Ecological Agriculture as an Integral part of Permaculture

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Abstract

Ecological agriculture is an integral part of permaculture. Permaculture refers to "permanent agriculture" but has not been expanded to mean "permanent culture" as it embraces the social aspects that focus on truly sustainable system. Permaculture also focuses on ecological method of design that shapes many practices, including farming. Permaculture is associated positively with ecosystem mimicry, perennial polycultures, agroforestry, agroecosystem design, and agrobiodiversity. Ecological agriculture is truly sustainable – it can regenerate and fertilize the degraded and damaged agricultural soils that cover most of the world, and will allow us to continue producing food on that land indefinitely. Conventional agriculture degrades and depletes the soil, and so cannot continue to feed us, and the "progress" made in agriculture in the last decades has come at an enormous environmental and social cost. Ecological agriculture also has the potential to offer higher economic returns than conventional or industrial agriculture as it gives a combined and continual yield from land, instead of one or two big monoculture harvests per year. And it is much more efficient in energy and financial terms when we consider the cost and embodied energy of conventional farming's chemical inputs. Ecological agriculture gives us a much better output for our input. This review discusses ecological agriculture as an integral part of permaculture in the light of organic agriculture.

Ecological Agriculture and Permaculture

Ecological agriculture is an integral part of permaculture. Permaculture's emphasis on whole systems design is heavily influenced by the work of ecologist H.T. Odum (Holmgren, 1992).

The Permaculture Concept

Permaculture refers to "permanent agriculture" (Paul 2011) but has not been expanded to mean "permanent culture" as it embraces the social aspects that focus on truly sustainable system. Permaculture also focuses on ecological method of design that shapes many practices, including farming. Permaculture is associated positively with ecosystem mimicry, perennial polycultures, agroforestry, agroecosystem design, and agrobiodiversity (Francis and Porter 2011).

Permaculture is a design system that aims to create stable, agricultural productive systems that provide for human needs, harmoniously integrating the land with the people not only for today but also into the future. It is a holistic approach that goes beyond simple food production and encourages us to work with every aspect of life with an ethical base of Earth Care, People Care and Fair Share (Holmgren, 2002). A well designed functional Permaculture System can restore degraded land and landscapes using simple low cost strategies such as earthworks, rainwater harvesting, appropriate and mixed planting,

composting and much more. The ecological and biological processes of the land, plants, animals, nutrient cycles, climatic factors, and weather cycles are all examined and incorporated into productive, functional Permaculture Systems. Elements in each system are viewed in relation to each other, and the outputs of one element become the input of another. Inhabitants' needs are provided for through proven technologies for food, energy, shelter, and infrastructure. Within Permaculture Systems, work is minimized, "wastes" become resources, productivity and yields increase, and the environment is restored.

Permaculture is a major tool for earth restoration and care of people. The result is productive, stable communities with functional, agriculturally productive ecosystems, which have the diversity, stability, and resilience of natural ecosystems. Ecological agriculture means growing food in diverse systems that are 100% organic (chemical free) and which do not use monocultures. They build and maintain soil fertility through maintaining the right mix of plant species (including nitrogen fixers) on the land all year round and make more use of multifunctional trees and other perennial plants. Any fertilisers or sprays are made from plant materials, such as compost teas or neem insect repellent. It is natural-system-based farming.

Ecological agriculture is truly sustainable – it can regenerate and fertilize the degraded and damaged agricultural soils that cover most of the world, and will allow us to continue producing food on that land indefinitely. Conventional agriculture degrades and depletes the soil, and so cannot continue to feed us, and the "progress" made in agriculture in the last decades has come at an enormous environmental and social cost.

Ecological agriculture also have the potential to offer higher economic returns than conventional or industrial agriculture as it gives a combined and continual yield from land, instead of one or two big monoculture harvests per year. And it is much more efficient in energy and financial terms when we consider the cost and embodied energy of conventional farming's chemical inputs. Ecological agriculture gives us a much better output for our input.

Evidence to Act

Our earth's ecosystems are in crisis. Healthy ecosystems are fundamental to successful, sustainable businesses and vibrant social communities. Indeed, people's health and well-being are intricately linked with the earth's health and well-being. These issues need to be addressed as one. The greatest problem in Africa is poverty, as seventy per cent of the people are living below the poverty line. Many youths and women have remained unemployed for years and are fast losing any hope of getting out of the trap of poverty. The situation needs immediate reversal in the form of capacity-building and the creation of employment. This widespread poverty also traps people in environmentally destructive systems, as they lack access and means to other knowledge and possibilities. Through no fault of theirs, the people continue using their land and local ecosystems in ways that further degrade them. Strict legislations that prevent poor people from accessing the resources in their communities without offering them alternatives have also brought futile outcomes as the lives of this resource poor communities is tied to the biodiversity resources around them.

Thus, adopting the ecological approach to farming will lead to ecological balance, where resources are utilised sustainably by the current generation and posterity is the way to go. The collapsing of soil systems, ecosystems and biodiversity has huge impact on the climate change affecting everyone negatively; permaculture have proven solutions to meet these challenges (Veteto and Joshua, 2008). Rhodes (2012) confirms that, permaculture has "a low-impact method which uses perennial cultivation methods to produce food crops in harmony with nature".

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