



Sustainable Nutrient Management through Poultry Wastes in Integrated Organic Farming System



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Submission: June 21, 2018; **Published:** July 05, 2018

Opinion

Ensuring food security for a fast growing global population estimated at 9.1 billion in 2050 and over 10 billion by the end of the twenty first century is a mammoth challenge for the present agricultural production system [1]. Shrinking average farm size in India and financial constraints for higher investment in agriculture due to 80% farm families belonging to small and marginal farmer categories further heighten the challenge. For anchoring nourishment and sustenance security for sizable populace, improvement in productivity may give a crucial solution. This involves the adoption of scientific agronomic practices and technologies which promise an augmentation of the productive capacity of traditional agricultural systems.

About 75% of the adversely affected households belong to rural communities of developing economies whose livelihood is directly or indirectly dependent on agriculture and allied activities [2]. Unsustainable farming leads to environmental pollution and threatens the livelihood of millions of small farm holders. Strengthening agricultural production systems for greater sustainability and higher economic returns is a vital process for increasing income and food and nutrition security in developing countries [3]. Therefore IFS is a multidisciplinary whole farm approach and very effective in solving the problems of small and marginal farmers. The approach aims at increasing income and employment from small-holding by integrating various farm enterprises and recycling crop residues and by products within the farm itself. The farmers should be guaranteed of customary income for living in any event above destitution line.

Combination of Integrated Farming System (IFS) along with organic farming so called Integrated Organic Farming System (IOFS) appear to be the possible solution to the continuous increase of demand for food production, stability of income and improvement of nutrition for the small and marginal farmers with limited resources. Integration of different components with crop as base will give approach to reuse products and waste materials of one enterprise as input through another connected enterprise

and reduce the cost of production of the products which will finally raise the total income of the farm. One among them is integration of poultry in farming which acts as a source of nutrients to the crop enterprises. Accordingly, if farmers initiate desi chicken (country birds) raising under integrated farming system can satisfy their day by day prerequisite and gives static income which improves their way of life.

Conventionally desi birds were raised in integrated farming system at the pond bank will satisfy the nutritious needs of the populace under the destitution line. This guarantees farmers get assets for their lives. Besides, desi chicken rearing can be integrated with fish component.

By this, water and landmass is fully used. The birds grew in the bank of pond, will serve as fertilizer machine and enrich pond's nutrient status and increase the yield. Integrated farming system generates employment opportunity with reduction in cost.

Uses:

- a. Balanced diet
- b. Productivity improvement
- c. Higher living standards
- d. Increased employment opportunity
- e. Recycling of farm waste
- f. Higher income
- g. Increased land use

In these situations, country chicken rearing through integrated farming system is turned as profitable business. So we should consider raising nation chicken in agreement to integrated farming system. Desi chickens grown in the patios are not taken after any cutting-edge innovation. In this situation reduction in productivity observed due to fodder scarcity.

Be that as it may, in intensive desi chicken raising strategy take after the balanced feed and preventive measures for vermin and sickness will make the country chicken raising is the beneficial business.

Direct Integration



Figure 1: Fish + poultry

Poultry ascending for meat (broilers) or eggs (layers) can be integrated with fish component to lessen costs on manures and feeds in fish culture and augment benefits. Poultry can be raised over or adjacent to the ponds and the poultry excreta recycled to fertilize the fishponds. Raising poultry over the pond has certain favourable circumstances: it boosts the utilisation of space; minimize labour cost in transporting manure to the ponds and the poultry house is more sterile. No significant differences have been observed on the poultry growth or egg laying when they are raised over the ponds or on land. Probably this is called double layer method. Fish in the lower layer, i.e, the upper layer of the water tank and country chicken in the upper layer is the growing method (Figure 1).

Indirect Integration

In this method, desi birds were raised in the pond bank, hen shed was cleaned after week once and the excreta were spread over the pond or keep as heap in every corner of the pond. This practice may be followed in the early morning.

Nutrient content of poultry waste

Poultry droppings have higher nutrient supplement substance among the animal-based manures. It has nitrogen (4.55 to 5.46%), phosphorus (2.46 to 2.82%), potassium (2.02 to 2.32 %), calcium (4.52 to 8.15 %), magnesium (0.52 to 0.73%) and appreciable quantities of micronutrients like Cu, Zn, Fe, Mn etc. Besides cellulose (2.26 to 3.62%), hermicellulose (1.89 to 2.77%) and lignin (1.07 to 2.16%) are also present in poultry litters. These components upon microbial action can be converted to value added compost with high nutrient status. In poultry droppings,

Integration

Integrating country chicken with fish farming can be done in two ways.

nearly 60% of nitrogen which is present as uric acid and urea is lost through ammonia volatilization by hydrolysis. This loss of nitrogen lessens the agronomic value of an item, other than causing atmospheric contamination. Composting of poultry waste appears to be encouraging in preservation of nitrogen in poultry droppings. Nitrogen in poultry waste can be effectively conserved by composting with suitable organic amendment.

Benefits

Poultry litter is perceived as an astounding wellspring of plant nutrients and organic matter. Organic matter can enhance production of crop by expanding the infiltration of water and water holding capacity, improving the maintenance of nutrients in the soil, reducing wind and water erosion, and promoting the growth of beneficial organisms. Continuous usage of litter additionally has been appeared to keep up soil pH and may increase soil pH in a few cases.

Conclusion

To enhance the productivity of soil, economic returns and wealth of farm families, poultry with crop combinations can be adopted successfully in Tamil Nadu instead of cultivating rice crop alone on same piece of land. Recycling of organic residues in form of animal and plant wastes could be beneficial in improving the soil health and productivity over a longer period with lesser environmental hazards. Sustenance of small and marginal farmers could be advanced by adopting integrated organic farming methods on a larger scale.

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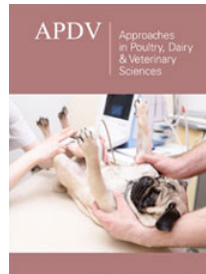
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