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Organic livestock farming benefits, principles, and challenges in India- A review

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Abstract
The livestock sector plays a significant role in the welfare of India's economy the use of veterinary medications and the creation of synthetic materials in conventional animal farming is continuously posing a threat to human health. And the main characteristics of organic livestock production in India utilizing natural breeding practices, reducing stress, preventing disease, gradually ceasing the use of artificial allopathic veterinary medications, and maintaining animal health and well-being are all goals of organic livestock management. the main objectives of this study are to know the characteristics of organic livestock in India, & to know the opportunities for acceptance by organic livestock farming**,** and understand the factors influencing organic livestock farming. the challenges of organic livestock farming in India a variety of organic products are already produced in developing nations, and many of them are doing well. though, the majority of them frequently deal with a variety of limitations, such as opportunities for organic livestock farming in accepted by consumers the majority of people prefer organic food because they claim it is tastier and better for the environment as well as for themselves. customers are willing to pay more for organic goods. a further justification for organic goods.

Keywords: farming benefits, principles, livestock

Introduction

The use of veterinary medications and the creation of synthetic materials in conventional animal farming is continuously posing a threat to human health. Organic livestock farming is one of several farming systems that are close to nature and ethical. The production of organic cattle is a land-based enterprise. Organic cattle production must, in theory, have a tight relationship with the land in order to prevent environmental degradation, especially to natural sources like the soil and water.

Organic livestock production demonstrates that it can preserve the health and welfare of the animals. But also playing a significant part in delivering advantages for consumer health, producer profit, and environmental sustainability. Animals that have been certified organic are often ready by grazing on pastures. The food is entirely organic, grown, and prepared without the use of genetic alteration, and antibiotics and synthetic hormones are only occasionally and sparingly permitted.

With the ensuing rise of the market for organic livestock products, demand for organic livestock farming is skyrocketing. The export of organic animal products by developing nations like Brazil and Argentina opens up welcome opportunities for other developing nations like India. The developing nations face numerous obstacles to overcome in order to enhance exports of products from organic livestock production and build robust domestic markets. Due to a greater emphasis on sustainability, there is a larger need for and scope for organic livestock production in the current global environment. Despite its advantages, organic livestock farming raises a number of controversial issues that require additional study and attention, including the spread of disease organisms, the use of outdated medications, and management.

Historical Development of Organic Livestock Farming

Livestock has historically been the mainstay of organic farming systems. The typical organic farms of Great Britain, Continental Europe, and North America linked livestock production with the growth of both foods and feed crops throughout the formative years of the organic livestock movements (the 1920s through the 1950s).

Manure, one of nature's best fertilizers and an effective way to recycle nutrients throughout a crop's rotation, was provided by livestock. Since forage legumes and sod-forming grasses are among the greatest feeds for ruminant livestock, increasing organic livestock farming alongside food crops, expands rotation, and these soil-building crops physically become part of long sustainable cropping sequences. In these systems, during years of low pricing, cattle might be fed cull vegetables, crops that were weather-demanded, crop wastes, "alternative" cereals, and forages and grains from cash crops.

Traditional agricultural practices in rural areas all over the world are where organic agriculture got its start. Farmers taught the next generation how to use effective techniques. Organization. When farmers and consumers start to worry that the number of chemicals used in crop and animal production may have a negative impact on human health and the environment in the 1960s, organic agriculture starts to become more widely visible. Since then, it has grown into a more unified and well-organized movement, and it is currently the food scoter with the fastest global growth.

Objectives of the Study

1. To know the performance of livestock faming in India.
2. To evaluate the benefits of organic livestock farming in the current circumstances.

Methodology

The present paper is based on extensive purely of secondary data from various published research articles, proceedings of conferences, annual reports and data published by Department of Animal Husbandry Dairying & Fisheries (DAHDF) from time to time. were also used as a source of information. Basic Animal Husbandry Statistics (2014) served as a major source of information. Report of National Accounts Division published by Ministry of Statistics and Programme Implementation and Annual Report (2011-12) of Ministry of Agriculture, Govt. of India were reviewed for the present compilation

Characteristics of organic livestock production in India

Utilizing natural breeding practices, reducing stress, preventing disease, gradually ceasing the use of artificial allopathic veterinary medications, and maintaining animal health and well-being are all goals of organic livestock management**.**

Breeds and Breedings

There are several different organic farming businesses. Some farms place a strong emphasis on scale economies and maximizing productivity per animal or per hectare. Other farms concentrate on things like product quality, independence, direct marketing, or niche markets. These various agricultural styles might require livestock breeds with various traits. Currently, organic farmers all over the world raise livestock under conditions where breed selection is based on knowledge from conventional production systems. These animals couldn't be raised in an organic, low-input agricultural system in an effective manner**.**

Animals that are genetically adapted to particular or extreme conditions will be more productive and cost less to produce. Additionally, choosing breeds that are compatible with the local environment will protect the health and welfare of the animals. Production in intensive systems is linked to the adoption of exotic livestock breeds, high-energy concentrate feeding, routine, prophylactic veterinary care, and these practices. Breeds of livestock are created specifically for use in these conditions. A system of organic forage-bred animals may require particular breeds. For instance, highly productive dairy cows may experience physiological issues in organic settings since they require concentration**.**

Feeds and Feedings

More than 50% of the feed should come from farms or other local sources; 100% of the feed should be physically grown; there should be enough clean, drinkable drinking water; and sufficient green fodder.

It is forbidden to use artificial growth promoters, appetizers, preservatives, coloring agents, amino acids, emulsifiers, urea, etc.

Hosing

Animals shouldn't be imprisoned or tethered inside structures. Animals need ample space to graze. Housing must permit enough movement. The freshest air and sunlight possible should be offered. Should be approached in flocks or herds of the proper size. Dry litter must be utilized as bedding. Group drafting is scheduled. An outside area that is at least 75% of the entrance area must complement the internal space.

Disease Prevention

Animals shouldn't be confined or chained up inside structures and breeds should be chosen to avoid certain diseases. Compared to alien breeds, native breeds are more resistant to the majority of diseases. Animals should be raised in a way that encourages strong resistance to infections and illnesses. The capacity to find high-quality food outdoors enhances the body's immune system. Ample space allowance reduces congestion and the health issues that come with it. When diseases cannot be controlled by manageable mental strategies, vaccinations should be utilized.

Treatment

Avoid relying solely on a routine or preventative veterinary medication use. It is important to promote the use of herbal remedies, homeopathy, ayurvedic medicine, and acupuncture as non-allopathic treatments. In an emergency, conventional veterinary medications are permitted. The withholding time for cattle products should be double the legally required length if it is employed.

Challenges of organic livestock farming in India

Low Productivity

India has the biggest livestock population and the highest milk production in the world, but the productivity of ruminants in particular has been dreadfully low, turning this priceless resource of the underprivileged into a liability. Large ruminants are kept by more than 60% of rural households, primarily for milk production and sporadically for bullock power. The average milk yield, however, is noticeably low.

Table 1: Average yield per animal during 2019-20 (KG/DAY)

Exotic Cows	Crossbred Cows	Indigenous Cows	Non-Descript Cows	Indigenous Buffaloes	Non-Descript Buffalo	Goat
11.67	7.85	3.85	2.50	6.34	4.35	0.45

High economic losses due to animal diseases

Animal diseases place a significant financial burden on farmers. The susceptibility of these cattle to different diseases, particularly exotic diseases, has grown with the improvement in livestock quality achieved by cross-breeding programs. Due to different animal diseases, there are ongoing financial losses due to insufficient vaccination coverage. Estimating losses caused by various diseases is challenging because it is challenging to record all diseases everywhere. According to estimates of direct economic losses based on reported diseases, the average annual losses from Hemorrhagic Sepsis (HS), Foot and Mouth Disease (FMD), Brucellosis, Paste des Petits Ruminants (PPR), and Classical Swine Fever were Rs. 5255 crores (2014), Rs. 20000 crores (2016), Rs. 20400 crores (2015), and Rs. 2417 crores in 2014, 2016, and 2015, respectively (2016),

Inadequate infrastructure and human resources for support services

India's cattle industry is hampered by inadequate facilities and labor. There were 65242 veterinary institutions as of March 31, 2017. In order to ensure good veterinary health care, the National Commission on Agriculture (NCA)-1976 recommended that one veterinary institution be given for

every 5,000 cattle units (one cattle unit equals one cow, one buffalo, ten sheep, ten goats, five piglets, and one hundred chickens).

In a similar vein, the Veterinary Council of India (VCI) has suggested that in order to effectively provide veterinary services, there should be one veterinarian for every 5000 cattle. There are reportedly 67651 veterinarians in India, but the VCI estimates that they need between 1.1 and 1.2 lakh (Damodaran, H. 2015). Poor and insufficient veterinary services were provided to the farmers as a result of these woefully insufficient human resources. Since the 1970s, India has embraced artificial insemination (AI) technology to improve the breed of cattle and, consequently, milk output. However, throughout the past 50 years, a number of such limitations have prevented the average conception rate through artificial insemination from exceeding 30 to 40 percent at the field level, and crossbred cows' milk output has not contributed much to overall milk production.

Shortage of feed and fodder

India is home to roughly 17 percent of the world's people and 10.70 percent of the world's livestock despite having just 2.29 percent of the world's land area (more than 535.82 million heads) putting extreme strain on available land, water, and resources. There are currently only 5 percent of its arable land is dedicated to growing fodder. area covered by year-round pastures just 3.30 percent of the entire area is used for grazing, and this percentage has been dropping. steadily. Crop wastes are a significant resource among others, and these feeds More than half of the demand for the cattle sector is being met by resources in the country. Given current livestock productivity and production, the livestock industry is significant lack of grain and forage. A study titled "Revisiting National Forage Demand" was published. And There are previously established high-yielding fodder types and technologies, including Making silage, hay, and treating crop residue with urea-molasses. However, several states have very dismal acceptance rates for these technologies. As stated by the Indian According to a report from the Ministry of New and Renewable Energy (MNRE), India produces on average each year, 500 million tons of crop residue. The identical report reveals that most of this in fact, crop waste is used as fuel, fodder, and other home and industrial reasons. Nevertheless, there is a 140 million tons excess remaining, of which 92 million tones are surplus to requirements. burned annually, which may be used as animal feed (S. Bhubaneshwar, *et al*., 2019)

The inadequate public institution support

The policy and financial attention that the livestock industry deserved were not given. In contrast to its contribution to agricultural GDP, the sector only received roughly 12% of the overall state spending on agriculture and related industries. Financial institutions have ignored the sector. It has barely ever been more than 4% of the overall agricultural loan that is allocated to livestock. (Short-, mid-, and long-term). Institutional safeguards against danger are insufficient for protecting animals. Only 6% of animal heads (excluding poultry) currently have insurance coverage. Past neglect of livestock extension has been egregious (Vet Helpline India (P) Ltd, 2013a). However, the Government of India established a distinct ministry, namely.

Inadequate processing and value addition

Processing and adding value to livestock products is seen as a potential instrument for the sustainability of livestock agriculture. As of 2018, India's milk processing sector is increased at a 14.80 percent compound annual growth rate (CAGR) (Laura Wood, (2019). One of the most significant sectors of the food processing sector is the meat business. Approximately 21% of buffalo meat is processed, compared to 6% for poultry. (Anonymous (2017). (2017). Specifically, insufficient processing and value addition in meat products are lacking the requisite facilities. There are currently just 1377. 68 abattoirs with facilities for processing meat have been approved by the Agricultural and the Authority for the Promotion of Export of Processed Food Products (APEDA), 32 APEDA11 APEDA-registered meat processing facilities

Issues in the marketing of livestock and livestock products

To hasten the commercialization of livestock production, market access is essential. Farmers may be discouraged from implementing more advanced technology and high-quality inputs due to a lack of market access. The livestock market does not alter consistently right now. Specific species or products are affected by the changes. Still, there are amazing transformations in the dairy and poultry industries from an informal to a formal market structure. The involvement of the business sector is responsible for this. However, the unorganized sector sells about 60% of milk (DADF, 2018a). On the other hand, sheep, goat, and cattle meat continue to be produced informally and with little support from the corporate sector. In a nutshell, the Indian market for cattle and livestock products is mostly unorganized, unpredictable, opaque, and frequently dominated by informal market intermediaries that take advantage of the producers.

Lack of attention to small ruminates

Sheep and goats are typically kept by tiny, landless farmers and marginal farmers who cannot afford to own large ruminants. However, the majority of these small ruminants, who depend on free grazing without any expenditure for supplemental food or medical care, do not contribute significantly to the income. Even if the demand for meat is anticipated to increase significantly over the next 20 years, the current system of unsustainable husbandry techniques underlines the plight of these species that lack access to management and technological help**.**

Inadequate attention toward extension services

The provision of technical services to the animals, the provision of technical inputs, and the education of livestock farmers make up the three parts of the delivery of livestock services Animal care services include vaccination, deworming, breeding, and disease control, all of which require technical inputs like vaccines, medications, semen, AI guns, syringes, and needles, among other things. For all of the aforementioned services and, to a certain extent, the provision of technological inputs, livestock farmers are forced to rely on veterinarians or para-vets. Sadly, the third element—educating livestock farmers on several facets of managing their animals, including nutrition, immunization, disease management, breeding, etc.—is utterly ignored. The input supply and service provision are frequently viewed as extension services despite the fact that "education of farmers

is the foundation of extension services," Aside from technological transfer and capacity building, the focus of any extension services should be on enhancing farmers' capacities to care for their livestock and crops. of various support and infrastructure services. Previously, the State Department of Husbandry (SDAH) was a division of the State Department of Agriculture, but on multiple occasions, each Indian state today has an autonomous division of animal husbandry. But ever since the start, the direction of Instead of expanding its services beyond providing healthcare and breeding, SDAH production-focused attention the majority of states classify veterinarians as Instead of Livestock, use Veterinary Officer (VO) or Veterinary Assistant Surgeon (VAS). Development Officers (LDO) were psychologically constrained to focus on livestock in their roles. development and capacity building for farmers. The farmers should receive education from the veterinarians on topics like scientific management techniques, sustainability of livestock farming, ways to deal with feed and fodder shortages, marketing livestock, processing livestock products, environmental problems caused by livestock, social entrepreneurship development, etc. As a result, India's exploration of the development function of veterinarians on the aspect of livestock production is inadequate.

and all so the variety of organic products are already produced in developing nations, and many of them are doing well. Though, the majority of them frequently deal with a variety of limitations, such as;

1. Lack of technical expertise, such as in organic farming techniques and manufacturing processes Practical assistance is typically focused on implementing technology that can increase production per unit of input and time in developing nations. Private firms with access to export markets and a small number of local marketplaces are the only ones who have actual expertise in organic livestock husbandry**.**
2. A lack of market information, such as how to grow a product, how to identify markets and distribution routes, how to compete, and how to gain access to the market. Despite the fact that the majority of people in developing nations are becoming aware of the health and environmental risks associated with organic agricultural goods, nothing is being done to promote the usage of organic ones. Additionally, the majority of governments in developing nations support the widespread conventional production system, which may impede the market's ability to learn about the availability of organic agricultural products.
3. Foods grown organically must adhere to strict guidelines. It is difficult to break into this profitable market. For two to three years after starting organic management, farmers are unable to access developed country organic markets since such nations will not certify land or cattle as organic before that period, claiming that it is crucial for the removal of chemical residues. Due to intense management, farming is typically done on a smaller scale.

The difficulties of operating with increasing labor inputs continue to be a challenge for 5 organic forming. According to other studies, doing manual and mechanical actions necessary for growth is the main factor explaining why organic formation demands more effort. On organic holdings, there is greater labor involved in the preparation for sale on the farm or in the market. in fact, as more people move from rural agricultural areas to cities in search of better-paying jobs, this could pose a problem for organic livestock production.

The demand for clarity continues to hinder organic farming. Consumers weren't always sure what organic farming actually encompassed or what limitations it indicated. The existence of various "schools" or philosophies, as well as the inclination to conflate ideas like organic, natural, and healthful, among other things, contributed to the misunderstanding. Cases of fraudulent use of labels alluding to organic methods made the problem worse. Due to rising incomes, urbanization, and rising demand for animal products, organic livestock products will eventually have access to lucrative local markets. This, combined with knowledge of the market's propensity for organic livestock products, will present opportunities for dishonest businesspeople.

Factors influencing organic livestock farming

Regarding the legal aspect, it is crucial to remember that regulations on organic production cover a wide range of organic farms; they accept the use of various animal breeds, agroecosystem management techniques, feeding strategies, and marketing techniques. As a result, the success and perspectives of organic livestock farms vary greatly from one location to another. For instance, it was discovered that the situation in northern Germany was different from that in the southern region, where there was variability. The quantity and distribution of the various feed kinds are mostly unrelated to milk output. Several elements from these variations include the ecosystems on which farms are founded and the needs and willingness to pay of consumers.

Animal nutrition legislation and market

Animal nutrition is the primary tenet of organic livestock production; hence it was discovered that Wisconsin organic dairy farms' feeding practices were the primary predictors of herd milk production and income over feed costs. When thinking about feeding management improvements necessary to satisfy organic pasture rule requirements or addressing nutritional supplements difficulties, this could be helpful to current organic farmers and farmers in the transition to organic farming.

The main challenges facing the production of organic feedstuffs are their high cost and difficulty in locating them. Due to the decoupling between crops and animals, the farm has a large external dependence on feedstuffs, which has forced this condition. These facts limit the organic livestock farms' ability to adapt and their access to high-quality feed additives and resources. As a result, the organic livestock farming industry is faced with a significant obstacle that, when combined with other circumstances, must result in a situation where organic livestock farms produce no organic goods, which reduces their profitability and chances of success in the future. This has also been seen in farms that raise dairy cows, beef cattle, or other animals.

The use of local agricultural by-products for animal nutrition would be one potential outcome of removing this barrier because they are typically inexpensive, allow for increasing their economic value, and provide an environmentally sound method for disposing of the by-product materials. Additionally, it would increase the income for the organic business that sells these by-products or decrease the costs associated with their disposal.

Opportunities for organic livestock farming in accepted by consumers

The majority of people prefer organic food because they claim it is tastier and better for the environment as well as for themselves. Customers are willing to pay more for organic goods. a further justification for organic goods. The objection to genetically modified food is another factor contributing to the popularity of organic products. Consumers expect organic milk, meat, poultry, eggs, and leather products, among other products, to come from farms that have passed inspections to demonstrate that they adhere to strict standards that allow the use of organic feed, forbid the use of prophylactic antibiotics, and allow animals access to the outdoors, fresh air, and sunlight.

North America and Europe account for 96% of global certified organic product sales, indicating that these two regions have the highest consumer demand for certified organic products. Major livestock goods include eggs and dairy products in addition to a wide range of organic crop products. Even though there are fewer organic livestock products available and no certification process for them in developing nations, most people, especially those who live close to urban areas, are aware of the benefits of organic products and want to use them for consumption once the governments of these nations support organic livestock farming as a policy and if awareness is raised and communities are given technical assistance.

Encourages biodiversity

Because the size and activity of the microbiological fraction are directly correlated with the quantity and quality of carbon present, organic livestock farming has been proposed as an indication of the change in soil qualities.

Since they typically have more trees, a greater variety of crops, and many different natural predators, which control pests and help prevent disease, organic livestock farms frequently explore more biodiversity than conventional farms.

Organic livestock farmers could tend to think of insects as pests

Various insects and mosquitoes spring to mind. However, dung beetles and other creatures of a like nature aid in the movement of manure into the soil, where it feeds the soil's microbial population and subsequently pasture plants. Animals such as livestock benefit from pollinators, and insects are essential to the food chain. By maintaining a variety of flowering plants and refraining from using broad-spectrum insecticides, you can encourage insects.

Benefits of organic livestock farming in India

Environment: Farmers and ranchers who practice organic farming lessen their impact on the environment outside of their operations. Instead of utilizing compost as fertilizer, they adopt methods to prevent manure runoff and preserve nutrients. In order to preserve soil fertility and safeguard the quality of the soil and water, farmers also employ sustainable methods including crop rotation and cover crops.

Animal health

The rumen becomes less acidic when ruminants eat a diet based on pasture. The number of helpful bacteria that aid in the fermentation of ruminants' high-fiber diet increases due to the decreased acidity. Pasture-based systems have been shown to lower cull rates, mastitis, hock lesions, and other forms of lameness, veterinarian costs, and other costs. Although livestock is typically the final component of a farm to receive organic certification, they are frequently its focal point and can help the farm succeed. Compared to conventional farms, organic farms place an even greater emphasis on livestock. On an organic farm, livestock plays a crucial part in

Nutrient Cycling

A procedure wherein manure and compost replenish the soil's nutrients. Adding animal manures to soils can improve their microbial composition, enzymatic activity, and community structure.

Feed crops, including alfalfa and grasses, are incorporated into crop rotations to help increase the organic matter in the soil. expanding the variety of crops available and the agroecosystem

Weed Control

Animals can be employed to graze weeds on crops or pastures while feed crops can be utilized to reduce and control weed growth**.**

Conclusion

Because of the negative repercussions of conventional farming, more consumers are choosing organic food. In particular, a livestock revolution entails not only increasing output but also enhancing consumer safety and food security. India has enormous potential for producing organic poultry because so much of the nation is already organic. The dangers associated with the poultry industry can be decreased with a minimum amount of support from the GOI for young entrepreneurs. Bird flu and Covid-19 are two endemics and epidemics that have caused significant damage to the industry. To encourage farmers to switch to organic poultry farming, MSP assurance, and modest support would be helpful.

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