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Rearing System Including Health Concern of Small Ruminant in Jumla, Nepal

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Abstract
Small ruminant production is one of the main sources of meat in Jumla district of Nepal and plays a vital role in the country's food security. Observational study was carried out at Guthichaur and surrounding areas to know the rearing system including health practices of small ruminant in Jumla. Interview was done with 20 farmers' group around Guthichaur, Jumla and each group/flock comprised of 100 to 350 animals. They were asked about the rearing system, feeding, vaccination and deworming schedule, general health problems etc. Sheep was a major livestock commodity and most of the farmers raised sheep and goat together in the same flock. Farmers raised sheep and goat in transhumance system (migratory sheep flock). Baruwal, Bhyanglung and their crosses in case of sheep while Sinhal in case of goat were raised commonly. From the beginning of summer season (March-May), sheep were grazed in the nearby field from morning to evening. At night, some farmers kept their sheep, goats in shed while some farmers kept their sheep outside their shed in field. Sheep remained in shed in winter when there was snowfall. During snowfall, land was covered with snow and there were limited places for the animals to graze. Hay and stored corn were major feed during snowfall time. From June to first week of September, farmers kept their sheep and goats in high hills called patan. Sheep grazed herbs there, no trees or shrubs were found. Farmers generally didnot deworm or vaccinate their sheep except few. When animal became weak, then farmers deworm those individuals only. Farmers performed open castration by themselves. Major health problems faced by farmers were plant poisoning, parasitic infestations, scabies and lice infestation, pneumonia, abortion, uterine prolapse, vaginal prolapsed and inbreeding etc as well. Farmers kept the same male for seed material for many years. It is difficult to convince them that inbreeding occurs when the same male is kept in herd for many years.

Keywords: *Rearing system, small ruminant (sheep and goat), transhumance system, plant poisoning, pneumonia, Jumla, Nepal*

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I. Introduction

Small ruminant production is one of the main sources of meat in Jumla district of Nepal and plays a vital role in the country's food security. Sheep is an important and major livestock commodity in Jumla district. Farmers raise sheep through transhumance system (Tiwari et al 2020), also called as migratory sheep flock. Farmers keep the sheep at one area, graze the sheep for some period and then take to another place (Joshi and Jacobs 1997). They carry food and other belongings themselves. It is popular method of sheep rearing in Himalayan region. During monsoon when abundant green grass is available, famers take their sheep to upper hill or mountain (Patan) where only herbs are present. They keep their sheep there for 2/3 months. Generally they take their sheep in June and bring their sheep back to river basins from first to second week of September (Sapkota et al 2020). Previous study investigated ovine fascioliosis, was recorded 34% in fecal test, 6.7% in slaughtered sheep and 23.5% in post mortem examinations as well as mature flukes were present in liver and gall bladder of inspected sheep (Sah et al 2020).There were very limited articles about sheep rearing in Jumla.
Objective: Observational study was carried out at Guthichaur and surrounding areas to know the rearing system including health practices of small ruminant in Jumla, Nepal.

II. Methodology

Observational study was carried out at Guthichaur and surrounding areas in 2021. Interview was done with 20 farmers' group around Guthichaur, Jumla and each group/flock comprised of 100 to 350 animals. Among the groups of farmers, eight had combined their smaller flock together to make one larger flock. Interview was done with the farmers in field also when they brought their sheep down to the basins. They were

asked about the rearing system/pattern, feeding, vaccination and deworming schedule, general health problems etc.

- Brief description about study area: Sheep and Goat Research Program (SGRP), Guthichaur Rural Municipality ward no 2, Jumla and surrounding areas
- 19 Km far from District head quarter (Khalanga) Jumla.
- Rainfall: 755 mm (June-Sep: 85%)
- Temperature: Max.27.3°C to Min. -5.7°C
- Snowfall: December to March
- Relative humidity: 60-84%
- Sunshine hour: 9.3 hrs in winter
- Latitude: $29^0$17'72.5"N
- Longitude: $82^0$40'83.4"E
- Elevation: 2700 masl (metre above sea level)

Data analysis- Data were collected, compiled and analysed in descriptive way by using MS Excel and SPSS.

III. Results And Discussion

Farmers raised sheep and goat in transhumance system (migratory sheep flock). Sheep was a major livestock commodity followed by goat. Baruwal, Bhyanglung and their crosses in case of sheep while Sinhal in case of goat were raised commonly. Limited improved breeds like Romney marsh and Coopworth cross were also found in some farmers as Sheep and Goat Research Program introduced few years ago. Some farmers had large flock (100-350 sheep) and some farmers had small flock (15-50).

1. Rearing pattern or system

From the beginning of summer season (March-May), sheep were grazed in the nearby field from morning to evening. At night, some farmers kept their sheep, goats in shed while some farmers kept their sheep outside their shed in field. Sheep remained in shed in winter when there was snowfall. During snowfall, land was covered with snow and there were limited places for the animals to graze. Hay and stored corn were major feed during snowfall time.

Fig 1.Interview with the farmers

Fig 2.Sheep resting after coming down from Patan

Transhumance system (migratory sheep flock)

During rainy season most of the farmers took their sheep to upper hills or mountain area (Patan) where there were no trees, only small shrubs and herbs were present. This study resembles with a report by Sapkota et al 2020. Migratory sheep movement ranged from elevation of 1250m to 4500 m during various seasons (Ghimire and Chapagain 2020). Sheep grazed herbs there, no trees or shrubs were found. Buki (*Anaphalis controta*) is a typical grass there that was highly nutritious. From June to first week of September, farmers kept their sheep and goats in high hills pasture land called patan.

Those farmers who had large flock, they took their sheep themselves singly, without mixing with other flocks. Those farmers who had small sheep flock, they combined 4/5 such small flocks/herds and make a larger flock/herd. In such combined flock, farmers made rotation of grazing duty for sheep. Generally two or three members stayed in the shed for a week or 10 days. After this completion of their turn/duty, they went to home to bring food ration for them and other members stayed in the shed. In this way, rotation of the members took place when they went to high hills (Patan). They brought their sheep down towards the basin in the first week of September resemble with a report (Sapkota et al 2020). After bringing their sheep down at the basin, they kept their sheep in forest/jungle till first week of October. They also kept their sheep in growing field under open sky

for manure. From October when vegetation was becoming scarce, they made the flock smaller. Each member took his sheep to his house. They reared themselves in small flocks till beginning of next warm season. The grazing cycle continues as mentioned above.

Fig 3. Shed of SGRP, Jumla at Patan

Fig 4. Sheep Grazing in Patan

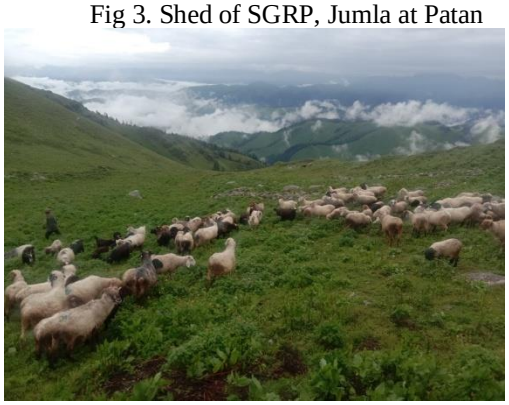

Fig 5&6. Pasture land at high hill called Patan (3500-4000 masl)

2. Practice of feeding salt

Since winter was very dry and animals did not get green grasses, there might be deficiency of minerals, so farmers offer salt to their sheep and goats once or twice every month. They poured the salt at one or two places on grass or on rectangular stone and all the sheep ate little by little as much as they need.

Fig 7.Feeding of salt in field

Fig 8. Feeding of salt in field

3. Practise of wool shearing and washing wool with Naru Tuber

Wool Shearing is done twice in a year: once in March and next in September. Wool shearing is done with shearing scissors in SGRP, Guthichaur farm and in villages. Some farmers shear wool with sickle also. With shearing scissor one person can shear 6-7 sheep in a day.

Naru tuber is sundried and crushed. 10 gm of crude crushed Naru equivalent to 6 gm of surf to wash 150 gm of greasy wool. Warm water is used to wash the wool. It removes all impurities, wax and dirt. Practise of washing wool with Naru Tuber is becoming less popular due to availability of detergents/ soaps.


Fig 9. Wool Shearing at SGRP, Guthichaur


Fig 10. Sheep after wool shearing

4. General health practices

Deworming

Farmers generally didnot deworm or vaccinate their sheep except few. When animal became weak, then farmers deworm those individuals only.

Vaccination

They didn't generally vaccinate their sheep against PPR and FMD although they have somehow some idea that their sheep should be vaccinated. When some NGO's or sub-centre from district veterinary hospital offered the vaccine, they used.

Castration

Majority of farmers performed open castration in male sheep by themselves at the age of 4/5 months. Only some farmers castrated their sheep through closed castration method using Burdizzo castrator. In open surgical castration, they didnot ligate the blood vessels. They burnt the faeces of sheep and made ash, and this ash was kept in scrotum after performing castration. While other farmers used turmeric powder, antibiotic powder, povidine iodine etc. Consequently, they lost their castrated sheep due to heavy bleeding (data showed 5-6 sheep died out of 70 castrated sheep using open tradition method). Farmers near Sheep and Goat Research Program, castrated their sheep with Burdizzo castrator by help of technician and applied povidine iodine on the crushed skin.

5. Major health problems

Major health problems faced by farmers were plant poisoning, parasitic infestations, scabies and lice infestation, pneumonia, abortion, uterine prolapse, vaginal prolapsed and inbreeding etc as well. Few reports have been published that Pneumonia, Fascioliasis, other parasites, abortion, prolapsed, plant poisoning etc were common in sheep in Jumla (Sah et al 2020; 2021; 2022).

Parasitic infestations

They applied cypermethrin (Tick out) solution soaking with cloth in March to April (small scale dipping). Some farmers adopted deworming once or twice in 2-3 years period. Generally, they used Albendazole, Oxycloznide, Piperazine etc. for all male and female sheep. They dewormed their sheep after lambing season which is February to March. In SGRP premises, *Fasciola* is endemic, tapeworms were also found abundantly (Sah et al 2020).

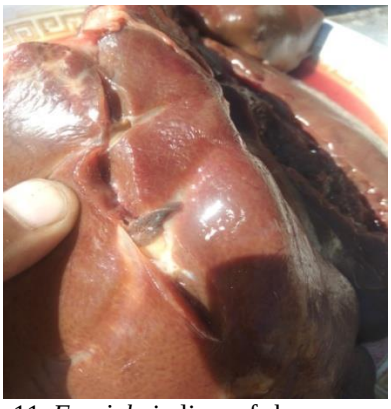
Fig 11. *Fasciola* in liver of sheep


Fig 12. *Fasciola* extracted from liver

Plant Poisoning

A specific type of herbal plant (locally called bikh- *Aconitum species*) is found in bank of rivers/streams. After consumption of this plant, animal becomes lethargic, foaming from mouth, recumbent,

bloat and finally dies. This grows in the beginning of summer season. There is less green fodder in this season, so sheep gets confused thinking other plants and consume this. After consumption, if prompt treatment is not done, animal dies. Every year almost 4-5 sheep die in each flock because of this plant poisoning. Pandey and Gyawali 2012 also reported that poisonous plants often account for a loss up to 10-15% of lamb per year in the moving flock, especially during the spring season near the summer pasture. Atropine sulphate injection @ 0.4 mg/kg b.wt. and sodium thiosulphate @ 5-10 gm dissolved in 100-200 ml water were used to counteract poisoning. Oral drenching of sodium thiosulphate immediately after poisoning reduced the mortality to 90-95 %.


Fig 13&14. Poisoning plant Bikh (*Aconitum sps*) found on banks of rivers

Uterine and vaginal Prolapse

Uterine and vaginal prolapsed cases were seen occasionally. One sheep in Kolte village, nearby farm had uterine prolapsed during study period.

Fig 15. Vaginal prolapse in sheep

Pneumonia

Because of the coldness occurred in some sheep, pneumonia gradually occurred and finally sheep died. During winter, the animals were kept in shed, suffocation may be there. But in rainy season when the sheep were taken to Patan, they were kept under open sky alongwith cold environment. There were no clinical services available in Patan (high hills). The shepherds carried some general medicines for first aid in patan.

Post mortem of the dead sheep showed yellowish fibrin like materials that surrounded the lungs. Its lungs had yellowish fibrin, marbling of lungs and multiple necrotic foci throughout the lungs.


Fig 16.Yellow fibrin deposition around lungs Fig 17. Multiple large necrotic foci/spots in lungs

Inbreeding problems

Farmers kept the same male for seed material in the flock for many years. It is difficult to convince them that inbreeding occurs when the same male is kept in herd for many years. Farmers thought that large sized rams were better than smaller ones and they kept same large ram in their flock for many years. Adhikari et al 2103 mentioned in a study that most of the flocks in migratory system used the same breeding buck for 4-5 years without considering inbreeding effects. The average body weight of one year old male sheep in farmers' condition was 12-13 kg whereas in Sheep and Goat Research Program (SGRP), it was 20-22 kg.

IV. Conclusion

Rearing system about sheep migratory flock was tradition in hilly region nowadays also. Sheep taken to high hills pasture land called patan from June to first week of September in order to get nutritious grasses, ad lib grazing, safe from very hot climate below. This system utilizes the unused green fodder available in high land pastures, investment is less. Pasture land can be utilized as urbanization increases day by day. Major health problems faced by farmers were plant poisoning, parasitic infestations, scabies and lice infestation, pneumonia, abortion, uterine prolapse, vaginal prolapsed and inbreeding etc as well.

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