Indian Journal of Agricultural Economics 80: 1 (2025): 116-122
DOI:10.63040/25827510.2025.01.006

Subject II

Sustaining Livelihoods: The Role of Livestock, Poultry and Fisheries in Rural Economy

Rapporteur: D. Bardhan[1]

The allied sectors—livestock, poultry, and fisheries—play a critical role in sustaining rural livelihoods, ensuring nutritional security, and contributing to the growth of the rural economy in India. These sectors not only complement crop agriculture but also serve as important livelihood avenues for millions of small and marginal farmers, landless households, and women. With increasing population pressure, urbanization, changing dietary preferences, and the rising demand for animal-based proteins, these sectors are expected to experience significant growth. However, they also face major challenges including feed and fodder shortages, disease risks, marketing inefficiencies, and environmental sustainability concerns. Addressing these issues is vital to realizing the full potential of livestock, poultry, and fisheries in reducing rural poverty, enhancing food security, and achieving inclusive and sustainable agricultural growth. The theme, '*Sustaining Livelihoods: The Role of Livestock, Poultry, and Fisheries in Rural Economy'*, is thus apt, providing a platform to deliberate on the critical challenges and emerging opportunities within these sectors in the context of sustainable and inclusive rural economic growth.

A total of 60 research papers were submitted under the conference theme. Of these, 21 papers were presented during the session at the conference, comprising 9 full-length papers and 12 summary presentations. The papers covered a broad spectrum of issues pertinent to the sector's development and sustainability. The key areas of focus included trends and patterns in production, the role of allied sectors in nutritional and livelihood security, resource-use efficiency, profitability analyses, marketing and trade dynamics, gender participation, environmental sustainability, and the impact of innovative technologies and scientific practices.

Key Questions for Research and Policy Discourse

The papers presented and discussions held during the session raised critical research and policy questions pertaining to the conference theme.

1. How can regional disparities in livestock productivity and participation be addressed**,** particularly in regions where livestock populations (such as

[1]ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar, Bareilly, Uttar Pradesh – 243 122.

indigenous cattle or pigs) are declining, and the benefits of livestock-based livelihoods are limited?

2. What role can indigenous breeds play in ensuring the sustainability of livestock systems, especially given the concerns about the declining population of indigenous cattle and buffalo breeds in certain states?
3. How can resource use efficiency, particularly feed and fodder utilization, be improved at the farm level to reduce production costs and enhance profitability, as several papers identified underutilization or inefficiencies in resource allocation?
4. What strategies can address the persistent yield gaps in milk production, particularly in states like Meghalaya, where a significant difference between attainable and actual production was observed?
5. How can financial and institutional barriers, such as high initial capital investment and limited credit access, be overcome to promote the wider adoption of Integrated Farming Systems (IFS) and other sustainable livestock-based enterprises?
6. What interventions are required to strengthen animal healthcare services and reduce economic losses due to diseases, especially in goat and dairy farming, where parasitic infestations and disease-related losses were substantial?
7. How can unorganized marketing systems in goat, pig, and dairy sectors be better integrated into formal value chains to ensure fair price realization and reduce exploitation by intermediaries, as highlighted in papers from West Bengal and Tamil Nadu?
8. What measures can improve the effectiveness and competitiveness of dairy cooperatives and producer collectives, given the findings that cooperatives often do not offer the best prices compared to private players?
9. How can ecological sustainability challenges, such as fodder deficits, methane emissions, and water resource depletion, be addressed in livestock systems, especially in environmentally sensitive regions like Ladakh and the northeastern states?
10. What is the potential of emerging innovations like ‘Jalkund’ (rainwater harvesting) and programs like ‘Aadarsh Chara Gaon’ in improving rural livelihoods, and how can their adoption be scaled up?
11. How can gender equity be strengthened in livestock and allied sectors, given that only limited evidence exists on the role of women-led SHGs and their challenges in accessing credit, raw materials, and markets?

12. What strategies can support the livelihoods of migratory sheep and goat herders**,** especially in light of shrinking common property resources and declining grazing lands?
13. How can the profitability and environmental sustainability of fisheries, including shrimp farming and trawl fishing, be balanced**,** considering the limited analysis of long-term ecological consequences presented?
14. What policy interventions are needed to improve India's dairy export competitiveness**,** while addressing trade barriers and ensuring control of endemic diseases like Foot and Mouth Disease (FMD)?

Issues Addressed in Light of the Key Questions

The presentations and ensuing discussions addressed several of the key research and policy questions,

1. Regional Disparities and Livestock Productivity - Papers presented at the Conference highlighted significant regional disparities in livestock populations and productivity. For instance, studies from Himachal Pradesh and Kerala revealed declining cattle and sheep numbers and stagnation in milk production from indigenous breeds, raising concerns about sustainability and regional imbalances. Discussions emphasized the need for region-specific interventions, particularly in states with declining participation in livestock-based livelihoods.
2. Sustainability of Indigenous Breeds - Multiple papers underscored the growing reliance on crossbred cattle for profitability while expressing concern over the declining population of indigenous breeds. The need to preserve genetic diversity and promote indigenous breeds for sustainable livestock production was acknowledged.
3. Resource Use Efficiency and Yield Gaps - Farm-level studies, such as from Meghalaya and Punjab, quantified yield gaps in milk production, attributing them to poor feed management and lack of extension support. Presentations on resource-use efficiency in Integrated Farming Systems (IFS) highlighted inefficient utilization of on-farm resources like fodder and labor, reinforcing the need to optimize resource allocation.
4. Barriers to Adoption of Sustainable Systems - IFS models presented from Tamil Nadu and West Bengal demonstrated economic viability but identified high capital costs and weak market access as major barriers to adoption, particularly for smallholders. Discussion points included the need for improved access to credit and targeted support mechanisms to promote such integrated models.

5. Animal Health, Disease Losses, and Veterinary Services - Economic losses due to diseases in goats and dairy cattle were explicitly quantified in papers from Puducherry, identifying parasitic infestations, lack of insurance, and limited veterinary outreach as critical challenges. Participants discussed strengthening rural veterinary infrastructure and exploring livestock insurance as potential mitigatory strategies.
6. Marketing Inefficiencies and Value Chain Gaps - Marketing studies, particularly on goat and pork sectors in West Bengal and Tamil Nadu, identified highly unorganized systems leading to farmer exploitation by intermediaries. The potential of strengthening producer collectives and restructuring cooperatives was debated, with mixed findings on the price realization benefits from cooperative versus private channels.
7. Environmental Sustainability and Emerging Concerns - Issues like fodder deficits, rising methane emissions, and water quality deterioration due to industrial effluents were raised, particularly from papers focused on Jammu & Kashmir, Ladakh**,** and Tamil Nadu. While future projections of methane emissions were discussed, the lack of economic feasibility studies on mitigation strategies such as feed efficiency improvement was noted.
8. Technology Adoption and Innovations - Presentations on innovations like 'Jalkund' water harvesting in Meghalaya and 'Aadarsh Chara Gaon' dairy interventions demonstrated positive livelihood impacts, but discussions revealed limited adoption due to financial and knowledge constraints.
9. Gender Dimensions - Only one paper addressed the role of women-led SHGs in Chhattisgarh, noting positive impacts on income but persistent challenges in credit access and scalability.
10. Fisheries and Sustainability Challenges - Fisheries papers revealed the profitability of shrimp and marine fishing but flagged concerns about environmental degradation and livelihood risks for artisanal fishers, especially due to by-catch and declining fish stocks. The emerging potential of seaweed farming as a livelihood option, especially for women, was also discussed.
11. Trade and Export Barriers - Papers examining India's dairy export competitiveness identified trade barriers, disease control (FMD), and quality standards as significant constraints. The need for enhanced disease management and product quality improvement for accessing global markets was debated.
12. Shrinking Common Property Resources (CPRs) - Although limited, the issue of declining grazing lands and its implications for migratory sheep and goat herders was raised, emphasizing the need for focused research and policy attention.

Gaps Identified in Relation to Key Questions

1. Regional Disparities**:** Limited analysis on specific interventions needed for low-participation regions and declining species (e.g., pigs, indigenous cattle).
2. Indigenous Breeds & Knowledge: Inadequate exploration of conservation strategies for indigenous breeds and integration of traditional knowledge.
3. Resource-Use Efficiency: While inefficiencies were identified, financial, behavioral, and institutional barriers preventing improvement remain underexplored.
4. Yield Gaps: No concrete models or actionable pathways proposed to bridge dairy yield gaps, especially in northeastern regions.
5. Scaling Integrated Systems: High capital cost constraints highlighted, but specific financing or credit solutions for smallholders missing.
6. Animal Health & Insurance: Detailed disease-related economic losses, cost-effective veterinary outreach models and livestock insurance strategies remain unexplored.
7. Marketing & Value Chains: Lack of concrete roadmaps for integrating unorganized goat and pig markets into formal channels.
8. Dairy Cooperatives: Need for restructuring identified, but no actionable frameworks for enhancing price realization and inclusivity.
9. Environmental Sustainability: Limited cost-benefit analysis of mitigation strategies (e.g., methane reducing feed technologies, fodder alternatives).
10. Innovation/Technology Adoption: Positive cases presented, but factors affecting large-scale adoption and scalability not sufficiently analyzed.
11. Gender Integration: Very limited coverage; women's role in livestock value chains and extension services underexplored.
12. Common Property Resources**:** Impacts of CPR shrinkage on migratory herders noted but lacked focused studies or policy directions.

Future Research Agenda

Following future research priorities emerged:

1. Region-Specific Studies to design targeted interventions addressing low livestock participation and declining species (e.g., pigs, indigenous cattle) in underperforming regions.
2. Conservation and Economic Valuation of Indigenous Breeds, integrating traditional knowledge systems to assess their role in climate resilience and sustainable production.

3. Resource-use efficiency research focusing on identifying financial, behavioral, and institutional barriers to optimal feed, fodder, and labor use, supported by pilot interventions. Also, development of models to bridge yield gaps, especially in dairy production, through region-specific feed strategies, extension service innovations, and farmer behavior studies.
4. Design and Testing of Scalable Integrated Farming Systems (IFS) with emphasis on credit solutions, risk mitigation instruments, and policy support mechanisms for smallholders.
5. Livestock Health Economics and Insurance Studies to quantify disease-induced losses, evaluate cost-effective veterinary outreach models, and designing viable livestock insurance products.
6. Market Systems Research on formalizing unorganized goat, pig, and poultry markets, with value chain analysis to minimize intermediary exploitation and enhance producer margins. Institutional reforms for dairy cooperatives and producer companies, including governance, pricing mechanisms, and inclusive models ensuring equitable benefits for smallholders.
7. Environmental economics studies to assess cost-effective methane mitigation technologies, fodder alternatives, and ecological impacts of intensified livestock systems.
8. Technology adoption and diffusion research, identifying constraints and pathways for scaling promising innovations like 'Jalkund' and 'Aadarsh Chara Gaon'.
9. Gender-focused studies assessing women's roles, constraints, and potential in livestock and fisheries value chains, including their participation in extension delivery systems.
10. Common property resource (cpr) impact assessments on migratory livestock systems, with policy recommendations for protecting pastoral livelihoods.

Conclusion and suggestions

The session deliberations reaffirmed the critical role of livestock, poultry, and fisheries in enhancing rural livelihoods, income generation, and nutritional security, particularly for small and marginal farmers. The suggestions emerging from the papers presented are summarized below:

- Allied sectors, including livestock, poultry, and fisheries, receive a relatively small portion of the total agricultural credit in India. To enhance productivity and efficiency within these sectors, it is essential to increase credit access for farmers.
- Training and extension services in allied sectors need to be strengthened to optimize resource utilization through better management practices, which includes improving feed and fodder management, water conservation, and waste management.

- To promote access to quality, affordable and timely veterinary care (both curative and preventive) in order to mitigate economic losses due to diseases and improve efficiency in production. This includes strengthening rural veterinary outreach programs and integrating veterinary care within broader agricultural extension services.
- To improve market infrastructure, reducing intermediaries, promoting farmer collectives, and enhancing access to information and technology to ensure fair prices and sustainable livelihoods for producers.
- To expand India's dairy exports there is need to address trade barriers and improving product quality. Also, controlling and eradicating endemic diseases such as Foot and Mouth Disease (FMD) is crucial for enhancing the international market access of the country's livestock products, particularly in Western markets.
- To prioritize promoting sustainable practices that reduce greenhouse gas emissions. Targeted awareness programs, trainings, and incentive-based initiatives, are essential to familiarize farmers with feed technologies designed to mitigate enteric methane emissions (such as 'Harit Dhara').
- Given the significant role of women in allied sectors, it is essential to enhance their access to resources and opportunities to address gender disparities effectively. Targeted interventions are needed, such as encouraging greater participation of female workers in extension service delivery systems.
- Limited availability of secondary data, particularly for livestock and more so for fisheries, presents a significant challenge to conducting policy research. There is need for data, especially for inputs and resources to provide effective policy support in promoting the growth of allied sectors.
- Common lands and grazing lands are declining very fast having adverse implication for migratory sheep and goat herders' livelihoods. While government regulations like the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, are in place, the enforcement of existing government regulations, especially at local level, is crucial to mitigate these adverse effects.
- To promote small ruminant farming among resource poor farmers because of greater adaptability to marginal lands and limited resources, steady income; while contributing to environmental sustainability through low ecological impact.