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**Research Article**

# PATENCY AND FACILITIES FOR ANIMAL HUSBANDRY PRACTICES OF LIVESTOCK OWNERS IN AMRELI DISTRICT OF GUJARAT

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## ABSTRACT

Animal husbandry occupies the major part in income generation at rural level. Livestock owners carry out different kind of animal husbandry practices as per their income, herd size and availability of information on feeding, housing, breeding, milking and milk disposal. A study focused on socio- economic condition of livestock owners was carried out in Amreli district of Gujarat state. A total 300 randomly selected livestock owners from five different talukas of Amreli district were interviewed to collect the desired information regarding their personal and socio-economic profile along with information on patency of animal husbandry practices followed and facilities for animal husbandry practices. Data were tabulated and analyzed as per standard statistical tools like frequency, percentage respondents and correlation to draw meaningful inference. Analysed data revealed that majority of males are involved in dairy farming, belong to general category of caste, middle age group, educated up to primary level and belong to large family size having more than five family members. Majority of the livestock owners fall in marginal and small categories farmer with small to medium herd size and possess agriculture and livestock as their source of revenue. Majority of respondents keep their animals inside the house with stall-feeding practise and feed market purchased concentrates during milking of their animals. Majority of livestock owners responded about non-availabilities of travis for animal treatment/artificial insemination, Gaushala, provision of breeding male by village panchayat and Govt. or dairy AI centre in their villages.

**Keywords:** Amreli district, Animal husbandry practices, Livestock owners, Personal and socio-economic profiles

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India possesses the richest livestock wealth in the global but in terms of productivity livestock sector is less than its optimum (Sathyanarayan *et al.*, 2010). Saurashtra region is a native place of Gir cattle and Jaffrabadi buffalo which are well known milch breed of India. Amreli is one of the important districts in the North-Saurashtra region having 386 thousand bovines including 207 thousand cattle and 179 thousand buffalo heads with population density of 87 bovine nos./Sq. Km (DOAH, 2020). Dairy farming, a part and parcel of Indian culture and civilization, plays a vital role in upgrading of country's economy. India emerged as leading milk producer country in the global. Milk production in India is predominately the domain of small and medium holders of mix farming. It has become the secondary source of income in Indian rural families (Sharma *et al.*, 2017). Differences in socio-economic status of livestock owners may be due to sub optimal production of livestock. Keeping these points in mind, present survey was designed to study personal, socio-economic profile, patency and facilities for animal husbandry practices of livestock owners in Amreli district of Gujarat.

## METHODOLOGY

A study was conducted in North Saurashtra region of Gujarat state. For present study total five talukas namely Amreli, Babra, Khamba, Kukavav and Lathi of Amreli district were selected randomly. Three villages from each selected talukas and twenty livestock owner from each village was selected by randomly sampling method. Thus, total 300 livestock owners were single interviewed and personal, socio-economic profile of livestock owners and desired information regarding patency of animal husbandry practices followed and facilities for animal husbandry practices were collected from dairy farmers with the help of pre-designed questionnaire. Variables were measured on the basis of following measurement techniques.

| Sr. No. | Name of the Variables | Measurement Technique |
|---|---|---|
| 1. | Gender | Structured schedule was developed. |
| 2. | Caste | Structured schedule was developed. |
| 3. | Age | Chronological age of the respondents. |
| 4. | Education | Scale developed by Pareek and Trivedi (1963) was used with some modifications. |
| 5. | Dairy experience | Number of years of experience. |
| 6. | Size of family | Scale developed by Pareek and Trivedi (1963) was used with some modifications. |
| 7. | Annual income | Scale developed by Pareek and Trivedi (1963) was used with some modifications |
| 8. | Source of income | Structured schedule was developed. |
| 9. | Land holding | Scale developed by Pandya (2010) was used with some modifications. |
| 10. | Herd size | Actual number of animals possessed. |
| 11. | Breed of animal | Actual number of breed animals possessed. |

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Data were tabulated and analyzed as per standard statistical tools like frequency, percentage and correlation were used to draw meaningful inference.

## RESULTS AND DISCUSSION

### A. Personal and Socio-Economic profile of livestock owners

Table1 depicts the personal and socio-economic profile of the respondents' *viz*., gender, caste, age, education, dairy experience, family size, annual income, source of income, land holding herd size and breed of an animal.

Majority (84.67 %) of the respondents were found in the category of men farmers. Sixtysix per cent respondents were found in general categories, whereas 30.33 and 03.67% of them were OBC category and SC category, respectively. No farmer surveyed belonged to ST category, might be due to very rare population of ST category in Saurashtra region of Gujarat. Age is a key factor for mature decision making and behaviour of an individual. Nearly half of respondents (48.67%) were found in middle age group followed by 40.33% in old age group and only 11.00% in young age group. It might be due to parental occupation taken by middle age group. Moreover, middle and old age group farmers took a responsibility doing farming and animal husbandry. The present findings are in harmony with the findings of Thombre *et al.* (2012) and Sabapara *et al.* (2014).

Data with regard to education indicated that 45.67% respondents had primary education level followed by 21.00%, 20.67% and 09.66% had secondary, Illiterate and high education level, only 3.00% among them had college and above education level. The reason was that education facility up to secondary level was available at village level. Moreover, majorityhad primary to secondary level of education indicating the importance of education in socio-economic development. Similar findings were also reportedby Thombre *et al.* (2012), Akila and Senthilvel (2012) and Sabapara *et al.* (2014). Whereas, Das (2003) and Jarial (2006) found that majority of the livestock farming respondents belong to illiterate category.This indicates the changing scenario which might be attributed to increase in unemployment leading to shifting of youth towards animal husbandry.

Experience of farmers as categorized in three groups which revealed that majority of the farmers had a high level of experience (85.00%) about dairy farming. It was due to the fact that most of the farmers adopted parental occupation. Thus, knowledge and decision to adopt dairy practices was influenced by the experience of dairy farmers. Experience helps in developing maturity and ability to face varied situations.

In the present study, family was categorized in two groups. It was found that majority of them lived in large family, (55.67%) followed by small family, (44.33%). The probable reason might be due to most of the farmers lived in joint family and played a key role regarding an adoption of any new technology. These findings are in conformity with the findings of Kumar *et al.* (2016) who found that majority of farmers maintained joint family socio-culture system in rural area of Rajasthan.

Annual income refers to the quantum of money earned by farmers during the year from farm and non-farm sources. Majority of the respondents had high annual income (58.00%) followed by medium and low annual income, 26.67 and 15.33%, respectively. Moreover, majority of their source of income were animal husbandry + farming (64.33%) whereas, 20.67% and 09.67% were animal husbandry and farming, respectively as source of income. It indicated that majority of farmers adopted farming with animal husbandry as a major source of livelihood.

Size of land holding is one of the most important indicators to measures one's socio-economic status. The farmers of large size of holding tended to cultivate different fodder crops to improve dairy practices more than the farmers of small size holding. In the present study, it was observed that 28.66% farmers were marginal farmers followed by 28.32, 19.33, 16.33 and 07.00% were small, large, landless and medium farmers, respectively. These findings are in accordance with findings of Rathod *et al.* (2012) and Sharma *et al.* (2012).

Herd size refers to the number of milch animals such as cows and buffaloes owned by the respondents. Data collected from the respondents showed that 42.33% had small herd size whereas, 41.00% and 16.67% had medium size and large herd size, respectively. This may be due to the fact that majority farmers belong to marginal and small farmers who cannot meet the green fodder requirement and afford high price of dairy animals. These findings are well supported by Thombre *et al.*, (2012). Data of breed of animals revealed that around 32% cattle owner and 49% buffalo owners possessed bovine of purebred animals, which still need to be increased by grading-up breeding programme.

The correlation among different personal and socio-economic profile of respondents shown in table 2 revealed that caste hashighly negative correlation with dairy experience and highly positive correlation with family size whereas, negatively and significantly correlated with age,

**Table 1. Distribution of the respondents according to their personal and socio-economic profile**

| Sr. No. | Personal profile | Selected respondents (n=300) | |
|---|---|---|---|
| | | Frequency (F) | % |
| 1. | Gender | | |
| | Men | 254 | 84.67 |
| | Women | 46 | 15.33 |
| 2. | Caste | | |
| | General | 198 | 66.00 |
| | OBC | 91 | 30.33 |
| | SC | 11 | 03.67 |
| | ST | 00 | 00.00 |
| 3. | Age | | |
| | Young age (up to 35 year) | 33 | 11.00 |
| | Middle age (36 to 50 year) | 146 | 48.67 |
| | Old age (above 50 year) | 121 | 40.33 |
| 4. | Education | | |
| | Illiterate | 62 | 20.67 |
| | Primary education | 137 | 45.67 |
| | Secondary education | 63 | 21.00 |
| | High education | 29 | 09.66 |
| | College and above | 09 | 03.00 |
| 5. | Dairy experience | | |
| | Low level of experience (below 5 year) | 24 | 08.00 |
| | Medium level of experience (5 to 10 year) | 21 | 07.00 |
| | High level of experience (Above 10 year) | 255 | 85.00 |
| 6. | Family Size | | |
| | Small (up to 5 member) | 133 | 44.33 |
| | Large (More than 5) | 167 | 55.67 |
| 7. | Annual income | | |
| | Low(up to Rs. 50,000/-) | 46 | 15.33 |
| | Medium (Rs. 50000 to 1,00,000/-) | 80 | 26.67 |
| | High (Above Rs. 1,00,000/-) | 174 | 58.00 |
| 8. | Source of income | | |
| | Farming | 29 | 09.67 |
| | Animal Husbandry | 62 | 20.67 |
| | Farming +A.H. | 193 | 64.33 |
| | Farming+ A.H. + Service | 04 | 01.33 |
| | Farming +A.H. + Business | 12 | 04.00 |
| 9. | Land Holding | | |
| | Landless | 50 | 16.66 |
| | Marginal farmers(0-1 ha) | 86 | 28.66 |
| | Small Farmers (1.01 -2 ha) | 85 | 28.32 |
| | Medium farmers (2.01-4 ha) | 21 | 07.00 |
| | Large farmers (more than 4 ha) | 58 | 19.33 |
| 10 | Herd Size | | |
| | Small (up to 2) | 127 | 42.33 |
| | Medium (3 to 6) | 123 | 41.00 |
| | Large (more than 6) | 50 | 16.67 |
| 11 | Breed of animal | | |
| A | Cattle | | |
| | Purebred Gir | 61 | 31.94 |
| | Crossbred | 19 | 09.95 |
| | Non-descript | 103 | 53.93 |
| | Purebred Gir + crossbred | 08 | 04.19 |
| | No cattle | 109 | 36.33 |
| B | Buffalo | | |
| | Purebred Jaffarabadi | 98 | 48.76 |
| | Any other | 42 | 20.90 |
| | Non-descript | 58 | 28.86 |
| | Purebred Jaffarabadi + Any other | 03 | 01.45 |
| | No Buffalo | 99 | 33.00 |

annual income, income source and land holding. Age was positive and highly significantly correlated with dairy experience, land holding. It shows that experienced dairy farmers were older age group and have more land holding. Negative and high significant correlation of age with education which indicated that older age group of farmers has a less education. Education was positively and highly significantly correlated with land holding and negatively but significantly correlated with dairy experience. Dairy experience was negatively and highly significant with heard size, positive and significantly correlated with annual income and negative and significantly correlated with family size. Family size was negatively but significantly correlated with annual income. Annual income was positively and highly significantly correlated with land holding. Herd size was negatively but highly significantly correlated with land holding.

## B. Patency of animal husbandry practices followed by livestock owners

Information furnished in table 3 revealed that majority of the respondents (79.67%) cultivate fodder in up to onehectare land whereas 19.67% and 0.66% of them had no area under fodder cultivation and above one hectare land under fodder production, respectively. It was due to the reason that 57.00% of land holdings are with small and marginal farmers and the average size of the holdings is 2.36 ha. in Amreli district (NABARD, 2017). Around 54% respondents purchased fodder from outside at the time of natural calamities followed by 33.67% and 12.67% of them had home production and both (purchased from outside+ home production) sources, respectively. Majority (65.33%) of the respondents had placement of animal housing inside house followed by 24.67% and 10.00% both (inside and outside) and outside only.

Majority of the respondents had adopted stall-feeding practice (79.33%) whereas, 12.34% and 08.33% of them practiced both (stall-feeding+grazing) and grazing, respectively. Nearly 52% respondents were found to feed concentrate during, followed by before milking (36.67%) and after milking (5.67%), respectively. No concentrate feeding was done by 6.33% respondents. Majority of the respondents purchase concentrate feed from market (85. 67%), whereas few do not use at all (6.33%) or use both, homemade & market (5.00%) and home-made (3.00%), respectively. Majority of the respondents, 62.00% do not feed vegetable residues followed by 38.00% feed vegetable residues. 35% respondents were selling their milk to private dairy whereas 31.00% were selling to cooperative dairy. Remaining respondents utilized their milk at home (15.33%), sale to private dairy + value addition (6.00%)

**Table 2. Correlation among different personal and socio-economic profile of respondents**

| | Gender | Caste | Age | Education | Dairy experience | Family Size | Annual income | Income source | Land holding | Herd size |
|---|---|---|---|---|---|---|---|---|---|---|
| Gender | 1.00000 | | | | | | | | | |
| Caste | -0.05544 | 1.00000 | | | | | | | | |
| Age | -0.09190 | -0.13915 * | 1.00000 | | | | | | | |
| Education | -0.05749 | -0.03253 | -0.21629** | 1.00000 | | | | | | |
| Dairy experience | -0.02263 | -0.37244** | 0.25681** | -0.11660* | 1.00000 | | | | | |
| Family Size | -0.04854 | 0.17040** | 0.07199 | -0.02611 | -0.13394* | 1.00000 | | | | |
| Annual income | -0.05765 | -0.13922* | 0.04432 | -0.08881 | 0.14258* | -0.17399** | 1.00000 | | | |
| Income source | 0.03504 | -0.11969* | -0.03117 | 0.02602 | -0.00812 | -0.08825 | -0.01504 | 1.00000 | | |
| Land holding | 0.02472 | -0.13988* | 0.19044** | 0.17266** | 0.13271* | -0.09531 | 0.35197** | 0.09664 | 1.00000 | |
| Herd size | 0.08884 | 0.09700 | -0.04523 | -0.04113 | -0.16553** | 0.00069 | -0.10891 | -0.02974 | -0.20811** | 1.00000 |

Note: - ** highly significant correlation at 0.01 level and * significant correlation at 0.05 level

**Table 3. Distribution of the respondents according to their patency of animal husbandry practices**

| Sr. No. | Patency of animal husbandry practices | Selected respondents (n=300) | |
|---|---|---|---|
| | | Frequency (F) | % |
| 1. | Area under Fodder production | | |
| | No area under fodder production | 59 | 19.67 |
| | Up to 1 ha land under fodder production | 239 | 79.67 |
| | Above 1 ha land under fodder production | 02 | 0.66 |
| 2 | Source of fodder at time of natural calamities | | |
| | Home production | 101 | 33.67 |
| | Buying from outside | 161 | 53.67 |
| | Both | 38 | 12.67 |
| 3 | Placement of animal housing | | |
| | Inside | 196 | 65.33 |
| | Outside | 30 | 10.00 |
| | Both | 74 | 24.67 |
| 4 | Feeding practices | | |
| | Grazing | 25 | 08.33 |
| | Stall feeding | 238 | 79.33 |
| | Both | 37 | 12.34 |
| 5 | Time of feeding concentrates | | |
| | Before milking | 110 | 36.67 |
| | During milking | 154 | 51.33 |
| | After milking | 17 | 05.67 |
| | No feeding | 19 | 06.33 |
| 6 | Types of concentrate fed | | |
| | Home-made | 09 | 3.00 |
| | From market | 257 | 85.67 |
| | 1 & 2combined | 15 | 5.00 |
| | Do not use | 19 | 6.33 |
| 7 | Feeding of vegetable residues | | |
| | Yes | 114 | 38.00 |
| | No | 186 | 62.00 |
| 8 | Utilization of milk produced | | |
| | sell to cooperative dairy | 93 | 31.00 |
| | sell to private dairy | 105 | 35.00 |
| | value addition | 35 | 11.67 |
| | use at home | 46 | 15.33 |
| | sell to cooperative dairy + value addition | 03 | 01.00 |
| | sell to private dairy + value addition | 18 | 06.00 |
| 9 | Chaff cutter/Milking machine/other equipment used | | |
| | Yes | 34 | 11.33 |
| | No | 266 | 88.67 |

**Table 4. Correlation between incomes of respondents with their patency of animal husbandry practice**

| Sr. No. | Practice | Correlation r value |
|---|---|---|
| 1. | Area under Fodder production | 0.3793** |
| 2. | Source of fodder at time of natural calamities | -0.21577 ** |
| 3. | Placement of animal housing | -0.0154 NS |
| 4. | Feeding practices | 0.0384 NS |
| 5. | Time of feeding concentrates | -0.0029 NS |
| 6. | Types of concentrate fed | -0.0946 NS |
| 7. | Feeding of vegetable residues | 0.3296 ** |
| 8. | Utilization of milk produced | 0.1865 ** |
| 9. | Chaff cutter/Milking machine/ other equipment used | -0.0636 NS |

**Note:** ** highly significant at 0.001 level,
* significant at 0.005 level, NS= non significant

and cooperative dairy+value addition (1.00%). The majority (88.67%) of the respondents do not use Chaff cutter/Milking machine/ other equipment. It was due to small herd size of the respondents (Table 3).

The correlation between annual income of the respondents with patency of animal husbandry practice revealed thatarea under fodder production, feeding of vegetable residues and utilization of milk produced were positive and highly significant with annual income of the respondents. Whereas, source of fodder at time of natural calamities highly significant and negatively correlated with income of the respondents (Table 4).

### C. Types of facilities for animal husbandry practices

Data of table 5 showed that nearly half of per cent of respondents utilizedthe sources of water from bore well (48.0%), followed by Pond (15.67%), Well (14.00%), River (07.33%). Hand pump; Well+ Bore well (05.33%), Canal +Bore well (03.67%) and Canal (0.67%), respectively.

Majority of the respondents informed non-availability of Gaushala (80%) which plays an important role to dispose non productive animal, travis for animal

**Table 5. Types of facilities for animal husbandry practices in villages of Amreli district**

| Sr. No. | Types of facilities for animal husbandry practices | Selected respondents (n=300) | |
|---|---|---|---|
| | | Frequency (F) | Per cent (%) |
| 1. | Source of water for animals | | |
| | Well | 42 | 14.00 |
| | Hand pump | 16 | 5.33 |
| | River | 22 | 7.33 |
| | Canal | 02 | 0.67 |
| | Pond | 47 | 15.67 |
| | Bore well | 144 | 48.00 |
| | Canal + Bore well | 11 | 3.67 |
| | Well+ Bore well | 16 | 5.33 |
| 2 | Travis for Animal Treatment /Artificial Insemination | | |
| | Yes | 82 | 27.33 |
| | No | 218 | 72.67 |
| 3 | Co-operative dairy in village | | |
| | Registered | 40 | 13.33 |
| | Private | 80 | 26.67 |
| | Both | 180 | 60.00 |
| 4 | Availability of Gauchar land in village | | |
| | Yes | 240 | 80.00 |
| | No | 60 | 20.00 |
| 5 | Presence of Gaushala in village | | |
| | Yes | 60 | 20.00 |
| | No | 240 | 80.00 |
| 6 | Provision of Breeding male by Village panchayat | | |
| | Yes | 40 | 20.00 |
| | No | 260 | 86.67 |
| 7 | Govt. or dairy AI centre in Village | | |
| | Yes | 100 | 33.33 |
| | No | 200 | 66.67 |

treatment/artificial insemination (72.67%), breeding male at village panchayat (86.67%) and Govt. or dairy AI centre (66.67%) in their villages. 60% of the respondents responded as availability of both, private and registered dairy cooperative facility in village; about 27% private and 13% registered co-operative facility. Whereas, majority of the respondents (80.00%) informed that there was availability of Gauchar land in their villages (table5).

## CONCLUSION

Animal husbandry is a major source of livelihood with farming in Amreli district. From the above finding it can be concluded that there is need to shift young generation in dairy occupation. Extension personnel should focus on adoption of purebred of animal; use improved equipment, cutter, and machine and value addition to improve their dairy income. Animal husbandry owner cultivated less land for fodder production so there is need to use popular multiple cut varieties of fodder in district. Government should focus to develop more dairy cooperative, gaushala, provision of breeding male and AI centres for conservation of native breed in Amreli district.

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