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ROLE OF LIVESTOCK FOR ORGANIC FARMING AND SUSTAINABLE AGRICULTURE

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Abstract

Livestock integration plays a major role in the life of farmers of our country, it provides food, income, employment and many other contributions to the farming community. Integrated crop-livestock system is advocated to be very promising in boosting food productivity and soil fertility owing to its numerous synergistic benefits. Integrated crop-livestock farming system (IFS) offers scope to promote organic farming, and carry over of carbon and nutrients from one cropping season to the next. **Organic Farming** also known as ecological farming or biological farming, is an agricultural system that uses fertilizers / manures of organic origin such as Village compost, Farm yard manure, green manure, oil cakes, Kitchen waste manures, bone meal, fish meal etc. and emphasizes on techniques such as crop rotation and companion planting.

Introduction

Agriculture and allied sector is the largest source of livelihood. More than sixty percent of its rural households still depends primarily on agriculture for their livelihood (Pathak 2023). India is on the threshold of becoming the super economic power, our country is taking several expeditious steps to achieve the goal. But in our enthusiasm of fast, track development, one must remember that we have to maintain a balance between exploitation and longterm sustainability particularly in the biotic resource areas (Pathak, 2017). It is of paramount importance for any country to conserve its natural resources not only for the present generation, but for the posterity also. No one has right to finish or pollute the nature's gift which has been showered by mother nature, as no one can produce Sun, land, Water, Air etc. The rapid population growth and the resultant need to produce more food are putting strain on the already depleted natural resource in India (Sharma, 2017).

Under the integrated farming system, livestock are the best insurance against the vagaries of nature like drought, heavy rains, floods, frost, high temperature, and other natural calamities which are more harmful to food grains, fruits and vegetable crops production as compared to livestock (Swaroop 2020). India is one of the World's richest countries in terms of its vast array of biodiversity (Swaroop 2022). Livestock keeping has always been an integral part of the socio-economic and cultural fabric of rural India, it provides food and nutritional security, employment, gender empowerment, besides

serving as a source of regular income and live bank for the day to day needs of the family.

Being part of farming, food, medicine and industry, cow also contributes to the health of environment. Ancient scripture states that “Suryaketu” nerve on cow's back absorbs harmful radiations and cleanses the atmosphere. Cow dung has an important role in preserving environment, when we burn dung, it balances the atmospheric temperature and kills germs in the air. Cow dung has antiseptic, anti-radioactive and anti-thermal properties. When we coat the walls and clean the floors of houses with cow dung, it protects the dwellers.

Organic Farming

Organic Agriculture is a unique production management system which implies livestock, promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs (Maity, 2017). Organic farming is a chemical-free, traditional farming method; it is considered as agro-ecology based diversified farming system which integrates crops, vegetables, fruits, trees and livestock with functional biodiversity. Organic agriculture has great positive impacts on the environment and has emerged as an alternative system of farming that addresses the quality and sustainability concerns and also ensures a better future prospect for small land holders with increasing awareness about the safety and quality of food, improving health issues, the long-term sustainability of the ecosystem, climate change and increasing global warming (Swaroop *et al* 2024). Organic farming is considered to be the most sustainable approach in food production; it is a chemical-free or traditional farming method, is considered as agro-ecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. In integrated plant nutrient management system, agro-wastes can be the important sources of plant nutrients which on decomposition give good nutrients to them.

Recycling is an eco-friendly technology through which we can convert organic waste into the best product that is rich in nutrient content and can replace chemical fertilizers. Wastes from cattle activities include solid waste such as cow dung, litter, organic materials, waste water, urine, cage wash water etc. The utilization of cattle manures/waste for fertilizer has a definite impact on input energy requirement at farm level for ages. As organic farming works on the principle that there is no shortage of nutrients in the soil, air and water, and healthy soil biology can unlock these nutrients. All the nutrients required for the growth of plants are available around the root zone of the plants. The nutrients in the soil are in the unavailable form; this non-available form is converted into available form by the millions of micro-organisms. Decomposition of organic matter by microbes and earthworms is encouraged right on the soil surface itself, which gradually adds nutrition in the soil, over the period.

Role of Cattle in Organic Agriculture

Indian agriculture has variety; there is no farm product that we don't cultivate. Our land grows all kinds of grains, pulses, vegetables, fruits, fodders etc. Our agriculture landscape is diverse and vivid in land topology, soil type and quality. Cattle are an integral part of this huge canvas of agriculture. In our country with small holdings and small-scale farming, there is no better alternative to employing cattle in farming. Agriculture is an economic symbiosis of crop and livestock production with cattle as the foundation. Dairy animals produce milk by converting the crop residues and by-products from crops which otherwise would be wasted. Dairy sector contributes by the way of cash income, draught power and manure for the nutrition of crops.

Natural resources, environment and particularly agriculture is under intense pressure due to ever increasing demand for food grains (Swaroop *et al* 2021). **Organic Farming** also known as ecological farming or biological

farming, is an agricultural system that uses fertilizers / manures of organic origin such as Village compost, Farm yard manure, green manure, oil cakes, Kitchen waste manures, bone meal, fish meal etc. and emphasizes on techniques such as crop rotation and companion planting.

Organic agriculture has great positive impacts to the environment. Organic Farming, as the name implies, is a method of farming where the cost of growing and harvesting plants is minimum. Farmers need not purchase fertilizers and pesticides in order to ensure the healthy growth of crops. It is basically, a natural farming technique that uses biological pesticides instead of chemical-based fertilizers/pesticides. Farmers use eco-friendly earthworms, cow dung, urine, plants, human excreta, etc.

Livestock Waste Is Used For:

Nadep Compost, Vermi Compost, Vermi Culture, Vermi Wash, Farm Yard Manure, Compost, Biodynamics

Farm Yard Manure:

Manures are plant and animal origin wastes used as source of plant nutrients after their decomposition (Devi et al 2023). Animal waste makes up the majority of manure which gives organic matter and nutrients to the soil which enhances its fertility.

Vermicompost :

Vermi composting is a natural process whereby earthworms convert waste material with rigid structures into compost. It is a process in which the earthworms convert the organic waste into manure rich in high nutritional content. Earth worm is an organism that acts on dead and decaying material, it enhances the productivity of the soil.

Vermicomposting is a process in which earthworms are used to convert organic materials into humus – like material known as vermicompost. It is the scientific method of making compost, by using earthworms. Compost produced in this green process is traditionally and popularly used as a natural fertilizer for enhancing plant growth.

Organic farming considered to be the most sustainable approach in food production. Expanding agricultural activities has enhanced agricultural crop wastes, exceeding around 620 million tones per year. In Integrated plant nutrient management system, agro wastes can be the important sources of plant nutrients which on decomposition give good nutrients to them. Recycling is an eco-friendly technology through which we can convert organic waste into the best product. **Livestock** on an organic farm plays main role in nutrient cycling: a process in which nutrients are returned to the soil through manure and compost.

- Amending soils with animal manure and increase microbial biomass enzymatic activity and alters the structure of the microbial community
- Farm yard manure (FYM) alludes to the disintegrated blend of dung and urine of livestock along with litter and left finished material from roughage or pasture
- FYM contains : 0.5% N, 0.2%P and 0.5%K
- Sheep and goat manure contains higher nutrients than cattle manure and compost
- Sheep and Goat Manure contains - Nitrogen- 3.0%; Phosphorous- 1.0% ;Potash – 2.0%
- Shed sweepings are placed in pits for decomposition and used
- They are kept overnight in field and urine and dung added to the soil is incorporated to a shallow depth
- **Poultry manure:** the dropping of birds ferment rapidly if left exposed 50% of it's nitrogen is lost within 30 days it

contains more N and P compared to other bulky manures

- **Poultry manure** contains - Nitrogen – 3.03% ; Phosphorous – 2.63% ; Potash – 1.4%
- **Other concentrated organic manures :**
- Blood dinner when dried and powdered may be used as manure, meat of dead animals is dried and converted into meat meal which is a rich source of nitrogen.

Government Initiatives :

- National Mission for Sustainable agriculture (NMSA)
- Rashtriya Krishi Vikash Yojna (RKVY)- Promotion of organic farming, NADEP, Vermi compost, Vermiwash etc.
- Paramparagat Krishi Vikash Yojna (PKVY)
- Namami Gange Yojna

Conclusion

“Jaivik Kheti Hai Hal, Aaj Nahi To Ki”

Livestock is the lifeline for millions of household and its importance in Indian agriculture as well as Rural development is well recognized. Livestock integration plays a major role in the life of farmers of our country, it provides food, income, employment and many other contributions to the farming community. Integrated crop-livestock system is advocated to be very promising in boosting food productivity and soil fertility owing to its numerous synergistic benefits. Integrated crop-livestock farming system (IFS) offers scope to promote organic farming, and carry over of carbon and nutrients from one cropping season to the next.

Nutrients required for the growth of plant are available around the root zone of the plants. There is no need to add anything from outside, as our soil is prosperous and full of nutrients. The nutrients in the soil are in the unavailable form. The roots cannot take it in this form. This non-available form is converted into available form by the millions of micro-organisms. These valuable micro-organisms are destroyed by heavy uses of chemicals, fertilizers, insecticides, weedicides, etc. To obtain proper availability of micro-organisms we have to re-establish them in the soil by adopting Organic farming, and it is possible only by applying precious cow dung of Indian cattle in the form of **Compost, Farm yard manure, NADEP Compost, Vermi compost, Vermi wash**, etc prepared from the dung of Livestock /Cattle (Indigenous cow).

The cow dung, is a miraculous culture as one gram of it contains about 300 to 500 crore beneficial and effective microbes and has proven to be a miraculous cure to revive the fertility and nutrient value of soil. To obtain proper availability of micro-organisms we have to re-establish them in the soil and it is possible only by applying cow dung / urine of cattle in the form of farm yard manure, NadeP Compost, Vermicompost, Vermiwash, jeevaamrit, dhanjeevamrit, bramhastra, compost, etc prepared from dung/waste of cattle. Thus, importance of Indian cattle has proved beneficial and worthy for the betterment of soil health, its fertility, Organic agriculture, horticulture, environment, health of soil and Sustainable Agriculture.

“Organic Farming the only Way for Sustainable Agriculture”

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