



## **ADOPTION OF SCIENTIFIC PRACTICES OF SMALL RUMINANTS AT A VILLAGE IN RAJASTHAN: A PRA STUDY**

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### **ABSTRACT**

Adoption behaviour of farmers towards small ruminant technologies was studied during June, 2015 with the help of PRA (Participatory Rural Appraisal) techniques in Soda village (Tehsil Malpura, Tonk) in Rajasthan. Matrix ranking technique was used to assess the important technologies of small ruminant rearing as well as major constraints faced by them. Study revealed that all the farmers were adopting vaccination against enterotoxaemia, sheep pox, peste des petits ruminants and foot and mouth disease. Fifty percent of farmers were providing concentrate feed to ewe during pregnancy and lactation. A few (5.56%) farmers were growing grasses and planting trees (anjan grass, ardu tree and ber bush) for small ruminants. Majority of farmers were rearing Kheri sheep, but were interested in Patanwadi sheep. Seasonal analysis revealed that farmers remained busy with different small ruminant practices throughout the year except in January. Lack of grazing land, local market, proper shed and trough facilities were the common problems faced by farmers.

**Key words:** Adoption, Participatory rural appraisal, Small ruminants, Technologies

It is believed that an effective way to increase productivity is broad-based adoption of new farming technologies (Minten and Barrett, 2008). Adoption of improved technologies will not improve food security and reduce poverty if barriers to their continued use are not overcome (Oladele, 2005). Participatory rural appraisal (PRA) helps in interacting with local communities to understand and learn from them. It is a way of learning from and working with community members to investigate, analyze and evaluate constraints and opportunities as well as make informal and timely decisions about development initiatives (Chambers, 1996). Rajasthan has the largest (16.03%) share of total goats and third position (13.95%) in sheep population after Andhra Pradesh and Karnataka in the country (Livestock Census, 2012). Even though population share of small ruminants in Rajasthan state is higher as compared to

other states in the country, their population has decreased considerably from 2007 to 2012. Keeping these points in mind this study was undertaken with the objectives of assessing the adoption behaviour of farmers towards suitable practices of small ruminants and constraints faced by them.

### **MATERIALS AND METHODS**

A PRA study was carried out in June, 2015 in Soda village to assess adoption behaviour of farmers towards sheep and goat rearing practices transferred by ICAR-Central Sheep and Wool Research Institute (CSWRI), Avikanagar. Soda village was selected purposively in the study as this village has been adopted by CSWRI, Avikanagar under its transfer of technology programme. All the small ruminant farmers in this village were provided various inputs for sheep and goat rearing according

to need and suitability through formal and informal meetings. Soda village is located in Malpura tehsil (Tonk district) in semi-arid area of Rajasthan with a total of 725 families. The overall literacy rate is 60.25% (43.64% in females and 75.70% in males). Majority of families in this village are engaged in cultivation, dairying and agricultural labour. Only 18 families were engaged in sheep rearing while 70 families were also rearing goats along with other livelihood activities. During the study the total population of sheep and goat was 1400 and 800, respectively. All the 18 sheep farmers were considered as respondents for the study. PRA techniques were applied in this study to assess the adoption behaviour of farmers towards small ruminant technologies and also constraints faced by them. The data were analyzed with help of descriptive statistical and PRA techniques.

## RESULTS AND DISCUSSION

The study revealed that all the sheep farmers in Soda were fully aware about the importance of vaccinations and regularly vaccinating their sheep against enterotoxaemia (ET), sheep pox, peste des petits ruminants (PPR) and foot and mouth disease (FMD). Deworming and faecal sample examinations were also adopted by all the farmers. Practice of supplementary feeding during pregnancy, early lactation and in scarcity period were adopted by 50.00% of respondents. Indigenous intra-vaginal sponge for oestrus induction and synchronization was adopted by 16.67% farmers while 11.11% farmers adopted practices of artificial insemination in sheep and lamb fattening (Table 1). Only 5.56% of farmers were growing anjan grass (*Cenchrus ciliaris*) and plantation of ardu (*Ailanthus excelsa*) and ber (*Ziziphus nummularia*) in their fields.

Table 1. Adoption (%) of different sheep management technologies by farmers (n=18)

Practice	Adoption level
Enterotoxaemia vaccination	100.00
Sheep pox vaccination	100.00
PPR vaccination	100.00
FMD vaccination	100.00
Deworming	100.00
Faecal sample examination for worm load	100.00
Concentrate supplementation of ewe during pregnancy and lactation	50.00
Sponge for oestrus induction and synchronization	16.67
Artificial Insemination	11.11
Lamb fattening	11.11
Anjan grass ( <i>Cenchrus ciliaris</i> ) for grassland	5.56
Ardu ( <i>Ailanthus excelsa</i> ) plantation for fodder	5.56
Ber ( <i>Ziziphus nummularia</i> ) bushes for fruit and fodder	5.56

Majority (94.4%) of farmers are rearing Kheri sheep followed by Patanwadi (11.1%) and Malpura (5.6%) sheep (Table 2). Majority (94.4%) of farmers expressed willingness to replace Kheri with Patanwadi sheep. This might be due to the fact that Patanwadi sheep has heavy weight, higher milk yield, fetch higher prices and thrive well in the semi-arid regions. Among goats, Sirohi breed was most popular and farmers wanted to continue with this breed due to its good demand for meat and milk.

Table 2. Adoption and preference of different small ruminants breeds by farmers

Breed/Strain	% Farmers adopted	% Farmers preferred to adopt
Sheep (n=18)		
Malpura	5.6	11.1
Kheri	94.4	0.0
Patanwadi	11.1	94.4
Goat (n=70)		
Sirohi	100.0	100.0

The seasonal analysis of sheep and goat rearing activities carried out by farmers in the study area reflects that sheep farmers remained busy with different rearing and management practices almost throughout the year (Table 3). The practice of deworming was carried out twice a year in June and November, vaccination against ET in June and December, against sheep pox in November, against PPR during May and against FMD in December. Shearing of sheep is being done thrice a year in March, June and October. Feed supplementation of rams was practiced by farmers two times a year (during February-March and July-August) coinciding with the breeding seasons. However, supplementation of ewes was practiced once a year at the time of lambing during September to October. Artificial insemination was also adopted by farmers twice a year during April-May and

August-September. Migration of sheep flocks was practiced from March to July every year. The farmers sold their adult animals in the month of March, while lambs were sold twice a year during April to May and July to August.

Matrix ranking of small ruminant practices showed first preference for Patanwadi sheep followed by Sirohi goat, ET vaccination, Malpura sheep, PPR vaccination and sheep pox vaccination. Other important practices like AI, deworming, FMD vaccination, fat lamb, supplementation of ewes scored less than 50% intensity score due to low awareness about these practices which needs to be addressed properly. Nil intensity score for oestrus induction and synchronization technology proved that it has not reached this village at all (Table 4).

Table 3. Seasonal analysis of sheep and goat rearing activities

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Nov
Deworming						√					√	
ET vaccination						√						√
Sheep pox vaccination											√	
PPR vaccination					√							
FMD vaccination												√
Shearing			√			√				√		
Feed supplement to rams		√	√				√	√				
Feed supplement to ewes									√	√		
Sheep migration			√	√	√	√	√					
AI				√	√			√	√			
Sale of adults			√									
Sale of lambs				√	√		√	√				
Grazing of animals	√	√	√	√	√	√	√	√	√	√	√	√

Table 4. Important sheep and goat rearing practices as perceived by farmers in Soda village

Practice	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	No. of times preferred	Intensity score (%)	Rank
Sirohi goat (T1)	-	T1	T3	T4	T1	T1	T1	T1	T1	T1	T1	T1	T1=9	81.8	II
Malpura sheep (T2)		-	T3	T4	T2	T2	T2	T2	T2	T10	T2	T2	T2=7	63.6	IV
Patanwadi sheep (T3)			-	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3=11	100	I
AI (T4)				-	T4	T6	T7	T8	T9	T10	T4	T4	T4=5	45.4	VII
Intra-vaginal sponge (T5)					-	T6	T7	T8	T9	T10	T11	T12	T5=0	0.0	XII
ET Vaccination (T6)						-	T6	T6	T6	T6	T6	T6	T6=8	72.7	III
Sheep pox vaccination (T7)							-	T8	T7	T7	T7	T7	T7=6	54.5	VI
PPR vaccination (T8)								-	T8	T8	T8	T8	T8=7	63.6	V
FMD vaccination (T9)									-	T9	T11	T9	T9=4	36.3	IX
Deworming (T10)										-	T10	T10	T10=5	45.4	VIII
Lamb fattening (T11)											-	T12	T11=2	18.8	X
Supplementation for ewe (T12)												-	T12=2	18.1	XI

Matrix ranking for the constraints faced by sheep farmers in sheep and goat practices revealed that all the farmers perceived lack of grazing land as the biggest constraint in the area. This has forced them to either leave or down scale the sheep rearing occupation. The other constraints in decreasing priority were lack of interest in the youth for sheep rearing, lack of market facility for live animals, lack of proper shelter for sheep, non-availability of feeding trough and problem of abortion in flocks. Sub-mandibular oedema, low wool price and lack of shearing facility were other problems revealed by farmers in sheep rearing, but at low (30%) intensity score. This study revealed that infrastructure facilities were considered serious problems as compared to

others and this might be due to health interventions provided by CSWRI, Avikanagar under its transfer of technology programme (Table 5).

Adoption or acceptance of a new idea is not a unit act but a complex process involving a sequence of thoughts and actions. Usually decisions are made after multiple contacts over a period of time with various communication channels (Reddy, 1987). Adoption behaviour varies from person to person according to their knowledge and understandings. Adoption of innovations also depends on felt needs of the ultimate user (Bagdi et al. 2001). Some people in villages adopt innovations immediately, but some people are slow to adopt innovations.

Table 5. Constraints faced by farmers in sheep and goat rearing in Soda village

Constraint	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	Total	Intensity score %	Rank
Lack of grazing land (P1)	-	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1=10	100	I
Hazards due to <i>Prosopis juliflora</i> (P2)		-	P3	P4	P5	P6	P7	P2	P9	P2	P11	P2=2	20	X
Submandibular edema (P3)			-	P4	P5	P3	P7	P8	P9	P3	P11	P3=3	30	VII
Abortion in flock (P4)				-	P4	P4	P7	P8	P9	P4	P11	P4=5	50	VI
No remunerative price for wool (P5)					-	P6	P7	P8	P9	P5	P11	P5=3	30	VIII
Lack of shearing facility (P6)						-	P7	P8	P9	P6	P11	P6=3	30	IX
No proper shed for sheep (P7)							-	P7	P9	P7	P11	P7=7	70	IV
No feeding trough (P8)								-	P9	P8	P11	P8=5	50	V
Lack of market facility in village (P9)									-	P9	P11	P9=8	80	III
FMD vaccine (P10)										-	P11	P10=0	0	XI
Poor inclined of young generation in sheep rearing (P11)											-	P11=9	90	II

It can be concluded that majority of farmers were adopting scientific practices in sheep and goats rearing. They are well aware about health and feeding technologies and less about other technologies like oestrus synchronization, lamb fattening and fodder trees and grass cultivation. Majority of the farmers demand Patanwadi sheep and Sirohi goat due to more meat and milk. Lack of grazing land and local market facility were major problems faced by farmers.

## REFERENCES

- Bagdi, G.L., Samra, J.S. and Kumar, V. 2001. Adoption of soil and water conservation technologies by the farmers of Sardar Sarovar Project catchment in Gujarat state. *Indian Journal of Soil Conservation* 29: 65-68.
- Chambers, R. 1996. *Poverty in India - Concepts Research and Reality- an exploitation*. Institute of Development Studies, University of Sussex, Brighton.
- Livestock Census. 2012. 19<sup>th</sup> Livestock Census-2012. Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries Krishi Bhawan, New Delhi. Retrieved from <http://dahd.nic.in/dahd/WriteReadData/Livestock.pdf> (accessed on 03.08.2015).
- Minten, B. and Barrett, B.C. 2008. Agricultural technology, productivity and poverty in Madagascar. *World Development* 36: 797-822.
- Oladele, O.I. 2005. A tobit analysis of propensity to discontinue adoption of agricultural technology among farmers in southern Nigeria. *Journal of Central European Agriculture* 6: 249-254.
- Reddy, A.A. 1987. *Extension Education*. Sree Lakhmi Press, Bapatala (A.P.) p. 278.