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308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Milk Production Trend, Milk Quality and Seasonal Effect on it at Baghabarighat Milk Shed Area, Bangladesh

M.A. Azad, M. Hasanuzzaman¹, Azizunnesa¹, G.C. Shil² and M.A. Barik
Bangladesh Milk Producer's Co-Operative Union Limited (Milk Vita), Bangladesh
¹Chittagong Veterinary and Animal Sciences University, Bangladesh
²Century Agro vet Ltd., Bangladesh

Abstract: The present research work was undertaken to identify the quantitative and qualitative trends of milk production of Baghabarighat Milk Shed Area of Milk Vita throughout the year from January, 2001 to December, 2005. It was observed that milk production trend of BMSA statistically significant ($P < 0.05$) between different months or season of each year during the said period, and the average values of milk production of different years (2001-2005) were also statistically significant ($P < 0.05$). It was also found that milk production of BMSA was 53.29 TL/day. From the study it was also revealed that the highest milk production was in February (10.01%) and lowest in September (6.46%) and milk production gradually increased from September to February which was indicated a specific milk production trend throughout the year. Fat and SNF production was little highest in December to April.

Key words: Milk production, specific gravity of milk, fat and SNF production

Introduction

Milk production as well as chemical compositional trend is a seasonal operation that depends on the availability of feed, climatic conditions and on tradition (Berg, 1988). Quality of milk production throughout the lactation period of a cow varies according to breed, feed, stage, number of lactation (Gopalkrishnan and Lal, 1994). Also, there is an inverse relationship between milk yield with its SNF% and fat% (Banerjee, 1991). During the period of 1995-99 milk production/collection trends of Milk Vita has been increased 12.36% each year that is clearly indicating the socio-economic advancement of milk co-operators. Considering the above mentioned thing, the present research was undertaken to establish a trend in milk production, its quality and effect of season on it throughout the year at Baghabarighat Milk Shed Area (BMSA), a large part of Bangladesh Milk Producers' Co-operative Union Limited (BMPCUL).

Materials and Methods

Time and place of study: The research data was collected for a period of five years i.e. from January, 2001 to December 2005 of BMSA of Milk Vita visited different MSAs and completion of a consolidated questionnaire.

Animals: The available breeds of BMSA are Sahiwal X Sindi, Sahiwal X local, Holstein Friesian and local undescriptive type that are popularly called Pabna Milking Cows (Hossain and Routledge, 1982).

Parameters studied: Relevant information was collected from BMSA's Register Book and by interviewing the randomly selected milk producers.

Parameters studied for this research work was: milk production (1000L/day), Fat value (g/kg), SNF value (g/kg), TS value (g/kg), and Specific gravity of milk.

Design of the experiment: Data obtained for different parameters were analyzed statistically by Completely Randomized Design (CRD) and significant differences among the treatments means were adjusted by Duncan's New Multiple Range Test (Gomez and Gomez, 1984) using a MSTAT statistical package program with the help of Microcomputer.

Results and Discussion

The influence of different months or seasons of the year on different parameters are presented below:

Milk production: The highest and lowest milk production took place accordingly in December (68.02 TL/day) and August (41.14 TL/day) and the average milk production was 53.29 TL/day (Table 1) during the period of 2001 to 2005 in BMSA. Average milk production of different years of BMSA differs significantly ($P < 0.05$) between different months or seasons (Table 1). It is also found that milk production gradually increases from September and stands pick on December and also begin to decrease from January (Fig. 1) in BMSA. (Razzaque *et al.*, 1995) observed a unique relationship between feed availability and milk production of dairy cows at BMSA. They also found adequate quantity legume feed from November to March and milk production was 6.0 ± 2.76 L/day while during the period of low feed supply, cows are fed rice straw milk production drops to as low as 1.5 ± 0.83 L/day. It supports the present findings. Causes behind

Table 1: Average milk production day-1 with chemical qualities of BMSA during the period of 2001-2005

Month	Mean /day				
	Production (1000L)	Fat (g/kg)	SNF (g/kg)	Total Solids (g/kg)	Specific Gravity
January	66.29 ^{ab}	49.5	79.0	127.6	1.0266
February	65.23 ^{ab}	48.0	79.2	127.9	1.0288
March	59.44 ^{abc}	48.9	79.0	127.8	1.0270
April	54.96 ^{abc}	48.6	78.6	126.9	1.0266
May	49.82 ^{abc}	49.3	78.6	129.5	1.0264
June	48.29 ^o	48.9	78.7	128.5	1.0264
July	44.07 ^o	48.7	78.8	127.7	1.0264
August	41.14 ^o	48.4	78.5	126.5	1.0266
September	41.55 ^o	47.7	77.6	126.0	1.0264
October	43.93 ^o	47.3	77.7	125.2	1.0262
November	56.78 ^{abc}	47.5	78.7	125.8	1.0266
December	68.02 ^a	47.8	77.3	126.5	1.0267
Average	53.29	48.4	78.4	127.0	1.0260
Level of significance	*	NS	NS	NS	NS
LSD	19.66				

Means with different superscript(s) in the same column differ significantly. *Significant at 5% level of significance. NS:Non-significant LSD: Least significant differences between two means.

this situation mainly might be due to serious scarcity of cattle feed especially green grasses during that period, and due to flood prevailing from July to September in BMSA. Variation in milk production for different months of the year and places might be due to eco-environmental condition, availability of feed staffs, genetic make up of industrials and so on.

Fat value: Fat value of BMSA between different months of the year (during 2001 to 2005) did not differ significantly (Table 1). Highest and lowest fat value was determined as 49.50 g/kg in the month of January, 47.3 g/kg in the month of October respectively and that of the average value was 48.40 g/kg. This result support (Banerjee, 1991) who stated that two factors are involved for highest fat value in the month of January, these are: i) wide abundance of legume fodder and ii) exercise or rearing facilities which has a tendency to increase the fat value. But in October cattle have to keep in confinement rearing due to seasonal flood, which may causes lowering fat value.

SNF value: SNF value of milk of BMSA between different months of each year did not differ significantly throughout the year (Table 1). Highest and lowest SNF value was 79.2 g/kg in February and 77.3 g/kg in December and that of the average was 78.4 g/kg. The difference between highest and lowest SNF value was 1.98 g/kg. It is clearly denoting a specific trend of SNF around the year. (Ito, 1966) analyzed 5700 milk sample collected in April, 1964 to March, 1965 and means and standard obtained for SNF as $7.929 \pm 0.137\%$ which support the current findings. The SNF greatly increases from July to January and after January it becomes low/

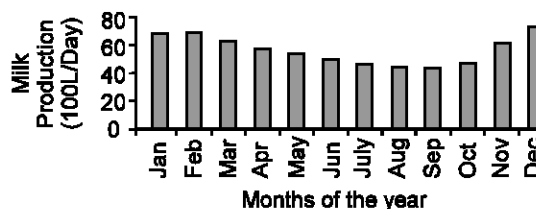


Fig. 1: Milk production trend of BMSA

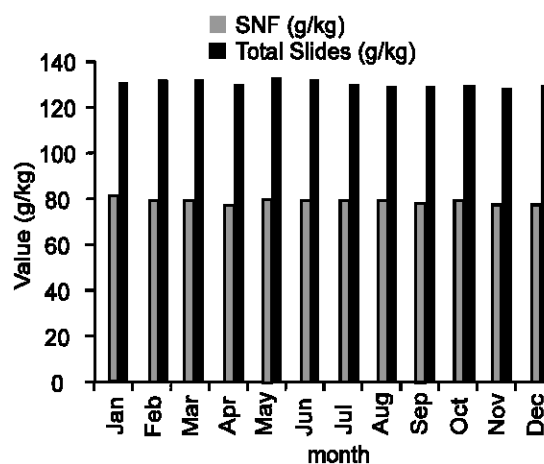


Fig. 2: Average values of SNF and TS of milk at BMSA

high up to July (Fig. 1). Variation of SNF value in respect of different months and years might be due to production/flushing period, type of feeds and fodder available, genetic make up of breeds, environmental phenomenon.

Total solids value: TS Values of milk of BMSA did not differ significantly (Table 1). The highest and lowest TS values were observed as 129.5g/kg in the month of May and 125.2 g/kg in the month of October respectively and the average TS value was 127.0g/kg (Table 1). (Azad, 2001) reported the TS values of milk of 10 primary co-operative societies under BMSA range between 103.9 g/kg to 151.4 g/kg. The results are in close agreement with the TS value range of the current experiment (125.2 g/kg to 129.5 g/kg) as well as other workers (Yadav and Saraswat, 1982; Islam *et al.*, 1984). TS value of BMSA follows a specific trend throughout the year.

Specific gravity: The specific gravity of milk was not varied significantly among different months in the year. The maximum, minimum and average specific gravity of milk of BMSA was 1.0288 (February), 1.0262 (October) and 1.0260 respectively. The normal range of specific gravity of whole milk is 1.027 to 1.035 with an average of 1.0320 (Eckles *et al.*, 1951). (Salam, 1993) found the average specific gravity of milk was 1.0276 ± 0.001 which result supports the present research findings.

Summary and conclusion: From the above findings it may be concluded that Milk production, Fat value, SNF value, TS value and specific gravity value of milk of BMSA, Milk Vita follow a specific trend of production throughout the year. As per our research findings it was observed highest production in December (10.01%) lowest in August (6.46%) & milk production gradually increases from September to December. It is indicating a specific milk production trend around the year that may be used for initiating and organizing the prescribed development activities routinely of milk and milk products marketing organization.

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