

Promoting Value-Added Products from Indigenous Livestock: A Win-Win Approach for Breeds Conservation and Rural Livelihood

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INTRODUCTION

Indigenous livestock are essential to the food security and livelihoods of rural India. They provide food (meat, milk, eggs), products (hides, wool, dung), and services (transport, agricultural operations). While indigenous livestock may not produce as much as crossbred animals, they can thrive in harsh environments where other breeds cannot survive due to unique traits like disease resistance and drought tolerance. They also play a vital role in sustaining biodiversity and are culturally significant to the communities that raise them. According to the FAO, there is a concerning trend of large numbers of indigenous livestock disappearing, with many breeds becoming extinct. The loss of indigenous animal genetic resources poses a threat to farmers and livestock keepers' ability to adapt to environmental and socio-economic changes. Additionally, the loss of these animals erodes cultural heritage and emotional connections that people have with them. Conservation efforts are necessary to preserve indigenous breeds for future generations, considering their value from genetic, socioeconomic, and cultural perspectives. Conservation strategies can be classified into *in situ* and *ex situ* methods. *In-situ* conservation involves maintaining live animal breeding farms within their native ecosystems, allowing breeds to adapt and develop genetic uniqueness. *Ex-situ* conservation involves preserving animals outside their habitats, either through cryopreservation of genetic materials or maintaining live animals in reserved areas and farms.

While indigenous livestock may have higher production costs per unit output compared to exotic breeds, there is potential for value addition and processing of their products to increase income for farmers. Unique qualities of indigenous livestock products, such as special quality milk and tender meat, present opportunities for market development, generating employment and income for livestock keepers. Creating a market for value-added products can incentivize the conservation of indigenous livestock, contributing to the preservation of culture and ecosystems.

Value-added products can help make livestock farming a more viable enterprise, increase visibility to the public, and open up new markets. Value-added indigenous livestock

products are becoming an important income-enhancing strategy for producers. Value can be added to livestock products using various approaches, i.e., by improving existing processes, methods, or services, or by creating new ones through innovation. Another approach is through arrangements among those who produce and market the products, known as coordination. Coordination links producers, wholesalers, retailers, and consumers.

VALUE-ADDED PRODUCTS FROM INDIGENOUS LIVESTOCK

VALUE-ADDED DAIRY PRODUCTS

India stands as the world's leading milk producer, accounting for nearly a quarter of global production. The dairy industry is a vital part of India's economy, contributing 5% to the national GDP and supporting over 80 million farmers. Over the past nine years, milk production has seen a steady growth rate of 5.85%, increasing from 146 million tonnes in 2014-15 to 230 million tonnes in 2022-23. In 2022-23, India's daily per capita availability of milk is 459 grams, surpassing the global average of 322 grams. Exotic/crossbred cattle produce an average of 8.55 Kg/day/Animal, while indigenous/non-descript cattle yield 3.44 Kg/day/Animal. There has been a 3.75% rise in milk production from exotic/crossbred cattle and a 2.63% increase from indigenous/non-descript cattle in comparison to the previous year. Buffalo milk production has seen a 3.69% rise from the previous year.

Consumers believe that Indigenous cow milk is different from the milk of exotic cattle and their crossbred counterparts. The nutrient profile of milk from indigenous cattle raised solely on grazing is better than milk from cows raised in an intensive management system. Buffaloes are well-known for the abundance of fat in their milk and are the top choice for making dairy products. Forty-five percent of all the milk produced in the country is used in its raw form, while the remaining is processed into enhanced products. Value-added products from milk include:

1. Ghee
2. Curd
3. Butter
4. Paneer
5. Buttermilk
6. Khoa and other milk sweets
7. Cheese
8. Yoghurt
9. Lassi
10. Milk powder
11. Flavored milk
12. Ice cream

VALUE-ADDED DUNG AND URINE PRODUCTS

For centuries, cattle dung and urine have been harnessed for its natural benefits and ongoing research is investigating the various potential uses of cattle dung and urine as natural fertilizers, pesticides, and for other applications. Cattle dung contain a high amount of natural substances, important nutrients like nitrogen, phosphorus, and potassium, and helpful microorganisms that can improve soil productivity. Cattle urine is rich in nitrogen, urea, and minerals, which makes it a strong fertilizer and pest deterrent. Examples of value-added products made from cattle dung and urine include:

1. Organic fertilizer
2. Fuel - cow dung patties
3. Vermicompost
4. Panchakavya
5. Dhoop – Sambrani/Agarbathi
6. Skin tonic
7. Flower pots
8. Tooth powder

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| 9. Seed protector | 11. Insect repellent |
| 10. Floor coating/Floor cleaner | 12. Soap/Face wash |

VALUE-ADDED MEAT AND EGG PRODUCTS

India is the eighth largest producer of meat globally, representing 2.42 percent of the total meat production, and is also the third largest producer of eggs globally, accounting for approximately 7 percent of global egg production. The country's meat production is expected to reach 9.77 million tonnes in 2022-23, marking a 20.39% increase from the 8.11 million tonnes recorded in 2018-19. The country's egg production is projected to reach 138.38 billion units in 2022-23, reflecting a 33.31% increase from the 103.80 billion units recorded in 2018-19. There are 101 eggs available per person each year. Total egg production from commercial poultry totals 118.16 billion, while backyard poultry account for 20.20 billion, making up 85.40% and 14.60% of total egg production, respectively. Poultry meat production amounts to 4.995 million tonnes, making up approximately 51.14% of overall meat production. During the 2022-23 periods in India, the quantity of animals killed for meat production includes 2.16 million Cattle, 13.62 million Buffalo, 73.70 million Sheep, 123.40 million Goat, 9.33 million Pig, and 3.31 billion Poultry. A significant number of these animals, especially buffaloes, sheep, and goats, are older animals with tough and less tasty meat, yet more appropriate for making processed products due to economic and quality factors. Adding value to meat is important in order to offer a range of meat products in the market, efficiently use various by-products, and boost the export of meat products. Different types of value-added meat products include:

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| 1. Bacon | 9. Nuggets |
| 2. Chops | 10. Patties |
| 3. Cutlets | 11. Roasts |
| 4. Ham | 12. Rolls |
| 5. Hamburgers | 13. Sausages |
| 6. Kebabs | 14. Steaks |
| 7. Meatballs | 15. Smoked/Fermented/Cured/Dried |
| 8. Meat pakoda | Products |

VALUE-ADDED EGG PRODUCTS

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| 1. Albumen Rings | 13. Scrambled Egg Mix |
| 2. Deviled Eggs | 14. Waffles |
| 3. Egg Albumen Powder | |
| 4. Egg crepe | |
| 5. Egg Roll | |
| 6. Egg Waffles | |
| 7. Filled Omelets | |
| 8. French Toast | |
| 9. Pickled eggs | |
| 10. Egg Patties | |
| 11. Quiche | |
| 12. Salted Chicken Eggs | |

VALUE-ADDED CHICKEN MEAT PRODUCTS

1. Chicken Burgers
2. Chicken chunkalona
3. Chicken chunks
4. Chicken cutlets
5. Chicken fingers
6. Chicken Frankfurters
7. Chicken Fritters
8. Chicken Kathi Kebab
9. Chicken Kheema
10. Chicken meat spread
11. Chicken nuggets
12. Chicken patties
13. Chicken pickle
14. Chicken Roll
15. Chicken Samosa
16. Chicken Sausages
17. Chicken Shami kebabs
18. Cured and smoked chicken
19. Marinated chicken breast fillets
20. Mixed Chicken Loaf

CONCLUSION

Enhancing the value of livestock products is a key strategy to boost farmers' income. By transforming raw products into value-added ones, farmers can enjoy longer shelf life, diverse consumer products, reduced food waste, and access to wider markets, including exports. This approach also fosters employment, entrepreneurship, and higher earnings without increasing production levels. India offers vast potential for value-added products due to its growing population, urbanization, and changing lifestyles. To capitalize on this, the government and related organizations should provide training in product preparation, packaging, and marketing, focusing on niche markets for indigenous products. However, challenges like inadequate marketing systems, infrastructure, and export hurdles need to be addressed. Research is crucial to highlight the unique benefits of indigenous livestock products, raising awareness and promoting their use. This will support the livelihoods of indigenous livestock keepers, conserve native breeds, and secure a place for them in modern farming practices.