Agroecology Upholds Environmental Justice and Food Sovereignty

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Evolution of Agroecology

The history of agroecology is interwoven with the development of agriculture and the domestication of plants and animals. According to Alteri (1995) [1], agroecology is practised globally using indigenous tribal knowledge close to nature. Some have long associated agroecology with conventional farming practices, however, these positions are imperfect. In my opinion, it is built on indigenous tribal wisdom and integrates all the knowledge that has been collected since the beginning of agriculture, nearly 10,000 years.

The most significant component is that it includes the overall aspect of modern science and technological development for the fulfilment of human needs. As a result, limiting it to traditional or subsistence farming is incorrect.

It is organic, sustainable and natural agriculture that rejects burdening farmers with the purchase of organic pesticides or fertilizers under the name of "organic certification". This is localized and self-sustaining agriculture which goes far beyond being pesticide-free and includes a well-defined plan for who, what, and how to develop. The political fight for farmers' autonomy, self-determination, and well-being inside the agricultural system serves as inspiration.

As the widespread effects of the Green Revolution were apparent, the conversation about sustainable agriculture began. As the food sovereignty movement gained momentum and the dispersed impacts of chemical corporate farming became apparent, agroecology emerged as a practice of the principle of food sovereignty. It gained widespread acceptance after the year 2000 owing to the global peasant movement *La Via Campesina*'s advancement and promotion of this idea. The current state of global agriculture practices can be divided into two distinct categories: the Capitalist model of corporate and industrial agriculture and the Food sovereignty model, which is based on agroecological and peasant farming.

Capitalist Agricultural Practices: Resource Plundering and Human Exploitation

The approach of the capitalist and neoliberal models is highly destructive since they maximize profit by exploiting people and natural resources. Capitalism encourages the use of external chemical fertilizers and pesticides, genetically modified seeds, and the use of any technology or machines, without considering the environment or human health, imposing its will on people to maximize profit. It promotes policy reforms that entice foreign direct investment in agriculture, corporate and industrial models, and a free market economy. Profit mongers in large capital view food as a commodity, crashing the interests of peasants and agricultural workers.

As outlined by David Harvey in 2003 [3], The notion of accumulation by dispossession, which centralises wealth and power in the hands of a few, perpetuates capitalist agriculture by exploiting people, soil and natural resources, and prioritizing profit over human welfare. Industrial and corporate

agriculture are inextricably linked to the current climatic and environmental crises, agricultural and food crises, health crises, and a slew of other issues [2].

Agroecology: A political project in defence of humanity and nature

According to Webster's Dictionary, agroecology is the practices, development, and management of sustainable agricultural systems based on the ideas and principles of environmental science. According to *La Via Campesina* (2014), it is agriculture done in harmony with Mother Earth, emphasizes peasants' autonomy and rights, rejects corporate agriculture and highlights the sustainable and equitable use of natural resources [4]. This is not a traditional practice but a combination of community wisdom and scientific innovation. It is also a struggle and movement against capitalism and action towards building socialism.

Agroecology is a form of resistance that addresses biodiversity conservation, collectivism, local knowledge, the use of locally adaptive and feasible skills and technology, and the rights of the productive class, at the same time as it addresses the recognition of moral economy value systems and the socialization of productive resources. There are diversity and variations in its comprehension because it has been developed at the grassroots level and it is being practised globally.

Furthermore, it also rejects industrial corporate agriculture, the burning of fossil fuels, the release of greenhouse gases, the commercialization of food, the destruction of local crops, the privatization of natural resources, the use of hazardous external inputs, and other issues brought about by the corporate capitalist production system. Therefore, it is a multifaceted, holistic, and political project. It is a small farmer-centered agricultural philosophy that emphasizes the prosperity and class interests of peasants.

Agroecology for Food Sovereignty and Environment Justice

There are no more explanations needed to demonstrate how the capitalist agricultural model has failed to address the problems of hunger, malnutrition, and poverty. It further aggravated the climate problem and environmental

degradation. Large-scale conventional farming relies on fossil fuels, pesticides, antibiotics, and synthetic fertilizers and focuses on intensive single-crop production and mechanization. Today, it is becoming increasingly clear that the key issues of our day – energy, the environment, climate change, food security, and financial stability — cannot be understood in isolation from Capitalism. These are issues with the system. Systemic solutions are required for systemic problems.

Our industrial agriculture, which is dependent on fossil fuels, contributes to greenhouse gas emissions in both ways: directly and indirectly. The burning of agricultural machinery's fuel during food processing and the thousand-mile journey "from the farm to the table" are direct sources of greenhouse gas emissions. Indirect sources include the production of synthetic inputs like nitrogen fertilizer from natural gas and nitrogen; and lastly, the breakdown of organic matter in the soil into carbon dioxide, which is released into the atmosphere as a greenhouse gas during extensive tillage and as a result of overuse of synthetic inputs.

Furthermore, vast amounts of methane (a far more potent greenhouse gas than CO2) are emitted during large-scale industrial cattle ranching. Alternatively, agroecology is more tolerant of changing weather patterns and climatic circumstances and more climate resilient. Recent assessments following significant climate catastrophes, such as Hurricane Mitch in Central America (1998) and Hurricane Ike in Cuba (2008), have demonstrated that agroecological farms incurred less damage than nearby monocultures cultivated conventionally.

Other research revealed that diverse farming systems, as opposed to monocultures, exhibit superior yield stability and a lesser production decline as a result of their ability to adapt to and withstand the effects of severe droughts. Furthermore, when soil is farmed organically, its carbon content grows, and thus organic farming helps to reduce the CO2 concentration of the atmosphere. Agroecology is not only more resistant to global warming than industrial agriculture, but it also contributes to climate stabilization, whereas industrial agriculture exacerbates climate change. Since agroecology is a struggle, it is also a struggle for climate justice. A plea for environmental preservation and resistance to industrial agriculture.

Myths and Realities of Agroecology

A few individuals and organizations want to profit from the misinformation surrounding agroecology. Understanding the covert politics at work here is crucial, as some foreign corporations and organizations plan to reopen for business under the agroecology banner. They wish to exchange genetically modified seeds, organic fertilizers, and so-called smart technologies.

Agroecology also lowers external expenses and contributes to both stabilizing and lowering the earth's temperature in addition to long-term adaptation to climate change (LVC, 2017) [4]. However, the claims made by proponents of climate-smart agriculture, green agriculture, carbon exchange, etc., are only attempts to disseminate misleading information supported by capitalism to profit from it.

Some authors who are unaware of and deny the benefits of agroecology claim that it will raise poverty and reduce production, support hybrid and genetic seeds as well as commercial fertilizers. But it's already been shown that the false assumptions about the gene revolution, food security, and green revolution are unfounded and It has not dealt with any problems. There are many instances of peasant-led natural farming that offer free, long-term advantages all around the world. Farmers increased the production of several affordable, climate-friendly, and enhanced seeds through open pollination[1].

Cuban rice farmers use the system of root intensification, or SRI, to produce more rice per hectare than farmers in any other country in the world. Agroecology contains a multitude of crops, therefore to assure dietary diversity, several types are planted simultaneously.

Agroecology in Nepal

Nepal's geographical diversity and agricultural practices highlight the potential of agroecology and ecological agriculture. The country is rich in natural resources and has the potential for rare, comparatively advantageous agricultural products and herbs. There is also a prospect of agricultural

[1] Open pollination is a natural and uncontrolled process that takes place between the crossing of gametes from different flowers by means of biological (insects and birds) and physical (wind and water) transport, and promotes an increase in biodiversity.

tourism, entrepreneurship, research, and studies, and the potential of relatively beneficial, health-enhancing, and organic products.

Hills and mountain regions are not a challenge for production but rather an area of great prospect that delivers diversity, beauty, and fun. The Himalayan and hilly regions can serve as an important basis for horticulture and animal husbandry, which is seen as a relatively simple approach in terms of nutrition, revenue, and the reduction of poverty. Development of agriculture is not possible without linking it with forest.

Agroforestry and ecological agriculture are complementary. In addition to bringing greenness and hygiene, planting grass in farm fields and degraded land can also bring financial benefits, as well as encourage animal husbandry. Fish found in Himalayan rivers, ponds and lakes, and cold water are considered valuable in the world. Hill agriculture, self-sustainable multi-crop, mixed and family agriculture are not problems for Nepal, they are opportunities.

The social and cultural environment of the country is suitable for agriculture with many breeds of animals and varieties of seeds which can serve as a source of income generation, without the need to look for billions of investments, or foreign companies for the development of agriculture. There is neither another source that can quickly alter the lives of millions in a short period and make the country self-sufficient nor reduce food imports that cost billions of dollars. All of these factors establish the context, necessity, and justification for ecological agriculture in Nepal.

In the context of the global capitalist neoliberal crises, the primary concerns for peasants in Nepal today include distraction from the peasantry, youth migration, price and market problems, and the growth of low-quality and chemical pesticides. Although the Constitution of Nepal has determined the direction of socialism, there does not appear to be much discussion on establishing the foundation of socialism in the agriculture sector.

Thus, agriculture in Nepal should be transformed by implementing scientific land reform, seed sovereignty, localized and self-reliant agriculture, environmental and judicial economics, and coordination with nature to rescue the agricultural sector and marginalized farmers from the tyranny of neoliberal policies and global trade. Meanwhile, the consumerism and profit-driven nature of the capitalist production system have led to greater

working-class oppression and climate and environmental catastrophes. Given Nepal's hilly terrain, land fragmentation, small farmer dominance, and biological and ecological diversity, family farming—whether natural or agroecological— is the sole means to transform the society and lifestyle in Nepal.

Conclusion

Agroecology is a system that combines the principles of agroforestry, agrotourism, agricultural research, technology development and expansion, improving peasant life, and improving seeds, crops, and livestock, where solutions are found in the field and with the peasants. The four pillars of agroecology are science, community wisdom, harmony with nature, and farmer wealth. It argues that farmers should have control over the means of production and that natural commons and food should not be commercialized, opposing multinational businesses' monopolies and the World Trade Organization (WTO) in food and agriculture, and it stresses peasants' decision-making autonomy and rights. It is a youth and women farmer movement that respects agriculture, invites dispersed youth back to agriculture and promotes the role of women farmers.

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