AUSTRALIAN DEMETER BIO-DYNAMIC

Bio Dynamic Agricultural Association of Australia

Newsletter Summer 19/20

The problem concerns water

Extract from ALEX PODOLINSKY 2011 LECTURE

Final extended report based on lecture given at a Bio Dynamic Farm near Young NSW on 28/10/11.

I first drew attention to this problem in the lecture "Living Agriculture" 2000 (reprinted 2002, 2005, 2009).

Familiarity with the rivers Rhine and Danube, with Danube flood marks and sequential dates over many centuries, exist historically – I was surprised at reports of higher and more frequent flooding than ever before. In my assessment, in a healthy, natural river system like the Danube, flowing at great length through rich fertile flats, ranging often hundreds of kilometres to both sides of the river, only about 10 to 20% of the total water of that river system is visible as flowing river water.
The larger portion flows in a vast underground vein system, which requires constant new input through rainfall, and which therewith acts like a bank account in holding the water level in the river, even in minor dry spells.
The so called "flood channels" of Australian inland "rivers" have no such vein system but run in flood after tropical type heavy rainfall of short spells upriver.

Recently Dr John Russell, Latrobe University Bendigo, published three dissertations comparing the water intake capacity on three large Bio-Dynamic grain and sheep farms north of Stawell, Victoria, and compared each to a similar conventionally farmed neighbouring farm.

The Bio-Dynamic farms took in water freely, whereas the heavily compacted conventional soils only gradually took in water whilst most ran off.

For decades the Bio- Dynamic organization was aware of B.D. farms not being waterlogged compared to conventional neighbour's, but also, that the B.D. stock water dams filled only slowly, and in some cases, extra provisions were required. I requested Dr Russell to supply a realistic, wide ranging assessment of the difference between the water intake of conventional soils and B.D. soils.

On a 160,000 square kilometre contributory river system into the Murray river, a one week rainfall of 100mm – with all soils being Bio-Dynamic, compared to the same being conventional, indicated a saving of water into the soil to maintain a more even river flow of 1⁄3 the holding capacity of the Eildon Weir irrigation dam (the flood irrigation Victorian requirement of one year). Whereas with conventional compacted soil conditions this water would cause prolonged local flooding (world-wide) and unnecessarily raise the ocean levels, causing so much concern.
In my observation virtually all major flatland food production areas of Earth (USA, Europe, Australia, Ukraine) are similarly affected by heavily compacted soils. This is an unrecognised enormous problem worldwide.

The reason for this major problem will be demonstrated in the following:

Picture 1 shows such heavily compacted soil, ripped up with a bulldozer equipped with road rippers – as can be seen widely in current Agricultural practices.

Picture 2 shows how the big rocks are "broken" down with heavy equipment (picture 3) and 200 hp heavy tractors. Mechanically breaking down soil to "dust" (to again be sown down thereafter) is the worst mechanical treatment a soil can receive. After rainfall or irrigation such soil will set down more **concrete** like each time requiring worse mechanical treatment.

A further problem, even after Bio-Dynamic restructuring of soil providing renewed water intake, is: the movement of soil water in the vein system. Due to soil compaction and only little rainwater intake into the vein system – which is also a living entity and not just a system of drainage pipes – little is known about the vein system flow and its effect on soil fertility.

Picture 1. Heavily compacted soils

Picture 2. Showing how the big rocks are broken down by heavy machinery.

Picture 3. The heavy machinery used to break sown big rocks.

We have one example from a B.D. farm at Gerogery (north of Albury). John Wilson had the usual results of Bio-Dynamic soil structure development, plant and animal health after 2 to 3 years on his very flat land. Along the west side between farm and road a creek runs water in Winter. The land further to the west rises. After some eight years of B.D results and at the beginning of a long drought, the opposite hill farmer, a man in his eighties, visited John and said

"John, I don't know what you are doing here, but this creek has not had water flowing in Summer for eighty years".

John and I had observed this slow development. It took about 8 years after B.D. soil structure was established for the vein system to open up noticeably again.

On the BD farm here, cautious examinations were undertaken regarding soil structure. The basic Bio-Dynamic soil activating spray 500 was used on its own with considerable soil structuring in the first and continuing years.

The same spray was applied together with our "Soil Rehabilitator" plough shown in Picture 4.

This gave the best result. On one paddock, only this plough was used, without 500. Surprisingly the latter compacted again after one year. Spraying of the entire property resulted. The earlier results referred to can't be seen anymore but are well remembered.

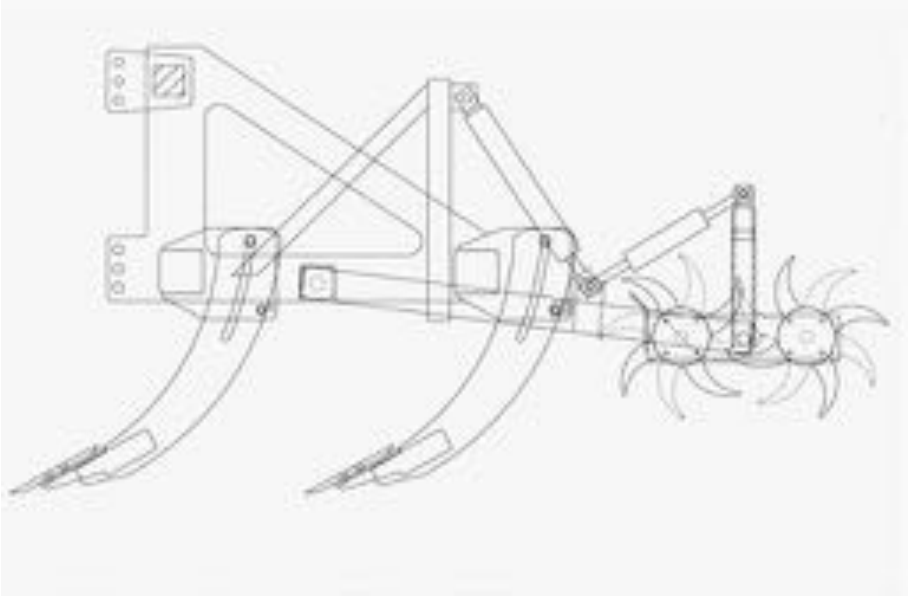
I emphasise again the huge amounts of water which should be held in vast soil areas of river vein systems now running into the oceans due to soil compaction and not any Government or University showing awareness of this problem, because too little is known realistically about soil compaction and the result thereof.

At the 2005 IFOAM tri-annual conference I challenged the eventual availability of Phosphate (so essential in the usage of conventional farming in phosphate starved Australia) with Earth's total resources vanishing, putting to question future conventional farming in Australia. I also pointed to the lack of a soil "bank" to "hold" water soluble elements in the conventional "model" of agricultural science and later received a "reply" in a little agriculture department magazine stating that, with Nano technology agricultural science will, in the future, be able to hold and release elements in soil akin to Nature's humus colloids!

What can be done to rectify the enormous soil compaction problem?

I start many basic introductory lectures with the question: "What is the most important ingredient in soil which is to be biologically active". The answers invariably are "Worms, microbes, organic matter, humus". In fact; it is **Air** and secondly **Water**.

We can live without food for weeks, without water for days, but without air only a few seconds. It is the same for the subsoil creatures. Conventional science sources have proposed that it takes 100 years for Nature to make one centimetre of soil; with a soil structure to take in water as shown on the Bio-Dynamic farms in the Bendigo University comparative trials.



Picture 4. Soil Rehabilitator

Soil picture 5 showing a B.D. vineyard in Burgundy shows by colour and soil crumbliness, and structure, ability to absorb water.

Compared to **picture 6** the conventional farmed, compacted soil from the next-door vineyard – further influenced by the greatest regular application of Monsanto Round Up as has occurred for decades, which, additionally, having sealed the top of soil like glue.

Picture 7 shows a typical poor Australian clay loam, grazed for many decades by sheep, less cultivated for cropping. This soil shows poor, weedy growth on top, compaction, no roots or structure. To get essential air into this compaction it was ripped deeply 2 to 3 metres apart, not ploughed on top but some English pasture seed broadcast and sprayed Spring and Autumn with the fundamental cow manure-based Bio-Dynamic soil activator "500".

Picture 8 shows soil 7 one year later. 25 centimetres of structured darker soil, full of white feeder roots and below the white root tips, due to root exudation, new darker soil emanating.

25 centimetres of new soil created in one year after application of initial biodynamic practice – if properly made and applied as Steiner and Ehrenfried Pfeiffer had worked out.

Picture 5. Bio-Dynamic vineyard in Burgundy, France.

Picture 6.Conventional farm situated next door to the BD vineyard, showing compacted soil

Picture 7. Australian clay loam showing poor, weedy growth on top, compaction and no roots or structure.

Picture 8. The same Australian clay loam 12 months later. 25cm of structured, darker soil, full white feeder roots and below the white root tips, due to root exudation, new darker soil emanating.

We worked with Pfeiffer type preparations in Australia, exchanged preparations with Pfeiffer in the 1950's, who was amazed to find some of ours more effective than his own and we described some of our improvements.

Important also was that our cow manure came from fully Bio-Dynamic farms, ditto soil used to insert ingredients and preparations into, and Bio-Dynamic preparation herbs.

Steiner required **energetic** stirring and a **bubbling** chaos in his Agricultural Course, which is technically unobtainable with the large stirring barrels used in Europe. (refer to "Living Knowledge")

Technical developments, like effective stirring machines (Kevin Twigg), without which the typical large Australian one owner/operator farm could not practice the Bio-Dynamic method, or horn fillers (Ginger & Trevor Hatch)to cope with the volume of horns required to supply

essentials "for wide ranging bio-dynamic development" as Steiner envisaged, became possible in Australia because of the practical skills of the Australian farmer, and especially of their indomitable attitude to not being beaten and likewise of not looking backwards to past times or "written notes" but, naturally being unnerved in advancing courageously and being creative, not just with equipment, but the B. D. method per se. (Barry Edwards)

I have here a sample of 500. It is of dark humus colloidality and can hold 70% of its volume in water.

The skin is not like plastic, but of a membrane nature that enables liquid to enter and be held in, so as a substance it would take many weeks to dry out. But at the same time this membraneness will release liquid when required by Nature's design. i.e. by the white feeder hair roots.

We make many tons of this substance called 500 in various, essentially cool, districts of Australia. A sandy soil like vast areas of the Victorian, South and West Australian "Malley" country, producing prime hard, world class wheat and fine merino wool with an initial soil organic matter level of 0.3%, and after 2 years of effective application of 500 developing a **humus** level of 2.5% ("measured" as "Organic" Matter level, as there is no conventional test for humus, but in B.D. science chromatography or crystallisation tests provide a humus test methodicity)

In practical agriculture this enables a collection and holding of a rainfall volume of as little as 4mm –

which, conventionally in April, at a day temperature of 30° and almost constant wind, would disappear in a short time – this moisture sucked in like into blotting paper, but due to the humus colloidity, is "held" and sucked down into the soil to an observable 15cm, offering a chance for early sowing – say in April and long before Autumn rain fall is expected and required under conventional conditions.

Due to high variation between day (30°) and night temperatures (2°) in these regions: "dew irrigation" is enhanced, i.e. dew running down even on young plants and then being "held" by soil humus. Early seeding in these low, unreliable rainfall areas, allowing every later drop of rain as help, especially when, all too late, Autumn/Winter rain comes only in July, still leading to a good crop, whereas such late rain, conventionally, would come too late for a good crop.

Pictures 9 & 10 show the difference of humus levels, Bio-Dynamic and conventional 20 metres apart, late in Spring. The B.D. soil and plants "hanging on" even still growing further. These examples demonstrate the totally **New Impulse** of **Bio-Dynamics** when practiced appropriately. The Agricultural lectures of Steiner bring this **Impulse,** backed by insights of cosmic chemistry. Apart from the **practical** emphasis on "energetic stirring and bubbling chaos" in between stirring directions, there are little other agricultural methodicity requirements, demanded of farmers in these lectures.

To reactivate soils: understanding "Organic" not just as applying solely animal manures, is necessary, but farming **within the organization of Nature**: with 500 colloidality ability developing low organic matter wide acreages by the sole owner operator – organic matter inputs on large acreages being impractical, but possible with the Bio-Dynamic 500 spray and organic Nature insights, thus closed farm units become possible!

Modern "Agricultural University and Government driven science" is: hydroponics and chemicals. Humus is not represented. Neither are appropriate basic agricultural skills or the ability to heal compacted soils with a substance like 500 and required soil cultivation.

Picture 9. Bio Dynamic humus levels, late Spring.

Picture 10. Conventional humus levels, late Spring.

We recommend you read the whole lecture for further understanding. Download the complete **2011 Lecture** from the Australian Demeter Biodynamic website
http://demeterbiodynamic.com.au/dvds-and-books/

Dr. John Russell comments:
"Infiltration rate is an indication of the cathedral, the cathedral of the spaces in the soil. That is totally shut off in conventional farming due to the chemicals and soil compaction. Alex's persistence with quality BD, allowing soil structure to develop, is best measured via a filtration test. How fast does water go into your soil?"

Dr. John Russell is available for further discussion on this topic, you can contact him at jvrussell100@gmail.com