

NATURAL AND CONSERVATION FARMING PRACTICES IN INDIA: RECENT PRACTICES AND FUTURE CHALLENGES

Mr. Swapnadeep Bagdi¹

¹M.Phil. in Geography Ph.D. Research Scholar, Department of Geography, Ranchi University, Ranchi, Jharkhand, India.

ABSTRACT

Conservation agriculture is an agricultural system through which the work of agriculture is done through conservation of biodiversity, change of soil structure and long term financial management through which the change in production of agricultural crops can be observed. . This farming has shown interest in farming in most of the states of India. Conservation agriculture can be used to increase yields, reduce production costs, preserve crop diversity, etc. In India, there is a need to change policy frameworks and develop strategies to promote farmer conservation in agriculture. This research paper sheds light on emerging concerns about the continued adoption of conventional agricultural systems and analyzes the possibilities, policy issues, limitations, and research requirements for conservation agriculture in India. Secondary data has been used in this research. Secondary information has been collected in various papers, newspaper books, personal sources, journals, websites of government documents etc.

Key words: Conservation agriculture, biodiversity, management, strategies

1. INTRODUCTION

Conservation agriculture is an agricultural system through which agricultural work is done through soil structure, biodiversity conservation, and long-term financial management. The mainstay of human survival is food, which plays an important role in alleviating human anatomy. Food security is of paramount importance in India, a country with a large population. Due to global climate change and natural disasters, developing countries like India have a major impact on the agricultural system, which in turn adversely affects agricultural production. In a country with a large population like India, if there are any obstacles in the way of proper use of agriculture, then there is a special effect on human food. From ancient times to the present time food is the most important thing.

At present, due to climate change in developing and developed countries, changes in food production and distribution system have been observed. Every state in India has seen a drastic change in its agricultural practices. Every state in India, especially in the hill states, has imported various products from India and the rest of the world through conservation and organic farming. Organic farming in the Indian state of Sikkim has helped to advance organic farming across India. The importance of food to every country is immense. Moreover, if food production is disrupted, the people of the country have to import food from abroad, which puts economic pressure on the country. Looking at the international market, it can be seen that the developed countries especially the countries like USA, Canada, Russia, Germany, France, United Kingdom have less food imports because these countries have less population and due to modern machinery dependent agriculture. Crisis does not occur. On the other hand, developing countries have special problems in India, Pakistan, Bangladesh, Sri Lanka and Southeast Asian countries due to climate change due to systemic problems in agriculture. At present, special emphasis needs to be laid on conservation agriculture to maintain the food supply system in India. In order to maintain the demand for conserved agriculture and meat products in India, it is necessary to manage agriculture properly in order to maintain the supply of cattle feed. In addition, due to the urbanization of India, the amount of agricultural land is declining and it is taking a long time to create new agricultural land.

2. OBJECTIVES OF THE STUDY

The main important objectives are as follows-

1. Conservation Learn about conservation of natural resources through integrated management of soil, water and biological resources through agriculture.
2. To study the need for conservation agriculture in India.
3. To find out into the future of conservation agriculture in India.

3. METHODOLOGY

The analysis carried out in this paper is descriptive nature. The paper is based on secondary data. Secondary data information has been gathered from various places like Newspaper, TV, and Official reports, documents, Journal etc.

CONSERVATION AGRICULTURE: An agronomic practice includes reduced cultivation. Helps to maintain soil stability with natural ingredients as well as minimize cultivation and increase yields and include crop rotation with vegetables. One of the guidelines issued by the FAO states that conservation agriculture is the basis of resources, sustainable productivity and climate protection and improved returns, and a method of overseeing the agricultural biological system for food security. "Conservation tillage is the collective umbrella term commonly given to no-tillage, direct-drilling, minimum-tillage and/or ridge-tillage, to denote that the specific practice has a conservation goal of some nature. Usually, the retention of 30% surface cover by residues characterizes the lower limit of classification for conservation-tillage, but other conservation objectives for the practice include conservation of time, fuel, earthworms, soil water, soil structure and nutrients. Thus residue levels alone do not adequately describe all conservation tillage practices." (Hobbs, P. R. 2007).

PRINCIPLES OF CONSERVATION AGRICULTURE:

1. **Least mechanical soil aggravation:** The biological action of the soil really creates stable soil aggregates as well as pores of different sizes, allowing air and water to invade. This interaction can be classified as "natural culture" and is not effective with mechanical culture. With the mechanical growth of the soil, the organic soil organized cycles will disappear. Maintains / maintains ideal levels of respiratory gases in areas with minimal soil tension, limits the oxidation of moderate natural substances, porosity for water development, maintenance and distribution, and re-exposure of weed seeds and their germination.
2. **Permanent soil natural cover:** An extremely durable soil cover is essential to safeguard the dirt against the pernicious impacts of openness to rain and sun; to give the miniature and large scale creatures in the dirt with a consistent stock of "food"; and change the miniature environment in the dirt for ideal development and improvement of soil living beings, including plant roots. Thus it further develops soil conglomeration, soil natural movement and soil biodiversity and carbon sequestration.
3. **Species enhancement:** The turn of yields isn't simply important to offer a different "diet" to the dirt miniature creatures, yet additionally for investigating different soil layers for supplements that have been drained to more profound layers that can be "reused" by the harvests in revolution. Moreover, a variety of harvests in revolution prompts a different soil verdure. Trimming arrangement and revolutions including vegetables helps in negligible paces of develop of populace of irritation species, through life cycle disturbance, natural nitrogen obsession, control of off-site contamination and upgrading biodiversity. (Bhan, & Behera, 2014)

CONSERVATION AGRICULTURE IN INDIA: Conservation agriculture has been seen as a significant approach to protecting against environmental change, soil erosion and health, and crop yield reduction, and the food security challenges posed by environmental pollution. (Choudhary et al,2016) At the moment, conservation agriculture is cultivated on about 8% of the world's arable land, and conservation farming has been done in India through some land acquisitions. In India, especially in the states of Uttar Pradesh, Haryana and Punjab, rice-wheat, rice, sugarcane-growing rice and wheat crops are produced in large quantities. Subsequently, in order to clear the fields and increase the yield of the crop, the farmers burn the crop residues, which creates the problem of environmental pollution, a problem which is especially noticeable in November-December. (Bhan, & Behera, 2014). Conservation agriculture is defined as a horticultural agriculture in which the crops of each district in India are cultivated in accordance with the requirements of the neighboring states, thereby protecting the soil from erosion and working on quality and biology.

ADVANTAGES OF CONSERVATION AGRICULTURE:

1. Decrease in costs
2. More result per low info
3. Natural matter increments
4. In soil water protection
5. Improvement in soil structure
6. Decrease soil disintegration
7. Efficient and hence decrease in labor prerequisite
8. Further develops carbon sequestration

STRATEGY FOR IMPLEMENTATION OF CONSERVATION AGRICULTURE REORGANIZATION

1. Carrying out circumstances and winning limitations: Factors restricting the agrarian creation ought to be amended before the full advantages from execution of conservation agriculture can be understood. This could allude to specialized factors, like soil compound properties, inadequate waste, soil compaction, as well as financial factors, for example, accessibility of satisfactory innovation, venture capital, land use freedoms, animal's

- pressure, standard practices or admittance to business sectors. These should be addressed to lay out conservation agriculture in a maintainable way.
2. **Changing the Perspective:** Changing the demeanor and mindset of the cultivating local area is a troublesome errand however it prepares to progress for task like carrying out the preservation horticulture. Legitimate information about the ideas of preservation horticulture is additionally unavoidable like soil is a natural surroundings for roots and soil creatures, any harm to this living space imperils soil ripeness and prompts land corruption, and soil fauna makes a steady soil structure and so on.
 3. **Support and Capacity Building:** Promotion of conservation agriculture ought to be done at the same time through approaches, schooling Research, and augmentation foundations in the field. Reception by ranchers is upheld most actually through ranchers' gatherings, concentrate on visits, organizations and NGOs. Examination and expansion organizations and the confidential area play a significant part in furnishing ranchers with fitting and reasonable innovations.

POSITION OF CONSERVATION AGRICULTURE IN INDIA AND WORLD: The significant conservation agriculture based advancements being embraced is zero-till wheat in the rice-wheat arrangement of the Indo-Gangetic fields. In different yields and trimming frameworks, the traditional horticulture based crop the executives frameworks are slowly going through a change in perspective from concentrated culturing to decreased/zero-culturing tasks. Notwithstanding ZT, other idea of conservation agriculture should be mixed in the framework to additional upgrade and support the efficiency as well as to tap new wellsprings of development in rural efficiency. The conservation agriculture reception likewise offers roads for much required broadening through crop heightening, transfer editing of sugarcane, beats, vegetables and so on as bury crop with wheat and maize and to increase and expand the RW framework.

The conservation agriculture based asset protection advancements likewise assist in coordinating with trimming, domesticated animals, land and water the executive's research in both low. In India, endeavors to take on and advance preservation horticulture advancements have been in progress for almost 10 years however it is just in the last 7-10 years that the advances are tracking down fast acknowledgment by ranchers. Endeavors to create and spread preservation horticulture have been put forth through the joined attempts of a few State Agricultural Universities, ICAR organizations and the Rice-Wheat Consortium for the Indo-Gangetic Plains.

The spread of advancements is occurring in India in the flooded locales in the Indo-Gangetic fields where rice-wheat trimming frameworks overwhelm. Protection horticulture frameworks have not been attempted or advanced in other major agro-Eco regions like rained semi-bone-dry jungles and the dry areas of the mountain agro-biological systems. Spread of these advances is occurring in the watered locales of the Indo-Gangetic fields where the rice-wheat editing framework rules. The focal point of creating and advancing preservation advancements has been on zero-till seed-cum manure drill for planting of wheat in rice-wheat framework. Different mediations incorporate raised-bed establishing frameworks, laser gear helped land evening out, buildup the executives rehearses, options in contrast to the rice-wheat framework and so on.

It has been accounted for that the region planted with wheat embracing the zero-till drill has been expanding and as of now 25% - 30% of wheat is zero-plowed in rice-wheat developing region of the Indo-Gangetic fields of India. Moreover, raised-bed planting and laser land evening out are likewise being progressively embraced by the ranchers of the north-western. (Bhan, & Behera, 2014)

BENEFITS OF CONSERVATION AGRICULTURE FOR SOIL DEGRADATION:

1. Conservation agriculture works with great agronomy, like opportune tasks, and further develops generally land farming for rained and flooded creation.
2. Supplemented by other known great works on, including the utilization of value seeds, and coordinated bug, supplement, weed and water the executives, and so forth, Conservation agriculture is a base for feasible agrarian creation heightening.
3. It opens expanded choices for coordination of creation areas, like yield animals joining and the reconciliation of trees and fields into agrarian scene.
4. Soil supplement supplies and cycling are upgraded by the biochemical decay of natural harvest buildups at the dirt surface that are additionally imperative for taking care of the dirt organisms. While a significant part of the nitrogen needs of essential food harvests can be accomplished by establishing nitrogen-fixing vegetable species, other plant fundamental supplements frequently should be enhanced by extra substance and additionally natural manure inputs. As a rule, soil richness is developed over the long run under protection farming, and less manure corrections are expected to accomplish ideal yields over the long run.

THE FUTURE CHALLENGES IN CONSERVATION AGRICULTURE: Research for conservation agriculture in this way will require imaginative highlights to address difficulties.

1. **Long-term view:** no culturing and surface-oversaw crop deposits set in processes which start changes in soil physical, synthetic and organic properties, which thus influence crop yields.

Understanding elements of these progressions and cooperation among actual substance and organic stages is essential to creating further developed soil-water and supplement the board systems. Essentially, understanding elements of subjective and quantitative changes in soil biodiversity, illness prompting creatures, remembering weeds for connection to adjusted administration rehearses is principal to advancing control measures with least utilization of earth unsafe synthetic substances.

2. **Technological difficulties:** Protection farming framework is a significant takeoff from past approaches to getting things done. This infers that entire scope of works on, including planting and gathering, water and supplement the executives, infection and vermin control, and so on should be developed, assessed and matched in setting of new frameworks.

The key test connects with improvement, normalization and reception of ranch apparatus for cultivating with least soil unsettling influence; creating crop reaping and the executives frameworks with deposits kept up with on soil surface and creating and ceaselessly further developing site explicit harvests, soil and bug the board methodologies that will enhance benefits from the new frameworks.

3. **Site particularity:** Versatile techniques for protection farming will be profoundly site-explicit, yet advancing across destinations will be a strong way in understanding the reason why certain advances or practices are viable in a bunch of circumstances and not successful in one more set.

This growing experience will speed up building an information base for practical asset the executives. Creating and elevating a systems administration to share data among ranchers, researchers and other partners would be basic in propelling spread and went on up-degree of preservation horticulture frameworks. Figuring out the variety and setting explicit nature of cycles would be significant in learning and changing for better. Preservation horticulture suggests an extreme change from conventional horticulture.

There is need for strategy examination to grasp how protection innovations coordinate with different advances, strategy instruments and institutional game plans that advance or stop protection farming. Sped up improvement and reception of preservation horticulture advancements will call for significantly reinforced observing and assessment alongside strategy research. Understanding requirements in reception and setting up proper motivators for taking on protection farming frameworks will be significant. (Meena, & Singh, 2013)

4. CONCLUSION

Soils are significant to food security and change in environment has compromised the food security by influencing the dirt property. In such situations, protection farming is an able strategy to moderate the dirt ripeness and increment the supportability of horticulture.

Additionally, many states are additionally dedicated to downgrade buildup consuming and advancing conservation agriculture put together practices through furnishing appropriations with respect to reasonable hardware. It has now been seen that buildup consuming has diminished definitely in Indo-Gangetic Plains. Conservation agriculture based crop the board rehearses improve crop efficiency as well as lessen the expense of creation and keep up with soil wellbeing.

5. REFERENCES

- [1] Hobbs, P. R. (2007). Conservation agriculture: what is it and why is it important for future sustainable food production? JOURNAL OF AGRICULTURAL SCIENCE-CAMBRIDGE-, 145(2), 127.
- [2] Barker, C.J., K.E. Sexton and W.R. Ritchie. 2002. no tillage seeding; science and practice. 2nd edition. Oxford, UK: cab international.
- [3] Singh, K. M., & Meena, M. (2012). Conservation Agriculture: Economic Perspective and Future Challenges. Available at SSRN 2026336.
- [4] Meena, M., & Singh, K. M. (2013). Conservation Agriculture: Innovations, Constraints and Strategies for Adoption. Constraints and Strategies for Adoption (September 1, 2013).
- [5] Bhan, S., & Behera, U. K. (2014). Conservation agriculture in India-Problems, prospects and policy issues. International Soil and Water Conservation Research, 2(4), 1-12.
- [6] Choudhary, M., Ghasal, P. C., Kumar, S., Yadav, R. P., Singh, S., Meena, V. S., & Bisht, J. K. (2016). Conservation agriculture and climate change: an overview. Conservation agriculture, 1-37.

Web References

- [7] [https://climate-adapt.eea.europa.eu/metadata/adaptation-options/conservation_agriculture#:~: text=The% 20 three% 20main% 20principles% 20of,agricultural% 20practices% 20to% 20greenhouse% 20gases% 20\(](https://climate-adapt.eea.europa.eu/metadata/adaptation-options/conservation_agriculture#:~:text=The%20three%20main%20principles%20of,agricultural%20practices%20to%20greenhouse%20gases%20()
- [8] <https://articlerewritertool.com/>
- [9] https://www.routledge.com/Conservation-Agriculture-in-India-A-Paradigm-Shift-for-Sustainable_Production/Sharma/p/book/9781032273877
- [10] <https://www.cimmyt.org/news/conservation-agriculture-for-sustainable-intensification-in-eastern-india/>
- [11] https://www.researchgate.net/publication/275412376_Conservation_agriculture_in_India_Problems_prospects_and_policy_issues
- [12] <https://iasexamportal.com/the-gist/kurukshetra-conservation-agriculture>
- [13] <https://www.fao.org/conservation-agriculture/en/>