



Identification of Grazing Lands for Chauri Improvement at Bhotekoshi Community of Sindhupalchok of Nepal

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ABSTRACT

A study was carried out to identify grazing lands for chauri improvement at Bhotekoshi community of Nepal from 7th March to 13th March, 2021. The grazing lands from 2500 m to 3500 were observed and measured height. Photographs were taken grazed chauri and available fodder tree. Two focus group discussion were conducted to study about farmer problem. Some open ended and close ended questionnaire were developed for focus group discussion. Oak forest has been seriously lopped out and threatened to its existence due to frequently cut system. Due to shortage of pasture and fodder, the production and productivity of the Chauri has been declined day to day significantly. The Chauri farming business is no longer and beneficial if the productivity of pastures would not be improved or supply of forage could not be adequate. Water source and pasture land is not together in somewhere. The farmer faced difficulty to move Chauri for drinking water due to long distance. The Chari farmer faced the problem of poisonous plant like locally called Chyatu, Bikh, Pra etc. Also, they feel lack of knowledge gap of proper Chauri farming. Renovation of native pasture lands should be done by incorporating leguminous forage like white clover, red clover. Cultural practice should be done by avoiding toxic plants from pasture and grazing lands. Rotational grazing, management drinking water, Making trails of animal are applied for sustainable chauri farming and its business development.

Keywords: Chaurai, Identification, Rangeland, Grazing, High altitude

1. Introduction

Here Bhotekoshi is a rural municipality located in Sindhupalchok District of Bagmati Pradesh in Nepal. Sindhupalchok district is divided into twelve local level units, in which three units are urban municipality and nine are rural municipality and Bhotekoshi is one of rural municipalities out of nine. It is located near the border of Tibet-China on Himalayan range. It is surrounded by Dolakha District in east, Bahrabise in south and Jugal in west. Tibet is located on the north side of the rural municipality. Total area of the rural municipality is 273.62 square kilometres (105.65 sq m) and total population is 19231 individuals. (Rural Municipality profile, 2021)

Yak is male and female is called Nak in Nepali, are pure breed Himalayan cattle. Yak and Nak reared at high altitude ranges from 2400 m to 4000 m. Yaks are very hardy animal. They have capacity to graze very short grasses. They can survive on poor quality roughages. In high altitude regions, the growing season of crops and grasses are very short. Most of the time grasslands are covered by snow. During this period they fed poor quality hay and shrubby foliage. They can graze 24 hours. The Chauri are more productive than female Yak and can easily adapted in lower altitude and reared at intermediate zone. Chauri farming is main source of income in the Himalayan regions. The Chauri are reared under migratory systems, grazing in alpine/sub alpine pasture during summers and feeding fodder trees leaves during winter. Due to continuous looping the forest fodder most of brose species are threatened to its existing.

Livestock production is the most important economic as well as livelihood activity for the farming families of Nepal. But their productivity is constrained by the deficit of nutrients. Feed shortage, particularly during winter seasons is the major limiting factor to reducing meat and milk production of ruminants in Nepal The feed situation in the high hills was not too poor (-3.56%) in high hills of Nepal (Singh and Singh, 2019) But in mountainous region, there is feed deficit occur in winter due to snowfall.

The oak forest has been seriously lopped out and threatened to its existence due to frequently cut system. Due to shortage of pasture and fodder tree, the productivity of the Chauri has been declined significantly and the Chauri farming business is no longer and beneficial if the productivity of pastures would not be improved or supply of forage could not be adequate (Pandey, 2004) The grasslands or pasturelands are important components for livestock production system (Fageria et al., 2010). So, it is needed to identify and investigate grazing lands for improvement grazing lands for higher production of Chauri.

2. Materials and Methods

2.1 Experimental site

This study was conducted at the study site of the Bhotekoshi Rural Municipality ward number-1, Sindhupalchok (27.878° N, 85.981° E and 1938 masl) from 7th March to 13th March, 2021.

2.2 Observed site and altitude

Observed site and altitude is presented in Table 1.

Table 1 Recorded observed site, altitude and grazing lands of chauri at Bhotekoshi Municipality ward-1, Sindhupalchok, 2021

SN	Observed site	Altitude (m)	Remarks
1	Chhakam	2484	Observed grazing land, Fodder tree, Source of Water and Animal path
2	Naugang	2650	Observed grazing land, Fodder tree, Source of Water and Animal path
2	Thakthok	3087	Observed grazing land, Fodder tree, Source of Water and Animal path
3	Shodang	3449	Observed grazing land, Fodder tree, Source of Water and Animal path
4	Bagmara	3449	Observed grazing land, Fodder tree, Source of Water and Animal path
5	Rupthank	3500	Observed grazing land, Fodder tree, Source of Water and Animal path

SN: Serial Number, m: Meter

2.3 Focal Group discussion and Individual interaction about grazing system and Chauri farming

Focal Focal group discussion was conducted with twelve member of Chauri farmers with open and close ended questionnaire. Questionnaire were grazing land status, Water source in grazing land, Toxic plants, animal trail, and possibility to improvement of grazing lands.

3. Result and Discussion

3.1 Population of Chauri at Bhotekoshi Municipality ward no-1, Sindhupalchok, Nepal

Different parameter of milk composition of Nak, Chauri, Local cow, Jarsi and Holestein are given in table 2.

Table 2 Composition found in milk of different Cattle

SN	Parameter	Nak	Chauri	Local cow	Jarsi	Holestein
1	Milk Production, Kg	1.11	1.40	1.85	18.33	25.00
2	Fat, %	6.45	7.32	4.17	5.14	3.45
3	SNF, %	11.50	11.08	9.09	9.42	8.56
4	Proten, %	5.94	5.53	3.04	3.80	3.15
5	Lactose, %	4.68	4.70	4.76	4.87	4.65
6	Total Solid Matter, %	17.93	18.40	13.20	13.57	11.93
7	Water, %	82.60	81.60	85.00	85.43	88.07

Kg = Kilogram, %=Percentage

Source: Department of Livestock Service, Hariharbhaban, Lalitpur, Nepal

Chauri milk is more important than other cattle milk because good chhurpi and cheese can be prepared from chauri milk. Chauri milk have high fat percentage as compared to other cattle milk. It is more expensive and valuable due to organic and medicinal point of view. Production found in highest at month of July, when grasses are abundant and nutritious (Chaeng, 1984). So, more focus should be given forage production.

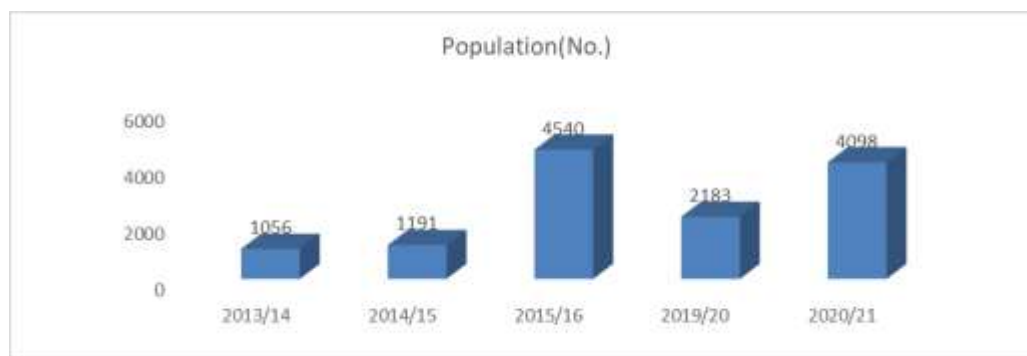


Fig 1 Population of Yak/Nak and Chauri trend at Sindhupalchok District, Nepal

Source: Department Livestock Service, Hariharbhawan, Lalitpur, Nepal, 2022

The Population of Chauri was found that sometime population increased and sometime decreased due to Nutritious problem and foot and mouth disease problem. We didn't care in health sector for chauri as compared to cattle. No any vaccination program was launched in case of chauri herd. Chauri also faced feed deficit at snowfall time. Chauri are reared at snowfall time or feed deficit time by feeding lower quality hay.

Table 3 Species Fodder tree and forage observed during field visit at Bhotekoshi, Sindhupalchok, 2021

S.N.	Common name	Scientific name	Local name	Altitude (m)
1	Nigalo	Drepanostachyum intermedium Munro Keng f	NA	Up to 4000
2	Oak (Honey dew oak)	Honey dew oak- Quercus faginea L.	Khasru	2500-4500
3	Oak (Pedunculate oak)	Quercus robur L.	Khasru	2500-4500
4	Oak (Black lovege oak)	Quercus sps	Khasru	2500-4500
5	Indian currant	Symphoricarper orbiculatum moench	Chutra	2500-3000
6	Dhudilo	Ficus namarolis	NA	Up to 2500
7	Gobleso	NA	NA	2800-3200
8	Ramur	NA	NA	Up to 2500

S.N. = Serial Number, NA = Not available, m = Meter



Figure 2 Looping of forest oak and graze Chauri



Figure 3 Observation of grazing land with chauri farmer

Focal Group discussion and Individual interaction about grazing system and Chauri farming

The oak forest has been seriously lopped out and threatened to its existence due to frequently cut system. Due to shortage of pasture, the productivity of the Chauri has been declined significantly and the Chauri farming business is no longer and beneficial if the productivity of pastures would not be improved or supply of forage could not be adequate. Water source and pasture land is not together in somewhere. The farmer faced difficulty to move Chauri for drinking water due to long distance. The Chari farmer faced the problem of poisonous plant like locally called Chyatu, Bikh, Pra etc. Also, they feel lack of knowledge gap of proper Chauri farming (Focal Group Discussion report, 2021).

4. Way Forward

From focal group discussion, we identified following measures for improvements of the pastureland and forage development for Chauri farming improvement.

4.1 Renovation of native pasture lands

There need to be over-sowing with improved species in altitude (2450-3000 m). Perennial rye grass, Cocksfoot, White clover, Red clover, Buki, tall fescue etc. should be over sowing.

4.2 Rotational grazing

Rotational grazing should be applied. If rotational grazing applied, there is a high chance to save fodder grass. Rotational grazing enhances to fodder trees as well as forage grass establishment. It reduces the chance of fodder tree as well as forage grass scarce.

4.3 Management of weed and toxic plants

Clearance of weed and toxic plants (Chyatu, Bikh, Pra) is necessary from the pasturelands.

4.4 Managements of drinking water, trails and bridge

There should be management of provision for drinking water, trails and bridges for easy access to the pasturelands. This area is difficult to animal movement for drinking water so should manage this problem.

4.5 Other managements

- If the alpine pasture could be improved, the Chauri could stay for three months (April, May and June) reduce the grazing pressure in oak forest (Locally called Khasru).
- The on farm pasture could be developed between the altitudes of (2450-3000 m) for Chauri.
- Alpine and cold tolerant fodder trees (like Bains, chuletro, Bhotepipal, Dhidilo, Rubiniya upto 2700 m) should be planted as source of fodder.
- Involvement of all herders in the formation of the Central Committee under the Forest User Group for development of policies pastureland management.
- Hay conservation should be applied at surplus season and feeding to lean season to Chauri. Hay is prepared from thin stem forage grass like oat, rye grass and other grass.
- Domestication is also another solution.
- Training should be given to following topics to the Chauri farming group
 - (i). Establishment of pasture and fodder tree nurseries
 - (ii). Field level training to herders in "Animal health Improvement"
 - (iii). Fodder conservation like hay making training to the herders
 - (iv). Quality Churpi making training to all Churpi makers
 - (v). Establishment of improved pasturelands for demonstration
 - (vi). Improvement crossbred cattle farming tour and trainings

5. Conclusion

For successful Chauri production program of Yak and Chauri, There must be improved grazing land by sowing improved forage and fodder tree in grazing land. Rotational grazing should be applied in forage scarce period. Easy access should be made for animal movement for drinking water.

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