

PERMACULTURE

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ABSTRACT: *The elements essential to human life are air, water, and food. Lack of any of them leads to an imbalance in living beings. Food which is usually produced by plants is drastically reducing, thereby leading to its depletion. Forests are an important source of food resources in the present day. They are the reason for the ecology and economy as well. Forest resources can also be used economically as well as for satisfying the hunger needs of plants and animals. Similarly, recreating the forest scenario artificial forestry is created. This is called PERMACULTURE. Permaculture can also be done even in domestic gardens also. Permaculture uses all the traditional and conservative techniques for cultivation and agriculture. It can prove a sustainable technique for an increase in food resources and also reduces barren lands.*

KEYWORDS: *Food resources, Permaculture*

1. INTRODUCTION

PERMACULTURE was derived by David Holmgren and Bill Mollison, Permaculture is derived from words ‘**Permanent agriculture**’. Permaculture is beyond looking at strategies which can create sustainable food growing methods. Permaculture is probably defined as “CREATING SUSTAINABLE HUMAN HABITATS BY FOLLOWING NATURE’S PATTERNS”. Permaculture is an integrated technique which involves land, people, resources and environment through mutually beneficial synergies like producing no waste, closed loop systems seen in diverse natural systems.

Permaculture applies holistic techniques that are applicable in rural and urban contexts at any scale. It includes multidisciplinary aspects like agriculture, water harvesting, energy, natural building, forestry, waste management, animal systems, aquaculture, appropriate traditional technology, and community development. Permaculture with its design restores the diversity, stability, and resilience of natural ecosystems. It is an integration of meeting the needs in a sustainable way by providing their food, energy, shelter, and other materials. Permaculture design is assembling conceptual, material, and strategic components which benefits life in all forms.

2. HISTORY OF PERMACULTURE

In the late 1960s, Bill Mollison and David Holmgren have started to develop ideas about stable agricultural systems in southern Australia due to the danger of the rapidly growing use of industrial-agricultural methods. The use of non-renewable resources has destroyed the land and water systems, and removal of topsoil from fertile lands. This has resulted in the theory of permaculture which enables the use of traditional agricultural methods. The term permaculture was made public with the publication of the book Permaculture One in 1978.

The theory of permaculture has come into practice which paved a path for sustainable human practices. After a few modifications, a series of books have come out with even more details and concepts as Permaculture: A Designers Manual. Mollison has delivered lectures in over 80 countries and taught the concept of two-week Permaculture Design Course (PDC) to students.

3. CONCEPT OF PERMACULTURE

The principle behind permaculture is working along with nature, systems in all their functions and allowing the systems to create their own evolutions. The basics of permaculture are design, ethical training, and skills. However, permaculture is concentrated on agricultural lands. There is a need for drastic rehabilitation and re-thinking. One result of skills is to integrate food supply, settlement, storing rainwater from our roof areas and develop fuel forest which receives wastes and supplies energy.

Recycling nutrients and energy within nature is an important function of many species. Taking the example of home gardens, it is a self-responsibility to compost the waste back into the soil which helps in increasing the nutrients. The thought differs even it comes to a large scale as many other species in the system uptake this responsibility. In and around the house's water is collected by watershed management. Taking into consideration the scenario of forests large quantities of water cannot be met by rivers alone but can be met clouds and rain with seasonal variations. Instead of leaving the lands dumped with waste, they can be used as developing gardens, home gardens and using it for composting purposes.

There is a need for setting up ethics for natural systems. They are:

- Opposing further disturbances in rest of species of plants and animals in natural forests which are still in the balance.
- Reduction of rehabilitation of degraded and damaged natural systems to stable states.
- Planning the systems in a way that people use less land for existence.
- Enabling and implementing strict rules for the establishment of plant and animal refuges for rare or threatened species.

Though permaculture primarily deals with the third statement mentioned above, people have to stay and act responsibly for the first and second statements.

4. ETHICS OF PERMACULTURE

The three core tenets of permaculture are

- **Care for the earth:** It enables the provision for the life systems to continue and multiply constantly. This is considered the first principle as human beings cannot flourish without a healthy and clean earth.
- **Care for the people:** The species living on earth can access the required and necessary resources for existence.
- **Setting limits to population and consumption:** For a healthy earth, human beings should govern their own needs by setting up the principles. All the activities of human beings must be in a way that the waste produced is also converted into a useful product. This is sometimes also called as Fair Share.



Figure1: Ethics of Permaculture

4.1 Earth care: The icon of the young plant represents organic growth which is a key ingredient for sustaining life on Earth. This represents the care for the soil. The state of soil often decides the well-being of society. Forests and rivers are represented as the lungs and veins of our planet earth which help the Earth live, breathe and support many diverse life forms. Different life forms have their own intrinsic values and individual function they can perform. Reduction of consumption of resources from earth is the best way to care for all living things.

4.2 People care: The icon of the two people together, represents the need for collective efforts to change the present scenario. People Care begins with one's self and includes our families, neighbors, and communities. Personal responsibility and self-reliance are more challenging. By personal responsibility for our situation, rather than blaming it is more important to empower ourselves. As wisdom lies in a group of people, the rest of the outcomes depend on integrated work. The approach focuses on all the positive opportunities and reduces the risks and obstacles in all situations.

4.3 Fair share: The icon of the pie represents the need of taking into consideration the limits and capacity of the earth. It helps in developing of the gives and takes in a system. For example, an increase in more number of fruit trees can give surplus than demand depending upon the population and their demand. The limitation is the time taken for growing and the harvesting. the rate at which population growth is seen accelerates the extension of certain species. Implementation of strict and stringent laws may be appropriate to make a positive change and maintaining balance in systems.

5. PRINCIPLES OF PERMACULTURE

Twelve Permaculture design principles articulated by David Holmgren in his Permaculture: Principles and Pathways beyond Sustainability:

1. Observe and interact
2. Catch and store energy
3. Obtain a yield
4. Apply self-regulation and accept feedback
5. Use and value renewable resources and services
6. Produce no waste
7. Design from patterns to details
8. Integrate rather than segregate
9. Use small and slow solutions
10. Use and value diversity
11. Use edges and value the marginal
12. Creatively use and respond to change

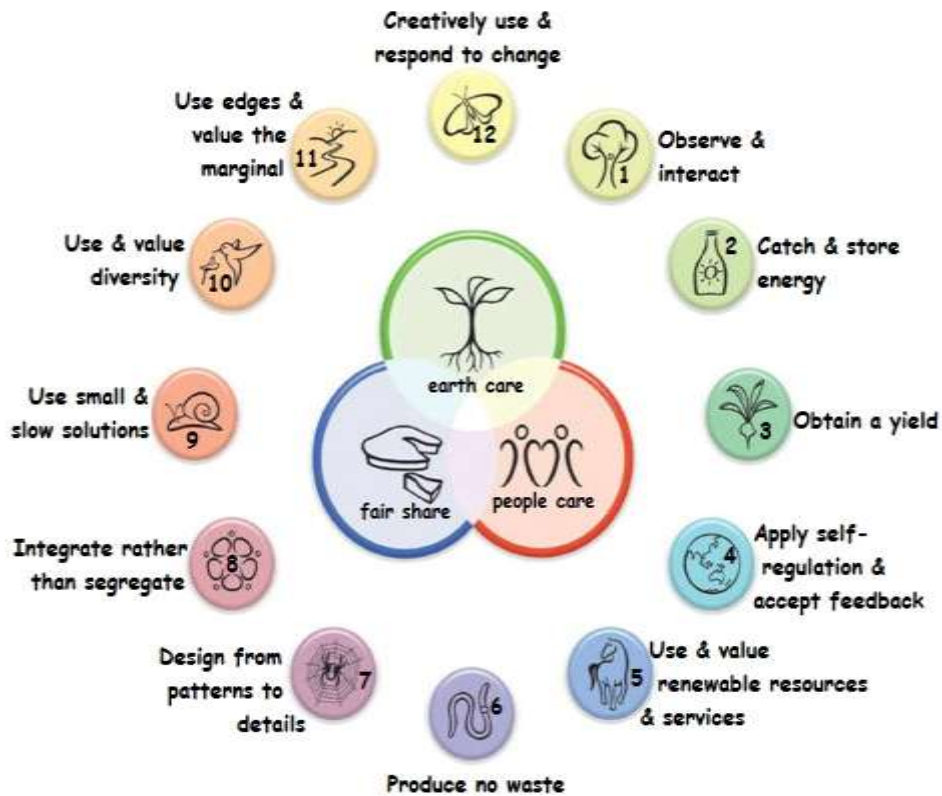


Figure2: Principles of Permaculture
All these principles help us in achieving the following aspects.



Figure3: Integrity of Permaculture

6. COMMON PRACTISES

6.1 Agroforestry

Agroforestry is an integrated approach of permaculture, which uses the interactive benefits from combining trees and shrubs with crops or livestock. It is a combination of agricultural and forestry technologies which create sustainable, profitable, productive and healthy land systems. Agroforestry systems are grown for timber and non-timber forest products. Shrubs and trees are grown intentionally in agricultural lands and also non-timber forest products are cultured. Food forests and agroforestry are approaches that lead to the same designs.

6.2 Rainwater Harvesting

Rainwater harvesting is collecting and storing rainwater for its use before it seeps into aquifers. The collected drinking is used for water for livestock, irrigation, domestic purposes and other uses. Rainwater which is collected from rooftops of houses and local institutions make a major contribution to the availability of drinking water. In urban areas, it can help a supplement for subsoil and urban greenery. Water collected from the ground is called stormwater harvesting.

6.3 Sheet Mulching

Mulch is a protective cover which is placed over the soil. Materials like stones, cardboard, leaves, woodchips, and gravel etc are used in sheet mulching. Organic materials are used in common as they can perform more efficiently. Sheet mulching absorbs rainfall, reduce evaporation, increase nutrients and organic matter, creating habitat for organisms, reducing evaporation, reduction of growth of weeds and accelerating seed germination. Sheet mulching is a mimic of natural process within forests like leaf cover found on forest floors. When a trial for restoration combined with permaculture principles can generate healthy, production and with low maintenance. It acts as a nutrient bank for restoring the nutrients. Earthworms and many soil micro-organisms are attracted to this organic matter. Earthworms and their castings are best fertilizers and soil conditioners. It helps in minimizing or eliminating undesired plants and is more advantageous than other control methods.

6.4 Intensive Rotational Grazing

Managed Intensive Rotational Grazing (MIRG) is a type of grazing in which flocks are systematically moved to fresh pasture in different range or forest so that the growth of pastures is increased with rest time. MIRG can be done with pastures of few animals like cattle, sheep, goats, pigs, chickens, rabbits, geese, turkeys, ducks etc depending on the mimic done to the ecology.

7. CONCLUSION

Agroecologists must continue to look beyond the boundaries of different disciplines in order to evaluate the usage and restoration of resources and various opportunities. Further research, development, and collaboration are required for following and implementing the principle of permaculture in critical conditions. This review provides a basic foundation and framework to implement the practices of permaculture. With proper design, wide diversity and appropriate water management, there can be an increase in productivity while retaining sustainability. This review towards integration and application will be the most significant benefit offered to agroecology by the analysis of permaculture theory and practices.

8. REFERENCES

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