

Short Communication

**Technological Constraints in Mixed Farming System in Bikaner District of Rajasthan: A Case Study**

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Frequent droughts, high radiation, severe frost, high wind velocity (30 to 40 km h<sup>-1</sup>), high evaporation (150-1200 cm y<sup>-1</sup>), extremes of temperature (-4° to 48.6°C) and limited water availability lead to low productivity in Bikaner district. Poor management of natural resources, non-adoption of improved package of practices, less off-farm economic activities, nomadic living, particularly with sheep owners are the main limitations in the economic development of this region.

Livestock-based farming systems involving subsidiary enterprises including dairy, sheep and goat farming have great potential, yet they need to be properly exploited. Therefore, keeping in view the above facts, Desert Development program/Transfer of Technology (DDP/TOT) project was started in 1992 to diffuse improved technologies developed at Central Arid Zone Research Institute to farmers' field for socio-economic upliftment of the farmers.

Mixed farming comprising crops like clusterbean, pearl millet, moth bean, green gram and sesame, and the livestock enterprises, i.e., cows, sheep and goat is

followed in this region. Rainfed crops are taken only during kharif and in rabi season fields are kept fallow. Therefore, livestock enterprise is very important for income generation and to provide employment round the year. In arid zone yields of rainfed crops are low and unstable. The key to enhance agricultural production including livestock products lies in the adoption of technologies developed in the research laboratories. Based on the recent survey in DDP/TOT adopted and non-adopted villages by CAZRI, a yield gap ranging from 100-150% in the crops was recorded indicating considerable scope for yield increase through adoption of improved technologies. It is essential to have in-depth analysis of technological constraints as perceived by the farmers. The present study is an attempt to identify the constraints faced by the farmers in mixed farming system.

The program was undertaken in Lakhusar, Berju (DDP/TOT adopted) and Kalaser, Jogran (non-adopted) villages, located west of the district on Bikaner-Anoopgarh state high way. The villages, Lakhusar, Berju and Kalaser, Jogran are having 184, 156, 265 and 37 households, respectively. Livestock rearing,

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\* Deceased.

**Table 1.** Technological constraints in crop production as perceived by the farmers (1998-99)

Constraints	DDP/TOT adopted villages (60)		Non-adopted villages (55)		Overall percentage
	No of farmers	Per cent to total	No of farmers	Percent to total	
Non-availability of HYV seeds	26	43.3	36	65.4*	53.91
Use of improved techniques	37	61.6	24	43.6*	53.04
Use of farm machinery	47	78.3	34	61.8*	70.43
Lack of training, guidance and relevant literature	25	41.6	43	78.2*	59.13
Non-availability of marketing facilities	35	58.3	34	61.8	60.00
High risk in production due to:	46	76.6	41	74.5	75.65
Poor and scanty rainfall	41	68.3	40	72.7	70.43
Wind erosion	38	63.3	38	69.0	66.08
High temperature	24	40.0	28	50.9	45.21
Poor purchasing capacity	44	73.3	46	83.6	78.26

\* Significant at P <0.05 level

i.e., cows, sheep and goat is the main source income for these farmers. The transport and other facilities related to crop and livestock production are lacking in this area. The study of constraints in mixed farming system was carried out in four villages on randomly selected 115 farmers, i.e., 30 farmers each from DDP/TOT adopted (Lakhusar, Berju) and 30, 25 from non-adopted Kalasar, Jogran villages, respectively. Complete information on the farmers along with their suggestions were collected on the well structured schedules through personal interviews. The data on various constraints were arranged with average percentages as well as by using 't' test, to assess the severity of constraints faced by the farmers in crop and livestock production.

Depending on rainfall during kharif season farmers were growing clusterbean, pearl millet, moth bean, green gram and sesame year after year under traditional system with single cropping (Table 1). Overall 60% of the farmers reported the non-availability of HYV. Farmers (53%) indicated the problem of non-adoption of improved technologies as a constraint in cropping. Only 61.6% of the farmers in DDP/TOT adopted and 43.6% of farmers in non-adopted villages were using improved techniques and earning high profits. In Bikaner district, 70.4% of the farmers were using farm machineries for sowing and other purposes in crop cultivation.

Lack of training, guidance and relevant literature was found to be another major

Table 2. Technological constraints in livestock production as perceived by the farmers (1998-99)

Constraints	DDP/TOT adopted villages (60)		Non-adopted villages (55)		Overall percentage
	No of farmers	Percent to total	No of farmers	Percent to total	
Non-availability of quality fodder	42	70.0	36	65.4	67.8
Insufficiency of fodder collection from grazing and cropped area.	45	75.0	40	72.7	73.9
High cost & irregular supply of good quality feeds	40	66.7	34	61.8	64.3
In efficiently marketing facilities					
Milk	44	73.3	24	43.6	59.1
Wool	46	76.6	39	70.9	73.9
Live animal (Meat)	48	80.0	35	63.6*	72.1
Low productivity due to non-availability of pure germplasm	24	40.0	28	50.9	45.2
Non-availability of veterinary facilities	26	43.3	44	80.0*	60.8
Non-applicability of techniques of enriching poor quality roughages	52	86.6	48	87.2	86.9

\* Significant at P <0.05 level

constraint (59.1%) in four villages, where as it was higher in adopted than non-adopted villages. Singh and Reddy (1987) also observed it as a constraint for crop production. Farmers in this region have to sell their products to the village traders at low prices due to lack of suitable marketing facilities. The high risk in crop production due to environmental constraints has been reported in both the villages (Table 1). Poor purchasing power was reported by 78.26% of the farmers as a main factor for not using costly inputs for crop farming which are of much importance.

The data showed that non-availability of quality fodder is very crucial in livestock

production. Most of the time dry fodder, low in energy and protein, is available for feeding of animals. Poor quality fodder was reported by 70.0% farmers in adopted villages as a factor responsible for low milk, wool and meat production. Reddy and Subramaniyam (2002) observed that the deficiency of protein in ration at village level is the main factor responsible for lower milk yield. Insufficient fodder from grazed and cropped area have been reported by 73.9% of the farmers as a constraint in milk, wool and meat production in Bikaner (Table 2). High cost and irregular supply of good quality feeds was a constraint observed by 66.6% and 61.8% of the farmers in DDP/TOT adopted and non-adopted

villages, respectively. Undeveloped marketing facilities for the sale of their livestock products like milk, wool and meat compelled farmers to sell their product to private traders which was in the tune of 59.1% for milk, 73.9% for wool and 72.17% for meat (sale of sheep and goats). About 45.2% farmers in the district indicated this constraint for low production due to non-availability of pure breed of cows, sheep and goats. 60.8% farmers have reported non-availability of veterinary facilities while 86.95% farmers reported the non applicability of techniques for enriching poor quality roughages responsible for low livestock productivity.

Awareness and availability of improved seeds can help to solve the problem of poor germination with high crop yields.

Since it is capital intensive, so liberal financial assistance and intensive extension activities can help to promote the adoption of such activities. Krishi Vigyan Kendras and other related agencies should organize short term training courses and demonstrations to make the farmers aware with improved crop production technologies.

### References

- Reddy, R.M. and Subramaniyaum, S. 2002. Factors affecting productivity gaps in dairy farming. *Agriculture Situation in India* 59: 3-8.
- Singh, S.K. and Reddy, P.R. 1987. An economic assessment of dry farming technology, adoption level, constraints in the transfer of technology: A case study of rainfed castor in Southern Telengana Zone of Andhra Pradesh. *Agriculture Situation in India* 42: 619-622.