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Socio-economic Survey of Uttar Pradesh, Bihar and Maharashtra States of Indian Continent

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Authors' contributions

This work was carried out in collaboration among all authors. Author VVP designed and plan of study along with primary calculations, wrote the first draft of the manuscript. Author YSG performed statistical analysis and author SJ prepared result and discussion. Author JRK the literature searches. Author MS given valuable guidelines, necessary corrections and update in draft. All authors read and approved the final manuscript.

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ABSTRACT

Dairy farming plays a very important role in improving the economy of rural India. The study was conducted to explore the socio-economic profile of dairy farmers and farmers feedback about dairy development project. The survey was conducted to study the education status, family structure, education status and management of animals, different patterns of rearing of dairy animals and status of milk production. Data was collected from the 3000 dairy farmers of three states namely Maharashtra, Bihar and Uttar Pradesh during year 2016 .Concentration of poor farmers was relatively high in Bihar (35.5%), followed by Uttar Pradesh (30.9%) and 16.3% in case of Maharashtra. Average family size show 8.74 members per household in Bihar, 6.76 members in Uttar Pradesh and 6.17 members in Maharashtra. Results revealed that majority of the families were nuclear families. Main source of income was agriculture which includes livestock farming. As regards to the size of land owned, nearly 56% of the landowners were Marginal farmers (owning

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0.1 -1 ha of land), 23% were small (1.1-2 ha) landowners while about 12% farmers owned above 2 ha of land. Literacy level was higher among farmers of Maharashtra (71.6%) as compared to Uttar Pradesh (65.8%) and Bihar (65.4%). Majority of the farmers followed mixed cropping system, Maximum number of cows and buffaloes were owned by the farmers of Maharashtra i.e. 3.37 cows and 1.42 buffaloes, followed by Uttar Pradesh (1.60 cows & 1.42 buffaloes) and Bihar (1.75 cows & 0.24 buffaloes).Farmers of Maharashtra owned maximum percentage of crossbred cows (90.97%), followed by Uttar Pradesh (83.4%) and Bihar (75.9%).Maharashtra farmers possessed maximum number of upgraded buffaloes (79.4%), followed by Bihar (55.7%) and Uttar Pradesh (51.5%). In study of average quantity of milk produced by cows was higher among the crossbred cows (10.18 litres), in indigenous cows it was (4.47 litres) and 4.23 liters in Non-Descript cows. The data shows the same pattern of milk produced across the three states with slight variation. In buffaloes, the average quantity of milk produced was observed to be higher among the upgraded buffaloes (8.42 litres) as compared to Non-Descript buffaloes (5.17 litres). Respondents appreciated the fact that due to dairy development project by BAIF their family and social status have increased.

Keywords: Socio-economic; population; non-descript cow.

1. INTRODUCTION

BAIF had implemented dairy development project named Godhan from Dec, 2009 to July, 2016. After successful implementation of project BAIF arranged to conduct an impact assessment study to document the project outcome and the lessons learnt which would be useful for research &development as well as while taking future policy decisions for replication and up-scaling of similar programs. This task has been assigned to [1] which undertook the impact assessment study during April-June' 2016. Under socio-economic information about demographic details, household category wise, education status, land holding, types of dairy animals owned, and their milk yield was collected and analysis.

2. MATERIALS AND METHODS - STUDY TOOLS AND SCHEDULES

Face to face interview of 3000 dairy farmers across three states (Bihar, Maharashtra and Uttar Pradesh) was conducted. A well-structured and pre-tested questionnaire were used to gather information on various aspects of prevailing housing and management practices Required classroom training, mock interviews in classroom was given to person who conducted survey. Questionnaires were filled completely by asking questions during visits to the farms. Question-aires were summarized as follows: population and family size, land size of the farms; social category of farmer with their education, type of animal breed maintained with their average milk yield. Data was filled in excel and basic statistical tool like frequency distribution, percentage, ratio, range, mean were calculated to draw infer-ences [2].

3. RESULTS

The list of farmers for all the three states was provided by BAIF and from that list, the team selected around 3000 farmers for administering the tool designed for the purpose.

3.1 Face to Face Interviews of around 3,000 Farmers

The list provided contains contact details of farmers i.e. name, addresses and names of Cattle Development Centre details etc. Based on the data provided, the field team secured information by contacting the sampled farmers, prepared data files, analyzed information and. Out of total 51.6% farmers were covered in Bihar and 21.7% from Maharashtra. Percentage of farmers interviewed in Uttar Pradesh were 26.7%.

Table 1. State wise distribution of sample farmers

State	Sample farmers	
	No.	%
Bihar	1550	51.6
Maharashtra	650	21.7
Uttar Pradesh	800	26.7
Total	3000	100.0

3.2 Age Group and Gender Wise Distribution of Farmers

The average age of the farmers in the sample was about 45 years. Average age of males was 46 years and 40 years of females. Majority of the farmers (50%) belonged to the two-dominant age-groups – 31-40 years and 41-50 years. Around 19.2% farmers were in the age-group of

51-60 years while 16.6% were above 60 years of age. The sample also comprised of 14 % farmers who were below the age-group of 30 years. The pattern of age-distribution of both males and females was similar with more females in 31-40 years (34.8%) as compared to their male counterparts (22.8%). This finding is in line with the findings of Sabapara et al. [3] reported that higher proportion of farmers were middle age. State-wise distribution of male and female farmers shows the same pattern. Several authors [3,4] found that majority of respondents were in middle age group.

3.3 Average Size of Household

The average size of family in the sample was 7.66 persons with 4.12 male members and 3.53 female members. State-wise differentials shows that on an average there were 8.74 members per household in Bihar, followed by Uttar Pradesh (6.76 members) and Maharashtra (6.17 members). In all the three states, households had more male members as compared to female members. This finding agreed with several authors [5,6] who found that rural women played an important and substantial role in dairy farming [7].

3.4 Educational Status

The data indicates that nearly 33% of the farmers from all the three states were not formally educated which comprised of 80% males and 20% females. Among the 67% farmers who had undergone formal education, maximum (29.3%) were those who were 10^{th} pass, followed by 22.5% who had cleared their 8^{th} grade. Around 20% farmers were 12^{th} pass while 11% were either graduates or postgraduates. State-wise differentials show that literacy level was comparatively higher among farmers of Maharashtra (71.6%) as compared to Uttar Pradesh (65.8%) and Bihar (65.4%). Tamizhkumaran and Rao [8] revealed that 45.31 per cent of cattle owners were illiterate and 54.69 per cent were literate in Western Rajasthan [9].

3.5 Social Category

The dominant caste group to which the farmers belong was Other Backward Class (OBC) accounting for 57% of the farmers, followed by general category (32.5%), scheduled caste (7.3%) and scheduled tribes (2.9%). State-wise analysis of data shows that representation of OBC was highest in Uttar Pradesh (74%) as compared to Bihar (59.4%) and Maharashtra (31.8%). Likewise, the concentration of general category was found maximum in Maharashtra (58.8%) while in Bihar it was 29.8% and 16.4% in Uttar Pradesh. Relatively more number of farmers belonged to scheduled tribes in Maharashtra (5.5%), followed by Bihar (2.7%) and Uttar Pradesh (1.0%).

3.6 Economic Status

Overall, the data of the three states indicated that 30% of the farmers were poor (households having income of < 2 USD per day) and 70% belonged to 'Others' category. State-wise data shows that the concentration of poor farmers is relatively high in Bihar (35.5%), followed by Uttar Pradesh (30.9%). In case of Maharashtra only 16.3% of the total sample farmers were under "poor category".

3.7 Land Holding

Of the total sample, 90.3% farmers were those who owned land. Maximum proportion of farmers who owned land was noticed in Maharashtra 94.6%, followed by Uttar Pradesh 91% and Bihar 88.2%. As regards to the size of land owned, nearly 56% of the land owners were Marginal farmers (owning 0.1 -1 ha of land), 23% were small (1.1-2 ha) land owners while about 12% farmers owned above 2 ha of land. State-wise data revealed that Bihar has maximum proportion of marginal landowners 71% followed by 46.9% in Uttar Pradesh and 29.7% in Maharashtra. The average size of land owned was in the range of 2-3 ha across the three states. Several authors [4,10,11,12] observed that the land holding was positively associated with the level of adoption of dairy innovations among the respondents.

3.8 Cattle Owned by the Farmers

Overall data of the three states indicated that more than 63% of the farmers owned cows, 10% owned buffaloes and 22% owned both cows as well as buffaloes. The remaining 4-5% did not own any cattle. The reasons stated by farmers for not owning livestock were: they were sold to meet the marriage expenses in the family, youngsters had shifted to cities and elderly people were not able to take care of animals, animals sold due to old age or death of livestock. State-wise figures reveal that it was the farmers of Bihar who owned the maximum number of cows (79.2%) while maximum number of buffaloes was owned by the farmers of Uttar

Pradesh (23.8%). In Uttar Pradesh and Maharashtra, the farmers who owned both cows and buffaloes were 38.3% and 33.4% respectively [13].

3.9 Type of Breed

Of the total 6179 cows owned in the three states, 5117 (82.8%) were crossbred cows, 874(14.1%) were indigenous cows and 188 (3%) were non-descriptive cows. The state-wise data showed that farmers of Maharashtra owned maximum percentage of crossbred cows (90.97%), followed by Uttar Pradesh (83.4%) and Bihar (75.9%). As regards to the buffaloes owned in the three states, it was noticed that 1525 (62.7%) were upgraded buffaloes and 905 (37.2%) were ND buffaloes. It was the farmers of Maharashtra who possessed maximum number of upgraded buffaloes (79.4%), followed by Bihar (55.7%) and Uttar Pradesh (51.5%).

Maximum number of cows and buffaloes were owned by the farmers of Maharashtra i.e. 3.37 cows and 1.42 buffaloes, followed by Uttar Pradesh (1.60 cows & 1.42 buffaloes) and Bihar (1.75 cows & 0.24 buffaloes).The results were almost similar to the findings of several authors [8,14,15] who found that dairy farmers had small herd size of cattle.

4. DISCUSSION

Data was collected from the 3000 dairy farmers of three states, but concentration of poor farmers

Table 2. Distribution of farmers by age group and gender (%)

Age (in years)	Gender		State		
	Male	Female	Bihar	Maharashtra	Uttar Pradesh
Up to 20	2.2	4.3	0.6	3.5	5.3
21 – 30	10.8	14.8	7.4	19.1	12.4
31 – 40	22.6	34.8	19.3	27.4	30.4
41 – 50	26.5	26.2	27.2	22.9	27.9
51 – 60	19.9	14.2	21.7	14.3	18.4
> 60	18.1	5.7	23.9	12.8	5.8
Average age	45.57	40.36	48.16	41.65	41.46
Total number of farmers	2649	351	1550	650	800

Table 3. Distribution of farmers by average number of male and female members per household (%)

Gender	State		
	Bihar	Maharashtra	Uttar Pradesh
Male	4.75	3.28	3.59
Female	4.00	2.89	3.17
Average family size	8.74	6.17	6.76
Total number of farmers	1550	650	800

Table 4. Distribution of farmers by social category (%)

Caste	State		
	Bihar	Maharashtra	Uttar Pradesh
Scheduled caste	8.1	3.8	8.6
Scheduled tribe	2.7	5.5	1
Other backward class	59.4	31.8	74
General	29.8	58.8	16.4
Total number of farmers	1550	650	800

Table 5. Distribution of farmers by economic status (%)

Economic status	State		
	Bihar	Maharashtra	Uttar Pradesh
Poor	35.5	16.3	30.9
Other	64.5	83.7	69.1
Total number of farmers	1550	650	800

Table 6. Distribution of farmers by land holding status

Land ownership	State		
	Bihar	Maharashtra	Uttar Pradesh
Farmers not owning land (n)	227	35	72
(%)	11.8	5.4	9.0
Farmers owning land (n)	1323	615	728
(%)	88.2	94.6	91
Size of land owned			
Marginal (0.1-1ha)	71.0	29.7	46.9
Small (1.1- 2 ha)	13.7	34.6	31.3
Above 2 Ha	3.5	30.3	12.9
Average size of land owned	2.24	3.01	2.63
Total no. of farmers	1550	650	800

Table 7. Distribution of farmers by land holding status (%)

Land ownership	State		
	Bihar	Maharashtra	Uttar Pradesh
Farmers not owning land (n)	227	35	72
(%)	11.8	5.4	9.0
Farmers owning land (n)	1323	615	728
(%)	88.2	94.6	91
Size of land owned			
Marginal (0.1-1ha)	71.0	29.7	46.9
Small (1.1- 2 ha)	13.7	34.6	31.3
Above 2 Ha	3.5	30.3	12.9
Average size of land owned	2.24	3.01	2.63
Total no. of farmers	1550	650	800

Table 8. Possession of animals by sample households

Type of cattle	State					
	Bihar		Maharashtra		Uttar Pradesh	
Cows	**No.**	**%**	**No.**	**%**	**No.**	**%**
	1227	79.2	389	59.8	276	34.5
Buffaloes	95	6.1	23	3.5	190	23.8
Both	144	9.3	217	33.4	306	38.3
None	84	5.4	21	3.3	28	3.4
Total number of farmers	1550	100.0	650	100.0	800	100
Total number of animals	3360		4229		3049	
Total number of female animals	3081		3113		2415	
Total number of milking animals	1375		1395		896	

Table 9. Distribution of cows and buffaloes by type of breed

Breed of cattle	State					
	Bihar		Maharashtra		Uttar Pradesh	
	Cattle owned (n)	**%**	**Cattle owned (n)**	**%**	**Cattle owned (n)**	**%**
ND Cow	98	3.62	16	0.73	74	5.79
Crossbred Cow	2056	75.92	1994	90.97	1067	83.42
Indigenous Cow	554	20.46	182	8.30	138	10.79
Total number of Cows	2708	100.00	2192	100.00	1279	100.00
ND Buffalo	165	44.24	189	20.52	551	48.50
Upgraded Buffalo	208	55.76	732	79.48	585	51.50
Total number of Buffaloes	373	100.00	921	100.00	1136	100.00

was relatively high in Bihar, average family was higher in Bihar 8.74 members per household. Over all data show majority of the families were nuclear families. Main source of income in all states was agriculture including livestock farming. Majority of farmers were of marginal category (owning 0.1 -1 ha of land), Literacy level, Number of animal owing was higher among farmers of Maharashtra viz 71.6% and 3.37 cows and 1.42 buffaloes respectively. Respondents appreciated the efforts of BAIF dairy development project.

5. CONCLUSION

It was concluded that majority of the respondents in all three states were middle and above aged and literate up-to secondary standard of education with medium family size. Majority of the respondents possessed land with small and medium herd size. Dairy farmers were having medium land holding (2-4 hectare) and milk production. From demographic profile, housing and feeding systems study, it can be concluded that dairy farming is still an occupation of poor community. The responses of the farmers showed that about 92% of farmers were interested in associating with Cattle Development Centre in future, 75% farmers expressed their willingness to incur expenditure for availing Artificial Insemination service from BAIF. By various training from BAIF respondent show they got updates in improved education of children (59%), Better health care for family, Improvement in dwelling, Better nutrition and management for dairy animals.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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