



Biological Agriculture Uptake in New Zealand March 2008

I have had various people involved in agriculture query me on the adoption of biological agriculture farming in New Zealand. The description below is written to give you a perspective on the extent to which biological agricultural presentations and “Balancing Soils for Profit” courses are having an impact on quality farming.

On-farm implementation of the science underpinning biological agriculture promotes rapid humus formation and carbon sequestration with reduction of leachate and erosion. The longer term production results are high yields of nutrient dense, pesticide-free products to a market clamouring for quality food. Experience in the USA and Australia shows double to quadruple premiums for tasty, long storage biological produce.

Through biological agriculture, New Zealand has a tremendous opportunity to capitalise on our market differentiation while providing real solutions to climate change, environmental challenges and our relationship to the land. This is a comprehensive approach that answers the issues vexing our environment and economy.

What is Biological Farming?

- Combining chemistry, physics, biology, and microbiology concepts with sound farm management practices.
- Addressing and solving weed, disease, and insect pest problems at their root causes rather than masking the symptoms with poisonous chemicals.
- Maximising yield, quality, food nutrition, and profit potentials

The dual goals and indicators of success are steadily increasing soil humus and product nutrient density levels. The approach emphasizes application of calcium and amendments that feed soil microbes along with practices that reduce nitrogen and pesticide usage.

“Biological farming is a ‘best of both worlds’ mix between organic and conventional farming practices, involving careful monitoring of crops and soils to ensure production is of high quality.” *Dr Arden Andersen*

The basis of the approach, used in the USA, Australia and South Africa, is re-establishing mineral balance through calcium availability and microbial strengthening. There is a focus on soil monitoring of plant available nutrient levels and tissue brix readings. The process uses small, frequent applications of fine lime, RPR, foods for the biology such as humic acid and molasses, trace minerals through concentrated and fresh seawater, and water-soluble technical fertilisers all applied with carbohydrates.

This results in a diversification and strengthening of the soil foodweb, a deepening of the carbon profile and a consistent level of energy release for plant growth. Optimum crop residue management and green manure cropping is a key aspect of the programme. The aim is to achieve continuous plant brix levels in excess of 12, which tends to eliminate insect and disease susceptibility and ensure higher vitamin and mineral content in the plant.

Who is Arden Andersen?

Biological agriculture emerged on the national level in New Zealand in March 2005 with Dr Arden Andersen's first three-day course. He has been brought back to deliver a total of 14 courses attended by over a thousand people, including a Zespri one-day workshop attended by 120. Dr. Andersen is an agronomist, PhD biophysicist, and practicing medical doctor in the United States. He has been consulting and applying biological agriculture practices for over twenty years around the world.

The courses reach a wide audience from farmers to PhDs in soil chemistry. The principles of accelerated humus formation and soil energy manipulation through enhanced microbiology are applicable to all agricultural sectors. Uptake here has been particularly strong in the wine, kiwifruit and now dairy sectors.

Dr Andersen has met with the Honourable Jim Anderton, Dr Morgan Williams, then Parliamentary Commissioner for the Environment, Maori Party co-leader Tariana Turia and John Hutching, Head of Sustainability Fonterra. He has made presentations to the Parliament Select Committee on Primary Produce, Ballance Fertiliser Co-operative, the eCOGENT National Conferences and the OANZ conference in August 2007.

He is a very able lecturer and excels at making science concepts accessible to farmers while simultaneously exciting agricultural science PhDs. The courses he presents are paradigm shifting, solidly science-based, and provide practical recommendations for successful application of the biological agriculture approach in the field.

Uptake by New Zealand farmers

The following are some of the companies and consultants who have attended courses and who now provide biological agriculture advice, product and research services:

- Abron
- Aer8tors
- AgriEssentials
- Ag First
- Ag Research
- AgriSea
- Asura Fertiliser Ltd.
- Ballance Agri Nutrients
- BioAg Ltd
- Bio Ag NZ
- BioFert
- Bio Nera
- BioSea
- Bio Soils
- BioStart
- Chaos Springs
- Crop Health Services
- Dynamic Compost Tea
- EcoAgrilogic
- Eco-logic Concepts
- Environmental Fertilisers
- Fertiliser NZ Ltd.
- Gavin Grain Ltd
- Healthy Soils
- Hort Max
- Liformnz
- Living Soils
- Mainland Minerals

NZ Humates
PGG Wrightsons
Revital Fertilisers
Soil Foodweb Institute NZ
Soil Tech
Superior Minerals
Sustainable Growing Solutions

Major Ag Sector / production firms who have attended the courses:

Apatu Farms
BEL Group
Corbans Viticulture
Hills Laboratory
Villa Maria Winery
CJ Pask Winery
Five Star Beef
Green Planet Ltd
GroPlus Ltd
John Austin Ltd
Zespri
Seresin Estate
LandCorp

On the ground

Uptake by the more intensive horticultural sectors has been pronounced with wineries and kiwifruit growers leading the way. Use of biological agriculture approaches in dairy farming and cropping is rapidly expanding with an estimated half of Hawke's Bay's milk production under the regime.

The consulting and supply firm, Abron alone is supplying product and advice to roughly 15,000 hectares in the North Island. The other firms listed above and farmers who have attended account for around another 60 to 80,000 hectares using bio-farming practices to substantially reduce chemical fertiliser and pesticide use while improving production.

We see deepening of soil profiles and root depth, doubling of worm numbers, reduction in water puddling and doubling of grass brix within a few months. Pastoral changes can occur quite rapidly depending on the approach taken, with dairy farmers usually reporting more placid cows, reduced SSC, no lameness, reduced empty rates, reduced topping, reduction in weedy species, increased fat and protein content, reduced need to worm calves, and increased milk solids production.

Kevin Davidson, operating a 1500 cow intensive dairy in Hawke's Bay, within 10 months reversed a three year decline in MS, eliminated puddling on paddocks, stopped topping and reduced urea use by nearly a third. His fertiliser expenditure increased by \$81 / ha while his net profit increased \$986/ ha. He was recently named HB Manawatu Farm Manager of the Year.

Monitoring being undertaken

The following biological agriculture monitoring and trials are the ones I have information on or direct involvement with. These generally involve adjacent blocks with monitoring for soil chemistry parameters, microbiology, brix, complete pasture profiles, yield, etc. I am aware there are other trials but do not have details.

J Bostock	Hawke's Bay	1 ha organic apple trial Dr. Greg Tate– 2 nd year 5 ha squash – 2 nd year Dr. Phil Schofield 8 ha squash, two sites – 1 st year .5 ha onions – 1 st year
Gavin Grain	Hamilton	Replicated trials biological stimulants on grass and maize Dr. Henrick Venter – 1 st year
BEL Group	Hawke's Bay	Whole scale conversion of 2,000 ha dairy and cropping , 7 farms 4 ha cage cut compar. w/ conventional– 1 st year 6 ha 3 varieties of potatoes – 1 st year
Greg Wilson	Hawke's Bay	5 ha each maize, pasture, peas, triticale -1 st year
Villa Maria	HB / Marlborough	6 matched vineyards, 3 varieties – 1 st year
CJ Pask	Hawke's Bay	13 ha various bio ag approaches – 1 – 3 rd years
Tuki Vineyard	Hawke's Bay	1 ha – 1 st year Abron BioPlex Hort
Peter Hyslop	Hawke's Bay	3 ha – 1 st year Abron BioPlex Hort
Scherer Bros	Waikato	50 ha – cage cut compar. w/ conventional 2 nd yr
Wilson & Robertson	Hawke's Bay	2 ha – cherries, apples, pears Abron BioPlex
E. Hutchison	Bay of Plenty	4 ha – replicated kiwifruit trial
Don Hart	Canterbury	Various blocks w/in 100 ha cropping farm
Auckland Regional Council		200+ hectares pastoral parks
Tim Oliver	Bay of Plenty	Kiwifruit green and gold trials

I hope this has provided you with a stimulating overview of the rapid uptake of biological agriculture in Aotearoa. I am happy to answer questions or clarify aspects of the approach.

Regards,

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