

**Case Study No 4:
Humphry family,
"Avondale",
Springhurst, Victoria.**

A vision splendid

The Humphry family's mixed farming operation in north eastern Victoria is ample proof that biological farming can be an efficient and sustainable method of agricultural production.

The Humphrys have been successfully implementing and refining biological farming techniques for more than 30 years on their Springhurst district property, "Avondale", long before such concepts even had a name or credence in the wider agricultural community.

During that time, their efforts to restore the natural health and structure of their soils have led to significant improvements in crop yields, grain quality and animal health without the use of conventional fertilisers, herbicides or pesticides.

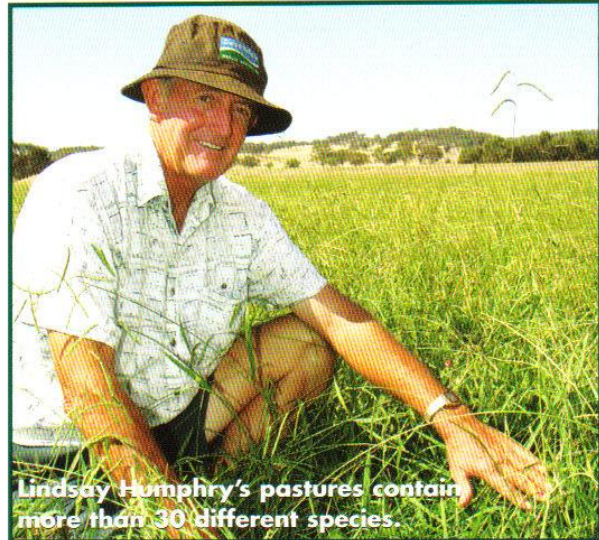
Lindsay Humphry and his brother, Ian, and sister-in-law, Margaret, run a tightly-integrated dairying, beef cattle, fine wool and cropping enterprise on a relatively frugal 575 mm (23 inch) average annual rainfall.

The livestock operation includes 260 milking cows (55 percent Holsteins and 45 percent Jerseys) plus 150 heifers and calves; an associated dairy beef operation that turns off 20 dairy beef vealers, feeder steers or export steers each year; and 3,000 Rockbank-blood superfine Merino sheep producing between 4.5 and 5.0 kilograms of 13 to 18 micron wool, averaging 16 microns.

More recently, they have introduced a small flock of 300 first-cross Boer goats which will be bred up to pure status for chevon (goat meat) production to cushion the effects of poor wool prices.

The Humphrys also grow 60 ha of oats, barley and triticale for stock feed. A further 20 ha of pasture is flood-irrigated from a network of gravity-linked dams, while large amounts of pasture are cut for hay and silage.

The current productivity of "Avondale" is an amazing



Lindsay Humphry's pastures contain more than 30 different species.

turn-around from 30 years ago, when the property was in a state of decline. Lindsay described the family's then management approach as "more-on" farming. "We were putting more and more on and we weren't getting any results," he said.

Some of the soils – particularly those on extra land acquired 20 years ago – had become so acidic, with the pH dipping as low as 4.3, that even high rates of superphosphate failed to trigger any meaningful pasture response. Accompanying this was a marked decline in soil structure, which had become compacted and devoid of life.

The Humphrys began applying lime instead of superphosphate, as well as aerating their soils in a bid to increase the amount of calcium in the soil and making previously-applied phosphorus more available to plants.

The early response was encouraging. The soil pH improved to the point where they were able to grow lucerne in paddocks where it had previously failed. Once the phosphate reserves in the soil started running down, the Humphrys began using reactive phosphate rock in preference to acidified fertilisers.

Six years ago they began using a range of "biologically active" solid nutrients and fermented liquid cultures produced by a Narrandera-based company called BioAg. One of the company's key products is BioAgPhos®, a reactive phosphate rock that has been treated with a proprietary microbial culture.



The Humphrys typically apply BioAgPhos at 125–250 kg/ha, depending on whether the paddock is dryland or irrigated, and the frequency of application. “We’re favouring a bigger application every second year, particularly in the pastures, to cut down the workload a bit,” Lindsay said.

In the cropping country, BioAgPhos is applied with 300–400 kg/ha of lime four to six weeks before sowing. The amount of lime is varied according to soil type and soil calcium levels. Seed is inoculated with BioAg Soil & Seed™, a liquid treatment that encourages rapid germination, root development and soil microbial activity.

Lindsay has also made a concerted effort to increase the size and diversity of the microbial population – including bacteria, fungi, protozoa, nematodes and earthworms – in the soil. Manure from the dairy is decomposed in a worm farm, with the resultant castings spread over the pastures and on cropping paddocks prior to sowing.

“Once the soil nutrient balance gets to a certain level, nature starts to work and it tends to balance itself,” he said. “For example, fungi produce humic acid, which is very important in the process of making humus in the soil.

“Humus increases the water holding capacity of the soil, which means you can trap a lot more rainwater and increase the growing period of a crop. This means our pastures tend to get away a bit quicker after the autumn break, grow better during the winter months and grow longer at the end of the season.”

The results of the Humphrys’ “back-to-basics” approach have had far-reaching implications for every enterprise on “Avondale”. The heavy clay loam and sandy granite soils are healthier, with a more desirable pH of around 6.4. The improved soil health has led to obvious flow-on effects in terms of pastures, crops and livestock.

Grain weight, yield and protein content have all improved without the use of large amounts of nitrogen fertiliser. Depending on the season, their triticale, barley and oats, grown for feed and grain, can yield up to six t/ha with 18 percent protein in the triticale and barley and 16 percent in the oats.

Nature tends to balance itself

Lindsay said there had also been a major improvement in the health and output of the dairy herd, which has an average yearly production of about 5,000 litres at 4.6 percent butterfat and 3.4 percent protein.

“We hardly had any milk fever or grass tetany last year, and we haven’t used any antibiotics in the past two years,” he said. “We use homeopathics to control animal health problems, including mastitis.

“The quality of the pastures and the silage means we have been able to reduce the amount of grain we feed by half, which has lowered our production costs significantly.”

Lindsay’s holistic management style is reflected in his irrigated pastures, which started out as white clover, perennial rye grass, paspalum and cocksfoot but now contain more than 30 different species.

Some, like dandelions, are generally considered weeds but to Lindsay they are part of a diverse and healthy system. “The cows love the dandelions,” he said. “They’ve got a tap root which allows them to bring up nutrients and trace elements from deeper in the soil.

“Every plant has different micro-organisms that live around its root system and it naturally follows that with a bigger range of plants, you have a bigger range of organisms.

“The more diverse the range of organisms that live on and within the soil, the healthier the soil’s ecosystem becomes and the ‘cycles of nature’ begin to work for us in an ecologically sustainable way.”

He said small amounts of selected nitrogenous fertilisers were helpful to feed microbes and get a biological farming system up and running. “They’ve got to have nitrogen to grow,” he said.

Rounding out the picture, Lindsay has planted thousands of trees for shade, shelter and agroforestry. “The trees provide a micro-climate and habitat for birds and beneficial insects, such as predatory wasps, ladybirds and praying mantises,” he said. “Some of them are food for birds while others eat insect pests, but they’re all part of the same ‘soil food-web’.”



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