

Influence of Age of cows on compositional quality of milk produced at organized and unorganized dairy farm Allahabad, U.P.

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Abstract: The present study was undertaken on “Influence of age of cows on compositional quality of milk produced at organized & unorganized dairy farm Allahabad” on **20 (H.F. Crosses)** healthy cows from each organized (**SHIATS**) & unorganized (**Kushwaha**) dairy farm Allahabad U. P. All cows were housed in tail to tail barn under similar management conditions. All sanitary precautions were undertaken to produce clean milk by dry full hand method of milking. Representative samples of 200 ml milk were collected at different age groups of cows viz. 3-5yr, 5-7yr and 7-9yr. Samples of Fresh milk drawn from the udder were analyzed for fat, protein, lactose, ash, solid not fat (SNF), total solid (T.S.), water, acidity percent and sp.gr. It was concluded that Age had significant effect on Protein, T.S. and water percent and non significant effect on Fat, Lactose, Ash, SNF, Sp.gr and acidity percent at organized dairy farm where as a non –significant influence of age of cows were observed on compositional quality of milk at unorganized dairy farm.

Key words: H.F. Crosses, Age of cows, Composition quality,

I. Introduction

India is the world’s largest producer of milk but unlike producing nations, the milk is produced by a large number of farmers (about 70 million) located in some 500 000 remote villages. The families of the milk-producing farmers are mostly poor and under-privileged. Therefore, the additional income every year through the sale of surplus milk is vital to their well-being and economic security. (**Manorama India Yearbook 1998**) Dairying contributes close to one third of gross income of rural households and in case of those without land nearly half of their gross income (**Bhasin 2011**). Around 70 Million rural household are engaged in milk production, which has shown rapid growth between 4to5 per annum during last two decades. It is encouraging to note that annual milk production in India has grown to an anticipated level of 140.6 million tons in 2014, and per capita milk availability has reached to a level of 290 gram per person day (**Makwana et al. 2011**). Milk and its products are excellent source of vital nutrients. It is described as nature’s nearly perfect food. Milk proteins offer a high quality animal protein in diet. Milk fat fractions are now being recognized to possess interesting anti cancer properties. Minerals and vitamins contents of milk contribute significantly to human nutrition. Calcium is needed for protection against brittle bones in the latter part of life. It is now considered to play a vital role in controlling blood pressure in protecting colon from cancer. Milk and milk products from dairy animals are palatable and easy to digest therefore important human food.

II. Materials and Methods

The present experiment on “Influence of Age of cows on compositional quality of milk produced at organized (**SHIATS**) and unorganized (**KUSHWAHA**) dairy farms Allahabad was carried out. The period of experiment was one year from (July2013toJune2014).The cows at organized & unorganized dairy farms were subjected to Californian mastitis test and 20 cows (**HF Crosses**) from each organized & unorganized dairy farm with negative test were selected for the study. All experimental animals were housed in a tail to tail barn and managed under more or less similar managerial conditions. Sanitary precautions like clipping of long hair at udder and flank, grooming, washing of hind quarters, wiping udder with towel soaked in 2% Dettol solution, tying tail with legs etc. were taken care prior to collection of milk samples. Cows were milked by full and dry hand method of milking. Two streams of fore milk from each quarter of udder were discarded and a sample of 200 ml milk was collected directly into sterilized conical flasks and plugged immediately. Milk sample were brought to laboratory for chemical analysis and the fat, protein, lactose, water, ash, solid not fat (SNF), total solid (TS), Sp. gr. and acidity percent was determined as per **AOAC (1995)**.

Factor for study;

Age of cows:

- a) 3-5 years
- b) 5-7 years

c) 7-9 years

Parameters of Study:

Parameters determined in milk were as follows:

- (i) Fat percent
- (ii) Protein percent
- (iii) Lactose percent
- (iv) Ash percent
- (v) Solid not fat(SNF) percent
- (vi) Total solid(TS) percent
- (vii) Water percent
- (viii) Acidity percent
- (ix) Specific gravity (sp. gr.) percent

III. Results And Discussion

Highest mean fat percent was recorded as 4.00 in milk of cows of 5-7 years followed by 3.73 in milk of cows in 7-9 years and 3.70 in milk of cows in 3-5 years at organized and 3.35 in milk of 5-7 years followed by 3.26 in milk of cows of 3-5 years and 3.22 in milk of cows in 7-9 years at unorganized dairy farm. The differences in these values were non-significant at both organized and unorganized dairy farms. Highest mean protein percent was recorded as 3.49 in milk of cows of 5-7 years followed by 3.36 in milk of cows in 7-9 years and 3.25 in milk of cows in 3-5 years at organized and 3.28 in milk of 5-7 years followed by 3.26 in milk of cows of 3-5 years and 3.14 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were significant at organized and non significant at unorganized dairy farms. Highest mean lactose percent was recorded as 4.81 in milk of cows of 3-5 years followed by 4.79 in milk of cows in 7-9 years and 4.72 in milk of cows in 5-7 years at organized and 4.70 in milk of 3-5 years followed by 4.68 in milk of cows of 5-7 years and 4.54 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were non-significant at both organized and unorganized dairy farms. Highest mean ash percent was recorded as 0.692 in milk of cows of 7-9 years followed by 0.690 in milk of cows in 3-5 years and 0.690 in milk of cows in 5-7 years at organized and 0.68 in milk of 5-7 years followed by 0.67 in milk of cows of 3-5 years and 0.67 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were non-significant at both organized and unorganized dairy farms. Highest mean T.S percent was recorded as 12.90 in milk of cows of 5-7 years followed by 12.58 in milk of cows in 7-9 years and 12.45 in milk of cows in 3-5 years at organized and 11.99 in milk of 5-7 years followed by 11.89 in milk of cows of 3-5 years and 11.56 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were significant at organized and non significant at unorganized dairy farms. Highest mean S.N.F percent was recorded as 8.90 in milk of cows of 5-7 years followed by 8.85 in milk of cows in 7-9 years and 8.75 in milk of cows in 3-5 years at organized and 8.64 in milk of 5-7 years followed by 8.63 in milk of cows of 3-5 years and 8.34 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were non-significant at both organized and unorganized dairy farms. Highest mean Water percent was recorded as 87.55 in milk of cows of 3-5 years followed by 87.42 in milk of cows in 7-9 years and 87.10 in milk of cows in 5-7 years at organized and 88.44 in milk of 7-9 years followed by 88.11 in milk of cows of 3-5 years and 88.01 in milk of cows in 5-7 years at unorganized dairy farms. The differences in these values were significant at organized and non significant at unorganized dairy farm. Highest mean specific gravity was recorded as 1.031 in milk of cows of 5-7 years followed by 1.030 in milk of cows in 3-5 years and 1.030 in milk of cows in 7-9 years at organized and 1.029 in milk of 3-5 years followed by 1.029 in milk of cows of 5-7 years and 1.028 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were non-significant at both organized and unorganized dairy farms. Highest mean acidity percent was recorded as 0.135 in milk of cows of 7-9 years followed by 0.134 in milk of cows in 5-7 years and 0.131 in milk of cows in 3-5 years at organized and 0.165 in milk of 3-5 years followed by 0.156 in milk of cows of 5-7 years and 0.148 in milk of cows in 7-9 years at unorganized dairy farms. The differences in these values were non-significant at both organized and unorganized dairy farms.

Mean values of parameters in milk in different age groups at organized and Unorganized dairy farms.

| Mean values of parameters in different age at organized and unorganized dairy farms. | | | | | | | | |
|--|-----------------------|---------|---------|---------|-------------------------|---------|---------|---------|
| Parameters | Organized dairy farms | | | | Unorganized dairy farms | | | |
| | 3-5 Yr. | 5-7 Yr. | 7-9 Yr. | Results | 3-5 Yr. | 5-7 Yr. | 7-9 Yr. | Results |
| (I) Chemical | | | | | | | | |
| Fat percent | 3.70 | 4.00 | 3.73 | NS | 3.26 | 3.35 | 3.22 | NS |
| Protein percent | 3.25 | 3.49 | 3.36 | S | 3.26 | 3.28 | 3.14 | NS |
| Lactose percent | 4.81 | 4.72 | 4.79 | NS | 4.70 | 4.68 | 4.54 | NS |
| Ash percent | 0.69 | 0.69 | 0.692 | NS | 0.67 | 0.68 | 0.67 | NS |
| T.S. percent | 12.45 | 12.49 | 12.58 | S | 11.89 | 11.99 | 11.56 | NS |
| SNF percent | 8.75 | 8.90 | 8.85 | NS | 8.63 | 8.64 | 8.34 | NS |
| Water percent | 87.55 | 87.10 | 87.42 | S | 88.11 | 88.01 | 88.44 | NS |
| (II) Others | | | | | | | | |
| Sp. gr. | 1.030 | 1.031 | 1.030 | NS | 1.029 | 1.029 | 1.028 | NS |
| Acidity percent | 0.131 | 0.134 | 0.135 | NS | 0.165 | 0.156 | 0.148 | NS |

IV. Conclusion

The compositional quality of milk was found to be better at organized dairy farm compared to unorganized dairy farm.

It was concluded that Age had significant effect on Protein, T.S. and water percent and non significant effect on Fat, Lactose, Ash, SNF, Sp.gr and acidity percent at organized dairy farm where as it has no effect on compositional quality of milk at unorganized dairy farm. Hence, to improve the quality of milk it was suggested that awareness among unorganized dairy farm about scientific management practices as per age should be increased and about age of animals a basic knowledge is needed since these factors also has an important role to make a dairy farm profitable.

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