

Breaking the Seasonal Barrier: Accelerated Lambing as a Game- Changer for Indian Sheep Farming

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Abstract

Accelerated lambing systems offer a strategic approach to maximize reproductive efficiency and lamb output per ewe annually. By reducing the lambing interval to less than 12 months and incorporating out-of-season breeding techniques, such systems enable multiple lamb crops each year. This article explores two prominent models—the 8-month system and the STAR system—and assesses their application potential in Indian sheep production. These models, though traditionally used in Western countries, have significant implications for enhancing productivity and income of Indian sheep farmers, especially in regions with high-quality forage availability and access to reproductive technologies. The article also discusses out-of-season breeding methods, infrastructural needs, labor dynamics, and key factors to consider before implementation. With proper adaptation, these systems can address seasonal market demands, improve cash flow, and reduce economic risks associated with price fluctuations. This paper emphasizes that accelerated lambing, if localized and supported with institutional and technical assistance, can significantly elevate India's small ruminant production sector.

Key words: Accelerated lambing, Sheep farming, Housing, Out-of-season breeding

Introduction

India ranks among the top sheep-producing countries globally, with over 74 million sheep contributing to rural livelihoods, meat, and wool production. Traditional lambing systems in India typically revolve around one lambing per year due to seasonality and resource constraints. However, with increasing demand for mutton and the need to improve farm profitability, there is growing interest in adopting innovative breeding strategies such as accelerated lambing. This method aims to shorten lambing intervals and increase the number of lambs produced per ewe per year.

Accelerated lambing systems are based on structured reproductive management, allowing ewes to lamb more than once annually. Two widely studied systems include the 8-month lambing system and the STAR system, which involve carefully timed breeding, nutrition, and flock management. While their implementation requires significant inputs in terms of infrastructure, nutrition, and labour, the returns can be substantial, particularly for semi-intensive and intensive sheep production systems in India.

Most accelerated system have 2 major management groups

1. Ewes in late pregnancy or lactation
2. Ewes exposed to rams or in early pregnancy

Advantages:

- Ewe replacement rate is high
- Can hit a huge diversity of markets allowing more opportunistic marketing possibilities
- Reduced risk due to price fluctuations within a year
- Target specific seasonal markets

Accelerated production systems

1. 8 month system – 3 lambing periods in 2 years
2. STAR system – 5 lambing periods in 3 years (7.2 month intervals)

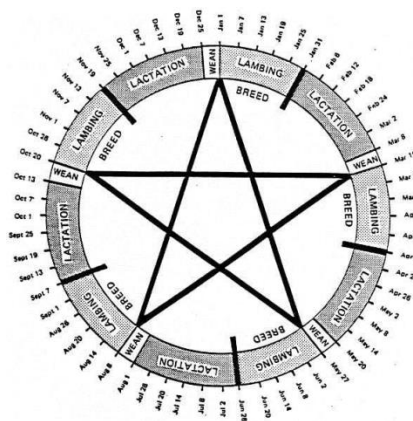
1. The 8-Month System

This system allows three lambing periods within two years. Lambing intervals range between 7 to 9 months, and the breeding period is around 51 days. Ewes are expected to produce up to 1.5 lambs per year under optimal management. Flexibility in scheduling helps producers align lambing with labor availability and market demands.

2. The STAR System

The STAR system provides five lambing opportunities in three years with 7.2-month intervals. The breeding period is shorter (<30 days), requiring efficient heat detection and synchronization. Ewes can yield up to 1.67 lambs annually. The system segments ewes into five groups, each at different reproductive stages, ensuring a steady lamb supply throughout the year.

STAR system



Summary of Accelerated systems

	STAR	8 month
Birth interval	7.2 month	7-9 month
Lactation length	42-72 days	42-100 days
Breeding period	< 30 days	< 51 days
Lambing period / year	5	3
Breeding period / year	5	3
Max. no. of births/ewe/year	1.67	1.5

Out-of-Season Breeding Techniques

India's sheep are generally seasonal breeders, with natural estrus limited to specific times of the year. For accelerated systems to function, inducing out-of-season estrus is crucial. Methods include:

- **Breed Selection:** Indigenous breeds like Nellore and Madgyal may be less responsive;

hence crossbreeding with a seasonal breeds can help.

- **Photoperiod Control:** Artificial manipulation of daylight hours can simulate breeding seasons.
- **Hormonal Regulation:** Use of progesterone sponges, gonadotropins, and melatonin implants.
- **Nutrition:** Flushing with high-energy diets prior to breeding stimulates ovulation.

Infrastructure and Resource Needs

- **Housing:** A facility that accommodates 2/3 of the flock is required for lambing and post-lamb care.
- **Nutrition:** Accelerated systems demand consistent high-quality feed including legumes, crop residues, and commercial concentrates.
- **Labour:** Year-round labour is essential for lambing assistance, health management, and record-keeping.

Factors to consider in choosing accelerating production

1. **Land value:** accelerated production systems are well suited for higher value, more productive land
2. **Genetics:** seasonal genetics are key, light control protocols reduce risk
3. Can buy or produce high quality forages
4. **Investment:** accelerated production requires a greater initial investment (Indoor lambing facility, feeding infrastructure)
5. **Labor:** accelerated production evens labor over the year but is a steady requirement

Pros:

- ✓ Year-round supply: create new and build existing markets
- ✓ Improve cash flow
- ✓ Reduced market risk
- ✓ Greater market income (per ewe, lamb, labor unit, enterprise)
- ✓ Spreads labor out more evenly over the year

Cons:

- ✓ Higher level of management: nutrition, reproduction, health
- ✓ Requires a winter lambing period and facilities

- ✓ Steady labor requirement
- ✓ Requires higher quality forage

Conclusion

Accelerated lambing systems, though resource-intensive, present a transformative opportunity for the Indian sheep sector. Adoption in India must be strategic, focusing on regions with suitable infrastructure, breed compatibility, and market access. Collaborative efforts between research institutions, government agencies, and farmer cooperatives are crucial to pilot, adapt, and scale these models. With proper training, subsidies for infrastructure, and feed support, accelerated lambing can significantly boost rural incomes and national meat production targets.

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