ISSN: 2583-8288

Popular Article

Published on: 30.09.2024

Advantages and Challenges of Goat Farming in India

Dr. J. Shashank[1]*, Dr. N. Rajanna[2], Dr. J. Saikiran[3]

[1] Subject Matter Specialist (Veterinary Medicine)

[2] Programme Coordinator & Head

[3]Subject Matter Specialist (LPM)

Krishi Vigyan Kendra, P.V. Narsimha Rao Telangana Veterinary University, Mamnoor, Warangal - 506 166.

DOI:10.5281/vettoday.13904216

Introduction

The goat is one of the early domesticated animals, earlier goat farming activity was limited to livelihood activity, but now it has become an important commercial activity. According to the 20th Livestock Census Report (2019), India has 148.88 Million goats, so India has 2nd highest population in the world followed by China (Table 1). Compared to the previous livestock census (2013) there is a 10.1% rise in the goat population in India, indicating steady growth in goat population and goat farming in India. Goats can adjust to a wide range of climatic conditions, rearing can be done in famine and drought areas. Goats are versatile and multipurpose animals because they will adapt under low fodder, low water, and extremely adverse climatic conditions and produce a variety of products meat, milk, kids, manure, and hide (Lad *et al*., 2017). A goat is known as a poor man's cow because it will produce milk, meat, and manure like a cow at a meager cost. Goats are docile, good-tempered, cooperative animals easy to rear by women, land less labour and children and they will thrive well on shrubs, bushes, and kitchen waste. They are known as moving ATMs they will provide financial assistance to farmers throughout the year in all situations (Risko and Csapo, 2019).

Table 1. Goat population in India according to 2019 census

Category	Population (In millions) 2012	Population (In millions) 2019	% Change
Male goat	37.62	32.10	-14.65
Female goat	97.56	116.78	19.71
In-milk	36.25	41.83	15.38
Dry	25.31	27.82	9.95
Milch animals (in Milk + Dry)	61.56	69.65	13.15
Total	135.17	148.88	10.14

A. Advantages of goat farming

Domestic or commercial goat rearing has some advantages. If you wish to start a goat farming business, you first need to learn about the benefits of goats.

1. **Meager investment**: Goat farming requires less acreage and additional amenities than cows, buffaloes, and other livestock farms. Infrastructure, feed, and treatment expenditures are all lower. They have a lower demand for housing and other administrative services. They can also share their houses with their owners and other

livestock in small-scale farming. At the cost of one pregnant buffalo, we can get 10 pregnant goats. Goats produce more per unit of investment than other livestock.

2. **Less labour requirement:** Under a grazing system 30-40 goats and stall feeding 40-80 goats can be reared by a single person. Compared to other animal farming goat farming needs less labour.
3. **Meat:** Chevon (Goat meat) has less fat than other meats, has protein with high biological value, doesn't have any taboos, and is consumed by all community people. It is getting more demand day by day due to its high nutritional value and taste.
4. **Milk**: Goats are known as man's foster mother since their milk is regarded to be better for human nourishment than that of other animal species. The milk is highly nutritious and finer than cow milk, which means the lipids and proteins are present in a finer state and are easier to digest, especially for children and the elderly, and are less allergic compared to other species. Goat milk has higher buffering qualities and this enhances its value for patients suffering from peptic ulcers, liver dysfunction, jaundice, biliary disorders, and other digestive problems. (Ranadheera *et al.*, 2019). Ayurvedic medicine uses goat milk to treat asthma, cough, diabetes, and other ailments (Hokmollahi and Ehsani, 2020).
5. **Hide:** The hide of a goat is often used to make leather products. The hairs of goats are used to make rugs and ropes. Pashmina shawls, Mohair, and Kashmere carpets are all in high demand and sell for a lot of money.
6. **Manure:** Goat manure has 2.5 times more nitrogen and phosphorus compared to cattle and buffalo manure. So agriculture and horticulture farmers have more faith in manure.
7. **Multipurpose animal**: Goat is a multipurpose animal that produces meat, milk, hide, fiber, and manure, among other things. Goats are frequently utilized to pull modest goods in mountainous terrain.
8. **High prolificacy:** Goats have extraordinary reproductive ability compared to other domestic animal species, yearly twice kidding and twins and triplets are common in goats.
9. **Easily marketable:** Goat milk, meat, kid, and manure have high demand in the market.
10. **Easy to rear**: Marginal farmers, agricultural laborers, women, and children can grow goats since they can survive on a variety of leaves, shrubs, bushes, and kitchen trash. They will not demand high-profile nutrition; they will survive and reproduce with low-quality feed and fodder. Goats have improved crude fiber digestibility and can feed even on low-quality roughages. Goats can adapt to a variety of agro-climatic conditions, including arid dryness, cold aridity, and hot humidity. Plains, hilly areas, sandy zones, and mountaintops are all good places to raise them. Goats are more tolerant to hot weather than other farm animals.
11. **Research:** Goats are a great animal to use in physiological and biological research (Lund and Ahmad, 2021).

B. Challenges in goat farming

Challenges include highly unorganized and most of the time monopoly marketing. Endemic disease problems, limited feed resources due to farmers behind the commercial crop practice, due to urbanization, and industrialization grazing land of goats depleting every year. Water problems due to low rain, climatic variations like famine, flood and lightning strike, and labour shortage. Unavailability of high genetic potential breeds of goat, absence of high producing exotic cross breeds, lack of scientific feeding practices and feeding management at farmer level. High kid mortality due to colibacillosis, starvation, extreme climatic conditions, and death of mother due to parasitic infestation as a result of of poor management. Challenges can be overcome by a change in marketing strategy, growing of fodder crops and trees, conservation and harvesting of rainwater, following of alert messages about climatic variations, practicing hygiene in the farm and regular following of deworming, dipping for internal and external parasites and vaccination schedule and good management practices will reduce the kid and adult mortality in the farm (Kumsa, 2019).

Health challenges include:

1. **Diarrhea (Scours)**

Increased frequency, fluidity, or volume of fecal output.

Etiology:

Diarrhea in goats, also known as scours, can have many causes, including parasites, bacterial infections, and stress:

a. **Coccidiosis:** A common cause of diarrhea in young goats, caused by microscopic protozoan parasites (Eimeria) that destroy intestinal cells. Symptoms include decreased feed intake, weight loss, and diarrhea can be severe and may contain blood, mucus, or water.
b. **Colibacillosis:** A bacterial infection (Escherichia coli) that affects young goats, causing watery, whitish-yellow, or greyish diarrhea. Other symptoms include dehydration, an inflamed umbilical cord, and soiled back legs.
c. **Peste des petit ruminants (PPR):** A viral disease that causes profuse diarrhea, dehydration, and emaciation.
d. **Stress:** Stressors include cold and wet weather, poor sanitation, transportation, and exposure to new animals.
e. **Feed:** Too much-wet grass and grain, or rich hay or alfalfa hay can cause diarrhea.
f. **Switching milk types:** Switching milk types can cause diarrhea.
g. If left untreated, scours can lead to dehydration, depression, loss of appetite, weakness, and death.

.

Images showing diarrhoea in goats

Treatment:

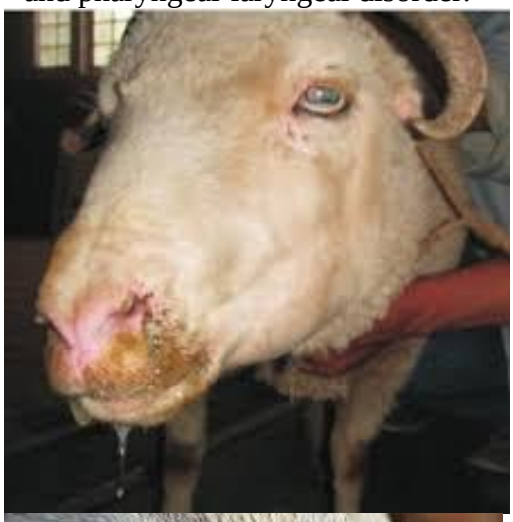
a. **Hydration:** Provide fresh, clean water to prevent dehydration. We can also alternate clean water with electrolyte solutions to help maintain hydration and energy levels.
b. **Isolation:** Isolate sick goats to prevent the spread of disease.
c. **Probiotics and baking soda:** Probiotics can help balance the rumen, while baking soda can help balance acids and fermentation gases in the digestive system.
d. **Diet:** Feed grass hay and limit or cut out grain.
e. **Antibiotics:** If the cause is bacterial, such as colibacillosis or paratyphoid (Salmonellosis), antibiotics are necessary.
f. **Cleanliness:** Keep bedding clean and wash down the goat to keep flies away. (Wash your hands well, as humans can get coccidiosis too).

2. **Respiratory infection**

Goats can be affected by several respiratory infections, including:

a. **Contagious caprine pleuropneumonia (CCPP):** A highly contagious disease that can cause severe respiratory disease in goats. Symptoms include a high fever, lethargy, coughing, difficulty breathing, and frothy nasal discharge.
b. **Bacterial bronchopneumonia:** A common cause of death in young goats, especially those that have not received adequate colostrum. It's caused by Mannheimia haemolytica and Pasteurella multocida, and is more likely to occur in animals that have recently been stressed.

c. **Caprine arthritisphalitis (CAE) virus:** Causes chronic progressive pneumonia in adult goats.
d. **Lungworms:** Acquired when grazing pastures in temperate climates.
e. **Aspiration pneumonia:** Caused by incorrect drenching technique.
f. Other respiratory issues in goats include sinusitis, nasal foreign bodies, nasal tumors, and pharyngeal-laryngeal disorder.



Images showing severe mucoid nasal discharges and runny nose in goats

Treatment:

Respiratory infections in goats can be treated with antibiotics, anti-inflammatory drugs, and other measures:

a. **Antibiotics:** Broad-spectrum antibiotics like oxytetracycline or trimethoprim sulpha are often effective. For Mycoplasma infections, macrolides, tetracyclines, and fluoroquinolones may be effective if given early.
b. **Anti-inflammatory drugs:** Non-steroidal anti-inflammatory drugs (NSAIDs) like flunixin meglumine, ketoprofen, tolfenamic acid, or meloxicam are used in animals.
c. **Symptomatic therapy with bronchodilators**-Theophylline, Aminophylline as per prescribed dosage, and nebulization with mucolytic agents like N-acetylcysteine should be done (10-20 %).
d. **Homeopathic medicine:** Anti-viral drugs like Vironil syrup-1ml per animal orally should be given.
e. **Isolation:** Isolate the affected goat to prevent the spread of infection to the rest of the herd.
f. **Ventilation:** Provide adequate ventilation.
g. **Deworming:** Administer deworming medications if lungworm is suspected.
h. **Nutritional support:** Offer good nutritional support.

3. Anaemia

Anemia is a serious condition in goats that can have many causes, including:

a. **Iron deficiency:** Signs include pale mucous membranes, reduced appetite, weakness, and reluctance to move.
b. **Internal Parasites:** Anemia can be caused by parasites like coccidia, which can cause intestinal hemorrhages. Trichostrongylosis or Haemonchosis, which can cause diarrhea, weight loss, hypoproteinemia, and bottle jaw.
c. **External parasites**: Ticks, lice, and fleas.
d. **Haemoprotozoal infections**: Theileriosis, Babesiosis, and Anaplasmosis
e. **Wounds:** Internal or external wounds can cause chronic blood loss and anemia.
f. **Protein deficiency:** Malnutrition or disease can cause primary or secondary protein deficiency, which can lead to anemia.
g. **Gastrointestinal tumors:** Tumors in the gastrointestinal tract can cause anemia due to blood loss.
h. Other clinical symptoms: Subnormal temperature, hurried respiration, exercise intolerance, tachycardia, rough hair coat, jugular pulsation, geophagia, and partial to complete anorexia.

Pale mucous membrane in an anemic goat
Bottle jaw condition in an anemic goat

Treatment:

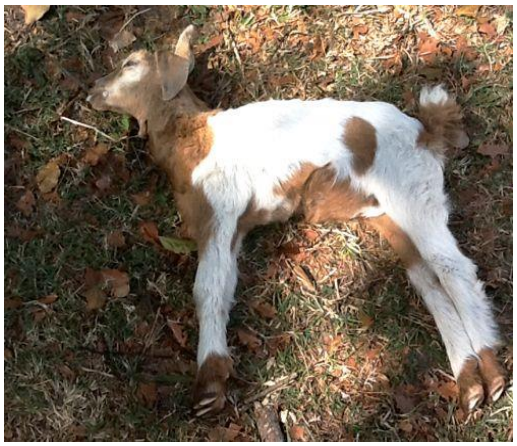
a. **Blood transfusion:** If a goat is showing signs of weakness, respiratory distress, or anorexia, a blood transfusion may be necessary. A donor of the same species can provide 20% of its blood volume or 10 to 15 mL/kg of body weight. The blood should be administered intravenously through a jugular catheter, or intraperitoneally.
b. **Iron supplementation:** If a goat has severe anemia due to chronic parasitism, iron supplementation may be necessary. Iron should be administered parenterally, not orally.
c. **Supportive therapy:** Supportive therapy can include fluid therapy and supplementation with vitamins and minerals. Vitamin E and selenium can be beneficial due to their antioxidant effect.
d. **Correcting the underlying cause:** Correcting the underlying cause of anemia is also important. For example, if a goat has anemia due to parasitic infestation, the goat should be dipped and dewormed.

4. Tetanus

Tetanus is a common and fatal disease in goats that can be prevented with vaccination. Tetanus is caused by the bacterium Clostridium tetani, which is found in soil, dust, and feces. The bacteria can multiply in an anaerobic wound and produce a toxin that causes tetanus.

Predisposing factors and clinical symptoms:

Prolapse, dystocia, wound, foot rot, and improperly treated abscess animals.
Symptoms include pyrexia, anorexia, dullness, depression, bloat, uncoordinated walking, muscle stiffness, extension of head and neck, arched back, twitching of eyes, lockjaw, and death.



Locked jaw, body stiffness, extension of the head and neck in goats

Treatment:

a. **Antibiotics:** High doses of penicillin (20,000-40,000 IU/kg BW.) or other antibiotics like tetracyclines, can be administered.
b. **Anti-inflammatories:** These can be used to treat tetanus in goats.
c. **Tetanus antitoxin:** This can be given to goats, but treatment often fails.
d. **Wound care:** The wound or infection site should be opened to the air and debrided if possible.
e. **Hydrogen peroxide:** The wound can be cleaned with hydrogen peroxide
f. Tetanus is curable if treated early, but the prognosis is poor once clinical signs develop. Humane euthanasia is sometimes considered the best option for goats with tetanus.

Prevention and control:

a. Vaccinating goats with a multivalent clostridial vaccine that includes tetanus.
b. Maintaining hygienic conditions during parturition.
c. Practicing proper wound care.

5. Footrot

Footrot is a contagious bacterial infection that affects the hooves of goats and other animals. Two bacteria Bacteroides nodosus and Fusobacterium necrophorum work synergistically in causing contagious foot rot in sheep and goats.

Symptoms:

- Footrot can cause lameness (Goats may limp or hold their limbs above the ground), painful lesions (The skin between the toes may become raw or infected), and the hoof tissue may get a foul smell.
- Footrots can cause economic losses due to decreased productivity, weight gain, and reproduction.

Images showing foot rot in goats (wound along with pus in interdigital space)

Treatment:

Footrot in goats can be treated with a variety of methods, including:

a. **Foot baths:** Place the goat in a foot bath containing a potassium permanganate solution for 15 minutes a day for 5-7 days. This can be an effective treatment for a large number of animals.
b. **Absorbent pads:** Place pads soaked in zinc or copper sulfate in high-traffic areas, such as a gate or water trough.
c. **Topical treatments:** Apply a 7% iodine solution directly to the goat's feet.
d. **Antibiotics:** For severe infections, inject the goat with antibiotics like penicillin or oxytetracycline.
e. **Trim hooves:** Trim hooves to remove dead material and excess tissue that can harbor bacteria.
f. After the treatment, keep the goats in a clean, dry environment for at least 24 hours. Foot rot can recur if wet conditions persist.

6. Lactic acidosis

Etiology:

Lactic acidosis, also known as ruminal acidosis or grain overload, is a common and potentially fatal condition in goats that can be caused by several factors:

Causes:

Misfeeding of highly fermentable carbohydrates, underfeeding of fiber, or poor management practices.

Symptoms:

Bilateral distension of the abdomen, absence of rumination, discomfort, teeth granting, colic, decreased body temperature, increased respiration rate, heart rate, and dyspnea, as well as anorexia, inactivity, incoordination, diarrhea, and death are observed.

Images showing bilateral distension of the abdomen in goats

Treatment:

Antacids, intravenous fluids, prebiotics, sodium bicarbonate, magnesium hydroxide, or magnesium oxide can be used to neutralize the rumen acid.

7. Polioencephalomalacia

Polioencephalomalacia (PEM), also known as cerebrocortical necrosis (CCN), is a common nutritional disorder in goats that can lead to brain dysfunction and death:

Causes:

Polioencephalomalacia is most often caused by thiamine (B1) deficiency, which can be due to feeding on high-concentrate rations, overconsumption of glucose, or sulfur toxicity.

Symptoms:

PEM can cause a variety of symptoms, including star gazing posture, partial or complete blindness, loss of body control, seizures, and arching of the head and back. Other symptoms include disorientation, dullness, aimless wandering, loss of appetite, circling, extensor spasms, and head pressing.

Images showing star gazing posture in goats

Treatment:

Treatment for PEM usually involves a high dose of Thiamine injections and B-complex preparations (Orally). Tribivet and B-Plex Forte Injections at the prescribed dosage. The diet should also be modified to reduce grain and increase forage intake.

Prevention:

To prevent PEM, we should provide adequate dietary fiber, avoid rations and water high in sulfur, and make gradual dietary changes.

8. Mastitis

Etiology:

Mastitis is a common health problem in goats that causes inflammation of the mammary gland, or udder. It can be caused by several factors, including:

- Physical injury or kid bites, bacteria such as *Streptococcus sp*., *Staphylococcus sp*., *Pasteurella sp*., and *E. coli*. Viruses, such as lentivirus or caprine arthritis encephalitis, Fungi, udder and teat shape, improper milking procedures, high milk-producing breeds, stress conditions, and wet, dirty, or crowded conditions. It's a costly disease due to the discard of milk and more treatment expenses.

Symptoms:

a. Clinical mastitis:

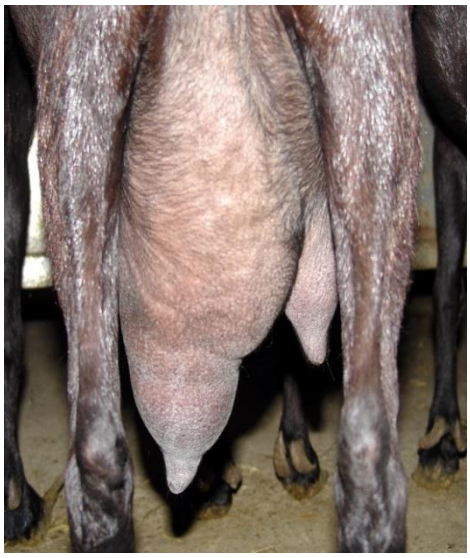
Udder changes: Swelling, warmth, pain, redness, and asymmetry in one or more quarters of the udder

Milk changes: Clots or flakes in the milk

Other changes: Fever, loss of appetite, depression, holding the rear foot up, and refusal to nurse.

b. Subclinical mastitis:

Decreased milk production and lumps in the udder. Subclinical mastitis is the most common type of mastitis and is difficult to identify because it doesn't cause obvious symptoms. It can be detected by testing the milk for somatic cells, which are inflammatory cells.



Images showing swollen and asymmetry of the udder in goats

Treatment:

Treatment for mastitis depends on the severity of the infection and its underlying cause:

a. Mild cases:

- For mild cases, we can try milking the affected side of the udder and then infusing the udder with an intramammary infusion product.

b. More severe cases:

- For more severe cases, we can use antibiotics, corticosteroids, ointments, and supportive care. Antibiotics can be administered intramuscularly, intravenously,

or intramammary. Corticosteroids can help reduce swelling in the mammary gland, especially if used early.

- Early diagnosis and treatment will help in recovery. Late presentation often causes ineffective treatment leading to permanent damage of the udder.

c. Dry-off treatment:

- We can try drying off the affected parts of the udder and applying an intramammary infusion of chlorhexidine solution.

Tips for successful goat farming:

1. Follow regular deworming and vaccination.
2. For local markets local breed goats are best.
3. Start farming with the guidance of a veterinarian.
4. Don't rear grazing goats in stall-feeding farms and vice versa.
5. Semi-intensive farming is the best method for the goat farming.
6. Start farming with local breeds and create your market channel for milk and meat, then upgrade your breeds on the farm.
7. Regular hygiene and good management practices are very much essential for optimum production.
8. Work in already running goat farms for a period of 15 days to a month before starting your goat farming unit.
9. Visit the nearby local livestock market and have an idea about goat demand, supply, and market.
10. Seasonal management is essential for better performance.
11. Isolation and prompt treatment is very much essential for the control of diseases.
12. Cultivation of fodder and fodder plants is key to success in goat farming.
13. Feeding of low amount of concentrates and a high amount of roughage will be ideal for goat feeding.
14. Provide regular clean and fresh drinking water and urea-molasses blocks licking will enhance the production of saliva and thereby improve the digestion in goats.
15. A foot bath with potassium permanganate and applying of lime powder in the shed in the rainy season will reduce the foot rot incidence in the farm.
16. Proper collection and sale of goat manure will increase the income in goat farming.
17. The sale of goats in the high-demand seasons like Bakrid, Dasara, and village festivals will have more income compared to sales in the lean season.
18. Have affection and affinity towards animals.
19. Regular animal health check-ups should be done for the control of diseases.
20. Restrict unauthorized movement of animals and humans in the goat farm.

References

Lad SS, Aparnathi KD, Mehta B, Velpula S (2017). Goat milk in human nutrition and health–a review. Int. J. Curr. Microbiol. Appl. Sci. **6** (6): 1781-1792.

Risko TC, Csapo Z (2019). Goat Keeping and Goat Milk Products in Human NutritionReview. Appl. Stud. Agribusiness Commerce. **13** (2): 24-36

Ranadheera CS, Evans CA, Baines SK, Balthazar CF, Cruz AG, Esmerino EA, Graça JS (2019). Probiotics in goat milk products: Delivery capacity and ability to improve sensory attributes. Comprehensive Rev. Food Sci. Food Safety. **18** (4): 867-882.

Hokmollahi F, Ehsani MR (2020). Characteristics of Nodooshan Goat Milk and Identification of Volatile Compounds in Traditional Nodooshan Goat Cheese during Ripening. Iranian J. Nutri. Sci. Food Technol. **14** (4): 67-76.

Kumsa S (2019). Carcass characteristics of yearling male borana goats supplemented with protein and energy feed resources. Int. J. Adv. Res. Biol. Sci. **6** (5): 91-97.