

Case Study

Yandoit Farm



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Yandoit Farm is a 140 acre property located near Yandoit, in Central Victoria. From the mid 1800's the property was the Williamson Freehold gold mine until approximately 1899. During the tenure of three subsequent owners it became a conventional farm, producing beef, some broadacre grain cropping, pigs, horses and dairy farming for cream production.

When Michael and Lisa Jackson purchased this property in 2011, they began work on their lifelong dream of developing a self-sustaining farm in a friendly community from which they could make a viable living and have quality of life.

Case Study Summary

The Jacksons have achieved substantial gains by redesigning their farm using principles of permaculture and Keyline design, with a focus on water efficiency, energy efficiency and improving soil health.

This case study focuses on water efficiency, but in the short time they have been at Yandoit, the Jacksons have initiated many resource efficiencies to help make the farm financially and ecologically viable. As well, they have forged strong connections with their local community.

What they did

The Jackson's success has been founded on thoroughly researching their farm and accessing the advice of recognised industry experts. After deciding to base their farm plan on Permaculture principles, the Jacksons engaged three experts to collaborate on the development of an overall Keyline farming design. Keyline farming uses the natural contours of the existing landscape for optimum water management to regenerate and enhance the land¹.

They also took the time to learn good cattle management from the previous owner for their herd of 80 cattle.

Water Efficiency

Keyline design is a very efficient water management strategy. It optimises access, catchment and water storage high on the landscape, allowing gravity feed for stock and watering systems. The design eliminates the need for fuel hungry pumps. Keyline design does not rely on any uphill surface run off. The road is used as the catchment to fill the dams high on the landscape. The Keyline at Yandoit farm starts from outside the property, sweeping around the landscape on a contour of 1:400mm. The small gradient slowly moves water along the contour line with very little loss or erosion. The catchment comprises three dams which net more than 5 Megalitres, all supplied by the Keyline system. Previously the paddocks were square, the dams were situated at the bottom of valleys and pumps were needed to move water to where it was needed.

As part of their Keyline design strategy the Jacksons cultivated their fields using the Yeomans ploughing method. Both the plough and Keyline design was first developed by the great Australian, P.A. Yeomans (1904-1984). The Yeomans plough is designed to cut the soil by gently lifting and loosening the soil with very little soil profile disturbance. The method reduces the need for chemical fertilizers through a natural process where rain, water, air, sun and soil all help to release minerals vital for healthy soil and plant growth. They set aside two paddocks to make a comparison test - one ploughed, one not - to measure results over time. Along all Keyline roads they have ploughed above and below the roads to eliminate runoff. This means that rain falling in any 1m² actually stays in that square, thus optimising the effect of the resource.

¹ For more information about Yeomans Keyline design you can find an excellent article co-written by Darren Doherty at

The long term rainfall averages from 1966 indicate an average annual rainfall of 600mm per annum. Based on this rainfall at Yandoit Farm the Jacksons have calculated that they would effectively be operating at the equivalent of 750mm+ p.a. by using the Keyline design and the Yeomans plough. This has resulted in a huge saving in both environmental and financial terms.

Tanks, windmills and hidden gold

In addition to the Keyline water catchment, the Jacksons have tapped into six million litres of underground water from a disused gold mine on the property. Installing a windmill over a mineshaft the water is pumped up to two 22,700 litre tanks which reticulates gravity fed water to the homestead vegetable gardens and food forest.

Food and biodiversity

The homestead boasts a huge vegetable garden from which the Jacksons feed both themselves and their Wwoofers². The planned 3ha food forest will support extensive and diverse perennial food trees and plants. Across the farm, livestock, tree, plant and pasture food systems are also being developed to support 65+ different food & fodder sources for animals allowing a minerally balanced and nutritionally complete diet for livestock and to support healthy soil development.

Electricity

Whilst the farm is connected to mains power their aim is to go off the grid completely. In their previous home in suburban Melbourne their electricity usage was 13Kwh (kilowatt hours) for six people. On the farm they live more simply so electricity has reduced to 3Kwh p.a. for six people. When there are only two people on site it only draws 2Kw p.a. In spring and autumn when hosting up to 16 Wwoofers they still use less than 5 Kw p.a. Solar arrays connected to bicycle batteries are used on the Wwoofers' caravan accommodation. Pride of place in the homestead courtyard is a Tim Barker designed Rocket Hot water heater and oven which is used for cooking. Indoor heating comes from a wood fire heater. The fridge, freezer and kettle are the primary uses of electricity at the homestead. The freezer is used to extend seasonal produce life and for meat storage of

kangaroo, rabbits, lamb and beef - all processed on the property.

The Consultants

Dan Palmer, Permaculture expert and systems theorist from *Very Edible Gardens* was the overall project manager and homestead consultant. His brief included building an edible food forest and perennial food system.

Darren Doherty, Permaculture and Keyline design expert advised and supervised the earthworks for the Keyline design for regenerative agriculture and natural farming.

David Holmgren, founding Permaculture expert provided a detailed reading of the landscape. He found varied levels of fertility, different geological soil types, a history of volcanic events and the riparian zones along the Jim Crow Creek.

This combined information provided a comprehensive picture that has enabled the Jacksons to do detailed planning to systematically act to regenerate the property for the long term.

Outcomes and Measurable Impacts

Water efficiencies beyond their expectation, increased soil health, power efficiencies and an improved quality of life are the integrated measures of success.

Critical success factors and advice

The Jacksons have been both methodical and innovative in their approach. Open to new ideas and old, they caution against just accepting conventional wisdom without question. To act without understanding can be dangerous and they recognise that advice about how things have always been done has a cultural, rather than a scientific basis.

They believe that taking a planned and integrated systems thinking approach to their farm management was critical to the success of their venture. Good water management, good soil (and soil building capacity) and achieving a mineral balance through a diversity of planting are all essential elements of this success.

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² Worldwide Opportunities on Organic Farms,
<http://www.wwoof.net/>