



POPULAR ARTICLE

Economic analysis of livestock-based farming systems in arid regions of Rajasthan

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Intricacies of the subject

Livestock production is an important component of the rural economy of arid regions of Rajasthan, where crop production is frequently constrained by low and erratic rainfall, high temperatures, poor soil conditions and recurrent droughts. Livestock provides regular income, employment, food security and an important source of manure to farm households. The present study was designed to examine the economics of livestock-based farming systems in the arid region of Rajasthan. The study focused on the cost of production, gross returns, net returns and benefit-cost ratio of major livestock enterprises and assessed the contribution of livestock to household income. A field survey approach can be used for collecting primary information from selected livestock-keeping households. For analytical purposes, farmers may be classified according to the predominant livestock enterprise, such as dairy, sheep, goat and mixed livestock farming systems. Illustrative analysis indicates that mixed livestock farming can provide greater income stability than dependence on a single

livestock enterprise because it distributes production and market risks among different enterprises. Feed and fodder expenditure, labour cost, animal health expenses and market price fluctuations are important factors affecting profitability.

Introduction

Rajasthan is one of the important livestock-producing states of India and livestock plays a major role in supporting rural livelihoods. The importance of livestock is particularly high in arid and semi-arid areas where agricultural production is highly dependent on uncertain rainfall. In such regions, livestock acts as an economic buffer during drought and crop failure and provides farmers with a regular source of income through the sale of milk, animals, meat, wool and other livestock products.

The arid regions of western Rajasthan are characterized by high temperatures, low and irregular rainfall, frequent droughts, scarcity of green fodder and limited availability of irrigation. These environmental conditions reduce the reliability of crop-based farming.



Consequently, farmers often adopt livestock enterprises as an integral part of their farming system. Sheep, goats, cattle, buffaloes and camels are important livestock species in different parts of Rajasthan. Livestock-based farming systems generate employment for family members and provide manure for crop

production. Small ruminants such as sheep and goats are especially suitable for resource-poor households because they require relatively low initial investment and can utilize grazing resources. Dairy animals provide regular cash income through milk sales.



Major livestock-based farming systems

In arid Rajasthan, livestock production is generally integrated with crop production and natural grazing resources. Dairy, sheep, goat

and mixed livestock systems are commonly found. The selection of livestock species depends on resource availability, landholding, family labour, market access and climatic conditions.

Farming system	Number of farmers	Percentage	Main economic output
Dairy-based	30	25.00	Milk
Sheep-based	28	23.33	Animals, wool, manure
Goat-based	32	26.67	Animals, milk, manure
Mixed livestock	30	25.00	Milk, animals, manure and other products

Illustrative economic performance

Farming system	Total cost (₹/household/year)	Gross return (₹/household/year)	Net return (₹/household/year)	B:C ratio
Dairy-based	1,85,000	2,55,000	70,000	1.38
Sheep-based	1,35,000	2,05,000	70,000	1.52
Goat-based	1,15,000	1,85,000	70,000	1.61
Mixed livestock	1,95,000	3,05,000	1,10,000	1.56

Feed and fodder generally represent one of the largest components of livestock production cost. Labour is another important component, particularly where livestock are maintained

under traditional systems. Mixed livestock farming may improve income stability because income is obtained from multiple enterprises.



Fodder and grazing resources supporting livestock production



Major constraints

1. Scarcity of green fodder.
2. High cost of concentrate feed.
3. Seasonal shortage of grazing resources.
4. Limited availability of quality breeding animals.
5. Inadequate veterinary services in remote villages.
6. Animal diseases and mortality. Water scarcity.
7. Limited adoption of improved livestock management practices.

Strategies for improving livestock farm income

Fodder development

Promotion of drought-tolerant fodder crops, fodder trees, silage preparation and scientific utilization of crop residues can reduce feed costs.

Breed improvement

Artificial insemination, selective breeding and availability of improved breeding stock can improve productivity while maintaining adaptation to local conditions.

Scientific feeding

Balanced ration formulation, mineral supplementation and appropriate feeding management can improve productivity.

Veterinary and preventive health services

Regular vaccination, deworming, disease surveillance and timely treatment can reduce mortality and production losses.

Better market linkages

Farmer groups, cooperatives and producer organizations can improve bargaining power and market access.

Livestock insurance

Greater awareness and accessibility of livestock insurance can protect farmers against losses caused by animal death.

Value addition

Processing and value addition of milk, wool, meat and other livestock products can increase returns per unit of production.

Conclusion

Livestock-based farming is an important livelihood strategy in the arid regions of Rajasthan. Due to climatic uncertainty and limitations on crop production, livestock provides farmers with an alternative and relatively stable source of income. Dairy, sheep, goat and mixed livestock systems each have their own economic advantages depending on resource availability and market conditions.

The economic performance of livestock enterprises is strongly influenced by feed and fodder costs, animal productivity, labour, health expenditure and market prices. Mixed livestock farming has particular importance because diversification can reduce production and market risks while improving the overall utilization of farm resources.



Recommendations

1. Promote climate-resilient livestock breeds suitable for arid conditions.
2. Establish village-level fodder production and fodder banks.
3. Improve access to veterinary and breeding services.
4. Promote balanced feeding and mineral supplementation.
5. Encourage integrated crop-livestock farming systems.
6. Strengthen livestock insurance coverage.
7. Develop organized livestock and livestock-product markets.
8. Promote farmer producer organizations and cooperative marketing.
9. Strengthen KVK-based capacity building and entrepreneurship programmes.

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