

BIODYNAMICS IS A WAY OF LIFE AT "KILTYNANE ESTATE" IN THE YARRA VALLEY

by Kate Kirkhope, 'Kiltynane Estate'.

I first became interested in biodynamics in 1996 while studying grape growing for winemaking. I wanted to make the best Pinot Noir in the Yarra Valley – a challenging mission that would require skill beyond the norm.

In Burgundy, France, many of the top producers had and were turning to biodynamics to assist in the production of better quality wine. Also, with laws becoming more stringent with regard to the use of chemicals in agriculture, European farmers had discovered that by using biodynamics they could produce better quality produce with few or no chemical inputs, while improving their soil and with less expense.

Some of the most expensive French Burgundies are grown and produced biodynamically.

This was to be my calling.



Kate Kirkhope turned to biodynamics to fulfill her dream of producing the best Pinot Noir in the Yarra Valley.



Here at Tarrawarra, I am surrounded by some of the biggest guns in wine production – Yering Station, De Bortolli, Tarrawarra Estate, Domaine Chandon, Coldstream Hills, Yeringberg and Mount Mary to name a few. I knew my own niche was to be the pursuit of absolute quality and a highly value added product.

The first block of Pinot Noir was planted in 2000 on five acres of gently sloping loam over clay, which had been heavily farmed in the past. The second block of five acres was planted in 2001.

My greatest obstacle was, and still is 'water'. With only a small dam and limited catchment, I knew I would need my soil to create miracles to avoid needing large amounts of water (that I didn't have).

Before we planted, I started applying the (500) preparation. The soil itself needed a lot of work to improve its moisture balancing so that it wouldn't water log in winter and it could hold more



Jarna flow forms are used to energise the preparations before they are put out.

moisture in summer. This was the first priority and where the (500) came in.

We repeated the spraying monthly from August to February and then again in autumn.

When the vines were in full leaf and fruit, we also used the Biodynamic Preparation (508), originally the equisetum form. Now we use the dried leaves of Casuarina, made into a tea and used either fermented for the soil or fresh brewed for the canopy. The high levels of silica in (508) build up leaf tissue strength and help prevent fungus attack.

From time to time the (500) would be followed up by Horn Silica Preparation (501) the following morning – this wonderful crushed quartz sprayed into the atmosphere, assists in photosynthesis and helps to balance the plants development.

It has taken two years of work to really get the soil in top condition and for our miracle to happen.

Last season, we were able to have beautifully balanced vines with fruit that the local experts claimed was enviable with only 2-3 litres of water per vine per week – that's all there was! The surrounding vineyards use up to 30 litres per vine per week.

The vines show incredibly strength and health with no deficiencies. I use no pesticides, instead encouraging a daunting population of predatory insects through

careful companion planting around the vineyards.

Right from the start, we followed the planting and activity calendar provided by the Biodynamic Association. This outlines for the year, the day by day lunar, solar and constellation activity in their relationship to daily farming practices.

I had known that for centuries, farmers, printers, wine makers and others had discovered the benefits of planning activities to coincide with the heavens. This has made our planning easier. We can now set down our planning calendar in the shed, exactly when we plant, spray Horn Manure Preparation (500) and put the other preps out. I can then schedule the other work around these times to minimise labour and equipment changeover.

In reality, the entire season can be planned out to minimise labour, fuel, vehicle, equipment and vine maintenance costs.

We now make a lot of our biodynamic preparations here on site – they are so simple to produce. The rest we buy from Biodynamic AgriCulture Australia.

We also use a Jarna flow form to 'energise' the preparations before putting them out.

The 'Jarna' is a series of stepped concrete bowls that the (Biodynamic) preparations in their 200 litres of water flow down for one hour before spraying out.

The flow form is an empowering experience and my workers love to just hang around while the bowls are flowing – their rhythmical flow creates a great sense of well being in even the most reluctant worker.

This season will be the third season for the old block and we will repeat the Biodynamic Preparations (500), (501), (508) with additional Biodynamic fish emulsion, seaweed tea, and manure concentrate.

The old block continues to improve with the soil turning a

deep chocolate brown, showing excellent friability when dug and with enviable worm and micro biotic populations.

The new block is obviously one year behind and still cracks in summer. Another year of biodynamic balancing will make all the difference.

The rest of the property, which is still grazing land, is treated two to three times a year with (500), manure concentrate, seaweed tea and Biodynamic fish emulsion.

My experience with biodynamics has driven me to a passionate belief in the benefits of this way of life for the pursuit of excellence. The first vintage is in the barrel, and quote "is an excellent award winning wine".

The inputs of bringing the vineyard to this level have been minimal. The wine will attract a premium price in a market that cannot be fulfilled at present. I already have an order for multiple cases from the UK, sight unseen, at premium price and bottling is still 14 months away!

I have to tell you, biodynamics becomes a way of life – you start to realise how our lives follow rhythms and patterns.

If we can work with nature and these rhythms, while still using our knowledge of commerce and the consumer society – then nature and man can come to a win win outcome. ■



Kate stirring biodynamic seaweed brew.

BIODYNAMIC PREPARATIONS – THE FOUNDATION OF BIODYNAMIC PRACTICE

By Cheryl Kemp*

Rudolf Steiner first described biodynamics in 1924, after requests from farmers, who were experiencing an increasing degeneration in seed strains, cultivated plants and animal health. Steiner gave the farmers indications for nine special “preparations” (500-508), which form the foundation of Biodynamic practice.

Horn Manure Preparation (500) is a specially prepared manure, Horn Silica Preparation (501), a silica-rich rock powder; 502-508 are herbs and other materials all with their own beneficial qualities for soil and plant health. Each preparation in conjunction with natural forces stimulates and enhances biological activity in a specific way to achieve optimum results on the farm.



Horn Manure Preparation (500) pit

So how do the Biodynamic Preparations work?

This is a huge subject and could take us on a whole amazing trip of discovery, which is what actually happens once you get involved. The questions keep arising and answers lead to the next question, and life becomes most interesting. So lets just start with the soil and we can move on upwards.

Recognising Vital Forces In Nature

In the past few years new discoveries have been made in the areas of soil microbiology. David W.Wolfe, in his book ‘Tales From The Underground –a Natural History of Subterranean Life’i describes this time of discovery as “reminiscent of where marine biology was 50 years ago, when Jacques Cousteau was first perfecting his Aqua-lung for exploration of another hidden realm – the oceans. Such explorations have verified the existence independent ecosystems at all levels below the surface”.

Biodynamic practice has at its very foundation an acknowledgment of working with many levels of activity in both the earth and atmosphere to bring health to the whole farm enterprise. You may remember from our previous article that the Biodynamic farmer develops a greater awareness of nature and the utmost respect for both the visible and invisible forces that shape life. The recognition of some of these vital forces in the soil is now readily understood thanks to Dr Elaine Ingham’s pioneering work on the Soil Food Web.

Dr. Elaine Ingham, a Soil Microbiologist from Ohio, USA has found that she can tell how the soil has been treated by the soil bio-life found in a soil sample.

The healthiest soils are in the old growth forests, where fungi outnumber the bacteria and the whole system works in a symbiotic way to support each other.

Soils that have been compacted, treated with water soluble fertilisers, herbicides and pesticides have very little bacteria, no fungi and poor oxygen levels and very low of any

soil arthropods. In other words it is nearly dead! And this is the reason many have been turning to Biodynamics.

How can I help my soil? It used to be alive and now it is dying.

What practices can bring the soil back to life?

In Biodynamics we work to keep life in the soil, to attract specific bacteria and fungi that help absorb trace elements and nitrogen in the soil. Biodynamics brings structure and tilth in the soil. Humus is made and the capacity for the soil to hold water is improved. More oxygen becomes available and soil life multiplies incredibly. To achieve this the Biodynamic farmer utilises a range of Biodynamic Preparations.

Horn Manure Preparation (500)

You have probably heard of “Horn Manure Preparation (500)” the most famous of Biodynamic Preparations which is made from cow manure placed in a cow horn, buried in fertile soil over winter, producing a sweet smelling humus-like colloidal substance, when retrieved in the spring. It is applied at 75g per Ha, stirred in water for one hour and spread in droplet form to the soil after 3pm (when the earth is breathing in).

Used to build soil structure and tilth, it works with calcium and helps make

How the soil can feed the plants

It is the activity of beneficial soil bacteria that attach with glue to the soil particles together and then the beneficial soil fungi that wrap around the particles and bacteria that gradually form soil aggregates. Water pores and air spaces are created and then protozoa and nematodes and arthropods are attracted by the food source of the increasing bacteria. The bacteria feed off the root exudates and organic matter that the earthworms digest and bring into the soils. Some of the bacteria (azotobacter) are able to make nitrogen from the root exudates and they accumulate it. When the protozoa eat them, this excess nitrogen is released into the soil and becomes available for the plants roots to absorb for growth. This is how the plant is fed by the soil – water soluble fertilisers are not necessary and are actually detrimental to the whole working of the Soil Food Web.

humus, attracts earthworms and the soil bacteria Azotobacter. The Azotobacter are 15 times more potent at making Nitrogen out of the soil than any other bacteria. It also attracts rhizobia, which helps nodulation on plant roots especially supporting increased clover growth. Soil depth increases, roots go deeper and grow more luxuriantly and most importantly water is held, like in a sponge in the humus materials created, when regularly using the Horn Manure Preparation (500).

Here is an effective solution for Australia's water and salinity problems!

Biodynamic farms use 25%-50% less water than their neighbours working conventionally! We recently heard of the water authorities ringing to see if the Biodynamic farmers were cheating, as they came in with much lower water use than their neighbours in a recent Irrigation audit. (Refer "Kiltynane Estate" story)

Horn Silica Preparation (501)

The Horn Silica Preparation (501) works in the atmosphere and with the silica and light forces as the opposite to the Horn manure Preparation (500). It is made from ground quartz crystal and is buried in the horns in the soil for the summer months. Only the smallest amount – 1-2g per Ha is used and it is stirred for one hour and sprayed as a fine

mist into the air at first light. Used later in the day around midday it can burn – so it is important to only spray out at sunrise (when the earth is breathing out).

This amazing preparation works with photosynthesis. It helps the plant keep up its sugar sap levels and the excess sugar saps are sent to the roots as root exudates to feed the bacteria and fungi that are forming a symbiotic relationship around them. In turn, the increased activity and nitrogen formation helps the plant grow – so we have the complete circle.

By keeping the sugar sap levels high, then plants are resistant to insect attack and disease. If conditions are extremely wet and prone to fungal disease, then the Horn silica can help restore the balance. The Horn Silica preparation also helps with the dry matter content of fruit, increasing flavour, colour, weight and keeping qualities. This is borne out in the number of Biodynamic growers who consistently receive medals or prizes for their wines, fruits and grains.



Stinging Nettle and Dandelion are just two of the plants used to make the Biodynamic Preparations

Organic wholesalers know that Biodynamic produce has the best flavours and their customers keep coming back for more. Several Biodynamic Herb growers are now topping the list for the highest quality and smell of oils in distillation.

Most exciting is the discovery by grape and fruit growers that use of the Horn Silica Preparation (501) can lift the Baume or Brix sugar levels at least one full point within a few hours – critical at harvest time.

Summer & Winter Horn Clay

This is a fairly new addition to the Biodynamic repertoire. It is a clay mixed to a slurry and placed in a cow horn over

A BRIEF SUMMARY OF THE BIODYNAMIC COMPOST PREPARATIONS

Yarrow Achillea millefolium PREPARATION 502	Yarrow flowers placed in a stags bladder. Stimulates the potassium, silica and selenium activating bacteria and helps combine sulphur with other substances. Remedies weaknesses in flowering and fruiting and strengthens the plant against insect attack.
Chamomile Chamomilla officinalis PREPARATION 503	Chamomile flowers placed in the small intestines of the cow. Helps retain nitrogen, calcium and sulphur. Also stimulates manganese and boron, as well as azotobacter activity – the best bacteria for making nitrogen in the soil.
Stinging Nettle Urtica dioica PREPARATION 504	Nettle is buried without an animal sheath. Conveys intelligence to the soil helps proper decomposition, aids chlorophyll formation and stimulates iron, potassium, calcium, magnesium and sulphur bacteria activity in the soil.
Oak Bark Quercus robur PREPARATION 505	Oak Bark placed in a cow skull and in water over winter. Helps restore balance when water activity is working too strongly, such as after lots of rain or at full moon. It also helps protect against fungal diseases. Helps calcium and phosphorus work into the earth in a living form.
Dandelion Taraxacum officinale PREPARATION 506	Dandelion placed in a cow's mesentery. Stimulates the potassium /silica bacteria and fungi in the soil to enable it to work more effectively. Silica makes the plants more inwardly sensitive. Can help increase flowering and filling of fruit out to tips. Also stimulates the magnesium, boron and selenium soil activity.
Valerian Valeriana officinalis PREPARATION 507	A Tincture made of valerian flowers. Stimulates the phosphorus process and mobilises the phosphorus-activating bacteria in the soil, as well as selenium and magnesium. Prevents the flowering process becoming excessive. Forms a warmth blanket around compost heap. If sprayed onto blossoms in spring can provide protection against late frost.
Equisetum/Casuarina Equisetum arvense PREPARATION 508	As Equisetum is seen as a noxious weed in Australia, we have found Casuarina to be a good substitute. Fresh Casuarina Preparation works with the water balance in the atmosphere as a fresh tea and is used to prevent and stop fungal growth, sooty mould and tightens plants against becoming soft and open to mildew infection. Fermented Casuarina tea works in the soil to stimulate the growth of beneficial fungi and large hyphae & is applied with the afternoon soil sprays. All Casuarina seems to be effective, especially the Casuarina equisetifolia from eastern Australia.

Summer (Summer Horn Clay) and over Winter (Winter Horn Clay). It works to restore a balance between the atmosphere and the earth, acting as a mediator between the Horn Manure Preparation (500) and the Horn Silica Preparation (501). It creates a boundary around the area sprayed to keep the farm integrity intact and help the soil hold moisture and give back more over the dry periods. It can be used even if the soil is highly clayed.

The Winter Horn Clay is typically used as part of the soil spray to assist in holding nutrients in the soil's digestive and nutritive processes. The Summer Horn Clay is used in the atmosphere spray and assists in vegetative processes of the plants.

Manure Concentrate

This is also known in Australasia as 'Cow Pat Pit; and in Europe and the USA as 'Barrel Compost'. Made from cow manure, basalt rock dust and ground eggshells and 3 sets of the Biodynamic compost Preparations 502-507 – it is mixed and then fermented for 4 months in a 20cm pit. It can be used as a general soil spray to get the benefits of the compost preparations over large areas.

It is especially useful when used for any organic matter breakdown, such as mulches, stubble, sheet composting, turning in green manures, dairy shed effluent and piggery effluent. It is usually recommended for use with the Soil spray – Horn Manure Preparation (500) and Winter Horn Clay.

The Biodynamic Compost Preparations (502-507)

These are made up of various flowers and animal parts treated in special ways.

Their purpose is to infuse the compost heap or fermenting brew with living forces. They help the breakdown of organic matter take place in the right way so that the life is not lost, but recycled for the use of the soil.

“When used on manure they help it become vitalised so it can transmit this vitality to the soil where the plants will grow.” ii

When the compost or other tea or fermented product made with the Biodynamic Compost preparations is added or sprayed on the soil, it has the capacity to make the soil more sensitive and reconnect to the Planetary movements within our cosmos. This is what has been happening to our earth over thousands of years as it loses its immense vitality and ages - we have lost our connections – just like we get a little deaf and blind as we grow older. The Biodynamic Compost Preparations are able to help restore the vitality of the soils again.

The Compost Preparations also appear to work as a stimulant to attract specific bacteria and fungi and trace elements in the soil. It is not a case of putting in microbes and hoping they will survive, it is more a case of making the soil attractive and the soil bio life will appear – rather like the smell of brewing coffee attracts us to the coffee shop. Then the increased root exudates from the plant (through use of the Horn Silica Preparation (501) will support their life and increase their activity and thus the plants growth in the right way.

The Compost Preparations (502-507) are sold as a set and used in any product being recycled and fermented such as compost, manure concentrate, (Cow Pat Pit), seaweed tea, fish emulsion, fuzzy brew, weed teas, blood and bone brews etc.

Biodynamic Plant Tonics

In addition to the soil and atmosphere preparations, the Biodynamic Farmer also uses a number of plant tonics to support the biological and dynamic processes of plant growth. A large number of plant tonics can be made on farm.

Plant and animal materials such as seaweed, comfrey, nettle, tree lucerne, casuarina, chamomile, cow manure and fish

can all be brewed in 200 litre drums with the Compost preparations (502-507) to make very beneficial foliar sprays. The distinguishing feature of these plant tonics from those used in an organic system is that the Biodynamic Compost Preparations have been added to enhance the availability of nutrients and bio-stimulants.

Biodynamic Tree Paste

A paste applied to the trunk of trees that nourishes, stimulates growth and protects the bark and cambium of the trees and vines, sealing over crevices in which pests may settle in winter. Made from equal parts of cow manure, silica sand or diatomaceous earth and clay or bentonite it is mixed to a thin paste, stirred with the Horn Manure Preparation (500).

For a small number of trees it can be painted on with a whitewash brush or in a commercial situation the paste should be thin enough to be sprayed out and only made with the diatomaceous earth instead of sand .

Moving into Biodynamics

If these descriptions of the Biodynamic Preparations sound too daunting as a method of farming, you can relax in the knowledge that all the Biodynamic Preparations and some of the plant tonics can be purchased through Biodynamic AgriCulture Australia in commercial quantities. The association provides the convenience of ready-made preparations as a service to their members who consist of growers from across Australia. So once you have completed two days at a Basics workshop on how to work with Biodynamics, acquired some basic equipment for stirring and spraying out, you can place your order and get underway.

For those that are keen to learn the whole process, once a year the Association has a Preparation Making weekend and also run's Master Preparation Making workshops to assist local regions in making their own Biodynamic Preparations. ■

**Education Officer, Biodynamic AgriCulture Australia*

In the Summer issue, we will look at the different types of equipment used for stirring and applying the Biodynamic Preparations, Equipment Calibration and timings for putting the preparations out.

i Tales for the Underground. David W Wolfe. Perseus Pub. ISBN 0-7382-0128-6

ii Agriculture – Spiritual Foundations for the Renewal of Agriculture – Rudolf Steiner

BDFGA Kimberton USA.

Crossword Solution													
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