



VALUE-BASED TRADITIONAL AGRICULTURE

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ABSTRACT:

Traditional Agriculture is one of the largest sectors that sustain livelihood to maximum number of people and contribute to climate change. Therefore, a climate approach to sustainable food production is the need of hour. Value-based Traditional agriculture is getting increased attention worldwide in context of sustainable food production in changing climate. The present article advocates traditional agriculture as a climate-smart approach for the sustainable food production and also deliberates the correlation between climate change and agriculture. Traditional agricultural practices are usually restricted to small farmers. Traditional vegetables grow well in drought-prone areas. Traditional vegetable knowledge is under serious threat due to habitat loss, introduction of new varieties, historical policies; stigma attached to the use of traditional vegetables and altered lifestyle. Integration of traditional agriculture with modern agriculture is the necessity of current scenario. Traditional agriculture is the result of the experiences delivered by the local farming practices through thousands of years; Traditional knowledge is holistic in nature due to its multitude applications in diverse fields such as agriculture, climate, soils, hydrology, plants, animals, forests and human health. Traditional agricultural practices have potentials to adapt and mitigate climate change through their agro ecological features. They increase agro biodiversity and resilience of agro ecosystems. Moreover, they are low-cost, energy-efficient and based on locally available resources. Traditional agriculture is also helpful for human health safety, natural resource management, energy conservation and socio-ecological integrity.



KEY WORDS: *Traditional Agriculture, shifting cultivation, Traditional storage system, etc....*

INTRODUCTION:

Value based traditional agriculture based on small landholdings, dominance of rain-fed agriculture (60 per cent of net cropped area), inadequate market linkages, and poor coping capacity, among other factors, make the Indian agricultural system highly vulnerable to climate-change impacts. Even a single extreme-weather event such as flood, drought, or cyclone leads to huge losses due to the unpreparedness of farmers and lack of sufficient storage facilities. Similarly, mono-cropping, or the cultivation of a single variety of a crop, undertaken because of the encouraging market prices of only a few crops or varieties, makes the entire agricultural system less resilient to climate-change impacts or pest attacks. For example, in the 1960s, India was estimated to have over 70,000 rice landraces. Two decades later, in the 1980s, more than 75 per cent of India's rice production came from less than 10

varieties because of an aggressive push for modern, input-intensive hybrids by scientists and policymakers. As a result of all these factors (non-affordability due to escalation in market prices, unavailability of varied crops), the impact on nutritional security has been serious, especially among women and children.

Realizing the importance of traditional agricultural knowledge and indigenous crop varieties, IPCC has suggested their examination as a tool for climate-change adaptation. The UN University Institute for the Advanced Study of Sustainability, Traditional farming practices, especially those of marginal farmers, are in many cases climate resilient. These farmers utilize locally available resources and choose specific varieties that can survive under adverse climatic conditions. They cannot afford losses, and thus have evolved farming practices in the best possible way by utilizing local resources most efficiently. Traditionally, farmers are also well versed with the varieties available and make informed choices for cross-breeding. These varieties constitute an irreplaceable gene bank; several locally available species have been protected and propagated over the centuries. In addition to the cultivation of the major cereals, local communities often also grow secondary crops and forest products to supplement their diet and to build food stocks in case of primary crop failure, thus maintaining their nutritional and food-security needs.

Traditional agricultural systems have evolved over centuries through trial and error in the field, and have proven their effectiveness, adaptability, and strength. Hence, they should not be ignored or dismissed. Since the documentation of these practices is really poor, and has long been neglected, we might have already lost numerous useful traditional practices appropriate for local conditions. Having said that, it should also be acknowledged that several traditional practices, such as flood irrigation and tilling, are not always resource efficient, and hence need to be modified according to the changing conditions. The shift from traditional to modern systems has to be gradual; this has not been the case so far.

The Indian Agricultural sector provides employment to about 65% of the labour force, accounts for 27% of the GDP, contributes 21% of total exports, & provides raw materials to several industries. The live stock sector contributes an estimated 8.4% to the country's GDP and 35.85% of the agricultural output. Contributions of indigenous and other traditional knowledge to the global crop production system have well been documented, Traditional farmers in India developed agricultural practices to successfully grow crops and raise animals in the highly diversified agro-ecological conditions with the help of locally available raw materials. The resource poor farmers with the help of highly efficient techniques that depend on locally available, low cost inputs get their lively hood.

HISTORY OF AGRICULTURE IN INDIA:

In India, value-based Agriculture started around 9000 BCE as a consequence of early farming of plants, crops along with animal's domestication. Almost immediately people established life with the implication of practices developed for agriculture. Due to the occurrence of double monsoon harvesting were done twice a year. Barley, wheat and jujube were cultivated in the Indian subcontinent by 9000 BC (Dev, 2006). Varieties of tropical fruit like muskmelon and mango were indigenous to the Indian subcontinent. The Indians also domesticated hemp and rice which was cultivated in the Indus Valley Civilization. It was also stated that rice cultivation was started during second millennium BC in Kashmir and Harrappan regions (Pillay, 1972). The basis of farming in Indus valley economy was mixed farming (Dev, 2006). The development of irrigation was made in the Indus Valley Civilization about 4500 B.C. Due to the development of irrigation prosperity grew in Indus valley civilization and eventually these leads to more sophisticated settlement of make use of drainage and sewers. In Vedic period the ploughing of top soil was done several times and seeds were spread. Definite succession of cropping was made from time to time. Cow dung was usually utilized in the form of the preferred fertilizer. Irrigation was adept accordingly in this period. The cultivation of jute was also done in India and was used to make rope and cordage in this (Lynda, 2000). In this period facilitation like construction and maintenance of dams were done along with provision of horse-drawn chariots. period (Ray et al., 1985).

During ancient Mauryan-Empire (322–185 BCE) meteorological observations were made and categorization of soils were made for agricultural use.

The evolution of traditional farming was over the foremost 10,000 years of agriculture. Traditional agriculture is basically sustainable and steady farming system that has been employed for a number of generations and is able to produce the material required by its producers. Through traditional farming a production of incredible variety of household crops and livestock, and systems of farming was made possible. Several conventional farmers in the developing world are still employing these farming methods that are in equilibrium with the nearby ecosystems, steady, sustainable and highly organized. Conventional agriculture symbolizes the novel system of farming that developed through the interaction of societal and ecological systems. This system involves the rigorous use of local information and natural wealth supporting biological diversity by means of alternating practices. Conventional farmers centered on methods that preserve soil fertility, check the loss of topsoil, grip water in the soil and produce steady harvests.

HIGH MIDDLE AGES (200–1200 CE):

Early Common Era In high middle Ages for sustained agriculture methodical ploughing, weeding, maturing, irrigation and crop safeguard was implemented (Burton, 1998). Water storage systems were also developed during this era. A dam named Kallanai was built during (1st – 2nd century CE) on river Kaveri during this period, and it is considered as one of the oldest water regulation structures in the world still in use.

AGRO-PASTORALISM,

In India agro-pastoralist incorporated threshing, planting crops in strips either of two or of six and storing up of grains in granaries.

MIXED FARMING,

Mixed farming was the basis of the Indus valley economy. In mixed farming arable farming is mixed with rising of livestock hence it is an agrarian system, Often the dung from the cattle is used as manure for increasing the production of cereal crops. Horses and cattle raised and used for haulage and bullocks to haul the cart and the plough.

REVIEW OF LITERATURE:

"Agricultural Diversification and Smallholders in South Asia" edited by **P.K. Joshi, Ashok Gulati & Ralph Cummings Jr. (2007)** unfolds the rapidly changing new lifestyles, tastes, and dietary patterns of urban as well as rural consumers of South Asian countries like India, Bangladesh, Nepal, Pakistan, Sri Lanka etc that how they are shifting from staple food grains to high-value- commodities such as fruits, vegetables, milk, meat, eggs and fish. The book analysis the situation and facilitates inclusiveness of small holders through incentives, evolving institutions and developing infrastructure by experts from various countries.

Dr. B. Reddy (2007), stated The book knowledge Management Tool for business development, guides how to capture and use knowledge for business development and create competitive advantage through cross functional areas. The book taking into analysis, the traditional farmers and their problems to enter into new age markets has deliberated, "the immense potential of Indian agriculture is waiting to be unleashed. The endemic constraints that shackle this sector are well known-fragmented farms, weak Infrastructure, numerous inter me diaries, excessive dependence on the monsoon and others. These pose their own challenges to improving productivity of land and quality of crops. The unfortunate result is inconsistent quality and competitive prices, making it difficult for the farmer to sell his produce in the world market."

"Nirmal Sengupta, (2007) stated the book "Economic studies of Indigenous and Traditional knowledge" edited by deals with traditional and indigenous knowledge of common men and women of India. Different chapters, by different authors show the significance of traditional

knowledge in different areas like forest farming, animal and husbandry, distortions in the relationship between man and nature and building the bridge between them, fisheries product and distribution, housing, irrigation, economy of homestead garden, medicinal knowledge, and drinking water collection. It also has been brought under notice that these knowledge are being utilized in the modern world in wide variety of ways so global interest for this increasing. Its commercial potential are to be recognized in order to reduce poverty

PROBLEMS OF VALUE-BASED TRADITIONAL AGRICULTURE: GREENHOUSE GAS EMISSIONS:

One of the main contributors to greenhouse gas emissions in crop production involves the use of nitrogen fertilizers. These fertilizers produce nitrous oxide, or N₂O, which is 300 times worse than simple carbon dioxide (CO₂). In the US alone, this amounts to about the same amount of environmental impact as 41 million passenger vehicles. It would not be exaggerating to say that nitrogen fertilizers are one of the primary environmental impacts of traditional farming methods in crop production.

WATER CONSUMPTION:

In value based traditional farming, a great deal of the water meant for crops ends up wasted. It leeches away into the ground or evaporates before plants can actually absorb it. It might seem that a farm that runs on water alone would have huge water consumption problems, but that isn't the case in a properly managed hydroponic system.

SOIL DEGRADATION:

Soil degradation is becoming an enormous problem globally. In the past century and a half, it's estimated that we've lost roughly half of our planet's topsoil. Problems like erosion, compaction, loss of soil structure, salinity from overuse of freshwater in irrigation, and nutrient degradation all play a role in this crisis. If we don't do something about this soon, it may be too late.

TRANSPORTATION OF FOOD:

We fly, ship, and truck food across the country and around the world in order to ensure we always have access to our favorite foods regardless of season or local viability. This wastes a huge amount of fossil fuels and also leads to nutrient loss because the food is not as fresh as it could be if grown locally.

POLLUTION FROM FERTILIZERS AND PESTICIDES:

Another major problem for traditional farms is that they have to find ways to fertilize crops, and drive away small and large pests and weeds. But much of the chemicals used in these pursuits leech into the ground, or runoff into our water supply. In the controlled environment of a vertical farm, this is not a problem. Without soil, nutrient solutions are used instead of fertilizers. These are added directly into the water, making them immediately bio-available to the plants they're meant to feed.

EFFICIENCY AND YIELD:

Can a hydroponic vertical farm really feed the world the way a traditional farm can? Not 100%, but it's a far more efficient system than traditional farming could ever hope to be. The truth is, some plants just don't lend themselves to hydroponic growing. We're not yet sure if we'll ever be able to create a way to grow every root vegetable, for example, in a hydroponic system. Other crops are likely possible, we simply haven't mastered them in such a system yet. So the truth is, at least if we want to maintain the same vegetable diversity as we have now, there may always be the need for *some* traditional farms.

**IMPACT OF TRADITIONAL AGRICULTURE ON ENVIRONMENT:
DEPLETION OF NUTRIENTS:**

The primitive style of farming like slash and burn decreases the organic matter from the soil and within the short period of time the nutrient content of the soil taken up by the crops. This makes the farmers to move to another place for farming.

DEFORESTATION:

It is the process of the removal of a forest or stand of trees where the land for the conversion of forestland to farms, ranches, or urban use. The most concentrated deforestation occurs in tropical rainforests. The slash & burn, and shifting cultivation required massive cutting down of the forest which leads to the situation of deforestation.

SOIL EROSION:

It is a process of the removal of topsoil by the natural physical forces of water and wind or through forces associated with farming activities such as tillage. The roots of the plant and trees firmly hold the soil, but the deforestation exposed the soil to get eroded by the weathering forces like rain, wind and storms which causes the loss of top fertile soil. Hence, we can say, it is our duty to deal with the most mundane problems of life where each individual matters, like dealing with safe and clean drinking water, hygienic living conditions, clean and fresh air, fertile land, healthy food and sustainable development.

IMPLEMENTATION OF VALUE-BASED TRADITIONAL AGRICULTURE SYSTEM IN INDIA:

- The problem is nobody has yet perfected a agriculture system that produces high yields, makes a good living for farm families, protects and enhances the environment and still produces good, affordable food.
- Value-based traditional agricultural practices followed by resource poor farmers, we have very few research institutions willing to carry out validation research involving traditional techniques.
- The need of the hour is that there should be a production technique that would counter all the ecological side effects of green revolution like degradation of soil fertility as a result of chemical fertilizers.
- NGO staff with agricultural background and interest could also document the traditional knowledge of aged people, about their early cultivation practices particularly are a rich source of information on seed selection, preservation and also local traditional use of herbs in maintaining the health of humans and livestock.
- The critical issues that plague Indian agriculture at present are the knowledge deficit and infrastructure deficit, especially in the rural areas. Problems related to irrigation infrastructure, market infrastructure and transport infrastructure add significant cost to farmers' operations.

CONCLUSION:

This paper focus for the Traditional Agriculture is backbone of economy in most of the countries, including India. And value-based Agriculture system Humans is using different techniques to enhance crop yield from many years before. But in present time that traditional techniques are not completely fruitful according to ever increasing requirement of food because this type of farming has many drawbacks like diseases and pest management, making them economically less beneficial. So, new techniques are trying to get more yields of crops with reference to environment health. In new techniques, organic farming is getting fame due to its environmental benefits with yield enhancement, nutrient management, health and safety; economical benefits and most important pest and disease management. If government of India will get some major steps in favour of organic farming to get it popular in farmers, this technique will surely play a major role to get better results in agriculture. On the other hand, GM crops have future possibilities to solve major problems in agriculture but it takes time to sort out many harmful aspects like negative effect on human health are coming to the reference

of GM crops. In Future, major researches will be required for GM crops to convert it 100% beneficial for humans. So, more researches and financial support from government are required for exploration of organic farming and GM crops in the realm of common agriculture practice. Classification of organic food is based on whether pesticides and other chemicals are used in production of that particular food or not. While, the nutrient profile of the food being grown based on the quality of soil and air. Hence, organic food is more costly, it's more difficult to grow as one can't do it in huge fields and saturate it all in chemical. It maintains health just fine, probably better because ingestion of fewer chemicals.

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