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Report and Opinion

MARSLAND PRESS
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Effect of rumensin on lactating dairy cows and buffalos

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Abstract: The results of present study showed that milk production was decreases from day 1 to day 40 and slightly increases form day 40 to day 50. This study was conducted from July to September 2020 so heat stress was the major concern that effect the production because heat stress may lead to reduced to DMI, increase respiration rate and panting to maintain the body temperature which ultimately effect the milk production in lactating cows and buffalos. Apart from heat stress other reasons for decreasing in milk productions are fluctuations in daily feeding and mastitis.

[Komal Rehman, Irsa Kanwal, Amna Kanwal. **Effect of rumensin on lactating dairy cows and buffalos.** *Rep Opinion* 2020;12(11):13-17]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). http://www.sciencepub.net/report. 4. doi:10.7537/marsroj121120.04.

Key words: rumensin, lactating dairy cows, buffalos

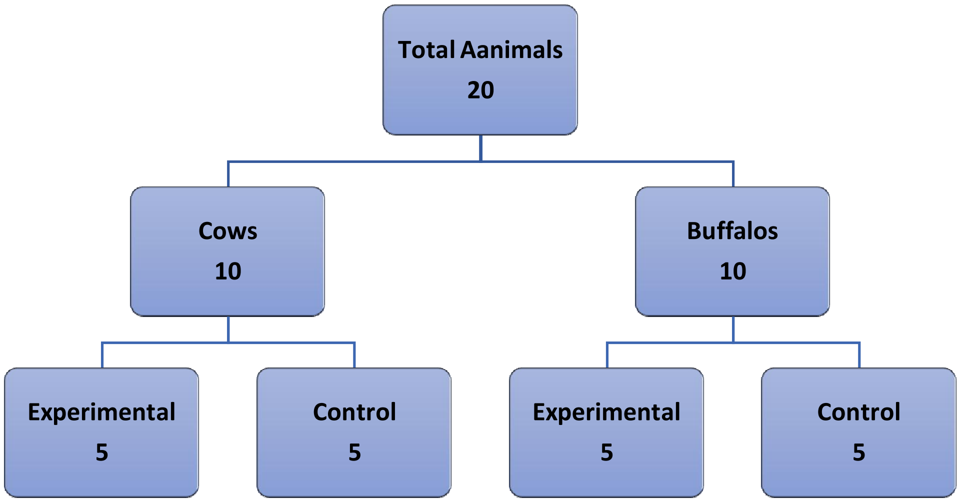
Introduction

The livestock sector has grown at an unprecedented level in the past decades due to increased demand for livestock products associated with growing human population and rapid urbanisation (Dangal et al. 2017). Changes in dry matter intake by cattle fed high-concentrate diets can negatively influence feedlot gain and efficiency as well as predispose digestive disorders such as acidosis. Subacute acidosis increases variation in feed intake and decreases dry matter intake of cattle consuming high-grain diets. During acidosis, cattle will reduce feed intake until ruminal pH increases to approximately (Cooper et al., 1997). Rumensin belongs to ionophore which is effective to improve feed efficiency. Ionophore lowers acetic proportion and increases propionic proportion in rumen and affects CH4 production. Some studies demonstrated that inhibiting methane production using ionophore did not last long (Johnson and Johnson, 1995). To remain competitive in the dairy industry, dairy producers must employ management practices and technology that are economically feasible. Income over feed costs must be optimized to maintain profitability of the dairy. One tool to help improve milk- production efficiency is the use of Rumensin. Rumensin is the first feed ingredient approved by the Food and Drug Administration (FDA) for increased milk production- efficiency (production of marketable solids-corrected milk per unit of feed intake) when fed to dairy cows (Thomas et al., 2005). As corn silage (CS) is added to a diet replacing corn grain, energy density decreases and is less available for body weight (BW) gain (Hilscher et al. 2019). Added CS also alters ruminal pH by changing the amount of highly fermentable starch available in the rumen (Galyean and Defoor 2003). Distillers grains, a cereal by-product of ethanol production, hold high nutritional value because of the removal of starch during the fermentation process and the consequent increase in digestible fiber, protein, and fat content (DiLorenzo and Galyean, 2010). In areas where, due to its agroecological aptitude, sorghum is a more competitive crop in comparison to corn, sorghum grain becomes the main input, not only for ethanol plants but also for beef finishing diets. The type of grain used during the fermentation process affects DG chemical composition and nutritive value (NASEM, 2016). It is thus probable that the level of sorghum DG that optimizes animal response in sorghum-grain-based diets would differ from the level observed in corn-based diets. The primary objective of the trials was to determine the effects of corn silage, young maize, sorghum on milk production, cud chewing index and manure scoring.

Materials and Methods

In this experiment, a total of 20 animals were used out of which 10 were the buffalos and 10 were the cows. Out of 10 buffalos 5 were kept as an experimental group and 5 were control group. Same strategy applies to the cows (as shown in flow chart).

Cows and buffalos were housed in a tie-stall barn during milking but rest of the time they were left in open field. They had free access to water at all times.



Ration and feed ingredients

Cows and buffalos were offered with fresh fodder, silage and concentrates as summarized in below table.

Table 1: Feeding management (on as fed basis /animal/day)

Cows		Buffalos	
Corn Silage	15kg	Corn Silage	15kg
Young Maize	10kg	Young Maize	10kg
Sorghum	15kg	Sorghum	15kg
Concentrates (Dairylac Feed 22P)	4.5kg	Concentrates Dairylac Feed 18M	5.5kg

Milk Yield

Milking was twice in a day i.e at 3am and 3pm. Milk weight were recorded at each milking for daily yield.

Cud Chewing Index

CudCI defined as the number of cows that were lying down in cubicles and ruminating multiplied by 100 divided by the total number of cows lying down in the cubicles. The expectation is that more than 50% of the cows lying in the stalls are chewing their cud. Many herds where diets are properly designed, and the cows are comfortable will have a CCI of 60 to 65%.

CCI = Cows chewing cuds / Cows in the stalls x 100

Manure Scoring

Manure is scored on a 1 to 5 basis, with a score of

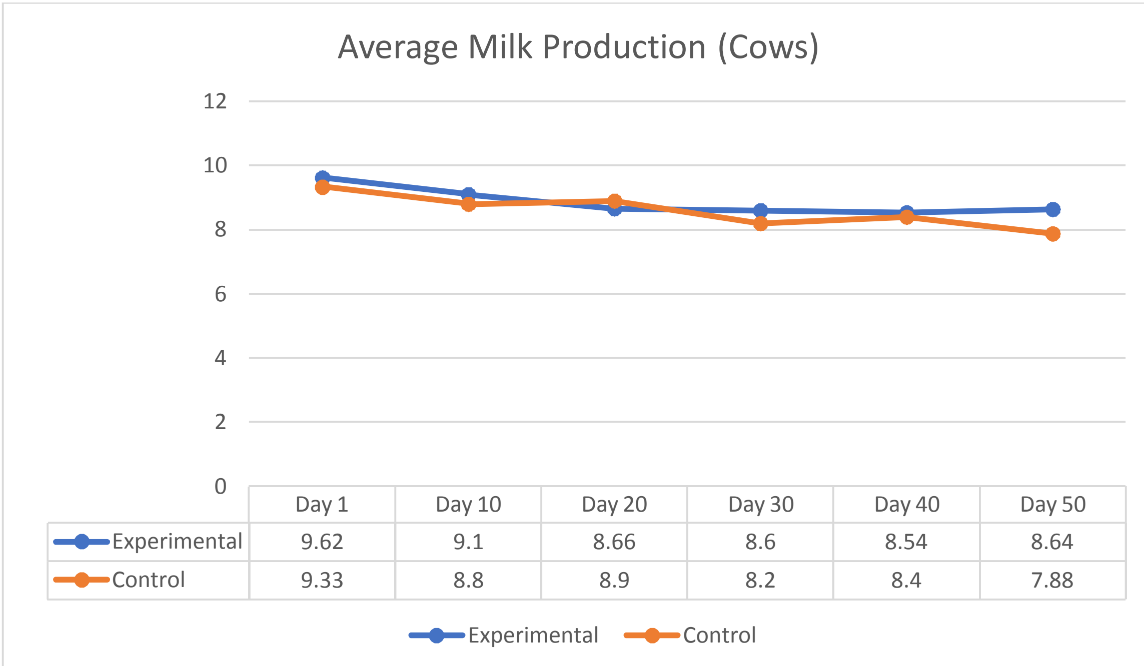
1. very liquid like soup, cows with diarrhea
2. runny and does not form a distinct pile, less than 1 inch on height
3. porridge like appearance, stack up to 1.5 to 2 inch having several concentric rings, a small dimple in the middle
4. Thicker, stick to shoes and stack more than 2 inches
5. firm feel balls and extremely dry

Results Interpretation

Milk yield was recorded on daily basis. Following are the results interpretation with ten days interval.

Table 2: Average Milk Production in kg per day

	Cows		Buffalo	
	Experimental	Control	Experimental	Control
Day 1	9.62	9.34	9.78	8.16
Day 10	9.1	8.8	9.34	7.6
Day 20	8.66	8.9	9.26	7.68
Day 30	8.6	8.2	8.94	7.94
Day 40	8.54	8.4	9.32	8.08
Day 50	8.64	7.88	9.56	8.3



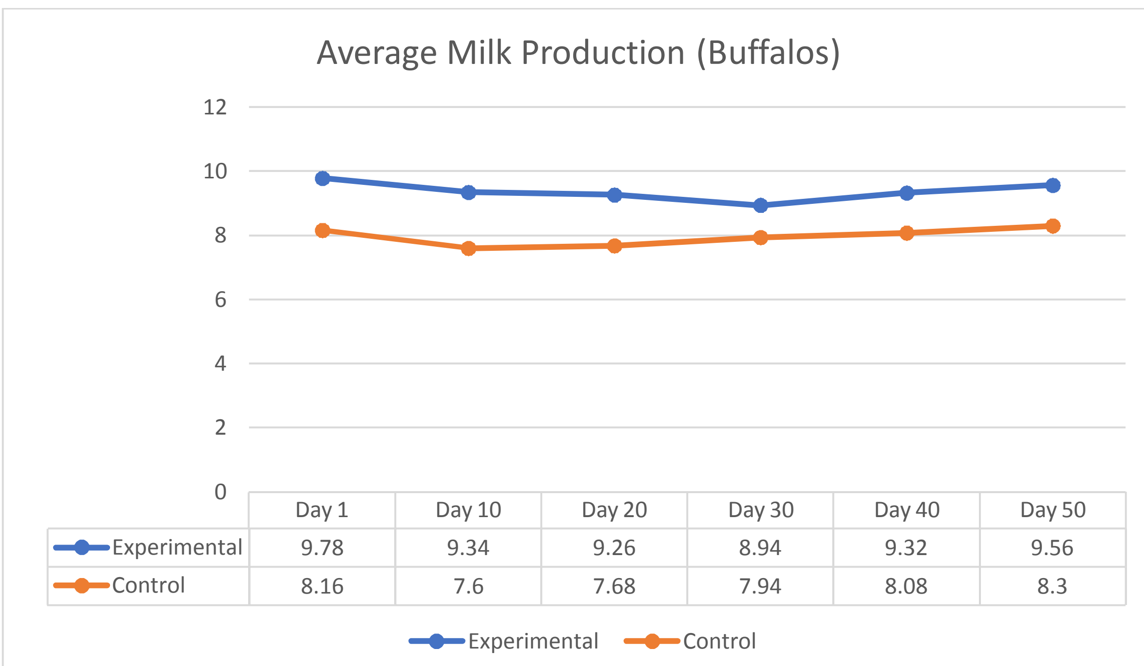
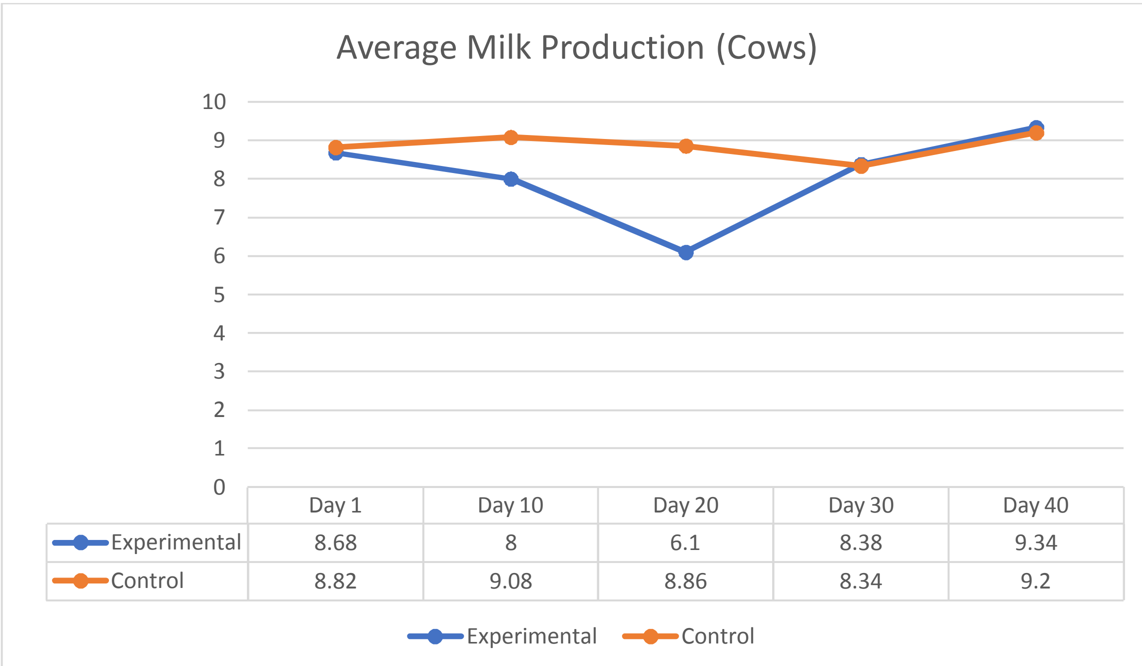


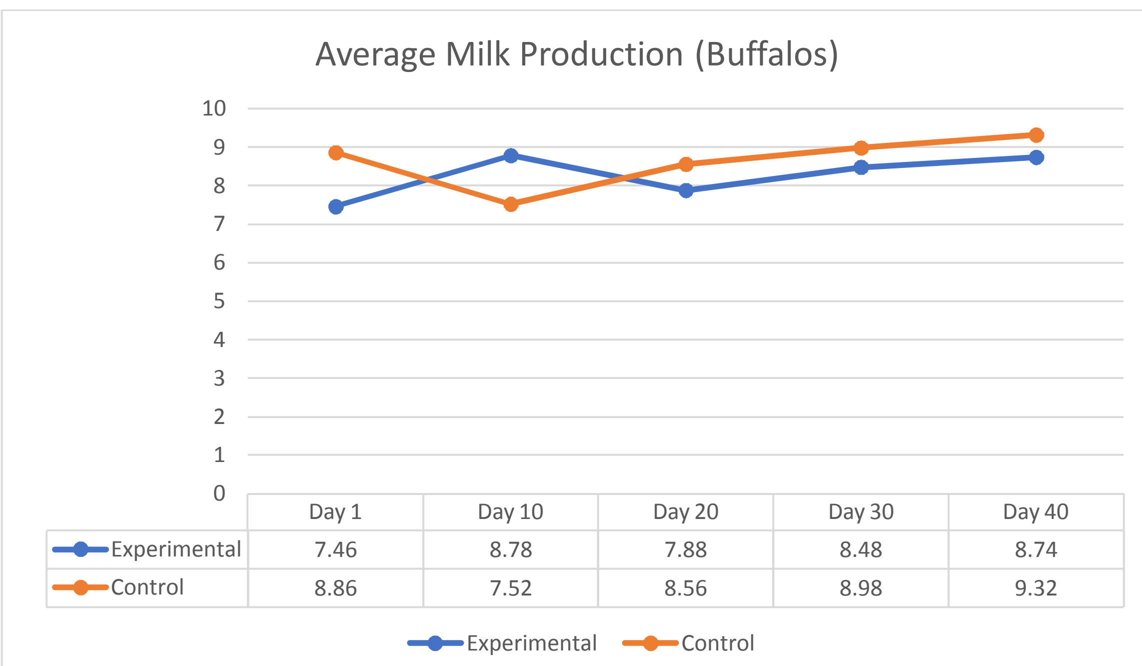
Table # 1 shows the average milk production of cows and buffalos separately. Both graphs shows that milk production was decreases from day 1 to day 40 and slightly increases form day 40 to day 50. This study was conducted from July to September 2020 so heat stress was the major concern that effect the production because heat stress may lead to reduced to DMI, increase respiration rate and panting to maintain the body temperature which ultimately effect the milk production in lactating cows and buffalos. Apart from heat stress other reasons for decreasing in milk productions are fluctuations in daily feeding and mastitis.

Switching of Animals

Switching of animals from experimental to control group and control group to experimental group was done after 50 days of experiment.

	Cows		Buffalo	
	Experimental	Control	Experimental	Control
Day 1	8.68	8.82	7.46	8.86
Day 10	8	9.08	8.78	7.52
Day 20	6.1	8.86	7.88	8.56
Day 30	8.38	8.34	8.48	8.98
Day 40	9.34	9.2	8.74	9.32





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11/7/2020