

Eden Valley - Biodynamic Grains and Sheep at Dumbleyung



Terri and Dayle Lloyd

Dayle and Terri Lloyd's farm, "Eden Valley", was first settled by white people in 1905. It is near Dumbleyung, about 300 kilometres south west of Perth in the 350-375mm rainfall belt, ideal for grain growing. Dayle's grandfather bought the original 2000 acre block in 1945 – he had been farming further east, but his farm went salty within 20 years of clearing it, so he was looking for land that would be more reliable. The family later added 1300 acres at the lower end of the farm, bringing the total to 3300 acres. Ten years ago they bought an additional 1700 acre property close by.

The home farm is ideal for natural farming – it encompasses a complete catchment including three small valleys, so they have almost complete control over their water. Also, 90% of their boundaries consist of road or rail reserves. Their few common boundaries with conventional neighbours are being progressively double-fenced and planted to trees as a buffer zone.

There are low, rocky hills dotted around, with freshwater springs, which were much used by local aborigines before white settlement – a lot of aboriginal implements have been found in the hills over the years. Dayle is fencing off all the hilltops and native vegetation areas, and allowing them to regenerate.

All the creeks have been fenced and replanted with native trees and shrubs. We crossed a small saltwater creek that flows into their farm from a 100 acre neighbour's paddock that is not in their catchment. This paddock has no actual salt damage, but *is* seeping salt into the creek and onto their property. Once on their farm, the water becomes sweet within ½ kilometre! Dayle thinks it is because the creek line is fenced and treed, and the pasture amongst the trees is allowed to grow longer than normal – the creek plantations are grazed occasionally. The pastures have all changed from saltland pasture to non-saline type pasture in amongst

the trees now, and the underlying water level has been lowered.

Water flow on the property is controlled by wide, shallow contour drains (with a small drop) which slow down the flow of water and redirect it into storage dams, similar to the Keyline system. Most cultivation is done on the contour to work in with the drains.

Dayle now has enough treed areas on the property to cut the annual 200-300 fence posts required – he uses white gum (*Euc. wandoo*) and Jam tree (*Ac. Acuminata*) posts, which last 50-80 years in the ground without any preservative treatment! Old posts that are replaced provide all their firewood requirements for the year.

Biodynamics

Dayle returned to help his father on the farm after graduating from agricultural college in the late 1970s. Apart from a period in the 1950s when DDT was extensively used, chemical use had been fairly limited in the W.A. wheat belt. But during the 1970s, farmers were starting to depart from traditional long pasture rotations and increase cropping, and consequently were starting to use more chemicals. Dayle felt uneasy about this situation, but it was only when he sat down to complete an Ag. Dept. survey on chemical use that he realized just how much they were using.

He had developed an interest in Permaculture in the mid 70s, though he realized that it would be a very long-term project on a broad acre farm. However, through that contact, he became aware of Biodynamics as an agricultural method, and attended the lecture given by Alex Podolinsky at Bob McIntosh's place at Kendenup in 1982. Everything Alex said made sense for Dayle. He took a few years to prepare himself, his family and the farm. His father was happy for him to run some trials, and Alex allowed them to convert one third of the farm initially to see how it went. Dayle's grandfather saw it as a very positive step.

After two years, the results were extremely good – the grain yields from the BD area were just as good as what they were getting on the other two thirds of the farm. The pasture quality had improved significantly. Areas where they were having trouble with clovers not regenerating, improved significantly within two years. In other areas where water weeds (a sign of compaction) were a problem, the weeds disappeared and pasture regenerated. The soil structure improved and the colour darkened.

After two years, the whole family noticed that in heavy rainfall events, the water on the BD pastures spread out evenly and moved as a sheet, whereas on the conventional paddocks it ran together in little rivulets (more potential for erosion). And when rounding up sheep at shearing time (August), they could drive a ute on the BD pastures but it sank into the surface on the conventional pastures and they had to use a motorbike -

there was a significant change in the way wet soil carried weight.

The results were so good that after two years, Dayle's father just said "let's do it over the whole farm". Prepared 500 has been sprayed once a year over the whole property since 1988. Demeter certified produce from the home farm includes grains, wool, Warrigal greens and eggs. Dayle and Terri currently sell lambs on the conventional market, but plan to develop a BD market for the meat in future.

Soils

There are a variety of soil types on the home farm – **Shallow ironstone sandy gravel soils.** These poorer soils need to be topped up with a bit of reactive phosphate rock (a water insoluble fertilizer, phosphate released slowly by reaction with soil acidity and biological activity) at 50kg per hectare, bulked up with a bit of lime for ease of spreading, after a crop, followed by three years of annual pasture (ie every four years).

Sandy quartz loam soils. These soils just need a small application of dolomite once every ten years.

Red clays and grey clays. These soils are very stable nutritionally, both visually and by soil test results. Dayle has done tests on these soils regularly since the 1970s. Since commencing BD 18 years ago, phosphate levels have remained stable at around 30-35ppm, and trace element levels have also remained stable, despite *no fertilizer applications for 18 years!*

Cropping

This year, Dayle is growing wheat (400 acres), barley (190 acres), cereal rye (32 acres) and oats (160 acres). He has found over the years that the different grains are best suited to different soils – wheat is mostly grown on the heavier red clays, barley (and some wheat varieties) on the heavy grey clays, and oats and cereal rye on the sandier textured soils.



Rye corn

Dayle works on a four year rotation – a crop followed by three years of pasture, rotationally grazed by sheep.



Wheat

Weeds such as wild radish are dealt with by cultivating twice, waiting till the weeds germinate, then ploughing them in. If there is a second germination, this is also worked in before sowing the seed. Chisel ploughs and scarifiers are the main cultivation implements used, and occasionally a disc plough. It is important to match the speed of cultivation to the design of the implement and prevailing soil conditions. The grass management over the three years between crops (described below) is also an important factor in weed control. Hand picking of radish and Doublegee involves the whole family and friends in the late winter and spring.

A potential problem is cutworms and webworms – the Lloyds get enormous flights of these pests in the autumn – they look for grassy paddocks to lay eggs in, and as all the neighbours intensively crop, and spray all the grass with herbicides, the Lloyd's is a very attractive destination! In a good season, with an early break, there is enough time between cultivations to disrupt their life cycle, but when there is a late break, and the pressure is on to get the crop sown quickly, there could be a problem. Dayle lets the grasses come right up and produce seed the first year after a crop. In subsequent years, the grasses are grazed more intensively and also slashed. This gives good control of grass seeds in the year before a crop, helps with soil diseases that affect wheat, and also helps control cutworms and wireworms.

One of the barleys Dayle grows is naked barley. This is a very ancient barley that was still grown in Western Australia until the 1920s or 30s. It is even older than Spelt wheat. Its great advantage is that it has no coarse husk like modern barleys. The outer bran coating is soft and digestible, so it can be ground whole to make

wholemeal barley flour or used as a whole grain like pearl barley, but with the outer skin intact. Dayle knew the history of naked barley from agricultural college, and his grandfather told him that it was the only barley grown in the 1920s. Dayle also knew that the West Australian Agriculture Department kept seed of all varieties ever grown in the West, and grew them every 5 years to renew the seed. When he requested a sample he was told that the seed bank was not accessible by farmers, but was put in touch with an ag. dept. plant breeder who was working on it at the time. This man was a great help, giving him a milling sample and a seed sample, together with instructions for further improving the variety and removing off types. Dayle worked with it for 5 years to improve the seed, and learn how best to grow it, and now grows it commercially. The whole grains are sold as *natural barley kernels*.

Grains are stored in sealed silos with carbon dioxide to prevent weevil infestation. Dayle paints the silos with a special white insulating paint which keeps the temperature inside 10⁰C cooler in summer! This is better for the grain and also helps against weevils.



Silos

Milling

Dayle and Terri have been value adding to their grains since 1991, by sending them to a mill at Corrigin (120 km away) and distributing flour products throughout Australia. Then, in 2001, the mill owners decided to sell up. After much thought, and with help from the Biodynamic Marketing Company, Dayle and Terri bought the mill themselves.

At first, they employed a farmer's son to run the mill, but were at a loss when he left. In a most remarkable coincidence, they jokingly said to Gotthard Bauer, the Biodynamic baker at Yallingup, who they supply with flour, "you don't happen to have a son looking for a job in a mill do you?" He said "well actually, I do!" They said "we're prepared to train him", but Gotthard said, "that's OK he's a fully trained, 3rd generation miller!" They brought Phillip Bauer out from Stuttgart where he worked in the family Biodynamic mill, and he started work at the Corrigin mill. Terri is responsible for overseeing the milling business.



Eden Valley BD flour mill, Corrigin



Phillipe Bauer, miller

They have two mills. One, a 160 year old Dutch stone mill, brought from Tasmania, is used for wholemeal flours, while a combination steel and stone mill is used to produce white flour - the steel mill shears the bran flakes off in larger pieces and allows better separation of the components of the flour. In addition to their own grains, the Lloyds mill grain for eight other Biodynamic farmers. They are able to advise the farmers on what and how much to grow each year, and provide surety of a market for their grains at a fair price.

Drought

Drought is a fact of life in Australia, but in 2000, the worst drought on record in Western Australia began, and lasted for three years. The rainfall fell to half the average. During this time the Lloyds cut back to the breeding flock only, spreading them out over their two farms plus a third, leased property. The Lloyds were very pleased with the way their farm performed during the drought – while the neighbours' paddocks simply blew away, their soils moved a little in some paddocks, but lodged against bits of vegetation, leaving a wavy effect. Not ideal of course, but no soil blew away at all. Dayle feels these paddocks will take a while to recover fully.

Stock Feed

During the drought, Dayle began to think of a use for their excess of Biodynamic bran and pollard from the mill. He thought he could make a stock feed to help

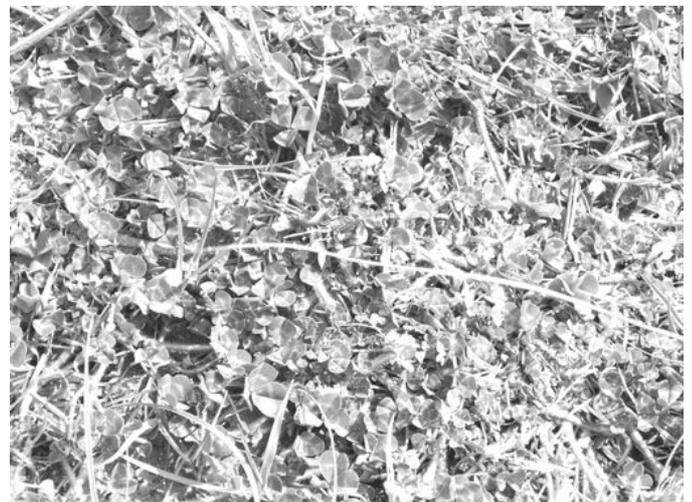
them through the drought. Realizing that more fibre was required he organised a supply of oat hulls from Peter Mason, who produces the Biodynamic Weinteriga rolled oats, and some seconds wheat, and sent samples to an animal nutritionist at the University of W.A. This man came up with a balanced formula for ruminant animals, including some salt, lime and gypsum. Dayle had this formula made into a crumble and found it very useful as drought feed. After the drought, other farmers became interested, and they began producing Biodynamic stock feed for sale. They have now also developed a formula for free ranging poultry.

Sheep

Dayle and Terri have over 3500 pure merinos at Eden Valley, including 1200 ewes and 190 rams. They have always made it a priority to have a soft handling wool, rather than go for a particular micron range. Their wool averages 21½ microns and cuts about 6½ kg per head. They feel that the economics of wool production are still there as long as you keep the wool cut as high as possible together with a reasonable micron level, rather than concentrate solely on producing finer wool at the expense of quantity.



Apart from wool quality and quantity, their main breeding focus is on developing worm resistance in the sheep. With Biodynamics, rotational grazing and culling animals that show evidence of not coping with worms (dirty bottoms) goes part of the way. But there are other



animals that do not have dirty bottoms, but are still badly affected and losing production. These animals must also be identified. Dayle has, for the last 10 years, been part of a West Australian Ag. Dept. program to identify those sheep – this is done by regular sampling and testing of faeces from each ram, and monitoring which ones are coping and which ones are not. Only the rams are involved, as the ewes are more difficult to test due to varying hormone levels. Also, each ram serves at least 50 ewes, so their influence on flock genetics is very important. This program has produced excellent results in only 5 years! This wetter year has been a very bad one for worms, but Dayle and Terri's sheep are coping wonderfully well, indeed thriving, whereas the neighbours are having big problems in spite of drenching.

The next breeding challenge will be the issue of mulesing – Dayle feels that it will be possible, over a period of time, to gradually eliminate the heavier wrinkled sheep and thus the need for mulesing.

Converting the New Farm

Dayle and Terri bought the nearby 1700 acre property 10 years ago. It was quite cheap because it had been very badly degraded by conventional farming. It is taking a while to get this property back to health, particularly in view of the extended drought, and they are still applying some water soluble fertilizers in conjunction with 500 at this stage while they slowly rebuild the badly degraded soils, and re-establish pastures. The crops and wool produced from this property are at present sold on the conventional market. This property gives them an interesting point of reference and comparison with the BD farm, and also provides the opportunity for trialing new varieties of grain. Dayle and Terri plan to eventually develop this farm for Biodynamic lamb production, particularly if one of their children decides to return to the farm after finishing school.

Eggs and Warrigal Greens

Terri runs 150 hens for egg production, producing 40-60 dozen eggs per week, which are sold in several shops in Perth. The hens are housed in fixed sheds, and can range freely, guarded by one very devoted alpaca. Movable sheds are also used at times, and were particularly useful during the drought, to better control grazing.

Another sideline is the production of Warrigal greens, a native Australian vegetable, which was the first Australian bush food eaten by the British when they came to Australia. It is similar in taste to spinach. It is also sent to Perth, sold in health food shops and used in several restaurants.

Value Adding

Dayle and Terri have successfully added value to their product through the mill operation and the eggs. Dayle's advice to other farmers wishing to value-add is to first



Warrigal Greens



Movable poultry arks

discuss the proposal very carefully with a good accountant. It is important to ensure that the financial and physical aspects of the project are well planned and don't adversely impact on family life. He also suggests that the operation be kept on a relatively small scale, using contractors where possible, and developing long-term relationships with other small businesses. He advises other farmers not to be tempted to get too big or to put all their eggs in one basket.

Eden Valley farm is a superb example of the direction agriculture must take in the very near future – highly productive without using chemicals, requiring only very limited inputs, responsibly conserving earth's limited natural resources. Soils that are biologically intensely alive, producing foods of the very highest quality, in a completely revitalized natural environment!

BIODYNAMIC SHARE FARMING

A share farmer, experienced in Australian "Demeter-standard" Biodynamics, is required on a farm undergoing conversion to Biodynamics. The 555 acre farm is located on French Island, Victoria, and currently produces cattle, lambs, pigs, garlic and vegetables. Some involvement in education of trainees will be required. Accommodation available, primary school on the island. Enquiries – Mark Cunningham, 03 5980 1224