

Permaculture Principles & Alpaca Farming

By Jen Frederick

Permaculture¹ was developed by Bill Mollison and David Holmgren in the late 1970s as a designed system of permanent agriculture (as opposed to seasonal tilling, planting, maintenance and harvesting). It is based on the underlying principles of:

- Care of the earth – all life on planet Earth is interdependent, and in developing our farms, that we have regard to the living ecosystems that already live there (including soil biota) as well as creating an agri-ecology to support ourselves and other imported animals and plants, and that we do no harm and restore damaged environments where we are the stewards of the land.
- Care of the people – whilst the humans who live in a place need to develop and maintain an ecosystem that supports them (as opposed to only caring for the natural environment), we need to support and help each other in developing ways of living that do not harm ourselves or the planet, and that we work together to restore and develop a healthy society.
- Return of the surplus to the system – limiting our own consumption of resources, ensuring that we use Planet Earth's resources in an equitable and wise manner, that abundant production is shared, and that we use our land and community resources to be self-sufficient, wherever possible.

Permaculture principles of agriculture can embody many other techniques including biodynamic, organic, natural sequence farming, holistic management, rotational and cell grazing, the many living soils/compost tea approaches, Yeomanns ploughing, key-line dams, to name just a few.

Permaculture design mimics natural systems by using all of our scientific and technological skills to design a system for a particular site that mixes different types of animals and plants, in multiple layers that support each other including human life. Developing a permaculture farm (or cultivated ecosystem) involves site planning, system establishment and system maintenance. In this article, some of the principles of permaculture design and site planning will be introduced.

The site planning issues in permaculture farm design include:

- The context of resources available at the particular site eg climate (macro and micro), location, soil, water, existing vegetation, fauna & land use – every permaculture design is unique to its site.
- The needs of the inhabitants of the property eg living, social, economic, & global arrangements – every permaculture design is unique to its human inhabitants.
- Understanding and applying permaculture concepts to the site to develop a permanent agriculture system that mimics a natural ecosystem (eg patterning - the patterns in wind movement, water movement, multiple beneficial relationships – siting, choice of species etc). This includes the principles of zoning ie putting most visited sites closest to the house

¹ Mollison, Bill with David Holmgren [Permaculture One: A Perennial Agriculture for Human Settlements](#), (1978) ; Mollison, Bill: [PERMACULTURE: A Designers Manual](#); (1988) Tagari Publications Australia

eg sites visited on a daily basis at our farm include poultry, kitchen garden, alpaca birthing paddocks (visited more than once daily, although for only a few weeks in a year) – these are all closest to the house, whilst the wether paddocks (except for immediately after shearing) and timber trees are furthest away. It also includes design of fencing and laneways, water reticulation systems, pasture species (including grasses, forbs, shrubs and trees, mix of perennial and annual species and winter active and summer active species), earthworks (chains of ponds, dams, swales, berms, diversion channels, gabions, chinampas), windbreaks and shelter belts, planning for droughts and floods and other extreme weather events, choice and use of livestock and poultry in the system (eg mobile chicken or pig tractors used in paddocks clean up and spread alpaca poo piles, fertilise the soil and produce food as eggs or meat); alpacas produce meat and fibre, their grazing habit reduces the risk of fire, their feet are soft on the landscape (less than a kangaroo) and so won't damage the soil structure, and their manure fertilises the soil.

- Multiple beneficial relationships – everything in a permaculture design should have at least 3 uses or links to other components in the design eg the use of tagasaste (tree lucerne) as wind breaks also provides fodder for alpacas and other large animals as well as poultry, and fixes air-borne nitrogen in the soil thus improving soil fertility; a pasture seed mix including native (microlena and danthonia) and exotic grass species (phalaris, cocksfoot, fescue, bromes) as well as herbs (parsley, chives, comfrey, yarrow, fennel) and other plants (plantain, medic, vetch, nasturtiums, chicory) will provide the trace elements, protein, and total nutritional requirements for alpacas over all seasons of the year.

Whilst we have developed a whole farm permaculture plan, we have been working on its implementation over the last 6 years. Key dependencies in the plan have affected the timing of some of the elements of the plan too eg we rebuilt 2 dams that were leaking at the same time as we were burning off approximately 25 huge piles of cleared timber (that were rabbit and blackberry colonies), and those tasks had to be completed before we could fence more paddocks and the laneway system, which had to be completed before planting out all of the windbreak/shelter belt trees, and so on. The next article will talk in more detail about how these principles have been applied at our farm.



Figure 1 October 2005 Zone 3 and 4



Figure 2 December 2010 Zone 3 and 4

About the author

Jen Frederick & Peter Bell have Permaculture Design qualifications & experience, & have 61 alpacas on a 250 acre permaculture farm at Galifrey Alpacas, near Braidwood NSW. They also run Galifrey Alpaca Textiles, a yarn & fleece products retail business, online at www.galifrey.com.au. For further information, please contact Jen at jfrederick@galifrey.com.au