



MAJOR CONSTRAINTS AND HEALTH MANAGEMENT STRATEGIES FOR PROFITABLE COMMERCIAL GOAT AND SHEEP FATTENING FARMS IN TAMIL NADU: A COMPREHENSIVE REVIEW

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Abstract:

Commercial goat and sheep fattening has considerable potential in Tamil Nadu because of the strong demand for chevon, well-adapted indigenous breeds, established livestock markets and the increasing need for regular meat supply. However, profitability at farm level is still limited by a combination of feed and fodder scarcity, rising concentrate cost, disease and mortality, poor growth, shortage of technical knowledge and labour, market intermediaries, seasonal price variation, heat stress, theft and limited access to credit and insurance. These problems are closely connected: high feed cost can reduce feeding and disease can reduce daily weight gain, slow growth increases the feeding period, and poor marketing can reduce the final return. Therefore, profitable fattening cannot be achieved by improving only one part of the production system. This review focuses specifically on the two major areas that directly influence the efficiency of commercial fattening farms: production constraints and practical health management. The review emphasizes locally relevant prevention, routine health monitoring, vaccination, strategic parasite control, quarantine, biosecurity, mortality reduction and proper farm records. A practical health program is proposed in which the farmer gives priority to prevention and early detection rather than depending on treatment after disease becomes severe. Vaccination against major infectious diseases, controlled introduction of purchased animals, targeted parasite control, clean and dry housing, safe feed and water, and regular body-weight monitoring are identified as high-value practices. The overall approach is intended to provide a simple and economically realistic framework that can be adopted by small and medium commercial goat and sheep fattening farms in Tamil Nadu.

Key Words: Goat and Sheep Fattening, Tamil Nadu, Production Constraints, Health Management, Vaccination, Parasite Control, Biosecurity, Profitability

1. Introduction:

Goat and sheep production is an important part of the livestock economy of Tamil Nadu and provides income and livelihood support to a large number of small and marginal farmers. According to the 20th Livestock Census (2019), Tamil Nadu possesses approximately 9.89 million goats and 4.50 million sheep. The state also has a strong domestic market for small-ruminant meat. During 2022-23, Tamil Nadu produced approximately 70,540 tonnes of mutton and 72,452 tonnes of chevon, showing the importance of sheep and goat meat in the state's animal-protein supply. Per-capita meat availability also increased from 8.41 kg/year in 2018-19 to 10.40 kg/year in 2024-25, indicating a growing overall demand for meat.

Demand for goats and sheep is further influenced by festivals and religious occasions. Markets in western Tamil Nadu regularly experience increased movement and price variation around periods such as Bakrid and Deepavali. Such seasonal demand creates an opportunity for farmers who can produce uniform, healthy animals and plan the sale period properly. At the same time, keeping animals for an unnecessarily long period only to wait for a better price can increase feed and labour expenditure. Therefore, the important point for a commercial fattening farm is not simply obtaining a high selling price, but obtaining the highest possible margin from each kilogram of live-weight gain.

Tamil Nadu also has suitable indigenous genetic resources for commercial goat and sheep production. Goat breeds such as Kanni Adu, Salem Black and Kodi Adu and sheep breeds such as Mecheri, Vembur and Kilakarsal are adapted to local production conditions, while the state has established livestock markets and veterinary infrastructure. India additionally exported 11,581 tonnes of sheep and goat meat valued at US\$84.94 million during 2024-25, with important destinations including the United Arab Emirates, Qatar, Kuwait, Bahrain and Oman. Although export production requires additional standards related to carcass quality, hygienic processing and certification, the existence of these markets shows the wider economic value of small-ruminant meat production.

Despite this potential, many farms still operate with a combination of traditional practices and incomplete scientific management. The major difficulties include shortage of quality fodder, fluctuating feed prices, disease and mortality, poor growth, limited technical knowledge, labour shortage and weak bargaining power in the market. In a fattening enterprise, these problems are especially important because the farmer invests continuously in feed, labour and health care until the animal reaches market weight. Any factor that delays growth or causes mortality directly reduces the return on investment.

Health management is therefore not a separate activity from farm economics. A goat or sheep that remains healthy and gains weight regularly converts feed into saleable live weight. In contrast, diarrhoea, parasitism, pneumonia, lameness, heat stress or subclinical disease may reduce feed utilisation and growth even when the animal survives. The present review therefore concentrates on two closely connected areas: the major constraints limiting commercial goat and sheep fattening and a practical

health-management system capable of reducing preventable losses. The objective is to present recommendations that are scientifically supported but simple enough to be applied under practical farm conditions in Tamil Nadu.

2. Major Constraints in Commercial Goat and Sheep Fattening:

2.1 Feed and Fodder Scarcity:

Feed and fodder shortage is one of the basic constraints limiting profitable goat and sheep production in Tamil Nadu. The Tamil Nadu State Agriculture Plan reported a green-fodder deficit of about 42.6% of requirement, with only about 1.10 lakh ha of grazing land and fodder crops occupying around 3% of cultivated area. Natural grazing lands have also been reduced by competing demands from food production, urbanisation and industrial development (Tamil Nadu State Agriculture Plan, 2017). More recent assessment by IGfRI (Indian Grassland and Fodder Research Institute) estimated state-wide dry-matter availability at about 97.3% of requirement, but with considerable district-level differences; six districts were classified as deficient and one as severely deficient (IGfRI, 2025).

Official data also indicate a reduction in the area under fodder crops in Tamil Nadu, from about 91 thousand ha in 2014-15 to 48 thousand ha in 2018-19 (DAHD, 2022). Therefore, the problem is not simply the absence of agricultural land but the limited land and water specifically allocated for fodder production. During summer and drought periods, this increases dependence on purchased green fodder, crop residues and concentrate feed. For a commercial fattening farm, maintaining a planned fodder source is therefore essential for controlling feed cost and maintaining consistent growth (Ravikumar and Kumaravel, 2017; Seetha et al., 2021).

2.2 Rising Cost of Concentrate Feed:

Concentrate feed plays a crucial role in determining growth and finishing performance, yet it also represents one of the major recurring expenses in intensive fattening systems. A study conducted in Tamil Nadu by Gokulakrishnan et al. (2024), based on monthly feed price data from January 2012 to December 2022, identified a clear time dependent pattern in goat, sheep, and creep feed prices and developed forecasting models for future trends. Consequently, farmers may encounter situations where the market price of goats remains relatively stable while feed expenditure continues to rise, thereby reducing the margin per animal. The economic effect becomes more serious when the farm depends almost completely on purchased concentrate. Unnecessary concentrate feeding does not automatically result in proportionally higher profit, especially when roughage quality is good and the animal has already reached the required growth stage. Correct ration formulation, gradual adjustment of concentrate, efficient use of locally available fodder and maintaining adequate fibre are therefore important for feed efficiency and prevention of rumen disorders (Ramkumar et al., 2019).

2.3 Disease, Mortality and Health-Related Production Loss:

Disease is a major constraint because mortality results in the loss of the animal as well as the money already spent on purchase, feed, labour and medicines. Important infectious diseases include Peste des petits ruminants (PPR), enterotoxaemia, goat pox in goats, sheep pox and contagious ecthyma (orf) in sheep, foot-and-mouth disease, pneumonia and other bacterial or viral infections. Sheep may also be affected by bluetongue and footrot depending on the local disease situation and management system. PPR is particularly important because it can spread rapidly through susceptible flocks and cause severe mortality (ICAR, 2022). Enterotoxaemia is also important in rapidly growing animals because sudden changes towards high-energy feeding can predispose susceptible animals to disease.

Among fattening animals, gastrointestinal disease is particularly important because it can reduce feed utilisation and daily weight gain without always producing high mortality. Diarrhoea may be associated with gastrointestinal parasites, coccidiosis, enterotoxaemia, salmonellosis, feed-related disorders or toxins. Coccidiosis is especially important in young kids and lambs kept under crowded, wet or unhygienic conditions, while *Haemonchus* and other gastrointestinal nematodes can cause anaemia, poor body condition and reduced growth in both goats and sheep (Smith and Sherman, 2009; TNAU, 2020).

High-concentrate feeding creates another risk. Sudden introduction or excessive intake of rapidly fermentable feed can produce rumen acidosis, reducing feed intake and performance and, in severe cases, causing dehydration, diarrhoea and death. Bloat can also occur when fermentation gases cannot be effectively removed, particularly when diets favour stable foam formation (Wang et al., 2023). Therefore, health management and feeding management cannot be treated separately.

Disease / Condition	Main Signs	Spread / Major Risk Factors	Prevention And Control	Importance
PPR	Fever, nasal/ocular discharge, oral lesions, diarrhoea, dehydration, cough and pneumonia.	Highly contagious; animal mixing and movement increase risk.	Vaccination, quarantine, movement control, early isolation and reporting.	Very high; affected populations may show high morbidity and mortality.
Enterotoxaemia	Sudden death, abdominal pain and diarrhoea may occur.	Rapid multiplication of <i>Clostridium perfringens</i> after sudden high-energy feeding or diet change.	Vaccination, gradual concentrate introduction and consistent feeding.	Can cause very high case fatality in susceptible young animals.
Coccidiosis	Diarrhoea, straining, dehydration, weakness and poor growth; severe cases may contain blood.	Faeco-oral spread; crowding, wet bedding, poor hygiene and stress.	Dry clean pens, good drainage, clean feeders / waterers and age-group management.	High production importance in young stock; severe cases may be fatal.
Sheep pox / Goat pox	Fever, skin nodules or papules, scabs and lesions; sheep pox can be severe.	Direct contact, aerosols, contaminated equipment and animal movement.	Use species-specific sheep-pox or goat-pox vaccine, quarantine new stock, isolate cases and control movement.	High; outbreaks can cause mortality and major growth/market losses.

Contagious ecthyma (orf)	Proliferative crusted lesions around lips and muzzle; lambs and kids may have difficulty suckling.	Direct contact with infected animals or contaminated surfaces; virus persists in scabs.	Isolate affected animals, maintain hygiene and use vaccination where locally recommended. Use gloves because orf is zoonotic.	Usually low mortality but can cause poor intake, weight loss and labour/treatment costs.
Footrot / foot disease	Lameness, foot pain, abnormal gait and reduced grazing or feed access.	Moist contaminated floors/pastures, infected carriers and prolonged wet exposure.	Regular foot inspection, dry flooring, foot hygiene and veterinary-directed treatment; quarantine affected or purchased stock.	Important production loss because lameness directly reduces feed intake and growth.
Gastrointestinal nematodes	Anaemia, pale mucosa, weakness, bottle jaw, weight loss and poor growth.	Larvae acquired mainly from contaminated pasture; warm and moist conditions favour transmission.	Targeted parasite control, faecal monitoring, pasture management and avoid overstocking.	Heavy Haemonchus infection can cause major production loss and death.
Pneumonia	Fever, cough, nasal discharge, rapid/difficult breathing and reduced appetite.	Respiratory spread; crowding, dust, poor ventilation, transport and stress increase risk.	Good ventilation, dry housing, low dust, isolation and local vaccination where applicable.	High morbidity in crowded groups; severe disease may be fatal.
Fascioliasis	Poor body condition, weakness, anaemia, reduced growth and sometimes bottle jaw.	Contaminated wet grazing areas with suitable snail intermediate host.	Avoid high-risk wet areas and use risk-based flukicide treatment.	Usually chronic; important through growth and productivity loss.
Rumen acidosis	Reduced intake, depression, diarrhoea, dehydration and sudden performance loss.	Sudden/excessive intake of rapidly fermentable concentrate.	Gradual adaptation, adequate effective fibre and consistent feeding.	Severe acute cases can be fatal; subacute disease reduces feed efficiency.
Bloat	Left abdominal distension, discomfort, respiratory difficulty and collapse in severe cases.	High-concentrate diets, rapidly fermentable feeds and some high-risk forages.	Adequate roughage, gradual dietary change and careful management of high-risk feeds.	Can become rapidly fatal when severe.

2.4 Poor Growth and Low Growth Rate:

Poor growth is usually the final result of several constraints acting together rather than one isolated problem. Inadequate energy or protein, poor-quality roughage, parasitism, diarrhoea, respiratory disease, heat stress, overcrowding and incorrect concentrate feeding can all reduce average daily gain. TNAU (Tamil Nadu Agricultural University) reports that chronic gastrointestinal infections and parasites can retard growth and result in weak and stunted animals (TNAU, 2020).

For a fattening farm, slow growth increases the number of days for which feed and labour are spent before sale. Therefore, even a moderate reduction in ADG (Average Daily Gain) can increase the cost per kilogram of live-weight gain and reduce the number of batches that can be completed in a year. Regular weighing or reliable body-weight estimation is consequently more useful than judging growth only by appearance.

2.5 Lack of Technical Knowledge and Continued Traditional Practices:

Traditional experience has value, but commercial fattening requires planned feeding, vaccination, parasite control, quarantine, disease observation, record keeping and marketing decisions. Tamil Nadu studies have identified lack of knowledge about balanced feeding and low adoption of practices such as mineral supplementation, insurance and farm records (Raja et al., 2018; Narmatha et al., 2019). A recent study from the Cauvery Delta also reported heavy dependence on browsing, crop stubbles and tree leaves and found no reported vaccination among the sampled backyard farmers (Senthil et al., 2025).

The important point is not to completely replace traditional knowledge, but to combine practical local experience with simple scientific management. A commercial farmer should be able to identify abnormal appetite, diarrhoea, respiratory signs, anaemia and reduced growth early and should maintain basic records that support decisions.

2.6 Labour Shortage:

Feeding, watering, fodder cutting, cleaning, animal observation, treatment and movement of animals require daily labour. The requirement is particularly high in stall-fed systems because animals cannot obtain feed independently. Studies in north-western Tamil Nadu have identified labour shortage as an important constraint, associated with migration, alternative employment and increasing wages outside agriculture (Ramkumar et al., 2019). Poor labour availability can result in delayed feeding, inadequate cleaning and failure to identify sick animals early.

2.7 Market Fluctuations and Dependence on Middlemen:

Farmers may have limited bargaining power when they sell animals individually and when price is estimated only by visual appearance. A study of 120 goat and sheep farmers in Tiruchirappalli and Salem reported exploitation by middlemen as the most serious marketing constraint, followed by low prices paid to farmers (Ravikumar and Kumaravel, 2017). More recent evidence from the Cauvery Delta found that middlemen remained the main marketing channel for a large proportion of backyard goat and sheep farmers (Senthil et al., 2025).

Seasonal demand can improve prices during festivals, but keeping animals longer only to wait for a higher price can increase feed and labour costs. Direct marketing, producer groups, weighing and grading animals, and access to more than one buyer can improve bargaining strength. The Theni goat producer-company example supported through NABARD (National Bank for Agriculture and Rural Development) also demonstrates the potential of collective marketing (Kamaraj, 2023).

2.8 Climate and Heat Stress:

High environmental temperature can reduce feed intake and shift energy towards maintenance of body temperature. Heat stress increases respiratory rate and body temperature and can reduce growth performance. Pragna et al. (2018) reported lower average daily gain in heat-exposed indigenous goats compared with animals maintained under more favourable conditions. In commercial fattening units, shade, adequate clean water, ventilation and reduced handling during the hottest hours are therefore low-cost measures with direct production value.

2.9 Predation and Theft:

Predation is more relevant to open grazing systems, while theft can affect both backyard and commercial farms. Tamil Nadu studies have ranked theft among the important constraints faced by small-ruminant farmers (Seetha et al., 2021). Theft creates a direct financial loss and can be particularly serious when animals have already accumulated substantial feed expenditure. Secure fencing, controlled entry, identification records and routine counting of animals should therefore be included in farm management.

2.10 Access to Credit and Livestock Insurance:

Commercial fattening requires working capital for animal purchase, shed construction, feed, medicines, labour and other operating costs before the animals are sold. In Namakkal, complicated loan procedures were identified as a major constraint by a high proportion of surveyed goat and sheep farmers (Narmatha et al., 2019). Insurance is also important because mortality can remove the productive asset against which capital has been invested. However, historical adoption of livestock insurance among goat and sheep farmers has been low. Under the National Livestock Mission, goats and sheep are eligible for livestock insurance support according to the applicable guidelines. Better awareness, simple procedures and timely settlement are needed to make insurance useful as a practical risk-management tool.

3. Health Management for Profitable Goat and Sheep Fattening:

Health management in a commercial fattening unit should be considered a production investment rather than only a treatment activity. Disease-related losses include mortality, treatment expenditure, reduced body weight, delayed marketing and additional labour. The most economical health programme is one that prevents major disease, detects abnormalities early and avoids unnecessary medication (Singh et al., 2013; Senthil et al., 2022).

3.1 Routine Health Monitoring in Goat and Sheep Fattening:

Daily observation should be simple and consistent. The objective is to identify a change before it develops into severe clinical disease. Young stock require particular attention because diarrhoea, enteritis and pneumonia are important causes of mortality and poor growth (Das et al., 2022; Senthil et al., 2022). A practical rule for the farm is: if a goat or sheep eats less, gains less, walks less or isolates itself, investigate it before waiting for obvious disease.

Monitoring activity	What to monitor / action
Daily observation	Appetite, rumination, activity, posture, isolation, cough, nasal/ocular discharge, diarrhoea, lameness and abnormal respiration.
Feed and water	Feed refusal, blocked/dirty troughs, sudden reduction in intake and contaminated water.
Faeces observation and examination	Consistency, colour, blood/mucus, straining; isolate diarrhoeic animals early. Egg/oocyst counts periodically and after treatment where possible.
Body weight / ADG	Weigh at arrival and at fixed intervals, preferably weekly in intensive fattening; calculate ADG.
Body condition / appearance	Body condition, coat quality, mucous membrane colour, dehydration and muscle wasting.
Respiratory screening	Cough, nasal discharge, increased respiratory effort, fever and reduced appetite; isolate suspects.
Anaemia / FAMACHA*	Conjunctival colour together with body condition and faecal egg count (FEC) where trained personnel are available.
Skin / ectoparasites	Ticks, lice, fleas, keds and mange; inspect ears, neck, groin and tail base.
Temperature	Check rectal temperature when infection or fever is suspected.
Mortality / morbidity register	ID, date, signs, treatment, response, death and suspected/confirmed cause.

FAMACHA*: Faffa Afrikaans Method for the Assessment of Conjunctival Hemoglobin Anaemia

3.2 Vaccination Programme for Goat and Sheep Fattening:

There is no single universal vaccination calendar that should be applied blindly to every farm. Vaccination depends on age, maternal antibodies, vaccine product, previous vaccination, local disease risk and the current state programme. For a Tamil Nadu commercial fattening farm, the core programme should give priority to PPR, FMD, enterotoxaemia, goat pox in goats and sheep pox in sheep. HS and other vaccines such as anthrax, bluetongue or orf should be included when the local veterinary authority, farm history or vaccine programme identifies a specific risk. Only healthy animals should be vaccinated, vaccines must be maintained under the required cold chain and the manufacturer's label and current Tamil Nadu Animal Husbandry Department programme should be followed.

The following table is therefore a theoretical framework for both goats and sheep. It should be adapted to each animal's previous vaccination history rather than restarting every schedule whenever a goat or sheep enters the farm.

Age / Time	Disease / Intervention	Primary / Booster	Practical Note	Species
Birth-24 h	Colostrum	Not a vaccine	Ensure rapid and adequate colostrum intake; this is the first major protection against neonatal disease.	Goat & sheep
Around 3 months	PPR	Primary; repeat according to current PPR programme/vaccine label	PPR is a major disease of both goats and sheep. ICAR describes approximately 3 years of protection with the standard Indian vaccine.	Goat & sheep
3-5 months	Enterotoxaemia	Primary + booster according to product; ICAR-IVRI guidance supports repeat/annual protection	High priority in rapidly growing animals and high-concentrate systems. Lambs and kids are highly susceptible.	Goat & sheep
3-5 months	Goat pox	Primary + booster according to product/local programme	Use only a goat-pox vaccine for goats.	Goat
3-5 months	Sheep pox	Primary + booster according to product/local programme	Use a sheep-pox vaccine for sheep; species-specific vaccination is important.	Sheep
3-5 months	Haemorrhagic septicaemia (HS)	Primary + booster according to product/local programme	Use where recommended by local veterinary authorities and plan around seasonal risk.	Goat & sheep
Around 5 months	FMD	Primary where they are required or indicated	Tamil Nadu programme has specified first vaccination around this age; follow the current state campaign and vaccine label.	Goat & sheep
Every 6 months	FMD	Revaccination	Follow the current Tamil Nadu mass-vaccination campaign.	Goat & sheep
6-12 months / annual review	ET / pox / HS	Revaccination according to vaccine label and local programme	Do not duplicate doses unnecessarily; maintain a farm vaccine register.	Goat & sheep; pox species-specific
Risk-based	Anthrax / Bluetongue / Orf or other local-risk vaccines	As advised	Use only when disease is endemic, farm history indicates risk or veterinary authorities recommend vaccination.	Species/risk specific

FMD timing differs between official schedules. Tamil Nadu guidance has specified first vaccination around the fifth month with six-monthly repetition, while ICAR-IVRI (Indian Council of Agricultural Research - Indian Veterinary Research Institute) health calendars may place primary vaccination earlier with a booster. For a commercial farm in Tamil Nadu, the current state campaign, the vaccine label and the attending veterinarian should take precedence. PPR is important in both species because it affects small ruminants and was first recognized in India in Tamil Nadu. Sheep pox and goat pox should not be treated as interchangeable vaccines: sheep should receive sheep-pox vaccine and goats should receive goat-pox vaccine (ICAR, 2022; ICAR, 2026).

3.3 Strategic Deworming and Parasite Control in Goats and Sheep:

A fixed monthly deworming programme should not be treated as the default for every commercial farm. Repeated blanket treatment can select anthelmintic resistance, particularly in gastrointestinal strongyles. A better approach is targeted treatment supported by faecal egg counts, body condition, anaemia assessment or FAMACHA where trained personnel are available, together with pasture and hygiene management (Thomas and Syamala, 2015). Young fattening animals require closer surveillance because gastrointestinal nematodes and coccidiosis can directly reduce growth.

Age / Time	Action	Preferred Approach
Birth-30 d	No routine anthelmintic	Colostrum, hygiene, dry bedding and close observation.
30-45 d	Faecal screening / coccidiosis risk assessment	Consider anticoccidial control only when signs, farm history or veterinary assessment indicates risk.
Around 45 d	Strategic helminth control if indicated	Select an effective drug based on parasite burden, previous drug use and veterinary advice.
60-75 d	Recheck FEC* / clinical signs	Treat only animals or groups requiring treatment.
Around 3 months	Strategic deworming	Use diagnosis/risk to guide treatment; avoid automatic repeated dosing.
Pre-monsoon	Risk-based helminth control	FEC/FAMACHA where feasible; improve pasture and pen hygiene.
Monsoon / post-monsoon	FEC + targeted treatment	Recheck high-risk groups and treat based on need.
6 months	Parasite review / treatment if indicated	Change drug class only when justified by efficacy/resistance considerations.
9 months	FEC / clinical review	Continue monitoring weight gain and parasite signs.

12 months	Annual parasite review	Review FEC, treatment efficacy and farm parasite plan.
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FEC*: Fecal Egg Count

Important parasite groups include gastrointestinal strongyles such as *Haemonchus*, *Trichostrongylus* and *Oesophagostomum*, other intestinal nematodes, lungworms, *Moniezia* where epidemiologically relevant, and coccidia (*Eimeria* spp.). *Fasciola* should be controlled only where local ecology and diagnosis support it. Indian work has documented substantial infection pressure in kids below six months (Alyethod et al., 2021), and lambs are also at risk where crowding, moisture and poor hygiene favour oocyst accumulation.

The practical sequence for a low-cost farm is: observe → weigh/score → perform faecal examination where feasible → identify the likely parasite → select an effective drug → dose accurately according to body weight → check response → record the treatment.

Drug rotation should be based on treatment history and evidence of reduced efficacy. Antibiotics and anticoccidials should not be used routinely without a veterinary indication.

3.4 Ectoparasite Control in Goats and Sheep:

Ticks, lice, fleas, keds and mange mites can cause irritation, skin damage, anaemia and reduced growth. Monthly inspection of the ears, neck, axilla, groin and tail base is a simple first step. Strategic whole-group treatment may be required during high-risk periods, together with cleaning of cracks, corners and manure accumulation. TANUVAS (Tamil Nadu Veterinary and Animal Sciences University) sheep and goat unit management information has reported dipping at strategic intervals, including March and September (TANUVAS, 2026). Only approved products should be used at the labelled concentration, and meat withdrawal periods must be respected.

3.5 Low-Cost Biosecurity for Goat and Sheep Fattening Units:

- Restrict unnecessary visitors, traders and animal handlers from entering the animal area.
- Provide controlled entry and, where practical, a footbath; however, cleaning organic matter is more important because disinfectants work poorly on dirty surfaces.
- Keep newly purchased animals and different age groups separate whenever possible.
- Maintain a separate quarantine pen for purchased animals for at least 30 days.
- Record source, vaccination history and previous treatments of every purchased animal.
- Isolate animals showing fever, diarrhoea, respiratory disease, skin lesions or sudden loss of appetite.
- Use raised feed troughs and keep feed away from faecal contamination.
- Clean drinkers regularly and prevent faecal contamination of water.
- Keep floors dry and remove wet manure; prevent stagnant water and damp corners.
- Remove carcasses promptly and dispose of them according to veterinary and public-health requirements.
- Clean and disinfect equipment between sick and healthy groups; avoid sharing contaminated needles or drenching equipment.
- Control movement of animals and avoid unnecessary mixing with outside flocks.
- Reduce contact with roaming dogs and rodents.

Expensive all-in/all-out infrastructure is not necessary for a modest goat and sheep fattening farm. The highest-value biosecurity investments are separation of new and sick animals, clean feed and water, dry flooring, manure control and movement control. TNAU recommends isolation of new arrivals and separation of infected or infested animals (TNAU, 2021).

3.6 Quarantine Protocol for Purchased Goats and Sheep:

Every purchased goat or sheep should enter quarantine rather than going directly into the main fattening group. A minimum quarantine period of 30 days is a practical baseline. During this period, the animal should be identified, weighed, clinically examined, checked for external parasites, assessed for faecal parasite burden and reviewed for vaccination history. Necessary vaccination and parasite control should be planned according to the animal's condition and previous history. Newly transported animals should not be overloaded with multiple procedures on the same day when they are severely stressed. Any animal with fever, diarrhoea, respiratory disease, skin lesions or unexplained weight loss should remain isolated until veterinary assessment is completed.

3.7 Disease Prevention and Mortality Reduction in Goats and Sheep:

Mortality reduction should concentrate on the few problems that repeatedly produce the greatest losses instead of attempting to prevent every possible disease. In Tamil Nadu, pneumonia, tetanus and diarrhoea have been reported among important causes of goat mortality, while Indian organized-farm observations also identify pneumonia and diarrhoea/enteritis as important causes of young-stock loss in goats and sheep (Senthil et al., 2022; Das et al., 2022).

Problem	Low-Cost Prevention Strategy
Neonatal period	Rapid colostrum intake, dry bedding, adequate shelter, navel hygiene and close observation of both kids and lambs.
Diarrhoea	Clean feed/water, clean pens, gradual diet changes, early isolation and investigation of parasitic, bacterial or coccidial causes in kids and lambs.
Pneumonia	Good ventilation without chilling drafts, low dust/ammonia, dry bedding, no overcrowding and early isolation.
Enterotoxaemia	Vaccination with gradual concentrate adaptation; avoid sudden high-starch/high-energy feeding.
PPR / major viral disease	High vaccine coverage, movement control, early isolation and veterinary notification of suspicious cases.
Pox	Vaccination, avoid contact with infected flocks and isolate affected animals.

Parasites	Targeted treatment, FEC/FAMACHA where possible, clean troughs, pasture management and ectoparasite control.
Lameness / foot problems	Dry floors, regular inspection of feet, early treatment and reduction of prolonged wet exposure; monitor sheep particularly for footrot where it is a local problem.
Heat stress	Shade, adequate clean water, ventilation and handling during cooler periods.
Poisoning / metabolic disease	Safe feed storage, prevent access to chemicals, gradual feed changes and correct mineral supplementation.
Outbreak response	Stop movement, isolate cases, contact veterinarian, collect samples when indicated and record morbidity/mortality.

3.8 Health Practices with the Greatest Likely Effect on Goat and Sheep Fattening Profit:

For a commercial fattening farm, health priorities should be arranged according to their likely effect on survival and growth. The first priority is vaccination against high-impact contagious diseases, particularly PPR and FMD together with locally relevant clostridial and pox vaccines. The second is early detection through daily observation and regular body-weight records. The third is prevention of diarrhoea and pneumonia in young stock. The fourth is strategic parasite control rather than indiscriminate monthly deworming. Quarantine, rapid isolation and clean, dry housing should support all of these measures. This approach protects both the number of saleable goats and sheep and the growth obtained from the feed already purchased (Senthil et al., 2022; Gurrappanaidu et al., 2026).

3.9 Farm Register for Goats and Sheep:

Health management becomes economically useful only when the results can be measured. The farm should maintain a simple register for both goats and sheep containing animal identification, source, arrival date, starting weight, weekly body weight, ADG, vaccination dates, vaccine batch where available, parasite-treatment date and drug, faecal examination results, illness episodes, treatment cost, days with reduced feed intake, mortality and final sale weight. This record allows the farmer to identify whether a repeated problem is related to disease, feeding, housing or management and provides evidence for future farm decisions.

4. Results and Practical Synthesis:

The reviewed evidence shows that the main constraints in commercial goat and sheep fattening are interconnected rather than independent. Feed and fodder availability remains a major limitation in Tamil Nadu, and seasonal changes in feed price can directly affect the cost of live-weight gain. Disease and parasitism further reduce feed utilisation and growth, while poor technical knowledge and labour shortage reduce the ability of farmers to prevent these losses. At the marketing stage, dependence on intermediaries and seasonal price variation can reduce the final margin even when animal performance is good.

From the health-management evidence, prevention gives the most practical return for a commercial farm. Vaccination against major infectious diseases, quarantine of purchased goats and sheep, rapid isolation of sick animals, strategic parasite control, clean feed and water, dry housing and heat-stress reduction can all be implemented without highly expensive infrastructure. Regular weighing is particularly important because the economic effect of disease may appear first as a fall in ADG rather than immediate mortality. This approach links health management directly with feed efficiency, growth rate and profitability.

The practical synthesis is therefore a prevention-first model: purchase healthy animals → quarantine and identify them → establish a vaccination and parasite-control plan → maintain clean feed and water → monitor appetite and faeces daily → record body weight regularly → isolate abnormalities early → review mortality and treatment records monthly → market animals when the target weight and economic conditions are favorable.

Constraint	Priority strategy	Expected economic effect
Fodder shortage	Maintain planned fodder production and use locally available crop residues appropriately.	Reduce dependence on purchased feed and stabilize ration cost.
High concentrate cost	Balance the ration and use concentrate according to growth stage; avoid unnecessary excess.	Reduce feed cost per kg gain.
Disease / mortality	Vaccination, quarantine, biosecurity and early isolation.	Protect saleable animals and invested feed cost.
Parasites	FEC/FAMACHA where possible and targeted treatment.	Improve growth while reducing resistance and unnecessary drug cost.
Poor growth	Weekly weight monitoring and investigation of reduced ADG.	Shorten fattening period and improve turnover.
Heat stress	Shade, ventilation, clean water and cooler-time handling.	Maintain feed intake and growth.
Labour shortage	Simple routines, records and organized pen design.	Reduce missed feeding/cleaning/health observations.
Middlemen / price variation	Compare buyers, weigh animals and use producer groups/direct marketing where possible.	Improve bargaining position and sale timing.
Theft	Secure fencing, animal identification and regular counting.	Reduce direct asset loss.
Credit / insurance	Plan working capital and use eligible insurance support where practical.	Reduce financial risk from mortality and cash-flow problems.

5. Conclusion:

Commercial goat and sheep fattening in Tamil Nadu has considerable scope owing to the strong demand for chevon in regular consumption and the significant demand for mutton during festival seasons, suitable indigenous breeds and established

livestock markets. However, profitability cannot be improved by increasing the number of goats alone. The major losses occur when feed cost, disease, poor growth, labor, climate stress and marketing problems act together. Among these, health-related losses are especially important because disease can reduce both survival and the efficiency with which feed is converted into live weight.

A practical commercial farm should therefore follow a prevention-based health system rather than depending mainly on treatment. Vaccination against major diseases, quarantine of all purchased goats and sheep, strategic parasite control, clean and dry housing, safe feed and water, heat-stress management and early isolation of sick animals should form the basic program. Regular body-weight and ADG recording should be combined with a simple health and mortality register so that the farmer can measure the economic effect of each management decision. The most suitable system is not necessarily the most expensive one; a simple, consistent and properly recorded system can prevent a large proportion of avoidable losses.

Overall, improving profitability in goat and sheep fattening requires the farmer to think in terms of cost per kilogram of live-weight gain rather than only the selling price of an animal. When health, feeding, growth and marketing are managed together, the farm can reduce unnecessary expenditure, shorten the fattening period, improve the number of saleable animals and achieve a more stable return. This integrated approach is particularly relevant for small and medium commercial farms in Tamil Nadu that are moving from traditional goat keeping towards planned fattening enterprises.

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