Migratory Sheep Farming Practices in Cauvery Delta Zone in Tamil Nadu

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ABSTRACT
Migratory sheep, due to its movement, poses threat of spreading diseases among small ruminants. Considering this, the study was carried out to identify the focus area of extension intervention among the migratory sheep farmers to disseminate scientifically recommended practices which minimize disease risk and enhance flock health. The study was conducted following ex post fact research design at Venganur village, Cuddalore district, Tamil Nadu. Using a semi-structured interview schedule, data were personally collected from 30 migratory sheep farmers who were selected purposively. The findings were subjected to focussed group interview involving seven farmers. The results envisaged a wider difference among the farmers from 100 per cent non-adoption of balanced ration to 100.00 per cent adoption of deworming. Therefore, extension interventions need to be intensified to educate the farmers on technologies which help in disease prevention and control.

Keywords: Flock health, Migratory sheep farming, Recommended farming practices.

INTRODUCTION
Sheep farming offers diversification opportunities in gaining economic and nutritional benefits for small and limited-resource farmers. Such benefits are adversely affected by small ruminant diseases. For an instance, Peste des Petits ruminants (PPR), a notifiable sheep and goat disease threatens more than 68 per cent of world’s small ruminant population (Bardhan et al., 2017). PPR is considered as one of the main constraints in improving the productivity of small ruminants in developing countries and causes heavy economic loss (Thakor et al., 2016). Small ruminants reared in pastoral or nomadic system has high risk for diseases (Sakhare et al., 2019). It poses risk of disease spread from animal to animal. Therefore, management practices followed during migration plays a major role. Furthermore, extension interventions need to be intensified to eradicate small ruminant diseases such as PPR (Chander, 2018). Keeping these in view, the study was carried out with an objective to identify the focus area of extension intervention in educating migratory sheep farmers on scientifically recommended practices.

MATERIALS AND METHODS
Ex-post facto research design was followed to carry out the study in Venganur village located in Mangalur Block, Cuddalore district, Tamil Nadu state. Venganur is an en-route village in sheep migratory route preferred by migratory sheep farmers who mostly depend on Cauvery delta zone for sheep grazing. To accomplish the objective of the study, recommended farming practices were identified. Based upon this, a semi-structured open-ended personal interview schedule on practices adopted during migration was developed for data collection. The response about practices adopted during migration were collected and categorized under on awareness (Aw), non-adoption (NA), symbolic adoption (SA), adoption (A), partial adoption (PA), over-adoption (OA) and discontinued (D), rejected (R), introduced (I) and reintroduced (RI) practices.

Thirty migratory sheep farmers who were migrating with sheep in Mangalur block during the study period were purposively selected for data collection. The findings of the personal interview were taken as the problem area...
for conducting focussed group interview involving seven migratory farmers to understand the participants’ viewpoints and cross-check the findings drawn from individual interview.

RESULTS AND DISCUSSION

Table 1 gives an overall view about migratory sheep farming in Cauvery delta zone in Tamil Nadu.

Table 2 shows the practices adopted during migration of sheep flock by the farmers.

a. General and nutritional management practices

In the migratory flocks, recommended practices were adopted to care pregnant animals and young ones, since they were considered as vital to increase the flock size. Available grazing and agricultural land helped the farmers (73.33%) to provide adequate space during night shelter, but made difficult to protect their animals during extreme weather. Notably, no farmer adopted balanced nutrition and 70.00 per cent did not maintain records in any form.

b. Disease management practices

Partially adoption of quarantine and isolation practices and willingness showed by farmers to adopt vaccination show the scope of bringing migratory sheep disease control programme particularly PPR Control Programme (PPR-CP) by implementing the PPR Global Control and Eradication Strategy (PPR-GCES) by 2030.

c. Marketing management practices

The farmers concerned on health condition of sheep while increasing the flock size through purchase of sheep from outside sources. None of the farmers sought veterinary advocacy while selling their sheep, since they believed that they knew their animals’ health condition.

d. Using extension and advisory services

Half of the farmers did not undergo any training programme and other formal extension programmes and nearly two-thirds (63.33%) did not make office call to the en-route veterinary institutions, despite their awareness on availing institutional services. Only 30.00 per cent farmers used social media for receiving information on migratory sheep farming. These imply the scope of extension intervention.

e. Migratory route

An overwhelming 83.33 per cent of the farmers collected information on grazing route from other migratory farmers and local farmers. Comparatively more farmers were partially changed their grazing route (43.33%) than time gap while sharing migration route. Equal proportion of farmers (30.00%) did not allow their animals to mingle with sedentary sheep and goats.

f. Disposal of dead animals or aborted foetus

Farmers were more concerned on disposing dead animals and aborted foetuses. Such materials were disposed properly by majority of the farmers (70.00%).

g. Animal insurance

None of the farmers insured their animals. Notably, 40.00 per cent farmers in symbolic adoption stage reveals the scope for disseminating insurance among farmers.

Reasons for varied or lesser adoption of practices by migratory sheep farmers

The focused group interview revealed following as the reasons for their varied adoption level on recommended sheep farming practices during migration.

a. General and nutritional management practices

• Adequate space during night shelter in agricultural land helps in manuring.

Table 1: Details of migratory sheep farming in central part of Tamil Nadu

| S.No. | Particulars                                | Numbers or details                          |
|-------|--------------------------------------------|---------------------------------------------|
| 1     | Breed maintained                           | Ramnad white                                |
| 2     | Number sheep per flock                     | 350-400                                     |
| 3     | Number of farmers per flock                | Three to four including one women farmer    |
| 4     | Migratory en-route districts               | Cuddalore – Mayiladuthurai - Nagapattianam – Thiruvarur - Tanjore – Ariyalur – Perambalur – Cuddalore – Villupuram – Kallakurichi – Tiruvannamalai |
| 5     | Period                                     | Every year from January to August           |
| 6     | Grazing hours                              | 8.00 am - 6.00 pm                           |
| 7     | Radial distance travelled / Migration route in km | 650-750 km                                 |
| 8     | Number of en-route districts               | Eight to eleven                             |
| 9     | Number of en-route villages visited        | 175-225                                     |
| 10    | Average number of stay in each village     | 2-5 days                                    |
| 11    | Number of en-route farmers/farm families interacted | 600-700                                   |
| 12    | Number of en-route livestock markets       | 10-14                                       |
| 13    | Maximum distance from their home           | 500-600 km                                  |
Table 2: Practices adopted by migratory sheep farmers during migration (n=30)

| S.No. | Practice                                                                 | Aw   | Nad | SA  | A   | PA  | OA  | D   | R   | I   | RI   |
|-------|---------------------------------------------------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|
|       | General and nutritional management practices                               |      |     |     |     |     |     |     |     |     |      |
| 1     | Balanced nutrition                                                        | 4 (13.33) | 30 (100.00) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2     | Adequate space during night shelter                                       | 30 (100.00) | 0 | 0 | 22 (73.33) | 8 | (26.67) | 0 | 0 | 0 | 0 |
| 3     | Care on young animals                                                      | 30 (100.00) | 0 | 0 | 27 (90.00) | 3 | (10.00) | 0 | 0 | 0 | 0 |
| 4     | Care on pregnant animals                                                  | 30 (100.00) | 0 | 0 | 24 (80.00) | 3 | (10.00) | 0 | 0 | 0 | 1 (3.33) | 2 (6.67) |
| 5     | Protecting animals' extreme weather                                       | 30 (100.00) | 9 (30.00) | 0 | 13 (43.33) | 8 | (26.67) | 0 | 0 | 0 | 0 |
| 6     | Record-keeping                                                            | 30 (100.00) | 21 (70.00) | 2 | 0 | 5 | (16.67) | 0 | 0 | 2 (6.67) | 0 |
|       | Disease management practices                                               |      |     |     |     |     |     |     |     |     |      |
| 1     | Quarantine                                                                | 30 (100.00) | 0 | 0 | 11 (36.67) | 17 | (56.67) | 0 | 0 | 1 (3.33) | 1 (3.33) |
| 2     | Isolation of animals                                                       | 30 (100.00) | 0 | 5 (16.67) | 0 | 20 | (66.67) | 0 | 3 (10.00) | 0 | 1 (3.33) | 1 (3.33) |
| 3     | Deworming                                                                 | 30 (100.00) | 0 | 0 | 30 (100.00) | 0 | 0 | 0 | 0 | 0 | 0 |
| 4     | Veterinary service in treating animals                                     | 30 (100.00) | 3 (10.00) | 0 | 9 (30.00) | 7 | (23.33) | 0 | 8 | (26.67) | 0 | 0 | 3 (10.00) |
| 5     | Vaccinating young animals at four months age                               | 30 (100.00) | 0 | 22 (73.33) | 3 | (10.00) | 5 | (16.67) | 0 | 0 | 0 | 0 |
| 6     | Recommended revaccination                                                  | 30 (100.00) | 0 | 22 | (73.33) | 4 | (13.33) | 4 | 0 | 0 | 0 | 0 |
|       | Marketing management                                                       |      |     |     |     |     |     |     |     |     |      |
| 1     | Seeking veterinary service for selling animals                             | 30 (100.00) | 30 (100.00) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2     | Seeking veterinary service for purchasing animals                          | 30 (100.00) | 23 (76.67) | 0 | 0 | 7 | (23.33) | 0 | 0 | 0 | 2 (6.67) |
|       | Using extension and advisory services (EAS)                                |      |     |     |     |     |     |     |     |     |      |
| 1     | Attending training/extension programmes                                     | 24 (80.00) | 15 (50.00) | 9 | (30.00) | 0 | 0 | 0 | 0 | 0 | 0 |
| 2     | Making office call at en-route veterinary service providing centre        | 30 (100.00) | 19 (63.33) | 6 | (20.00) | 3 | (10.00) | 2 | 0 | 0 | 0 |
| 3     | Using social media                                                         | 25 (83.33) | 12 (40.00) | 1 | (3.33) | 9 | (30.00) | 3 | 0 | 0 | 0 |
|       | Managing migration route                                                   |      |     |     |     |     |     |     |     |     |      |
| 1     | Information on grazing route from other migratory farmers and local farmers| 30 (100.00) | 0 | 0 | 25 (83.33) | 5 | (16.67) | 0 | 0 | 0 | 0 |
| 2     | Few days gap between migratory flocks while sharing migration route        | 30 (100.00) | 8 (26.67) | 5 | (16.67) | 0 | 7 | (23.33) | 0 | 6 | (20.00) | 0 | 3 (10.00) | 1 (3.33) |
| 3     | Changing pastoral route during adverse health conditions of animals        | 30 (100.00) | 4 (13.33) | 5 | (16.67) | 6 | (20.00) | 13 | 0 | 0 | 0 | 1 (3.33) | 1 (3.33) |
| 4     | Not allowing animals with sedentary semi-extensive sheep                   | 30 (100.00) | 0 | 7 | (23.33) | 8 | (26.67) | 9 | (30.00) | 0 | 0 | 3 (10.00) |
| 5     | Not allowing animals with goats                                            | 30 (100.00) | 0 | 11 | (36.67) | 8 | (26.67) | 9 | (30.00) | 0 | 1 | (3.33) | 0 | 0 | 1 (3.33) |
| f     | Disposal of dead animals or aborted foetus                                 | 30 (100.00) | 0 | 0 | 21 | (70.00) | 7 | (23.33) | 0 | 0 | 0 | 1 (3.33) | 1 (3.33) |
| g     | Animal insurance                                                          | 23 (76.67) | 11 (36.67) | 12 | (40.00) | 0 | 0 | 0 | 0 | 0 | 0 |

Aw-Aware; Nad-Not adopted; SA-Symbolic adoption; A-Adoption; PA-Partial adoption; OA-Over-adoption; D-Discontinued; R-Rejected; I-Introduced; RI-Reintroduced.
Figures in the parentheses indicate percentage to the total.
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- Care on young animals and pregnant animals are vital to increase the flock size.
- Treating entire flock as one unit does not necessitate record-keeping.

b. Disease management practices
- Less frequent purchase and constant movement make quarantine difficult.
- Prompt care given on animals does not necessitate isolation of sick animals.
- Observable infection and reduction in animal weight due to worms necessitate deworming.
- Difficult access adversely affects availing veterinary services.
- Vaccination at four months age was considered as very early to vaccinate.
- Farmers prefer to do recommended vaccination by themselves.

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Strategies recommended
- Extended vaccination coverage including migratory sheep
- Digitally connecting farmers and stakeholders
- Migratory route map to avoid intermingling of animals
- Farmers group formation
- Engaging farmers for community surveillance of diseases

The results help to understand focus area of extension intervention to increase the capacity of the migratory farmers on recommended scientific practices.

References
Bardhan, D., Kumar, S., Anandsekaran, G., Chaudhury, J. K., Meraj, M., Singh, R. K., Verma, M. R., Kumar, D., Kumar, P. T., Ahmed, S. L., & Mishra, V. (2017). The economic impact of peste des petits ruminants in India. Scientific and technical review of the office international des epizooties, 36(1), 245-263.

Chander, M. (2018). Peste des petits ruminants (PPR) is going to be history, but how? Blog posted on January 5, 2018 by GFAR. Accessed through https://blog.gfar.net/2018/01/05/peste-des-petits-ruminants-ppr-is-going-to-be-history-but-how/ on 16.05.2020.

Sakhare, P., Kalyani, I., Vihol, P., Sharma, K., Solanki, J., Desai, D., & Makwana, P. (2019). Seroepidemiology of Peste des Petits Ruminants (PPR) in Sheep and Goats of Southern Districts of Gujarat, India. International journal of current microbiology and applied science, 8(11), 1552-1565. doi: https://doi.org/10.20546/ijcmas.2019.811.180

Thakor, R. B., Patel, M. D., Kalyani, I. H., & Patel, R. M. (2016). Economic impact of peste des petits ruminants in goats of south Gujarat. The Indian journal of veterinary sciences and biotechnology, 11(4), 17-23.