

**ORGANIC FARMING AND SUSTAINABLE AGRICULTURE HARMONIZING
ECOLOGICAL CONSERVATION: THE LEPCHA INDIGENOUS PERSPECTIVE**

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Abstract

Organic farming and sustainable agriculture have increased in the Himalayan region of West Bengal over the last decade due to the rise in eco-consciousness among the people. The mountain ecology which has been the sustainer and provider of resources has been under the immense pressure of increased consumeristic demands. This demand led to increasing the supply which was achieved using chemical fertilizers, pesticides, and the introduction of multiple high-yielding varieties of seeds. These though met the rising demands contributed to the degradation of soil and its fertility in the hills. The alternative to mitigate this concern was undertaking organic farming and promoting sustainable agriculture.

This research paper seeks to explore how the Lepcha indigenous communities of the hills are utilizing their indigenous knowledge in organic farming and maintaining sustainable agricultural practices to contribute to ecological conservation.

Key Words: Organic Farming, Sustainable Agriculture, Lepcha Community, Eco-consciousness, Ecological Conservation

Introduction

Agriculture practices have become enhanced due to Green Revolution (GR) and GR-supported technologies. Agrochemicals, machinery, and irrigation have enhanced agricultural production with the introduction of High Yielding Varieties of Seeds during the GR. While these technologies and agricultural practices have helped mitigate food security issues in India, land has undergone ecological degradation and deterioration. Fertilizers and pesticides, the two significant inputs of GR, are associated with severe environmental and health problems.

Kumar (2007), The negative effects of the green revolution on the environment are many and they can be discussed as 1. Loss of biodiversity 2. Greenhouse gas emissions, 3. Dependence on non-renewable resources, 3. Land degradation, 4. Adverse impact on health, 5. Increase in Pesticides and thereby increasing health hazards. Even though the green revolution has contributed positively in many ways, socially and economically, it also has had adverse environmental degradation. This ecological degradation makes GR only a short-term solution to mitigate food security issues. Modern agricultural practices, along with irrational use of chemical fertilizers and pesticides, have in the past four decades resulted in not only causing environmental disequilibrium and deteriorating soil health but have contributed to soil erosion, decreased groundwater level, pollution due to fertilizers and pesticides, erosion, reduced food quality and increased cost of cultivation, leaving the farmer poorer year after year.

Green Revolution, which was taken up to secure food security, had met its goal and has ensured food security. This revolution in agricultural practice has brought about harmful consequences not only on agricultural practices but also on human health. Increasing and active awareness of health and environmental issues associated with the extensive use of chemical supplements for agriculture. This has led to an interest in finding alternate forms of agriculture among which organic agriculture is one of the chosen forms of agro-production methods that are supportive of environmental concerns (John et al., 2021).

With the world moving towards eco-consciousness and conservation of ecology, organic farming, and agro-based manufacturing have taken center stage. Sustainable development and Sustainable

Development Goals have propelled the world towards sustainable agriculture. Some developments in modern agriculture have led to doubts regarding the long-term viability and sustainability. The word sustainable implies permanence or long-term support. In this context, indigenous knowledge and practices of conserving the ecology are being tapped into for their rootedness in the sustainable use of natural resources. Indigenous communities have relied on their local environments and ecology for generations to provide various resources that can contribute to their social and economic life. Indigenous communities and people, with their knowledge and practices, have developed a stake in conserving, enhancing, and restoring the ecology they belong to.

Reganold et al. (1990), With a growing population questioning the environmental impacts of agricultural practices, has led to seeking alternative agricultural practices that would be more sustainable in nature. Sustainable agriculture is an amalgamation of various non-conventional agricultural practices called organic, low-input, regenerative, or ecological. For a farm to be sustainable, it must produce adequate amounts of high-quality food while protecting its resources and being environmentally safe and profitable. These agricultural practices focus more on renewable resources than on purchased chemical materials such as fertilizers and pesticides. Agriculture is fundamental to natural resources and to human life and its existence. Efforts to create a sustainable agriculture farm will protect natural resources and draw the community closer to a sustainable society.

Alternative approaches have been developed concerning sustainability issues, including integrated pest management, integrated crop management, low-input agriculture, low-input sustainable agriculture, permaculture, and organic farming.

Organic farming is one of the alternatives to sustainable agricultural practices which is widely spreading in the Himalayan region of West Bengal. Seufert et al. (2016), Organic farming is one of the fastest-growing sectors in the world of agriculture and is one of the most recognized and sought-after food labels. A wide range of interpretations are available on what is organic, and one of the principal regulations defining what is organic and what is not is 'natural' vs. 'artificial.' 'Chemical-free farming' is also another regulation of defining what organic means. But, organic meaning should go beyond this and focus more on what are the practices which are best for the environment to ensure that sustainability is achieved through organic farming.

McCormack (1995) notes, "unlike 'sustainable' farming practices, organic farming practices are well-defined and unique, for they are the only ones codified as law." Organic farming is perceived to be more environmentally friendly than conventional farming and primarily produces grown with chemicals and pesticides. It has been seen that organic farming is one of the fastest-growing sectors of world agriculture. "Organic" is one of the most recognized and sought-after food labels, and most people in developed and developing countries consume and sought-after organic food today.

Reddy (2010), Factors contributing to the current crises in farming can be attributed to the rise in factory-produced external inputs. In such a space, farming methods that support and strengthen natural processes of remedies without using chemicals to increase the fertility or yield from the land can be defined as organic farming. Organic agriculture is developing rapidly, and not only do countries acknowledge it on paper they are practicing in a mission mode. There has been a rise in certified organic agriculture. Even though farms are being converted into organic farms, poor farmers may not be able to bear the cost of the organic certification of their agricultural practices. Such farms are used for home consumption and farmers' market. Organic farming has varied opinions, but there is a strong consensus on organic farming being eco-friendly. Multiple studies have also shown how organic farming is productive and sustainable. Organic agriculture has been neglected in the policies. Hence, the government's assistance is minimal, but for organic agriculture to progress in India, which has massive potential, all stakeholders must play their roles.

Green Production Collaboration is a key consideration for not only sustainable development but also for a thriving ecology. This consideration is formed by the people who practice and promote eco-wisdom, knowledge, and practices handed down across generations and the working system through

indigenous knowledge and practices. The protection of eco-conscious steps plays a vital role in inducing technological change and facilitating sustainability growth in agriculture.

Methodology

This is a qualitative study where semi-structured interviews have been taken up from the Kalimpong and Darjeeling districts of the Himalayan region of West Bengal as data collection tools. Transcriptive descriptive analysis has been used to analyze the data, and the study is exploratory. The study aims to explore how the Lepcha indigenous community is contributing to/practising organic farming and sustainable agriculture in the hills through their indigenous knowledge base.

Discussion

Lepchas are the indigenous tribal community found in the Sikkim and Himalayan region of West Bengal. This paper will focus on the Lepchas in the Himalayan region of West Bengal as the organizations are based in the Kalimpong district of West Bengal. According to the 2011 census, there are 76,871 indigenous Lepcha people in Sikkim and Darjeeling hills collectively. The Sikkim government recognized Lepchas as the 'most primitive tribes' in 2005 and time and again maintained their commitment to protecting the rights of the indigenous Lepcha. Dzongu, located in North Sikkim, has been recognized as a tribal reserve area that the Lepchas exclusively inhabit. Under the provisions of Article 371F of the Constitution of India, the government is mandated to protect the unique cultural heritage and interests of the indigenous Lepchas and Bhutias who were rendered a political minority with the incorporation of Sikkim into India (Arora, 2006b).

"The Lepcha folks being intelligent and industrious, can design, make and erect all the necessities required by the household or society in day-to-day life" (Tamlong, 2015). Even Hooker a British botanist who was travelling to Sikkim saw the Lepcha bridges and called them '*the works of art*' in his journal. This dynamic trait of the Lepchas has contributed to them as a community formulating multiple sustainable agricultural practices, which have contributed to them conserving their ecology to a large extent.

Quoting J.C. White, *"They (Lepchas) are great nature lovers and good entomologists and botanists..."* these characteristics of the Lepchas have built a strong relationship with their ecology, and this has, in turn, helped the community to build practices around the environment and its sustainability. Organic and sustainable farming are essential components of sustainable development and are integral to social and economic Lepcha life.

When we discuss the Lepcha indigenous practice of organic farming and sustainable agriculture, these concepts merge and spill into each other. *"Our indigenous ways of farming are not compartmentalized, as how you are saying, we do not even understand these terms, but what I can tell you is that our agricultural practices are sustainable and organic. We have been using what nature has given us, which has helped in our harvest"* (M. Sada, Pastor, Kalimpong district). The Lepcha community is agrarian in nature and depends on farming for their livelihood. Land has a purpose further than socioeconomy in the Lepcha way of life.

"As a community, our identity is our land and we have landed too. Land is not just an economic status symbol or means to meet our economic needs, but the land is our identity. We are careful how we use our land, what we use it for and how long we use it. We do not believe in complete exhaustion of all the soil's potential" (M. Lepcha, Filmkaer & River activist, Darjeeling district).

Farming methods used in the hills are terrace farming and even today, traditional agricultural patterns are followed. *"Our ancestors used to follow the shifting cultivation pattern and via this practice, they use to also burn the agricultural field with the left-over stems, shoots, and roots of the agricultural produce. This was done to not only clear the field but also to prepare the field for the next season. This burning had a grave scientific purpose behind it. The ashes full of nutrients merged with the soil's topsoil and enhanced the quality and fertility of the soil"* (Y. Tamsang, Community head, Kalimpong district). This agricultural practice was frowned upon because burning was seen as destroying instead of restoring.

A shallow understanding of the indigenous knowledge of the Lepchas has led to the misinterpretations of multiple indigenous practices, which has led to the loss of knowledge and wisdom. The land that is burnt after the harvest season is allowed to rest and be fallow for some time until the next season of sowing produce comes. *"As a community, we strongly believe that the soil is not a machine and with every produce, it bears forth its fertility reduces. To avoid exhaustion of the land the land is allowed to remain fallow. During this time, the soil is allowed to replenish itself and take a break from all its hard work. This pause in the agricultural season may seem like a nuisance, especially in today's time of everything being rushed and immediate. But this pause leads to better results in the next harvest season"* (G. Lepcha, Lepcha activist, author & philanthropist, Darjeeling district).

Practices such as these contribute to the conservation of the soil and work towards preventing damage to the soil. Every biodegradable product of nature is used as compost. *"Nothing goes to waste here in our villages. Every leaf and biodegradable product including cow dung is used to create manure. Earthworms are used as the speeding agents and nitrogen fixers of the soil. Do you know food produced organically tastes better?"* (M. Tamlong, Community leader & agriculturist, Kalimpong district).

We nurture a plant that plays an essential role in the final output or quality of the food harvested. What goes into the soil is what becomes of the harvest. *"These organically grown foods though the size may be small, are very tasty. Not only this, they can stay fresh for a longer duration of time after harvest. When food is grown organically it allows for the nutrients and chemicals from the soil native to the topography to nurture and nourish the plant this is why certain plants, fruits, and vegetables even though similar will taste different because of the varying altitude"* (S. Lepcha, Teacher & Author, Darjeeling district). Soil chemicals not changed due to the alteration of external factory-manufactured inputs will have a different result.

When we studied the food chain, we learnt that what one predator eats, that every predator consumed by the more significant predator, a transmission of the toxins from the first bait gets transferred on. This process is called bioaccumulation, which becomes complex and builds up as it passes from the food chain to the food web. As toxins pass from one trophic level to another, the concentration of the toxin accumulation also increases. This is why the communities and individuals must be aware of and act upon this. *"They say chemically grown food causes cancer, I am not sure if that is true but it must be because what we grow, we eat and how we grow it will also affect what we consume"* (R. Lepcha, Assistant & Author, Kalimpong district).

"In recent times everyone wants to eat organic food and the cost of organic food is also higher. This has encouraged people to grow food in traditional ways. As farmers, we only grow to meet the demand and when the demand is that of organic, we supply organic" (M. Tamlong, Community leader & Agriculturist, Kalimpong district). This consumerist shift to organic consumption has led to farming communities to opt for more organic ways of farming. *"This shift has allowed me to grow my food following the traditional ways of harvesting taught by my grandparents of using cow dung as manure, and leaves, allowing for the food waste to be converted to compost which people call black gold. Not just this, organic farming has also allowed me to grow many traditional seeds even though the harvest quantity is less but hopefully, it will grow more in the days to come"* (J. Simmik, Doctor, Kalimpong district).

Going a radical change in the Hill agricultural community has paved the way for more communities to opt for eco-centric farming methods, also called organic farming. *"Organic food is the wave that is washing the whole hill regions. Whether this wave is here to stay or destroy only time will tell. Organic farming is good but everything also has a negative effect. It is crucial for us as communities to go beyond the shallow waters of what is trending and what is in vogue and study to understand the nuances of the process. Once we do this, it is also necessary to educate the communities"* (C. Lepcha, Animator & Designer, Darjeeling district).

Another respondent shared, *"Now when you ask me this question, my mind goes blank even though I have a doctorate in agriculture and am an active member of the horticulture association, this is*

because you see our indigenous knowledge is not compartmentalised. We also do not have these words such as organic farming, or agricultural sustainability, and how we treated our hands is a part of our identity and existence. We have always lived in harmony with nature around us and with this, our approach to everything involving our natural resources has been judicious" (M. Tamlong, Community Leader & Agriculturist, Kalimpong district). This goes on to show that indigenous knowledge goes a long way in the judicious use of natural resources. Lepchas with their indigenous knowledge and use of their natural resources move on towards sustainable agriculture.

"Organic farming is not a new concept for us, we have been farming using natural manure or compost as you call it for years, just the nomenclature is different" (C. Lepcha, Animator & Designer, Darjeeling district). Lepchas with the vast natural resources available to them especially in the form of forests have relied on available naturally composted manures for their agricultural practices. This has not only produced better quality products but also prevented multiple diseases in the long run.

"Our agricultural fields are also given moments of rest and kept fallow, this helps the ground from being completely stripped of its nutrients and it also gets an opportunity to replenish itself naturally. This process of taking only just enough from our natural resources and not everything so that we can leave it for future generations and even for us to use the land for a long time is what modern studies call sustainable agriculture. We do not have a name as such, let us say we call it the way of life and living" (M. Tamlong, Community leader & Agriculturist, Kalimpong district). The notion of knowledge not being compartmentalised into topics and boxes for indigenous knowledge but holding knowledge as a holistic one is what sets indigenous knowledge and its practices different.

When we discuss agriculture, we also talk about our animals. *"Our animals are grass fed which has been collected from the jungles. This ensures that the animals are not consuming anything which has been introduced to chemical fertilizers. This sets the animal apart and hence their meat is costly and tastier. Organically grown is hence not only good for the soil but also good for the soul"* (M. Lepcha, Filmmaker & River Activist, Darjeeling district). This organic approach to animal husbandry has given it a better market as well. It is not only the meat but also eggs that are privy to this. It also has been seen that organic farming, when it works collaboratively, brings the community close.

"Indigenous way of life is always community-centric and for steps such as organic farming and sustainable agriculture to take place sustainably this community belief must be tapped into" (M. Sada, Pastor, Kalimpong district). Since organic farming produces less than commercial ones, it is necessary to hone community support and strength. The demand and supply change may not always be proportionately met with the practice of organic farming. This is where the alternative is to be investigated and sensitizing people is also a must.

Clean Himalayas is an initiative that has been taken up for years with a focus on zero-waste Himalayas which is to be brought about mainly by promoting agro-based manufacturing and organic farming. This approach is taken up mainly to reduce carbon footprint and encourage and keep local and indigenous environmental conservatory practices alive. It has been seen that these organizations are youth-focused for they believe that for a sustainable change to take place youths are to be involved.

"With clean Himalayas, we have been able to organize seminars for our clean Himalayas drive and promoting of minimal waste and no plastics, especially single-use plastic products. Every year we organize a program where people and a lot of indigenous communities from the Himalayan region also participate. We have been calculating our waste and talking about waste management. Indigenous communities are fine-tuned to lead a very ecologically and not only agriculturally sustainable life. As an organization, we also have been tapping into this trove of indigenous knowledge and resources to enhance our ecology" (M. Lepcha, Filmmaker & River Activist, Darjeeling district).

When organizations recognize the potential of indigenous knowledge and practices, it not only encourages the indigenous communities but also brings forth indigenous knowledge to the western

academic understanding and knowledge. Lepchas in the hills are also active members of these organizations. *"The concept of zero waste, minimalism and minimum waste all have great prominence in indigenous knowledge but it is only a matter of opening our hearts, keeping aside the stereotypes of indigenous knowledge and venturing into this knowledge with curiosity. Understanding that this indigenous way of life reflects their knowledge. Lepchas have been practising minimalism, zero waste, mindfulness, and intentional living, not as a vogue but as genuine ecologically conscious communities. There is still a huge scope of research on this"* (R. Lepcha, Assistant professor & Author, Kalimpong district).

Concerning this context, the Mayal Crafts, and the Rongring Society in the Himalayan region of West Bengal are extensively working on the same. Both these organizations are co-related and run by the Lepcha indigenous community. *"These organizations are the brainchild of the Lepcha youths and community leaders. With more and more Lepchas in the villages having no income during the lean periods the notion of introducing indigenous handicrafts was born. Lepchas are good weavers and artisans. So, with this in mind things sold in Mayal Lyang are heavily dependent on agricultural raw materials. The bamboo is grown for making major of their products, the woven handbags, organic dried fruits, turmeric, all are ways of sustainable agro-manufacturing"* (J. Simmik, Doctor, Kalimpong district).

Agro-based manufacturing is also creating awareness among the youths in the hills about the growth in eco-consciousness. Conservation has taken a new shape of inclusiveness and awareness beyond just awareness. *"With Mayal Crafts and other small agro-based startups or organizations from the indigenous communities have a combination of demand-based products and naturally available raw resource material. These two blends in a seamless merger and a rift in this can cause damage. Products are seen going 'sold out' and are restocked only in the next season. The organizations are also playing a huge role in generating awareness not only about organic farming and sustainable agriculture but mainly indigenous knowledge which contributes to the same and what we can learn"* (T. Tamlong, Retired IAS officer & author, Kalimpong district).

Awareness is good, but along with awareness, education is also crucial for the indigenous knowledge being transferred, shared, and learnt from to be done in its true essence and not just in a shallow manner. *"Taking advantage of how 'in season' indigenous knowledge and ways of life is, we must learn and walk beyond shallow waters"* (S. Lepcha, Teacher & Author, Darjeeling district).

"Rongring Society aims to teach the Lepcha Language- Rongring but along with that, the society aims to also be an educator, advocate and facilitator of the indigenous knowledge, culture, heritage, stories, folklores, knowledge, practices and create a safe space to learn and have discourses" (G. Lepcha, Lepcha activist, Author & Philanthropist, Darjeeling district). Initiatives such as these go a long way in not only educating the said community and the mass but also in breaking stereotypes and glass ceilings of what indigenous knowledge and practices can contribute to or not.

The Lepchas are being proactive in their indigenous knowledge base and practices of theirs, which are rooted in religious beliefs like *muk-zik-din-rum-phat*, eco-conscious hunting and fishing practices of not killing fishes and animals during birthing season, taboos associated with conserving wildlife and nature, all establish the deep love of the Lepchas for their ecology. This love translates to sustainable agriculture and organic farming to achieve sustainable development.

"Our Lepcha indigenous knowledge is like a complex web all interictally connected. You cannot cherry-pick and say I will only learn this topic, no. When you want to draw knowledge or information on one topic, the rest of the complementary knowledge will also be pulled" (R. Lepcha, Assistant Professor & Author, Kalimpong district). This can seem and sound daunting, but just as the Lepchas say to sit still and hear if we do that, we can find treasures passed on across generations. Agriculture sustainability and organic farming complement each other even in contemporary science/knowledge, and we simply need to embrace Lepchas indigenous knowledge with all its complex simplicity.

Conclusion

The Lepchas of the Darjeeling and Kalimpong district of the Himalayan region of West Bengal have been using their indigenous knowledge in collaboration with their western science and information to walk towards organic farming and, eventually, sustainable agriculture.

The indigenous knowledge systems of the Lepcha indigenous community must be tapped into for the invaluable set of knowledge and practices present, which are contextually centric to their region. "A tendency of the present generation to attach more value to modern knowledge may be due to wrong value judgement or may be due to the reason that they are unfamiliar with indigenous knowledge or may be due to the reason that they are comfortable and easy with modern knowledge than the knowledge that prevailed in the past" (Wickremasinghe, 1994).

If we move towards holistic and all-inclusive sustainable development, we cannot leave behind communities and their knowledge base. We all have many things to learn from each other, and knowledge is knowledge, whether it be coming from experience or structured western science, a collaborative combination of the two will not only propel us further on the road to sustainable agriculture and organic farming but also be a ground to learn and grow with each other sustainably.

Reference

- McCormack, H. (1995). Sustainable agriculture versus organic farming. *Bird, Bultena, Gardner (Eds.), What is Sustainable Agriculture*, 60-61.
- Tamlong D.T. (2015). *Mayel Lyang & The Lepchas (About Sikkim and Darjeeling)*. Darjeeling, India: Mani Printing House.
- Arora, V. (2006). Assertive Identities, Indignity, and the Politics of Recognition as a Tribe: The Bhutias, the Lepchas and the Limbus of Sikkim. *Sociological Bulletin*, 56(2), 195-220.
- John, D. A., & Babu, G. R. (2021). Lessons from the aftermaths of green revolution on food system and health. *Frontiers in sustainable food systems*, 5, 644559.
- Seufert, V., Ramankutty, N., & Mayerhofer, T. (2017). What is this thing called organic?—How organic farming is codified in regulations. *Food Policy*, 68, 10-20.
- Wickremasinghe, W. (1994). Indigenous knowledge and sustainable development.
- Reddy, B. S. (2010). Organic farming: status, issues and prospects—a review. *Agricultural Economics Research Review*, 23(347-2016-16927), 343-358.
- Kumar, P. (2007). Green Revolution and its impact on environment. *International Journal of Research in Humanities & Soc. Sciences*, 5(3), 54-57.
- Reganold, J. P., Papendick, R. I., & Parr, J. F. (1990). Sustainable Agriculture. *Scientific American*, 262(6), 112–121. <http://www.jstor.org/stable/24996835>