

AGRICULTURAL KNOWLEDGE TRANSFER IN NEW ZEALAND

- Organisation, context, financing, legal basis and efficiency

By

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**Report from study trip
12 December 2004 to 9 January 2005**



ABBREVIATIONS

CRI	Crown Research Institute
DAAS	Danish Agricultural Advisory Service
FADN	Farm Accountancy Data Network
GMO	Genetically Modified Organisms
ITO	Industry Training Organisation
MAF	Ministry of Agriculture and Forestry
MIS	Market Information System
MS	Milk solids (fat and protein in the milk)
NZD	New Zealand Dollar (1 NZD = 0.25 DKK)



PREFACE

New Zealand is known as not only an agricultural country but also as a country which is respected and admired for its agricultural sector, and a country with a completely liberalised agricultural market with a minimum of subsidy programmes and regulations. Seen in the light of the cease of the subsidies for the advisory services in Denmark by end of 2003, combined with the fact that EU's common agricultural policy is moving towards a gradual reduction of agricultural subsidization, it would be interesting to analyse how it has been found relevant to organise the knowledge-transfer to the primary agriculture in New Zealand. Previous Danish study trips to New Zealand has especially focused on the methods used in the primary agricultural production.

I have therefore in a connection with a visit to New Zealand in the period 12 December to 9 January 2005 studied the agricultural knowledge transfer in New Zealand with the objective

- to increase my knowledge to the way advisory services are organised in other parts of the World in order to get inspiration for the further development of our own organisation; and
- to get a better background for my work with the establishment and development of agricultural advisory services in other countries, as this is the main activity in my daily work as Senior Projects Manager for National Centre within The Danish Agricultural Advisory Service.

It was more concretely my wish to get an insight into the way the transfer of agricultural knowledge from research and authorities to the primary agriculture is organised, regulated and financed in New Zealand. I also wanted to analyse the context of this knowledge transfer, and here under compare law-based and other advice demanding factors in New Zealand and Denmark.

The study was organised as a number of meetings with institutions and persons, who are centrally involved in policy making or execution of agricultural knowledge transfer from authorities and research to private farming, whether dealing with knowledge transfer through advice, information or training. The meetings were typically organised in three phases: 1) Meeting preparations included especially studies of the homepages of the institutions and companies, 2) the meetings themselves concentrated on central questions, and 3) annual reports, magazines or other material which was handed out to me was studied after the meetings.

The study was very interesting and informative for me. I was by all contacted institutions, organisations and companies met with a big hospitality and a great willingness to provide me the envisaged information.

Skejby

28 February 2005

Henning Lyngsø Foged



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EXECUTIVE SUMMARY

New Zealand is a beautiful and interesting country, and some of the main impressions concerning knowledge transfer are:

- There is no organised, impartial advisory services in New Zealand, but a large number of service and knowledge providers with each their own objective for offering farmers advice, services, training and information.
- The agricultural productivity is extremely low as compared to the Danish level.
- Only few farmers are members of Federated Farmers, the professional farmer organisation in New Zealand.
- The legally based commodity levy system is a very great active for the knowledge transfer in New Zealand, and it pays for instance a big part of the costs for education of young farmers.
- The way the commodity levy system is organised has favoured the producers associations, who are relatively strong.
- The knowledge transfer is increasingly dealing with traceability / product certification / the chain from farmers stable to consumers table, requiring increased focus on animal welfare, agro-environment, food safety, plant protection, disease prevention, use of medicines, additives and other chemical agents, animal identification, animal health, as well as on nature conservation.

Knowledge transfer deals with more than a question of demands or needs of the supplier or consumer of this knowledge; it deals with traditions, culture, farm structure, socio-economic development, and education. The farm structure in New Zealand with an average livestock farm size of 3,500 - 4,000 stock units makes New Zealand farms among the biggest in the World, and we must on this basis assume the farms are run in a strict business oriented way. In contradiction to this it seem like New Zealand farmers has a deep buried instinct of producing without costs after the motto: "Things are good as long as I can avoid expenses". New Zealand farmers do therefore seek the free advice, training and information they can get, and as the Internet and the infrastructure in general is much less developed than in Europe, farmers are leaning much to their producers associations.

Although the traditions, culture, farm structure, socio-economic development, and education of Danish users of knowledge is different, it might both in New Zealand and in Denmark be helpful to be aware that the main playing ground for organisations working with agricultural knowledge transfer is related to issues, which are regulated by law!

- The laws issued today determine the need for agricultural knowledge transfer to farmers tomorrow! Plan your activities after this.
- The policies decided today determine the need for agricultural knowledge transfer to farmers in the future! Adjust your organisation strategies after this.

Policies are becoming more and more similar in New Zealand and in EU. One example is for instance that tagging of cattle and deer has become compulsory in New Zealand in 2001, 10 years later than in EU. The reason is simply that New Zealand exports its main part of the agricultural production, EU is a major export market, and New Zealand has therefore to comply with rules set by clients in Europe. EUREP¹ is setting standards for the agricultural practices used for production of goods, which their retailer members wish to import into EU.

However, EU is generally setting the trends, and it is therefore more relevant for New Zealand to find inspiration in EU than opposite.

Based on the above and other impressions, some overall recommendations for the development of our own organisation The Danish Agricultural Advisory Service (DAAS) are:

¹ EurepGAP started in 1997 as an initiative of retailers belonging to the Euro-Retailer Produce Working Group (EUREP). It has subsequently evolved into an equal partnership of agricultural producers and their retail customers. Our Mission is to develop widely accepted standards and procedures for the global certification of Good Agricultural Practices (GAP).



- The destiny of DAAS will much depend on the ability to maintain the strong link between the professional farm organisation in Denmark, Danish Farmers, and the advisory organisation, DAAS, here under to maintain farmers in the management of DAAS.
- The agricultural knowledge transfer market is increasingly being commercialised and internationalised. It is under such circumstances very important
 - to use efforts on marketing, branding of products, taking patents, register names, and have a sales strategy; and
 - that employees are provided a greater understanding for commerce and fund raising, here under for the inevitable connection to project organisation and competition for funding.
- Frequent reviews of strategies and organisational structure are imperial, and they shall be based on currently policy plans in the area of rural development and food safety. It is in this connection worth to note, that the rural development and food safety legislation, which we assist farmers with today, were not even thought of 20 years ago.

The context of the agricultural knowledge transfer

- Farming in New Zealand is almost only dealing with livestock grazing – rotational grazing is used with electrical fencing, fertilisers are the most important input.
- The climate makes it unnecessary to have stables.
- Normally production happens without supplement feeds.
- There are roughly
 - 12,500 dairy farms – typically of 100 ha
 - 22,000 beef and sheep farms – averagely 3,500-4,000 stock units (1 stock unit = 1 sheep, 1 cow = 7 stock units)
 - 4,500 horticulture farms
 - 10,000 smallholders
 - 1,000 grain growers
 - 4,000 deer farms (most on farms which also have sheep or beef)
 - there are only 350,000 pigs in New Zealand;
- The agricultural export value is 16 billion NZD, amounts to 85% of the production, and makes up 50-6% of all expert values – the single most export item is whole milk powder.
- Agriculture counts for around 20% of GDP.

Some key figures for an average New Zealand dairy farm, compared to an average Danish dairy farm, are shown in the following:

Parameter	New Zealand	Denmark
Cows per herd	313.9	90.0
Arable land, ha	103	100
Kg milk per cow per year	3,790	8,442
DKK per kg milk (2003)	1.26	2.45
Gross profit, million DKK	1.8	2.2
Average unit costs, million DKK	0.9	0.8
Rest for capacity costs, own labour, interest payment, depreciation and tax, million DKK	0.9	1.4
Interest payment, DKK	267,000	407,000
Total assets, million DKK	12.4	11.0
Hereof value of cooperative shares in the dairy plant, million DKK	2.2	0
Loans, % of assets	28	70



Organisation of knowledge transfer to New Zealand farmers

There is no organised advisory service in New Zealand for transfer of knowledge from research and authorities to the farming community. The need for advice, services, training and information is covered by a wide variety of companies and organisations, private, cooperative and semi-public. The following table gives an example of the service or knowledge providers and a rough estimate of their number:

Overall subject matter	Subject matter	Example of service or knowledge provider	Estimated number of persons
Farm economy and management	Farm book keeping and accounting, including tax and vat accounts, management accounts, budgeting, investment planning, financing, taxation and other	Private auditors	1,000
	FADN	Ministry of Agriculture and Forestry	10
	Legal advice	Private lawyers Federated Farmers	5
Plant production	Fertilizing, crop rotation, plant protection	Producer associations Wrightson Fertiliser companies	30
	Grassland management	NZ Grassland Society Livestock Improvement Private advisers Veterinarians (use of foliar fertilisers)	50
	Soil sampling/analysing	AgriQuality	
Animal production	Feeding norms and standards	Private advisers Dexcel	25
	Feed sampling/analysis	AgriQuality	-
	Breeding value calculation	Livestock Improvement	5
	Herd books	Livestock Improvement	5
	Milk recording/performance recording	Livestock Improvement	100
	Animal identification	Wrightson Livestock Improvement Other farm suppliers AgriQuality	5
Education and training	Training material, textbooks, curriculum, approval of farmer employers, guidance of young farmers	Agriculture ITO	45
Food quality	Food quality programmes, farm auditing, laboratory analyses, animal and herd registration, etc.	AgriQuality	100
Information	Subject matter articles, research results, legislation	Producer associations	20



Legislation related to and financing of knowledge transfer

New Zealand has like Denmark established the legal basis for a system of production levies. The Commodity Levies Act 1990 makes it possible for a Minister to propose a levy for a commodity. The Act requires that the related producer association has made a ballot on the issue, and it has been decided that the producer association in question must represent more than 70% of the production of the commodity. The use of the levy has to be determined for the specific commodity within specific frames.

Example: The Commodities Levies (Milk solids) Order 2003 has determined that all dairy producers in New Zealand (including those who might process their milk themselves) have to pay up to 4.3 cents per kg milk solids to the organisation Dairy InSight. The Order gives with other words the basis for collection of up to around NZD 60 million per year. The funds are used for:

- a) farm-focused research and information transfer
- b) information collection and co-ordination of industry standards (including animal improvement programmes)
- c) industry promotion and development (including representing the views of dairy farmers)
- d) quality assurance (including product safety, animal health, and eradication of disease)
- e) education
- f) environmental research and research into animal health and welfare (including farming practices)
- g) the day-to-day administration of Dairy InSight.

Information transfer is, as appears, the first issue mentioned! Some of the organisations mentioned on the previous table works to the benefit of all farmers or young farmers for the levy funds.

Details

For more details, please see:

- ANNEX A SHORT MEETING REPORT
- ANNEX B ACTUAL TRAVEL PROGRAMME
- ANNEX C LIST OF MET PERSONS / INSTITUTIONS
- ANNEX D STUDY TOUR ACCOUNTS
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ANNEX A SHORT MEETING REPORTS

Thursday 16 December 2004 – meeting with Alan Walker, Ministry of Agriculture and Forestry (MAF)

Information studied on beforehand

- The Development of Agriculture Advisory Services in New Zealand, MAF Policy Technical Paper 97/8, by Phil Journeaux, MAF Policy, Ruakura, and Pat Stephens, Farm Economist (Retired) edited by RWM Johnson, Assistant Director (Retired). June 1997. Ministry of Agriculture and Forestry
- Sustainable Development. Extension. MAF Technical Paper No: 2002/03. Prepared for MAF Policy by: Will Allen & Margaret Kilvington, Landcare Research, Chris Nixon & John Yeabsley, NZIER, February 2002. 80 pp.
- Agricultural Statistics. February 2001. Parliamentary Library. 4 pp.
- Agricultural Statistics 2002.

Main questions discussed

Alan Walker started to give a brief **introduction to the typical New Zealand agriculture**, and mentioned for instance, that

- farming in New Zealand is almost only dealing with livestock grazing – rotational grazing is used with electrical fencing, fertilisers are the most important input;
- the climate makes it unnecessary to have stables;
- normally production happens without supplement feeds;
- there are roughly
 - 12,500 dairy farms – typically of 100 ha
 - 22,000 beef and sheep farms – averagely 3,500-4,000 stock units (1 stock unit = 1 sheep, 1 cow = 7 stock units)
 - 4,500 horticulture farms
 - 10,000 smallholders
 - 1,000 grain growers
 - 4,000 deer farms (most on farms which also have sheep or beef)
 - there are only 350,000 pigs in New Zealand;
- the agricultural export value is 16 billion NZD, amounts to 85% of the production, and makes up 50-6% of all expert values – the single most export item is whole milk powder; and
- agriculture counts for around 20% of GDP.

About **agricultural policies** Alan Walker explained, that

- 1.5 billion NZD was given in support of the agricultural sector in 1994, for instance for producer boards, subsidies for fertiliser production, soft loans, Crown Research Institutes, and advisory services. Today the support is effectively negative if calculated as producer support equivalents;
- New Zealand is highly urbanised with 85% of the inhabitants living in cities, so there is therefore a low tolerance towards agriculture.



MAF Director of Policy, Alan Walker, provided an excellent introduction to my studies.

The most **important legal requirements** in the agricultural sector counts first of all

- Resource Management Act (RMA), a law introduced in 1991, putting many restrictions on agriculture as it authorize the regional administrations to impose regulations on farms on for instance requirements on environmental approvals, needs for making resource balance accounts, etc. The philosophy is that farmers can do as they wish as long as it doesn't harm the environment. The RMA require regional authorities to set standards for e.g.
 - air quality
 - water quality
 - soil quality
 - noise quality

Concerning **agricultural advisory service**:

- Everything what is described in the MAF homepage is outdated as there is absolutely no advisory or extension services left today, there is no funding and there is no legislation.
- Alan Walker was himself engaged in the advisory services, which ceased after the last subsidisation was taken away in 1996.
- There are probably 15-20 advisers left, spread somewhere in the commercial advisory business.
- The MAF has without the presence of an advisory service a real problem in getting information disseminated to the farmers. MAF spreads its information through the Internet, press releases and information bulletins.
- MAF has no formal relationship with Federated Farmers.

MAF must without an advisory service undertake some activities themselves, one important of them being the system **of monitoring farms to collate farm economy data to base its policies on**:

- There are 600 monitor farms;
- The collection of the data costs annually 450,000 NZD, and the work is tendered out. 7 staff in MAF handles and analyses the data.
- Other statistical collection costs 1 billion NZD per year and farmers must by law respond the questionnaires send out.



- There is no farm register in New Zealand, but the state owned enterprise AgriQuality has a kind of register.

Agricultural research in new Zealand is

- completely commercialised;
- organised under 9 Crown Research Institutes;
- the CRI's have the main purposes to do research and make a profit;
- research projects are tendered out;
- among science providers are also the 2 universities with agricultural educations, Massey and Lincoln

Alan Walker suggested me to include Lincoln University and Wrightson on the institutions to visit in order to get the right picture of knowledge transfer.

Information material handed out

- Contribution of the Land-based Primary Industries to New Zealand's Economic Growth. 2003. Ministry of Agriculture and Forestry. 55 pp.
- Agriculture, Forestry and Horticulture in brief. June 2004. MAF pamphlet.
- Agriculture and Forestry in New Zealand. An overview. July 2000. Ministry of Agriculture and Forestry. 56 pp.
- Dairy Monitoring Report. A short-term financial and physical forecast reflecting farmer, farm consultant and industry perceptions of farming trends and issues, production and financial figures. July 2004. Ministry of Agriculture and Forestry. 60 pp.

Tuesday 21 December 2004 – visit to a Wrightson farm supply shop in Te Anuh

Information studied on beforehand

- Internet page

Main questions discussed

The main purpose to visit the farm supply show was to see their offers and especially whether they had any advisory offers to farmers.

The Anuh is the regional centre of a poorly civilised South Eastern area of New Zealand, where the main farming is sheep and beef production.

The farm Supply shop was rather small and had offers of for instance working clothes, and a variety of chemicals as fertilisers, mineral blocks, medicaments and pesticides.

Given the herd sizes there were not more mineral blocks in the shop that there should be on a whole farm (and it looked like they did not haven any store outside), and the type of mineral supplements offered were salt blocks and some stuff to put in the drinking water, mainly to protect the water from growing algae. Evaluated from this it became clear that sheep and beef do not use mineral supplements on a regular basis. Salt blocks had a price of NZD 18.50 per block of 20 kg (equal to DKK 3.70 per kg – a very high price given that 98% of their content is normal fodder salt.



Mineral blocks to put into the water troughs to avoid growth of algae. The blocks gives the water an unnatural taste and supplies the livestock with some trace mienrals.

It is also possible to order ear tags in the shop. Ear tagging is obligatory in New Zealand for cattle and deer in connection with a tuberculosis surveillance programme.

There were absolutely no trace of any advisory offers in the shop, and the shop manager was not aware that Wrightson should have such offers.

Information material handed out -

Wednesday 22 Decemder 2004 – visit to "Totata Estate" a historical sheep farm

Information studied on beforehand • Internet page

Main questions discussed The Totara Estate was the place where there back in 1882 for the first time was shipped out frozen lamb to England. These initial initiatives



became later on, as known to anyone, a major industry and revenue for New Zealand. The farm is now made into a museum, showing videos, permanent exhibitions etc. of the activities from the late 19th century till now. Totara Estate itself has grown and run farm businesses different places in New Zealand.



Totara Estate has a herd of various sheep breeds, which are and has been important for the sheep industry in New Zealand.

Information material handed out

Thursday 23 December 2004 – meeting with Tony Whatman, Lincoln University

Information studied on beforehand

- Internet homepage

Main questions discussed

Lincoln University is one of eight government universities in New Zealand, established in 1878. It is the main provider of higher agricultural education in New Zealand but offers also a variety of social science and other educations.

The main purpose of the visit was for me to clarify how the research of the university is disseminated to the farmers, and which extension activities it is performing.

Tony Whatman has the title of Director of Farms, being overall responsible for the management of 7 farms belonging to the University. He was earlier involved in the state extension service in new Zealand and gave a good overview of how had functioned:

- In the period from 1960 till 1985 there were offered advice for free to the farmers. In this period there were also established Farm Improvement Clubs (FIC's). A FIC is typically meaning that around



50 farmers employ their own consultant and shares the expenses. Lincoln University took a major initiative in the establishing of FIC's, which became very successful. However, after some time it turned out that some farmers used the advisers much more than others, there came some dissatisfaction and the systems has ceased by now. However, the FIC's made the share of private advice increase from 10% to 35% in the period.

- The Government decided in 1985 as a part of a wider social and economic reform to cease any support to the agricultural sector, including support to extension. This made the extension / free advice disappear after a privatisation and a number of reorganisations. The remnants of it, Agriculture New Zealand Limited, exists as a division under Wrightson (see report from visit to Wrightsons headquarters).
- Today advisory services are not used much by farmers, but there exists many service providers – most of them also engaged in trade.



Tony Whatman is Director of Farms at Lincoln University and has earlier been involved in advice and extension.

- The only free advice is today offered by producer associations, financed from milk levies.

Commodity Levies Act 1990

The act makes it possible for a Minister to propose a levy for a commodity. The Act requires that the related producer association has made a ballot on the issue, and it has been decided that the producer association in question must represent more than 70% of the production of the commodity.



The use of the levy has to be determined for the specific commodity within these frames:

- 1) No industry organisation shall spend any amount of levy for any commercial or trading activity.
- 2) Subject to section [6\(3\)](#) of this Act, in specifying how a levy is to be spent, or a means by which an industry organisation is to ascertain how it may be spent, a levy order—
 - a) May specify any purpose or purposes for which no amount of levy shall be spent:
 - b) Subject to subsection [\(1\)](#) of this section and paragraph [\(a\)](#) of this subsection, may specify all or any of the following purposes:
 - i) Research relating to the commodity or commodities concerned, or in relation to any matter connected with it (including market research):
 - ii) The development of products derived from the commodity or commodities concerned:
 - iii) The development of markets for the commodity or commodities, or products derived from the commodity or commodities:
 - iv) The promotion (including generic advertising) of the industry concerned, the commodity or commodities, or products derived from the commodity or commodities:
 - v) The protection or improvement of the health of animals or plants that are, or parts of which are, or from or by which is or are produced or gathered, the commodity or commodities concerned:
 - vi) The development or implementation of plans or programmes of quality assurance (relating or relevant to the commodity or commodities concerned):
 - vii) Education, information, promotion, or training, (relating or relevant to the commodity or commodities concerned):
 - viii) Day to day administration of the organisation's activities (not being the administration, direct or indirect, of any commercial or trading activity undertaken by the organisation or on its behalf):
 - ix) Any other purpose the Minister thinks fit.
- 3) Subsection [\(2\)\(b\)](#) of this section does not limit the generality of section [6\(2\)\(a\)](#) of this Act.
- 4) An industry organisation may, with the written approval of a Minister, and subject to the conditions (if any) subject to which the approval was given, spend any amount of a levy it has imposed pursuant to a levy order for a purpose prohibited by subsection [\(1\)](#) of this section or by the order.
- 5) The Minister shall not give an approval under subsection [\(4\)](#) of this section unless satisfied that—
 - a) The spending of money for the purpose concerned will benefit most of the persons primarily responsible for the payment of the levy concerned; and
 - b) If some members of the industry spend money for the purpose, other members who have not done so will derive unearned benefits from the expenditure; and



- c) Persons who, together, are primarily responsible for paying considerably more than half the amount of the levy concerned each year support the spending of money for the purpose.
- 6) Nothing in subsection (1) of this section prevents an industry organisation from—
 - a) Using any part of a levy for buying limited quantities of the commodity or commodities concerned, or of any product made from it or them, if those quantities are bought for one or more of the following purposes: promotion, research, education, product development, and market development; or
 - b) Reselling (with or without modification or processing) all or any part of any limited quantity of the commodity or commodities bought for one or more of those purposes.
- 7) Nothing in subsection (1) of this section prevents an industry organisation from—
 - a) Using any part of a levy to undertake or pay for the undertaking of any promotion, research, product development, or market development, undertaken with the intention of achieving commercial or financial benefits; or
 - b) Exploiting commercially (otherwise than by the use of any part of a levy) the results of any promotion, research, or development, for whose undertaking any part of a levy was (whether with or without the intention of achieving commercial or financial benefits) used or paid; or
 - c) Using any part of a levy to undertake or pay for the undertaking of the publication or sale of any educational, informative, or promotional material, (whether or not at a profit); or
 - d) Investing any part of a levy, pending its expenditure.

- The Commodities Levies (Milksolids) Order 2003 has determined that all dairy producers in New Zealand (including those who might process their milk themselves) have to pay up to 4.3 cents per kg milksolids to the organisation Dairy InSight. The Order given with other words the basis for collection of up to around NZD 60 million per year. The funds are used for:
 - h) farm-focused research and information transfer
 - i) information collection and co-ordination of industry standards (including animal improvement programmes)
 - j) industry promotion and development (including representing the views of dairy farmers)
 - k) quality assurance (including product safety, animal health, and eradication of disease)
 - l) education
 - m) environmental research and research into animal health and welfare (including farming practices)
 - n) the day-to-day administration of Dairy InSight.Information transfer is, as appears, the first issue mentioned!



Information material handed out

- Finally, it was clarified that Lincoln University is not performing any kind of extension service activities, and the only form of knowledge transfer is the one that happens in the teaching of the students.
- Commodity Levies Act of 7 September 1990 with amendments of 1993 (No 151) and 1995 (No. 85).
- Commodity Levies (Milksolids) Order 2003 of 24th day of March 2003.

Thursday 23 December 2004 – meeting with Terry Donaldson, AgriQuality

Information studied on beforehand

- Internet pages

Main questions discussed

The background for meeting with AgriQuality was that I on beforehand had discovered from the Internet that AgriQuality actually offers many services to the farming community which are similar to the services DAAS offers.

AgriQuality is a state owned enterprise, which was privatised and separated from Ministry of Agriculture and Forestry in 1999, in connection with its reorganisation of an earlier department within the MAF.



Manger of AgriQuality, Mr Terry Donaldson is an enthusiastic person, and AgriQuality an interesting organisation, which offers a wide variety of services to the farming society – many of them being the same services as DAAS offers their clients

AgriQuality is an organisation, which undertakes many activities similar to DAAS:

Example of activities of AgriQuality, similar to DAAS:

- On-farm audits
- Grower audits
- Farm dairy assessments
- Animal welfare audits
- Livestock disease control
- Horticulture and seed crops surveys and inspections
- Growers spray programme monitoring
- Environmental monitoring



- Farm mapping and GIS services
- Animal health surveillance
- Sample collection
- Food safety and quality management auditing
- Product and food safety programme evaluation and auditing
- Plant pathology and entomology testing
- Export market compliance
- Export certification
- Plant pest and disease diagnostics

AgriQuality has 948 employees and a steeply increasing turnover of presently NZD 90 million. It is working with areas with has an increased attention, such as issues related with disease surveillance, traceability and product certification. New Zealand is due to its very high rate of expert in need to comply with export markets requirements to health, welfare, sanitary, medical etc. requirements – see for instance www.eurep.org on some of the requirements for export to EU.

AgriQuality is also running a GMO laboratory and a seed laboratory in Australia.

As an example it can be mentioned, that the large dairy, Fonterra, of this reason has introduced a product quality standard programme for its suppliers, which AgriQuality undertakes the third part auditing of.

Information material handed out

- Annual Report 2004. 46pp.

Thursday 23 December 2004 – meeting with Katherine Trought, Crop&Food Research

Information studied on beforehand

- Internet page

Main questions discussed

Crop&Food Research is one of 9 Crown Research Institutes in New Zealand. It is a state owned company with a board appointed by the Government, members typically representing the industries (horticulture, etc.).

Crop&Food Research has a staff of 335 persons in the main company. The turnover is close to 40 million NZD, whereof 50% comes from commercial activities (wun tendered research projects) and the rest from for instance royalties and licenses.

Crop&Food Research holds majority interests in 8 other companies with in total 1,200 staff. Those companies are typically functional foods producers, plant breeding centres and alike. The activities are extended to Australia.

Crop&Food Research is mainly dealing with research in arable crops and vegetables, and they have a long-standing cooperation with the industries, and especially with VEGFED, the vegetable growers association. VEGFED tender out research projects financed from the levies they put on the marketed vegetables. Research projects are typically of 1-5 years duration. The payer is the only one who gets the results of the research projects and would then decide whether and how to disseminate this information. Also MAF has a Sustainable Farm Fund, which tender out research projects and they also go after tenders and business in Australia, and they have one project to



develop new wheat varieties for the Australian market. It happens that they cooperate with other CRI's if they form consortiums about projects, but else other CRI's are strong competitors.

Crop&Food Research is absolutely not doing any information dissemination activities (except from promotion of their services), they do no farmer training and there are not found any research results on the web page.

The way to work makes research extremely business oriented, and the disadvantages of the completely commercialised research are that

- farmers would only get to know about research results, which the payer has censured; this would not be frightening as long as the payer is a grower association but calls for some sound scepticism to research results financed by the private companies in the agricultural supply production industry;
- scientists would have more difficulty to get their findings published in international scientific journals, where the condition is that the results have not been released earlier; and
- there are absolutely no freedom for the researchers to follow a thread and make spontaneous experiments (this is the way the majority of this Worlds discoveries, innovations and inventions happened).

However, Crop&Food research gave the impression of being a very professional organisation encompassing the most advanced crops related science expertise with modern business management. There were absolutely no sign that the push to commercialise the agricultural research sector had set them back.

The main purpose of the meeting was to clarify how research results are communicated to the farming society. This question was quickly clarified, as

- they do not perform any information, extension, training or advisory service towards farmers or anyone else;
- only the payers, typically producers associations and especially for Crop&Food research VEGFED, would have the information about research results, and then they would communicate this to their members through their member magazines or their advisers, in some case through trainings organised;
- Crop&Food research issue an annual report and some newsletters "Digest", which are merely some general profile magazines.

Information material handed out

- Annual Report 2004.41 pp.
- Company profile. 18 pp.
- Several "Digest" newsletters

Thursday 23 December 2004 – meeting with Helwi Tacoma, INTELACT

Information studied on beforehand

- Internet pages

Main questions discussed

The meeting with Intelact was organised as this company presents themselves as advisers to the dairy farmers. The meeting took place in Christchurch with Director and Consultant Mr Helwi Tacoma, who accidentally were at the South Island at the same time as me as it otherwise due to Christmas and New Year would be difficult to find a suitable time to meet at their headquarters in Te Awamutu in the northern part of the North Island.



Intelact has around 20 advisers with a high education and expertise within nutrition, health and reproduction matters, and spread all over New Zealand. Their advise cover all aspects of dairy production, and their customers are typically the most advanced or progressive of the dairy farms, who steps out from the traditional production systems based on grass alone, and uses supplement feeding to optimise economy and productivity. The customers are also counting client farms in Australia.



The headquarters of Intelact in Te Awamutu is merely for administration – the advisers are working region-wise.

Intelact would always ask for payment of their consultations, but they also organise the delivery of input supplies in the form of supplement feed, minerals, vitamins, medicaments, etc.

Intelact would have their knowledge up-dated from participation in national seminars, reading magazines, international conferences and scientific journals, etc.

Information material handed out

- Company profile pamphlet.

Thursday 29 December 2004 – visit to RD1 in Cambridge

Information studied on beforehand

- Internet homepage

Main questions discussed

RD1 is a division under Fonterra, having farm supply shops in especially in the dairy regions on the Northern Island.

The visit was made in order to get an impression of the offers to the farmers.

Compared with the visit to Wrightson in Te Anuh the shp was considerably larger and with a larger assortment and more articles of interest for dairy farmers, for instance medicaments for hygiene and udder health, washing detergents, etc. There were like in the Wrightson shop no offers of advice or training.

Information material handed out

-

Friday 30 December 2004 – visit to a dairy farm

Information studied on beforehand

- Agricultural statistics
- Farm magazines

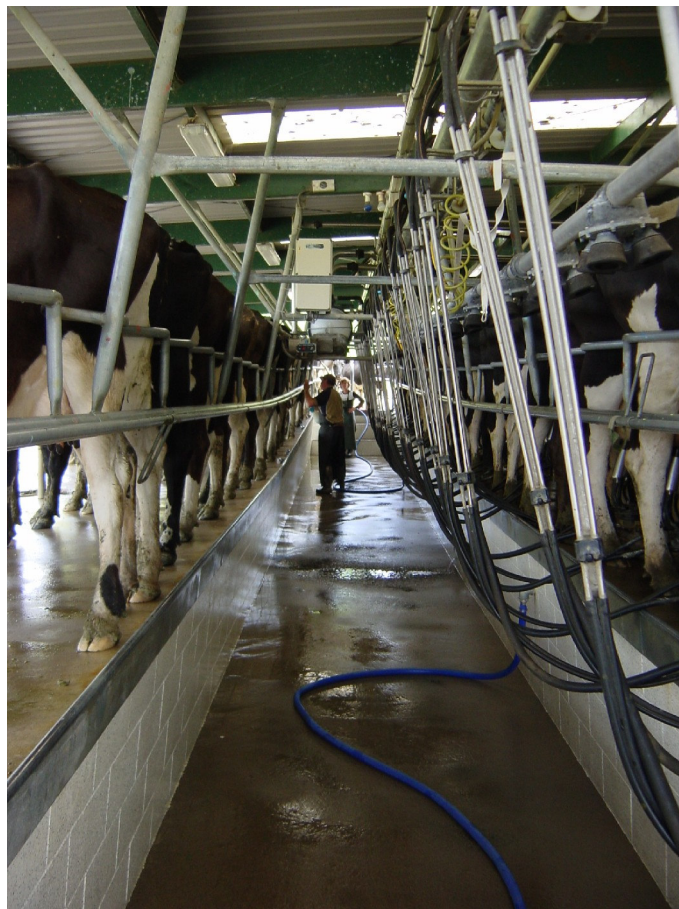


Main questions discussed

Familien Clotier – husband, wife and son at approximately 20 years – runs the farm with 320 dairy cows and 100 ha, situated in the famous Waikato region, where there is a big concentration of dairy cows.

They are milking their 320 cows 2 times per day in a 2 x 30 milking parlour. They take vacation in the wintertime when all the cows are dry. As many others they consider going over to one time milking per day all year. The inseminations are handled by Cr. Clotier himself, and he is further servicing 10 other herds with artificial inseminations.

Advice is not used, maybe except for a single visit by an adviser in the spring time to discuss grassland management and strategies for the herd. Book-keeping is handled by the wife and the accounts made by a private auditing company. They are not member of any farmers joint experience groups or similar.



Note, that the tails are docked, and that the cloves looks to be in a remarkably good condition, despite the fact that they are never trimmed. Inseminations are handled by Mr Clotier himsel, who also serves 10 other herds with inseminations.

They use purchased silage in case of shortage of grass in the spring. Mineral supplementation - or any other form of feed supplementation - is not used, except for powdering of the paddocks with some minerals in periods just before the cows are let into the paddock, as a rotational paddock system is practiced. The grass fields are re-sown approximately every 10 years.

The only machinery on the farm is a 4-wheel motorbike (for instance used for the powdering of the paddocs). The farm has except from the milking parlour with the milking room and milk tank only a small open



hut for the calves, when they are newly born. The keeping of the heifers is out-sourced to a nearby farm.

The visit gave the impression, that the family Clotiers is satisfied with their life, in balance with themselves and without any distinguished drive to change their situation.

Information material handed out -

Thursday 30 December 2004 – visit to Bill Gerring of Tirau Veterinary Centre

Information studied on beforehand -

Main questions discussed Veterinarian, Mr Bill Gerring, is running a normal veterinarian clinic in Tiray close to Hamilton on the Northern Island. The clinic employs 4 veterinarians.

The purpose of the visit was to investigate the level of knowledge transfer via veterinarians.

In general veterinarians are used much lesser than in Denmark as the legislation around medicine use is much more liberal than in Denmark, and also because the productivity level is so low that the disease pressure on the animals are smaller – the herds are on the other hand much larger, meaning that the spreading of infectious diseases are a much larger problem. The veterinarian would therefore typically not be called so much for single animal treatments like for instance mastitis, but more frequently for herd abnormalities as for instance diarrhoea among calves or mineral deficiency problems.

<p>Minerals</p> <p>Deficiency in Mg is the main problem. Some farmers powder the grass with 100 g MgO (at a price of around 1,000 NZD per tonnes. There are often serious problems with Cu deficiencies. In Rotorua there are problems with Co deficiency (bush sickness). All farms have more or less problems with Zn deficiency, an important mineral to fight <i>facial eczema</i>.</p>
<p>Animal identification</p> <p>Traceability is of increasing importance. Ear tagging is used for the Tuberculosis surveillance programme; TB reactors are identified by their ear tag and are not allowed for export. (TB is a serious problem, spread by opossums.)</p> <p>All dairy cows have 2 ear tags by law – with a bar code and a herd number as part of the entire number. Recording of calvings and movements.</p>
<p>Medication</p> <p>Every treatment must be recorded subsequent with a withholding time. Veterinarians issues subscriptions. Every herd must receive a consultation per maximally 6 months. There is legislation for storage of medicals or dangerous substances.</p>
<p>Welfare</p> <p>Tail cuts can only be done before the cattle is 18 months old, and the same with dehorning. There are also rules for necessary space for poultry.</p>

Despite the big and seemingly normal problems with death of animals



and symptoms of low immune status, etc. due to mineral deficiencies² the veterinarians are not recommending farmers to use mineral supplements. When some problem has been discovered the veterinarian prescribes some treatment, for instance use of a specific liquid mineral solution given by drench gun for a period to all dairy cows, and the farmers can purchase the minerals in the veterinarian clinic. Before the treatment the veterinarian would often sample blood or liver tissue to analyse for verification of the diagnosis and the severity of the mineral deficiency. It is estimated that the veterinarians in this way sells maybe half of all cattle minerals in New Zealand. The reason for not advising farmers to use mineral supplements is that "There are no research results that has proven that cattle are in deficiency of more than one or a few of the 15 minerals they need so how can we recommend the dairy farmers (or other livestock farmers) to spend money on mineral supplements on a regular basis."

It is really depressing to recognize that veterinarians are the main livestock nutrition advisers in New Zealand – a role they probably do not have the right education for and especially because they have a dubious role as suppliers of mineral medicaments and other turnover following the mineral deficiencies.

The veterinarians are up-dated through their association magazine, where veterinary issue related research results and similar articles are published, and else through seminars etc.

Information material
handed out -

Wednesday 5 January 2005 – meeting with Wrightson

Information studied
on beforehand • Internet homepage in general – www.wrightson.co.nz

Main questions
discussed The background for the meeting was the fact that Wrightson is the largest farm supply company in New Zealand and they have taken over Agriculture New Zealand, the privatised advisory service, the rest of the former state financed extension service.

Wrightson has an annual turnover of NZD 820 millions and are engaged with a wide range of activities, for instance

- Sale of farm supplies as medicaments, fertilisers, etc.
- Trade of livestock
- Trade of wool
- Real estate trade
- Agricultural advice
- Agricultural insurance activities

Compared to the size and the range of activities Wrightson is really a small company to European standards. The reason is simply, that the use of farm supplies is so extremely low in New Zealand. The level of use of supplement feed including fertiliser for the fodder crops are only one eighth of the level in Europe in value.

The Agriculture New Zealand keeps a rather low profile in Wrightson – they offer farmers some in-service training courses, which typically have a close relationship to some products Wrightson sells, for instance GROWCARE[®] courses, including subjects on plant protection.



Information material handed out

- Annual Report 2004. Wrightson. 45 pp.

Wednesday 5 January 2005 – meeting with Chris Jack, Nutritec International Limited

Information studied on beforehand

- Internet pages

Main questions discussed

Nutritec International Limited is a company, which produce especially mineral supplement mixtures of the same type as are used in Europe, here under granulated mineral mixtures.

Nutritec is the only company in New Zealand which produces such minerals.

Nutritec was established by a Danish chemist and only recently bought by another New Zealand based family. Its minerals are for instance bearing the name DANMIX. The customers of Nutritec products are especially dairy farmers, who have understood the value of the use of regular supplementation with mineral mixtures. The sale happens directly to the farms by a corps of 28 sales staff. The sales staff would offer services much similar to persons known as "Verkaufsberatern" in Germany, i.e. agronomists who gives nutritional advise and makes feeding plans while in the same time takes orders on the supplement feed their company provides.

Information material handed out

- Complete nutrition. Company presentation folder.

Thursday 6 January 2005 – meeting with John Pask, Federated Farmers (FFNZ)

Information studied on beforehand

- Internet pages

Main questions discussed

Federated Farmers is the professional association of New Zealand farmers. However, they have only one out of 6 farmers as their member, and a major reason for this is probably that they do not offer their members advisory services, and with the limited number of members they also have a problem to be respected as the organisation who represent farmers generally towards the Government and in this way influence the agricultural policy. It is symptomatic for a weak organisation like this, that they in their efforts to be heard on their homepage in late December 2004 had a heavy critics of the Minister of Agriculture and Forestry on an issue of property rights.

Federated Farmers issues the magazine "Straight Furrow", which is much dominated by advertisements, and the 15 last of the 60 pages are alone advertisements of farms and other real property.

Else, another important offer Federated Farmers emphasizes they give to their members, is the advice from a lawyer. They have a single lawyer the members can contact and one might wonder how one person is able to service 13,000 farmers with individual advice.

Well, my poor impressions of Federated Farmers has of course its background in my inevitable comparison with the federation of Danish Farmers, who has around 90% of Danish farmers as members, runs an advisory service with 3,300 staff, offers a high quality member magazine, and imposes much influence on the agricultural policy in Denmark, among other via its position in the Danish Agricultural



Council.

New Zealand has in the theory and umbrella organisation like Danish Agricultural Council, but it is according to John Pask not working in practice. Federated Farmers has of course contacts with Ministry of Agriculture and Forestry and with the producer associations, but it seem for me that these links are relatively weak. Federated Farmers are not contributing much to the knowledge transfer in agriculture.

I was confirmed in my belief that farmer organisation without advisory offers to their members will have difficulty to grow string and important.

Information material handed out

- Federation Update. Several issues. 16 pages quarterly political statement newsletter.
- Straight Furrow. 60 pages weekly member magazine. Mainly advertisements and market information.
- Various subject matter handouts.

Thursday 6 January 2005 – meeting with Galvin Coker Agriculture ITO

Information studied on beforehand

- Internet page

Main questions discussed

The Agriculture ITO is a relatively new organisation set up to continue education of farmers after the farm cadetship scheme from 1964, later reorganised into the Farm Education and Training Association of new Zealand in 1990.

ITO has a board of producer organisation representatives, who in this way directly takes the responsibility for the organising and financing of the education of young farmers. The financing of the various farmer educations is as follows:

Producer Associations	Dairy – Dexcel	70%
	Beef – NZ Meat Board	
	Sheep/Wool – NZ Wool Board	
	Pork – NZ Pork Industry Board	
	Rural retail Supplies – Rural retail Supply companies (user pays)	
	Poultry – Poultry employers	
	Merino – Merino New Zealand	
Government	Tertiary Education Commission (TEC)	15%
Trainee	-	15%

There are 28 lines/specialities in the farm educations, and 10 levels. As examples of specialities can for instance be mentioned fencing, pork production, and artificial insemination.

The levels are in general

- Level 1 to 4: Various skills levels of farm workers, who have learned specific work routines with increasing complexity.
- Level 5 to 6: Farmer education level (National Diploma Level), where the students have learned management and farm business at a level enabling them to run their own farm or be sharemilkers.
- Level 7 to 10: Post graduate studies levels, for level 10 described as a level that involves skills and knowledge that enable the



student to "provide an original contribution to knowledge through research or scholarship, as judged by independent experts applying international standards.

Sharemilkers: It is a common thing for New Zealand farms that the producers and the owners are different persons – a sharemilker would have an agreement with the owner of the farm on the way they share the income of the milk sale.

It is worth noticing, that

- It is voluntary to take any farmer education courses as there are no restrictions for buying of farms for non-educated persons, and there are no specific subsidies for young and educated farmer's purchase of farms.
- The education happens while the student's works full time. There are no boarding schools, but theoretical lessons, self studies, and a high degree of putting the responsibility for the students learning on the shoulders of the farmer employer.
- There are presently approximately 14,000 young farmers under the farmer education scheme!!

It should also be mentioned, that the Agriculture ITO except from around 10 staff in the national headquarters in Wellington employs around 30 regional staff, who has the role of advising the young farmers in their choices of specialities and the courses to choose, but who also approves the farmer employers to have young persons under education.

Information material
handed out

- Annual Report 2003. 41 pp.
- Managing your team. A guide to employment practices. 2001. Agriculture ITO. 66 pp.
- Earn while you learn. Agriculture ITO pamphlet.
- Poultry production. Agriculture ITO pamphlet.
- Physical resource management. Agriculture ITO pamphlet.
- Business planning. Agriculture ITO pamphlet.
- The national diploma in agribusiness management. Agriculture ITO pamphlet.
- Production management. Agriculture ITO pamphlet.
- The role of Agriculture ITO. Agriculture ITO pamphlet.
- Financial planning. Agriculture ITO pamphlet.
- Dairy farming. Agriculture ITO pamphlet.
- Rural retail. Agriculture ITO pamphlet.
- Pork production. Agriculture ITO pamphlet.
- Lead and educate. Agriculture ITO pamphlet.



ANNEX B ACTUAL TRAVEL PROGRAMME

In the following is the realised travel programme. It was necessary to compress the meetings on fewer days than planned as there were more holidays/days off in connection with Christmas and New Year than expected on beforehand. 15 days (out of 29 days) with travel or meeting activity, necessary for the undertaking of this study, are indicated with bold font.

Date³	Place	Activity
12 December 2004	Billund to Sydney via Frankfurt	Flight
13 December 2004	Billund to Sydney via Frankfurt	Flight
14 December 2004	Sydney to Wellington	Flight
15 December 2004	Wellington	Acclimatisation
16 December 2004	Wellington	Visit Ministry of Agriculture and Forestry
17 December 2004	Wellington to Christchurch	Flight
18 December 2004	Southern Island	Tourism
19 December 2004	Southern Island	Tourism
20 December 2004	Te Anau	Tourism
21 December 2004	Te Anau	Visit to Wrightsons
22 December 2004	Omaru	Visit to historical sheep farm, Totara Estate
23 December 2004	Christchurch to Wellington	Visit to Lincoln University Visit to AgriQuality Visit to Agresearch Meeting with Intelact Limited Flight
24 December 2004	Wellington	Christmas
25 December 2004	Wellington	Christmas
26 December 2004	Wellington	Christmas
27 December 2004	Taupo	Tourism
28 December	Taupo	Tourism

³ Days on grey background are week-ends or holidays or days it otherwise was impossible to organise meeting at (light grey).



Date³	Place	Activity
2004		
29 December 2004	Cambridge	Visit to RD1
30 December 2004	Te Awamutu	Visit a dairy farmer Visit to Tirau Veterinary Centre
31 December 2004	Wellington	Tourism
1 January 2005	Wellington	New Year
2 January 2005	Wellington	Tourism
3 January 2005	Wellington	Tourism
4 January 2005	Wellington	Tourism
5 January 2005	Wellington + Auckland	Visit to headquarters of Wrightsons in Porirua Visit to Agritech International Limited in Auckland
6 January 2005	Wellington to Sydney	Visit to Federated Farmers Visit to Agriculture ITO (Industry Training Organisations) Flight
7 January 2005	Sydney	Tourism
8 January 2005	Sydney to Billund via Singapore	Flight
9 January 2005	Sydney to Billund via Singapore	Flight



ANNEX C

LIST OF MET PERSONS / INSTITUTIONS

#	Places	Persons
1	Ministry of Agriculture and Forestry (MAF) ABS Bank House 101-103 The Terrace P. O. Box 2526 Wellington New Zealand www.maf.govt.nz	Mr Alan Walker , Director, Policies, Information & Regions, MAF Policy Phone +64 4 474 4100 eMail alan.walker@maf.govt.nz
2	Totata Estate (Sheep farm) 19 DRV Omaru New Zealand www.totaraestate.co.nz	eMail totaraestate@historic.org.nz
3	Lincoln University P. O. Box 84 Lincoln Christchurch New Zealand http://www.lincoln.ac.nz/	Mr Tony Whatman , Director of Farms Phone +64 3 325 3672 eMail whatman@lincoln.ac.nz
4	Intelact Nutrition Limited 418 Sloane Street P. O. Box 370 Te Awamutu New Zealand www.intelact.co.nz	Mr Helwi Tacoma , Director Phone +64 7 871 4547 Mobile +64 27 603 4312 eMail h.tacoma@xtra.co.nz
5	Crop&Food Research Private Bag 4704 Christchurch New Zealand www.crop.cri.nz	Ms Katherine Trought , Communications and Public Relations Manager Phone +64 3 325 6401#3508 Mobile +64 27 431 3261 eMail troughtk@crop.cri.nz Mr Nic Lees , Business Manager Phone +64 3 325 6400 Mobile +64 27 431 3763 eMail leesn@crop.cri.nz
6	AgriQuality Limited 14 Sir William Pickering Drive Burnside Private Bag 4718 Christchurch New Zealand www.agriquality.com	Mr Terry Donaldson , Manager Phone +64 3 358 1830 Mobile +64 27 433 7127 eMail donaldsont@agriquality.com
7	Wrightson Farm Supplies	Manager



#	Places	Persons
	Te Anuh New Zealand www.wrightson.co.nz	
8	Dairy farm Aotearoa Road 35 Waikato Region New Zealand	Cr. & Tm. Clothier
9	Tirau Veterinary Centre P. O. Box 41 Tirau New Zealand	Veterinarian, Mr Bill Gerring Phone +64 7 883 1667 Fax +64 7 883 1838 eMail tirauvetcentre@xtra.co.nz
10	RD1 Limited 81 Queen Street P. O. Box 432 Cambridge New Zealand www.rd1.com	Branch Manager, Mr Malcolm Aish Phone +64 7 827 4622 eMail malcolm.aish@rd1.com
11	Nutritech International Ltd. 12 Fischer Crescent P. O. Box 62-121 Mt Wellington Auckland New Zealand www.nutritech.co.nz	Sales and Marketing Manager, Mr Chris Jack Phone +64 9 276 1185 Mobile +64 27 222 8020 eMail chrisjack@nutritech.co.nz
12	Wrightson Wrightson House 14 Hartham Place Porua P. O. Box 50 240 Poirua New Zealand www.wrightson.co.nz	Market Development Manager, Mr James Croy Phone +64 918 3264 Mobile +64 29 918 3264 eMail jamescroy@wrightson.co.nz Group Manager, Store Operations, Mr Vaughan Whyte Phone +64 918 3280 Mobile +64 29 918 3280 eMail vaughanwhyte@wrightson.co.nz Sales Manager, Mr Barry McMillan Phone +64 3 989 9039 Mobile +64 29 989 9039 eMail barrymcmillan@wrightson.co.nz
13	Federated Farmers (FFNZ) 154 Featherston Street, Level 6 P. O. Box 715 Wellington www.fedfarm.org.nz/	Deputy Director, Policy, Mr John Pask Wellington Office Tel: +64 473-7269 Fax: +64 473-1081 Email: jpask@fedfarm.org.nz
14	Agriculture ITO (Industry Training	Corporate Analysis and Accreditation Manager,



#	Places	Persons
	<p>Organisations) Thoroughbred House, Level 2 Taranaki Street 180 – 188 P. O. Box 10-382 the terrace Wellington New Zealand www.agricultureito.ac.nz</p>	<p>Mr Gavin Coker Tel. +64 801 9616</p>



ANNEX D STUDY TOUR ACCOUNTS

The following table relates only with the expenses for the study tour part of the travel, which I with reference to Annex B defines as days with travel or meeting activity. Expenses and costs for other days, here under week-ends and holidays, are not included in the following accounts:

Expenses	DKK ⁴
Flight ticketc Billund-Wellington-Christchurch-Wellington-Billund	12.163,00
Flight ticket Wellington-Auckland-Wellington	1.276,00
Rent of car (7 days on southern island and 11 days on northern island)	15.354,48
Per Diem (15 days of DKK 408)	6.120,00
Accommodation (without documentation – 15 nights of DKK 175)	2.625,00
Parking, taxis and fuel	3.597,00
Total	41.135,48

Financing	DKK
"Fællesfonden" administered by DAAS National Centre	5.000,00
"Jubilæumsfonden, Søren Sørensens Studielegat, samt A. og H.K. Olsens Fond" administered by Danish Advisers Association	5.000,00
Private financing	31.135,48
Balance	41.135,48

⁴ 1 NZD = 4 DKK



ANNEX E ARTICLE SENT TO BOVILOGISK

Succesfaktorer for mælkeproduktion uden subsidier

- vi skal ikke forsøge at lave mælk med produktionssystemer og metoder som anvendes i New Zealand

af



Henning Lyngsø Foged
Senior Projektleder
Landscentret | International

Hvis produktionssystemet alene består af køer, græsmarker og en malkestald så er det naturligvis salget af mælk per ha græs der er den mest kritiske succesfaktor for økonomien, og kvægbrugerens handelsevner er helt uden betydning når man næsten ikke anvender hjælpestoffer eller tilskudsfodermidler og når man har et helt markedsdominerende mejeri. Med faldende mælkepriser og subsidier til mælkesektoren i EU kan vi dog ikke uden videre finde løsningen til mælkeproduktionens tilrettelæggelse ved at bruge New Zealand som forbillede. Om 10 år har new zealænderne formentligt indrettet deres mælkeproduktion efter mere dyrevelfærdsmæssige standarder, har krav om øremærkning, sporbarhed i produktionen og miljøgodkendelser, og lært at anvende tilskudsfoder for at optimere økonomien og ikke for at undgå dyrene dør. – Og de mælkeproduktionsenheder i EU - som overlever og evner at konkurrere mod new zealænderne på det globale "landsbymarked" – er dem med de allerbedste driftsledere og de største besætninger der kan udnytte den nyeste produktionsteknik.

Nogle umiddelbare indtryk

New Zealand gennemførte økonomisk reform i 1986 og har siden den tid fremstået som et super liberalistisk samfund; tidligere subsidier af landbruget er nu helt og aldeles fjernet, og det har bl.a. medført at al landbrugsforskning foregår på kommerciel basis (hvilket absolut ikke har taget pusten fra den). En landbrugsrådgivningstjeneste har de aldrig haft, og den "extension service" de havde efter USA model er forsvundet helt for de havde åbenbart ikke nogen tilbud som landmændene fandt værdifulde nok til at betale for.

Mælkeprisen er ca. 126 øre per liter p.t. idet man dog afregner per kg. værdistof og stort set aldrig anvender kg mælk som enhed. Mælkeydelsen per ko er noget vi går meget op i, men som er underordnet på New Zealand. 95 % af produktionen eksporteres, mest i form af sødmælkepulver. Selvom landmandens pris altså er i niveauet 40 % lavere end i Danmark – og dette er for resten gældende for prisniveauet generelt i New Zealand - så koster mælken en anelse mere i butikkerne; med 1.600 km til nærmeste ikke new zealandske ko har kunderne har jo ligesom ikke noget valg hvis de vil have frisk mælk. Mejeriet Fonterra har en



markedsandel på over 95 %, de har godt 12.000 andelshavere (med aktier!), altså knap så mange som Arla, men de indvejer 14 millioner tons mælk og har over 19.000 ansatte, mens tallene for Arla er 7.1 millioner tons mælk og knap 18.000 ansatte.

Det typiske malkekvægbrug har over 300 køer, og nyder godt af klimaet derved at de ikke behøver staldbygninger ud over malkestalden, og at klimaet ellers frembyder ideelle betingelser for græsvækst. Kun ca. 10 % af verdens mælkeproduktion er lavet på denne måde alene ved afgræsning. Tabel 1 viser en sammenligning af et gennemsnitligt dansk og new zealandsk malkekvægbrug; når man når ned på bundlinien er der ikke megen forskel. Efter at have trukket ca. 200.000 ud til privatforbrug har det gennemsnitlige new zealandske malkekvægbrug et underskud på 25.000 kr. Selvom det på grund af forskellige opgørelsesmetoder er svært at sammenligne regnskaber fra land til land så mener jeg dog økonomien i mælkeproduktionen er lidt bedre i Danmark (men husk altså på, at vores mælkepris er ca. 40 % højere – endnu).

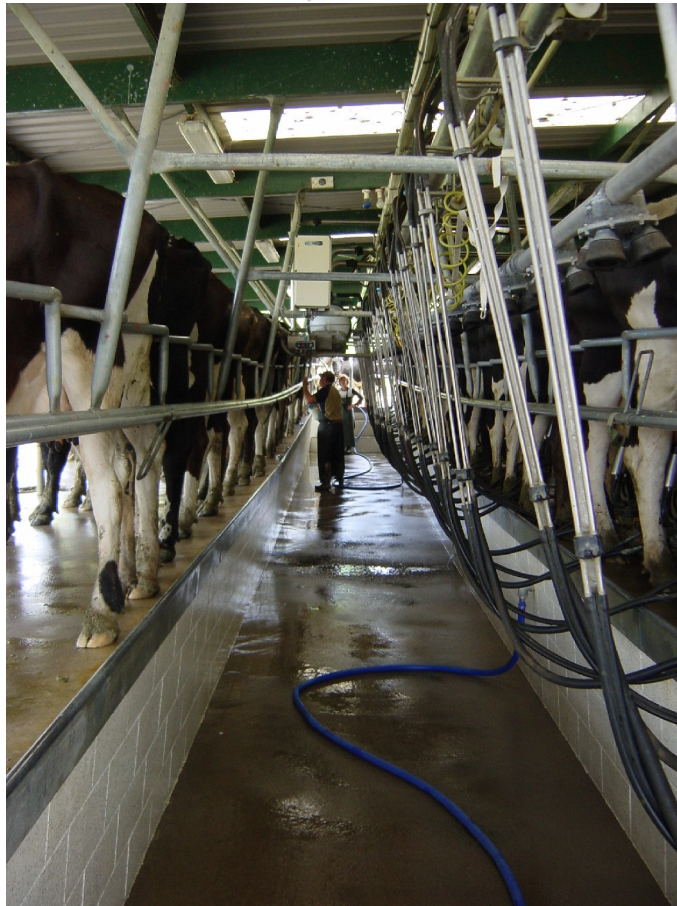
Tabel 1 *Sammenligning af nogle væsentlige indikatorer for en gennemsnitlig new zealandsk og dansk malkekvægbesætning (Kilder: Landbrugsministeriet i New Zealand – gennemsnit af 100 malkekvægs-overvågningsbesætninger i 2003/04, Landskalkuler 2004 fra Landscentret, Ydelseskontrolresultater 2003/04 fra RYK). Nogle af tallene er groft ansat, og beregnet fra andre tal.)*

Parameter	New Zealand	Danmark
Køer per besætning	313,9	90,0
Jordtilliggende, ha	103	100
Kg mælk per årsko	3.790	8.442
Øre per kg mælk	126	245
Gens. bruttoudbytte per bedrift, millioner kr.	1,8	2,2
Gens. stykomkostninger per bedrift, millioner kr.	0,9	0,8
Rest til dækning af kapacitetsomkostninger, egen arbejdskraft, renter, afskrivninger og skat, millioner kr.	0,9	1,4
Renteudgifter	267.000	407.000
Aktiver, millioner kr.	12,4	11,0
Heraf værdi af andelshaverbeviser i mejeriet, millioner kr.	2,2	0
Gæld, %	28	70

En new zealandsk malkekvægbruger skal med andre ord have ca. 5½ malkekøer for at lave det samme dækningsbidrag som en dansk ko (her vurderet på basis af bruttoudbytte minus driftsomkostninger), og selvom der ikke er de store udgifter til bygninger og maskiner og heller ikke de store forskelle i arealtilliggende, så har man faktisk en aktivmasse som i forhold til omsætningen er ca. 40 % større end aktivmassen på et dansk malkekvægbrug med samme bruttoudbytte! En skelen til tidligere års økonomiske resultater samt fremskrivninger af økonomien i den new zealandske mælkeproduktion giver nogenlunde samme billede.

New Zealand som inspiration

Det er spændende at rejse og det giver altid inspiration uanset hvor man så rejser hen. Selvfølgelig kan man ikke overføre den måde man har organiseret tingene på i et land på den anden side af jordkloden, men New Zealand har en række forhold som vi også bevæger os hen imod, altså overhovedet ingen subsidier. Det kan derfor være interessant at analysere hvilke parametre der under sådanne forhold er afgørende for økonomien i mælkeproduktionen.



Familien Clotier - mand, kone og søn på omkring 20 år - malker de 320 køer 2 gange om dagen i deres 2 x 30 malkestald. Om vinteren holder man ferie når alle køerne er gølle. Ligesom mange andre overvejer de om de skal gå over til en gang malkning hele året. Læg mærke til at halerne er kuperede. Læg også mærke til klovene som kun undtagelsesvist for enkelte køer beskæres. Insemineringerne klarer man selv og Cr. Clotier servicerer desuden 10 andre besætninger som inseminør.

Det normale i New Zealand er at stille sig tilfreds med den produktion der kan opnås på afgræsning alene. I nogle tilfælde anvendes der tilskud af (mest indkøbt) majs- eller græsensilage, hvis græsproduktionen ikke kan følge med mælkeproduktionen. Afbalancering af rationen med energi, protein og mineraler m.v. i forhold til normerne sker aldrig.

På den baggrund ser man naturligvis ret ofte symptomer og sygdomme som følge af mineralmangel hos husdyrene, så hvis man ønsker at studere dette i praksis er New Zealand det ideelle sted! Hvilke specifikke mineraler der er mangel på afhænger bl.a. af sæsonen, det geografiske område, og hvilke(t) mineral(er) besætningen blev behandlet med sidst m.v.

Når man kigger på detaljer i regnskabsopgørelser, kan man se at man i New Zealand bruger meget lidt penge på foder, dyrlæge og avl.

Tabel 2 Sammenligning af udvalgte udgifter per årsko i New Zealand og i Danmark.

Parameter	New Zealand	Danmark
Dyrlæge, avl og kontrol	341	1.765
Suppleringsfoder, inklusive indkøb af gødning til græsmarkerne	1.292	9.501

Mens det kan undre en tidligere kvægbrugskonsulent som mig at man dog ikke bare giver køerne noget tilskudsfoder, f.eks. nogle kg korn kunne gøre underværker på ydelsen, så ligger holdningen lige så dybt begravet i new zealænderne at tilskudsfoder og mineraler først er midler man tager i anvendelse når dyrene ellers ville dø. En landmand, som har mistanke om



mineralmangel i sin besætning, vil typisk kontakte sin dyrlæge, der oftest vil starte med at udtage blodprøver og leverbiopsier for at fastlægge den nøjagtige mangel og graden af den. Dyrlægen vil herefter foreskrive en behandling mod mineralmanglen. Mineralmangler betragtes som sygdomme der skal kureres og mineraler som medicin. I tilfælde af mangel ville forsyning jf. normerne ikke sikre en hurtig normalisering, så dyrlægen foreskriver anvendelse af store doser, hvilket forstyrrer tilgængeligheden af andre mineraler.

Med den udbredte opfattelse i New Zealand af at mineraler er medicin og ikke foderstof, er det ikke sært, at dyrlægeklinikkerne formentlig sælger en tredjedel til halvdelen af de mineralprodukter der anvendes i New Zealand.

Nogle definitioner

Mælketørstof (milk solids, eller bare MS)	1 kg mælketørstof svarer til 1 kg mælkefedt og -protein. Mejerierne afregner efter mælketørstof og produktiviteten i mælkeproduktionen opgøres først og fremmest i kg mælketørstof per ha, og eller i mælketørstof per ko
Husdyrenheder (stock units)	1 husdyrenhed svarer til 1 får. 1 ko svarer til 7 husdyrenheder. Gennemsnitligt svarer størrelsen af husdyrbesætningerne til knap 4.000 husdyrenheder.
Economic Farm Surplus (EFS)	Economic Farm Surplus (EFS) er beregnet som Bruttoudbyttet + ændring i besætningsværdi - lønninger - afskrivninger - løn til driftsleder (1% af aktiver + 158.000 kr., max. 300.000)

Kritiske succesfaktorer

En ting er holdning og en anden er fakta. I Danmark finder man frem til de kritiske succesfaktorer ved at analysere kvægbrugenes regnskaber efter statistiske metoder. Dansk Landbrugsrådgivning udfører regnskab for op mod 40.000 landbrug, hvoraf ca. 12.000 ligger i en central database og anonymt kan anvendes til sådanne analyser, ikke mindst til gavn for landmændene selv. I ethvert land jeg kender til udarbejder man desuden en årlig regnskabsstatistik omfattende 1-1½ % af landbrugene med henblik på udformningen af landbrugspolitikken samt for generel information, og for EU lande er det direkte et krav at man også sender disse informationer videre til FADN (Farm Accountancy Data Network) i Bryssel.

Selvom den politiske kurs som nævnt er sat i New Zealand har de også behov for regnskabsstatistikker. I mangel af organiseret rådgivning og herunder organisering af bogføring og regnskabsudarbejdelse for landmænd har man på New Zealand oprettet et system af overvågnings-bedrifter, hvor man så laver specielle regnskabsindberetninger fra. Systemet drives af landbrugsministeriet i Wellington, som alene til håndtering og analyse af data har 7 personer ansat og her ud over bruger ca. 2 millioner kr. på dataindsamling.

Den følgende tabel er baseret på en analyse af 100 malkekvægbrug, som der er indsamlet regnskabstal fra under Landbrugsministeriets Overvågningsbedrifter (de andre tabeller indeholder tal fra samme kilde).

Tabel 3 Sammenligning af den dårligste og bedste fjerdedel af malkekvægbedrifterne på New Zealand med hensyn til driftsresultat.

	Dårligste 25 %	Bedste 25 %	Forskel, %
Økonomiske resultater			
Indtægter fra salg af mælk	1.994.056	2.369.060	15
Renteudgifter	570.488	375.684	-51
Afskrivninger	154.800	106.124	-45
Ændring i besætningsværdi	-28.400	90.616	131
Driftsresultat efter træk til privatforbrug	-456.104	-16.296	



Produktionsresultater			
Foderareal (græs), ha	184	129	-43
Køer, primo	390	397	2
Køer, ultimo	390	416	6
Kreaturer, primo	496	537	8
Kreaturer, ultimo	488	559	13
Køer som malke den 15. december	367	380	3
Ydelse i kg mælketørstof	124.499	151.019	18
Kg mælketørstof per ha	680	1.083	37
Kg mælketørstof per ko	327	365	10
Køer per ha foderareal	2,03	2,97	32

Tabellen taler sit tydelige sprog. Det er ensidigt den mængde mælk man kan få ud af en ha græs som er af betydning – hvordan kan man i øvrigt forvente andet i et produktionssystem der alene består af køer, græsmarker og en malkestald? De bedste besætninger har med et 43 % mindre foderareal 18 % mere mælk at sælge til mejeriet!! Økonomisk succes i new zealandsk malkekvægproduktion er altså i stor udstrækning et spørgsmål om driftslederens evne til at dyrke græs. Dog skal man også bemærke at de bedste besætninger har væsentlig mindre afskrivninger og renteudgifter – et tegn på at der er en større egenkapital. Imidlertid er økonomien ikke acceptabel for selv de 25 % af besætningerne med bedst økonomi.

Som Martin Wegge fra Dansk Kvæg skriver i Kvæginfo 1445 den 4. februar 2005 så er det endnu engang opgjort, at ydelsesniveauet per malkeko på et dansk malkekvægbrug heller ikke har nogen sammenhæng med det økonomiske resultat på ejendommen (i dette tilfælde bl.a. udtrykt som forrentningsprocenten). Måske kan vi her lære noget af new zealænderne: Gode produktionsøkonomiske resultater skal skabes gennem god driftsledelse – køernes ydelse skal trækkes og ikke skubbes opad, som det åbenbart sker i for mange besætninger.



Køerne på vej ud efter malkning. De store trug er beregnet til supplerung med græs eller majsensilage i perioder hvor græsset ikke slår til – det kan typisk være hvis græsvæksten kommer sent i gang om foråret og man står med 320 nykælvere.



Mange outsourcer opdræt af kvierne, der hele deres opvækst alene lever af græs uden tilskud af nogen art, men som altså heller ikke senere kommer til at give nogen videre mælkeproduktion.

Min tur til New Zealand fandt sted i perioden 12. december 2004 til 9. januar 2005. Hovedformålet var at studere hvordan man i New Zealand organiserer videnoverførsel fra det myndigheder og forskning m.v. til landbrugene.



ANNEX F ARTICLE SENT TO LANDBRUGSAVISEN

New Zealand er imponerende – og man ser styrkerne i "den danske model" mere klart når man betragter den fra "down under"

af

Henning Lyngsø Foged
Senior Projektleder
Landscentret | International

Der er efter mine begreber ikke nogen organiseret, uvildig rådgivning i New Zealand, og dette er formentlig årsagen til at landboforeningen (Federated Farmers) kun har ca. hver 6. af de i alt 83.000 landbrug som medlemmer, da den ikke kan servicere sine medlemmer på samme måde som Dansk Landbrug og dertil har begrænset indflydelse på den førte landbrugspolitik.

Federated Farmers tilbyder sine medlemmer bladet "Straight Furrow" (den lige plovfure), som i forhold til LandbrugsAvisen er meget domineret af reklamer, og 15 ud af 60 sider i bladet er deciderede annoncer om salg af gårde og anden fast ejendom. Ellers er et væsentligt tilbud, som foreningen slår på i søgning efter medlemmer, at man tilbyder juridisk hjælp til lovrelaterede problemer (der er en enkelt rådgiver man kan kontakte), og man repræsenterer da også landbrugere overfor bl.a. Landbrugsministeriet i forskellig sammenhæng. Ellers kommunikerer Federated Farmers til omverdenen via deres hjemmeside, og også her forekommer det mig at tonen er meget skarp og uforsonende, hvilket for mig er et tegn på at man ikke sidder med ved bordet når der tages væsentlige beslutninger.

Jeg har indtryk af at Federated Farmers svæver meget frit i luften da de kun i teorien er bundet sammen med andre landboorganisationer via en paraplyorganisation svarende til Landbrugsrådet. Jeg er efter besøget i New Zealand mere og mere overbevist om at det er svært at drive en landboforening uden at kunne tilbyde sine medlemmer en bred vifte af faglig rådgivning.

Promilleafgifter

Når landmænd alligevel organiserer sig i det super-liberalistiske og kommercielle New Zealand skyldes det ikke mindst en lov, der muliggør foreninger med mere end 70 % af producenterne som medlemmer at opkræve promilleafgifter, som man så har en indflydelse på anvendelsen af.

Eksempelvis på mælkeområdet er landmændene således organiseret i mejeriorganisationen Fonterra, der i markedsdækning modsvarer Arla Foods, og som i princippet er ejet af de ca. 13.000 leverandører, men i praksis drives som et aktieselskab efter benhårde, forretningsmæssige principper. En stor del af promilleafgiftsmidlerne anvendes til forskningsprojekter, som man udbyder i licitation til især de 9 landbrugsforskningsinstitutioner under Kronen (Crown Research Institutes). Nogle af promillemidlerne anvendes desuden på uddannelse af unge landmænd.

Jeg rejser i mit daglige arbejde i mange lande og det er første gang jeg er stødt på et promilleafgiftssystem udenfor Danmark. Det var især glædeligt at se systemet anvendt i New Zealand, som jeg eller synes ville være helt og aldeles fortabt med hensyn til uvildig forskning og rådgivning. Promilleafgiftssystemet er efter min mening et fantastisk godt redskab, og selvom mange lande misunder os dette system må de erkende at det rent politisk er meget vanskeligt at indføre.

Uddannelse af unge landmænd

Et område der imponerede mig under mit besøg på New Zealand var den måde de organiserer uddannelse af unge landmænd. Der er p.t. ca. 14.000 unge i gang med en



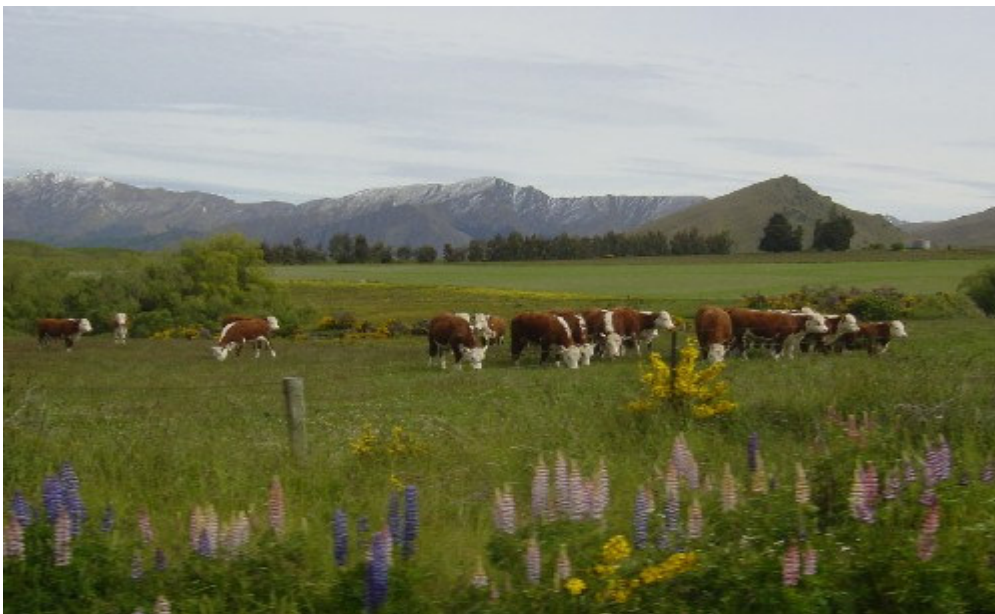
landmandsuddannelse i New Zealand, og forskellene til vores eget hjemlige system op illustreres af følgende karakteristika:

- Uddannelsen er frivillig – der er ikke noget krav om uddannelse for at købe en gård.
- Uddannelsen er meget fleksibel med stor mulighed for stykke kurser med forskellige emner sammen til større moduler.
- Uddannelse bygges op om elevens egen og hans arbejdsgivers målsætninger - uddannelsen kan på nogle områder sammenlignes med tidligere danske lærlinguddannelser.
- Teoretiske kurser foretages på dagskoler.
- Producentorganisationerne er involveret i tilrettelæggelse af uddannelsen.

Det er efter min opfattelse virkelig lykkedes for new zealænderne at få fejlet de gamle lig ud af skabene ved reorganiseringen af landmandsuddannelsen. Hvis man i Danmark skulle finde behov for at granske mål og midler i forbindelse med landmandsuddannelsen, så kan jeg varmt anbefale at studere det new zealandske system.

New Zealands skønhed og mangfoldighed

Alle som besøger New Zealand betages af dets dejlige natur, og vurderet ud fra det store antal husdyr man ser på markerne og udbuddet af mælke- og kødprodukter i supermarkederne bliver enhver bekræftet i fordømmen om New Zealand som et decideret førende landbrugsland.



Der er 4,6 millioner ammekvæg i New Zealand, her en flok Hereford kvier. Det meste kødkvæg i New Zealand er af de traditionelle Engelske racer (mest Hereford, Angus og Galloway) eller krydsninger heraf.

New Zealand er verdenskendt for dets landbrug; lammekød og mejeriprodukter fra New Zealand findes i supermarkeder i 140 lande. Der er omkring 10 millioner kvæg og 40 millioner får i New Zealand, hvilket svarer til antallet i Storbritannien, der også har et areal der er sammenligneligt med New Zealands. Der er imidlertid kun 3,8 millioner indbyggere i New Zealand mens der er 60 millioner i Storbritannien så ca. 85 % af landbrugsproduktionen eksporteres. Landbrugssektoren bidrager med rundt regnet 20 % af BNP og 50 % af New Zealands eksportindtægter.

New Zealand er blevet til på basis af vulkansk aktivitet. Muldlaget er udviklet som skovbund og er tyndt og surt, og indeholder kun små puljer af plantenæring som kvælstof, fosfor og svovl. Markernes frugtbarhed afhænger derfor i høj grad af gødskningen af dem.

Knap halvdelen af New Zealands 26,8 millioner ha er dækket af græs, enten vedvarende eller permanent (herunder også mindre arealer med foderafgrøder og anden omdrift, samt brak),



mens ca. 25 % er skove og resten veje, byer, bjerge samt minimale arealer med frugtplantager og vingårde.

Græsningsarealerne er generelt meget bakkede, men kan med en god gødskning give gode udbytter i det varme, visse steder subtropiske, kystklima.

Produktiviteten

Fakta er, at mælkeproduktionen er så lav som 3.790 kg per årsko, og at der kun produceres 18 kg lam per moderfår og 65 kg oksekød per kreatur om året, selvom halvdelen af kvæget er af kødkvægrace.

Det forekommer set med europæiske øjne som om nogle åbenbare årsager til den ekstremt lave produktivitet er, at den normale praksis på New Zealand er at producere med minimale omkostninger; uvildig foderrådgivning findes næsten ikke og mineraler anvendes ikke regelmæssigt.



Produktionen af ammekvæg og får er meget ekstensiv og der anvendes kun undtagelsesvist mineraltilskud.

Landbrugsrådgivning

New Zealand havde tidligere en statsstøttet rådgivningstjeneste (extension service), som med mange reorganisationer kan spores tilbage til omkring 1890, hvor de første konsulenter blev ansat til hjælpe med at øge udbytterne i husdyrproduktionen, herunder at løse problemerne med "busksyge" (koboltmangel). En egentlig rådgivningstjeneste blev dog først etableret i 1972 som en afdeling i Landbrugsministeriet, og eksisterede altså kun frem til 1985.

Statsstøtte til landbruget generelt, og herunder til rådgivning, standsede i 1985 som en del af en bredere reform af den økonomiske politik. Rådgivningstjenesten blev herefter privatiseret, men er nu helt opløst, da landmændene tilsyneladende ikke ønskede at betale for de topstyrede aktiviteter, der typisk var tilrettelagt af universitetsprofessorer og ansatte i ministeriet uden indflydelse fra landmændene selv og deres organisationer.

I dag køber landmændene rådgivning fra en lang række rådgivere. Den tekniske rådgivning vedrørende husdyrproduktion leveres især af dyrlægeklinikker, avlsfirmaer og leverandører; denne rådgivning er ofte gratis, men er i så fald tilknyttet de produkter som firmaerne sælger. En husdyrproducent vil kun i sjældne tilfælde købe uvildig rådgivning.

**Nøgletal om New Zealands landbrug (forskellige kilder, afrundede tal)**

Antal landbrug	83.000
Landbrugsareal (inklusive græs, foderafgrøder, omdrift og brak), 1.000 ha	12.000
Ha/landbrug	145
Antal kvæg, millioner	9.8
Kg mælk per årsko	3.790
Kg oksekød (slagtet vægt) per kreatur per år	65
Kr. per kg mælk	1,20
Antal får, millioner	40
Kg lam + får per moderfår per år	18
Antal hjorte, millioner	1.7
Netto overskud per landbrug, kr.	120.000



Mineraltildeling i New Zealand

af Henning Lyngsø Foged, Agronom

Selvom New Zealand er berømt for dets landbrug verden over så forekommer det for en europæer som om potentialet er langt fra udtømt; mælkeydelsen er gennemsnitligt så lav som 3.100 kg per årsko, og der produceres kun ca. 18 kg lam per moderfår og 65 kg oksekød per kreatur om året, endda selvom halvdelen af kvæget er af kødkvægrace! Nogle åbenbare årsager til den ekstremt lave produktivitet er uden tvivl at den normal praksis på New Zealand er at producere med minimale omkostninger; uvildig foderrådgivning findes næsten ikke og mineraler anvendes ikke regelmæssigt.

New Zealand er derfor et ideelt sted at tage hen hvis man ønsker at studere symptomer på mineralmangler og sygdomme som følge heraf! Det forekommer som om meget få i New Zealand anerkender at husdyrene rent faktisk har et fysiologisk behov for mineraler, og at specielt mikro-mineraler bør tilføres dagligt for at udgå mangelsituationer.

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Alle som besøger New Zealand betages af dets dejlige natur, og vurderet ud fra det store antal husdyr man ser på markerne og udbuddet af mælke- og kødprodukter i supermarkederne bliver enhver bekræftet i fordommen om New Zealand som et decideret førende landbrugsland.



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PRAKSIS FOR MINERALTILDELING I NEW ZEALAND

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På den baggrund ser man naturligvis ret ofte symptomer og sygdomme som følge af mineralmangel hos husdyrene, så hvis man ønsker at studere dette i praksis er New Zealand det ideelle sted! Hvilke specifikke mineraler der er mangel på afhænger bl.a. af sæsonen, det geografiske område, og hvilke(t) mineral(er) besætningen blev behandlet med sidst m.v.

De mineralmangler, som forårsager de største tab i New Zealand, fremgår af Tabel 1.

Tabel 1 Almindeligt forekommende, tabsgivende mineralmangler i New Zealand

Mineral	Almindeligt forekommende mineralmangler og sygdomme i New Zealand
Mg	Græstetani, mælkefeber
Zn	Facial eczemia, dårlig frugtbarhed, lamhed, somatiske celler
Co	Busksyge, dårlig frugtbarhed
Cu	Kobber mangel, dårlig frugtbarhed
Se	Tilbageholdt efterbyrd, selen mangel

En landmand, som har mistanke om mineralmangel i sin besætning, vil typisk kontakte sin dyrlæge, der oftest vil starte med at udtage blodprøver og leverbiopsier for at fastlægge den nøjagtige mangel og graden af den. Dyrlægen vil herefter foreskrive en behandling mod mineralmanglen efter en af de metoder som er anført i Tabel 2.

Tabel 2 Almindeligt forekommende metoder for tildeling af mineraler i New Zealand

Metode	Fordele	Ulemper
Flydende mineraler tildeles dyrene oralt en eller flere gange om dagen	<ul style="list-style-type: none"> • Det sikres at hvert enkelt dyr med stor nøjagtighed får den foreskrevne dosis. 	<ul style="list-style-type: none"> • Hvert dyr skal gives mineraler med en doseringspistol, hvilket er ret arbejdskrævende. • Metoden er på grund af arbejdsforbruget ikke realistisk at anvende ud over en kort periode. • De flydende mineraler indeholder normalt kun et enkelt eller ganske få mineraler ud af de 15 makro- og mikromineraler dyrene har behov for. • De flydende mineraler kræver konstant omrøring for at undgå mineralerne dannelser tungtopløselige forbindelser og bundfældes. • Behandlingen med enkelte mineraler forstyrrer tilgængeligheden af andre mineraler i den periode behandlingen står på.



		<ul style="list-style-type: none"> Mineraler på flydende form er meget dyre i forhold til granulerede mineraler.
Boluser injiceres i dyrenes vom	<ul style="list-style-type: none"> Det sikres at hver enkelt dyr får mineraler. 	<ul style="list-style-type: none"> Hvert dyr skal have indskudt en bolus via munden, hvilket er arbejdskrævende. Ikke anvendeligt for makromineraler, idet f.eks. en magnesiumbolus kan kun frigive 2 gram Mg om dagen, hvilket er helt utilstrækkeligt i forhold til normen. Boluser indeholder normalt kun et enkelt eller ganske få mineraler ud af de 15 makro- og mikromineraler dyrene har behov for. Mineraler på bolus-form er meget dyre i forhold til granulerede mineraler. Virkningen holder kun en begrænset periode.
Injektioner	<ul style="list-style-type: none"> Det sikres at hvert enkelt dyr med stor nøjagtighed får den foreskrevne dosis. 	<ul style="list-style-type: none"> Anvendes på grund af pris, arbejdsforbrug m.v. kun til behandling af akutte tilfælde for at undgå dødsfald.
Græsmarkerne sprøjtes med flydende eller pulveriserede blandinger af specifikke mineraler i en periode.	?	<ul style="list-style-type: none"> Det er ret arbejdskrævende at sprede mineralerne hver dag - spredning foretages på den græsfold dyrene afgræsser umiddelbart efter. Metoden er på grund af arbejdsforbruget ikke realistisk at anvende ud over en kort periode. De flydende eller pulveriserede mineraler indeholder normalt kun et enkelt eller ganske få mineraler ud af de 15 makro- og mikromineraler dyrene har behov for. Anvendelse af enkelte mineraler forstyrrer tilgængeligheden af andre i den periode behandlingen står på. Der er naturligvis at enormt spild da en stor del af mineralerne falder ned på jorden i stedet for at ramme græsset. Dermed bliver prisen for ønsket virkning meget høj. Græssets vækst hæmmes, især kløverens vækst.
Specifikke mikromineraler opblandes i drikkevandet i en periode.	<ul style="list-style-type: none"> Mineralerne modvirker algedannelse i drikkekarrene. Nemt. 	<ul style="list-style-type: none"> Kan kun anvendes hvis dyrene kun har adgang til vand et sted. Vandet får afsmag. De anvendte mineraler indeholder normalt kun nogle få mikromineraler ud af de 15 makro- og mikromineraler dyrene har behov for. Makromineraler kan ikke tildeles på denne måde. Anvendelse af enkelte mineraler forstyrrer tilgængeligheden af andre i den periode behandlingen står på.



		<ul style="list-style-type: none">• Nøjagtigheden i tildelingen er selvsagt meget lille.
Sliksten stilles til rådighed for dyrene.	<ul style="list-style-type: none">• Nemt.	<ul style="list-style-type: none">• De anvendte sliksten indeholder normalt kun mikromineraler. Makromineraler kan ikke tildeles på denne måde.• Dyrene kan slet ikke slikke nok mineraler i sig på denne måde.• Mineraler i form af sliksten er normalt 2-7 gange dyrere end granulerede mineraler.

Det forekommer som om meget få personer i New Zealand respekterer at husdyr rent faktisk har fysiologiske behov for mineraler, og at disse (specielt mikromineraler) bør tilføres dagligt for at undgå mangelsituationer.



Malkekøerne i New Zealand forekommer at være små, måske fordi kvierne (som her) ikke vokser tilstrækkeligt på græs alene og er for små ved kælving.

Mangler betragtes som sygdomme der skal kureres og mineraler som medicin. I tilfælde af mangel ville forsyning jf. normerne ikke sikre en hurtig normalisering, så dyrlægen foreskriver anvendelse af store doser, hvilket forstyrrer tilgængeligheden af andre mineraler.

FORHANDLING AF MINERALER

Med udgangspunkt i forbruget af mineraler i danske besætninger af kvæg og får og projiceret op til antallet af husdyr i New Zealand burde den totale omsætning af mineraler i New Zealand have en værdi i størrelsesordenen 450 millioner €. Den største leverandør til landbruget i New Zealand, Wrightson, oplyser i deres årsrapport for 2003/04³ at deres totale omsætning (der inkluderer handel med gødning, uld, husdyr, medikamenter, arbejdstøj og meget andet) kun er på tre fjerdele af dette beløb, hvilket sætter anvendelse af mineraler i New Zealand i perspektiv!



Med den udbredte opfattelse i New Zealand af at mineraler er medicin og ikke foderstof, er det ikke sært, at dyrlægeklinikkerne formentlig sælger en tredjedel til halvdelen af de mineralprodukter der anvendes i New Zealand.



Wrightson er den største leverandør til landbruget, med forretninger i alle større byer, men deres omsætning på mineraler er minimal.

KAN MINERALTILSKUD BETALE SIG?

Det koster f.eks. omkring 25 € per år at opfylde køers behov for mineraler, både makro- og mikromineraler, og forholdsvis mindre for kvier og får. Dette beløb skal sættes i forhold til at

- et sygdomsudbrud hos en malkeko typisk koster 500 € i form af produktionstab, dyrlægeomkostning og medicin, hvortil kommer ekstra arbejde med syge dyr; og at
- symptomer på mineralmangel hos enkelte dyr er et tegn på at hele besætningen har subklinisk mangel og derfor heller ikke opnår de ønskede produktionsresultater.

Med al respekt for de specielle produktionsvilkår der findes på New Zealand så er mineraltilskud et rigtigt dårligt sted for landmanden at spare, og der er desværre for få uvildige rådgivere som kan formidle dette budskab.

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