

## Summary

Nomadic pastoralism is critically important to the economy of Rajasthan. Aridity and poor soils, especially in the western districts, make it well-suited to a combination of agriculture and livestock rearing. Here Raika agro-pastoralists combine sheep husbandry with crop production for part of the year. The large number of animals in these districts cannot be supported by existing fodder resources. Therefore a significant number of animals migrate annually in search for grazing grounds. Because of the extreme climatic conditions Raika have developed and maintain a large variety of indigenous livestock breeds well adapted to specific and often very difficult environmental conditions.

The sheep husbandry system of the Raikas should not be seen as a male dominated enterprise but more as a system dependent on labor inputs of all members of the family. Women's main responsibilities are those of taking care of new born animals and young animals and handling milk. Milking and the care of sick sheep is also taken up by women in a considerable large percentage of households. Raika men have main responsibility in herding, feeding (cutting trees) and assisting ewes and labor and to a lesser extent taking care of sick sheep. Milking is more or less equally divided between men and women. Raika can choose between several healthcare actors and institutions such as traditional healers, spirit healers, firing healers and governmental veterinary hospitals and veterinarians. However communication between veterinarians and Raikas is very problematic and awkward with a lack of respect on both sides and governmental animal health care services and veterinarians generally fail to improve the health status of the sheep kept by the Raikas in the research area.

The Raikas will most often avail to self treatment of their animals. According to the perceptions of the Raika, the most common sheep diseases and problems include *gogla* (bottleneck), *fatgiya* (enterotoxemia), *khurpak* (foot and mouth disease), *mata* (sheep pox), *thakla*, *haldariya* (haematuria), *Nimji* (orf), *Sindura* (pneumonia, or other respiratory diseases), diarrhea, obstipation and "durdi mata".

The Raikas in the study area seem to differentiate between sheep disease brought by supernatural entities (sheep pox and FMD, although the latter is also said to be brought by "bad air") nutritional; eating dirty grass and drinking dirty water (liver flukes) or eating too much green fodder (enterotoxaemia), "hot/cold" (haematuria) and from other animals (thakla, but also sheep pox, FMD and sindura). Disease names were found to refer either to symptoms or disease cause, e.g. in the case of haldariya, which literally resembles the word "yellow" some of the symptoms were yellow urine and yellow mucus membranes, in the case of mata (sheep pox) the disease was associated with "Mataji" (Hindu goddess) who was perceived to be the causer of the disease.

What became clear during the interviews was that treatments mostly consisted of enhancing a sheep's resistance by giving it edible oil mixed with turmeric or ghee or buttermilk mixed with turmeric and jaggery. These mixtures contain high contents of proteins and energy and help the weakened sheep to regain strength and recover from disease. Additionally most respondents regularly visit a temple to pray for their sheep's welfare and health. In some cases mantras and tantras are chanted for sick sheep and it was observed that many sheds have small niches build in the walls in which small altars were build in order to pray for the sheep. Strong points of the traditional healthcare system can be summarized as follows:

- \* High variety of local resources and materials are used.
- \* Home remedies are effective in increasing general condition of sheep, which helps animals to recover more quickly.
- \* Wounds, skin infections and ectoparasites are effectively treated with plants (*Calotropis procera*, *Euphorbia spp*) different kinds of oils, salt solutions or Potassium Permanganate.
- \* Literature research showed that some plants have active ingredients which work against those diseases and problems for which these plants are used, or these plants are used in other parts of the world for the same diseases.

Specific treatments include a.o. topical application of different oils, juice of *Calotropis procera* and *Euphorbia spp* in case of Nimji (Orf), drenching sheep with tea from the flowers of the palas tree (*Butea monosperma*) in case of Haldariya (haematuria), use of tobacco (*Nicotianum tabacum*) and chili (*Capsicum annum*) in case of Gogla and drenching sheep with tea made from the bark of the Karava tree in case of Thakla (possibly Brucellosis or Contagious agalactia).

Weak points of the Raika healthcare system can be summarized as:

- \* Inadequate use of conventional drugs such as oxy-tetracycline and anthelmintics.
- \* Some diseases can not be cured or prevented with traditional treatments (e.g. enterotoxaemia, brucellosis)
- \* Traditional vacine against sheep pox seems effective but application is problematic resulting in high death rates.
- \* Treatment of Liver fluke (2nd highest cause of death) does not seem very effective.

Strong points of the conventional healthcare services and veterinarians are:

- \* Effective medicines and vaccines available for treatment and adequacy of application.
- \* Potential to train Raika in use of conventional drugs.

Weak points of conventional healthcare system and veterinarians are:

- \*Social disparity.
  - \*veterinarians are not from pastoral groups (western trained, high caste).
  - \*communication problems
- \*Lack of motivation

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