

Feeding Status of Indigenous Buffalo in Midhills of Gandaki Province, Nepal

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ABSTRACT

More than 50% of the households of Gandaki province have been rearing buffaloes. Whereas in mid hills 1-2 number of buffalo is present in most houses which are reared for sustainable purpose. A cross sectional study was carried out for a year in the mid hills of Gandaki province selecting 20 farms from four locations; Parbat, Nagi ramche, Tarakhola and Lwang ghalel, Kaski. Similarly, for a year a buffalo farm of Directorate of Agricultural Research, Gandaki was also studied. The purpose of this study was to determine the feeding system of buffalo in midhills and DoAR farm and compare the milk production. The milk production by the indigenous buffalo of local farms (3.3liters/d) was significantly higher than that of DoAR farms(2.9liters/d) despite of feeding balanced concentrate ration daily. The raulo and khar combination was the main source of roughages whereas maize, barley and millet flour were the common source of concentrate for the indigenous buffalo in mid hills of Gandaki province.

Keywords: Sustainable, Milk Production, Kaski, Raulo, Khar

INTRODUCTION

In Nepal buffalo farming is a main occupation which covers total population of 51,78,612. The contribution of buffalo in meat and milk production is 58.3% and 68.7%, respectively (SINA 2013/14). The buffalo is reared under subsistence farming system rather than for commercial purpose particularly in mid hills part of Nepal. One or maximum two numbers of buffalo are reared and provided feeding that is locally available. The practice of feeding locally available resources doesn't meet the requirement of the buffalo which could be the reason for low milk production. The buffalo should be provided with the Dry matter three percent of their body weight. The one third of the total dry matter should come from concentrate and the remaining two third from the roughages which is the thumb rule of feeding buffaloes. In the country 47% of total livestock nutrition in terms of Dry matter content is fulfilled by crop by-product and residue, and suffers from 31% of feed deficit (Upreti and Shrestha, 2006). The month, duration from June to October is

identified as the peak season of milk production because of the availability of the green grasses which enhances nutrition. In a study done in Chitwan wheat bran and rice bran were identified as the major concentrate feeds and rice straw as major roughages source. The concentrate provided occasionally to the buffaloes in the Chitwan is wheat straw, maize flour, and commercial feed (Shah et al., 2018). The average milk production by Murrah cross in the Chitwan is 2.7 liters.

Lack of knowledge, regular practice of feeding, far from the agro vets and shortage of feeds are some of the reasons for poor feed quality provided to buffaloes. Indigenous buffalo mainly Lime and Parkote are the common breeds of buffalo raised in the mid hills region of Gandaki Province. The villages are far from the road and markets which avoids artificial insemination leading to conservation of pure breeds of buffaloes there. The genetic potentiality of such indigenous buffalo is unknown, the type of feed that they are having and the nutrient content present in them is still not clearly determined which the first step for improving productivity is. The low-quality roughages, agricultural crop-residues and industrial by-products which contain high levels of lingo cellulosic materials, low levels of fermentable carbohydrate and protein are fed to buffalo in mid hills. The productivity improvement program focuses only on breed improvement program rather than the identification of genetic potentiality of the indigenous breed and providing them the nutritious feeds. The purpose of this study was to determine the status of the indigenous buffalo and to determine the year round feeds that are provided to the buffalo. This study was done with a view to help the future programs to provide a valid statistics information on feeds as a basis for the improvement programs.

METHODOLOGY

Year round survey was taken in four different sites (Nagi ramche, Ramja of Parbat, Tarakhola of Baglung and Lwang Ghalel of Kaski) of mid hills. Twenty farmers were selected from each sites and a recorder was kept for each sites. The recorders were kept to determine the daily milk production and types of feed fed to the buffalo. The data were collected in a month interval from each sites and analyzed.

Source of Roughage

Crop by products and fodder trees were major source of roughages for buffalo. Khar (*Imperata cylindrica*) and raulo are the common green forage, maize Stover, rice straw and wheat straw are common crop by-products and khasru (*Quercus semicarpifolia*) and Duhilo (*Ficus neriifolia* var *nemoralis*) are the common fodder trees fed to the buffaloes in mid hills of Gandaki province. They are fed either alone or in combination based on their availability rather than the requirement assessment. The source of roughages fed to the buffalo was collected every month from each house so, they were arranged and entered. The frequency was determined to calculate the most available roughages in the

study sites. On an average 33 kg of roughages and was provided daily to average 3.3 liters' milk producing indigenous buffalo in the mid hills.

Source of Concentrate

Millet bran, maize bran, maize flour, broken rice, local kudo, and barley flour were the identified source of concentrate for buffalo in the study sites. They were fed either alone or in combination based on their availability. Local kudo is a homemade mixture prepared by mixing the waste of kitchen, wheat flour, maize flour, water, and salt, and finally cooking to prepare slurry mixture. The source of concentrate fed to the buffalo was collected every month from each house so, they were arranged and entered. The frequency was determined to calculate the most available concentrate in the study sites. On an average 1.01 kg of concentrate was provided daily to average 3.3 liters' milk producing indigenous buffalo in the mid hills of Gandaki province.

Source of roughages and concentrate in the farm of DOAR, Lumle

The farm consists of 30 indigenous buffaloes out of which only 10 among them were lactating. They were provided daily with 3 kg of concentrate feeds containing 90.4% Final Dry matter and 24.98% crude protein. Whereas in case of roughages they were grazed for 4 hours daily, 5 kg of straws and green grass according to season. During summer season they were provided with 25 kg of grasses like setaria, napier, Khar, Bermuda and local grasses. During winter they were fed with 4 kg of silage and 20 kg of oats grass or fodder leaves. The fodder trees include Katus, Rye khanyu, Nemaro, Dudhilo, and Pakhuri.

RESULTS

The types of roughages and concentrate fed to the indigenous buffalo are given in Table 1 and Table 2, respectively. Table 1 indicates that Raulo and Khar combination was the most available roughages for feeding to the buffaloes in mid hills followed by khar and maize stover combination. Khasru alone was the least available source of roughage for feeding to the buffaloes in study sites. Figure 1 indicates that raulo and khar combination was available for 12 months whereas raulo and dudhilo combination was available only in Baisakh and Mangsir.

Calendar of source of roughages for buffalo

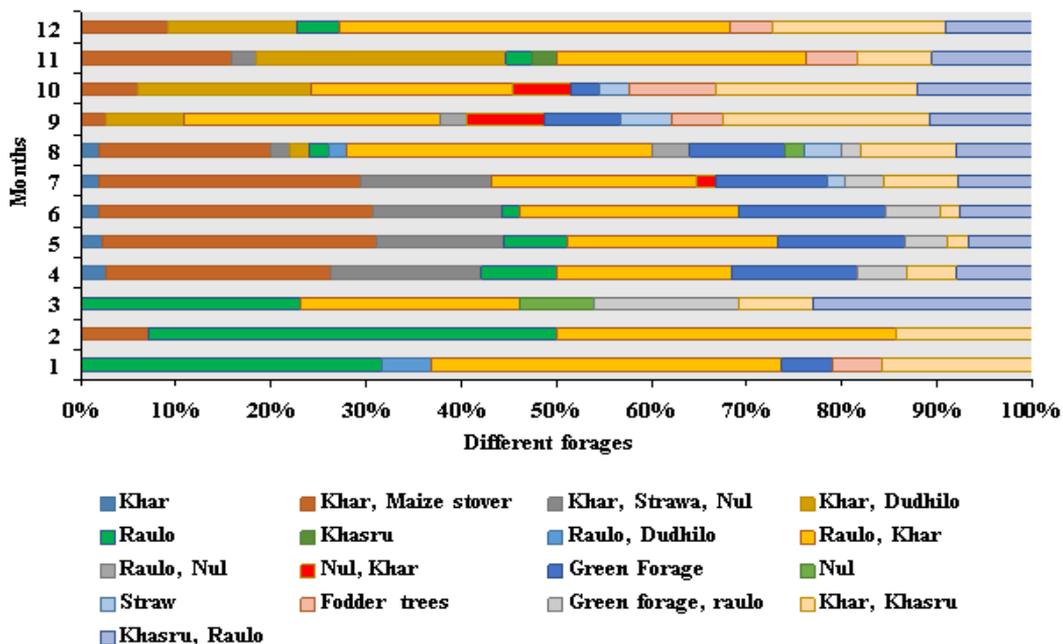


Figure 1. Calendar of source of roughages for buffalo in the study sites

Table 1. Different roughages available for indigenous buffalo in mid hills

S.N.	Roughages	Frequency	Percentage
1	Khar	5	1
2	Khar, Maize stover	72	14.8
3	Khar, rice and wheat straw	28	5.8
4	Khar, Dudhilo	23	4.7
5	Raulo	25	5.1
6	Khasru	1	0.2
7	Raulo, Dudhilo	2	0.4
8	Raulo, Khar	107	22
9	Raulo, Wheat straw	3	0.6
10	Wheat straw, Khar	6	1.2
11	Green Forage	35	7.2
12	Wheat straw	2	0.4
13	Straw	6	1.2
14	Fodder trees	9	1.9
15	Green forage, raulo	12	2.5
16	Khar, Khasru	41	8.4
17	Khasru, Raulo	31	6.4
18	Total	408	100

Table 2. Different concentrate feed available for indigenous buffalo in mid hills

S.N.	Concentrate feeds available	Frequency	Percent
1	Millet, maize bran	76	18.6
2	Millet bran	16	3.9
3	Maize flour	73	17.9
4	Broken rice	6	1.5
5	Maize, broken rice	11	2.7
6	Local kudo	92	22.5
7	Barley	4	1.0
8	Maize, barley, millet flour	130	31.9
9	Total	408	100.0

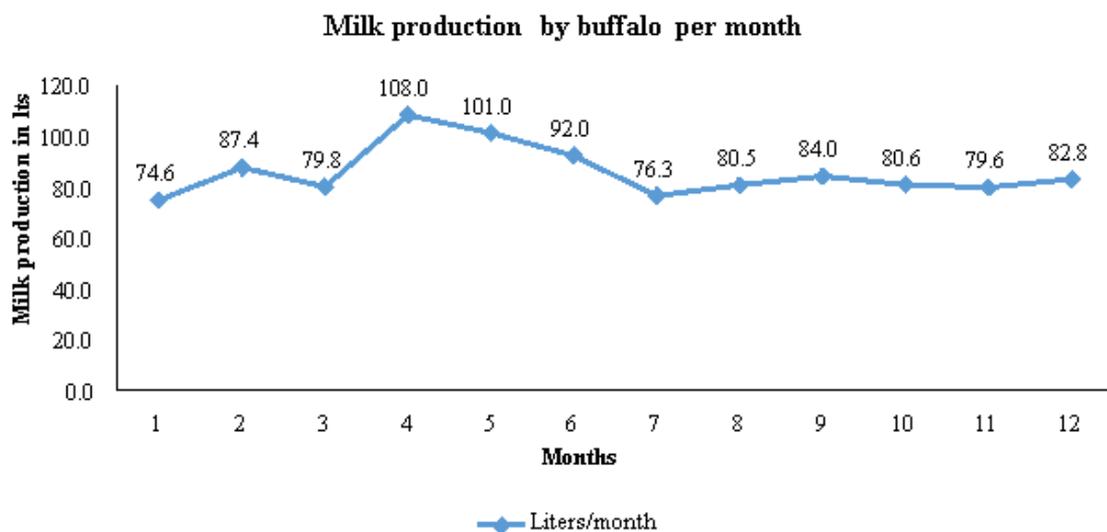


Figure 2. Line graph showing average milk production by buffalo per month

DISCUSSION

Majority of buffalo owners practice open grazing to animals followed by semi stall feeding while very few respondents practiced only grazing on pasture land which is supported by the similar findings of Viswkarma, et al. (2018). Also in Bangladesh, the buffalo are fully dependent on roughages for feed and no concentrate is provided. They are fully dependent on grazing and more than 20% farmers uses cultivated fodders and tree leaves. More than 90% farmers reported that feeds are available in the selected areas (Sarkar et al., 2013).

In the study sites Khar, maize stover and raulo are the common source of roughages rather than the wheat and rice straw contrast to the study done in Bangladesh. Home-

made concentrate, Kudo is also one of the common sources of concentrate in the study sites similar to the study of Bangladesh (Viswkarma, et al., 2018). In Natore district of Bangladesh, buffalo are grazed for 5-7 hours/d, source of roughages are rice straw, locally available green grasses like durba, baghata grass, vadal grass, kaishe grass, khasheri koli etc. and crop byproducts which include sugarcane top, sugarcane pulp and whole sugarcane. The sources of concentrates are rice polish, wheat bran, broken rice, rice gruel and oil cake (til oil cake, mustard oil cake) (Siddiki et al., 2015).

In terai region of Nepal, the lack of green pasture in diet of cattle was compensated by supplying large amount of straw resulting low concentration of CP and TDN than other periods result decrease in milk production. (Hayashi et al., 2005). In Contrast in this study the straw is used in less frequently. Khar (*Imperata cylindrica*) grows well from sea level to 2000 m of altitude, in sub humid or humid grasslands or open woodlands. It grows well at 25°C-35°C temperatures, 250-6250 mm annual rainfall, full sun or light shade on light sandy soils of 4 to 7.5 pH. It is capable of tolerating long drought periods, and burning since its rhizome allows rapid regrowth but cannot withstand flooding and temperatures below 20°C (Ecoport, 2010; FAO, 2010) Though khar contributes much in the feeding of buffalo, it is considered as a poor quality grass whose cp is about 7% DM and generally lower than 12% DM (Feedipedia, 2013). It is also deficient in energy and sodium (Falvey, 1981).

The milk production by indigenous buffaloes was 2.9 liters/day and 3.3 liters/day respectively in the DoAR, Gandaki and local villages of Gandaki Province. This finding is similar to that of Natore district, Bangladesh (3.32 Liters/d) (Gupta et al., 2014) and indigenous Bangladeshi buffalo (2.1 to 2.7 Liters/d) (Amin et al., 2015). In contrast, the average finding is lesser than that produce (7.19 ± 0.18 liters/d) by Azikheli buffaloes of Pakistan (Khan et al., 2014).

CONCLUSION

Lime and Parkote are the most efficient utilizer of the fibers and convert poor quality roughages to high quality milk. Raulo and Khar are the common source of roughages whereas maize, barley and millet flour are the common source of concentrate for the buffaloes in mid hills of Gandaki Province. The balanced concentrate ration has no effect on the milk production potential of indigenous buffalo in the study. Thus, financial burden can be reduced by decreasing amount of concentrate ration and replacing it with more roughage in the feed of buffalo.

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CONFLICT OF INTERESTS

The authors hereby declare there is no any potential conflict of interest(s) including financial or personal with the work submitted for publication.

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