

INTRODUCTION TO PERMACULTURE

PERMACULTURE = PERMANent AgriCULTURE and PERMANent CULTURE

Permaculture is a practical concept applicable from the balcony to the farm, from the city to the wilderness. It enables people to establish productive environments providing for food, energy, shelter, material and non-material needs, as well as the social and economic infrastructures which support them. Permaculture means thinking carefully about our environment, our use of resources and how we supply our needs. It aims to create systems that will sustain not only for the present, but for future generations.

...definition from Permaculture International Journal

Conventional modern agriculture is facing serious environmental problems - widespread erosion, salinity, acidification and contamination of soil and water by toxic residues. Food-raising systems that conserve soil, water and nutrients and minimise the use of fossil fuels, chemical fertilisers and synthetic pesticides are desperately needed. Although the expanding organic movement is a positive development, in the final analysis agricultural production will be maintained only if farms are designed in the image of natural ecosystems, combining the knowledge of science with the wisdom of the wilderness. Natural ecosystems are extremely resilient and use only renewable sources of input. They have, for thousands of years, demonstrated high productivity, an impressive ability to maintain environmental quality, and quick adaptiveness to natural disturbances. Hence, they can be used as architectural and botanical models for designing and structuring our agro-ecosystems.

This is the approach of Permaculture, the name given by Australian ecologist Bill Mollison to describe the concept of a self-sustaining, consciously designed system of agriculture. It takes the practices of organic farming one step further, applying natural principles to design a self-sustaining food, fibre and energy producing ecosystem. By weaving together the elements of microclimate, annual and perennial plants, water and soil management, and human needs, the permaculturalist forms an energy-efficient, low-maintenance, high-yielding and intricately interconnected system. The philosophy, as summed up by Mollison, is one "of working with, rather than against nature; of protracted and thoughtful observation, rather than protracted and thoughtless labour; and of looking at plants and animals in all their functions, rather than treating any area as a single product system."

A good permaculture design takes advantage of the fact that landscapes develop over time. In natural ecosystems, this concept is known as succession. This describes the process by which, for example, an abandoned paddock becomes inhabited with successive communities of weeds, shrubs, pioneer trees, and mature species until it becomes a forest. In conventional farming, succession is frozen at an early stage by practices such as tillage, grazing, fertilising and pest control, all of which require energy. By allowing agricultural succession to occur, or even by consciously directing it, energy and nutrients can be conserved, soil losses reduced, and herbivore populations stabilised. Monocultural cropping systems expose soil to erosion at the harvest stage, and reduce the ecological niches of macro and micro fauna, resulting in subsequent imbalances developing in the system.

Simple successional systems also make economic sense. For example, annuals planted between the rows of a young orchard will furnish income while the orchard species mature. In some cases, understanding the successional process provides the clue to optimal land use. Many shrub communities actually create the environment for the succeeding tree species. Trees that follow pioneer species are often shade-tolerant and may even need shade for germination. Other pioneer species are nitrogen-fixers. By building up the soil nitrogen level, these plants create a more fertile soil in which succeeding species can thrive. Another characteristic of permaculture systems is that, whenever possible, production and management inputs are derived from biological resources. Plants and animals can provide such functions as insect, disease and weed control, nutrient recycling, fertilisation, energy conservation and tillage. The potential for using biological inputs is enormous and is the key to creating a sustainable agricultural system.

Permaculture systems favour diversity over monoculture and will include a great variety of plant types from top-storey trees to groundcovers. However, because interactions among plants are both beneficial and competitive, the right kind of diversity is important. Plant relationships take many forms, including competition for light, nutrients, water and pollinators; relative attractiveness as food for insects; and chemical interactions. The number of elements in the landscape is not as important as the number and quality of the linkages among them. Good design maximises the number of beneficial interactions among plants, structures and people while minimising or eliminating those interactions that are harmful. As a benefit the soil becomes more complex, the natural litter acts as a control on weeds, reduces leaching, run-off and erosion and harbours a greater variety of soil fauna. Structural diversity increases microclimate variation, allowing a greater range of useful plants to be grown. Diversity can also be considered from an economic standpoint. With farmer's incomes dependent on the marketplace, having several saleable products instead of one tends to avoid large fluctuations in financial returns.

Permaculture is based on the ethics of environmental soundness and social responsibility, co-operation and community growth. As such it approaches the many problems now facing us on a practical level and can be applied to both urban and rural situations.

written by Max Lindegger