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EFFECT OF SOCIO-ECONOMIC VARIABLES OF THE RESPONDENTS ON PRODUCTION TRAITS OF CATTLE

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ABSTRACT

The study was carried out in Churu district of Rajasthan to acquire information on effect of socio- economic variables of respondents on production traits of cattle. It was observed that 52 percent of the respondents belonged to old age group, about one third (30.25%) belonged to illiterate category, 45.75 percent had medium size herd, majority (57.00%) of the respondents had large land holding and 43.75 percent had medium size family. The age at first breeding was lower in young age group but it was non-significant with other age groups. The education level had significant influence on age at first breeding and age at first calving. Young age, high educated, large herd size, large land holding and small family size farmers' animals had less inter calving period than other groups but it was non-significant. Large herd size had significant influence on service period. Age, education level, herd size, land holding and family size had non-significant effect on lactation length. The herd size had significant effect on dry period of cows.

Key words : Cattle, effect, respondents, production traits and selected traits

Livestock rearing and crop husbandry are two important components of mixed farming system which influence agricultural economy leading to sustainable agriculture; both are complementary to each other. On an average animal husbandry contributes 30 percent to agricultural gross domestic product (GDP) of the country, whereas, the contribution is much higher in hot semi-arid and arid region as conventional crop production is always a gamble due to uncertain and scanty rainfall. The animal wealth of the farmer is on hooves and mobile, hence during drought, which is a common feature of the study area, they migrate to neighbouring district or state in search of feed and water.

In spite of India's position as the highest producer of milk in the world, per cattle productivity is very poor viz. 800-900 kg./ lactation which is much less than the world's average of 4000-7000 kg. in European countries, 7000 kg. in Australia and 9000 kg. in Israel. This low productivity is due to the gradual breed deterioration neglected over centuries, consequent rise in the population of non-descript cow i.e. 80 percent, poor fertility of dairy cattle and chronic shortage of feed and fodder coupled with poor nutritive value[2].

India ranks first in the world with a total of 185 million cattle population[1]. Rajasthan state ranks sixth in cattle population. Animal husbandry is the most important enterprise for the farmers of arid region of Rajasthan. Churu district is also situated in this region, where the present study was conducted. Keeping the importance of cattle in view, a comprehensive study was conducted to find out the effect of socio- economic variables of the respondents on production traits of cattle.

MATERIALS AND METHODS

The present study was carried in Churu district of Rajasthan. Out of six blocks of Churu district four blocks were selected randomly i.e. Churu, Rajgarh, Sardar Shahr and Sujangarh. Four villages from each block and 25 cattle keepers from each village were selected randomly. Thus, the entire sample consisted of 400 respondents from selected sixteen villages in four blocks of the district. The data were collected by personal

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interview techniques through an interview schedule. Age, education, herd size, land holding and family size of the respondents were selected to study the association with production traits of cattle. Age categorised into three categories young (up to 28 years), middle (29 to 45 years) and old age (above 45 years). The education level of the respondents were grouped into four categories[10] i.e. illiterate, low (up to primary), medium (up to middle pass) and high (secondary/ sr. secondary and graduate or above). Herd size was grouped in three categories-small (up to 3.5), medium (3.6-5.5) and large (above 5.5 adult cattle unit). Heifers and calf were assumed as 0.5 and 0.25 adult unit, respectively. The actual land holding of respondents were grouped in three categories as per classification of district revenue department i.e. marginal (up to 3.5 ha.), small (3.6 to 7.0 ha.) and large (above 7.0 ha.). Family size were grouped into three categories-small (up to 5), medium (6-9) and large (above 9 members). Age at first breeding, age at first calving, calving interval, service period, lactation length and dry period of cows were selected as production traits of the cattle. Statistical analysis was done to study independence of attributes as per[9].

RESULTS AND DISCUSSION

Socio- Economic Variables:

The results regarding personal attributes were presented in Table-1

Age : In out of 400 respondents' majority (52%) were in the old age group followed by middle (45.25%) and young (2.75%) age groups. These data indicated that majority of the houses were controlled by older persons. The percentage of young age group was smallest. The present findings are in contrary to earlier findings of[7]who reported that majority (59.16%) of the respondents found in middle age group.

Education : Education of the respondents is one of the important parameter of adoption of new innovations. The data indicated that highest percent of respondents belonged to illiterate category. More than one fourth (28.50%) of the respondents had received up to primary level of education followed by medium (22.25%) and higher (19.00%) level of education. Similar observation**s** were reported by other researchers[4]. However these findings are in contrary to the findings of other workers[7].

Herd size : The 45.75 per cent of the respondents were having medium size herd followed by large (34.25%) and small (20.00%) size herds. The data indicated that animal husbandry is the second enterprise after crop production in the district. These findings are in agreement with[4] and contrary to[7].

Land holding : The majority (57.00%) of the cattle keepers had large land holding i.e. more than 7.00 ha. followed by small (28.50%) and marginal (14.50%) land holding. The data of land holding revealed that the respondents had sufficient land for crop production as well as animal rearing but due to lack of irrigation facilities farmers faced the problem of drought many times. These findings are contrary to [4&7] who reported that majority of the respondents had small land holding.

Family size : The 43.75 per cent of the respondents had medium size family followed by large (29.25%) and small (27.00%) family. These findings are in agreement with[4].

Average values of production traits : The effect of socio- economic variables of the respondents on production traits of cattle were presented in Table-2.

Age at first breeding : The age at first breeding of heifers were 37.90±2.66, 39.14±0.41 and 39.96±0.31 months of young, middle and old age group of respondents, respectively. The age at first breeding was lower in young age group but it was having non-significant difference with other age groups.

The level of education was significantly ($P<0.05$) influencing the age of first breeding. The results of the table revealed that according to education the age at first breeding were 40.42±0.036, 39.64±0.55, 39.41±0.54 and 38.09±0.65 months for illiterate, low, medium and high educated group of respondents, respectively. The age at first breeding in cattle was less in high educated farmers than others.

The herd size was not significantly influencing the age at first breeding of cattle. The corresponding data according to herd size were 39.41±0.63, 39.37±0.39 and 39.81±0.42 months for small, medium and large herd size, respectively.

There were non-significant effects of land holding on age at first breeding. The average age at first breeding for small, medium and large land holding were 39.43±0.73, 39.14±0.47 and 39.75±0.34 months, respectively.

The ages at first breeding were 39.49±0.56, 39.47±0.38 and 39.66±0.44 months of small, medium and large family size, respectively. The age at first breeding was slightly more in large family size, but it was non-significant.

Age at first calving

The age at first calving of heifers was less in young age group but the effect of age group on age at first calving was not significant. It was observed that age at first calving were 46.90±2.66, 48.14±0.41 and 48.88±0.29 months of young, middle and old age category respondents, respectively.

The age at first calving of heifers were 49.42±0.36, 48.50±0.50, 48.41±0.54 and 47.09±0.65 months of illiterate, low, medium and high level of education category, respectively. The table clearly indicated that the age at first calving was low in high educated group than other groups and it was almost similar in low and medium education groups. There was non-significant influence of herd size, land holding and family size on age at first calving. The ages at first calving in present study are higher than that observed by[3&5]. It may be due to malnutrition and lack of green fodder feeding. These findings are encouraging than observed by[8].

Calving interval

It was concluded that there was no significant effect of age, education, herd size, land holding and family size of the respondents on calving interval of cows. The inter calving periods in present study are less as compare to reported by[5] and [8].

Service period

The service period of cows were 140.00±10.70, 153.09±3.10 and 152.79±2.99 days for young, middle and old age groups, respectively. The service period was less in young age group but it was not significantly different than other groups.

There was significant ($P<0.05$) difference observed in service period of small and large sized herd. The large herd size had less (146.29±3.08) service period than medium and small herd size.

The large land holding respondents had shorter service period (149.70±2.58 days) than medium (153.94±4.34 days) and small (161.20±5.94 days) land holding but it was having non-significant difference. According to family size, large family had shorter service period than small and medium size family but difference was non-significant. The service period in present study was higher as compared to earlier researchers[3].

Lactation length

There was no significant effect of age of respondents on lactation length. These findings are in agreement with [7]. Similarly, the education level had non-significant effect on lactation length (Table-2). The present findings are contrary to earlier study [7] who found the significant effect of education level on lactation length.

The herd size and land holding had non-significant effect on the lactation length. The lactation lengths of small, medium and large herd size were 304.12±2.86, 303.41±1.86 and 307.54 days, respectively. The corresponding data for land holding were 303.01±3.34, 302.89±2.35 and 306.50±2.31 days, respectively. The present observations are in agreement with earlier findings of [7]. However, these findings are in contrary to the findings of other researchers[3]who reported 265.67±13.65 days lactation length in crossbred cows. The family size had non-significant effect on lactation length.

Dry period

The dry period of cows were less in young age group respondents than middle and old age

group respondents, but it was non-significant. Similarly, the level of education had no significant effect on duration of dry period. It was concluded that the herd size had significant ($P<0.05$) effect on dry period. The shortest dry period was found in large herd size. i.e. 4.05±0.11 months followed by medium (4.33±0.11 months) and small (4.58±0.17 months) herd size. The present findings are in contrary to the findings of other workers[3] who reported less dry period in crossbred cattle.

The shortest dry period was found in large land holding and large family size but the clearly indicated that land holding and family size had no significant effect on duration of dry period.

Table -1: Socio- economic variables of the respondents

Sl. No.	Variables	Category	Respondents	
			f	%
1.	Age	Young	11	2.75
		Middle	181	45.25
		Old	208	52.00
2.	Education	Illiterate	121	30.25
		Low	114	28.50
		Medium	89	22.25
		Higher	76	19.00
3.	Herd size	Small	80	20.00
		Medium	183	45.75
		Large	137	34.25
4.	Land holding	Marginal	58	14.50
		Small	114	28.50
		Large	228	57.00
5.	Family Size	Small	108	27.00
		Medium	175	43.75
		Large	117	29.25

Table-2: Average values of production traits according to age, education, herd size, land holding and family size

Variables	Age at first breeding (months)	Age at first calving (months)	Calving interval (months)	Service period (days)	Lactation length (days)	Dry period (months)
I. Age						
Young	37.90^{a}±2.66	46.90^{a}±2.66	14.00^{a}±0.35	140.00^{a}±10.70	294.54^{a}±5.45	4.18^{a}±0.37
Middle	39.14^{a}±0.41	48.14^{a}±0.41	14.45^{a}±0.10	153.09^{a}±3.10	307.29^{a}±1.68	4.19^{a}±0.11
Old	39.96^{a}±0.31	48.88^{a}±0.29	14.50^{a}±0.12	152.79^{a}±2.99	303.50^{a}±2.58	4.37^{a}±0.10
II. Education						
Illiterate	40.42^{a}±0.36	49.42^{a}±0.36	14.52^{a}±0.13	155.70^{a}±4.00	299.95^{a}±2.14	4.51^{a}±0.13
Low	39.64^{ab}±0.55	48.50^{ab}±0.50	14.48^{a}±0.19	149.57^{a}±4.03	308.01^{a}±4.19	4.17^{a}±0.14
Medium	39.41^{ab}±0.54	48.41^{ab}±0.54	14.41^{a}±0.14	152.47^{a}±4.28	306.91^{a}±2.50	4.19^{a}±0.13
High	38.09^{b}±0.65	47.09^{b}±0.65	14.40^{a}±0.15	152.23^{a}±4.67	306.11^{a}±2.60	4.21^{a}±0.17

Contd...

III. Herd size

Small	39.41^{a}±0.63	48.48^{a}±0.62	14.72^{a}±0.16	161.87^{a}±5.06	304.12^{a}±2.86	4.58^{a}±0.17
Medium	39.37^{a}±0.39	48.37^{a}±0.39	14.45^{a}±0.11	153.22^{ab}±3.29	303.41^{a}±1.86	4.33^{ab}±0.11
Large	39.81^{a}±0.42	48.65^{a}±0.38	14.33^{a}±0.15	146.29^{b}±3.08	307.54^{a}±3.41	4.05^{b}±0.11
IV. Land holding						
Small	39.43^{a}±0.73	48.53^{a}±0.72	14.68^{a}±0.19	161.20^{a} ±5.94	303.01^{a}±3.34	4.62^{a}±0.20
Medium	39.14^{a}±0.47	48.14^{a}±0.47	14.49^{a}±0.14	153.94^{a} ±4.34	302.89^{a}±2.35	4.37^{a}±0.15
Large	39.75^{a}±0.34	48.65^{a}±0.11	14.39^{a}±0.11	149.70^{a} ±2.58	306.50^{a}±2.31	4.15^{a}±0.09
V. Family size						
Small	39.49^{a}±0.56	48.54^{a}±0.56	14.36^{a}±0.13	150.27^{a} ±4.17	302.63^{a}±2.16	4.25^{a}±0.14
Medium	39.47^{a}±0.38	48.47^{a}±0.38	14.56^{a}±0.11	156.85^{a}±3.34	305.65^{a}±1.86	4.37^{a}±0.11
Large	39.66^{a}±0.44	48.47^{a}±0.39	14.42^{a}±0.18	148.30^{a}±3.47	306.10^{a}±4.06	4.18^{a}±0.13

Note : Mean bearing different superscript in the same column differ significantly (P<0.05)

CONCLUSION

It can be concluded from the study that majority of the respondent in old age group and belonged to illiterate category. Respondents having medium and large herd size were predominant in the study area. More than half (57.00%) of the cattle keepers had large land holding, whereas, 43.75 percent of the respondents had medium size family. The education level of the respondents had significant effect on age at first breeding and age at first calving. Similarly significant influence was also found in herd size with service period and dry period of cow. Age group, land holding and family size had non-significant effect on production traits of cattle.

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