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Impact Assessment of Cattle Farming on Forest and Socio-Economic Status, Village Borabas, Mhtr, Kota (Rajasthan)

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ABSTRACT

Present study was conducted in Borabas village which is in close proximity to the Mukandara Hills Tiger Reserve (MHTR) of Kota, Rajasthan. This study was conducted for the assessment of impact of dairy cattle farming on socio-economic status of households specifically to evaluate the effect of cattle farming on household income and impact assessment of cattle on forest. A survey was conducted with a structural questionnaire to interview the 383 households. The study showed that the minimum and maximum household size of the households keeping dairy cattle was 52.65% and 0.88% respectively. On the other hand, minimum and maximum household size for not keeping dairy cattle was 56.05% and 3.82% respectively. Out of the total, 65.01% belongs to Gurjar community which is dominant on others and mainly involved in dairy farming. Bheel community is on second position with 24.54% and they are not involved in dairy farming. 48.67% of the household persons among households keeping dairy cattle has primary school education level, about 34.95% had secondary school education and 3.09% had higher education but 13.27% were illiterate. On the other hand, household's not keeping dairy cattle, 50.95% had attended primary school, 30.57% had secondary education, 3.18% had higher education and 15.28% had no formal education. Only 0.78% of the households were engaged in farming, maximum 48.82% were involved in animal husbandry, 1.04% was both in agriculture plus animal husbandry, 9.13% were in animal husbandry plus wages while 33.42% were wage employees and rest 6.77% were involved in other activities like shop etc. Net annual income of Borabas from dairy farming is 16,55,17,250 Rs. Annual income of 226 household keeping dairy cattle is 7,32,377 Rs., after exclusion of expenditure on these cattle. It is concluded from the present study that households keeping dairy cattle have more income than the households not keeping dairy cattle. But dairy farming has negative impact on the biodiversity of MHTR.

Keywords: *Animal Husbandry; Livelihood generation; Life Status; Tiger Reserve; Human-Wildlife Conflict.*

INTRODUCTION

Dairy plays an important role as a source of income, which is used for income generation, food security and for household assets. Small-scale dairying plays an important role in farming system in smallholder economy, particularly in places where agriculture land is limited (Mdoe & Nyange, 1995; Bikuba, 2011).

It is considered as an important opportunity for rural improvement in developing countries as its contribution to increase in production of dairy stuff, stipulation of jobs and transfer of money from urban to rural areas (Paris 2000, Kristensen et al., 2004). The present study was conducted to evaluation of dairy cattle farming on household income and impact assessment of cattle on forest. Likewise other Tiger reserves of Rajasthan villages are situated on the periphery of MHTR where Tiger has been introduced in April, 2018. On the other hand these villages are located in the close proximity of urban area of Kota city. Rurals of these areas have more focused on smallholder dairy farming. The conditions are suitable for milk production and there is a huge market for the consumption of all milk products. On the other hand land for agriculture is also a limiting factor in the study area so maximum village population is involved in dairy farming. In this village dairy production aims to achieve multiple objectives, which includes; improvement in food security, supportive crop production and generation of cash income. Unfortunately a big number of local inhabitants of these villages are not in support of tiger reintroduction and they are demanding for the grazing land for their cattle around the Reserve. The socio-economic information resulting from this study will help in decision making policy of the forest department and further research will provide an idea for strategic relocation of village for the sake of conservation of wildlife and humanity.

STUDY AREA

Study was conducted at Borabas village situated on the edge of Mukandara Hills Tiger Reserve, Kota (Rajasthan) located on state highway 22 beneath Rawatbhata town and Kota city. It is considered as most impactful village on area-wise, population, economic and political levels. Total area of Borabas Forest Block is 3018.008 hact. Kota is nearest largest city on the distance of approximate 25 km.

DATA COLLECTION METHODS

Interview schedule composed of closed and open ended questions were used to obtain primary data from both households keeping dairy cattle and who that did not. Interviews were done with the household head or in his/her absence, with his/her representative family member. Interviews was done to obtain information on total numbers of members in a family, gender, education status, caste, cattle record, daily milk production, income generation through milk, forest dependency, other sources of income generation etc. Four teams of 3-3 members were organized for survey. Door to door survey was conducted during the study period in the month of September 2018. Some supporting data were also collected from government offices.

OBSERVATIONS AND RESULTS

This chapter represents empirical findings of the study on the following points:

  i. Characteristics of the sample,
 ii. Cattle keeping practices and income generation,
iii. Impact of dairy farming on forest.

i. Characteristics of the Sample

It includes Household size, their caste, education status, occupation and gender.

A. Household Size

Table 1: Household Size of BORABAS

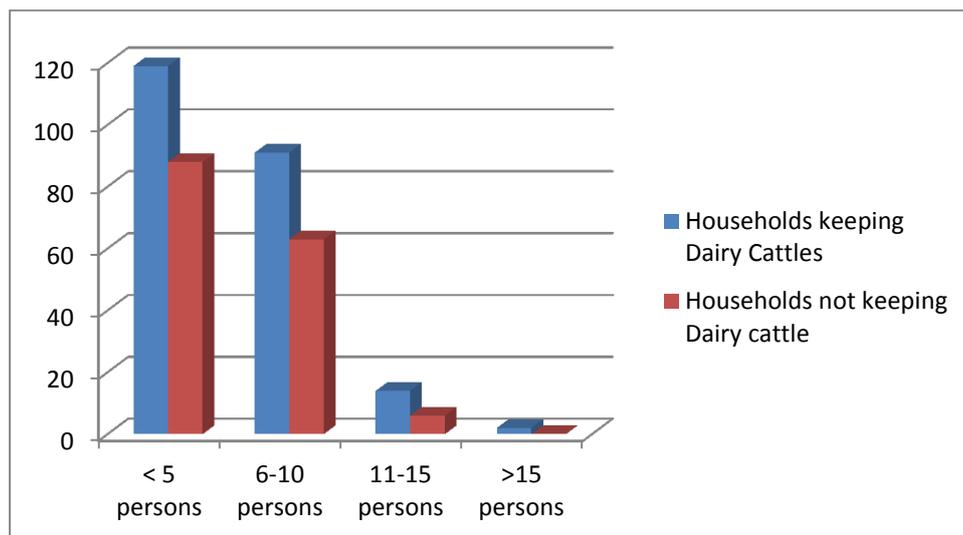| Statistics	Households keeping Dairy Cattles		Households not keeping Dairy cattle		Total	
	No.	%	No.	%	No.	%
< 5 persons	119	52.65%	88	56.05%	207	54.04%%
6-10 persons	91	40.26%	63	40.12%	154	40.20%
11-15 persons	14	6.19%	06	3.82%	20	5.22%
>15 persons	02	0.88%	0	0	02	0.52%
Total	226	100%	157	100%	383	100%

Fig. 1: Household Size of Borabas

The minimum and maximum household size of the households keeping dairy cattle was 52.65% and 0.88% respectively. On the other hand, minimum and maximum household size for not keeping dairy cattle was 56.05% and 3.82% respectively. It shows that household size influences labour availability for dairy farming activities like cattle grazing, their care and for their milking etc.

B. Social Status

Among 383 households 65.01% belongs to Gurjar community which is dominant on others and mainly involved in dairy farming. Bheel community is on second position with 24.54% and they are not involved in dairy farming. Their main source of livelihood is wages or collection of forest products. Other communities are trace less in number.

Table 2: Social status of Borabas

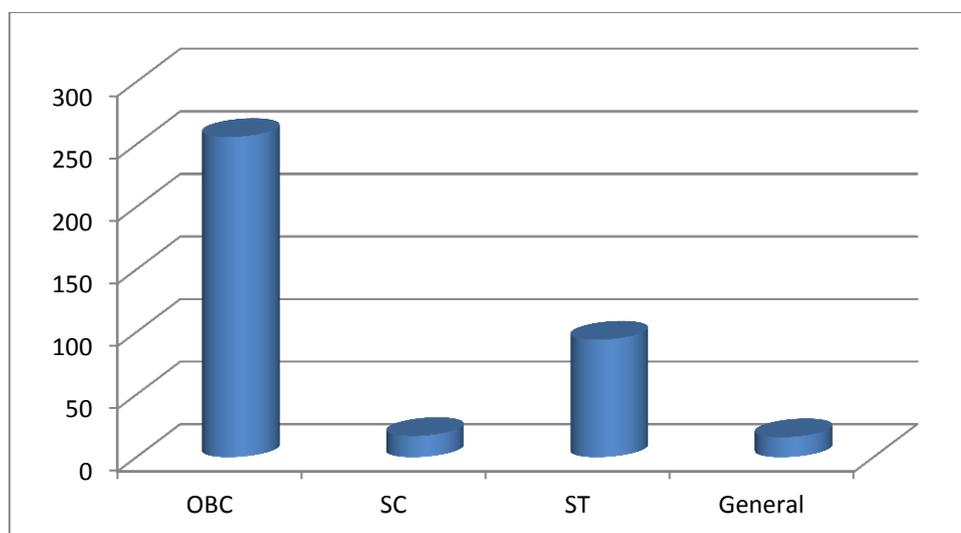| S.No.	Social Status	Total Households		Adult		Child (0-6)
		No.	%	Male	Female	
1.	OBC	256	66.85	726	543	391
2.	SC	17	4.43	38	33	21
3.	ST	94	24.55	98	142	108
4.	General	16	4.17	44	33	04
Total		**383**	**100%**	**906**	**751**	**524**
Total Population				**2181**		

Fig. 2: Social status of Borabas

C. Level of Education

48.67% of the household persons among households keeping dairy cattle has primary school education level, about 34.95% had secondary school education and 3.09% had higher education but 13.27% were illiterate. On the other hand, household's not keeping dairy cattle, 50.95% had attended primary school, 30.57% had secondary education, 3.18% had higher education and 15.28% had no formal education. The results show that majority of the respondents have acquired basic education (primary education) which can enable them to get knowledge, skills and attitude on how to solve some problems associated with managements of dairy cattle. It can be said that, level of education has a positive relationship with dairy cattle keeping and marketing.

Table 3: Level of Education in Borabas

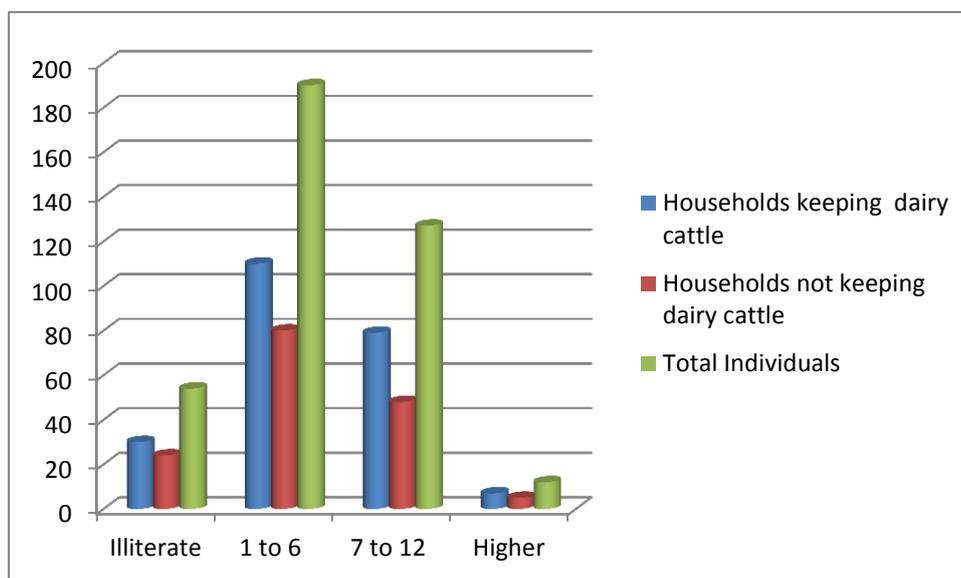| Level of Education	Households keeping dairy cattle		Households not keeping dairy cattle		Total Individuals	
	No.	%	No.	%	No.	%
Illiterate	30	13.27%	24	15.28%	54	14.09%
1 to 6	110	48.67%	80	50.95%	190	49.60%
7 to 12	79	34.95%	48	30.57%	127	33.15%
Higher	7	3.09%	5	3.18%	12	3.13%
Total	**226**	**100%**	**157**	**100%**	**383**	**100%**

Fig. 3: Level of Education in BORABAS

D. Occupation

Table 4 reveals that only 0.78% of the households were engaged in farming, maximum 48.82% were involved in animal husbandry, 1.04% was both in agriculture plus animal husbandry, 9.13% were in animal husbandry plus wages while 33.42% were wage employees and rest 6.77% were involved in other activities like shop etc.

Table 4: Occupation Stats of Borabas

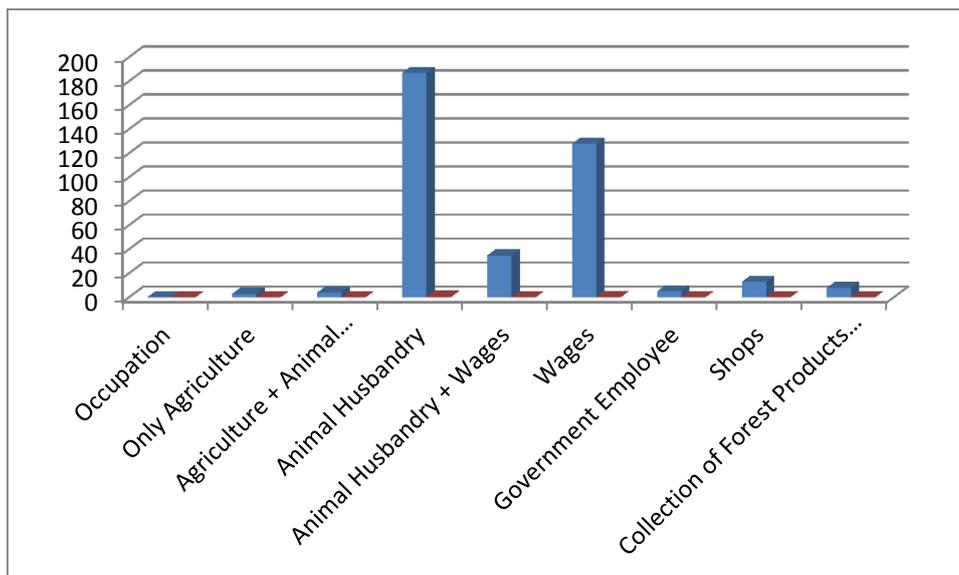| S.No.	Occupation	Number of Households	
		No.	%
1.	Only Agriculture	03	0.78%
2.	Agriculture + Animal Husbandry	04	1.04%
3.	Animal Husbandry	187	48.82%
4.	Animal Husbandry + Wages	35	9.13%
5.	Wages	128	33.42%
6.	Government Employee	05	1.30%
7.	Shops	13	3.39%
8.	Collection of Forest Products + Others	08	2.08%
	Total		**383**

Fig. 4: Occupation Stats of Borabas

E. Gender of household heads

Only 1 of dairy cattle household head was female and 225 were males in Borabas. These results show that, many households in both dairy and non dairy cattle keeping households are headed by male, which is a common feature in most Indian societies.

ii. Cattle keeping practices and Income Generation

A. Number of Dairy cattle

In Borabas 226 households from 383 (59%) are dependent on cattle. Table 5 reveals that 123 households are those who possess 11-50 cattle, 11 households have 51-100 cattle and 6 households have more than 100 dairy cattle. These results indicate that maximum economics is dependent on dairy farming.

Table 5: Range of Dairy Cattles in Borabas

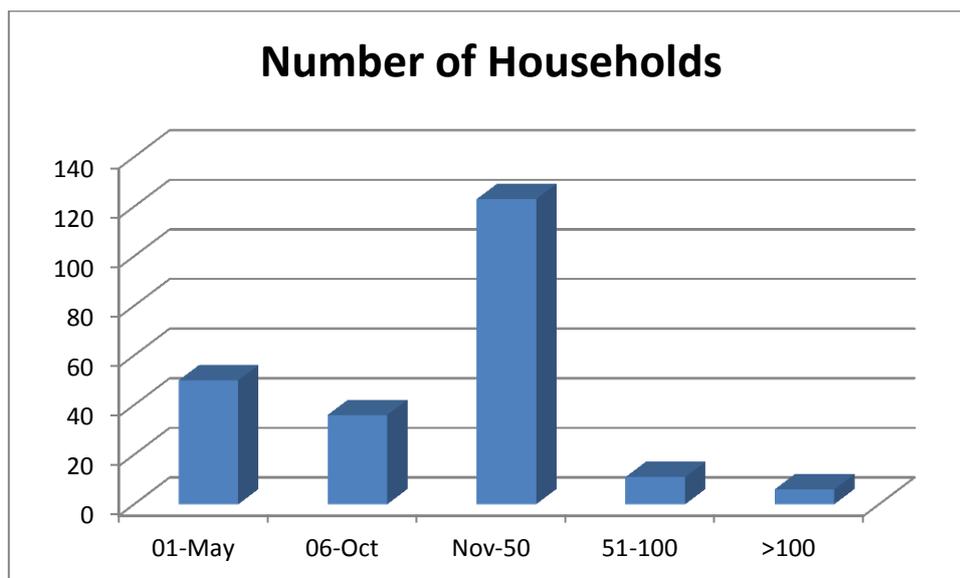| S.No.	Range of Cow & Buffalo	Number of Households
1.	1-5	50
2.	6-10	36
3.	11-50	123
4.	51-100	11
5.	>100	6
	Total	**226**

Fig. 5: Range of Dairy Cattles in Borabas

B. Types of livestock kept

Surveyed households are involved in animal husbandry of various economic important animals such as cattle, buffalo, goats, hen, pig and poultry. Livestock production is considered as a major source of income, food and other social and cultural issues in life of these areas.

Table 6: Types of Livestock kept in Borabas

Animals kept	Borabas
Cow	2738
Buffalo	2697
Calf	738
Ox	61
Goats	721
Pig	10
Poultry	310
Total	**7275**

C. Milk Production

Cow and buffalos are very valuable and expensive animals. Surveyed households were asked to give information on the quantities of milk produced. They told that average 70% cattle of total population are milking at the same time. Households were asked to give information on the quantities of milk produced. An average milk production per cow was 5 litres per day and per buffalo was 6 litres per day. Milk production was high after 2 months of delivery as much as 15 litres per day and it decreases with time. As in delivery time supplement feeds was given to the dairy cow and buffalos. The supplement feeds used were chick pea bran, oil cakes and sometimes cotton seed cakes. Large amount of supplement food is not used due to its high cost but in pregnancy time it is much required for the good health of cattle. Lack of supplementary feeds, differences in dairy cattle breeds kept, husbandry practices and animal health management practiced could be the reasons for low milk production in the study area. Table 7 shows annual milk production, its sale and income generation from dairy farming.

D. Milk Sales

All household heads' keeping dairy cattle, admitted to have had enough milk for sale

after meeting house consumption needs, and disclosed the income they earned daily or annually on average. Net annual income from dairy farming is 16,55,17,250 Rs (Sixteen crore fifty five lakh seventeen thousand and two fifty only). Annual income of 226 household keeping dairy cattle is 7,32,377 Rs. (Seven lakh thirty two thousand three hundred and seventy seven) after exclusion of expenditure on these cattles. Daily income of these households is two thousand six rupees (Table:7).

Table 7: Total Annual Household Income from Animal Husbandry in BORABAS

S.No.	Particulars	Cow	Buffalo	Calf
1.	Total Number	2738	2697	738
2.	Avg. Number of Milk Producing Animals	1917	1888	-
3.	Avg. Milk Production/day (in lt.)	9585 @ 5 lt/day	11328 @ 6 lt/day	-
4.	Avg. Milk Production /year (in lt.)	34,98,525	41,34,720	-
5.	Avg. income/day (in Rs.)	287550 @ 30 Rs/lt	453120 @ 40 Rs/lt	-
6.	Avg. income/yr (in Rs.)	**10,49,55,750**	**16,53,88,800**	-
7.	Total Income	**27,03,44,550**		
8.	Avg. expenditure /MPC/yr (in Rs.)	18600 (for 1917)	22100 (for 1888)	-
9.	Total expenditure on MPC /yr (in Rs.)	3,56,56,200	4,17,24,800	-
10.	Avg. expenditure /NMPC/yr (in Rs.)	10,300 (for 821)	18000 (for 809)	-
11.	Total Expenditure on NMPC/yr (in Rs.)	84,56,300	1,45,62,000	44,28,000 @ 6000Rs.
12.	Total Expenditure (MPC+NMPC)/yr	**4,41,12,500**	**5,62,86,800**	**44,28,000**
13.	Net Expenditure	**10,48,27,300**		
14.	Net Income/yr	**16,55,17,250**		
15.	Net income/family/yr (in Rs.)	**732377**		
16.	Avg. income/family/day (in Rs.)	**2006**		

E. Other sources of household income

The households which have not dairy cattle they prefer non-agricultural activities for cash generation. This can be from permanent employment (shop and driver), temporary employment (conductor) or casual labour. The study revealed that both dairy cattle keeping and other households were getting their income from different sources, such as crop production, small business and wage employment. It can be observed that 226 of the household heads were getting their income by dairy cattle, and by by-products of cattle like they sold out the dead bodies of cattle, sold their calf and by selling organic manure (average 3000 Rs/month); 157 getting their income by means of wage employment and by doing small businesses. The households which were involved in daily wages get employment only for 240 days in comparison of 365 days of the year. They are basically mine labours and mines remain closed for four months of monsoon (July-October). Their daily income is 207 Rs in Rajasthan. Total annual income both from cattle and other sources of households keeping dairy cattle is 17,37,66,250 Rs whereas total annual income of households not keeping cattle is 77,99,760 Rs only (Table:8)

Table 8: Annual Income of households in Borabas

Statistic	Income from Milk sales (INR)		Income from other activities (INR)		Total Household Income (INR)	
	Household keeping Dairy Cattle	Household not keeping Cattle	Household keeping Dairy Cattle	Household not keeping Cattle	Household Keeping Dairy Cattle	Household not keeping Dairy Cattle
Village Annual Income	16,55,17,250	-	82,49,000	77,99,760	17,37,66,250	77,99,760
Household/yr	732377.22	-	36500	49,680	76,88,77.22	49,680
Household/Day	2006.51	-	100	207	2106.51	207

iii. Impact of Dairy Farming on Forest:

- Deficiency of Grass- As all the cattle graze in the nearby forest area so very less amount remains for the wild herbivores.
- Human Animal Conflict-It is an increasing rate, as villagers invade inside the forest in search of their cattle, or their cattle are eaten by the large carnivores.
- Spread of Infection- Many infective diseases are being spread among wildlife by the cattle.
- Wild animal moves to other areas- in search of food and shelter.

CONCLUSION

Based on the above said findings of the study following conclusions can be drawn;

(i)   Gurjar community is dominant which is involved in dairy cattle farming.

(ii) Households keeping dairy cattle have large family size due to more involvement in the farming activities.

(iii) Households keeping dairy cattle earn more annual income than households not keeping cattle or dairy cattle.

(iv) Household keeping dairy cattle are largely dependent on forest for cattle grazing.

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