming from offshore. So we must continue to work out and reach a point where those decisions will be made with the endorsement of industries. We will continue to fund organics as well.

KEVIN HAGUE

The Greens absolutely would oppose GE ryegrass. Farmers in Western Australia have been going through the extremely costly process of trying to convert back from GE canola to non-GE canola because the prices for the GE canola simply were not delivering profit for them. Aside from the science arguments – that's not my area of expertise – from an economic point of view New Zealand's agricultural future lies in premium prices, and the premium prices are with organics and non-GE products.

DON NICOLSON

The Royal Commission recommended that New Zealand could investigate GE issues on a case-by-case basis and I see no reason to defer from that.

DAVID CARTER

The government stands by the work done by the previous government. Projects are examined by the Environmental Protection Agency (previously ERMA did this work). It is a vigorous process. Not many projects have got through. Some companies are doing research offshore, but if they want to introduce the results to New Zealand and make it available they will have to go through the EPA regime.

What are your policies on farm training for farm labour and for future farmers – and have you any plans to open up Flock House again?

DAMIEN O'CONNOR

We have no plans for Flock House but we are very focused on the rising number of youth unemployed. We are not saying all those people are suitable for agriculture but if you can put them through a structured training process I am sure farmers – like other employers – will be entitled to benefit from our policy, which is to pay the dole to an employer and give unemployed people a structured training process with an outcome that gives them some pride and a certificate and qualification. If we go on about all the bad things in agriculture and how farmers have been beaten up by councils and beaten up by governments, then young people will not want to go near agriculture. We have to be positive and aspirational and say there are huge opportunities.

I applaud DairyNZ for its initiatives. We need that across all the sectors to point out the good things. Every time that an industry leader or politician is negative about agriculture or primary industries, we scare away another 1,000 young people who should be coming and looking to us for a future.

If you look at all the sectors – horticulture, dairying, viticulture – we are reliant now on foreign labour. At a time of rising unemployment that is politically risky and has other social consequences that some small rural communities are facing right now.

KEVIN HAGUE

Farming is just one of the many industries where we have an aging workforce and gaps are appearing. We are filling those, as Damien says, with foreign labour. That brings a lot of positives but it also brings some negatives in terms of building a long-term future for of our industries, and is not the way to go. We don't have a policy that's specific to Flock House or to farming trainees but we do say we want a New Zealand where every young person is either in work or in training of some sort.

If we look at some of the reasons why young people might not be attracted into the industry, part of it is about wages. We need to fetch premium prices from goods through a longer value chain that is able to deliver higher wages.

DON NICOLSON

We have an entitlement mentality among many young people. They choose not to work in certain sectors and we have got to reinstate the youth minimum wage, get back to giving these people a purpose in life and making them feel good about themselves.

Damien talks about disparaging comments when the cost of government is challenged, but it is real. The real stuff also means telling our teenagers and young adults the truth about their future. They can't have everything that grows on trees yesterday – simple.

DAVID CARTER

Re-opening Flock House is not part of our policy but enrolments are increasing at a number of institutions. Telford now is in very good hands under the auspicious of Lincoln University.

This is a serious question. The damage done by David Lange's comments in 1988 around farming being a sunset industry was very pervasive. It has taken a long time to get over it

It comes back to the profitability issue. You must have profitable farms so they can employ people and pay reasonable wages.

DairyNZ is doing a good job. Beef & Lamb similarly has to get out there and talk about the prospects for a career in agriculture because there is a very good career path.

Do you agree we need to get more expenditure on R&D and, if so, what would you be setting as a target?

DAMIEN O'CONNOR

We haven't set a target as a percentage of GDP. Agriculture – dairying in particular – has probably been at the leading edge of re-investment in R&D but we still have a long way to go. We committed $700 million, and all credit to Jim Anderton to get that money. It was cash in the bank allocated to MAF in their accounts to be matched dollar for dollar from the industry – a huge step forward. We committed to R&D tax credits. It is as much for the support of those who commit to R&D as it is about the funding itself.

We must move in that direction. We have all acknowledged higher value, more innovation, is the only way we can survive as a primary-producing nation.

KEVIN HAGUE

We would spend $1 billion in R&D over a three-year period. That is a pretty specific commitment, although not only in agriculture and horticulture but also in other parts of the economy because the fundamental vision I have outlined for agriculture of a value-add economy is the same in other areas.

We are of the view we need to pick some winners. Clearly agriculture that is moving in the direction we need to deliver a high-value economy and that has a sustainable relationship with the environment is one of the winners we would pick.

DON NICOLSON

I had better defend Federated Farmers policy of about 3% – it seems a good number and we are a long way off it. But I am tired of the political shenanigans that seems to be going on between the two major parties. Let's lock in stone something long-term so scientists have some surety around their futures.

DAVID CARTER

There are two aspects to R&D expenditure in this country – one is the private investment by private companies, and if you look at international comparisons we lag behind. The second is government funding of R&D. I am not at liberty to announce our science policy today. I suggest you wait until the election campaign. I don't expect you to be disappointed.

What are the panel's views on whether we need to look at the tertiary sector funding model again? It is a major contributor to research and development. Should we strategically invest, to ensure we get the right young people coming through in the right areas to keep the economy going?

DAMIEN O'CONNOR

Yes, we do need a strategic approach but if you have a philosophy that says we don't need a strategy then it is hard to take a strategic approach. Yes, we believe we do need to focus our funding and direct the universities in the right area. That is a conversation you have to have. Paul Callaghan says we can't have five Fonterras but we need to quadruple ten times the output from some of the high-value manufacturing industries and ideas that build off that biological production. I agree with him and we can do that. There are some excellent examples. We just need some lateral thinking.

We need a little bit of support and we do need some blue-skies research. I think that is where we have got into a bit of a bind, where we are saying the research should be connected to industry objectives. But you don't know what you don't know.

And while you can't allow researchers to run wild, because they can spend a lot of money, I buy into Kevin Roberts' concept of us on the edge of the world. We are not constrained by the centre and by the conventions that hold back Europe and sometimes the United States. We should be coming up with the best and the brightest ideas because we don't have the constraints of tradition and we have to foster that research, then work out a way of nurturing it and retaining the value from it.

KEVIN HAGUE

Funding based on student volume clearly is a fail strategy. There must be funding based on capacity as well so we fund an institution to be able to do a minimum set of things, one of which is its research output.

I absolutely agree with Don about that certainty of research funding over a number of years. One of the interesting things I have learned, talking to researchers around the country, is the massive waste of funding that has occurred by new approaches to science funding replacing the previous approach and whole projects being lost as a result. We can't afford to do that in this country.

DON NICOLSON

ACT says we will remove fee caps which currently apply to tertiary education institutions to allow them to specialise and excel. ACT would also re-introduce market interest rates for student loans to ensure those who benefit from tertiary education pay a rather higher proportion of the cost of their education.

Personally, I believe a student education is an investment in a student's life no different from my buying a tool of trade to use in my business. The interest component of loans should be tax deductible against future income.

DAVID CARTER

Steven Joyce, as Minister of Tertiary Education, is doing some work around funding. I can't give a party position because I don't know where that work is going. From a personal perspective, I think we do need to acknowledge that a country so dependent on agriculture needs more agricultural scientists. We need expertise in science and pasture and genomics or whatever. We should acknowledge that those courses cost a lot more to deliver at universities than – say – an art or law degree. We need to fund accordingly.

NZIAHS Awards for 2011

JUBILEE MEDAL

Dr Michael Dunbier, FNZIAS has provided an outstanding level of leadership and service to agrarian resource sciences, and continues to make significant contributions to the support of research and innovation for New Zealand's primary industries. He began his research career as a lucerne breeder and geneticist (he published more than 50 research papers on plant genetics and breeding, seed production and technology transfer, concentrating particularly on lucerne plant improvement), then progressed into key positions of research leadership in New Zealand's agricultural, horticultural and seafood industries.

In 1983 he was appointed director of Crop Research Division of DSIR; in 1992 he was appointed chief executive of the NZ Institute for Crop & Food Research when Crown Research Institutes were established; he was Acting Chief Executive of Dairy InSight in 2006 during the establishment of that organisation.

Later in his career he has given widespread guidance in leadership, advisory, and governance positions relating to agricultural and horticultural sciences. He also has provided advice and insight for several international primary resource research programmes.

HONORARY LIFE MEMBERSHIP

Alan Harré graduated in horticultural science from Massey University in 1964 and for 17 years worked for the Ministry of Agriculture and Fisheries, first as a Horticultural Advisory Officer in Nelson and then as the Central Otago Provincial Manager and Horticultural Consultant at Alexandra specialising in export pipfruit and summerfruit.

He became Senior Tutor in Quality Assurance at the Bay of Plenty Polytechnic in Tauranga, responsible for organising more than 250 export training workshops for more than 7,000 workers in the pipfruit and kiwifruit industries. Since 1991, he has developed a horticultural consultancy with a post-harvest quality assurance focus. He has also undertaken many consultancies in the Pacific Islands.

Alan has been a member of the Institute since 1964 and served on the Council from 1992 to 1998. He was Chairman of the New Zealand Horticultural Science Advancement Trust from its inception in 1995 until 2005 and continued as a trustee until 2008.

FELLOW

Professor Paula Jameson, Professor of Biology and Head of the School of Biological Sciences at the University of Canterbury. She completed a BSc with 1st Class Honours and a PhD in Plant Physiology at the University of Canterbury before taking an academic position in the Botany Department at the University of Otago in 1981. She moved to Massey University in 1993 and became Professor of Plant Biology and Head of the Department of Plant Biology and Biotechnology. Eleven years later she took up her post at the University of Canterbury. Her research expertise is in physiological and molecular plant biology, especially the role of the plant hormones the cytokinins in seed and plant development and in plant-microbe interactions.

SCIENCE AWARD

Dr Jason Wargent, Senior Lecturer in Fruit Production at Massey University – he received the award to attend the International Botanical Congress in Melbourne in July to present a paper on the role of solar ultraviolet radition in sustainable crop production.

Nick Hoskins, Project Leader for the New Zealand Winegrowers Virus Elimination Project – he received the award to attend the Grapevinie Leafroll and Vitivirus Diseases seminar in Monterey, California in June.

Dr Alastair Currie, Team Leader for the Berryfruit, Hops and Grape Breeding Team at Plant & Food Research – he received the award to attend the Rubus-Ribes Symposium in Serbia to present a poster and participate in the working groups.

AGMARDT TECHNOLOGY TRANSFER AWARD

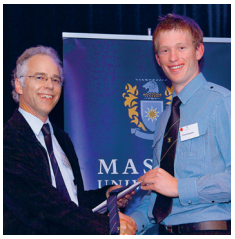
Earnscy Weaver has been involved in commercial fruit production for over 30 years. He plays a critically important role in the summerfruit industry in New Zealand, particularly in Central Otago. This includes advising growers, liaising with researchers on government-funded projects, ensuring that industry-funded research programmes address strategic industry issues and in the transfer of that technology to the industry as a whole.

DOUG CAMPBELL AWARD

Ian Rodger, a stalwart and long-serving member of Auckland Section. He joined the Institute in 1978 and the Auckland Section committee in the early 1990s. He was Auckland Section Chairman from 2004 to 2010 and still serves on the committee.

PGG/WRIGHTSON SEEDS SIGNIFICANT ACHIEVEMENT AWARD

Dr Alister Metherell for his major contribution to Canterbury agriculture through the development and improvement of decision support tools for soil fertility management.



MASSEY UNIVERSITY LEADING STUDENT AWARD

Thomas Woutersen received this award at the recent Massey Agriculture Dinner.

Canterbury Forum

Complexity, collaboration and communication

Morning presentations from six Canterbury scientists at the Canterbury Section Forum – Biological Innovations for Agricultural Sustainability held at Lincoln University in July.

Sustainability equals profitability in today's marketplace, thanks to growing national and international concerns around a range of environmental issues. For New Zealand farmers and growers, maintaining sustainable production will rely on new technologies, based on, and backed up by, good science.

The forum, Biological Innovations for Agricultural Sustainability, featured presentations from researchers involved in a range of projects addressing issues such as climate change, pollination and reduced access to chemical pesticides.

The difficulties imposed by complex biological systems emerged as a common challenge for all the researchers, who also agreed that developing and implementing successful non-chemical weed, pest and disease technologies requires collaborative research and strong end-user involvement.

A major challenge for Professor Alison Stewart, who works on microbial-based biopesticides, is developing screening, evaluation and production systems that take into account all the biotic and abiotic factors that impact on the efficacy of products based on living organisms.

"Bringing a biopesticide to market requires a number of very specific skills, from microbiology and biochemistry to agronomy and patent law," she said. "No one person, or even organisation, has all these skills, hence the importance of collaborations.

"Our Trichoderma research for example, involves experts from the universities, CRIs and the commercial sector."

Dr Charles Merfield highlighted the importance of new collaborations too. Referring to the rapidly approaching 'post-herbicide era' he explained the need for integrated weed management solutions based on physical, biological and ecological techniques.

"These systems require a deeper understanding of the many factors influencing weed/crop systems, so future collaborations are likely to involve ecologists, engineers and also farmers who will have to learn a whole new range of weed management skills," he said.

Ecological techniques such as landscape engineering could also help optimise crop pollination. Dr Brad Howlett's investigations into the role of flies and solitary native bees has shown they can play a significant role in the pollination of some crops, and that their performance may be influenced by factors such as timing of cultivation and the planting of shelter belts. As with the use of biological products, landscape manipulation requires a deeper understanding of agricultural systems and the buy-in of end-users.

The systems outlined above require considerable change of focus for growers, both in terms of implementation and systems management. However, other speakers reassured the audience that sustainable technologies don't have to be completely new.

Glenn Judson, from Agricom, confirmed that while climate variability will call for better adapted pasture cultivars, "most of these new drought and pest-resistant grass technologies will come packaged within species we already know."

Dr Mitchell Andrews had a similar message with regard to legumes. Outlining the complex relationships between native, weed and crop legumes and their rhizobial symbionts, he concluded by expressing his confidence "that we can produce improved inoculum for lucerne that will increase nitrogen fixation performance."

Nitrogen was also the focus of Professor Keith Cameron's talk, which covered the relationship between soil-dwelling ammonia oxidising bacteria and the release of nitrates into the atmosphere. He explained how the nitrogen product eco-n, which contains nitrification inhibitors, is a classic example of developing existing technologies to improve agricultural sustainability.

"Eco-n mitigates many of the environmental concerns surrounding dairy farming by significantly reducing nitrate leaching and nitrous oxide emissions, while increasing pasture growth," said. "It's an environmental and economic winner."

The take-home message from this session was that current research will deliver new sustainable technologies, but that many of these new technologies will be so different from their predecessors that farmers, growers and their field consultants will require a lot of education and – in some cases – a significant mind-shift.

Afternoon presentations from six Canterbury farmers and businesses actively involved with sustainable technologies provided a rounded picture of sustainability in action.

Risk management in North Canterbury hill country

DUGALD RUTHERFORD, FARMER

Dugald and Mandy Rutherford's farming philosophy is to work with nature whenever possible. Dugald explained how shrub-land management and forestry contribute to the farm's economic and environmental sustainability.

Matagouri, coprosma, corokia and hebe provide low level shelter for both stock and pasture, draw subsoil nutrients and moisture to the surface through leaf drop and provide a habitat for biodiversity including pollinators, he said. "We have a forestry planting plan and forest income is now annual. The pine trees also access subsoil minerals and moisture and agroforestry blocks provide up to 15 years of good quality grazing and shelter".

Smart tools for sustainable farming

JEMMA MACKENZIE, FROM AGRI OPTICS NZ LTD

Agri-Optics is a family business with a focus on crop sensors and farm and field mapping technology.

Jemma McKenie predicts that 'smart farming' or 'precision agriculture' techniques will provide the sustainable way forward for New Zealand agriculture. Among the products she discussed were:

WeedSeeker®, which uses sensors to detect individual weeds, delivering herbicide as required;

GreenSeeker®, which maps and manages in-field variability, only applying inputs where it is most economic to do so;

Smart-N, for site-specific nitrogen application;

Electromagnetic soil mapping, which provides base data for variable rate application.

Innovation on an arable farm

ERIC WATSON, FARMER

Eric Watson provided a user-perspective to precision agriculture

By Anna Heslop,
Communications Advisor, Bio-Protection Research Centre, Lincoln University.

technologies, explaining the benefits of a wide range of high-tech gadgetry in use on his Ashburton cropping farm. These included the yield meter in his header which identifies high and low yielding points within a paddock and a self-steering module on the tractor which reduces driver fatigue, improves drilling precision, aids night drilling and provides perfect 32m tramlines.

He has used electromagnetic surveying to map paddocks and that data is used for both Variable Rate Irrigation (VRI) and Variable Rate Spreading (VRS). VRI allows individual sprinklers on the irrigation system to deliver exactly the amount of water required for the area beneath it, while VRS enables precision fertiliser application.

Waipara Wine – ugly duckling or quiet innovator?

GWYN WILLIAMS, WAIPARA WINEGROWERS

Gwyn Williams outlined several initiatives involving wine growers, especially those around Waipara. The best known of these is the Greening Waipara project which focuses on building up native biodiversity. This project has shown that planting companion species under and between vine rows can minimise the use of artificial inputs and have beneficial effects on the soil.

Disease control, especially of Botrytis, is still a problem, and growers and winemakers are seeking minimal, soft inputs. Established chemical companies are heavily involved in improvements here.

Innovation and sustainability – the way forward

DAVID CROFT, FARMER

Dairy farmer David Croft, who has a 1085 ha/ 1450 cow dairy farm near Culverden, has faith in science to provide knowledge and technologies to mitigate any detrimental environmental effects of agriculture. Currently these include using Eco N to reduce nitrate leaching and nitrous oxide emissions and endophytic ryegrasses to reduce insect pest damage. The property also benefits from wasps released to control both Argentine stem weevil and clover root weevil and rabbit numbers were reduced by calicivirus.

Mr Croft employs careful water and pasture management strategies and believes future productivity gains will come from harnessing the biological mass in the soil.

How excellence breeds excellence

Professor Alison Stewart will step down as Founding Director of the Bio-Protection Research Centre at the end of this year, a post she has held since 2003, guiding New Zealand's only production-based Centre of Research Excellence (CoRE) from an unknown entity to an internationally recognised research institute.

Ten years ago Centres of Research Excellence were a new concept but their advocates had broad ambitions to test the ways in which science could be done in New Zealand. The centres were set up to drive innovation and research excellence within the tertiary education sector by drawing research expertise from across the country into a collaborative framework.

They fundamentally involve excellent researchers training the next generation of excellent researchers. They are also strongly focused on building networks of national and international collaborations that leverage benefit back to New Zealand.

"I believe they have succeeded," Alison says.

In the case of the Bio-Protection Research Centre, she cites evidence of significant increases in the number of publications and technology transfer outputs as well as increased numbers of PhD students and post-doctoral fellows being trained. Importantly, these increases in research quantity are matched by a corresponding increase in research quality, "as evidenced by a dramatic jump in the mean impact factor of our publications from 1.7 to 2.9".

Achieving research excellence in the applied discipline of bioprotection has its challenges, Alison points out, "but we have worked hard to weave fundamental discovery-based research into our applied programmes".

Professor Steve Wratten's work on conservation biocontrol is a good example of this. Years of fundamental research into the interactions between pests, their natural enemies and their environment has been translated into conservation biocontrol techniques which are being adopted by vineyards throughout New Zealand and around the globe.

Alison is adamant that collaboration has been the key success factor for the centre. "Strong working relationships with our partner institutes (Lincoln and Massey Universities and the two CRIs – AgResearch and Plant & Food Research) have been vital to our success, and much effort has gone into developing national and international connections," she says. "These connections provide access to a wider network of expertise, equipment and resources, broaden our science capability, and feed innovation.

"In the case of my Microbial Products research programme we have collaborated with a number of research organisations and companies to form a whole range of multi-disciplinary partnerships essential for progressing research into commercial products". These include, but are not limited to, microbiologists, biochemists, toxicologists, formulation experts, field agronomists, fermentation chemists, IP specialists and patent attorneys.

"Importantly, our achievements in excellent research and collaboration are now being recognised by funders. Our TEC funding allocation has increased substantially since 2003, clearly indicating that the collaborative research model does work and that funding is available for research groups who are focused on conducting quality research in relevant strategically important areas."

Other CoRES, The Riddet Institute and the MacDiarmid Institute in particular, provide further examples of quality researchers attracting substantial national and international funds.

"It is clear that the CoREs are achieving what they set out to do: bringing excellent researchers together, delivering excellent science and providing a training environment for the next generation of excellent researchers," Alison says.

"Together they are putting New Zealand and New Zealand research on the world stage, promoting the New Zealand Inc approach and, along the way, opening up significant new funding opportunities."

Keith Fuller

The Auckland Section of the New Zealand Institute of Agricultural & Horticultural Science has lost a highly respected stalwart with the death of Keith Fuller, who suffered a stroke at the age of 84. Keith gave generously of his time to the section and – as many have observed – "was the Auckland Section" at times. He was involved with everything from organising speakers to ensuring the kettle was on.

He was awarded Honorary Life Membership in 1998.

After leaving school Keith studied for a Diploma in Horticulture at Massey College in Palmerston North and in 1948 took up his first position in the Plant Diseases Division of the DSIR at Mt Albert in Auckland. He became a Horticultural Instructor with the Department of Agriculture in Auckland and then in Hamilton.

Four years later he was recruited into the commercial enterprise of Ivory Spray Chemicals, beginning a life-long association with sprays and fertilisers with a company that became Ispray Ltd, Kempthorne Prosser, NZ Farmers Fertiliser, and finally Nufarm. He served the industry for 31 years from 1954, receiving a raft of certificates and honours from a range of associations including the Percy Tregidga Memorial Award for outstanding service to the greenhouse vegetable industry. He received a Special Award from the Association of Berryfruit Growers, which he served as secretary for many years. His expertise was in strawberries.

Keith was regarded by many as the ultimate science extension advisor, efficiently taking horticultural research findings out to the field.

When he retired he went to Carrington Polytechnic (which became Unitec) to teach horticulture. He was emphatic in what he believed, drumming the information into students' minds so that his classes' results were always top of the RNZIH national marks. His lectures were hand-written in large capitals on overhead projector slides and he talked in the same way. Greenies had to accept it or lump it – no discussion was entered into.

After stepping down from the Auckland Section committee after many years, Keith continued to attend section meetings. During the social parts of those meetings the high esteem in which he was held by colleagues and friends was clear, even to those meeting him for the first time.

He was a devoted husband to Launa and father to Kay, Ross and Diane.

New members We welcome

Chris Luoni, Waikato
Bjorn Oback, Waikato
Sarina Manandha, Manawatu
Karin Schofield, Manawatu
Mary Christey, Canterbury
Adele Scott, Canterbury

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 HORTICULTURAL SCIENCE ADVANCEMENT TRUST 2012 AWARDS

Are you working in horticulture and need financial assistance to develop your ideas, attend a conference, disseminate information or sustain a project that might advance horticultural science in New Zealand.

If so, and you are a member of NZIAHS (including a Student member), then you are encouraged to apply to the New Zealand Horticultural Science Advancement Trust for the year 2012 awards.

Applications are considered on their merits, including the benefits to New Zealand horticulture. In recent years individual awards typically ranged between $1,000 and $2,500.

While most applications are for assistance to attend international symposia and meetings, consideration is given to any project that advances horticultural science in New Zealand.

Application forms are available from:
Jenny Taylor, secretariat@agscience.org.nz
The closing date for applications is 30th November 2011

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