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Impediments of Yak Farming: Opinions of *Brokpas* from Sakteng

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ABSTRACT

This study was conducted to understand and document different factors affecting yak rearing practices in Sakteng block under Tashigang district. In total, 60 yak rearing households were randomly selected and interviewed, using a semi-structured questionnaire to gather desired information. The results indicated a decline in yak rearing households by about 38% over the past five years. The major factors reported were high incidence of mortality from a locally known disease called "*Rhimney*", inadequate pastures, and labor shortages to manage the herd that contributed to the decline in yak farming. About 90% of yak mortality as reported by 40% of respondents was attributed to *Rhimney*. About 40% of respondents reported inadequate pastures as a cause of decline in yak population and yak farming, and the remaining 20% of respondents reported labor shortage to manage herd as the major concern affecting yak rearing.

There was a contradicting response from the respondents on the average yak herd size maintained at the household. It was recorded that about 60% of respondents reported a decline in yak herd size, 23.4% of respondents reported yak herd size to be static, and 15% of respondents reported an increase in yak herd size over the years. Considering a decline in yak population and yak farming households over the period, it is time to undertake appropriate policy interventions to make yak farming attractive and sustainable.

1. INTRODUCTION

Yak [*Poephagus grunnines* or *Bos grunniens*] is one of the world's most remarkable domestic animals that thrives under extreme climatic conditions, providing means of livelihood for high mountain people [Weiner 2003]. Yak domestication has led to progress, prosperity and economic advancement of herdsmen because of its value as pack animals and diverse products from milk, hair, hide and meat [Rhode et al. 2007]. Yak is the most ecologically sustainable animal genetic resource of the high Himalayas, which provides livelihood support and nutritional security to the highlanders [NRCY 2015]. Besides providing milk, butter, cheese, meat, leather and wool, yak is an important mode of transport for the people of the Himalayas and plateaus of Central Asia [Joshi 2005]. Since yak is the sustainable source of cash income for the people of alpine region, without yaks, the survival of herdsmen in such a hostile environment is unimaginable [Ghatani and Tamang 2016]. Yak is found only in Asia viz. China, Mongolia, Nepal, India, Pakistan, Afghanistan and Bhutan.

Estimated to be about 5% of the country's population, yak herders of Bhutan reside in the northern alpine region between 2,500 and 6,000m [Bonnemaire and Derville 2010]. Yak rearing follows the age-old traditional practice of migration from lowland to highland in summer and vice versa in winter. Yak sustains the herders' livelihood, as crop production is not feasible in the alpine region, due to freezing temperature. *Brokpa* or the community residing in alpine region, not only rear yak as a main source of livelihoods but also have a firm belief that yak is a gift of God. However, over the years, both yak rearing households and yak population have declined, due to socio-economic development in the Himalayan farming system [Wangchuk 2014]. The decline in yak population has been attributed to low economic return from yak husbandry [Shaha 2000], and dwindling interest of younger generation to continue traditional yak herding [Weiner 2013]. The decline is also caused by other lucrative economic activities, which guarantee an easier access to social services and economic opportunities. Passang [2012] reported a decline in yak population by half over the last decade in nineteen villages under three blocks of Katsho, Bji and Esu under Haa district. A decline in yak rearing is also found in India and Nepal, which is attributed to youths desiring for a better and more comfortable life at middle and low altitude areas [Pal 1993]. In Bhutan, the decline in yak farming is a major concern, which if remains unchecked, will have huge implication on the age-old farming tradition and overall ecosystem balance in the alpine region. Among studies conducted in Bhutan, Wangchuk et al. [2015] highlighted a decline in yak farming in the cordyceps growing areas in alpine region. However, there is no specific study conducted in eastern Bhutan where alpine areas do not have cordyceps, yet there is steady decline in yak farming. It suggests that there are other impediments of yak farming, which remain

uninvestigated. Therefore, this study was undertaken with the main objective to gain deeper understanding of factors affecting yak farming in Sakteng block under Tashigang District.

2. MATERIALS AND METHOD

2.1 Study area

The study was conducted in Sakteng Gewog [Block] stretching from latitude 270 17.84 to 270 18.51 °N and longitude 910 50.76 to 910 52.12 °E under Tashigang district in Eastern Bhutan [Figure 1]. The block shares its border with Merak block to the south-west and Phongmey block to the south, and Tawang district of the Indian state of Arunachal Pradesh to the north-east. Yak farming is the main source of livelihood, as crop production is less feasible due to short summer and long cold and dry winter.

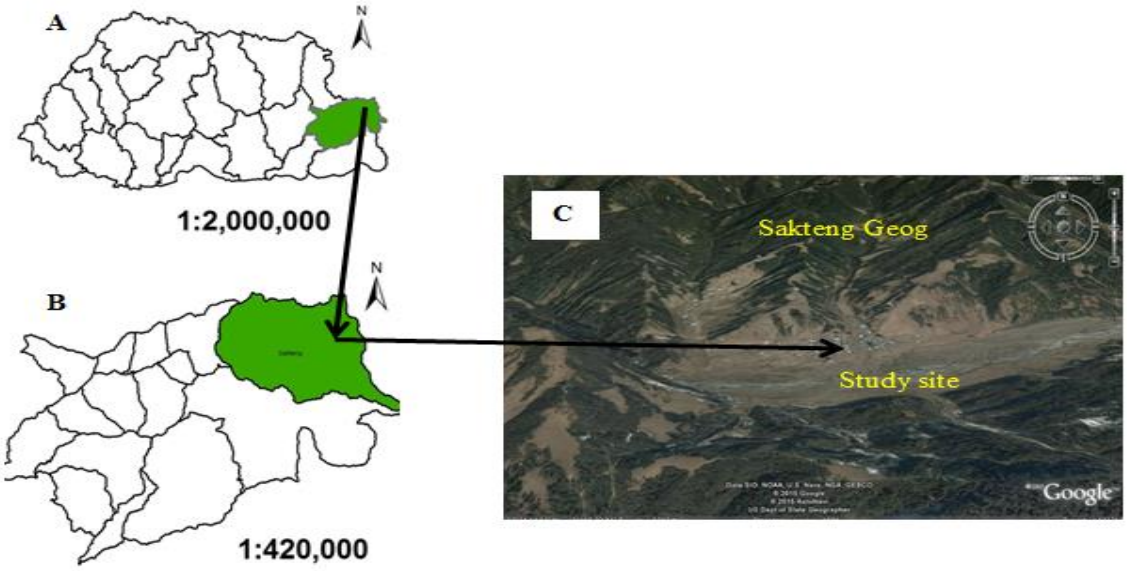

Figure 1: Map of study area.

2.2 Data Collection

The study selected randomly 60 out of 122 yaks rearing households fully dependent on yak farming [Livestock Statistics 2015]. The field survey was administered through interviews, using a structured questionnaire. The questionnaire had questions on factors deterring yak rearing in Sakteng block and reasons for abandoning yak farming over the past five years. To determine change in yak herd size of households interviewed, respondents were asked on whether their yak herd size had increased or decreased over the past five years. Respondents were asked on pasture holding status to determine what percent of households owned sufficient pastures to rear yaks. Respondents were also asked on the issues related to pasture degradation and conflict with conservation group. In addition, information was gathered through informal discussion with elderly people to understand the perception on future sustainability of yak farming. Secondary data were gathered from the Livestock Extension Office.

2.3 Data Analysis

Data gathered were analyzed with descriptive statistics in SPSS version16.

3. RESULTS AND DISCUSSION

3.1 Cash income source and marketing of dairy products

Yak products were used for household consumption. Only excess products were either sold or bartered for other basic necessities. Butter and fermented cheese were two most common products from yak. Other main products produced from yaks were wool, which is used for making bags, ropes and garments. The products were also offered as gifts to relatives and neighbors. The households' main source of cash income was the sale of butter and fermented cheese. Fermented cheese had higher demand in the market than butter, and also fetched higher prices between Nu. 350-400 per kg, against Nu. 200-250 per kilogram of butter. On average, each household earned Nu. 60,416.66 annually from the sale of fermented cheese and butter. From the total annual cash income generated, about 90% were spent on buying household necessities such as salt, rice, maize, millets, barley and clothes. About 20% of respondents reported that the income generated from sale of yak's products was not enough to cover the household expenditure, and the remaining household expenditures were met through income generated from involvement in other off-farm activities i.e. construction. Most respondents indicated that the value of butter has dwindled compared to fermented cheese over the decade, due to ready availability of refined

cooking oil in the shops. About 70% of products were marketed to Tawang in Arunachal Pradesh, India and the remaining 30% were marketed in Radhi and Phongmey *Gewog* under Tashigang *Dzongkhag*.

3.2 Alpine pasture, labor shortage and livestock diseases

The number of households rearing yaks had reduced by about 40% in 2015, as compared to 2011 [Figure 3]. At this declining rate, there will be a few or no households rearing yak in a decade from now. The main factors contributing to a decline in yak farming are presented in Figure 4.

About 40% of respondents had abandoned yak farming due to lack of adequate grassland to feed yaks. About 48% of respondents owned sufficient private pastures, 47% of respondents owned some pastures but were inadequate and they were dependent on other pastures, and 5% of respondents did not own pastures at all round the year [Figure 5]. About 78% of respondents reported an issue of pasture degradation, and remaining 20% did not express their views. The causes reported for pasture degradation varied. Five percent of respondents reported that overgrazing was partially caused by the upward migration of sedentary livestock [Cattle] to summer pastures of yak, which escalated grazing pressure, 16.7% of respondents reported that accrued users among the household members deteriorated pastures, 11.7% of respondents reported increase in less productive yak population as a cause of high pressure on grazing resources, and 66.6% of respondents reported invasion by unpalatable trees and bushes as a cause of degradation of grazing resources. They also reported that around 33% of pasture was covered by bushes and trees after government exercised control over timber harvesting and prohibited burning to improve pastures.

Respondents abandoned yak rearing due to labor shortage to manage the herd at household level. Yaks from these households were sold to neighbors who had adequate labor to tend yaks. Of the several reasons outlined, inadequate grassland and labor shortage to manage yaks featured as major reasons for abandoning yak farming, followed by increasing incidence of diseases causing high yak mortality. About 20% of households with small herd size abandoned yak farming because of constant occurrence of locally known disease '*Rhimney*'. According to a local elder, the symptom of *Rhimney* ranges from; early diarrhea, poor grazing, wounds and crack on mouth and foot, and shedding of hair from backside of the body. Furthermore, the local elder expressed that, yaks that died from *Rhimney* had soft bones. Many respondents in this

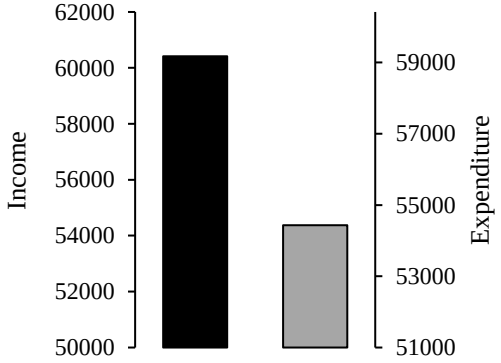

Figure 2: Income and expenditure.

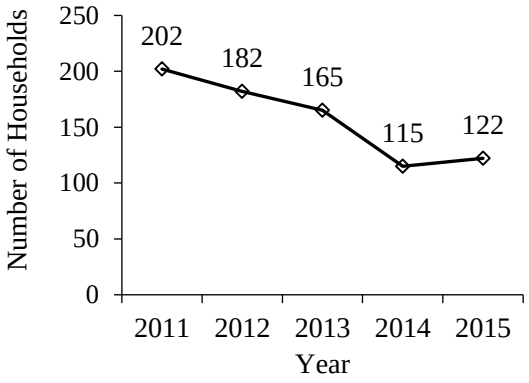

Figure 3: Trend of household rearing yaks [2011-2015].

Figure 2: Percentage of respondents on pasture holding status [N=60].

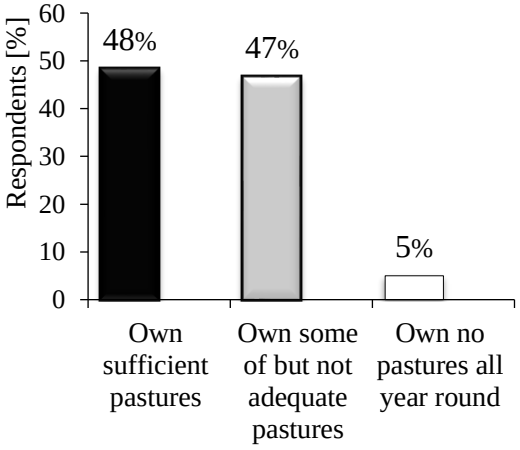

Figure 3: Factors contributing to decline in yak farming

study related *Rhimney* to plant poisoning, resulting from yaks feeding on Senecio plants when grazing resources are scarce during the severe winter months. As such, this disease in yaks affected milk productivity.

As shown in Figure 6, about 61.7% of respondents reported that the yak herd size had declined, 23.3% of respondents reported that the yak herd size had remained same, and interestingly 15% of respondents reported that the yak herd size has increased over the years. The reasons mentioned for the decrease in yak herd size include occurrence of disease, insufficient of pastures, wild animal attack, and labor shortage to manage herds [Figure 7]. Around 46% of respondents indicated that incidences of diseases, especially *Rhimney* led to death of yaks and decrease in yak herd size, 16.4% of respondents reported that the loss of yaks to wild dogs had decreased the herd size, and 27.1% of respondents reported lack of sufficient pastures as another factor that prevented increase in herd size. Ninety percent of respondents expressed that yaks become more susceptible to diseases and had higher chance of death when grazing on scarce grazing resources. This made yaks to depend on toxic weeds like senecio plants. Another 10% of respondents reported labor shortage as another factor that contributed to decline in yak herd size. Labor shortage resulted from young people getting enrolled in schools and leaving behind only few people to look after yaks. A decline in yak population has also been reported in India and Nepal [Pal 1993].

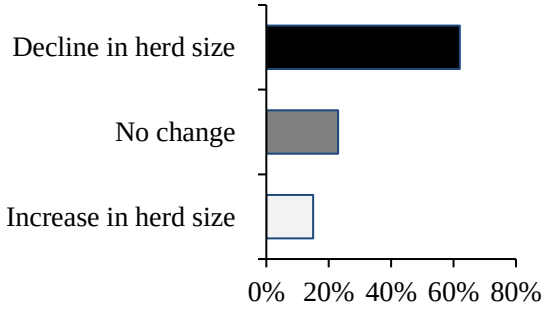

Figure 6: Status of yak herd size [N=60].

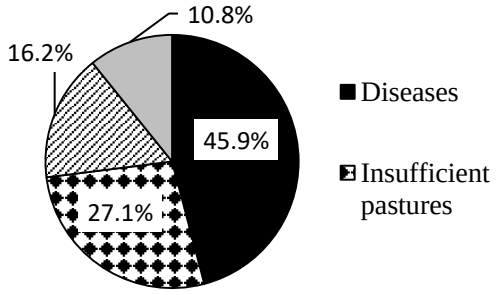

Figure 7: Causes of decline in herd size of yak [N=60].

3.3 Youth's attitude toward yak rearing

The younger generation desiring for better and more comfortable life is likely. As a result, it might have a huge impact on the future of yak farming. About 65% of respondents indicated that their youths are less interested to take up yak farming. Maiti [2014] reported that the younger generations of yak herdsmen are not willing to continue with the age-old yak rearing as their profession, because transhumance system of livestock rearing is considered as difficult, tough and it devoid of modern amenities. But that are also youths interested and willing to embrace yak farming as a source of livelihoods, according to 35% of respondents. This may keep alive the age-old traditional yak farming practices. Government needs to capitalize on this group of youths and provide necessary supports for the sustenance of their livelihood.

3.4 Rural-urban migration

Only 18.3% of respondents reported that youths migrated to urban areas aspiring to seek lucrative jobs. The remaining 81.7 % respondents reported that youths had not out-migrated and they did not face labor shortage.

3.5 Factors likely to cause decline in yak rearing in future

Yak rearing is currently affected by occurrence of diseases, insufficient pastures, wildlife depredation, and labor shortage [Figure 8]. Of several reasons, emerging diseases, wildlife depredation and insufficient of pastures were major constraints to successful yak rearing. This, as a consequence, will have negative effects on the interest of youths who would want to pursue yak faming. About 31% of respondents reported that youths are likely to shift from yak husbandry practices to other income generating activities due to difficulty, emerging challenges and low income from yak farming. About 25% of respondents reported that insufficient pastures to increase their herd size may cause decline in yak rearing in future.

Households that owned less pasture are more likely to abandon yak rearing in future as they encounter difficulty to get pastures on lease from those who owned sufficient pastures. About 19% of respondents reported occurrence of disease, especially *Rhimney*, as a reason that could cause a decline in yak rearing. This is mainly because the disease has negative effect on milk productivity.

Increase in predators is another threat to survival of yaks. The common predator that attacked yaks was wild dogs. Therefore, 13% of respondents reported that the increasing number of wild dog depredation will decline yak rearing in future. Another 12% of respondents reported that yak farming is getting difficult.

3.6 Government support

Yak development in Bhutan is a priority of Ministry of Agriculture and Forests. To promote yak rearing among highlanders, herders were provided breeding bulls, subsidized milk churning machines, and scissors to shear yak hair. However, 99% of respondents mentioned that they did not receive trainings related to yak management.

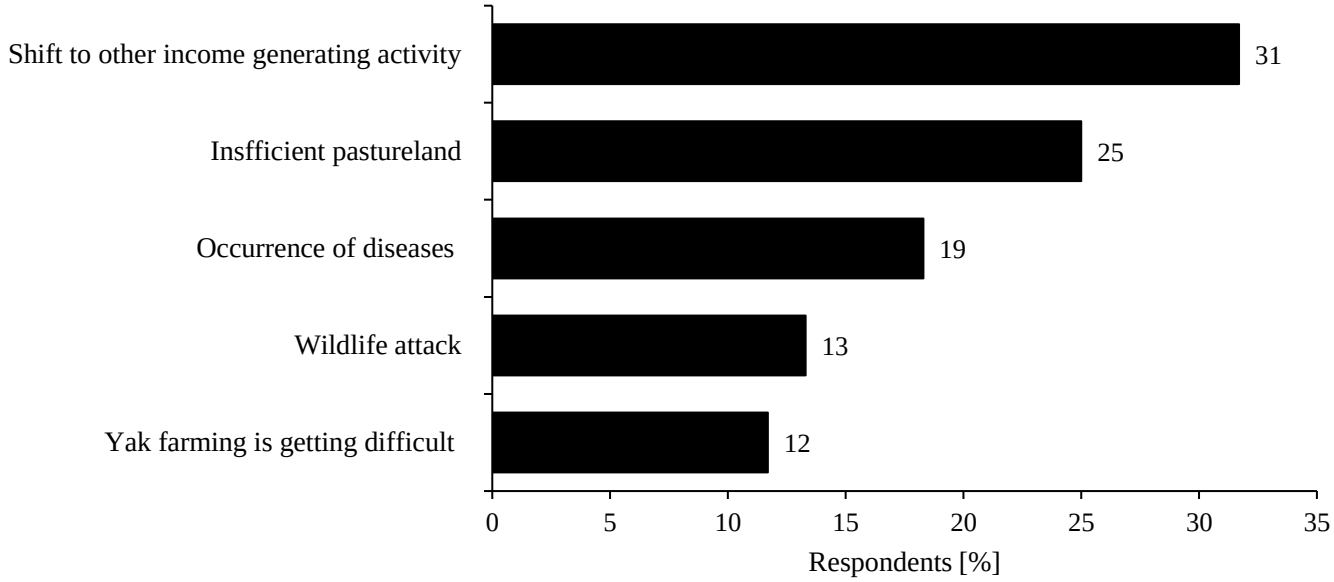

Figure 8: Factors likely to cause decline in yak rearing in future [N=60].

3.7 Interventions expected from government

The intervention measures as suggested by respondents are presented in Figure 9.

- Dominance of trees in pastures after government prohibited burning and has led to invasion of pastures by woody plants. Therefore, respondents suggested the need for the government to revise policy framework to control the growth of undesirable plants in their pastures.
- Respondents suggested a need for studies to find remedy for fatal *Rhimney* disease. The cause of this disease still remains mystery to many herders although they relate it to plant poisoning. This disease occurs in yaks mostly in the month of May, June and July. According to respondents, yaks have slim chance to survive once this disease attacks.
- Compensation for loss of yaks to wildlife depredation. Loss of yaks to wild dogs is a burden for herders. Therefore, respondents suggested government to compensate for the loss of more than three yaks to predators. The primary objective is to buy yaks to cover the loss and to sustain yak farming.
- Respondents feel more comfortable with customary right of using pastures even while migrating to other pastures. But the new Tsamdro lease is likely to create inconvenience among users.

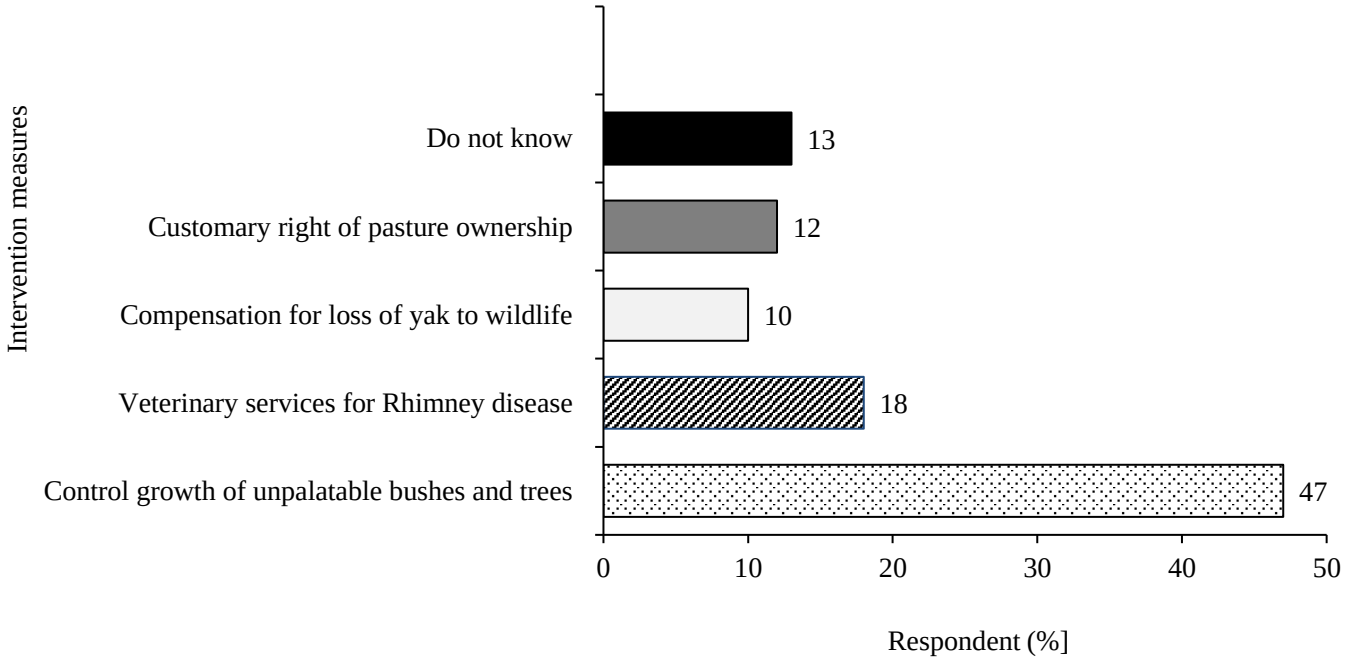

Figure 9: Government interventions requested by respondents to sustain yak farming

4. CONCLUSIONS

The decline in households rearing yaks and dwindle in herd size of yak at household level were attributed by various factors; youth less interested to continue yak rearing as their source of income, labor shortage to manage the herd as younger ones are enrolled in schools, occurrence of diseases that led to yak mortality, and lack of sufficient pastures to develop the herd. These are the major constraints that inhibited the success of yak raring. As a consequence, it is likely to affect the interest of younger ones to continue their parent to endure yak rearing. Therefore, to ameliorate the challenges confronted by the herdsmen, there is need of appropriate intervention design such as; medical facilities to reduce incidence of disease [*Rhimney*] that particularly threaten the survival of yaks, allow control of bushes and trees in pasture which is prohibited by conservation law, and need of coherent policy for highlanders to encourage youths to take yak rearing as their source of income.

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