



## PRODUCTIVE PERFORMANCE OF BUFFALOES IN PESHAWAR UNDER FARM CONDITIONS

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### ABSTRACT

A study was carried out to know the productive performance of buffaloes maintained at Livestock Farm of NWFP Agricultural University, Peshawar, Pakistan. The data of buffalo herd was analyzed on the basis of daily, morning, evening and monthly milk yield as well as in different seasons of the year. The average highest and lowest milk production was found from 6-9 litres and 4-5 litres daily per buffalo. Morning yield was found slightly higher than evening during some months. The season on individual yearly basis did not show uniform pattern of highest yield trend but the comparative analysis on cumulative basis (including all seasons of all years) showed highest trend in summer (77.25 litres), followed by autumn (71.07 litres), spring (68.9 litres) and winter (63.72 litres). It was concluded from the present study that the milk production of buffaloes can be maintained at their maximum potential provided some good management practices are established at the farm e.g. deworming in regular intervals, feeding balanced ration and concentrates, ample quantity of drinking water and special care for seasonal requirement of the species both in terms of feeding and management.

**Keywords:** buffalo, productivity, performance, yield, Peshawar.

### INTRODUCTION

The future for animal agriculture holds obvious challenges. Natural resources will be increasingly scarce and much more expensive. Efficiency of resource utilization as well as productivity of food will be essential to meet the needs of an expanding human population. It is imperative to identify priorities for future research to enable livestock efficiently and effectively to serve human needs in the 21<sup>st</sup> century (GOP, 2005).

Since livestock is a renewable natural resource and plays a vital role in the Pakistan economy. The share of livestock in agriculture growth has jumped from 25.3 percent (1996) to 49.6 percent (2006). The higher growth in livestock sector was mainly attributed not only in the headcount of livestock, which is commercially important but also in the milk production (GOP, 2007).

The buffalo being the main dairy animal in Pakistan posted impressive increase with 35 percent in population in 2006 over 1996 (Livestock census, 2006) and gross annual milk production from 18.90 billion litres (1996) to 25.04 billion litres (2006), with growth pegged at 32.5 percent. The share of buffaloes in total milk production stood at 64.7 percent, while during 1996, 66.9 percent. Milk production of buffaloes increased from 14.82 billion litres (1986) to 18.90 billion litres (1996), 27.5 percent increase over 1986. Total milk production increased by 29.1 percent in 1996 when compared with 1986. In 1986, the share of buffaloes in total milk production was 67.7 percent. Number of slaughtering buffaloes increased from 2.18 million (1996) to 3.34 million (2006), 53.2% increase and from 1.42 million (1986) to 2.18 million (1996), 53.5% increase (GOP, 2007).

It has been suggested that buffaloes were in the service of man as early as 2500 to 2100 B.C. Domesticated buffaloes may be classified into swamp buffalo, inhabitant of marsh lands, like to wallow in mud,

swamps and stagnant pools and feeds on coarse marsh grass, vary in size from 300-600 kg, being primarily used as draught animals but also provide small quantities of milk for a farmer's family and is found principally in Malaya, Singapore, Philippines, Thailand, Indonesia, Southern China and other countries in the Far-East. While river buffalo are principally milch animals, prefer clean running water; vary in size from 450-800 kg and are primarily maintained for milk production, milk yield varies from 1400-3000 kg per 300 days lactation period (Banerjee, 1992).

Although sufficient study and work has been done in the past to improve the performance of buffaloes in the country but their productive and reproductive performance is still very poor. The present study is one of the series of those contributions to the scientific ocean to assess the performance of buffaloes herd kept at the Livestock Farm of NWFP Agricultural University, Peshawar, in order to have better future planning for high milk production and to judge the cost/benefit ratio of the animals according to their production and to probe into the issues responsible to hinder high productivity.

### MATERIALS AND METHODS

Milk production data of buffalo herd maintained during the period from 1999-2002 at Livestock Farm of Agriculture University Peshawar was obtained. The data was calculated/analyzed on the basis of daily, morning, evening and monthly milk yield as well as in different seasons of the year and each year is divided into four seasons i.e. spring (Feb, Mar, Apr), summer (May, June, July), autumn (Aug, Sep, Oct) and winter (Nov, Dec, Jan). The mean of milk yield was determined by using a formula  $\sum x/n$ ; where Ex is the total milk yield produced and n is the number of lactating buffaloes at the farm.



## RESULTS AND DISCUSSION

Table-1 shows milk production during the year 1999. High milk yield 7-9 litres from Jan-Sep and lowest yield 4-5 litres from Oct-Dec but no remarkable difference between morning and evening yield was found.

As shown in Table-2, during the year 2000, high milk yield 6-7 litres from May-Sep, in the rest of the months 5 litres/month, milk drop in April i.e. 3.5 litres was found. Morning yield was found slightly higher from April-Jun and Sep-Nov and during the rest of months approximately equal trend was found.

As shown in Table-3 during the year 2001, about 5-6 litres milk yield was found from Aug-Jan and 4 litres from Feb-July. Morning yield was found slightly higher than evening from Feb-April and Aug-Oct and also Dec.

As shown in Table-4, 5-7 litres yield was found throughout the year 2002. Morning yield was higher than evening from Jan-May and Sep, Oct, Dec. While in Nov, drastic drop in morning yield was found than evening.

The present study finding is in agreement to the report of Nemat-ullah, (2001) that Nilli-Ravi buffaloes yield an average of 6 litres milk. In another selected study at the government farms in Punjab province suggested that average milk yield of Nilli-Ravi buffaloes in a standard lactation is 6.44 litres. While the average milk yield of Kundi buffaloes are 4.46 kg and can go as high as 8.92 kg daily with a lactation period of about 305 days and an average milk yield of Nilli-Ravi buffaloes can go as high as 9.78 kg daily with a lactation period of 308 days. But under optimum conditions, the buffaloes of Pakistan can produce as much as 13.33 litres of milk daily in a lactation period of 300 days (Khan, 1994).

As shown in Table-5 and the relevant graphs of each year, it is evident that during the year 1999, highest milk yield was found in spring (26.31 litres), followed by summer (24.39 litres), autumn (19.72 litres) and winter (17.41 litres). During the year 2000, summer (20.54 litres), autumn (17.94 litres), winter (14.93 litres) and spring (13.3 litres).

During the year 2001, autumn (16.13 litres), winter (15.44 litres), summer (12.82 litres) and spring (11.71 litres). During the year 2002, summer (19.5 litres), spring (17.58 litres), autumn (17.28 litres) and winter (15.94 litres), respectively.

To see the comparative highest yield in different seasons of the years it became evident that the pattern is

not in uniform order i.e. during the year 1999, the highest yield was found in spring, in 2000; summer, in 2001, autumn, in 2002, again summer. But if we analyze the production on cumulative four year basis (1999-2002), the highest yield was found in summer (77.25 litres), followed by autumn (71.07 litres), spring (68.9 litres) and winter (63.72 litres).

The results of the present study are in agreement with those of many workers, who found significant effect of season on milk yield in cattle (Mc Dowell *et al.*, 1976, Arora and Sherma, 1983 and Pytloun *et al.*, 1986). However the finding of the present study is not in agreement with the report of Afridi, *et al.*, (2004) that maximum milk yield was in autumn calvers followed by spring calvers and summer calvers yielded lowest milk.

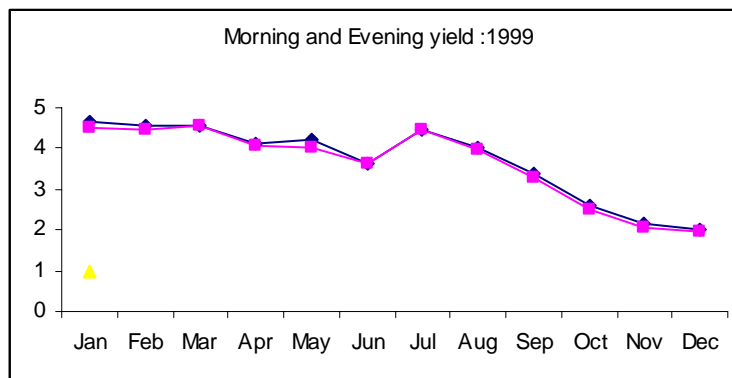
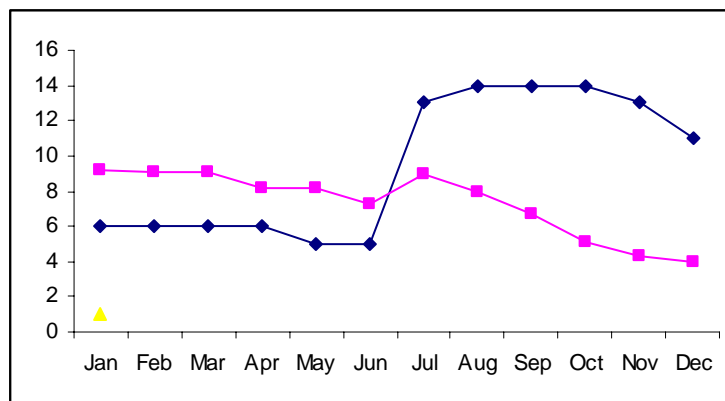
This study shows that milk yield was comparatively higher in hot months and during average atmospheric temperature, as compared to cooler months of the year. The reasons might be due to adequate availability of green fodder, high water intake, and good adaptability to hot rather than cooler season and inadequate feeding of concentrate ration (Wanda) in cooler season to maintain their health for extra requirement of calories. Because most of the practice is followed ignoring the seasonal requirement of nutrition which affect productivity. Although a lot of other managemental factors might be involved during different seasons of the year to make fluctuation in milk yield.

Since there is on and off, in and out flow of animals in the farm throughout the year due to various reasons and also in most parts of NWFP, the trend is prevalent on supply of lactating buffaloes from Punjab province (Siddiqui and Saeed, 2000), therefore, milk yield fluctuation in different months and years might be due to adaptation of animals in the location/environment for some period, variation in stage of lactation and abrupt change in feeding schedule and feeding etc.

The seasonal changes in feed supply have direct effect on animal performance and fertility and also make the animals susceptible to infectious or parasitic diseases, therefore under conditions of disease outbreak and fertility problems in swamp buffalo, the nutritional problems should be specially counted (Srihakim and Pholpark, 1994).

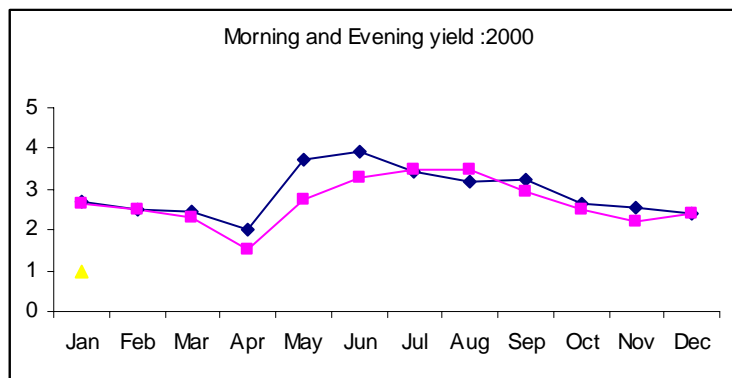
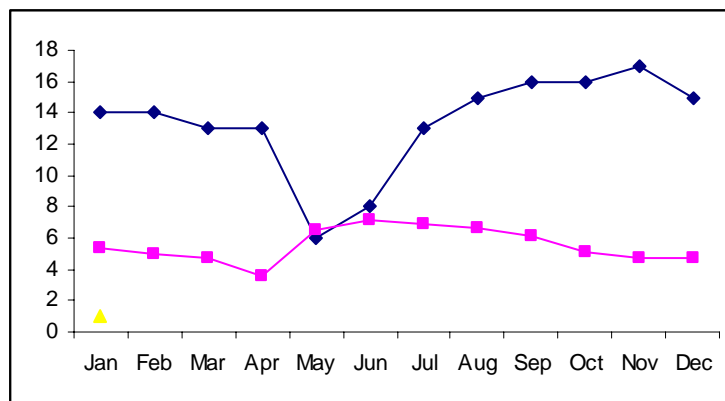
**Table-1.** Mean milk production (Litres/animal) of buffalo herd during the year 1999.

Month	No. of animals	Morning yield	Evening yield	Daily yield	Monthly yield
Jan	6	4.67	4.53	9.2	285.2
Feb	6	4.56	4.47	9.03	252.84
Mar	6	4.56	4.56	9.12	282.72
Apr	6	4.10	4.06	8.16	244.8
May	5	4.20	4.02	8.22	254.82
Jun	5	3.61	3.62	7.23	216.9
Jul	13	4.47	4.47	8.94	277.14
Aug	14	4.01	3.96	7.97	247.07
Sep	14	3.36	3.30	6.66	199.8
Oct	14	2.58	2.51	5.09	157.79
Nov	13	2.18	2.08	4.26	127.8
Dec	11	2.00	1.95	3.95	122.45

**Graphs of Table-1.**

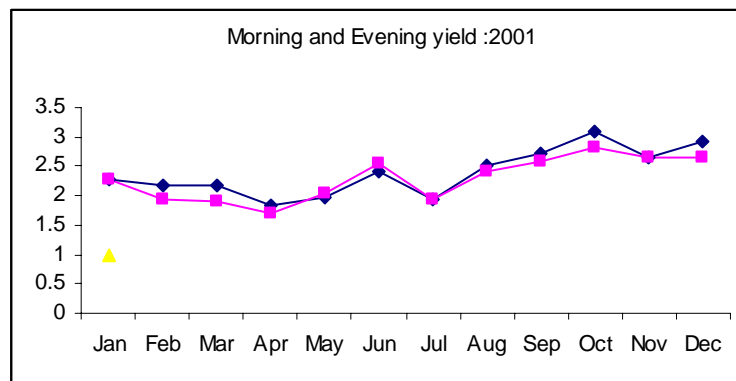
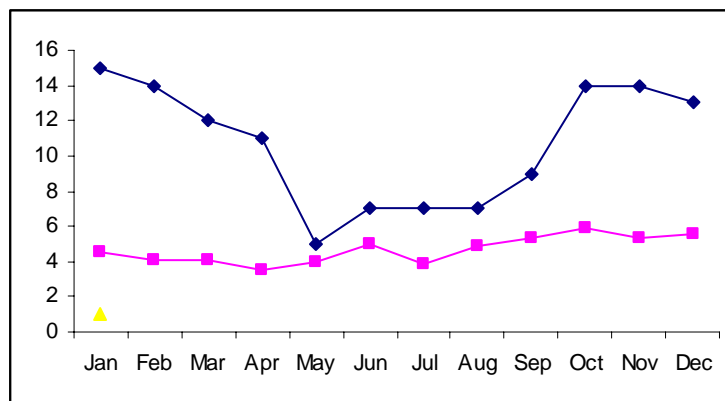
**Table-2.** Mean milk production (Litres/animal) of buffalo herd during the year 2000.

Month	No. of animals	Morning yield	Evening yield	Daily yield	Monthly yield
Jan	14	2.70	2.67	5.37	166.47
Feb	14	2.52	2.49	5.01	145.29
Mar	13	2.46	2.28	4.74	146.94
Apr	13	2.02	1.53	3.55	106.5
May	6	3.72	2.74	6.46	200.26
Jun	8	3.92	3.26	7.18	215.4
Jul	13	3.43	3.47	6.9	213.9
Aug	15	3.17	3.48	6.65	206.15
Sep	16	3.23	2.92	6.15	184.5
Oct	16	2.66	2.48	5.14	159.34
Nov	17	2.56	2.22	4.78	143.4
Dec	15	2.38	2.40	4.78	148.18

**Graphs of Table-2.**

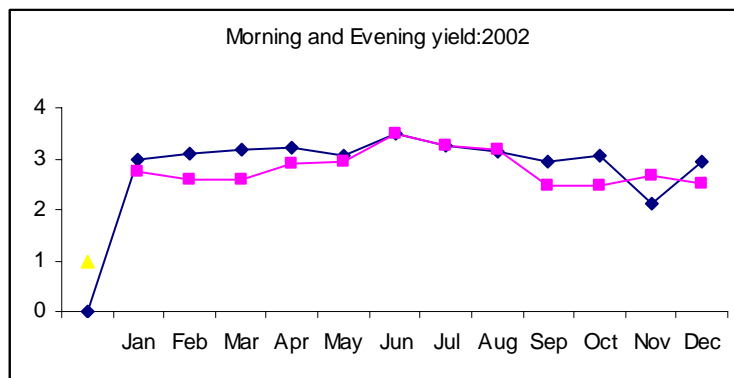
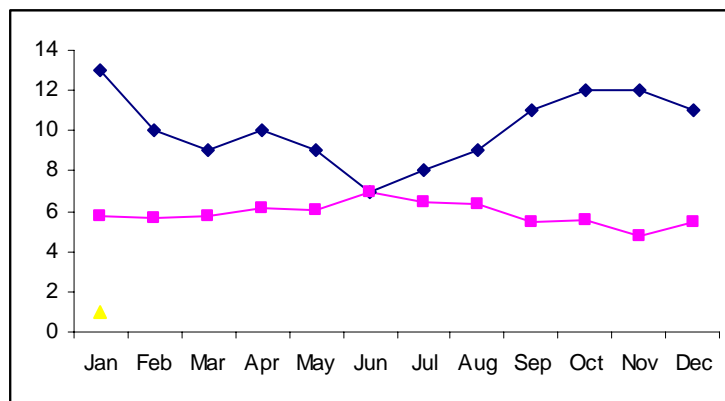
**Table-3.** Mean milk production (Litres/animal) of buffalo herd during the year 2001.

Month	No. of animals	Morning yield	Evening yield	Daily yield	Monthly yield
Jan	15	2.29	2.28	4.57	141.67
Feb	14	2.19	1.92	4.11	115.08
Mar	12	2.18	1.90	4.08	126.48
Apr	11	1.82	1.70	3.52	105.6
May	5	1.96	2.03	3.99	123.69
Jun	7	2.4	2.56	4.96	148.8
Jul	7	1.92	1.95	3.87	119.97
Aug	7	2.51	2.41	4.92	152.52
Sep	9	2.73	2.58	5.31	159.3
Oct	14	3.08	2.82	5.9	182.9
Nov	14	2.66	2.64	5.3	159
Dec	13	2.92	2.65	5.57	172.67

**Graphs of Table-3.**

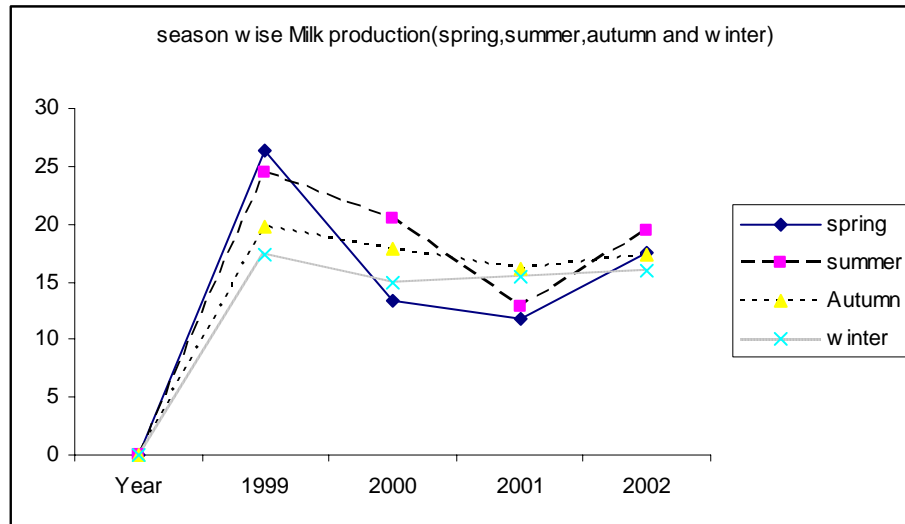
**Table-4.** Mean milk production (Litres/animal) of buffalo herd during the year 2002.

Month	No. of animals	Morning yield	Evening yield	Daily yield	Monthly yield
Jan	13	2.98	2.75	5.73	177.63
Feb	10	3.09	2.57	5.66	158.48
Mar	9	3.19	2.58	5.77	178.87
Apr	10	3.23	2.92	6.15	184.5
May	9	3.07	2.96	6.03	186.93
Jun	7	3.49	3.49	6.98	209.4
Jul	8	3.24	3.25	6.49	201.19
Aug	9	3.12	3.19	6.31	195.61
Sep	11	2.96	2.46	5.42	162.6
Oct	12	3.07	2.48	5.55	172.05
Nov	12	2.11	2.65	4.76	142.8
Dec	11	2.95	2.5	5.45	168.95

**Graphs of Table-4.**

**Table-5.** Season wise milk production (litres/animal) of buffalo herd for the year 1999-2002.

Year	Spring	Summer	Autumn	Winter
1999	26.31	24.39	19.72	17.41
2000	13.3	20.54	17.94	14.93
2001	11.71	12.82	16.13	15.44
2002	17.58	19.5	17.28	15.94
<b>Total</b>	<b>68.9</b>	<b>77.25</b>	<b>71.07</b>	<b>63.72</b>

**Graph of Table-5.**

## CONCLUSION

The present study revealed highest and lowest milk production of buffaloes from 6-9 litres and 4-5 litres daily. Slight variation between morning and evening yield was found, the former being higher. Keeping in view the findings of entire study the highest yield was found in summer, followed by autumn, spring and winter.

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