

AgScience



“Well, it’s inventory time again - you do the soils and I’ll do the lakes”

Inside

Biosecurity audit

Our natural
capital stocks

RMA reform
and science



Getting the balance right

NATURAL CAPITAL IS THE topic for the main article in this edition of *AgScience*. The authors propose that, as we make decisions about how we use our natural resources, we need to include all of the factors that are impacted by a change in use. We also need to consider how a particular resource or ecosystem contributes to our well-being. Sometimes that contribution is clear, such as allowing for a food crop to be grown. At other times a benefit such as water holding or prevention of erosion may be less obvious, certainly to those not directly affected, and yet we all have an interest or stake in the outcome.

The article emphasises for me that actions or decisions are seldom isolated, having no impact on anything else. It would also seem that some world issues – such as population increase, climate change, food security and water quality – make it even less likely that good decisions can be made in isolation. The inter-linked nature and cumulative effect of these issues and their impact on ecosystems actually make it more important for a holistic view to be taken.

The current debate about affordable housing in New Zealand seems to be entirely focused on the availability of land

to build more houses. Is more land the only solution and what other factors need to be considered? We do not seem to be asking questions about how we also need land to grow food, provide water catchment, and allow recreation. Yet we presume that these needs will be met.

The parallels noted between the Millennium Ecosystem Assessment definitions for ecosystem services and the aims of the Resource Management Act are interesting. New Zealand already has legislation that makes us consider how we balance our use of natural resources. The operations associated with the Act may need review but its aims and goals still seem valid.

The authors also note that, by using the idea of natural capital, economic thinking can be combined with ecological values. This changes the discussion on how we calculate value for our resources. A study on soil fertility, and presumably crop productivity, also incorporated the economic benefit associated with carbon sequestration and the calculation of a carbon footprint for the crop. Natural capital may increase the level of complexity when calculating value but perhaps it gives a better balance.

Discussion around the roles that

horticulture plays in supporting human well-being leads me to the Horticultural Congress that is coming up in 2014 in Brisbane. Details about the timing and the website address for the congress are advertised in this edition of *AgScience*. I recently attended a meeting of the congress organising committee and was impressed with the planning and efforts that have gone into the congress so far. NZIAHS is one of the host societies for the congress. This is only the second time that the congress will have been held in the southern hemisphere, so it is a huge opportunity for researchers, horticultural companies and horticulturalists generally to showcase our capabilities to the world.

The dates for the congress are 17–22 August 2014. The profile and coverage will increase as we get closer to that time. I encourage all New Zealand horticulturalists not only to attend but also to think about how we make the most of this event. Related activities in New Zealand are being planned and NZIAHS would be pleased to hear suggestions or comments as to how else we can make the congress a success.

David Lewis
President

**NZIAHS/NZSPB
PLANT SCIENCE 2013 CONFERENCE**

Tuesday 2nd – 4th July 2013
Ag/Hort Lecture Block, Massey University,
Palmerston North

Proposed Themes:

- ❖ Plants and environment
- ❖ Horticultural innovation to achieve *step changes* in sustainable production
- ❖ Predicting quality after harvest
- ❖ Innovation in plant improvement
- ❖ Any aspect of plant science in response to submitted abstracts

Call for abstracts expected mid-March




More information to follow by e-mail to members or check NZIAHS website



IHC 2014
Brisbane

Horticulture - Sustaining Lives,
Livelihoods and Landscapes

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

Biosecurity:

what can the Aussies teach us?

THE MINISTRY OF PRIMARY Industries website says pests and diseases pose serious threats to our economy, environment, health and cultural identity. The information includes an ominous warning: in 2001, the Reserve Bank estimated that a foot-and-mouth disease outbreak could cost the economy \$10 billion over two years. Thousands of jobs would be endangered and the economy would take years to recover. "Given the potential impacts of a serious biosecurity incursion, it's easy to see why biosecurity is critical for New Zealand," the ministry says.

On 22 February, Lyn Provost, the Controller and Auditor-General, had more to say on the subject. Our country is more dependent on biosecurity than any other developed country, she pointed out. And the system to ensure biosecurity is "complex".

Ms Provost was reporting on a performance audit that examined how effectively the biosecurity system works in preparing for and responding to the arrival in New Zealand of foreign pests and organisms (biosecurity incursions). No border control was 100% effective, she said, so it was important that New Zealand was prepared to deal with incursions effectively. But the MPI could do better: she found it was under-prepared for potential incursions from some high-risk organisms.

Responding to incursions had taken precedence over preparing for the potential arrival of other pests and disease, she said. Not enough priority had been given to planning. Many response partners who had worked with MPI and its predecessors believed a stronger response capability was also needed.

Improvements were being made, Ms Provost acknowledged. These included trying to detect threats earlier by better targeting of surveillance activities, updating existing plans for dealing with specific pests and diseases, and more regular testing to ensure that plans and preparations will work if needed. A new response system had brought more consistency and efficiency to how incursions were dealt with. Some improvements to information systems and how information was used had begun. There was more openness about acknowledging mistakes and treating these as learning opportunities.

But "there is still a lot to do and some serious weaknesses remain". Plans for responding to potential incursions from some high-risk

organisms were not yet complete. "For example, the plan for dealing with a foot and mouth disease outbreak is inadequate".

Workforce planning and capability development needed to be stronger, so that MPI had the appropriate people, with the right skills, in the right place. Staff were not using the new response system to its full potential, so a better approach was needed to managing staff experience, development, and training. Contracting with partners during responses needed to be more efficient and there was potential for better value for money.

Some information systems did not yet link together and information was not used as effectively and efficiently as it could be.

Performance reporting needed improvement. Stronger outcome-based measures and performance measurement tools were needed to identify how effectively and efficiently incursions were responded to and to ensure continuous improvement.

The recently merged and restructured ministry had an opportunity to achieve lasting improvements in biosecurity preparedness and response. But "the previous track record of delivering sustained improvements is not good," Ms Provost said. "There are many instances where initiatives either have not been completed or have been delivered but not embedded."

She saw a desire for improvement, but this required continued strong leadership from the new management and commitment throughout the ministry. She has made some recommendations for improvements to biosecurity preparedness and response that would need to be implemented if MPI was to bring about the changes required.

There has been a changing of the guard in the Beehive, since the audit work began. Nathan Guy became Minister of Primary Industries in a new-year cabinet reshuffle, when David Carter became Parliament's new Speaker. Discussing his new responsibilities with the editor of *AgScience*, he said he was confident New Zealand had a world-leading biosecurity system – "it's much better than it was when we came into office".

But it would always be tested thoroughly, because...

- New Zealand has ten million travellers crossing its borders every year, and
- 175,000 items come across the border each day.

He noted that Government last year had one of the biggest intakes of new staff into biosecurity last year – 46 new people including dog handlers working on the front line. But "we need to ensure we are making the right investment in new technologies and systems and we are a lot more sophisticated with our use of intelligence and information to better understand emerging risks."

Former NZIAHS president John Lancashire, interviewed on Radio New Zealand's Nine to Noon, highlighted a raft of recent costly incursions, such as varroa and the Psa virus that have plagued the apiary and kiwifruit industries. He urged the MPI to look across the Tasman: find out what the Aussies are doing that makes their biosecurity so much more effective than ours. 

– Bob Edlin



Nominations and applications called

Closing date 31st May 2013

This is your opportunity to nominate fellow members for their contribution to the industry.

All details and forms are on our website www.agscience.org.nz.

Alternatively, contact Jenny Taylor (09) 812 8506

or secretariat@agscience.org.nz for personal assistance.

JUBILEE MEDAL

Awarded for an exceptional contribution to primary resource science over a sustained career.

EMERGING SCIENTIST AWARD

Significant achievement and outstanding contribution by an emerging scientist dedicated to research and science leadership.

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To recognise members who have given outstanding service to agricultural and horticultural science. Needs to reflect an on-going and active engagement in scientific research and development evidenced by authorship or co-authorship of an ongoing series of nationally and internationally significant publications or other peer-reviewed scientific treatises.

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For significant contribution to agriculture or horticulture (as above) and to the Institute.

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Communication beyond the call of duty to the wider audience.

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Exemplary transfer of agricultural (interpreted broadly) information to the end user.

NZIAHS POSTGRADUATE AWARD

For a postgraduate research scientist to attend and present their research at an international conference.

NZIAHS SCIENCE AWARD

For travel to do with research.

NZIAHS Postgraduate Student/Emerging Scientist Travel Award to attend IHC2014 17-22 August 2014 – Brisbane

Up to 10 awards at \$500 each

This 2013 special award is offered to NZIAHS postgraduate students and emerging scientists to present a paper or poster at the IHC2014 meeting to be held on 17-22 August 2014 in Brisbane (www.ihc2014.org). The award will provide leverage for further funding from other bodies.

Applicants should be NZIAHS Full or Student members and must be studying for their PhD or within five years of a postgraduate degree.

Closing date 30th September 2013.

Contact secretariat@agscience.org.nz for application form.



Obituary: John Scott, 1930-2012

JOHN SCOTT, RUAKURA'S SCIENTIFIC liaison officer for several years, died in his sleep at his new home in Hamilton after six months of declining health. He was 82.

Born in Wellington on June 15 1930, John was a boarder at Sacred Heart College in Auckland from the age of 12. He enjoyed rugby, rowing and boxing and was head boy in his final year.

He studied at Massey Agricultural College from 1949 to 1951 and gained a B.Ag.Sc. degree. He joined MAF in 1955 and was sent to Ruakura as a scientific liaison officer to inform farmers and farm advisors of the scientific work being conducted there. He was well skilled at converting complex scientific results into down-on-the farm language.

For many years he organised the Ruakura Farmers Conference and Fieldays which attracted farmers and industry personnel in their thousands.

In 1968 John was involved as a founding member of the Mystery Creek Fieldays Society and later served as its president. He was involved in various scientific societies, too, and was a past president of the NZIAHS. He was a Fellow and Foundation Member of the Institute and remained an active member of the Waikato branch until his death. He was also a past president of the New Zealand Society of Animal Production and a Fellow of the New Zealand Society of Farm Management.

John was an active dairy farmer with property interests in the Waikato.

He will be well remembered for his organising skills from conferences through to parties. He had a wide range of friends from different walks of life and was well known for his near infallible memory.

His first wife, Lucy, died in 2003. He is survived by his second wife, Pauline Laboyrie, and by his son, three daughters and five grandchildren. ☹

– Mike O'Connor, Waikato Section

The facts get in the way of new RMA policy

INTEMPERATE AND ILL-INFORMED CRITICISM of an Environment Court ruling by David Carter, before he stepped down as Minister of Primary Industries, triggered a storm of protest including criticisms from economists Gareth Morgan and Susan Guthrie. As a result the Government appears to have backed off a suggestion that commissioners should be appointed to run the Horizons Regional Council. He acknowledged “we need to allow the court process to continue” on the ruling which upheld the re-imposition of the Horizons One plan, although it is being appealed to the High Court.

But given the back-down, it is extraordinary that one academic congratulated Carter on showing leadership in this area.

Extravagant claims from some farmers that the plan spells the end of profitable dairy farming unfortunately were echoed by Federated Farmers, which described the plan as “Farmageddon” and a farce that would bankrupt farmers. That criticism was echoed by the Minister for the Environment, Amy Adams, who said in an address to Federated Farmers provincial presidents she would not let water quality deteriorate, but “nor am I going to rip the guts out of the productive sector”. This Minister said she was concerned that farmers had failed to win the “hearts and minds” of urban people on water quality. That this is simply a public relations failure is a regular complaint by the dairy sector, although regular surveys over several years by Lincoln University have shown that most people regard pollution of our waterways and lakes as the major environmental problem in New Zealand and further regard the dairy industry as the major culprit.

The state of denial about the parlous condition of many of our waterways was given further emphasis in a spate of personal attacks on Dr Mike Joy, of Massey University. His interview with the *New York Times* and questioning of the Government-supported 100% pure campaign caused Sean Plunkett, a former champion of rigorous interviewing, to call him a “traitor” and Cameron Slater, on his Whale Oil blog, to say “Joy should be taken out and shot at dawn for economic sabotage”. Political lobbyist Mark Unsworth accused him of “sabotaging tourism”. Not for the first time, critics took the easy way out by slandering the messenger, Dr Joy, rather than by confronting his message. At a time when science is increasingly compromised by political expediency, it was refreshing to see the New Zealand Association of Scientists, the New Zealand Ecological Society and the New Zealand Freshwater Sciences Society all publicly supporting Dr Joy.

The good news is that many dairy farmers are not “whining” about the new regulations, as was suggested in recent correspondence in the *Manawatu Standard*, but are starting to use and trial a range of techniques to solve the problems. A trial in the Waikato has shown that profitability can be maintained with a return on assets of close to 6% with reduced nitrogen leaching through reduced application of nitrogen fertiliser and a careful winter management. That this “good news” trial is funded by the Ministry of Primary Industries and DairyNZ seems to have escaped the notice of the former Minister. There are many other examples of farmer-led innovations such as wintering barns helping to meet the new requirements.

The extreme backlash caused by his comments appears to have caused him to modify his views before he stepped down to become the new Speaker of the House. Given that the exaggerated political

arguments aided and abetted by a “rump” of farming opinion in Federated Farmers do not match the facts, then the push to modify the Resource Management Act becomes less credible. It is even more important that this legislation remains as a bastion against environmental degradation because it is the stated intention of the dairy industry and Fonterra to increase production by 3% a year. This is scary, because we are not coping with the current situation and the damage to waterways caused by the recent large increase in dairy cows in Southland is well known. This proposed increase can only come about through large-scale conversions of sheep and beef farms to dairying. This is extremely expensive and will simply add more debt to an industry that already owes \$30 billion. Given that the average capital return on dairying in New Zealand over many years has only averaged around 4.5% and the industry has been sustained by extraordinary hikes in land prices, which have now flattened out, the industry strategy seems flawed, given the inevitable



environmental damage that will be a consequence.

Unfortunately there is huge pressure on new conversions to intensify through high stocking rates to maximise production and quickly reduce debt – a recipe for environmental disaster. Just as unfortunately, industry spokesmen are on record as saying they will not tolerate a reduction in stocking rates and appear stuck in grazing philosophies propounded in the 50s and 60s by eminent scientists such as McMeekan, Levy, Sears and Brougham. But because many farmers now do recognise that our dairy cows are fed perhaps as much as 50% below their genetic potential, they can at least maintain production at lower stocking rates by better feeding with concomitant reductions in environmental damage. Cost-effective improved feeding regimes for our dairy cows should be a high research priority for both production and environmental reasons.

What can we learn from this debacle? That politicians will develop better policy if they are more aware of the facts. That Federated Farmers needs to find out what is going on in the farming communities they purport to represent. And that media commentators need to lay off abusing the messengers of bad news and actually address the issues. ☒

Natural Capital

–thinking about how we value and use our natural resources

NATURAL CAPITAL CAN BE defined as the earth's stocks of natural material and energy. Natural capital stocks are our soils, our vegetation, our biodiversity, our aquifers, lakes, streams and rivers. The natural capital concept integrates economic thinking with ecological principles by considering nature's stocks of materials and energy as capital. The sum of these natural capital stocks and the connectivity between them can be referred to as ecological infrastructure.

In the economic world, interest or rents flow from financial or built capital. So by analogy, in the ecological world, ecosystem services which benefit mankind, flow from our ecological infrastructures. The Millennium Ecosystem Assessment (MA, 2005) classified ecosystem services into four categories:

- The provisioning services: the products obtained from ecosystems: food, fuel and fibre production;
- The regulating services: the regulation of ecosystem processes: the buffering and filtering of water, carbon and gases;
- The cultural services of heritage, recreation and spiritual well-being;
- The supporting services: those that are necessary for the production of all other ecosystem services: soil formation, water and nutrient cycling.

The way these services are linked to and support the constituents of human well-being is shown in *Figure 1*.

These ecosystem services are massively valuable, and not just in the way we have traditionally thought in the form of the yield of food, fibre and fuel. Farmland does return provisioning value to the farmer, but farmland also supplies regulating and cultural ecosystem services to the wider community. As a consequence, we are all stakeholders in how they are managed irrespective of title ownership. We also have a vested interest in ensuring that there is continued investment into

our ecological infrastructures to ensure their future sustainability.

Costanza *et al.* (1997) assessed the global flow of ecosystem services from the world's natural capital stocks of materials and energy. They concluded that the sum value of terrestrial and marine ecosystem services was 1.8 times the value of gross global production. Nature, it would seem, is very bountiful and more valuable than is often calculated.

In New Zealand, horticulture generates \$3.5 billion of export revenues for New Zealand, and sustains a \$1.5 billion domestic economy. All of this comes from just 70,000 hectares of orchards, vineyards and farms. The ecological infrastructures which underpin the production of New Zealand's fruit, fruit products and vegetables comprise valuable natural-capital assets. But it is not only the economic activity generated by the provisioning ecosystem service that gives us this value. The three other types of ecosystem services generated by orchards and farms surely benefit growers, but they also serve the wider community. This realisation might be considered inherent and obvious, yet is it an idea we routinely acknowledge? The concept of natural capital and ecosystem services offers a way for all to include this value in our long term planning and decision-making. There is no 'optimum' solution which is in the 'eye of the beholder', rather it is about discussing and resolving the impacts and trade-offs of the various choices. Analysis of ecosystem services enables this debate.

BEHIND THE CALCULATIONS

The challenge for researchers is to develop and validate appropriate information to estimate the value of ecosystem services that natural capital provides. This is the basis for these calculations and debates. As an example, a recent kiwifruit study by Deurer *et al.* (2010) investigated soil health and fertility. But at the same time they considered aspects of sustainability that was then linked to orchard economics. The study examined whether perennial fruit crops can maintain, or enhance, soil carbon storage so that these results could be incorporated in carbon-footprinting protocols to enable greater differentiation of New Zealand's fruit products in environmentally concerned markets such as Europe. This was achieved. They found that the rate of carbon sequestration was 0.4 t-C ha⁻¹ yr⁻¹ by comparing soil carbon stocks (SCS) of an old and a young block of kiwifruit down to 1m (*Figure 2*). Holmes *et al.* (2012) extended the work of Deurer *et al.* (2010) by sampling down to 9 m in a 30 year-old kiwifruit orchard, as well as in an adjacent pasture. The pasture would have been the antecedent land-use before the kiwifruit orcharding. By considering the difference in the 9 m SCS, they calculated that the

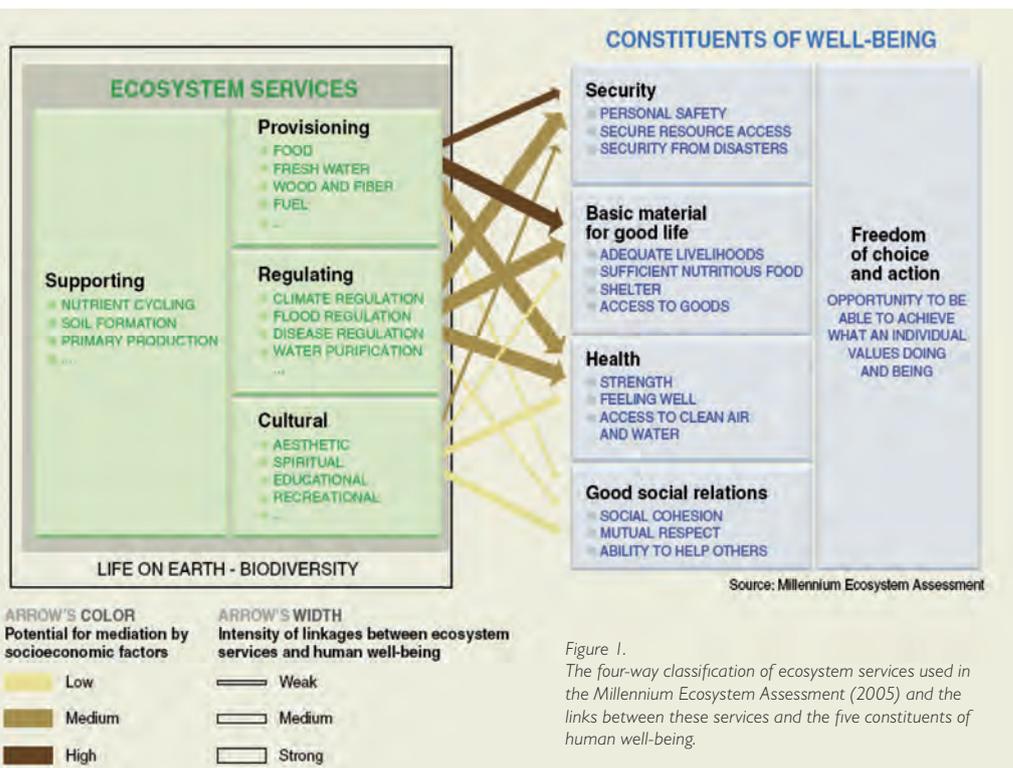


Figure 1. The four-way classification of ecosystem services used in the Millennium Ecosystem Assessment (2005) and the links between these services and the five constituents of human well-being.

kiwifruit vines were sequestering carbon at a rate of 6.3 t-C ha⁻¹ y⁻¹, which matches the 1-m results of Deurer *et al.* (2010) if they were extrapolated to 9 m depth. This rate of carbon sequestration, if accounted for in a life cycle assessment of the carbon footprint of export kiwifruit, would essentially halve the current value of the carbon footprint calculated for a tray of New Zealand kiwifruit landed on a shelf in a European supermarket. Kiwifruit vines are increasing the value of the soil's natural capital by 'growing' soil at depth. But furthermore the vines are also engendering a valuable regulating service of significant carbon storage in the soil, thereby lessening the flow of carbon to the atmosphere. Double whammy: win-win.

FORTY CENTURIES OF FARMING AND THE RESOURCE MANAGEMENT ACT

The notion of natural capital is not new, even if not formally recognised as such. The soil investment schemes practiced by Asian farmers have enabled them to farm the same land for forty centuries (King 1911). It was noted that all the services flowing from their soils had been sustained for four thousand years, and that the provisioning service was undiminished since "the yield is the product of brain, brawn and utilised waste". Carbon investment into the soil's natural capital has sustained the ecosystem services flowing from them – for four thousand years.

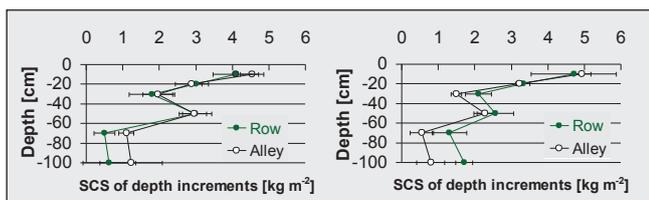


Figure 2:
 Soil Carbon Stocks (SCS) in 'Hort16A' kiwifruit orchards of different ages.
 Left: 'Young' block. The total SCS to 1m depth are 13±2.1kg m⁻² in the row and 14.7±0.5kg m⁻² in the alley. Right: 'Old' block. The total SCS to 1m depth are 15.7±0.8kg m⁻² in the row and 13.3±0.3kg m⁻² in the alley (from Deurer *et al.*, 2010).

In 1991, New Zealand passed innovative legislation to deal with environmental and developmental issues: the Resource Management Act (RMA). Section 5 details that the "purpose of this Act is to promote the sustainable management of natural and physical resources". The Act would enable "managing the use, development and protection of natural and physical resources to enable people and communities ... to provide for their social economic and cultural well being and for their health and safety while ...

- sustaining the potential and natural physical resources;
- safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- avoiding, remedying, or mitigating any adverse effects of activities on the environment."

The RMA's goals presaged those of the Millennium Ecosystem Assessment that was released by the United Nations in 2005, wherein the four types of ecosystem services were linked to the constituents of human well-being (Figure 1).

It would seem then, given the apparent link between 'natural capital' and 'natural resources', and the association between 'life supporting capacity' and 'ecosystem services', that arguments in court hearings based on natural capital and ecosystem services are compatible with the goals of the RMA. There is as yet little evidence that this approach has directly influenced decision making.

One instance where the value of natural capital has been argued is in relation to peri-urban expansion of a city on to horticultural land. A retailer purchased 4 ha of orchard land on the outskirts of Hastings and sought consent to build a large-format store. Independent commissioners were appointed to hear the application which was declined. It was appealed to the Environment Court, where the judgement was cautious yet noted that while not proposing to enter the natural capital debate, there was value in taking a holistic approach to assessment of the wider value of the soils of the site. The natural-capital loss of 4 ha of horticultural land may not have been significant in itself, but there were far wider policy implications. So although the Judge and his commissioners did not directly buy into the natural capital argument, they did note a holistic view was needed. Holism is, it seems to us, an ecosystem services approach in principle, at least in this judicial sense.

SUMMARY

Natural capital comprises our stocks of natural materials and energy. These stocks add up to be the constituent parts of our landscapes – our rivers, aquifers, lakes, and vegetation. These interconnected elements in total form our ecosystems. From our ecosystems flow the diverse and indispensable ecosystem services that benefit and sustain mankind (Figure 3). The critical link between all of these elements is the soil. Land is a finite resource, and soil formation proceeds only slowly. Thus we must ensure that the inventory value of the world's soil stocks is not diminished. Indeed, through intentional investment into their ecological infrastructures we can grow their asset value so that we can ensure an enhanced flow of ecosystem services from our soils to meet the demands of a growing population and meet their greater aspirations of prosperity. But there is no 'optimum' way we can use our natural resources. It's the ultimate balancing act. An 'optimum' is in the eye of the beholder. There are manifold and diverse perspectives. We need to think about 'impacts and trade-offs', plus 'costs and benefits'. We borrow these words from economics. And we are now applying them to the environment. ☑

References for this article are on the AgScience website



Figure 3.
 An example of ecological infrastructure providing cultural services in relation to aesthetics, tourism, recreation, fashion, music, social needs, and cuisine.

ETS, GST, GHG ... etc

In response to your Ag/Hort Talking in the previous issue of *AgScience* regarding the Emissions Trading Scheme, I would like to make the following points:

- The architects of the ETS chose an all-sector all-gas model to avoid the problems of boundary issues. This is analogous to the GST tax system that works so well because there are so few exceptions.
- The ETS creates a property right with regard to greenhouse gas emissions and their sequestering. All of New Zealand agriculture is based on similar property rights.
- The ETS is based on economic theory. This has the highest chance of delivering net reductions in the GHG balance at lowest possible costs. All other models such as fiat, rationing and taxes have been proven failures compared to the market model when it comes to regulating economic activity.
- Livestock emissions represent nearly half of New Zealand's emission and must be included for the ETS to be effective. For other countries, livestock present such a

low proportion that they are not worth considering relative to the challenges facing those countries.

- While New Zealand is only a small player in terms of world emissions it has the fourth highest per capita emissions after Canada, USA and Australia (outside the Gulf states which are in league of their own).
- Forestry provides an easy fix for agriculture in terms of the reduction in net emissions. Forests planted after 1990 have kept net New Zealand's emissions for the period 2008-12 at around the 1990 levels. This represents around a 75 million tonne CO₂= subsidy to the nation.
- New Zealand could become entirely GHG neutral with another two million ha of forest. This would barely dent the profitability of the pastoral and agricultural sectors and would provide massive benefits in terms of water quality improvement, flood attenuation, soil protection and biodiversity improvement. ☒

– Owen Springford

NZIF Registered Forestry Consultant

Bill Burrill honoured

FORMER AUCKLAND REGIONAL COUNCILLOR and Institute member Bill Burrill was awarded the Queen's Service Medal in the New Year honours list for his dedication to enhancing Auckland's natural environment.

During Bill's nearly 18 years of service he served on all the council's standing committees and was chairman of the ARC Parks Committee for nine years, overseeing the completion of the Huakwaiwaka Visitor Centre at the Auckland Botanic Gardens, the purchase of Scandrett and Waitawa regional parks and the building of the East Grandstand at Mt Smart Stadium. He championed the ARC's farming operations across its regional parks.

Concurrently he served seven years as a member of the Auckland board for the Department of Conservation Board, and 15 years on the Auckland Animal Health Committee including ten years as its chairman during which time it achieved official TB free status for the farmers in the Auckland region. He took particular satisfaction from the establishment of and by participation in the Hauraki Gulf Forum, established in 2000 to improve management and understanding of the Hauraki Gulf. ☒

NZIAHS Biosecurity Forum

– have we gone soft at the border?

Thursday 11th July 2013 9.00am – 4.00pm
Owen Glenn Building, University of Auckland

Biosecurity is vital to New Zealand. Preservation of our natural ecosystems, the future growth of our economy and our major primary biological exports are all threatened by ongoing incursions at our borders. Yet we also recognise the importance of tourism and without the ability to trade then the agriculture and horticulture industries don't function. The contradiction is that being part of the global economy also means we are part of the global ecosystem, for better or worse.

- So does the increase in tourist numbers constitute a significant increase in incursion risk?
 - Should we expect that no incursions occur?
- What is the current research on biosecurity focusing on?
 - Can we play a part to assist the Ministry?

Join us as we debate these questions.

For more information contact secretariat@agscience.org.nz

New members We welcome

Scott Beckett (Auckland)
Pravin D'Lima (Auckland)
Marzieh Keshavarzi (Manawatu)
Malcolm North (Manawatu)
Srikanth Rupavatharam (Manawatu)
Tom Sherratt (Canterbury)
Heather North (Canterbury)

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- 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

National Secretariat

P O Box 121 063 Henderson, Waitakere City

Phone 09 812 8506 Fax 09 812 8503

secretariat@agscience.org.nz

Contributions to the Editor

Phone and fax 04-237-8074

bob.edlin@xtra.co.nz

www.agscience.org.nz

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