RELATIONSHIP BETWEEN HEARD SIZE AND MILK PRODUCTION IN GREATER GUWAHATI REGION OF ASSAM, INDIA

Hemen Sarma¹, Dr. Jnanashree Borah² and Tirthankar Sarma³

¹*Research Scholar, Department of Earth Science, University of Science & Technology, Meghalaya*

²*Professor, Department of Earth Science, University of Science & Technology, Meghalaya*

³*Research Scholar, Department of Geography, Rajiv Gandhi University, Arunachal Pradesh*

E-mail: 78hemensarma@gmail.com Ph No. 7086413564

E-mail: tirthankar389@gmail.com Ph No.9954234766

ABSTRACT

The production of milk is conceived of several factors and a very complex process. “The knowledge of relative importance of the resource inputs influencing in milk production is essential for the dairy farmer for introducing desirable change in his operation at micro level and for the policy maker for formulating plans for improvements in dairy cattle productivity based on sound economic principles at the macro level” (Rao, 1985). Household samples have been selected both from the municipal wards of Guwahati Municipal Corporation area. Out of 672 dairy farming households, 201 household have been selected for the survey. Regression analysis has been used for the study of factors affecting milk production in greater Guwahati region of Assam.

Keywords: Factor, Milk Yield, Dairy Farming and Assam

INTRODUCTION

Dairy farming plays an important role in livelihood of dairy farmers. All the economic impacts are interlinked in terms of social impact such as income from sale of animals, milk cash, fertilizer and biogas. Rao (1985) in his study on factors effecting in milk production found that green fodder and concentrates, are the principle factors affecting milk production in all size-groups of farms. Tumuteggere et al. (1999) mentioned that the breed of cow reared, purchased feeds and experience in dairy farming are the major factors that affect in dairy farming. They also mentioned that lack of support service such as extension service, insurance and credit facilities hampers in milk production. Oguz, C. and Canan, S. (2016) in their study mentioned that “higher properties of lactating cows, expense on concentrates and supplements and spending more labor hours in farm activities increase the efficiencies while availability of European crossbred animals, higher education levels, male farmers, full-time dairy farming and being a member of farming society decreases occurrence of the inefficiencies”. The variables must be logical, relevant and applicable to the phenomenal facts. Considering the facts a no of attributes pertaining to the socio-economic status of dairy farming families has been included in the present study.

OBJECTIVES

Based on the background outlined above, the main objectives for the study are

- (i) To analyze the relationship between herd size and milk production in greater Guwahati region of Assam

STUDY AREA

Assam is a northeastern state of India, bordering with Bhutan and other northern states of the country known as Seven Sisters State. Assam is located near the Himalayas and has absolutely amazing natural view. It is bordered by the states of Arunachal Pradesh, Nagaland, Manipur,

Mizoram, Tripura, Meghalaya, as well as Bangladesh, Bhutan, and West Bengal. Assam covers an area of 78,438 km² (30,285 sq mi). Assam has a latitudinal extension of 24° N to 28° N and a longitudinal extension of 89°45'E to 96°00' E.

Figure 1: Study area

METHODOLOGY

The present study is based on both primary and secondary data. Household samples have been selected both from the municipal wards of Guwahati Municipal corporation area and the extended area of GMDA. Within GMC area, out of total 672 households from sampled clusters, 201 households have been selected randomly as sampled dairy households. Thus sample size stands at 30%. Different types of data from various sources were acquired for this study. Secondary sources pertain to date like Census of India report, the Statistical Handbook published by the Government of Assam, Dairy co-operatives, District Animal Husbandry Department, and Town Milk Supply scheme. Some other relevant information has also been collected from various books, journals and periodicals.

RESULT AND DISCUSSION

Breeds types

Improved breeds as an important driver to changing in milk production project. Widespread introduction of highly productive breeds of dairy cows has been major source of increased productivity in dairy sector, Cheruiyot and Otieno(2017). It means that milk production depends upon the types of breed, management types and food and fodder supply not in the number of cow reared in the dairy farm.

Table 1: Details of Breeds

Heard Size	No. of DHH	Mean	No. of cows	Mean	No. of Milking Cow	Mean	.D	Milk Production per cow(in Lt)	S.D.
1-10	142	35.14	752	5.3	480	3.4	1.645	7.32	2.444
11-20	130	32.17	2130	16.4	1138	8.8	3.106	6.05	1.771
21-30	72	17.82	1978	27.5	1093	15.2	4.365	7.47	2.063
31-40	32	7.92	1158	36.2	578	18.1	5.073	7.43	1.798
Above 40	28	6.93	1326	47.4	518	18.4	3.644	8.02	2.998
Total	404	100	7344	18.2	3803	9.4	6.377	7.00	2.269

Distribution of Dairy households by herd size has explained the mean scores of Average milking cow and Milk production per cow. 142 number of household has 1 – 10 herd size and 3.38 of average milking cow produced 7.32 liter of milk. 130 number of households have 11 – 20 herd size have average of 8.75 milking cow which produced 6.05 liters of milk. 72 number of households have 21 – 30 herd size where 15.18 number of average milking cow produced 7.47 liters of milk. 31-40 number of herd size of 32 households have 18.06 average number of milking cow and produced 7.43 liters of milk 28 numbers of households have Above 40 number of herds and average 18.36 number of milking cow which produced 8.02 liters of milk in an average. Overall 9.41 milking cow in a household produced average 7 liter of milk per day. From this it is clear that when heard size increases the production of milk also increases. But from the study it also seen that the per cow milk production is high in those dairy households where the cattle no is less in comparison to those dairy households where the cattle no is high.

Table 2: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Milking Cow No.	Between Groups	12253.424	4	3063.356	295.626	.000
	Within Groups	4134.544	399	10.362		
	Total	16387.968	403			

Milk production (liter/Cow)	Between Groups	183.355	4	45.839	9.668	.000
	Within Groups	1891.701	399	4.741		
	Total	2075.055	403			

From the above ANOVA table, number of milking cow by the herd size has differed. The F Value 295.626 and P=0.000 depicts that the difference of milking cow by herd size is significant at 1% level.

The increase of milking cow by herd size in sample dairy household sowing positive. From the table above it has found the F=295.626, P=0.000 reflected that the difference of milking cow by herd size in the dairy farming household is significant at 1% level.

Average per cow Milk produced in liter by herd size has shown in above table. The F-value=9.668, P=0.000 depicted that the difference of milk production by herd size is significant at 1% level. It means that when number of herd size increase or decrease in a dairy farm the production of milk has impacted through it. It can be concluded that when the herd size is 1-10 and average milk production is 7.32 liters and herd size is 11-20 the average milk production is 6.05 liters.

From the post Hoc tests, difference of milk production within group has been placed below:

Post Hoc Tests

Homogeneous Subsets

Table 3: Milking Cow in number by Herd size

Tukey HSD

Herd size group	N	Subset for alpha = 0.05			
		1	2	3	4
1-10	142	3.38			
11-20	130		8.75		
21-30	72			15.18	
31-40	32				18.06
Above 40	28				18.36
Sig.		1.000	1.000	1.000	.990

Means for groups in homogeneous subsets are displayed.

Herd size and milking cow distribution has shown in above table depicted that 1-10 size of herd is differed with all remaining group of herd size with the number of milking cow which is significant at 1% level. Only 31-40 and above 40 of herd size has no significant difference in terms of milking cow in the dairy farm households.

Table 4: Average Milk Produced per Cow

Tukey HSD

Herd size group	N	Subset for alpha = 0.05	
		1	2
11-20	130	6.05	
1-10	142		7.32
31-40	32		7.43
21-30	72		7.47
Above 40	28		8.02
Sig.		1.000	.481

Means for groups in homogeneous subsets are displayed.

Number of herd size group 11-20 has shown less production of milk comparing to the other group of herd size. The difference of milk production within the group of 11-20 herd size and other groups is significant at 1% level.

Table 5: Herd size and Net income Group

Herd size		Net income group						Total
		Below 6500	6501 to 12500	12501 - 18500	18501 - 24500	24501 - 30500	30501 and above	
1 - 10	Count	21	33	20	20	8	40	142
	%	14.8%	23.2%	14.1%	14.1%	5.6%	28.2%	100.0%
11 - 20	Count	23	35	13	13	3	43	130
	%	17.7%	26.9%	10.0%	10.0%	2.3%	33.1%	100.0%
21 - 30	Count	12	3	4	6	3	44	72
	%	16.7%	4.2%	5.6%	8.3%	4.2%	61.1%	100.0%
31 - 40	Count	5	2	2	1	1	21	32
	%	15.6%	6.2%	6.2%	3.1%	3.1%	65.6%	100.0%
>40	Count	3	1	3	5	0	16	28
	%	10.7%	3.6%	10.7%	17.9%	.0%	57.1%	100.0%
Total	Count	64	74	42	45	15	164	404
	%	15.8%	18.3%	10.4%	11.1%	3.7%	40.6%	100.0%

Table 6:Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.245 ^a	20	.000
Likelihood Ratio	61.129	20	.000
Linear-by-Linear Association	19.698	1	.000
N of Valid Cases	404		

The critical value of chi-square distribution with 20 d.f. The calculated Pearson's chi-square value is 55.245 at d.f. 20 (table 6.7). The tabulated value of chi-square at 0.95 probabilities is 31.416.

CONCLUSION

The calculated value is greater than the tabulated value. Hence, we say that the herd size and net income of the dairy household are not independent from each other.

From the table it is seen that dairy household where herd size is less, the income level of that dairy household is high in comparison to the dairy household where the herd size is big. Out of total 164 dairy household whose income level is above 30501, majority of the dairy household i.e. 77.43% have herd size below 30 no. This means that income level does not depend upon the herd size. It depends upon the types of breed they reared, feed supply and farm management etc.

REFERENCE

1. Cheruiyot, M.K. and Otieno, M.M., Factors Influencing Milk Production Project Among Small Scale Dairy Farmers in Bomet East Sub County, Bomet County, Kenya.
2. Gitau, K.J., 2013. *Factors influencing milk production among small scale dairy farmers in Mirangine in Nyandarua county and Mauche in Nakuru county, Kenya* (Doctoral dissertation, University of Nairobi).
3. Sharma, T., Saikia, S. and Medhi, B., 2020. MADAN KAMDEV TEMPLE AND ITS ARCHAEOLOGICAL REMAINS: A STUDY ON SOCIAL MILIEU LINKED ON THE NEIGHBOURING AREAS OF ASSAM, INDIA. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(6), pp.6815-6826.
4. Sarma, T. and Saikia, S., 2021. Status Of Groundwater Arsenic Contamination And Human Health In Hajo Circle, Assam, India. *NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal/ NVEO*, pp.11297-11305.
5. Tumutegyeize, K., Hyuha, T. and Sabiiti, E.N., 1999. Factors affecting dairy production in peri-urban areas of Kampala. *Uganda Journal of Agricultural Sciences*, 4(1), pp.7-11.
6. Wijethilaka, D., De Silva, S., Deshapriya, R.M.C. and Gunaratne, L.H.P., 2018, May. Factors affecting sustainable dairy production: A case study from Uva Province of Sri Lanka. In *IOP Conference Series: Earth and Environmental Science* (Vol. 157, No. 1, p. 012063). IOP Publishing.