

## Assessment of Variation in Milk Production in Buffaloes from Different Seasons

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### ABSTRACT

An experiment contribution of cows and buffaloes milk in unorganized sectors in eastern Uttar Pradesh, general, and selected block of rural areas, in particular is not clear. About 50 percent of total bovine are underfed or overfed in rural areas mostly due to lack of scientific knowledge for feeding, breeding, management and veterinary problems. The present study was conducted during March 2002 to April 2004 in villages of selected blocks of Azamgarh District to assess the economic performance of buffaloes during different seasons in different categories of farmers. The choice of block was based on the state Department of District Azamgarh and BIAF Center are working for popularization and up lift of dairy animals in the locality, beside, extension training center is also located near the all blocks, which acts as a catalytic agent in promoting the development in entire block area.

**Keywords:** Buffaloes, milk production, variation and seasons.

### INTRODUCTION

Milk production is most efficient system as for as conversion efficiency of protein and energy is concerned. In order to achieve economical milk production, emphasis has been on improvement of milk production traits, growth rate for early maturity and to augment reproduction efficiency. Adequate and scientific feeding is also equally important. There is a wide gap of feed availability for animal their requirement due to continuous increases in live stock population and shrinking land resources for forage production due to increasing demands for production of food grain for ever growing human population.

The average annual milk production per adult breed able female in milk grew by some 57.20 per cent cattle from 520 (kg) to 528 (kg) and among buffaloes by 30.16 per cent from 1041 (kg) to 1355 (kg) during 1980 to 1995. In 1995 the average annual milk output per adult breed able female was 2141 (kg) for cross breed and cow, 634 (kg) for desi cow and 1355 (kg) for buffaloes.

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animal vice a versa their requirement due to continuous increase in live stock population and shrinking land resources for forage production due to increasing demands for production of food grain for ever growing human population.

As such the present low level of milk yield in dairy cattle cannot accept to change drastically in the near future under the existing mixed farming system and the crop residue based cattle farming system. However, within these constraints, there is ample scope for increasing animal productivity through selective breeding, improved feeding, nutrition, and better veterinary facilities, which would help reduced inter calving period, thus increasing the overall milk production of improved dairy animals. Better marketing facilities are also having better opportunity to increase the dairy industry, employment and income generation of the households of rural people.

Buffalo contributes more than 50 per cent of the total milk production in the country. This makes them an important milk producing species than cattle. Furthermore, the country posses the best breeds of buffaloes in the world, thus attracts more scientific efforts to enhance their productivity.

### MATERIALS AND METHODS

Selection of villages during the survey a list of villages in different block in which adequate number of buffaloes are maintained was

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prepared in consultation with Veterinary Hospital, BIAF and BDO/ADO center located in the area. From such list, 250 (10x5) farmers from 25 villages from 5 blocks were selected randomly for the present study name of blocks viz. Atroulia, Jahanaganj, Palhni, Lalganj and Phool pur.

Selection of former after selection of villages, the list of families' buffaloes was prepared. Then 250 live-stock owners were selected randomly. In the selected villages, in different five types of farmers viz. large, medium, small, marginal and land less family to family enumeration was first carried out in order to secure proper information for selection of representative samples of producing unit.

The information collected from 250 families. The selected milk produce family was interviewed and necessary information collected through carefully pre designed questionnaires by survey methods throughout the year. Every milk producer family having buffaloes were interviewed every month during the lactation period under study area to ensure the availability of following information viz. number buffaloes maintained by the families, lactation length and yield, calving interval, initial investment, nutritional status of animals maintained by different of farmers, production of milk, quality of milk in respect to fat, protein and SNF, price of milk sold and cost of milk production.

Record of milk production for this, the observation of milk production in each animal was recorded weekly by oral enquiry or from observation at the timing of milking.

Estimation of cost of milking production the data pertaining to milk production were collected for the crossbred cows and buffaloes under study and analyzed according to the systematic method relevant for the village farmers. Firstly, the fixed and variable costs were determined as under.

Fixed cost, as the name denotes this cost not varies with the change in level of production. Such cost occurs on the farm an account of fixed capital maintains by the farmers. The items of fixed cost in milk production are- (1) Depreciation on animals value, cattle shed value, and on chaff cutter and equipment value. (2) Repair charges made on equipment and machines and on cattle shed etc.

The variable cost as the name denotes, varies with the change in production. The items of such cost for present study are labour charge, feed and fodder value, medicine and salt, ropes, service charge etc.

Veterinary cost, these were calculated by ascertaining the average cost per visit of an animal to the dispensary and total number of visit paid by each animals were worked out on the basis of total expense incurred by the animal holders to dispensary.

Miscellaneous cost, the cost upkeep of bull, water and electricity charges, repairs and depreciation of equipment and perishable goods etc. were included the expense on repair and depreciation for building was distributed among all the animals in proportion of utility of these items in that category of the animals for each animal.

**Table1.** Average body weight and milk production of the buffaloes during the course of study in different seasons

Parameter	Categories of farmers					
	Large	Medium	Small	Marginal	Landless	C.D.
No. of farmers	50	50	50	50	50	
No. of buffaloes	60	60	75	75	75	
No. of buffaloes in milk	44	51	65	72	60	
Average body weight (kg)	465.50 <sup>b</sup> ±20.50	478.50 <sup>a</sup> ±18.45	445.50 <sup>c</sup> ±15.50	460.50 <sup>b</sup> ±±15.50	475.50 <sup>a</sup> ±22.50	5.89*
Lactation period	315	315	315	300	300	
Total milk day during spring season	58	58	58	58	58	
Total milk day during rainy season	77	77	77	77	77	
Total milk day during autumn season	76	76	76	76	76	
Total milk day during winter season	61	61	61	61	61	
Total milk day during	92	92	92	92	92	

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summer season						
Total milking period (days)	364	364	364	364	364	
Average milk yield per day (kg) during summer season	7.50 <sup>f</sup> ±0.50	8.50 <sup>c</sup> ±0.25	9.50 <sup>a</sup> ±0.50	9.00 <sup>b</sup> ±1.00	8.50 <sup>c</sup> ±0.50	0.33
Average milk yield per day (kg) during spring season	8.25±0.50	9.50±0.25	10.50±0.75	9.50±0.50	9.00±0.50	
Average milk yield per day (kg) during autumn season	8.50±1.25	8.00±1.50	9.50±1.50	8.50±1.25	8.50±1.50	
Average milk yield per day (kg) during winter season	9.50±0.25	10.50±0.50	8.50±0.75	8.50±0.55	9.50±0.75	
Average milk yield per day (kg) during rainy season	7.50±1.25	8.00±1.50	10.00±1.20	8.50±2.00	8.00±1.50	
Average milk yield per day	8.25 <sup>c</sup> ±0.25	8.90 <sup>c</sup> ±1.25	9.60 <sup>a</sup> ±0.75	8.80 <sup>c</sup> ±1.50	8.70 <sup>d</sup> ±0.50	0.24
Total milk yield per lactation (kg)	2598.75 <sup>g</sup>	2803.5 <sup>c</sup>	3024.0 <sup>a</sup>	2640.0 <sup>c</sup>	2610.0 <sup>c</sup>	81.06
Value (Rs.)	15	15	15	15	15	
Income (Rs per day)	123.75 <sup>h</sup>	133.5 <sup>d</sup>	144.0 <sup>a</sup>	132.0 <sup>d</sup>	130.5 <sup>d</sup>	3.26
Total income per year (Rs.)	38981.25 <sup>c</sup>	42052.5 <sup>a</sup>	45360.0 <sup>a</sup>	24600 <sup>c</sup>	39150.0 <sup>c</sup>	3552.7

## RESULT AND DISCUSSION

Lactation yield is the one of the most significant parameter of rearing dairy animals, since it is directly linked with the milk yield that ultimately gives economic return to the livestock owners. Milk yield depends upon species and breeds of livestock and feeding, breeding, management and health coverage. The result observed on milk production of the buffaloes in different categories of the farmers presented in the Table-1.

It was found that the average lactation period varied from 300 to 315 days, respectively, in different categories of farmers in different seasons. The lactation length and lactation yield was higher during the season of the rainy, autumn, winter and spring season whereas, during the summer season it was found to be lower. Generally the lactation yield was highest in case of large, medium and landless farmers whereas lower in small and marginal categories of farmers. The lactation period in rainy, autumn, winter, spring, and summer seasons were 77, 75, 61, 58 and 92 days. The lactation yield per month in rainy, autumn, winter, spring, and summer seasons were 247.50, 267.00, 288.00, 264.00 and 261.00 (kg), respectively, and average annual production of the milch buffaloes in rainy, autumn, winter, spring, and summer seasons were 2598.75, 2803.50, 3024.00, 2640.00 and 2610.00 (kg)/head,

respectively, Which is significantly ( $P < 0.05$ ) higher in the small category of farmers than that of other categories of farmers. Since the small farmers have limited resources in respect to the availability to feeds and fodder as they grow fodder on less area but their maintenance of the animals was proper in comparison to the other categories of farmers. The results of the present study on milk yield of buffaloes are somewhat higher. The milk production of the lactating animals was affecting with various factors viz. type of breeds, level of inheritance, season, climate, type of feeds available in surrounding areas and management conditions.

Rate at which milk sold, the data on milk production was worked out for the rate at which the milk was sold to the retailer, vendors or village cooperative societies during the course of study are given in the Table. As the price of milk depends upon the requirement of the local market, it may vary depending upon the supply and demand. The average rate of milk of buffaloes was Rs. 15/- per (kg). The milk of murrah buffaloes fetched higher price, since the milk content higher per cent of fat and solid not fat. The consumer/ customers/ cooperative societies procure the milk on the basis of the fat percentage. The cooperative societies invariably make the payment according to the percentage of the fat in milk. Value of milk per lactation, it is evident from the data in table..... and ..... The average value of milk per lactation of

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buffaloes were Rs. 39150.00, 24600.00, 45360.00, 42052.00 and 38081.25/- in large, medium, small, marginal and landless categories of farmers, respectively. The value of milk per lactation was significantly ( $P < 0.05$ ) higher in large categories of farmers than that of other categories of farmers. Since the buffaloes milk was sold at higher rate.

Lactation length of buffaloes, the lactation length affects the total milk production as well as income from lactating animals. As already explained in the preceding paragraph, the lactation period (length) depends on the genetic characteristic of the animals along with proper feeding and management practices followed by livestock owners.

Milk production, the average milk production of the buffaloes during the different season has been presented. In India, which is predominantly agriculture based country, milk is produced by million of house hold, which are scattered throughout the country. Till recently the production of milk of rural household was largely for their own consumption, but with increasing demand for milk and milk products by the families having no animals and urban population the milk production is increasingly becoming a commercial enterprise. The demand of milk in the country as a whole is increasing due to increasing population as well as increase in the purchasing power of customers with the growing pace of industrialization and urbanization. Therefore, it was thought necessary to study the economics of milk production as an individual enterprise for optimum use of resources and realize maximum gain from upkeep of milch animals.

The average milk production of the buffaloes during the rainy, autumn, winter, spring and summer season were  $7.50 \pm 1.25$ ,  $8.00 \pm 1.50$ ,  $10.00 \pm 1.50$ ,  $8.50 \pm 2.00$  and  $8.00 \pm 1.50$ ;  $8.50 \pm 1.25$ ,  $8.00 \pm 1.50$ ,  $9.50 \pm 1.50$ ,  $8.50 \pm 0.20$ , and  $8.50 \pm 1.50$ ;  $9.50 \pm 0.025$ ,  $10.50 \pm 0.50$ ,  $8.50 \pm 0.075$ ,  $8.50 \pm 0.55$  and  $9.50 \pm 0.75$ ;  $8.50 \pm 0.24$ ,  $9.50 \pm 0.121$ ,  $10.50 \pm 0.25$ ,  $9.50 \pm 0.045$  and  $9.00 \pm 0.50$  and  $7.50 \pm 0.25$ ,  $8.50 \pm 0.50$ ,  $9.50 \pm 0.45$ ,  $9.00 \pm 0.75$  and  $8.50 \pm 0.25$  kg/h day in large, medium, small, marginal and landless categories of farmers, respectively. The milk production was different during the different season in different categories of farmers may be due to variation in the intake of feeds and fodders, seasonal variation, categories of farmers, milking characteristics of buffaloes, lactation length, lactation period and number of lactation etc.

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