Sheep pastoralism in Rajasthan: Still a viable livelihood option?

State-level workshop, 31 January–1 February 2005

Sadri, Rajasthan, India

State-level workshop

Sheep pastoralism in Rajasthan: Still a viable livelihood option?

Workshop report

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Acknowledgments

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Abbreviations

CSWRI	Central Sheep and Wool Research Institute
LPP	League for Pastoral Peoples and Endogenous Livestock Development
LPPS	Lokhit Pashu-Palak Sansthan
NGO	Non-government organisation
PPR	Peste des Petits Ruminants
RCVS	Rajasthan Chervaha Vikas Sanghathan
Rs	Indian rupees

Executive summary

In the context of a Misereor supported project entitled “Securing pastoral livelihoods in Rajasthan through support for sustainable sheep production”, Lokhit Pashu-Palak Sansthan and the Rajasthan Chervaha Vikas Sanghathan organised a two-day workshop entitled “Sheep Pastoralism in Rajasthan: Still a viable livelihood option?” that was attended by sheep breeders, government officials, scientists from the Central Sheep and Wool Research Institute and NGOs. The programme included speeches, lectures, group work and group discussions, as well as a final plenary session in which the participants formulated a set of recommendations to be presented to the government.

Grazing/fodder

- The customary grazing rights of pastoralists in the forest, on revenue land, on wasteland, as well as in *gauchars* and *orans*, need to be legally recognized.
- Areas adjacent to the Indira Gandhi Canal should be developed as pastureland.
- With the exception of National Parks, forest nurseries must be opened after the five year regeneration period.
- Encroachments on *gauchar* land must be removed.
- A special grazing policy must be formulated and implemented.
- The inclusion of pastoralists in the village forest protection committees must be mandatory. Corruption in the Forest Department must be eliminated.
- A white paper revealing the complete details on the progress of forestry programmes should be released.
- Plantation of useful plants for livestock in nurseries.

Marketing

- There should be minimum prices for meat and wool.
- The State wool marketing federation should be re-established.

Services

- The sheep health services should be expanded.

- The central government should take the responsibility for the security of pastoralists and their livestock during migration.
- The sheep insurance policy must be revised.
- Sheep, goat and camel should be included in the Famine Code.

Institutional changes

- There needs to be a state-level platform composed of pastoralist representatives, relevant government departments and research organizations to discuss issues of concern to livestock development.
- Pastoralist representatives need to be consulted and included in policy-making processes.
- Sheep breeding should be recognized as an industry to become eligible for the associated benefits.
- Representatives of pastoral communities must be appointed in the local autonomous bodies.
- The representatives of pastoralists and concerned organizations should be invited to secretary level meetings.

Other

The conservation, documentation, promotion and development of traditional and indigenous knowledge should be promoted.

- Research must be oriented towards solving the problems experienced by sheep breeders.

It was unanimously decided that the government should be given a period of three months to take steps towards implementing the above recommendation, otherwise the pastoralists would involve in agitation against the government.

Background on sheep husbandry

The Raika are a Hindu caste specialised in livestock breeding and at home in the Marwar area of Rajasthan. Traditionally associated with camel breeding, a majority of Raika is currently engaged in herding sheep, often in migratory systems. Lokhit Pashu-Palak Sansthan is an NGO that initially worked with Raika camel breeders, but in 2001 was requested by the community to extend its activities to sheep breeders. According to community leaders, sheep breeding that had once been a very profitable business, no longer provided attractive economic returns, mainly due to a decline of wool prices. A project was initiated with the goal of economically reviving this important livelihood strategy.

The Raika sheep production system

The Raika keep herds in sedentary and migratory systems. The degree of mobility is dependent on several variables which include the size of the herd, the location of the family or village, as well as the amount of rainfall in a given year. In general, larger herds go on migration, as well as those whose owners are settled in the plains, in some distance from the Aravalli Hills that have a good vegetation cover. In drought years almost everybody is forced to go on migration. Sheep are utilised for meat, wool, dung, and milk, and the production system is market-oriented. As Hindus, the Raika themselves are basically vegetarian and eat meat only at the rare occasion of sacrificial killings. They process milk into ghee (clarified butter), but the yields are generally negligible. Dung is usually traded for grain with sedentary farmers. Many aspects of sheep husbandry are influenced by religious beliefs; for instance shearing is a sacred communal function and animals born on certain days in the moon cycle are devoted to God, and neither they nor their offspring can ever be sold.

In a participatory process, baseline-data were established (see the Appendix) and four aspects of the sheep production systems were singled out as possible avenues for improving economic returns from sheep breeding: health care, breeding, marketing, and feeding.

Health care

Although the Raika have an extensive ethnoveterinary knowledge system and an extremely detailed disease classification system, the impact of diseases is significant. During the initial survey, it also became apparent that antibiotics, such as tetracycline are used regularly and routinely without any clear indication and practically whenever animals are perceived to not perform optimally. Use of anthelmintics also seemed to be exaggerated. Many of the medicines that the Raika obtain from local medicine shops are actually counterfeit and their lack of effectiveness may be one of the reasons for the excessive use, or rather misuse, of medicines. One of the first activities initiated by the project were training camps in which sheep breeders were

shown how to distinguish between genuine and fake medicines. They were also advised to limit the administration of antibiotics to cases of infections, diagnosed by raised body temperatures. Because of the local social norms preventing men and women from sharing the same spaces, initially only men participated in the trainings. At a later stage, training sessions were held exclusively for women who appear to be more receptive to the idea that overuse of drugs is counterproductive - probably because they are usually in charge of family finances.

Prior to the project, the Raika had steadfastly mistrusted any kind of vaccination by government vets. But since vaccination certificates were obligatory for obtaining grazing permits, a system had developed where they paid veterinarians to issue certificates without accepting the vaccination. As the trust of the Raika developed, many of them had their sheep vaccinated against foot-and-mouth disease, enterotoxaemia and sheep pox by project staff. When the government raised vaccination fees, they organised a demonstration and succeeded in once again lowering the charges.

Breeding

The traditional sheep breeding system had been oriented only towards wool production, but over the last few decades this has changed. Wool prices are depressed, whereas the demand for meat is practically bottomless. As a result the Raika now breed their animals for good growth rates, rather than wool quality. They have pursued this by crossing their local animals with breeds from adjacent regions that have higher growth rates and better meat potential. In doing this they face severe environmental constraints because the higher growth rates of the non-local breeds are coupled with greater susceptibility to drought and disease. As a consequence of their continuing experimentations for achieving the “ideal” sheep or sheep flock, their herds have become entirely hybridized. The government, on the other hand, had promoted for several decade the use of exotic breeds with good wool yields.

Because the Raika themselves continuously experiment with breeding trying to go for maximum meat production without losing resilience, the project so far has not involved in any breeding interventions, although conservation of the original Boti breed may be an activity that could be taken up.

Marketing

The Raika depend on middlemen to market live animals and wool. Demand for slaughter animals is high, and Muslim agents regularly visit the Raika homesteads looking for animals to buy. In the wool market, the middlemen are also from the Raika community. While there is some grumbling about the high margins obtained by these people, it is difficult to operate without them, since the sheep breeders are generally much too occupied with herding to take these matters into their own hands. On an exposure trip to the government run wool market, the Raika were told by officials that they could obtain higher prices if they would shear their animals twice rather than thrice (as is the local custom) and by producing cleaner wool. However both suggestions proved to be impractical. Larger intervals between shearing also increased the amount of thorns and twigs in the wool, causing problems to the

sheep. Because of acute water shortage, washing the wool or the sheep also is not feasible.

LPPS is still working with sheep breeders to find out whether direct-marketing without middlemen is more profitable. However the fact that India imports huge amounts of carpet wool from countries such as Australia and Canada (whose farmers actively lobby their governments for higher import quota to India), suggests that pressurizing the Indian government for changing its import policies might yield some positive results. However this is a long-term goal for which the Raika are currently not sufficiently organised.

Table 1. Characteristics of sheep breeds in the project area

Local name of breed	**Boti**	**Bhakli**	**Dumi**
Synonyms	Vannermee, Jhachhi (small type)		
Scientific equivalent	Marwari	Sonadi	Patanwadi
Origin	Native to Godwar area (but came from Jaisalmer?)	Obtained from Gayri pastoralists in Mewar (Udaipur area)	From North Gujarat
Disease resistance	Most disease resistant, disease spreads slowly, if infected with FMD walks on three legs. Low mortality from Mata		
Drought resistance	Very drought resistant	Needs good food and water	
Walking Ability	Can walk on hilly and stony as well as on flat terrain	Not good for migration	Very fast walker on flat terrain
Reproduction	Lambing twice a year	Only 4-5 births in a lifetime	Long reproduction interval – 8-9 months.
Longevity	Has long life		
Food requirements	Can withstand lack of food	Selective eater	Eats everything
Wool quality	Wool is soft and thin	Wool is coarse	Wool is long and soft and fine
Milk production	Very low, Raika use goat milk to feed lambs	Good milk	
Meat quality	Is coloured like goat meat		
Growth rate	Very slow	Grows twice as fast as Boti	Grows very fast

Feeding

The most significant problem that the Raika face is lack of grazing. Since the Raika are largely landless, they depend entirely on various forms of common property resources to fulfil the nutritional requirements for their herds. Access to such spaces has been significantly curbed during the last few decades. First, the amount of seasonal fallow period been reduced due to the proliferation of tubewells that now enable year-round cultivation, rather than the previous seasonal crop agriculture. Secondly, the Kumbalgarh Wildlife Sanctuary has been established in their grazing areas, and according to its management plan, grazing is to be prohibited during the rainy season, just at the time of the year, when the Raika need it most. In 2004, an order by the Supreme Court entirely prohibited grazing in the sanctuary and no more grazing permits were issued. In this uncertain legal situation, few families can foresee a long-term livelihood perspective in their traditional occupation and the young generation is being discouraged from a herding life. Nevertheless, the Raika have formed a “struggle committee” and have hired an advocate to fight for their rights in the Rajasthan High Court.

The experiences of the project suggest the following: In the harsh ecological context in which they exist, the Raika already have optimised the system in many ways, so that it is difficult to suggest technical interventions that might help them. But the Raika do not fully grasp the nature of the political and macro-economic changes that are going on around them. The most beneficial interventions seem to be those that focus on building their analytical and organisational capacities so that they can collectively speak up for their rights and advocate for more favourable government policies.

Purpose of the workshop

Sheep Pastoralism has always been an important and typical livelihood strategy in Western Rajasthan, practiced not only by traditional pastoralist castes, but also by "non-traditional" pastoralists, because of its good economic returns. **However between 1998 and 2003, Rajasthan's sheep population declined by 31%.**

What are the reasons behind this regression – drought, inappropriate policies, globalisation, or lack of interest in the young generation? How is this development reflected at the micro-level and what does it mean to the livelihoods of sheep breeders and rural economies? Does the trend of declining sheep numbers have repercussions on the state's economy and ecology? Is the time of sheep pastoralism gone in this day and age? Should and can something be done to reverse the declining sheep numbers, and if yes, what?

These were some of the questions to be covered at a two-day workshop organised by Lokhit Pashu-Palak Sansthan and the Rajasthan Chervaha Vikas Sangatan in the context of a Misereor-supported project to strengthen the sheep breeders of the Godwar area. It brought together sheep breeders, scientists, government officials, as well as NGOs and aimed at formulating a concrete set of recommendations for policy makers that is informed by the needs of poor livestock dependent people.

The following topics were addressed:

- Sheep nutrition and grazing problems: the crux of the matter?
- Sheep health care: do government interventions have an impact?
- Sheep breeding: are indigenous breeds losing out?
- Sheep breeders' Indigenous Knowledge: how can it become appreciated?
- Meat production: can sheep compete with goats?
- Wool production: can Rajasthani sheep breeders be competitive?
- Organisational strengthening of sheep breeders: the way forward?
- Insurance for sheep pastoralists: what should it look like?
- Education for sheep pastoralists: how can traditional and modern knowledge be combined?

Workshop documentation

Day 1: Inaugural session

Inauguration of the workshop

The Workshop began with the worship of goddess “Saraswati”. The chief-guest of the programme, Sh. Sagar Bhai Raika (Chairman, Central Wool Development Board), Special guest Dr. A.L. Arora (H.O.D., Central Sheep & Wool Research Institute, Avikanagar), Dr. Ilse Köhler-Rollefson (League for Pastoral Peoples, Germany) and representatives of pastoral communities inaugurated the workshop by worshiping the Goddess.

Welcome address

Sh. Bagdi Ram Raika (President, Rajasthan Charvaha Vikas Sanghathan) welcomed all guests and participants on behalf of LPPS and RCVS. He praised the activities of LPPS and gave a brief introduction of the honourable guests. The guests were welcomed with turbans, garlands and a shawl. Sh. Babu Khan recited a poem praising Shri Sagar Raika.

Hanwant Singh Rathore (Director, LPPS)

Sh. Rathore gave a brief introduction of LPPS and said that it had been working for the welfare of pastoralists since1996. He mentioned that the camel population is declining continuously, due to lack of grazing and pasture land. The establishment of wild life sanctuaries was an important contributing factor. If this situation continued, than the next generation would find camels only in zoos. He said that the awareness of pastoralists had been raised to some extent, but that their situation would not improve unless pastoralists engaged in an intensive struggle. If they want their rights to be recognized, they had to fight for this, and needed to get united. He also emphasised the importance of education. He requested Sh. Sagar Raika to work for obtaining reasonable prices for wool and for his support to the Supreme Court case for Grazing.

Dr. Ilse Köhler-Rollefson (League for Pastoral Peoples and Endogenous Development)

Dr. Ilse thanked Sh. Bagdi Ram and Sh. Hanwant Singh for organizing the workshop. She said, "Sheep breeding is an important subject for Rajasthan. The sheep population has declined by 31% between 1998 and 2003. This development has a big economic impact on the 1-2 lakh sheep breeders in Rajasthan. Even though sheep breeders contribute more than 700 crore rupees to the state's economy, the Government is ignoring the problems of sheep breeders. However, the situation is not unique to Rajasthan. In other countries, such as Pakistan, Afghanistan, and Africa, indeed almost everywhere in the world, pastoralists suffer from lack of grazing land and neglect by their governments. This situation obtains although they make big contributions to their respective national economies, and do all this without depleting scarce water resources.

The only way of improving the situation was in organisational strengthening, in creating associations of livestock keepers that can make their voice heard, just as Rajasthan's farmers have done. Dr. Ilse expressed her delight about the birth of the Rajasthan Chervaha Vikas Sanghathan, an association that thrives to make the voice of livestock keepers heard in a constructive manner and that presses for supportive policies. Her organisation, the LPP, was ready to give full support to the Sanghathan.

She also elaborated on the role of LPP as interface between scientists and pastoralists and trying to ensure that research fulfilled the livestock keepers' needs. Scientists and livestock keepers have very different assessments and explanations for the crisis of pastoralism. Scientists see the fault in droughts, in lack of awareness of pastoralists, in illiteracy, and in unwillingness of pastoralists to take up new technologies. Pastoralists themselves see mainly two problems: lack of grazing and lack of animal health care. They are not worried about their sheep breeds not being productive enough, because they know only these breeds survive. This workshop aims at bringing together the scientists, government and the pastoralists.

Sh. Bagdi Ram Raika (President, RCVS)

Sh. Bagdi Ram said "The RCVS is an organization that does not adhere to, or favour, any particular party. Livestock keeping is of enormous economic significance throughout the world. 80% of farmers also keep livestock. The use of plant pesticides poisons the soil and the people. Bio-agriculture, or organic agriculture, avoids such poisoning, but it is dependent on livestock for fertilization of the soil. The sheep breeders suffer a lot during migration. The government is allotting land for the production of bio- diesel and this will create a great problem for graziers, so it is necessary to take united action against it. Scientist should develop breeds that are suitable to the local environments."

Dr. A.L. Arora (Head of Department, Central Sheep and Wool Research Institute, Avikanagar)

Dr. Arora said, "India has 2% of the world's land, but it owns 16% of the world's total livestock population. The average wool production in India is 800 grams per sheep

per year, while in Australia it is 4-5 kg, and averages 2.5. kg globally. The average meat yield per sheep in India is 10 kg, while it averages 15-18 kg in the world. The NGOs can help that the fruits of research efforts become available to the common pastoralists. We have developed a new breed at our centre that is named “Avika-bhed” and provides 1600 grams wool.”

He provided information about the correct time for giving prophylactic treatment and on concentrate feed blocks as a way of tiding over nutritional deficits during times of drought. He added that the sheep breeders are losing out, because the middlemen take away a high margin from the profits. He urged Sagar Bhai to consult with the scientists of the CSWRI before sending any proposals on sheep breeding to the government.

Sh. Hastimal Vaishnav (Sarpanch of the local Panchayat)

Sh. Hastimal welcomed the guests and expressed his pride about LPPS being located in his Panchayat area.

Dr. Deva Ram Dewasi (Department of Animal Husbandry)

Dr. Dewasi said that there are no specific programmes for controlling sheep diseases and that doctors had no specialized knowledge on sheep, and that this should change. He appealed to Sagar Raika to install a sheep health system. He emphasized that in Rajasthan migration was a necessary element of the production system and that stall-fed conditions were not viable. The migration across state-borders should be facilitated and that the central government should look into this.

He also noted that the size of sheep herds had decreased significantly in the last couple of years. Earlier they consisted of several hundreds of animals, but now they numbered only 50-100 animals. He concluded that this meeting would be fruitless, unless it changed the way in which things were implemented.

Sh. Choga Ram Dewasi

Sh. Dewasi thanked LPPS for organizing the workshop. He said that the organization could only achieve its goal if the pastoralists became more active themselves and joined LPPS. He mentioned that the government had spent crores of rupees on breeding programmes, but that no benefits had filtered down to the people. He also emphasized the need for education.

Sh. Sagar Bhai Raika (President, Central Wool Development Board)

The chief guest, Sh. Sagar Bhai, thanked the director of LPPS for organizing the workshop. He said that this type of organizations played an important role in the development of society and the nation. He also appreciated the presence of scientists. He said, “Livestock is a national asset and livestock breeders provide an

important service to the nation, so they deserve to be accorded rights. He pointed out that without pastoralists the environment would suffer, and that it was wrong to ban grazing in forests to protect the environment. Livestock keepers can not sit in air-conditioned rooms, but have to go to the jungle. The sheep breeders must unite to fight for their rights and to fight against corruption. Currently they get ripped off when they sell their wool, but the local wool is also not competitive in the world market. The sheep breeders need to organize in cooperative unions, such as in Gujarat, in order to improve their economic status. In Gujarat, vets are on call and come by jeep, if contacted by wireless or phone."

He gave some information about the schemes of the Wool Development Board. He said that it was the responsibility of social workers and educated people to help the pastoralists to get their rights. He promised to try his best to create appropriate policies for better prices of wool and for sheep health.

Sh. Bhopala Ram Dewasi (President of the programme)

Sh. Bhopala Ram Said, "The economy of the state is based on pastoralism. Every year the Chief-Minister calls a meeting with the chief secretary to protect pastoralists and their sheep during migration but it never results in any benefits. Earlier, the sheep breeders benefited from the Wool Marketing Federation but this had been closed down. There must be a national level wool federation".

He appealed to the government to include sheep and goat in the famine-code and to solve the grazing problem and remove encroachments from Gochar.

Lunch

After the end of the opening session all the guests and participants had their lunch. The second session of the workshop started just after the lunch.

Session II

The second session of the workshop aimed at letting the scientists from the CSWRI share their knowledge and experiences.

Dr. S.A. Karim (Head of Department, Sheep Nutrition, CSWRI)

Dr. Karim informed about various techniques for improving the income from sheep breeding. He said, "The sheep breeders are getting 70% of their income from meat and 30% from wool & dung. There should be at least 35 male sheep in a herd of 100 sheep and 30 of them could be sold for meat and the remaining 5 animals should be kept for breeding. The male sheep should be sold after the age of 8 months instead of at the age of 3-4 months, as is the common practice".

He gave some suggestions about how to improve the weight of sheep by feeding it additional grains every day after the grazing. In this way 1 kg of weight could be

added by expending 21 Rs. He said that to for selling a product at its real value, a good marketing strategy and a co-operative system were required.

He explained that most sheep were exported as live animals to the Middle East. Although India had a competitive advantage by being closer to the Middle East than Australia, it was losing out. The Australians had huge ships which could transport lakhs of sheep and were equipped with fodder production units on board.

He said, “If we make a linkage with the international market we could sell the meat for 1000 Rs per kg. Instead we are getting only 100 Rs. for it in India”. But there were also restrictions by EU countries on importing meat from India because of disease status.

He said, “Our mandate is limited to generating technologies, but the propagation of the technologies is the responsibility of the state government. However, we demonstrate the feasibility of the technologies in a few villages that we have adopted.”

He gave some knowledge on nutrition. Young sheep of 3 months should be given grains in the evening after a full day grazing. In addition, they should be vaccinated against enterotoxaemia. The fodder should consist of 70% grain, 30% residue (oil) and 1% Salt.

He said that the NGOs can make the research accessible to the common sheep breeders.

Dr. A.M. Arora (H.O.D. Sheep Breeding, CSWRI)

Dr. Arora said that in the same way as we choose the seed for growing crops, we also need to choose a ram with great care. The ratio of male and female sheep in a herd should be 3:100, meaning 1 male per 35 female sheep.

He said that the productive life of a sheep is 7 years and that on average it gives 5 lambs during its lifespan. He suggested keeping a ram for not more than two years in the same herd to avoid inbreeding. The ram should also not be recruited from the own herd for the same reason. He told that by cross breeding twins and triplets could become the norm, but that in this case the female sheep should be good milk producers.

He said that their institute organized training for the veterinarians in the control of P.P.R. (Peste des Petits Ruminants). He also suggested that the sheep breeders not give medicines without consulting with the veterinarians.

He then discussed the reasons for abortion in sheep. He said that the sheep gets weak during drought and can no longer support the foetus; therefore abortion results. Another frequent cause was infection of the ram with Brucellosis. Therefore all rams needed to be scanned for infection with this disease. However, he it was not known to him where tests for Brucellosis could be undertaken; this was the responsibility of the Department of Animal Husbandry.

He also said that their institute provides rams of good breed at nominal charges for the sheep breeders. For his they need to present a certificate verified by their local Sarpanch.

Dr. Subhas Gill (Senior Scientist, CSWRI)

Dr. Gill said that *Prosopis juliflora* should be cut down totally and then some fodder plants like neem or grasses should be planted around it. These plants should be taken care for 3 or 4 year or till the grass produces seed. In this way the spreading of *P. juliflora* can be controlled.

Group discussion

The participants were divided into two groups for group discussion. The first group was given the topic “Grazing” while the second one was given the subject “ Disease’. The groups were coordinated by Dr. Subhas Gill and Dr. Deva Ram Dewasi. The members of both the groups discussed the problems related to the topic and their possible solutions which were noted down by the coordinators.

Night programme (Campfire)

A camp fire was organized in the night in which Babu Khan entertained everyone with his poems and jokes. After the camp fire all the participants took their dinner.

Day 2: Field visit

All participants went on a field visit to the sheep breeders in Alsipura. Dr. Arora collected some details about the local breeds. He suggested the following:

- All the sheep of a herd should be of the same breed.
- The wool should be washed before sheep shearing
- The black wool and the wool taken from belly and legs should be kept separately.
- The “Marwari” (Boti) breed is good for migration and its wool is of better quality but its milk production is very low.
- The ram should be selected carefully.

Further topics of sheep breeding were also discussed.

Presentation of results of group work

Participants then presented the results of their group work on the previous day.

Group 1 (Grazing problems and possible solutions)

Problems

1. Rapid decline of grazing land
2. Encroachments on “Gochar” and “Oran”.
3. Continuous drought.
4. Proliferation of *Prosopis juliflora* (*angrezi babul*)
5. Hostility of Forest Department.
6. Human population pressure.
7. No grazing rights on fallow land
8. Lack of good quality fodder grass in the pasture land.
9. Harassment and exposure to criminal elements during migration

Suggestions for solutions

1. Grazing land should be allotted for the small livestock also as like the big livestock.
2. Pasture land should be developed adjacent to the Indira Gandhi Canal by planting grass and fodder trees.
3. Permission should be given for grazing in the Aravalli region.
4. Encroachments on *gochar* land should be removed.
5. Exemption from migration tax.
6. *Prosopis juliflora* should be uprooted.
7. The customary grazing right in forest areas should be recognised.
8. Communal support.
9. Human population growth must be controlled.
10. Grazing rights on fallow land should be officially recognized.
11. The government should protect pastoralists on migration from criminal elements.

Members: Babu Khan, Dr. Subhas Gill, Bhopala Ram Dewasi, Kumpa Ram, Mala Ram and other.

Group 2 (Diseases in sheep)

Problems

1. Lack of veterinarians.
2. The sheep breeders give medicines without consulting the veterinarians and it causes many diseases.
3. Sheep are dying due to mouth swelling.
4. Communication gap between sheep breeders and veterinarians.
5. Weakness in sheep.

Suggestions for solutions

1. The veterinarian should contact the sheep breeder at least once a week.
2. Medicines should be given as directed by the veterinarian.
3. Vaccination to P.P.R.
4. Sheep breeder should himself keep in touch with the veterinarian.
5. Good nutrition and mineral mixture should be given to sheep.

Members: Sh. Bagdi Ram Raika, Dr. Deva Ram Dewasi, Fula Ram, Avar Dan, Javahar Dan and other.

Recommendations/demands

After presentation of the group work, a set of recommendations/demands to the government was formulated in the plenary.

Grazing/fodder

- The customary grazing rights of pastoralists in the forest, on revenue land, on wasteland, as well as in *gauchars* and *orans*, need to be legally recognized.
- Areas adjacent to the Indira Gandhi Canal should be developed as pastureland.
- With the exception of National Parks, forest nurseries must be opened after the five year regeneration period.
- Encroachments on *gauchar* land must be removed.
- A special grazing policy must be formulated and implemented.

- The inclusion of pastoralists in the village forest protection committees must be mandatory. Corruption in the Forest Department must be eliminated.
- A white paper revealing the complete details on the progress of forestry programmes should be released.
- Plantation of useful plants for livestock in nurseries.

Marketing

- There should be minimum prices for meat and wool.
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- The central government should take the responsibility for the security of pastoralists and their livestock during migration.
- The sheep insurance policy must be revised.
- Sheep, goat and camel should be included in the Famine Code.

Institutional changes

- There needs to be a state-level platform composed of pastoralist representatives, relevant government departments and research organizations to discuss issues of concern to livestock development.
- Pastoralist representatives need to be consulted and included in policy-making processes.
- Sheep breeding should be recognized as an industry to become eligible for the associated benefits.
- Representatives of pastoral communities must be appointed in the local autonomous bodies.
- The representatives of pastoralists and concerned organizations should be invited to secretary level meetings.

Other

- The conservation, documentation, promotion and development of traditional and indigenous knowledge should be promoted.
- Research must be oriented towards solving the problems experienced by sheep breeders.

It was unanimously decided that the government should be given a period of three months to take steps towards implementing the above recommendation, otherwise the pastoralists would involve in agitation against the government.

Closing session

Sh. Ota Ram Dewasi (Bhopaji), Chairman, State Livestock Development Board) presided over the closing session.

Sh. Ota Ram Dewasi

Sh. Ota Ram said, “Pastoralists belong to many castes. The pastoralists of all communities are equal. Human beings, livestock and vegetation are closely interdependent and can not survive without each other. Pastoralism is declining day by day because of urbanization, lack of *gauchar*, *oran* and encroachment”. He thanked LPPS for facilitating the establishment of the “Rajasthan Charvaha Vikas Sanghathan” and said that the problems could be solved by the cooperation of Government and NGOs.

He also thanked LPPS for submitting a petition in the Supreme Court for securing grazing rights in the Kumbhalgarh Wild life Sanctuary. He suggested that a board of representatives can meet to the Chief Minister to solve the problems. He gave some information on the government schemes concerned with pasture land development and sheep insurance. He appealed to the sheep breeders to undertake joint efforts for re-establishing the Sheep and Wool Department and to get united against the corruption of the Forest Department.

Vote of thanks and closing

At the end of the workshop Shri Hanwant Singh Rathore, Sh. Bagdi Ram Raika and Dr. Ilse Köhler-Rollefson thanked all the participants for participating in the workshop and making it successful. Sh. Hanwant Singh declared the workshop closed.

List of participants

No.	Name	Organization/ address
1	Sh. Sagar Bhai Raika	President, Central Sheep & Wool Development Board.
2.	Sh. Ota Ram Dewasi	President, State Livestock Development Board (Rajasthan)
3	Dr. A.L.Arora	Central Sheep and Wool Research Institute (CSWRI), Avikanagar, Tonk
4	Dr. S. A. Kareem	C.S.W.R.I. Avikanagar
5	Dr. Subhash Gill	C.S.W.R.I. Avikanagar.
6	Dr. Dewa Ram Dewasi	Veterinary Hospital, Siyat (Pali)
7	Dr. Ilse Kohler Rollefson	League for Pastoral Peoples, Germany
8	Sh. Babu Khan	Yash Sansthan, Pokaran (Jaisalmer)
9	Sh. Khima Ram	Sheep breeder, Vill. Senda, Dist. Pali
10	Bhopal Ram	Sheep breeder, Vill. Vinja, Dist. Pali
11	Rama Ram Dewasi	Sheep breeder, Vill.-Senda Dist. Pali
12	Avad Dan Ratnu	Shri Samand Gram Vikas Sansthan, Pokaran
13	Khanau Ram	Sheep breeder, Lunawas Charnan, Jodhpur
14	Jawahar Dan	Sheep breeder, Samand Gram Vikas Samiiti
15	Chena Ram Dewasi	Sheep breeder, Lunawas Charnan
16	Jodha Ram Raika	Sheep breeder, Vill. Rampura, Desuri/Pali
17	Bhopala Ram Dewasi	President, Sheep breeder Cooperative Society. Kharabera, Luni
18	Dhanna Ram Solanki	Vasundhara Sewa Samiti, Kalyanpur, Barmer
19	Sh. Ghewa Ram Bhati	Vasundhara Sewa Samiti, Kalyanpur.
20	Kistu Ram Dewasi	Sheep Breeder c/o Vasundhara Sewa Samity.
21	Sh. Bagdi Ram Raika	President, Rajasthan Charvaha Vikas Sangthan.
22	Jaitmal Singh	Yash Sansthan, Pokaran (Jaisalmer)
23	Nije Khan	Yash Sansthan, Pokaran, Dist.- Jaisalmer
24	Kupa Ram Raika	Sheep breeder, Vill.- Madpur Dist.Pali
25	Vala Ram Raika	Sheep breeder, Vill.- Sadri, Dist.Pali
26	Choga Ram Dewasi	Vice president, State Livestock Board.
27	Hira Ram Raika	President, Raika Sangarsh Samiti
28	Chagna Ram Meghwal	Sheep breeder, Raj Vikas Santhan,Odhaniya, Dist.- Jaisalmer
29	Babu lal Raika	Sheep breeder, Dungarli, Dist. Pali

No.	Name	Organization/ address
30	Dayli Devi	LPPS, Sadri
31	Mangi Lal Dewasi	Sheep breeder, Vill. Hirawas Dist. Pali
32	Rawta Ram Raika	Sheep breeder, Vill. Rajpura
33	Sangram ji	Sheep breeder, Mangliyon ka Gura, Desuri
34	Babra Ram Raika	Sheep breeder, Vill. Latada, Dist. Pali
35	Bala Ram Raika	Sheep breeder, Ghanerao
36	Badar Ram Raika	Sheep Breeder, Siwas
37	Kasna Ram Raika	Sheep breeder, Juna
38	Rana Ram Raika	Sheep breeder, Bagol
39	Hara Ram Raika	Sheep breeder, Bagol
40	Jepa Ram Raika	Sheep breeder, Bagol
41	Vela Ram Raika	Sheep breeder, Bagol
42	Bhoma Ram Raika	Bagol
43	Panna Ram Raika	Sheep breeder, Ganthi
44	Thana Ram Dewasi	Mundara
45	Harji Ram Raika	Sheep breeder, Mundara
46	Kheta Ram Raika	Sheep breeder, Kanklawas
47	Bhoma Ram Dewasi	Sheep breeder, Aneva
48	Labu Ram Dewasi	Sheep breeder, Narlai
49	Sawa Ram	Genari
50	Jala Ram Raika	Ramaji Ka Gura
51	Shivji Ram Raika	Ramaji Ka Gura
52	Mula Ram Raika	Gangana
53	Bhaga Ram Raika	Ramaji Ka Gura Dist. Pali
54	Hamma Ram Raika	Kerli Dist. Pali
55	Joga Ram Raika	Kerli Dist. Pali
56	Mathura Devi	Sheep breeder, Alsipura Dist. Pali

Appendix: Results of sheep survey conducted by LPPS

Based on a report compiled by Ellen Geerlings[1]

Introduction

From February to June, 2003, Ellen Geerlings and LPPS staff conducted 34 in-depth interviews in the villages composing the Sadri *samafla*[2], using a standardised questionnaire. The purpose of this survey was to establish baseline data on various aspects of sheep production, in order to be able to monitor the impact of the LPPS sheep project. Some of the salient results are summarised here.

Herd size

The number of sheep per herd in the project area differs greatly between families with an average of 88 sheep (*n* = 34), a minimum of 20 sheep and a maximum of 200 sheep.

Breeds

There are basically 4 breeds present in the project area:

1. **Jaisi.** This is a local breed known as Boti or Wannermi. This breed is most abundant in the project area. According to "official" classification this breed is known as "Marwari".

2. **Bhagli** originally from Malwa in the state of Madhya Pradesh. This is the second most abundant breed in the project area. The official name of this breed could be "Sonadi".

3. **Baradi** is also said to be a separate breed. It comes from Madhya Pradesh (Malwa) and is mostly kept by the Raika "Kassi" community from Gujarat. The Baradi breed is kept by very few Godwar Raikas, mostly those going on migration.

[1] Extracted from report compiled by Ellen Geerlings, June 2003.

[2] "Samafle" is a local term that refers to an organizational unit of the Raika community

4. **Dumi**, originally coming from Gujarat, kept in very small numbers in the project area.

However most of the breeds in the project area are crossbreeds *("Bhildami"*).

These crossbreeds are given the following names:

- *Keri* (reddish coloured face with brown/ black patterns)
- *Kajeli/ojeli* (white face with black ring around the eyes)
- *Gungli* (red face, short ears)
- *Hodi* (both sides of the face are coloured, from the forehead to the nose runs a white stripe)
- *Lapri* (long wide shaped ears, different colour types possible)
- *Tepli* (long ears, different colour types possible)
- *Kabri* (black and white spots all over the body).

Production

The main source of cash income is the sale of lambs for slaughter, secondly the sale of dung and thirdly the sale of wool. Milk is not sold but used for home consumption.

Lambs

Male lambs between the ages of 2–7 months are sold to the slaughterer. They fetch prices ranging from Rs 200–800 depending on age and weight. Female lambs are kept for reproduction although occasionally they are also sold for slaughter.

Wool

The average production of wool per sheep is 330 g (n = 25) with a minimum mentioned by one respondent of 150 g and a maximum of 1000 g mentioned by another respondent. Production depends highly on feed intake and size of the sheep. Raika get between 10 to 13 rupees per sheep. Wool is cut three times per year.

Milk

The average production of a lactating ewe is 131 g of milk per day (n = 24). With a minimum of 50 g and a maximum of 500 g mentioned. Of course the amount depends highly on feed intake.

Feeding

During dry season (October–May) sheep are grazed on agricultural and *gauchar* ("common land"). In rainy season (June-September) sheep are commonly taken to the forest for grazing. Fifteen percent of respondents stated that they would graze their sheep year-round on *gauchar* and agricultural fields and not take sheep for grazing to the forest. About 65% of respondents provide extra fodder to their sheep, especially during the dry months. Supplementary fodder given includes: straw, maize, soya bean, cottonseeds, *chaach* (buttermilk), *gwar* (grain), ghee and oil. Furthermore it is common practice that women collect the seeds of *desi babul* in the sheep corral. The sheep throws up these seeds during the night after eating the pods during the day. In the winter season these seeds are ground and boiled in water and given to the sheep. Sometimes they mix the *desi babul* seeds with cottonseeds or other seeds. This mixture is said to be high in protein and energy.

Diseases

According to the respondents most common problems in lambs are diarrhoea (53%) and respiratory diseases (coughing and breathing problems) (53%). In adult sheep *sinduria* (pneumonia) (44%), liver fluke (38%), diarrhoea (32%) and foot-and-mouth disease (25%) are most prevalent. Respondents cited more than one disease or health problem (Table A1).

Medicine use

Terramycin

All of the respondents (n = 34) use Terramycin. Without exception all respondents use this antibiotic for almost all diseases that they encounter in their sheep. Some examples are: *sinduria* (pneumonia), diarrhoea, *thakla*, fever, weakness, after a sheep has eaten poisonous plants, as a drench if sheep are eating sand and applied on wounds.

On average Raika are using between 10 and 30 bottles (30 ml) of broad-spectrum antibiotics per year. The numbers 50 and 100 were also mentioned during interviews. These antibiotics are not only given by injection but also applied on wounds and given to drink. Injections are not always given intramuscularly. If a sheep is suffering from a disease or affliction that affects the leg or feet an injection will be given near the affected area. This could even do more harm as the bone or nerves can be damaged. Raika pay between 11–15 rupees for one bottle (30 ml) of Terramycin.

Nilverm

Eighty-three percent of respondents (n = 30) use Nilverm. In general it is given as dewormer or treatment for *gogla* (liver fluke); this was cited by 60% of respondents. Other uses are to increase milk production, for general health and lack of appetite, to treat anorexic sheep, and as a drench to get rid of "germs" inside the sheep's stomach (it was not clear what exactly was meant by "germs").

Table A1. Disease prevalence in the project area as cited by respondents (*n* = 34)

Local name	Description	No. of times cited for adult sheep	No. of times cited for lambs
Dast	Diarrhoea	11	18
Khasi	Coughing/cold	6	11
Galtia	Anorexia/weakness	4	1
Sinduria	Pneumonia/cold	15	4
Haldariya	Haematuria/babesiosis	6	0
Gogla	Bottleneck/liver fluke	13	0
Thakla	Haemorrhagic septicaemia/ Brucellosis?	7	6
Miti kane	Eating sand	0	1
Kharar	Foot-and-mouth disease	9	2
Mumri	Contagious ecthyma	1	4
Mata	Sheep pox	3	1
Fifrize	?	1	1
Relia	?	1	0
?	Abortion	1	0
Dodio mata	Bloody diarrhoea	8	1
Balawa	Respiratory problems	0	7
Laria	Yellow urine	0	4
Gada	Mange	1	0
Muh per chalo	Pustule wound on muzzle	2	1
Kotra	Exhausted/difficulty breathing	1	1
Aafra	Tympani/bloat	2	1
?	Constipation	0	1

Albendazole

Eighty-eight percent of respondents use Albendazole (*n* = 33). Eighty percent of the respondents use Albendazole “to increase milk production”. Eight percent use Albendazole to cure sheep from *Gogla* (liver fluke). Other uses are to cure *sinduria* (4%), “to increase general health” (4%), and as dewormer (4%).

Reproduction

Fertility problems hardly occur in the project area; only four interviewees responded that one or more of their ewes could not become pregnant. Causes are mostly weakness, old age or *garmijee* (see below).

Abortion seems to be a big problem in the project area. Twenty-nine interviewees out of 34 (85%) responded that one or more ewes aborted their lamb last year. Most cited cause of abortion was *garmijee* (49%) This “disease” mostly occurs in rainy season when it is very hot during the day and in the evening after raining it becomes cold. Sheep get affected by the cold air.

Symptoms: first yellow urine after some time urine becomes orange/red. Sheep look apathetic/not alert and have difficulty moving. Sheep lose wool, stop eating and become weak. Their eyes become red and sheep are trying to get in the shadow. Pregnant ewes may abort. *Garmijee* was often associated with *haldariya* (possibly babesiosis), but this has to be verified.

Other causes of abortion as cited by respondents are “other diseases”, worms, general weakness and lack of water.

Vaccination

Since 4 years ago, all Raika living within a 10 km radius of the forest have been obliged by law to have a certificate that states that all sheep have been vaccinated against sheep pox, enterotoxaemia and foot-and-mouth disease. They need this certificate to enter the forest for grazing. Since Raika are reluctant to vaccinate their herds and governmental vets are not always keen on vaccination large number of sheep, this certificate is often “bought”. Prices of vaccines are: 0.25 rupee per sheep for the sheep pox and enterotoxaemia vaccine and 5–7 rupees for the foot-and-mouth disease vaccine. Eight of the thirty-four interviewees (23%) did not vaccinate their sheep but bought the certificate from government veterinarians. Sixteen interviewees (47%) did not vaccinate their sheep and did not buy the certificate. Two interviewees stated that their sheep are vaccinated against the above-mentioned diseases and that they have good experiences with the vaccinations. Five interviewees (15%) stated that they did not adopt conventional vaccination but they had their sheep vaccinated against sheep pox with a traditional vaccine. However this number is probably underestimated because in the initial stage of data collection Raika were only asked about “conventional” vaccination and not specifically about traditional vaccination.

Workload

Sheep husbandry depends on labour inputs of all family members. Work is divided between the adult male and female of a family with children helping in all kind of activities. Table A2 presents data on the gender labour division. However, these results underestimate women's workload and responsibilities:

- First, the majority of respondents were male (*n* = 30); only four women were interviewed. It became evident that communicating with Raika women when Raika men are present is sometimes very difficult. Because of their workload, but most importantly because of social/cultural barriers it was very difficult to directly address women, since normally men are the first person to speak to, especially on a first visit. Moreover, when talking to women, men often take over the conversation. Women need a different approach and it takes time to win their and their husband's trust.

- Second, after crosschecking some interviews it appeared that women were much more involved in sheep husbandry activities than initially indicated on the interview form.

Table A2. Gender labour division

	Respon-dents	Man	Woman	Man/ woman	Man/ woman/ daughter	Man/ daugh-ter	Woman/ daughter
Grazing	33	28	1 (8)*	1	1	2	(1)
Cutting branches for home feeding	31	25	3 (6)	1		1	
Milking	31	8 (6)	16 (5)	3	4		
Processing milk	26	2 (7)	23 (2)				1
Care for newborn lambs and sick sheep that are kept at home	34	1 (2)	30 (3)				3
Preparing *desi* medicine	31	15 (3)	11 (3)	5			
Giving *desi* medicine	31	20 (1)	5 (6)	6			
Applying conventional medicine	31	31	(1)				
Preparing and supplying supplementary food	24	(2)	23				

* Numbers in brackets represent the number of times a family member was mentioned to perform the mentioned activity but not on a regular basis

- Furthermore, at the end of May and beginning and June some group discussions were conducted in Ghanerao, Latada, Sadra and Bijapur. During these meetings only one or two topics were discussed such as diseases and treatments, breeding strategies and women and men's workload and responsibilities in sheep husbandry. Discussions on the last subject yielded insights that also suggest that women are more involved in activities such as grazing, preparing and applying *desi* medicine and cutting branches for home feeding than initially thought.

Constraints

From the interviews conducted it becomes clear that the reduction of grazing land is the number one bottleneck in sheep husbandry. The availability of grazing lands has considerately been reduced for several reasons. The percentage of land designated as permanent pastures and other grazing lands and forests is extremely low. Forestland is closed to establish nurseries and the *Panchayats* (village committees) are closing communal grazing grounds in order to plant trees. Increase in livestock has overcrowded the permanent pastures and other grazing lands, which results in depletion of the grazing lands and soil erosion due to trampling of livestock resulting in decreased livestock carrying capacity. More people are changing from traditional rain fed agriculture to irrigated agriculture due to agricultural modernization with the consequence that crops can be grown year round and the fallow period of the land is reduced considerable, therefore the Raikas are losing out on these grazing resources. As a consequence of a decrease in grazing land and fodder resources Raika stated that their sheep are weak and become more susceptible to diseases. Diseases were cited to be the second biggest constraint in sheep husbandry. However it should be borne in mind that interviews were conducted in the dry season at a time when lack of grazing land and resources is critical. It might be that if interviews are taken during rainy season that disease prevalence may be cited as the biggest problem. Table A3 provides details of bottlenecks in sheep husbandry and their relative importance as cited by respondents.

Future vision

Herd sizes of 24 (71%) respondents have increased during the last two years.

Thirty percent stated that their herd did not increase of which half cited that this was due to diseases in their herd.

The majority of respondents (91%) are planning to expand. Only 2 (6%) cited that they are not planning to expand because of lack of grazing land. One respondent did not decide yet whether to expand, he is getting old and it will depend on his son whether the herd will increase or not.

When the Raika were asked if their children will continue this occupation 40% replied "yes", meaning that at least one of their children showed interest in continuing or already started their own herd. Another 40% of respondents cited not to know whether their children would continue, mostly because their children are still too young to be able to know yet. Seventeen percent replied that none of their children show interest in sheep husbandry and/or are not planning to continue. This is mainly due to the decrease in profit and increase in constraints, such as drought, lack of

grazing land, disease and lack of assistance. One respondent (3%) could not answer this question because he does not have children.

Table A3. Bottlenecks in sheep husbandry as cited by respondents, ranked in order of importance (*n* = 33).

	1st ranked	2nd ranked	3rd ranked	4th ranked	Total times cited
Shortage of grazing land	24	2	0	0	26
Disease	7	15	0	0	22
Low wool prices	0	3	1	0	4
Children losing interest in sheep husbandry	0	1	2	1	4
Water shortage	1	2	0	0	3
Low meat prices	0	1	1	0	2
Bad relation with forest authorities	0	1	0	0	1
***Agresi babul* ruining grazing land**	0	0	1	0	1
Government doesn't give assistance	0	1	0	0	1
Little knowledge of medicine and treatment	1	0	0	0	1
Little milk production	1	0	0	0	1
Weakness of sheep	0	0	1	0	1