

Buxton Red Deer Farm – Soils

By Andy Cowan

After reading the story about Gordon Carter's property, Glenhope Farm, in the Winter 2013 edition of the ADF, I began to check some of my own records. One of Gordon's many strengths is the references he has to past activities on the farm. It enables him justify future farm management decisions. My search emphasised my treatment of my soils over time. I must admit to being a little disappointed in what I discovered.

In brief, in 1986 I started looking for a property to farm deer. I was working around Bendigo and had some red deer agisted at Tatura with Rob Collins. I began looking around some old dairy farms in the Kerang district but was concerned about the potential salt problems and decided to look "upstream". After looking for about a year, my brother and I bought a property in the Acheron Valley on the Acheron River, near Buxton in Victoria.

Based on my records over the last 27 years, our area has about 1000mm annual rainfall although this seems to have been decreasing recently. The parent material for the soils on our hill country is Devonian sandstone and siltstone and would be classified as either a red Dermosol or red podzolic soil depending on the method of classification. Some characteristics of these soils are they are generally of low fertility; well leached over time as they are found in high rainfall areas; acid; more than likely have higher concentrations of iron and manganese in the A2 and upper B horizons and formed in situ (from parent material). Prior to clearing/farming, the organic matter in the A1 horizon would have developed, in part, from the woodlands and the cool, wet climate. The lack of fertility is indicated by the presence of bent grass, blackberry, bracken, sweet vernal, soft broome and milk thistle. At different times of the year, we also have sub-clover, white clover, plantain and ryegrass plus many other plants - all adding to the diversity of the plant population. Although the soil is non-dispersive, it slakes very quickly upon wetting. The large clay content in the soil means that heavy machinery use should be restricted. This could damage the soil structure and reduce both the root growth and drainage. The river flats are what you may expect - colluvial soils originating from the granite hills of the Great Divide to the south of us. I am not sure but, probably up until the late 1960s, this was a dairying area with many small dairy farms supplying milk to Melbourne. Well, that's what we started off with!

Although I do not do soil tests all that often, I have looked over my last 27 years of soil tests. Over the years I have actually used five different labs. On one occasion I sent soil from the same sample to different labs. I was surprised by the variation in both the results and recommendations. I now prefer to use only one Analytical Laboratory.

In regard to pH, I have only recently noticed that there are a couple of ways to measure pH. There are the standard water and CaCl₂ measurements but there are variations of concentrations used when preparing a sample. I am not sure how these differences affect the results but my advice again would be to always send your samples to the same laboratory.

My soil tests have always indicated that I am short of calcium and have a low pH. In this situation it is convenient to raise the pH of this clay soil by using lime. (As an aside, please remember that calcium has nothing to do with pH.) To raise the pH in my clay soil from 4.5 to 5.5 may take about 5 MT/Ha. To raise it from 5.5-6.5 may take about 6 MT/Ha., assuming that you use a high neutralising form of lime. These figures seem to vary substantially depending on the source, soil type and the neutralising value of the lime. Traditionally, "experts"

recommend an application of 2.5 tonnes of lime per hectare every 5 years to maintain the pH. From the figures above - to raise the pH from 4.5 to 6.5 - I would need about 11 tonnes/Ha immediately and this would need to be ploughed in about 20 plus cm. Costing...mucho dollars - maybe \$1,500/Ha! Over the years, I have added about 5 MT/Ha of lime and/or dolomite and the pH has risen only slightly on the hill country and a little on the river flats, as to be expected. I started out with the pH being about 4.8 (CaCl₂). If you are a believer in the balance of cations in the cation exchange capacity of the soil I have moved their values slightly - maybe over doing the magnesium a little.

The biggest problem for me with soil tests was the interpretation of the results. One example I could use to illustrate my quandary is the measurement for copper. In 1987, my copper levels were 2.5 ppm which was regarded as "extremely low" using the ETDA method of analysis. In 2013, the copper levels were 0.71ppm which a different laboratory regarded as "marginal" using the DTPA analysis method. I have similar issues with zinc, molybdenum, iron and manganese. What to do?? I would think the ppm value should be the same using either method. The differences in recommendations could be quite costly.

Knowing the cost of creating a "great" soil, rightly or wrongly, I tended to buy in fodder to supplement the feed for the deer rather than plant specialist crops. Good quality hay is a terrific source of seed. When the seed is wrapped in its own fertiliser - you would be surprised by the results. Plantain is readily seeded this way. I supplemented the lactating hinds with dairy pellets - about 16% protein - and generally bought hay or silage that had been feed tested.

As my soils were not conducive to being constantly dug up, I have very few farm implements. My tools of choice are a soil aerator (a modified Wallace plough), a rotterra, a wick-wiper and an old forage harvester.

I tend to use an organic/natural fertiliser which is based on brown coal mixed with whatever other elements are needed. The company I use for this has given me exceptional service over the years. They come out to the farm, do farm walks with shovel in hand, explaining the options and potential outcomes. Then I make decisions based primarily on what I can afford.

When I first arrived in the area I was told by the Department of Agriculture that the carrying capacity of the land, on average, was 10 DSE/Ha. At the time we had our largest herd, we farmed 1600 deer (mix of velvetters, hinds and younger than 2 yo. mixed sex) on 160 Ha. We also had 20 Ha of flood irrigated river flats. The highest number of bales of silage / hay that we cut in one season was about 1600 bales. This was in a very dry year and we were cutting fodder from November until May. We were over stocked but were able to produce enough supplementary feed to last up to six months. Dairy pellets were also used to boost the protein intake of younger stock.

As Robert Burns alludes to in his poem "To a Mouse", the best laid schemes may go wrong. In the last decade we have been dealing with and adapting to droughts (very mild compared with many others), fires and floods - all part of nature's cycle.

I will never know if my farming methods, concentrating more on organic matter, grazing techniques and soil conservation were better than trying to make the soil and pasture more productive by adding costly soluble fertilisers in order to produce weakened plants. I will always wonder if this would have been money well spent when fires, floods and droughts can destroy years of work. I have enjoyed the journey and continue to learn.



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