IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Approaches for Sustainable Livestock Development in Rainfed Regions: A Case Study of Marwar Area, Rajasthan

Name: **Asha Jatav**
Guest Faculty (Assistant Professor), JNVU Jodhpur
Department of Geography
Research Scholar, Dungar College, Bikaner, Rajasthan

1. Abstract

Livestock serves as a cornerstone for sustaining rural livelihoods in rainfed regions, where agricultural activities are frequently hampered by erratic rainfall, acute water scarcity, and soil degradation. The Marwar region of Rajasthan, covering arid and semi-arid districts such as Jodhpur, Barmer, Pali, Nagaur, Jalore, and Sirohi, reflects these challenges most prominently due to its desert-like conditions and low annual rainfall, often below 300 mm. In this fragile ecosystem, livestock not only ensures food and income security but also strengthens resilience for rural households. Indigenous breeds like Marwari goats, Tharparkar cattle, and Magra sheep play a critical role in local livelihoods, yet their productivity is restricted by inadequate fodder, low genetic potential, disease vulnerability, poor market connectivity, and the intensifying effects of climate change. Government initiatives—such as livestock insurance schemes, breed improvement programs, fodder development projects, and rural employment missions—are vital in mitigating these challenges and enhancing livestock-based income security. This study emphasizes the need for a comprehensive approach that integrates community participation, resource management, technological innovation, and institutional support, while leveraging government interventions to promote sustainable livestock development in the Marwar region.

2. Introduction

Livestock plays a pivotal role in sustaining rural communities in rainfed regions, where agricultural practices are challenged by erratic rainfall, water scarcity, and soil degradation. In such fragile ecosystems, livestock is not only a source of food and income but also an asset for resilience.

The Marwar region of Rajasthan, comprising Jodhpur, Barmer, Pali, Nagaur, Jalore, and Sirohi districts, is highly dependent on traditional pastoral systems. Annual rainfall is typically below 300 mm, with prolonged droughts and desertification adding pressure on rural livelihoods. Indigenous breeds such as Marwari goats, Tharparkar

cattle, and Magra sheep are central to local economies, yet productivity remains constrained due to fodder scarcity, low genetic potential, high disease incidence, and weak market access.

This research examines strategies for sustainable livestock development in rainfed areas, focusing on integrated resource management, technological interventions, institutional support, and government schemes, with special reference to Marwar.

3. Research Problem

Despite being central to rural livelihoods, livestock rearing in Marwar faces multiple challenges:

- Scarcity of water and fodder, worsened by droughts and overgrazing.
- Low productivity of indigenous breeds despite their resilience.
- High disease incidence (e.g., Foot-and-Mouth Disease, PPR) and weak veterinary outreach.
- Poor infrastructure and market linkages to urban centers like Jodhpur.
- Climate stress including desertification, sand dune encroachment, and heat waves.

These challenges necessitate climate-resilient and sustainable strategies for livestock development.

4. Objectives of the Study

1. To assess the key constraints affecting livestock productivity in rainfed areas, with emphasis on Marwar.
2. To analyze the effectiveness of breed improvement, fodder management, and water conservation practices.
3. To evaluate the role of animal health services and livelihood diversification in resilience-building.
4. To examine policy, institutional, and market interventions for sustainable livestock management.
5. To propose a climate-resilient framework for livestock-based livelihoods in Marwar.

5. Hypotheses

- **H1:** Adoption of integrated fodder, water, and breed management strategies significantly improves livestock productivity in rainfed regions like Marwar.
- **H2:** Strengthened veterinary outreach and livelihood diversification enhance household resilience in arid areas.
- **H3:** Policy and institutional support act as critical enablers for sustainable livestock development in Rajasthan's rainfed ecosystems.

6. Methodology

(a) Study Area Selection

Representative districts—Jodhpur, Barmer, and Nagaur—were chosen for their dependence on livestock and recurring droughts.

(b) Data Collection

- **Primary Data:** Household surveys of pastoralists (e.g., Raika community), focus group discussions, and interviews with veterinary officers, cooperatives, and NGOs.
- **Secondary Data:** Government reports (RKVY, NRLM, IWMP, Rajasthan Livestock Census), research publications, and institutional data (CAZRI, Jodhpur).

(c) Analytical Framework

- Statistical analysis of productivity indicators (milk yield, wool output).
- GIS and remote sensing for mapping fodder and water resources.
- Case study approach on successful models (community fodder banks in Barmer, paravet systems in Pali, goat cooperatives in Jodhpur).

---

7. Expected Outcomes

- Identification of sustainable fodder and breed management practices, including drought-tolerant grasses (e.g., Sewan).
- Strengthened veterinary infrastructure and community-based health workers.
- Livelihood diversification via small ruminants, poultry, wool processing, and camel milk products.
- Policy recommendations for insurance, credit, and market linkages tailored to smallholders.
- A climate-resilient framework combining traditional pastoral knowledge and modern interventions.
- Greater synergy between government schemes and local participation for improving adoption of livestock projects.

8. Conclusion

Sustainable livestock development in rainfed regions such as Marwar requires an integrated approach that blends technical, institutional, and policy innovations. The study demonstrates that strengthening fodder and water management, improving animal health services, and promoting government-supported programs can substantially improve resilience and productivity.

For greater success, government projects must be made more people-centric, with awareness campaigns, training of local youth as para-vets, easy access to insurance schemes, and involvement of pastoral communities in decision-making. This will not only make government schemes more attractive but also encourage active participation by livestock keepers, ensuring long-term sustainability.

9. References

1. Government of Rajasthan (2021). *Rajasthan Livestock Census Report*. Department of Animal Husbandry, Jaipur.
2. Central Arid Zone Research Institute (CAZRI) (2020). *Livestock and Pastoral Systems in Arid Rajasthan*. Jodhpur.
3. National Bank for Agriculture and Rural Development (NABARD) (2019). *Fodder Development and Livestock Productivity in Drought-Prone Areas*. New Delhi.
4. Ministry of Agriculture and Farmers Welfare (2022). *Rashtriya Krishi Vikas Yojana (RKVY) Progress Report*. Government of India.
5. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (2018). *Climate-Resilient Livelihoods in Semi-Arid Regions of India*. Hyderabad.
6. Singh, R., & Kumar, P. (2017). "Pastoral Practices and Livestock Productivity in Western Rajasthan." *Indian Journal of Animal Sciences*, 87(3), 243–250.
7. National Rural Livelihood Mission (NRLM) (2020). *Livestock-Based Livelihood Promotion in Rajasthan*. Government of India.
8. Ministry of Fisheries, Animal Husbandry & Dairying (2021). *National Livestock Mission (NLM) Report*. Government of India.