Sustainable practice development, and the Horticulture industry in NZ

The development of GAP and Good Management Practice

ECAN Hearing Group 2 - 23 May 2013
Changing structure of horticulture industry

For larger growers, cost as a proportion of production value is modelled as low as 0.8%.

For smaller growers, costs as a proportion of market value is as high as 10.5%.

Incentive is to grow or fail. Some niche markets exist.

<table>
<thead>
<tr>
<th>Modelled Compliance Costs – Horticulture industry</th>
<th>Cost (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent monitoring fees (existing consents)</td>
<td>$8.3</td>
</tr>
<tr>
<td>Cost to obtain new consents</td>
<td>$19.0</td>
</tr>
<tr>
<td>Cost of renewals for existing consents</td>
<td>$21.4</td>
</tr>
<tr>
<td>S.36 Charges (SOE monitoring and measuring)</td>
<td>$1.3</td>
</tr>
<tr>
<td>Permitted activity cost (compliance with conditions)</td>
<td>$5.4</td>
</tr>
<tr>
<td>Water meter reporting (to regulator)</td>
<td>$2.4</td>
</tr>
<tr>
<td>Water meters new (installation and purchase)</td>
<td>$14.8</td>
</tr>
<tr>
<td>Compliance cost estimate</td>
<td>$72.6</td>
</tr>
</tbody>
</table>

The cost is roughly 7% on average of total industry value.
Trends
Reduction in grower numbers
Increase in the size of businesses
Supply chain integration

Collaboration and partnership are crucial, because without our collective strength we are still a small player – compared to power generators, other primary sectors, retail sector, food and grocery organisations.

Vegetable growers nationwide

1770

Note - 258 growers are in more than 1 crop category below:

Process Vegetables
576

Fresh Vegetables
1002

Asparagus
109

Potatoes
203

Tomatoes
138

Onions is included in Fresh Veg above
106

Vegetable Growers by Region

Auckland
341

Bay of Plenty
41

Canterbury/West Coast
480

Gisborne
65

Hawkes Bay
262

Horowhenua / Manawatu / Wairarapa
194

Nelson/Marlborough
137

Northland
105

Otago/Southland
58

Taranaki
18

Waikato
69
Fruit and Vegetable Production nodes

Canterbury: See Hearing 1 Evidence for production statistics
Business Case – RMA / Sustainability

• Compliance reduction (all areas)
• Rising cost of production
• Certainty is key
• Access to resources is getting harder

Waikato Variation 6
• Dairyshed grandparenting
• Water for Auckland
• Waikato River health

Land supply:
• Matamata Piako
• Waikato DC
• Franklin PC 14
GAP: A strategic response to strangulation from profligate market access systems
Introduction to New Zealand GAP

Operates two market access modules
1. For New Zealand and export markets not requiring GLOBALGAP
2. For markets requiring GLOBALGAP

How widespread is the uptake of NZGAP? 
= > 80% of produce is certified through GLOBALGAP or NZGAP.

What is the audit process? 
= Independent 3rd party audit: SGS, Assure Quality.

What made growers adopt the NZGAP model? 
= Customer compliance, market access

Where is the future for NZGAP? 
= Meeting the market, meeting the needs of regulators. NZGAP or a system with equivalence covers all produce grown in NZ.

Picture: Field tests of sediment movement on dairy land converted to brassica production in the Horowhenua district
Water challenges

- Managing nutrients
- Conserving soils
- Responsible use of agrichemicals
- Efficient water use
- Sharing and leasing of land
- Access to water to produce food
Plan Proposal for ECAN

Key Horticulture issues identified by Council with sectors and iwi

Nitrogen
- Developing Overseer module and GMP definition

Water Use
- Adapt generic CoP’s

Sediment
- Develop locally relevant COP’s

Phosphorous

Land and Water Plan
- NZGAP incorporated by reference in Plan (appropriate modules in appropriate plan provisions)

Permitted activity status for NZ GAP certified growers meeting council N and Sediment discharge requirements
- Default to controlled / consented activity if PA requirements not met or not NZ GAP certified

Horticulture New Zealand
Strategy for horticulture sector

How ASM fits with regulation

Council managed

Industry developed “ASM” systems

Fair / practical regulation consented

Industry defined GMP

Allowed / permitted

Industry defined BMP

Allowed / incentivised

Negotiated conditions on a mix of s.9 or s.15 type controls

Specified non compliance points, audited and verified independently

Specified recommended actions, audited and verified independently

Incentive examples:
Reduced s.36 charges
Increased consent term (take)
Higher reliability
Reduced inspection
Lower consent charges

X = increased adoption of practice

Y = number of farmers/growers
Key Programmes 1

**ASM Development**
New Version Release NZGAP 2013 – modules currently in review
• Modules include Sediment / Nutrient Management / Water
• Development of new risk assessment technique for auditors

**Soil Conservation**
• HIT – comprehensive review of targeted BMP’s for soil conservation
• Testing effectiveness
• Development of NGAP template for soil management
• Rule frameworks
• Continuous improvement cycle / risk assessment techniques
• Cost modelling

**Overseer advancement**
• New yield models being developed
• Industry training programme
• Benchmarking programme for vegetable sector
• Cost modelling
• Development programme for GMP

*Figure 12: Comparison of control (left) and diked (centre) wheel tracks on the amount of surface runoff during a winter rainfall event. There was also a clear effect of wheel track practice on the amount of sediment in the runoff (right).*
Key Programmes 2

Irrigation efficiency
  Development of irrigation BP Guidelines Waikato (allocation / application)
  2/3 years conjoint work on water balance model
  Benchmarking – 4% of use for Waikato!

Agrichemicals
  AIRCARE
  Currently rolling out new range of GROWSAFE Courses
  Developing high level GROWSAFE course for managers and planners
  Reviewed NZS8409:2004 – no changes required

Plan development
  Horizons incorporation of NZ GAP
  Continuance of sediment control work
  Instigate discussions on local catchment based programmes
  LUWQ Project Cant / PAG
  Tasman / Gisborne values setting process
  Benchmarking efficiency of use - nutrients / water
Key Programmes 3

Local solutions
- Twyford side agreement progress
- Water user groups – Franklin
- Northland Growth Forum - metering
- Redevelop FSP “Doing It Right” manual

Subsector specific development
- Kiwifruit industry water and carbon footprint
- Potato industry water footprint
- Glasshouse COP for nutrient solution treatment

Graph: The annual average (April-to-April) nitrate load leaving the rootzone per ha of canopy area of ZESPRI GREEN. The bars are one standard deviation representing the variation of the 5 soils considered per region.
Waikato – Irrigation Efficiency

4 Years work – Aqualinc, EW and Growers from a PVGA Reference Group

3 of those years collecting data for a soil water balance model.
Waikato – Soil Conservation

- Based on Horizons Region Code of Practice - a revision of Ohakune CoP’s and FSP
- **New Approach:** Risk based assessment, laying out a pathway to achieve maximum protection.
- Methods are inclusive and all encompassing.
- Likely to be released soon – waiting for comment from Waikato Tainui, EW (Auckland Council has responded).
- Also seeking to incorporate nutrient management but may publish separately.

Erosion & Sediment Control Guidelines for Vegetable Production

Good Management Practices

Version 1.0
August 2012
## Costs and Benefits

<table>
<thead>
<tr>
<th>Mitigation strategy</th>
<th>Range in effectiveness (%)</th>
<th>Cost per hectare</th>
<th>Tractor size</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detailed erosion mgmt plan</td>
<td></td>
<td>$80 - $180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover crop</td>
<td>90-99</td>
<td>$82</td>
<td>120</td>
<td>3.00</td>
</tr>
<tr>
<td>Minimum tillage</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Stubble mulching</td>
<td>?</td>
<td>$66</td>
<td>120</td>
<td>1.00</td>
</tr>
<tr>
<td>Wheel track ripping</td>
<td>50-80</td>
<td>$33</td>
<td>120</td>
<td>2.00</td>
</tr>
<tr>
<td>Wheel track dyking</td>
<td>50-80</td>
<td>$33</td>
<td>120</td>
<td>2.00</td>
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<tr>
<td>Contour drains</td>
<td>30-70</td>
<td>$75</td>
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<td></td>
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<tr>
<td>Contour cultivation</td>
<td>50-80</td>
<td>Not recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setback strip by drain</td>
<td>50-80</td>
<td>$105</td>
<td></td>
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</tr>
<tr>
<td>Wind break crop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benched headlands</td>
<td>50-80</td>
<td>$64</td>
<td>170</td>
<td>1.25</td>
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<tr>
<td>Bund</td>
<td>80-95</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetated buffer strip</td>
<td>50-80</td>
<td>$255</td>
<td></td>
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<tr>
<td>Silt fence</td>
<td>80-95</td>
<td>$378</td>
<td></td>
<td></td>
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<tr>
<td>Silt trap</td>
<td>80-95</td>
<td>$750 - $1,300</td>
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<tr>
<td>Silt trap maintenance</td>
<td></td>
<td>$75</td>
<td>180</td>
<td>5.55</td>
</tr>
</tbody>
</table>

Produced by Landcare Research 2013
Verified by Agricultural Engineer
NZ – Nutrient Management Programme

**SCIENCE**

1. Establish protocols for collecting information to establish a “look up table” of values for:
   - Benchmarks
   - Defining GMP / BMP.
2. Collect benchmark data to inform science models (a representative snapshot of production and management practice).
4. Define industry GMP / BMP and gain consensus on how it meshes with industry and council regulation

**ECONOMICS**

1. Collect information on macroeconomic factors eg. External price effects, transferability of production
2. Collect microeconomic data (hopefully from same farms covered in NMP surveys) such as gross margin, etc. Establish efficiency of nutrient use.
3. Cost the various mitigation options available to reduce nutrients. Also factor in soil and water management costs.
4. Provide this information to inform a discussion on how to manage within limits.

**PARTNERS:** MfE, MPI, FAR, DAIRYNZ, ECAN, AUCKLAND COUNCIL, PRODUCT GROUPS, PLANT AND FOOD RESEARCH LTD.
Strategy for vegetable sector (Fruit – less of a priority)

Categorise (discretise) farm type

Benchmark nutrient leaching

Benchmark management techniques

Define N efficiency

Define GMP

Define BMP
Key Messages: Overseer

Horticulture New Zealand supports the development of Overseer, and recognise it should become the preferred tool for nutrient management planning. We are undertaking our nutrient benchmarking work in APSIM because we have been advised by Plant and Food it is the most valid research tool to use. We would envisage that the work we are doing will complement and inform the development of Overseer. We support the recommendations in the review of Overseer undertaken by FAR (page 6). Because the fertiliser industry has not yet produced a complete model of a complex farm eg Hadfield, Turley, Pye, we are not convinced the model is able to be applied to these sorts of operations economically at the current time. We would support all who lease land keeping records to help populate Overseer budgets.
A Code of Practice for The Management of Nutrient Solution Released from Greenhouses

First Edition: 4 August 2006
**Key Messages**

Horticulture industry has functioning ASM system, and will continuously improve this system in the areas of soil, nutrient and water use.

The “next steps” for the research programme underway is benchmarking industry performance and validating what is good practice starting in the Canterbury context.

The horticulture industry is still developing a better understanding of nutrient use – Overseer is able to be used for simpler systems but research will need to inform more complex farm analysis.

The last 12 years has seen significant advances in soil conservation and management of erosion on cultivated land.

All the efforts an industry takes to mitigate effects should be recognised – not just some.

**Horticulture NZ** Launched NZGAP in 1999, (whole of industry 3rd party audited self-management system established). Compulsory agrichemical management and training is now required by all growers. 15 years of investment in soil conservation ($1.55m over that time) has resulted in new soil conservation modules for Horizons, Auckland and Waikato (linked to rules, tested for effectiveness). $1.45M invested in nutrient modeling for vegetable industry since 2006. 35% of vegetable growers, representing 80% of production have nutrient budgets and management plans in place. Irrigation efficiency guidelines established, Waikato Region (2009 – 2012). 2011-2012 kiwifruit sector benchmarked for nitrogen and water use efficiency. 2013: New modules for NZGAP (soil, water, nutrients) under development for 2013-2014. Vegetable industry nitrogen leaching rates and benchmarking commenced 2013 – Canterbury, Horowhenua, Manawatu, Ohakune, Waikato, Auckland regions prioritized for 2013 – 2014. This programme will also identify a good management practice toolbox.

**Picture:** Lab tests of different chemical soil stabilisers trialled but not recommended as part of HIT programme research.
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Erosion at Pukekohe During the Storm of 21 January 1999

L. R. Basher and T. Thompson

The Role of Wheel Track Compaction in Runoff and Sediment Generation Under Vegetable Production at Pukekohe

L.R. Basher, C.W. Ross, J. Danso, J. Eakonake
Doing it right

Franklin Sustainability Project
Guide to Sustainable Land Management
Wheel track diking can be an effective on both flat and sloped paddocks.