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Organic poultry production system in India: Issues & challenges

Shilpa Gujral[1], Nazam Khan[2], Dhirendra Kumar3, Dibyendu Chakraborty1 and Vikas Mahajan2*

1Division of AGB, 2Division of Livestock Farm Complex, F.V.Sc. and A.H, SKUAST- Jammu

3Department of AGB, CoVAS, Kishanganj.

Introduction:

According to its definition, organic farming is a "unique production management system which uses on-farm agronomic, biological, and mechanical methods in exclusion of all synthetic off-farm inputs to promote agro-ecosystem, health including biodiversity, biological cycles and soil biological activity." Raising poultry utilizing organic agricultural practices that support animal welfare, environmental sustainability, and the production of healthy products is known as organic poultry production. This technique places a strong emphasis on using organic feed that is devoid of artificial additives and genetically engineered organisms. Poultry are given compassionate care, access to the outdoors, and natural living conditions. Adherence to stringent guidelines, such as prohibiting the use of synthetic pesticides and antibiotics, is necessary for organic certification. Natural disease prevention, biodiversity, and ecological balance are the main points of emphasis. The increased consumer demand for ethically and ecologically sound, health-conscious food options is met by the production of organic poultry. In an organic poultry production system, homoeopathy and ayurveda medicine are recommended over allopathic medicine. According to national standards for organic cultivation, APEDA governs the certification of organic products in India. The production of organic poultry in India faces up with several obstacles, including inflated feed expenses, restricted access to organic inputs, insufficient infrastructure, insufficient knowledge and education among farmers, and complicated certification procedures. Variations in consumer demand and market accessibility are further barriers to the sector's growth and viability.

Organic poultry farming's position in India and throughout the world:

Growing consumer demand for more sustainable and healthier food options is fueling the expansion of organic poultry farming in India and around the world. The organic poultry market

is still relatively new in India, but it is growing. As per the 2022 study published by the Agricultural and Processed Food Products Export Development Authority (APEDA), the Indian organicmarket, encompassing poultry, is expanding at a rate of 17% per year. Faster growth is hamperedby issues like high production costs, a shortage of organic feed, and a lack of broad certification.The market for organic poultry is more developed worldwide. The global organic

poultry market, according to a Grand View Research from 2023, was estimated to be worth USD 7.1 billion in 2022 and is projected to increase at a compound annual growth rate (CAGR) of 8.3% between 2023 and 2030. Because of their strict rules, thorough certification procedures, and high levels of consumer awareness, Europe and North America dominate the market.

There are 130 nations that produce certified organic goods at the moment. Currently, a few developing nations, like Mexico, Brazil, and Argentina, are exporting organic animal products to industrialized nations. Since tribal people and those who farm in rainfed environments often use very minimal chemical inputs, there is a great deal of room in our nation to promote organic farming in the export market without sacrificing the nation's ability to feed its people. There are currently very few studies conducted in India on organic poultry.

There is no denying the trend toward organic poultry production, even with varying degrees of market development. In order to ensure that this industry grows and makes a substantial contribution to sustainable agriculture and better diets worldwide, it is imperative that efforts to improve certification, farmer education, and consumer awareness continue.

Success Stories in Indian Organic Poultry Production:

The production of organic poultry has been pioneered by several Indian states. Several Indian states and organizations have achieved progress in encouraging the production of organic poultry in spite of these obstacles:

1. Kerala's Kudumbashree Mission:Through organic poultry farming cooperatives, Kerala's Kudumbashree Mission has empowered women. Women who want to start small-scale chicken farms are given help and training in organic farming methods. In addition to enhancing livelihoods, this strategy has encouraged sustainable agricultural methods.
2. Organic Poultry Integration in Sikkim: Sikkim has included organic poultry farming into its agricultural model. The state is well-known for its statewide organic farming project. The state's overall sustainability aims are furthered by state-supported programmes that give farmers the tools and instruction they need to switch to organic poultry farming.
3. Project "Maha Poultry" in Maharashtra: This initiative helps farmers switch to raising chicken organically. With an emphasis on organic feed and free-range methods, it seeks to improve the economics and sustainability of chicken farming in the area.
4. Pradan's Initiative in Jharkhand: Tribal tribes in Jharkhand have been able to grow organic poultry thanks to the assistance of NGOs like Pradan.

Crucial Role of the Conversion Period in Organic Poultry Production:

The conversion period is the amount of time that passes between the beginning of organic farming practices and the certification of the poultry farm and its products, during which local breeds are given preference. Because chicken has a short production cycle, it has emerged as the most significant organic meat. In organic poultry production, the conversion period is crucial for maintaining adherence to organic standards, clearing the environment of synthetic inputs, reviving the health of the soil and ecosystem, and modifying animal welfare practices. A seamless transition to fully certified organic farming is made possible by its ability to help farmers manage risks and create market channels.

Core Principles In Organic Poultry Farming:

Organic poultry farming is based on several core principles in Organic poultry farming:

1. Organic Feed: Organic feed is provided to chickens and is devoid of genetically modified organisms (GMOs) and synthetic pesticides and herbicides. Being a major component of the production process, this feed is sometimes more costly and harder to get.
2. Natural Living Environment: Because they have access to the outdoors, hens may engage in activities that come naturally to them, such dust bathing, pecking, and foraging. The purpose of the housing is to reduce stress and enhance general welfare.
3. Prohibition of Synthetic Inputs: It is completely forbidden to use pesticides, artificial growth boosters, or antibiotics. Diseases and pests are managed using natural therapies and preventative measures.
4. Animal Welfare: Strict adherence to high standards of animal welfare guarantees that the poultry get humane treatment all of their lives.
5. Environmental Sustainability: By maintaining ecological balance, soil health, and biodiversity, organic chicken farming seeks to reduce its negative effects on the environment.

Breeding of Poultry: Selecting breeds that can adjust to local circumstances is advisable. The purpose of breeding should be health rather than behaviour opposed to an animal's natural state. It is forbidden to employ species or breeds that have undergone genetic engineering. The method of reproduction need to be organic. Artificial insemination is only permitted when it is required by veterinarians. It is best to forbid using hormone therapy to increase egg production. Due to the higher costs and limited availability of organic chick production, the majority of organic producers in India now rely on commercial hatcheries and rearers. Lack of hatcheries providing the necessary small number of chicks, transportation expenses, suffocation losses, and availability of suitable breeds are the three primary obstacles to chicken breeding for small-scale production in India. All livestock in an organic production unit should ideally have been grown on organic farms from birth. It has been demonstrated by science that the fertility, birth rate, semen quality, etc., differ from those of the traditional breeding method. The method of reproduction need to be organic. It is forbidden to utilise artificial insemination, embryo transfer, or hormones to synchronise body temperature. Breeds that are suited to the environment in your area should be picked. Some producers are concerned about using contemporary hybrid birds for table bird production. This is because of two factors: the rising prevalence of ascites in intensive broiler systems, and their rapid development rate in comparison to leg strength, which causes welfare issues with joint weaknesses and malformed legs. Breeders now recognise the connection between current hybrids and increased mortality from flip over, ascites, and leg issues, and they select for ascites, improved leg quality, and disease resistance. Certain organic producers have reported that they may effectively employ hybrid birds by lowering the ration's quality in the early stages, which lowers growth rates. They also say that this approach can solve issues with leg weakness. Consumer preferences and readiness to pay a much higher price for a different quality are major factors that influence the utilisation of alternate breeds for table birds. In India, slower-growing varieties like Vanraja and Aseel (desi birds) are accessible and make good uses.

Poultry management and housing: In order to minimise stress for the poultry, organic guidelines strive to establish a setting where all natural behavioural patterns can occur. Reduced stress levels are probably going to benefit the flock's health and ability to produce. Because most poultry farmers keep their birds inside throughout the night to keep predators away, care must be given

while designing the housing system.

There are two types of housing approaches: stationary housing systems where birds have access to a lush outdoor space, and movable housing systems with housing that may be moved to take use of the grasses and clover in an agrarian rotation. Allowing poultry birds to display all of their typical behavioural patterns is the primary goal of adhering to organic housing and management regulations. This measure is expected to mitigate the stress experienced by the birds. In contrast to permanent housing systems, mobile homes are quite popular for the production of organic poultry in nations throughout Europe and America. Access to fresh grass is the primary benefit of the movable housing system for birds. One major drawback of the mobile housing system is that all other necessary production resources (feed, litter, water, etc.) must be moved to and from the homes, which adds significantly to the work need. In general, movable housing is probably more expensive per unit than stationary systems. Furthermore, because of geographical and economical limitations, the mobile housing system's reach in India is quite restricted. Housing should be designed and built in a way that protects birds from predators. Good cleanliness, including frequent cleaning of the chicken shed, is essential. Birds should not be caged or raised in deep litter systems in organic poultry farming. Artificial light can be used at the times specified by certifying bodies. Birds must typically be reared for 81 days before being sold as organic meat. Poultry must have easy access to an outside grazing space, fresh air, clean water, a balanced feed, dust bathing facilities, and an area dedicated to animal care. Debeaking and beak trimming are often forbidden activities, however certain certifying authorities allow trimming and debeaking. Debeaking if completed, greater than 5mm of the upper beak should be removed. Poultry should have easy access to an outside grazing area. Large egg producers offer a little covered space for the birds. This provides some access to fresh air, dust bathing facilities, and a space for scratching, as well as improving animal comfort without the challenges involved with managing grassed outdoor runs for bigger flocks.

Mobile housing: The advantage of movable housing is that the birds may be relocated to fresh grass areas, reducing the danger of soil-borne parasites in the outside area. This does not, however, remove the possibility that animals will be re-infected with viruses from their own waste if they are left in the dwellings. The key constraint is the size of the shelters, which must be portable. Units typically hold 200-300 birds, while some designs may hold up to 500. The downside of movable housing is that additional production elements (feed, straw or other litter material, and water) must be moved to and from the homes, increasing work needs significantly.

Static Housing: The primary advantage of static housing is that it is easier to develop automated or semiautomatic systems for feeding, watering, and collecting eggs and droppings. The cost per bird is also expected to be lower than for mobile systems. One downside of a static housing arrangement is the maintenance of the outside area, which requires some rotational grazing to limit the danger of soil-borne parasites and illnesses while also maintaining plant cover.

Lighting: Organic guidelines require that natural light be present. However, natural light is thought to increase the risk of feather pecking and cannibalism. Artificial lighting may be used to increase the lighting duration to a maximum of 16 hours of light, with the day length being prolonged in the morning rather than in the evening. As a result, the majority of chickens will have laid before they go out, reducing the possibility of egg contamination from dirt.

Fencing: Fencing surrounding the range areas is not technically essential because birds do not

move far from their homes and are usually shut up at night.

Poultry Behavior & Intervention:

Chickens, like other farm animals, have a distinct pecking order. The birds can recognise each other based on their head shape and remember roughly 50-60 other individuals. Excessive numbers create a socially unstable group with the possibility of major pecking issues. Within such a flock, subgroups arise. In the wild, they are typically composed of 4-6 hens and one cock. In aviary setups, subgroups of hens range in size from four to six. Finding food is a crucial social activity for hens. They normally feed at the same time, and the auditory signals of pecking and scratching serve as a stimulant for other hens. Similarly, the sounds from the feeding tools might influence their eating behaviour. The shape and colour of the food impact feeding, but their sense of taste is underdeveloped. Pecking and scratching are natural behaviour, and the housing structure must give adequate room for these activities. This is achievable both on the bedding levels of the housing structure and outdoors. Birds prefer to rest on lower tree branches. The housing design should enable for this behaviour to be imitated while still providing adequate room for fluttering and flight. The lighting scheme must provide for enough relaxation periods. Attractive nests minimise the quantity of ground and misplaced eggs, resulting in fewer soiled eggs and less time spent collecting them. Nests should be kept in a quiet section of the barn, awayfrom light and pop holes, but not too far away from the other facilities.

Curtains can assist to minimise light intensity while increasing appeal, however nests with eggs are preferable. In addition, trash nests are more appealing. Sand, dust, and sun bathing are examples of hens' comfort behaviours. More precisely, sand and dust baths are helpful for hygiene and significantly reduce the amount of ectoparasites. Areas for these activities are needed either inside the housing system or in the outside environment. If the shed is too far away or difficult to access, other shelter must be provided.

In free range/organic production, behaviour qualities are especially crucial when designing a system that allows hens to roam freely in big flocks. There should be lots of room for birds to stretch and flap their wings, as well as places where they may play in the sand, dust, and sun. Like other farm animals, chickens have a rigid pecking order that allows them to identify one another by shape of head. In such a bigger flock, subgroups should be developed since larger groupings render them socially unstable and increase the danger of major pecking issues. Similar to wild birds, there should be one cock for every four to six hens in the flock.

The two main behavioural issues that chickens have are cannibalism and feather pecking. One of the birds' other social behaviours is looking for food. Typically, they feed simultaneously, and other chickens are stimulated by their pecking and scraping sounds. Likewise, they may become more likely to eat if they hear the sound of feeding tools like chains. Although birds have a poorly developed sense of taste, their eating behaviour is influenced by the feed's colour and form. Normal eating behaviour includes pecking and scratching, thus their housing arrangement must allow enough room for these actions.

Watering & feeding:

The only materials to be used should be agricultural residue, feed, and fodder from organic farms. The ability of plants to feed themselves and defend against pests and disease is enhanced by good soil, so less fertiliser and pesticide application is necessary. The farm should become self-sufficient in the production of feed, and natural resources should be employed to get vitamins, minerals, and

trace minerals. The birds should only be fed high-quality feed that is farmed entirely organically.

All items, with the exception of vitamins and minerals supplements that can make up to 5% of the diet, must be certified organic.
The chicken's digestive tract is designed to process insects, seeds, and grains rather than forage, thus the food should be provided in a way that allows the birds to follow their normal eating habits. If the birds are to be produced organically at the necessary level, concentrated balanced feed diets must be prepared. Cereal (Maize) makes up the majority of the diet of any organic chicken. High-quality roughages, especially beans, can be used as dietary supplements. Use locally farmed protein sources such as rapeseed, beans, and peas. In this sense, peas provide greater flexibility when creating an organic feed formulation. For table chicken, they may be added at a rate of 250–300 g/kg, and for laying hens, 150–200 g/kg.
Oily fish meal has a greater amount of essential amino acids than full fat soya and can be utilised in organic feeds. Because it is expensive and has been linked to fishy taints in organic goods, its use in chicken rations is restricted. Replace synthetic amino acids with sprouted grains, which are also a wonderful source of vitamins. Phosphate rock and limestone can be used as mineral sources for organic ration. Oyster shell and limestone grit will provide layers the calcium they need to produce eggs. Feeding organic soybeans, skim milk powder, potato protein, maize gluten, and other foods can satisfy an animal's need for critical amino acids. Regular testing for groundwater pollution should also be performed on the water.

Ingredients forbidden in animal feed intended for organic farming: Manure feeding, growth regulator, colouring agent, urea, animal byproduct (slaughter house waste), Hormones, chemically extracted feed, medicated feed, genetically engineered feed, and plastic roughages.

Health Care In The Production Of Organic Poultry:
The birds will attain maximal resistance against sickness and avoid numerous infections if all management activities are focused on their well-being. Birds that are ill or damaged should receive urgent medical attention. Finding the source of the sickness and preventing future outbreaks by removing the cause and altering management techniques should be the goal when disease strikes birds. Antibiotic use need to be avoided. Vaccination is to be reserved for situations in which illnesses that are known to exist in the farm's area or are predicted to do so cannot be managed with other management strategies.
It is important to emphasise the use of natural remedies and therapies like homoeopathy and ayurveda. Coccidiosis and parasite issues are more prevalent in regions with hot temperatures. Animal health in an organic system depends on proper husbandry practices and preventative management. It is forbidden to regularly utilise veterinary medications for prevention (such as wormers and antibiotics). Vaccines can be administered if there is a recognised medical need with veterinarian guidance.

Feather Pecking And Cannibalism:
For larger-scale organic egg producers on the continents, feather pecking and cannibalism seem to be major issues right now. Feather pecking is just one of numerous predisposing variables (along with group size and light intensity) that might contribute to cannibalism, which is an issue in many conventional free range conditions. However, it is not always the case. Cannibalism-related losses in litter systems are lower than those in battery cages. The rules governing organic farming prohibit

beak cutting. Feather pecking by itself might not be a major issue.Feather pecking and cannibalism appear to be present problems for continental organic egg producers operating on a bigger scale. It isn't always the case, though. Compared to battery cages, there are less losses from cannibalism in litter systems. Beak cutting is forbidden under organic agricultural regulations. Feather pecking might not be a big deal on its own.
In particular housing systems, feather pecking is nearly considered a sign of wellbeing quality since it is an unsatisfied pattern of food scavenging behaviour. Boredom is the main cause, although other factors include abrupt stress, poor food, crammed spaces, and insufficient trough space. One way to prevent boredom in hens is to feed them in mash instead of pellets, which will take longer for them to finish their regular meal. In order to better satisfy the behavioural pattern of searching for food, scratch feed can also be employed. Feather loss in contemporary free-range layers is mostly caused by large egg sizes. It is advised that farmers try to prevent stress by improving the ratio of feeding to output, avoiding giving birds high-energy and high-linoleic acid diets when they don't need it, and achieving a better balance between the two. Feather loss is also linked to food (deficiency in amino acids). When chicks are raised on plastic surfaces as opposed to sand- or slatted-floored areas, the prevalence of feather pecking is greater. The greatest outcomes, it seems, come from overlaying wood shavings with short straw for play. Unfortunately, feather pecking is a behaviour that animals acquire and will not stop, even if they are placed in a more friendly.Additionally, parasite issues and diseases in the ovaries and cloacal area of the layers may be connected to cannibalism. Already-infected birds may attract the interest of other chickens, and cannibalism-related wounds may spread the illness.

In conclusion, they should focus on pullet raising, enhanced housing systems, providing a range of feed sources in a balanced diet, equalising light distribution (including daylight), and conducting routine assessments of the flocks' overall health and climate.

Coccidiosis:
Similar to a pullet raising operation, it is a significant health concern in the production of table birds. Because mature birds may depend more on natural immunity, the issue is less severe for layers. Ingestion of sporulated oocysts from the environment can cause infection in birds. When sporulated oocysts proliferate in the gut, they can generate up to 8 million oocysts, seriously damaging the intestinal walls and reducing the absorption of nutrients due to the formation of scar tissue.Coccidistats are not allowed although natural anticoccidial poloxalene permitted.

Ascites:
Ascites, which can range from 3-20% at high altitude, has emerged as a significant contributor to traditional table bird mortality. Hypoxia is the cause of ascites (too little oxygen). Due to their rapid development rates, table birds are particularly affected since they require more oxygen. While the quantity of carbon dioxide is important throughout incubation, chick delivery, brooding, and the critical development period, other factors that affect the process include physiology, genetics, feeding, management, and ventilation. The need for oxygen is increased by diets with high growth rates and fat levels, and pelleted feed is linked to more issues than mashed feed. The risk of ascites should generally be lowered by the lower feeding intensity of organic feed.

Mutilation:
Poultry breeding should only use non-mutilated animals. It should be illegal to tolerate mutilation.

The bird should experience the least amount of stress during transportation and slaughter. Water and food should be given to the animal while it is being transported. Gentle and calm handling is required during shipping and slaughtering. It is forbidden to administer any kind of pharmaceutical stimulant or tranquillizer before or during transportation.

Records in the keeping of organic poultry:

Maintaining records involves methodically recording events, observations, and things in relation to time for later review, assessment, and observation. It helps in reporting to lenders, other owners of agricultural assets, and other parties interested in the farm business's financial health. Breeding records, feed supplement and additive inventories, records of organic poultry pastures, health care product inventories, monthly flock records, records of organic meat poultry, records of organic poultry slaughter and sales, and monthly records of organic egg packing and sales are all important documents to maintain on an organic farm.

Organic Poultry Production: Indian Issues and Difficulties:

India has a number of obstacles in implementing organic poultry farming, despite the industry's rising popularity and benefits:

1. Expensive Feed: The price of organic feed is one of the biggest obstacles. Because raising organic crops has higher expenses than raising conventional crops, organic feed is usually more expensive than conventional feed. Small-scale organic chicken growers may find it less profitable as a result.
2. Restricted Access to Certified Organic Inputs: There is a restricted supply of feed and pharmaceutical goods that are certified organic. It can be difficult for farmers to find these inputs locally, which raises expenses and creates logistical issues.
3. Inadequate Infrastructure: Appropriate housing, facilities for storing feed, and processing facilities are among the infrastructure needs for organic chicken farming that are frequently absent.
4. Lack of Knowledge and Training: The foundations and advantages of organic poultry production are not well known to many farmers. In-depth education and training programmes are necessary to provide farmers the know-how they need to switch to and sustain organic systems.
5. Complexities of Certification: Getting organic certification requires negotiating complex, frequently bureaucratic procedures. Many small-scale farmers are discouraged from obtaining organic certification because of the lengthy and expensive certification procedure.
6. Demand from consumers and Market Access: While the market for organic products is expanding, market access is still uneven. It may be difficult for farmers to locate steady markets for their goods, and consumers' knowledge of organic poultry is still growing.
7. Hazard of Contamination: There is a chance of non-organic source contamination both during and after the transition phase. To ensure the integrity of organic systems, strict cross-contamination prevention measures must be implemented.
8. Financial constraints: Making the switch to organic farming might need a significant financial expenditure, which many marginal and small-scale Indian farmers may find difficult to meet without sufficient financial assistance and incentives.

Overcoming Challenges and Moving Forward:

Many steps may be made to address the issues and advance the production of organic chicken in India:

1. Financial Assistance and Subsidies: Small-scale farmers may find organic farming to be more profitable if they get financial assistance for organic feed and other inputs.

2. Infrastructure Development: To support organic poultry farming, infrastructure investments are essential. Examples of this include feed mills, storage facilities, and processing units.
3. Programmes for Training and Education: Comprehensive programmes for training and education may provide farmers with the skills they need and increase knowledge of the advantages of raising organic poultry.
4. Streamlining Certification Procedures: More farmers may choose to pursue organic certification if the certification procedure is made simpler and less expensive.
5. Market Development: One may improve market access and demand by creating dependable market channels and raising consumer knowledge of organic poultry products.
6. Research and Development: The industry may expand by funding studies that result in affordable organic feed and all-natural disease remedies.
7. Policy Support: The expansion of organic poultry farming in India can be fueled by government initiatives that support organic agricultural methods and offer financial incentives.

Conclusion:

More than merely increasing output volume, the "livestock revolution" aims to improve food security and consumer safety via a holistic strategy. India has a huge potential for producing organic chicken because a significant percentage of the nation is organic by default. However, people are moving towards organic products due to the detrimental effects of conventional farming.

Organic poultry therefore has the potential to significantly alter the poultry industry in particular as well as animal agriculture in general if policies, infrastructure, technology transfer, and sector-specific, goal-oriented development programmes are implemented with the fundamental goal of "food safety and poultry welfare." These days, we need the institutional and legislative framework needed to pave the way for the national promotion of organic poultry farming and animal husbandry in general.

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