

India's Organic Livestock Farming Opportunity: The Untapped Potential

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Abstract

Organic livestock farming in India, a practice deeply embedded in the nation's cultural heritage merging traditional nature-centric animal husbandry embodies principles of natural living, sustainability, and animal welfare, eschewing synthetic inputs for organic feed and natural remedies. Historically, Indian livestock rearing was inherently organic, integrating animals for nutrient cycling, a tradition dating back to the Vedic period. However, colonial influences and the green revolution led to a shift towards chemical-intensive and commercial farming. A major Change in organic farming occurred in late 20th century, supported by the government policy intervention such as the launch of national programme for organic production (NPOP) in 2000 and the paramparagat krishi vikas yojna (PKVY) in 2015. India now leads globally in organic producers, yet its organic livestock sector lags behind crop farming. There is immense potential exists due to hardy indigenous breeds and using low-input methods by the small-scale farmers. This sector offers significant opportunities including rising consumer demand, environmental benefits, improved animal health, and higher nutritional quality in products and can be further boosted by adaptation of technologies like Precision Livestock Farming. However, challenges always persist such as limited farmer awareness, high input costs, complex certification, and low domestic demand. Apart from this, disease management without synthetic chemicals, organic feed shortages, insufficient policy support, research, and extension services are also significant hurdles. Overcoming these requires increased awareness, financial aid, simplified certification, stronger supply chains, and targeted policies to foster a sustainable and profitable organic livestock sector.

Keywords: Animal Welfare, Challenges, NPOP, Opportunities, Organic Livestock Farming, PKVY.

Introduction

Raising animals with organic livestock farming is a holistic approach in concurrence of organic farming principles (Saini *et al.*, 2018). These principles prioritize the provision of natural living conditions that enable livestock to express their innate behaviours (Lund, 2006). The practices emphasize sustainability (Wiseman, 2022), with a focus on renewable resources (Kaswan *et al.*, 2012), soil health (Revee *et al.*, 2016), and ecological balance (Kayesh *et al.*, 2023). Furthermore, farming aims to minimize stress to promote natural behaviors with high standards for animal health and welfare (Akerfeldt *et al.*, 2021).

This approach prohibits the use of synthetic inputs such as fertilizers, pesticides, antibiotics, and growth hormones (Gamage *et al.*, 2023). Instead, it advocates the use of organic feed and natural remedies to ensure the well-being of the animals (Sanders *et al.*, 2025). Additionally, organic livestock farming places a strong emphasis on biodiversity and environmental stewardship, seeking to protect and enhance biodiversity through practices aimed at reducing environmental impact (IFOAM, 2020).

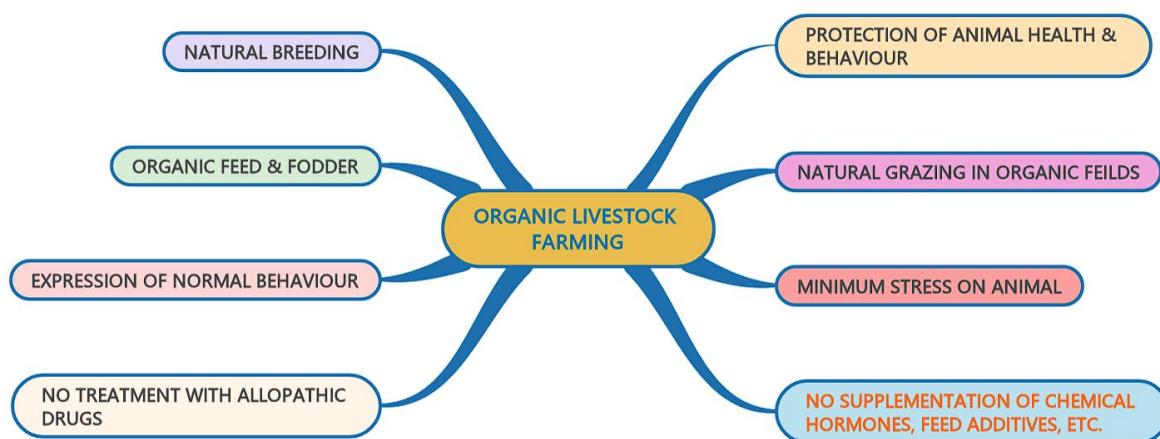


Fig. 1: Principles of organic livestock production

History of Organic Livestock Farming in India

Historically, livestock in India (indigenous breeds well-suited to local climates and requiring minimal external inputs) were reared using natural methods, with animals grazing on open pastures and being fed on crop residues, grasses, and natural fodder (Ahlawat *et al.*, 2015). Chemical inputs were not used, and the livestock rearing was integrated into farming systems to recycle nutrients back into the soil, a practice aligned with organic principles (Kumaresan *et al.*, 2007). Livestock provided manure for fertilizing crops, while crop residues served as feed for animals. This symbiotic relationship contributed to a closed-loop system that minimized waste generation and maintained soil fertility (Patel *et al.*, 2020). The roots of organic farming and animal husbandry in India can be traced back to the Vedic period (1000–600 BC) (Choudhury *et al.*, 2022). The Vedas, ancient Hindu scriptures (Vrikshayurveda- Science of plants, Krishishastra- Science of agriculture, Mrigayurveda- Animal science), include references to sustainable agricultural practices and the ethical treatment of animals (Patel *et al.*, 2017). Cows were particularly revered, and their well-being was considered essential for a prosperous society. Ayurveda, India's ancient system of medicine, also encompassed veterinary practices. Texts like the "Ashvashastra" and "Hastyayurveda" detailed the care of animals, including the use of herbal remedies and natural treatments (Nene, 2007). These practices laid the foundation for organic livestock rearing by emphasizing over all holistic care involving natural therapies.

During the colonial period, Western agricultural practices began to influence Indian farming. The introduction of chemical fertilizers and pesticides marked a departure from traditional organic methods (Nene, 2017). India faced food security challenges during post-independence period (1947-1960), which led to emergence of the green revolution in the 1960s and 1970s through introduction of high-yielding varieties of crops also had an indirect impact on livestock farming. Improved crop production led to better feed availability for animals, which contributed to increased livestock productivity (Beddington, 2010; Rahman, 2015). The Indian government started implementing

various programs to support commercial livestock farming, including subsidies and incentives for feed production, veterinary services, and infrastructure development. The dairy cooperative movement, particularly through the National Dairy Development Board (NDDB) established in 1965, played a significant role in the commercialization of dairy farming (Archana, 2021). Commercial poultry farming began to expand significantly in the 1970s and 1980s, with the introduction of improved breeds, feed formulations, and management practices. From the 1990s till present, advances in veterinary science, nutrition, and breeding technologies, growing demand for meat, dairy, and poultry products, both domestically and internationally, have further facilitated the growth of commercial animal rearing or, factory farming of livestock (Bhattacharyya *et al.*, 2005).

By the late 20th century, as a response to the green revolution's environmental and health impacts, some Indian farmers and activists started advocating for organic livestock rearing. NGOs, farmer groups, and government initiatives began promoting organic practices, emphasizing on the traditional knowledge and sustainable methods (Bhattacharyya *et al.*, 2005). The Government of India launched the National Program for Organic Production (NPOP) in 2000, which included guidelines for organic livestock farming. These guidelines covered aspects such as organic feed, healthcare, breeding practices, and living conditions for livestock. Organic livestock rearing began to be recognized and certified under NPOP, particularly for farmers who were also practicing organic crop farming. Certification ensured that livestock products labelled as organic met specific standards related to animal welfare and feed (NPOP, 2000). The Paramparagat Krishi Vikas Yojana (PKVY) scheme was launched in 2015, which promoted organic farming practices, including livestock rearing. This initiative encouraged the integration of organic livestock into broader organic farming systems, providing support for farmers to adopt sustainable practices. States like Sikkim, Kerala, and Uttarakhand, which have promoted organic farming, also emphasize organic livestock rearing. For instance, Sikkim's transition to a fully organic state included the promotion of organic livestock rearing practices (Saha, 2016).

The 21st century has witnessed a significant surge in consumer awareness regarding the health and environmental advantages of organic products. This has led to a growing demand for organic dairy, meat, and poultry products. Notably, India's organic livestock products, especially organic dairy, are beginning to gain recognition in international markets. However, this sector is still in its nascent stages of development compared to the more established organic crop farming (Bhattacharyya *et al.*, 2005). This burgeoning recognition has motivated more farmers to embrace organic livestock rearing practices. It's essential to recognize that organic livestock farming in India is more than just an agricultural practice; it is a reflection of the country's rich cultural heritage and traditions (Kumar *et al.*, 2019).

Furthermore, organic livestock farming offers substantial economic benefits, especially for small and marginal farmers, by granting them access to premium markets and creating employment opportunities. From an environmental perspective, it promotes sustainable farming practices that conserve resources, maintain soil fertility, and safeguard biodiversity (Narayanan, 2005). With the escalating demand for organic products and the increasing awareness of sustainable practices, organic animal husbandry holds tremendous promise for India's future. Therefore, the aim of this review is to disseminate the comprehensive knowledge about organic livestock farming practices, benefits, challenges, and innovations. This knowledge aims to educate entrepreneur, farmers, students, researchers, and the general public about the intricacies of organic livestock farming.

India's Potential for Organic Livestock Farming

The Indian subcontinent is home to a diverse range of livestock breeds across different species that are suitable for particular climatic conditions. Further, the Indian breeds are proven to be hardy and disease resistant as compared to the western counter parts (Sarang *et al.*, 2024). The exotic breeds and the crossbreds developed by crossing indicine and exotic breeds are more susceptible to diseases and thus require more veterinary care (Mishra *et al.*, 2017). This intervention leads to a violation of the guidelines required for organic certification. Another opportunity that can be explored with respect to the Indian livestock farming is the small and marginal farmers holds more than 80 percent of animal assets and rear their animals on a minimal external input, only through natural grazing (NITI Ayog, 2018). This rearing pattern closely justifies the organic pattern of rearing. The farmers are required to be made aware of the organic farming potential and the profit that they can get through it. These small and marginalized farmers can be mobilized in a form of union or co-operative on the footsteps of AMUL so that the steps from production to the sale of the product can be streamlined and the profit can reach its rightful owner. A separate veterinary infrastructure and manpower is needed to be developed that is well versed in providing veterinary care

at the standards of organic production so that the standards are not violated (Chander *et al.*, 2011). India has a wealth of traditional knowledge such as traditional herbal-based healthcare, that can be used in all aspects of organic livestock farming. There is little reliance on allopathic medicine, which lowers production costs and gives India a competitive edge over wealthy countries (Maji *et al.*, 2017). In India, organic farming contributed significantly to carbon sequestration in soils, helping mitigate climate change by reducing greenhouse gas emissions. Techniques such as cover cropping and organic mulching protect soil through capturing carbon, lower the carbon footprint and support the preservation of traditional and indigenous crop varieties that are well adapted to local climatic conditions and require fewer external inputs. This conservation of biodiversity is essential for maintaining ecological balance and ensuring food security in the face of climate variability. Overall, organic farming in India exemplifies a holistic approach to agriculture that prioritizes environmental sustainability, fostering healthy ecosystems, minimizing environmental degradation, and promoting sustainable agricultural productivity in the long run (Kaur, 2023).

Current Status of Organic Livestock Farming in India

The majority of small landholders in the Indian agriculture employ organic methods in their farming practices through the use of bio-fertilizers, compost, and traditional farming techniques passed down through generations. However, these farmers and their organic produce are not widely recognized in the global market. This untapped resource has enormous potential for export and revenue generation, as the demand for organic products continues to rise worldwide (Hamadani *et al.*, 2021).

In addition, the traditional livestock rearing system in India utilizes natural pastures for feeding animals and traditional remedies for treating diseases, ensuring that the animals and their produce remain free from artificial inputs. This holistic approach to animal husbandry results in high-quality organic dairy and meat products (Maji & Meena, 2018).

Globally, India ranks first in terms of the total number of organic producers and second in terms of agricultural land under organic farming (APEDA, 2025). The country covers approximately 5.97 M ha area under NPOP certification & PGS-India certification with Madhya Pradesh leading at 1.22M ha, followed by Maharashtra (1.07 M ha) and Rajasthan (0.73 M ha), while among the North Eastern States Sikkim reports the highest area at 0.14 M ha followed by Assam and Meghalaya (PIB, 2025). The total number of organic certified processing units under NPOP in India is 1016, in which Karnataka alone has 134 followed by Gujarat (122) and Maharashtra (113) (PIB, 2024).

The country is able to produce almost 3.6 MMT of certified organic products, including oil seeds, fibre, sugarcane, cereals & millets, cotton, pulses, aromatic & medicinal plants, tea, coffee, fruits, spices, dry fruits, vegetables, processed foods, etc. in 2023-2024. Out of this, India exported approximately 2.61 L MT of organic food, generating a total revenue of USD 494.80 million (APEDA, 2025)

Government Policies and Regulations

The Indian government has implemented several policies to acknowledge the potential advantages of organic farming for sustainable agriculture, conservation, and ecological well-being. Notable among these initiatives is the PKVY, a flagship program launched in 2015 to promote cluster-based organic farming and preserve traditional agricultural practices. Under the PKVY, farmers are organized into clusters and provided with financial assistance and training tailored to their organic farming needs, with a target of 2 L ha by 2020 (Avi & Batra, 2023). Another significant policy is Mission Organic Value Chain Development for North Eastern Region (MOVCDNER), which focuses on the Northeast region and includes support for organic certification, provision of organic inputs such as seeds and planting material, and storage/procurement of bio-fertilizer/organic manure at the field level to ensure timely access to necessary inputs. This initiative also aims to establish market linkages by fostering proactive relationships with aggregators and market participants (Yadav, 2017). The government has also initiated the NPOP scheme to establish standards and procedures for organic production enabling Indian organic products to comply with international norms and access both domestic and global markets (Darjee, 2023). To further promote the benefits of organic farming, the government provides financial assistance through schemes such as the Rashtriya Krishi Vikas Yojana (RKVY) and offers organic input subsidies under various state programs (Vijayan *et al.*, 2023). Additionally, capacity-building programs are in place, reflecting a broader vision of how organic practices can help make Indian agriculture both sustainable and more profitable. These collective efforts represent key policies aimed at advancing the organic farming sector.

The Ministry of Food Processing Industries has launched a Central Sector Scheme called the “Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) aimed at incentivizing Indian brand food producers to upgrade their products to meet international market standards. The total budget for this ambitious project has been set at Rs. 10900 crores. One of the scheme's objectives is to promote small and medium enterprises to adopt free-range poultry farming for the production of organic and naturally produced eggs, poultry meat, and egg products (Wandhe, 2024). To promote organic production and reduce the burden of stray cattle, Chhattisgarh state government launched Godhan Nyay Yojana, under which farmers are encouraged to adopt to organic farming by minimizing pesticides and artificial input use. The government buys manure from the farmers, converts into vermicompost for fodder production, supporting organic milk production, increased farmer profitability and simultaneously reducing the stray cattle burden in the state (Pandey *et al.*, 2023).

In India, the production, packaging, sale, offering for sale, marketing, and distribution of all organic food products are governed by the Food Safety and Standards (Organic Food) Regulations of 2017. These regulations were officially announced on December 29, 2017, and came into effect on July 1, 2018. According to these rules, organic food must adhere to the guidelines set forth by NPOP or PGS. However, small scale organic farmers or producer groups with an annual revenue of up to ₹12 lakhs, are not required to undergo certification through NPOP or PGS. Organic food products falling under these regulations must display the FSSAI organic logo, known as the “Jaivik Bharat logo”, along with either the PGS-Organic or India Organic logo.

India has set an ambitious target to achieve ₹20,000 crore in organic exports within the next three years, driven by a strong push towards sustainable agriculture. This initiative promotes organic farming as a solution to critical issues like water scarcity and excessive pesticide use. To facilitate this growth, several key digital platforms have been launched or revamped. These include the NPOP Portal for streamlined certification, the Organic Promotion Portal for connecting stakeholders and generating trade leads, TraceNet 2.0 for robust traceability, the redesigned APEDA Portal for enhanced user experience, and the revamped AgriXchange Portal for accessing export data and market connections (PIB, 2025a). Additionally, the Jaivik Kheti portal has been established to promote and facilitate the sale of organic products, aiming to connect organic farmers directly with consumers for better pricing. The promotion of value addition, packaging, and marketing of organic products has been undertaken through the organic schemes of PKVY and MOVCDNER (PIB, 2019). Policy and operational changes, such as simplified organic certification for grower groups and derogation provisions for reduced land conversion time, have been implemented to support this vision. The government's strategic focus is to mainstream organic farming, emphasizing packaging, branding, and global marketing to ensure fair prices for farmers. A concerted effort is underway to integrate cooperatives, trade bodies, and private players to build a strong and transparent organic value chain, fostering trust and growth in the sector (PIB, 2025a).

Case Studies of Successful Organic Livestock Production Initiatives

Organic farming plays a crucial role in bolstering disaster resilience in vulnerable regions by promoting sustainable agricultural practices that enhance soil health, biodiversity, and ecosystem stability. Study on the strength and weakness with respect to organic dairy farming in Uttarakhand reported that farmers when offered with proper support and guidance regarding the organic production system they could convert it to profitable enterprise as natural feed and water are in ample amount in the state (Maji & Meena, 2018). In disaster-prone areas such as the Sundarban Biosphere Reserve in India, organic farming has been proven effective in mitigating the impacts of natural disasters such as cyclones and flooding. Organic methods, such as utilizing compost, vermiculture, and bio-pesticides, improve soil structure and fertility, thereby making the land more resistant to erosion and nutrient loss during extreme weather events. Moreover, organic farming encourages greater biodiversity through crop diversification, reducing the risk of complete crop failure in the event of a disaster. By integrating traditional knowledge with modern organic practices, communities can better adapt to changing environmental conditions, ultimately strengthening their overall resilience. For example, in the Sundarbans, organic farming initiatives have not only increased crop yields by 10-12% during the kharif season but have also empowered local communities to sustain their livelihoods in the face of environmental challenges. These practices demonstrate that organic farming is more than just an agricultural technique; it is a comprehensive approach that contributes to the socio-economic and environmental resilience of vulnerable regions. (Chowdhury *et al.*, 2022).

The organic dairy enterprise is a booming sector for entrepreneurs, as the demand for organic dairy products continue to rise steadily. In the Indian context, many dairy enterprises have emerged that focusing exclusively on

the organic production of milk and milk products, such as Akshayakalpa Farms and Foods Pvt. Ltd, an APEDA-certified organic milk brand from Karnataka. The working model of Akshayakalpa is a farmers' participatory model with a network of more than 750 farmers, (Naik & Rajeshwaran, 2024). They provide training to the farmers for conversion of their farm into a certified organic farm, organic fodder production, clean and automated milk production, biogas production from the dairy farm waste and for natural treatment of animals which herbs and shrubs, help them generate investments in the form of low-interest loans and provide a marketing platform for their produce. (Guruprasad *et al.*, 2022). Another such successful enterprise is the Govind Dairy farms, which run through small farmers participatory model providing free housing for its animals, allowing them to exhibit their natural behaviour, resulting in stress-free and organic produce. Govind Dairy provides the farmers with expert services and veterinary care to ensure organic production and the resulting produce is then marketed. (<https://tanyamunshi.com/food/govind-dairy-the-organic-milk-farm/>).

Practicing only a single enterprise limits farmers' income sources, especially when their animals enter an unproductive phase. To overcome this, multiple and diverse income streams such as dairy, poultry, piggery, and fishery alongside traditional crop farming can be a boon for small farmers. A successful bio-diversified natural farming model has been established by Aman Lakhara in Bareilly, U.P., under the guidance of Krishi Vigyan Kendra, IVRI, Bareilly. On his farm, he rears poultry, goats, pigs, and buffaloes, along with fisheries and beekeeping in a traditional, low-input approach that makes the farm profitable. He also grows cereals, fruits, and vegetables in a traditional, organic manner that maintains the farm's organic integrity (Singh *et al.*, 2018).

Opportunities in Organic Livestock Farming

1. Economic Opportunities

A key driver of the organic livestock farming movement is the rising consumer demand for organic meat, eggs, and dairy products as increasing awareness of the health and environmental risks of conventionally produced animal products fuels market growth and create lucrative opportunities for farmers and producers who can supply this organic alternative. (Mie *et al.*, 2017). Moreover, the implementation of proper farm management strategies, as outlined in the literature, can help organic farmers optimize their operations, improve cost-effectiveness, and ultimately increase their profitability.

2. Sustainability and Environmental Benefits

Organic animal husbandry provides significant environmental advantages as avoiding synthetic pesticides, fertilizers, and other harmful chemicals helps mitigate the environmental degradation associated with conventional practices, including soil depletion, water pollution, and greenhouse gas emissions (Rani *et al.*, 2023). Furthermore, the diversification of organic farming systems emphasizing natural pest control and balanced inputs, enhances the overall resilience and sustainability of production, making it less vulnerable to external shocks (Seufert *et al.*, 2019) and the adopting humane treatment of animals with sustainable practices such as crop rotation and composting, improves soil health and ecosystem balance, indirectly contributed to the quality and safety of animal products (Lund, 2006).

3. Improved Animal Health and Welfare

Organic farming practices focus on preventive health care and welfare by providing natural living conditions, appropriate feeding and avoiding harmful substances, thereby ensuring livestock health and safety and ultimately producing higher-quality, safer, and more ethical animal products for consumers (Sutherland *et al.*, 2013). Organic standards restrict the routine use of antibiotics, reducing the risk of antibiotic resistance, promotes the selection of robust, disease resistant animals for breeding and provide livestock with access to pasture, resulting in lower stress levels and better overall health (Sundrum, 2001).

4. Higher Nutritional Quality of Animal Products

As the demand for organic and sustainable foods continues to rise, the opportunities presented by organic animal husbandry are poised to become increasingly significant, offering a promising path forward for farmers, producers, and consumers alike (Röös *et al.*, 2018). Organic animal husbandry practices lead to safer food products by natural

and sustainable practices, minimizing exposure to harmful substances and forbidding the use of growth hormones and GMOs (Prache *et al.*, 2022). Organic animal products, such as meat, milk, and eggs, are often found to have different nutritional profiles compared to conventional products. Organic milk and meat tend to have higher levels of omega-3 fatty acids, antioxidants like Vitamin E and beta-carotene and minimal levels synthetic chemicals residues (Vigar *et al.*, 2019). These differences can be attributed to the animals' diet and lifestyle.

The evidence suggests that organic animal products can provide essential nutrients and contribute positively to human health while promoting a more humane and sustainable approach to farming (Mie *et al.*, 2017).

5. Technological Advancements

Organic animal husbandry focuses on raising animals in ways that adhere to organic farming principles, emphasizing natural processes, welfare, and sustainability. Technological advancements in this field have improved animal welfare, productivity, and environmental impact. Below is a comprehensive overview of these advancements, along with references to key studies and sources.

- a) Precision livestock farming (PLF):** PLF involves using technology to monitor and manage livestock health, welfare, and productivity. Technologies like wearable sensors (monitor vital signs, activity levels, and feeding patterns), smart feeding systems (optimize feed efficiency and nutritional intake), automated health monitoring (early detection of diseases through data analytics and machine learning), cameras, and GPS tracking help farmers make data-driven decisions (Rajak *et al.*, 2023).
- b) Genomic selection and breeding:** Advances in genetic technology have allowed for the selection of traits that enhance health, productivity, and adaptability to organic farming systems. These includes genomic testing (identifying animals with desirable genetic traits), and sustainable breeding programs which is focused on disease resistance, longevity, and productivity without compromising welfare (Henryon *et al.*, 2014).
- c) Improved housing and environmental control:** Innovations in animal housing have led to better living conditions, reducing stress and improving overall animal welfare. For example, natural ventilation systems for reduced heat stress and respiratory issues, eco-friendly bedding materials for improved hygiene and comfort, and automated cleaning systems to maintain cleanliness and reduce labour (Fiorilla *et al.*, 2024).
- d) Alternative Therapies and Health Management:** Organic animal husbandry restricts the use of synthetic chemicals, leading to the adoption of alternative therapies and natural remedies like herbal remedies and homeopathy), probiotics and prebiotics, and vaccination programs that is developed specifically for organic systems (Kijlstra & Eijck, 2006).
- e) Sustainable feed and nutrition:** Focus on organic, non-genetically modified organisms feed that meets nutritional needs without relying on synthetic supplements. For example, organic feed crops (development of high-yield, resilient organic feed crops), precision nutrition (tailoring diets to individual animal needs using data analytics), etc.

The technological advancements in organic animal husbandry with traditional practices, farmers can achieve a balanced and sustainable farming system. These innovations not only contribute to the quality of animal products but also support the overall well-being of the animals and the environment.

Challenges in Organic Livestock Farming

Challenges to organic livestock farming in India are multifaceted. Firstly, many farmers lack awareness about organic livestock farming practices, and traditional methods continue to dominate. Understanding of organic standards and certification processes is often low among farmers (Gamage *et al.*, 2023). Moreover, the high input costs pose a significant barrier to entry into organic system. Organic feed and healthcare inputs can be expensive compared to conventional options. This is due to the requirement for non-GMO, pesticide-free fodder, which is often not easily available nor affordable (Thakur *et al.*, 2022). The process of obtaining organic certification in India is lengthy and costly, which discourage small-scale farmers from transitioning to organic methods. Many farmers lack the resources to navigate certification systems or comply with stringent organic standards. Additionally, the

demand for organic animal products, such as meat, milk, and eggs, is still relatively low in India compared to other markets. This is partly due to consumer unawareness of the benefits of organic livestock products and reluctance to pay premium prices (Roy *et al.*, 2023). Furthermore, organic livestock farming discourages the use of synthetic chemicals and antibiotics, making disease management challenging. Farmers must rely on natural remedies, which are not always as effective, thus increasing the risk of disease outbreaks (Coffey & Baier, 2012). Organic livestock farming also demands a continuous supply of organic feed and fodder, which is often unavailable in sufficient quantities resulting in supply shortages and high costs. Moreover, there is insufficient policy support and infrastructure for organic livestock farming in India. Government subsidies and schemes are often focused on crop farming, leaving livestock farmers with fewer resources to transition to organic methods. There is also limited research in the field of organic livestock farming in India, and extension services are inadequate in educating and assisting farmers in adopting organic methods. To address these challenges, it is essential to increase awareness and education about organic livestock farming. Government and private sector initiatives can focus on educating farmers about organic livestock farming practices, benefits, and standards. Workshops, training programs, and extension services need to be made more accessible to rural farmers. Additionally, offering subsidies on organic feed, fodder, and certification processes can help reduce the financial burden on farmers. Easy credit facilities for small-scale farmers would also encourage the adoption of organic livestock farming. Investment in research to develop effective natural treatments for livestock diseases, organic feed solutions, and management practices specific to Indian conditions is crucial. Collaborative research between universities, agricultural institutions, and farmers can help drive innovation. Simplifying the organic certification process and reducing associated costs can encourage more farmers to participate. Providing certification at the group or community level may be a way to reduce costs for small farmers. Strengthening organic livestock product supply chains through cooperatives and farmer organizations can help connect farmers with larger markets. Building cold storage and transport infrastructure can also reduce post-harvest losses and ensure better market access. Increasing consumer awareness through campaigns about the benefits of organic livestock products could help create demand. Retailers and government bodies can collaborate to promote organic labels. The government can introduce policies specifically designed to support organic livestock farming, including incentives for feed producers to grow organic crops. Promoting integrated organic crop-livestock farming systems can help optimize resource use, such as manure for soil fertility, while reducing costs. This synergy can make organic livestock farming more sustainable. By implementing these targeted strategies, organic livestock farming in India can become more sustainable and profitable, contributing to rural livelihoods and environmental conservation.

Conclusion

India boasts a remarkable livestock diversity, holding the world's largest population with 515 million animals according to the 2019 census. Traditionally, livestock rearing has been predominantly extensive, and even today, a significant portion of small ruminant's graze in unorganized, extensive systems, relying naturally on pasture. Similarly, many dairy animals are raised on pasture-based systems. While these traditional practices align with organic principles, they often lack formal certification. Furthermore, unique animal populations like Yak and Pig in Northeast India, and Camel in Western India, are typically reared naturally or in backyard systems with minimal chemical input.

Organic livestock farming in India is one such practice that fills the gap between environment sustainability and rural economic growth. In fact, organic livestock farming forms a rich cultural heritage within the Indian agricultural space and is also imbued with these principles of treating animals ethically and utilizing natural resources abundantly while ensuring the sustainability of the farming practices. Though demand for organic meat, dairy, and poultry products is on the rise, primarily due to increasing awareness of health as well as environmental benefits, organic livestock farming in India is yet to take its baby steps and face several critical challenges.

The future of organic livestock farming in India would largely depend on several key developments. It will increase farmers' education and awareness, which could also be done with better access to training programs, workshops, and extension services on organic methods, processes involved for certification, and access to markets. Technological advances offer ample scope for much-improved productivity, animal welfare, and sustainability. Data-driven tools like wearable sensors, smart feeding systems, and automated health monitoring can be a part of precision livestock farming that may also be able to deliver better standards of better farm operations. Some of the short-term drivers include providing new high-health and disease-resistant breeds or lines for organic farming systems based on genetic gains, including genomic selection and breeding programs; selecting animals that are

better suited to organic farming systems, focusing on disease resistance and adaptability, without compromising animal welfare; developing sustainable feed solutions and organic health management practices such as natural remedies and probiotics to maintain animal health and reduce dependence on synthetic inputs.

Expansion of markets is another important aspect in the growth of organic livestock farming. The development of supply chains, market access, and greater linkages between the farmer and the consumer will ensure a growing demand for organic animal products. Retailers, government institutions, and marketing organizations can implement joint efforts to further promote the organic label and consumer education about the value addition of livestock products, thereby stabilizing a strong national and international market for these products. With this, the future of organic livestock farming in India appears bright, but their success story would depend upon overcoming the existing barriers and embracing technological innovations, policy reforms, and market development. Organic livestock farming can become a notable contributor to the objectives of sustainable agriculture, environmental conservation, and better rural livelihood by providing healthier products to consumers while retorting the balance between traditional knowledge and modern practices.

Contribution by Authors

All the authors contributed equally to writing the manuscript. The final manuscript was read by all authors and consented to publication.

Conflict of Interests

There is no conflict of interest.

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References

1. Ahlawat, S. P. S., Kumar, P., Shrivastava, K., & Sahoo, N. R. (2015). Indigenous livestock resources in a changing climate: Indian perspective. In Malik, P. K., Bhatta, R., Takahashi, J., Kohn, R. A., & Prasad, C. S (Eds). *Livestock production & climate change* (pp.214–228). CAB International. <https://doi.org/10.1079/9781780644325.0214>
2. Akerfeldt, M. P., Gunnarsson, S., Bernes, G., & Blanco-Penedo, I. (2021). Health and welfare in organic livestock production systems—a systematic mapping of current knowledge. *Organic Agriculture*, 11, 105–132. <https://doi.org/10.1007/s13165-020-00334-y>
3. APEDA. (2025). *Organic Products*. Ministry of Commerce & Industry, Government of India. <https://apeda.gov.in/OrganicProducts>.
4. Archana, N. (2021). Rural development and milk cooperatives in India. *Asian Journal of Research on Social Science & Humanities*, 11(11), 654-659. <https://doi.org/10.5958/2249-7315.2021.00208.2>
5. Avi, A., & Batra, V. (2023). Organic farming in India: evolution, current status and policy perspectives. *Space and Cult, India*, 11(2), 18-34. <https://doi.org/10.20896/saci.v11i2.1328>.
6. Beddington, J. (2010). Food security: contributions from science to a new and greener revolution. *Philosophical transactions of the Royal Society of London, Series B, Biological sciences*, 365(1537), 61–71. <https://doi.org/10.1098/rstb.2009.0201>
7. Bhattacharyya, P., & Chakraborty, G. (2005). Current Status of Organic Farming in India and Other Countries. *Indian Journal of Fertilizers*, 1(9), 111-123.
8. Chander, M., Bodapati, S., Mukherjee, R., & Kumar, S. (2011). Organic livestock production: an emerging opportunity with new challenges for producers in tropical countries. *Revue Scientifique et Technique de l'OIE*, 30(3), 569-583. <https://doi.org/10.20506/rst.30.3.2092>
9. Choudhury, N. R. (2022). A historical study of agriculture system in vedic India. *The Journal of Archaeology and Heritage Studies*, 9(II), 61-67.
10. Chowdhury, A., Iyer, A. S., Bhattacharyya, S., Khan, S. U., & Naz, A. (2022). Organic farming in the tropical, disaster-prone coasts: Interventions, major challenges and a success story from Sundarban Biosphere Reserve, India. *IOP Conference Series Earth and Environmental Science*, 1084(1), 012052.

- <https://doi.org/10.1088/1755-1315/1084/1/012052>
11. Coffey, L., & Baier, A. H. (2012). Guide for organic livestock producers. Butte, M (Eds.), *National Centre for Appropriate Technology ATTRA Sustainable Agriculture*. <https://www.ams.usda.gov/sites/default/files/media/GuideForOrganicLivestockProducers.pdf>
 12. Darjee, D. K. (2023). An Exploratory Study on the National Programme for Organic Production of India. *International Journal of Creative Research Thoughts (IJCRT)*, 11(8), 119-127.
 13. Fiorilla, E., Ozella, L., Sirri, F., Zampiga, M., Piscitelli, R., Tarantola, M., Ponzio, P., & Mugnai, C. (2024). Effects of housing systems on behaviour and welfare of autochthonous laying hens and a commercial hybrid. *Applied Animal Behaviour Science*, 274, 106247. <https://doi.org/10.1016/j.applanim.2024.106247>
 14. Gamage, A., Gangahagedara, R., Gamage, J., Jayasinghe, N., Kodikara, N., Suraweera, P., & Merah, O. (2023). Role of organic farming for achieving sustainability in agriculture. *Farming System*, 1(1), 100005. <https://doi.org/10.1016/j.farsys.2023.100005>
 15. Guruprasad, L. S., Ashwini, T. K., & Bhat, P. K. (2022). Akshayakalpa farms—a case of rural innovation. *Emerald Emerging Markets Case Studies*, 12(2), 1-35. <https://doi.org/10.1108/EEMCS-05-2021-0131>
 16. Hamadani, H., Rashid, S. M., Parrah, J. D., Khan, A. A., Dar, K. A., Ganie, A. A., Gazal, A., Dar, R. A., & Ali, A. (2021). Traditional farming practices and its consequences. In Dar, G. H., Bhat, R. A., Mehmood, M. A., & Hakeem, K. R. (Eds.), *Microbiota and Biofertilizers, Vol 2: Ecofriendly Tools for Reclamation of Degraded Soil Environments* (pp. 119-128). Springer, Cham. https://doi.org/10.1007/978-3-030-61010-4_6
 17. Henryon, M., Berg, P., & Sorensen, A. C. (2014). Animal-breeding schemes using genomic information need breeding plans designed to maximize long-term genetic gains. *Livestock Science*, 166, 38-47. <https://doi.org/10.1016/j.livsci.2014.06.016>
 18. IFOAM - Organics International. (2020). The IFOAM Norms for Organic Production and Processing. Bonn, Germany. <https://ifoam.bio/our-work/how/standards-certification/organic-guarantee-system/ifoam-norms>
 19. Kaswan, S., Kaswan, V., Kumar, R. (2012). Organic farming as a basis for sustainable agriculture- A Review. *Agricultural Reviews*, 33(1), 27-36.
 20. Kaur, H. (2023). Challenges and Prospects for Organic Farming: A Case Study from India. *Gyan Management*, 17(2), 75-79. <https://doi.org/10.48165/gmj.2022.17.2.1>
 21. Kayesh, E., Gomasta, J., Bilkish, N., Koly, K., & Mallick, S. (2023). A Holistic Approach of Organic Farming in Improving the Productivity and Quality of Horticultural Crops. In Hakeem, K. R. (Eds.), *Organic Fertilizers - New Advances and Applications* (pp.35), IntechOpen. <https://doi.org/10.5772/intechopen.1001589>
 22. Kijlstra, A., & Eijck, I. A. J. M. (2006). Animal health in organic livestock production systems: a review. *NJAS-Wageningen Journal of Life Sciences*, 54(1), 77-94. [https://doi.org/10.1016/S1573-5214\(06\)80005-9](https://doi.org/10.1016/S1573-5214(06)80005-9)
 23. Kumar, D., & Jain, R. (2019). The role of traditional knowledge and practices in sustainable animal husbandry. *Journal of Ethnobiology and Ethnomedicine*, 15(1), 54.
 24. Kumaresan, A., Bujarbaruah, K. M., Pathak, K. A., Chhetri, B., Das, S. K., Das, A., & Ahmed, S. K. (2007). Performance of pigs reared under traditional tribal low input production system and chemical composition of non-conventional tropical plants used as pig feed. *Livestock Science*, 10(2-3), 294-298. <https://doi.org/10.1016/j.livsci.2006.12.007>
 25. Lund, V. (2006). Natural living—a precondition for animal welfare in organic farming. *Livestock Science*, 100(2-3), 71-83. <https://doi.org/10.1016/j.livprodsci.2005.08.005>
 26. Maji, S., Meena, B. S. (2018). Organic dairy farming in Uttarakhand: an analysis of prospect from farmer's perspective. *Indian Journal of Dairy Science*, 71(3), 306-312.
 27. Maji, S., Meena, B. S., Paul, P., & Rudroju, V. (2017). Prospect of organic dairy farming in India: A review. *Asian Journal of Dairy & Food Research*, 36(1), 1-8. <https://doi.org/10.18805/ajdfr.v36i01.7452>
 28. Mie, A., Andersen, H. R., Gunnarsson, S., Kahl, J., Kesse-Guyot, E., Rembiałkowska, E., Quaglio, G., & Grandjean, P. (2017). Human health implications of organic food and organic agriculture: a comprehensive review. *Environmental Health*, 16(1), 111. <https://doi.org/10.1186/s12940-017-0315-4>
 29. Mishra, S. P., Mishra, C., & Sahoo, S. S. (2017). Crossbreeding experiments in India—Lessons to learn and voyage to future. *Pharma Innovation*, 6(10), 32-35.
 30. Naik, G., & Rajeshwaran, S. (2024). Akshayakalpa, Management for professionals. In Kolavalli, S., Naik, G., Tsamenyi, M., & Babu, S. (Eds.), *Managing Agricultural Enterprises and Developing Agricultural Value Chains: Cases on Agribusinesses* (pp. 217-223). Springer Nature Singapore. https://doi.org/10.1007/978-981-97-5850-0_19
 31. Narayanan, S. (2005). Organic farming in India: relevance, problems and constraints. NABARD Occasional Paper No. 38., Mumbai, NABARD.
 32. Nene, Y. L. (2007). Glimpses of the Agricultural Heritage of India. *Asian Agri-History Foundation*, India, pp.

902.

33. Nene, Y. L. (2017). A critical discussion on the methods currently recommended to support organic crop farming in India. *Asian Agri-History*, 21(3), 267-285.
34. Niti Ayog. (2018). *Demand & Supply Projections Towards 2033. Crops, Livestock, Fisheries and Agricultural Inputs. The Working Group Report*, Government of India.
35. NPOP. (2000). National Programme for Organic Production (NPOP). Ministry of Agriculture and Farmers Welfare, Government of India.
36. Pandey, S., Patel, M., Wasnik, S. B., & Parte, J. (2023). Resource Use Efficiency of Vermicompost Production under Gothan and Godhan Nyay Scheme in Chhattisgarh, India. *Asian Journal of Agricultural Extension Economics & Sociology*, 41(9), 553-557. <https://doi.org/10.9734/AJAEES/2023/v41i92075>
37. Patel, S. J., Kumar, U., Chaudhari, R. P., & Darji, S. S. (2017). Organic farming in animal husbandry practices. *Indian Journal of Hill Farming*, 30 (Special issue), 55–60. <https://doi.org/10.56678/>
38. Patel, S. K., Sharma, A., & Singh, G. S. (2020). Traditional agricultural practices in India: an approach for environmental sustainability and food security. *Energy Ecology & Environment*, 5(4), 253–271. <https://doi.org/10.1007/s40974-020-00158-2>
39. PIB. (2019). Marketing of agricultural products with organic tag. Ministry of Agriculture & Farmers Welfare, Government of India. <https://pib.gov.in/PressReleasePage.aspx?PRID=1580030>
40. PIB. (2024). Export of organic products. Ministry of Food Processing Industries. Government of India. <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2079635>
41. PIB. (2025a). Union Minister of Commerce & Industry Shri Piyush Goyal launches 8th edition of National Programme for Organic Production, Ministry of commerce and Industry, Government of India. <https://pib.gov.in/PressReleasePage.aspx?PRID=2091601>
42. PIB. (2025b). Promotion of organic farming. Ministry of Agriculture and Farmers Welfare, Government of India. <https://pib.gov.in/PressReleaseIframePage.aspx?>
43. Prache, S., Lebret, B., Baéza, E., Martin, B., Gautron, J., Feidt, C., Médale, F., Corraze, G., Raulet, M., Lefèvre, F., & Verrez-Bagnis, V. (2022). Quality and authentication of organic animal products in Europe. *Animal*, 16(1), 100405. <https://doi.org/10.1016/j.animal.2021.100405>
44. Rahman, S. (2015). Green Revolution in India: Environmental Degradation and Impact on Livestock. *Asian Journal of Water, Environment and Pollution*, 12(1), 75-80.
45. Rajak, P., Ganguly, A., Adhikary, S., & Bhattacharya, S. (2023). Internet of Things and smart sensors in agriculture: Scopes and challenges. *Journal of Agriculture and Food Research*, 14, 100776. <https://doi.org/10.1016/j.jafr.2023.100776>
46. Rani, M., Kaushik, P., Bhayana, S., & Kapoor, S. (2023). Impact of organic farming on soil health and nutritional quality of crops. *Journal of Saudi Society of Agricultural Sciences*, 22(8), 560-569. <https://doi.org/10.1016/j.jssas.2023.07.002>
47. Reeve, J. R., Hoagland, L. A., Villalba, J. J., Carr, P. M., Atucha, A., Cambardella, C., Davis, D. R., & Delate, K. (2016). Organic Farming, Soil Health, and Food Quality: Considering Possible Links. In Sparks, D. L (Eds.). *Advances in Agronomy*, 137, 319-367, Academic Press.
48. Rööß, E., Mie, A., Wivstad, M., Salomon, E., Johansson, B., Gunnarsson, S., Wallenbeck, A., Hoffmann, R., Nilsson, U., Sundberg, C., & Watson, C. A. (2018). Risks and opportunities of increasing yields in organic farming. A review. *Agronomy and Sustainable Development*, 38(14), 1-21. <https://doi.org/10.1007/s13593-018-0489-3>
49. Roy, A., Ghosh, A., & Vashisht, D. (2023). The consumer perception and purchasing attitude towards organic food: A critical review. *Nutrition & Food Science*, 53(3), 578-599. <https://doi.org/10.1108/NFS-04-2022-0130>
50. Saha, B. (2016). Sikkim's Journey to Become a Fully Organic State. *Economic & Political Weekly*, 51(26-27).
51. Saini, K. P. S., Roy, B., Goutam, V. N., Thakur, D., Yadav, D. S., & Parihar, S. S. (2018). Organic livestock farming. *Journal of Entomology and Zoological Studies*, 6(2), 199-207.
52. Sanders, J., Brinkmann, J., Chmelikova, L., Ebertseder, F., Freibauer, A., Gottwald, F., Haub, A., Hauschild, M., Hoppe, J., Hülsbergen, K., Jung, R., Kusche, D., Levin, K., March, S., Schmidtke, K., Stein-Bachinger, K., Treu, H., Weckenbrock, P., Wiesinger, K., Gattinger, A., & Jurgen, H. (2025). Benefits of organic agriculture for environment and animal welfare in temperate climates. *Organic Agriculture*, 15, 213-231. <https://doi.org/10.1007/s13165-025-00493-w>
53. Sarang, S. K., Sreekumar, D., & Sejian, V. (2024). Indigenous cattle biodiversity in India: Adaptation and conservation. *Reproduction and Breeding*, 4(4), 254-266. <https://doi.org/10.1016/j.repbre.2024.09.001>

54. Seufert, V., Mehrabi, Z., Gabriel, D., & Benton, T. G. (2019). Current and potential contributions of organic agriculture to diversification of the food production system. In *Agroecosystem Diversity - Reconciling Contemporary Agriculture and Environmental Quality* (pp.435-452), Elsevier, Academic Press. <https://doi.org/10.1016/B978-0-12-811050-8.00028-5>
55. Singh, B. P., Khode, N., & Singh, R. (2018). Bio-diversified integrated natural farming – a success story. *Indian Farming*, 68(7).
56. Sundrum, A. (2001). Organic livestock farming: a critical review. *Livestock Production Science*, 67(3), 207-215. [https://doi.org/10.1016/S0301-6226\(00\)00188-3](https://doi.org/10.1016/S0301-6226(00)00188-3)
57. Sutherland, M. A., Webster, J., & Sutherland, I. (2013). Animal health and welfare issues facing organic production systems. *Animals*, 3(4), 1021-1035. <https://doi.org/10.3390/ani3041021>
58. Thakur, N., Nigam, M., Tewary, R., Rajvanshi, K., Kumar, M., Shukla, S. K., Mahmoud, G. A. E., & Gupta, S. (2022). Drivers for the behavioral receptiveness and non-receptiveness of farmers towards organic cultivation system. *Journal of King Saud University Science*, 34(5), 102107. <https://doi.org/10.1016/j.jksus.2022.102107>
59. Vigar, V., Myers, S., Oliver, C., Arellano, J., Robinson, S., & Leifert, C. (2019). A systematic review of organic versus conventional food consumption: is there a measurable benefit on human health? *Nutrients*, 12(1), 7. <https://doi.org/10.3390/nu12010007>.
60. Vijayan, B., Nain, M. S., Singh, R., Kumbhare, N. V., & Kademani, S. B. (2023). Knowledge test for extension personnel on Rashtriya Krishi Vikas Yojana. *Indian Journal of Extension Education*, 59(1), 131-134. <https://doi.org/10.48165>
61. Wandhe, P. (2024). An overview on production linked incentive (PLI) scheme by the Government of India. Available at SSRN 4693578. <http://dx.doi.org/10.2139/ssrn.4693578>
62. Wiseman, N., Moebis, S., Mwalea, M., & Zuwarimwea, J. (2022). The role of support organisations in promoting organic farming innovations and sustainability. *Malaysian Journal of Sustainable Agriculture*, 6(1), 44-50. <http://doi.org/10.26480/mjsa.01.2022.44.50>
63. Yadav, M. (2017). Towards a healthier nation: organic farming and government policies in India. *International Journal of Advanced Research and Development*, 2(5), 153-159.
