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RESEARCH ARTICLE

AN ANALYSIS OF LAMBING SHED IN CHANGTHANG REGION WITH SPECIAL REFERENCE TO NYOMA BLOCK, UT LEH LADAKH

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ABSTRACT

Sheep and goat are the important component of the changthang nomade in respect to their rural economy and livelihood particularly changthang a semi-arid and mountain area of Himalaya in ladakh territory where climate is too harsh temperature -30 degree in winter and 30 degree in summer. Due to harsh winter season and lack of proper shelter cause death of 1090 kids/adult sheep and goat which is 23.81% of total mortality from different sources, which consist (62.9%) i.e. 2879 Lamb/kids and (37.09%) i.e. 1698 adult sheep and goat. By considering all this figure there is need to be improvement in to the shelter system so that mitigate some sort of economic loss, since sheep/goat do not need much expensive building to house and a very less number of man power is required to handle it. The shelter is not confined to sheep/goat kept but it have some alternative use in the summer season too, almost 100% household respond that yes there is alternative use of lambing shed, (93.3%) i.e. 56 household out of total 60 household use it for green house purpose, (3.3%) i.e. 2 household use it for Kitchen garden and rest (3.3%) used it for storage purpose.

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INTRODUCTION

The chnagthang region lie in the mid of trans Himalayan region on the apex head of Indian territories which is the extension of the great Tibetan plateau, this plateau is wide spread among from Durbuk in the north through demchok and Koyul in the eastern to chumur and korzok in the southern most point to Rumtse in the west. This area is bounty with the natural beauty of lake, spring, wide spread green pastoral land and worldwide known species like black-necked crane, snowleopard, Tibetan wild ass and Tibetan gazelle (*procapra picticaudata*) etc which are on the brink of extinction in world

Ladakh is a tribal area consist of more than eight tribe among chang-pa inhabit of changthang area is one of the major tribe the changpa are the nomadic and pastoralist their economics and social life is entirely depend upon the livestock including sheep, goat, yak, drimo, cow and horse. These livestock provide wide range of product and services to the residence. The domestic of changthang produce one of the finest cashmere wool or pashmina in the world locally its known as Le-na. Which is the main stay of their economy by selling them in to raw form to the local market or to various intermediate which further cleaned and dehaired it.

The quality of the pashmina is characterized by the long staple length and small fiber diameter it's observed that trait of finest pshmina fiber is 2-3 inch length and $11.99 \pm 0.22 \mu$ (microns). The male goat can yield 256.90 ± 6.64 gm and female goat can yield 240.68 ± 5.10 gm of pashmina. Pashmina is known for its unique feature the fibers is warmth, lightness and better ability to absorb dyes and moisture compare to wool. Since people are mostly nomade moving from place to place in the search of pastoral land so they keep other livestock used it for specific purpose like yak and horse for transportation, sheep and goat for wool and chevon, milk and manure. Pashmina fiber from the goat and wool from the sheep are harvested once in the year on the set of summer (june and july). The equipment used form harvesting the fiber and wool from animal by iron made combs scissor one by one sequence which consume lots of time and energy its observed that approximately 20 minute consume per head. Therefore it's crucial to find the solution to mitigate this problem.. The objective of conducting this survey is to highlight the problem face by the native and find the alternative solution which is more economical in nature saving time and money. Sheep shearing machine may be one of ultimate solutions to solve this problem, sheep shearing machine is extensively used to cut hair from the sheep body which replace the manual scissor, achieve greater level of productivity reduce time and money.

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Now in this technical era numbers of potable machines are developed available at various affordable, but the challenges are to selection kind of machine which is feasible for surveyed area. Selected surveyed area Nyoma block of changthang territory with lack of power grid.

Study area: The proposed survey took place in three village in Nyoma block namely Nyoma village, Mudh village and Hanley village. This is located at about 180 Km south east of leh, the district headquarters. Elevation 4,180 above sea level, according the data realized by chief medical office leh district in the year 2018 Nyoma block consists of 22 small villages backed by 5486 people with sex ratio (1.03:1) having 1023 household, whereas 90 household in Mudh village, 135 household in Nyoma village and 188 household in Hanley village. As per Sheep husbandry departmental report of leh district 2017-18. Sheep and goat rearing are mostly concentrated in two blocks of the district viz Nyoma and Durbuk, having 219198 nos of pashmina goats, 16199 nos of Non pashmina goats, 110943 nos of sheep and 1520 nos of other livestock. Agriculture is the secondary occupation with an total area of 846 hectares out of which 33% of total land are cropped area, Oats, barley and pea are main crops produce in this semi-arid region, stream is the source of irrigation tributaries of Hanley and Indus river.

MATERIALS AND METHODS

These surveys were carried out between February and March 2020. An organized field study conducted on changthang livestock especially focus on mortality of different livestock due to lack of proper shelter and alternative use of lambing shed as a greenhouse for vegetable production, Income generation from livestock and farming too by the Himmotthan society as a part of Collectives for Integrated Livelihood Initiative sponsored project entitled "Promoting Decentralised Renewable Energy Solution to Enable Rural Livelihood" the data were collected largely through structured questioner consist of both open ended and closed ended question both in three villages and Herder camp by interviewing one adult member of all the 60 families (4 family from Nyoma, 8 from Mudh and 48 from Hanley). Information collected on family size, live stockholding, sheep shearing practices, pashmina and sheep wool production, income from different sources, agriculture and irrigation sources etc. agriculture growing season is very confined to a short period in summer (May to Sept), and the vegetation is characteristic by the alpine steppe and there are no trees except for the willow in some scatter part of village.

RESULTS AND DISCUSSION

Household detail: The Nyoma block is selected for the surveyed area inhibited with large number of herder camp and bulk number of livestock holding especially Pashmina goat and sheep, the three Villages had a total population of about 1751 and 700 household on an average of 3 people per family, a total of 60 household from 3 villages were purposely selected and interviewed 4 household from Nyoma village, 8 from Mudh village and 48 from Hanley village which contribute respectively 7%,13% and 80% to the total selected samples. Since maximum population are nomadic in nature which is their primary occupation about (65%) to total selected

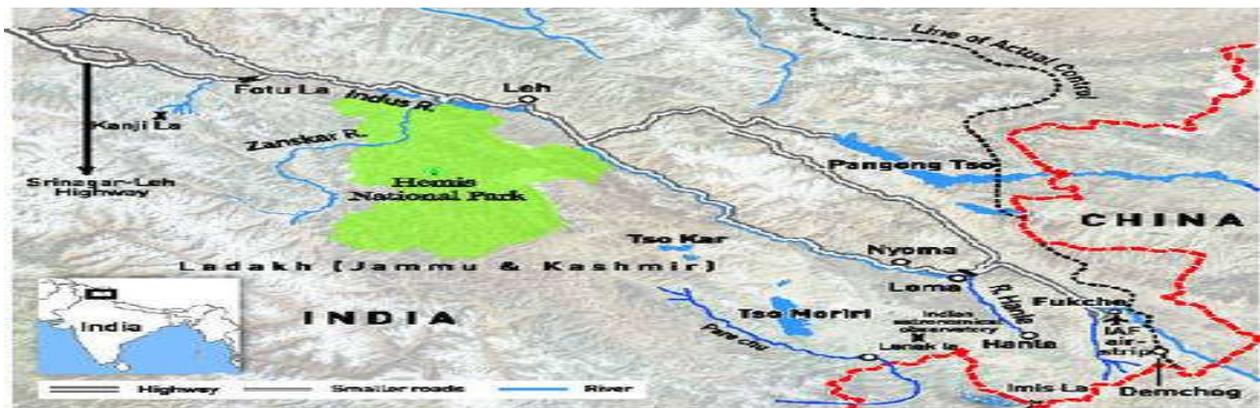
household earn 40,000 to 50,000 (INR) per annum follow by (25%) earn 50,000 and above per annum. Agriculture is their secondary occupation about (75%) to total household earn 1000-2000 INR per annum follow by (15%) earn 3000 to 4000 per annum., majority of interviewed adult member are between 30 to 40 year old and 40 to 50 year old which is (28.33%) each. Follow by 50 to 60 year old (25%). The average daily electricity available about (66.67%) of total household respond that their daily electricity available through off grid using solar and battery is about 3 to 4 hrs. which incurred 100 to 200 INR per household responded by (83.33%) household. It's clearly state that people of these villages are not aware current govt. policies and programs through which various financial and non financial aids were provided, none of these household were membership with any community and registered with the govt. portal.

Ration card holding: The percentage share of different ration card holding by the selected, the entire population is divided in to two major sections above poverty line (APL) and Below poverty line (BPL) about (73.3%) of total house hold holding BPL ration card and rest (26.7%) holding APL ration card. So in this respect maximum population lie below poverty line, there is need to revive their economy, this can be done by optimal utilization of their existing resources in best way i.e. either by providing financial aids or by adding human capital through training and program so in this respect we may reach to track of equilibrium.

Categories: Entire population is divided in to two major categories Schedule tribe (ST) and Registration certificate (RC). Generally ST's are the Indian national which is (86.7%) of total selected household and the rest are the RC, these are the Tibetan refugee popularly known as TR who influx in to Indian territory during 1962 Indo sino war, this people are like the changpa, rear variety of Livestock consist of yak, Drimo, sheep, goat etc which contribute rest (13.3%) of selected house hold.

Livestock: The above figure 2 revealed the different kind of occupation practices by the selected household from three different villages in Nyoma block respectively Nyoma, Mudh and Hanley, the result find out that about (98.3%) of total population whose primary occupation is Nomadic rearing different livestock including sheep, goat, yak, drimo, horse and cow. Earning livelihood through selling their wool, meat, manure, leather, milk, dry cheese, and livestock in the local market. On the other hand, a very a smaller number of marginal household has agriculture as their primary occupation i.e. only (1.7%) of total household. Since both livestock and agriculture are co interdependent on each other either for fodder or self-consumption therefore about (66.7%) of total selected household engage in both the occupation i.e. Nomadic and farming too.

Figure 3 embody different types livestock owned by the selected household including both male and female; generally they keep 6 types of livestock out of which Goat dominate livestock population it may be due to its high valued cashmera wool having huge demand in both local and international market at very high price, earning handsome income. A total of 8287 number of pashmina goat owned by the selected household including 4304 male and 3984 female goat, follow by sheep of total 4442 numbers. Yak is the male version and female yak is known as drimo both are most crucial livestock



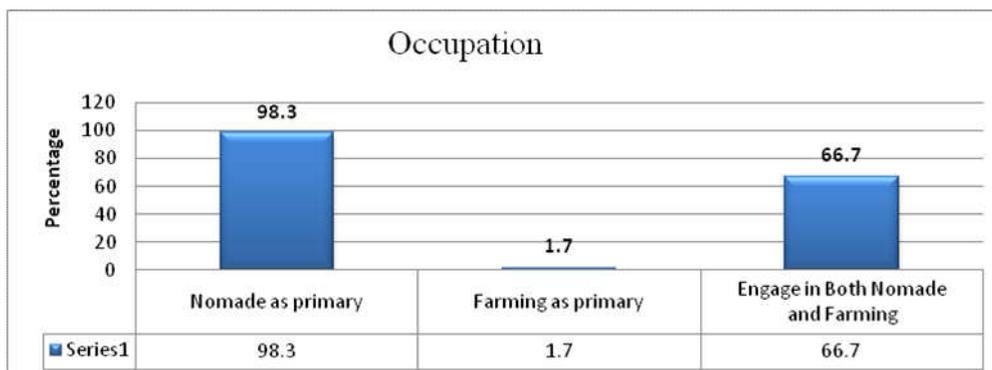
Map of Changthang, Ladakh showing the surveyed areas (Block Nyoma – 1=Hanley Village, 2= Mudh Village, 3= Nyoma village).

Figure 1

Table 1.

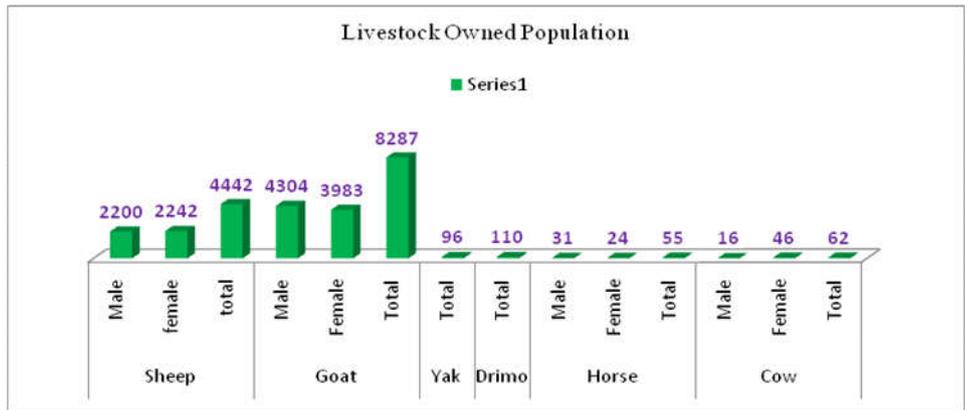
Particulars	Value
Primary Occupation Annual Income (INR)	
0-40,000	6 (10)
40,000-50,000	39 (65)
50,000-Above	15 (25)
All	60 (100)
Secondary Occupation Annual Income (INR)	
1000-2000	30 (75)
2000-3000	4 (10)
3000-4000	6 (15)
All	40 (100)
Ages of family member (No.)	
30-40	17 (28.33)
40-50	17 (28.33)
50-60	15 (25)
60-70	7 (11.67)
70- Above	2 (3.33)
Average daily electricity available (hrs)	
1-3 hrs	1 (1.67)
3-4 hrs	40 (66.67)
4-5 hrs	19 (31.67)
Monthly electricity expenses (INR)	
100-200	50 (83.33)
200-300	10 (16.67)
Member ship with any community Institution and registered with govt. Portal	
YES	0 (0%)
NO	60 (100%)

Note: Figures within the parentheses indicate percentage



Sources: Tata trust (Himmothan society leh)

Figure 2



Sources: Tata trust (Himmothan society leh)

Figure 3

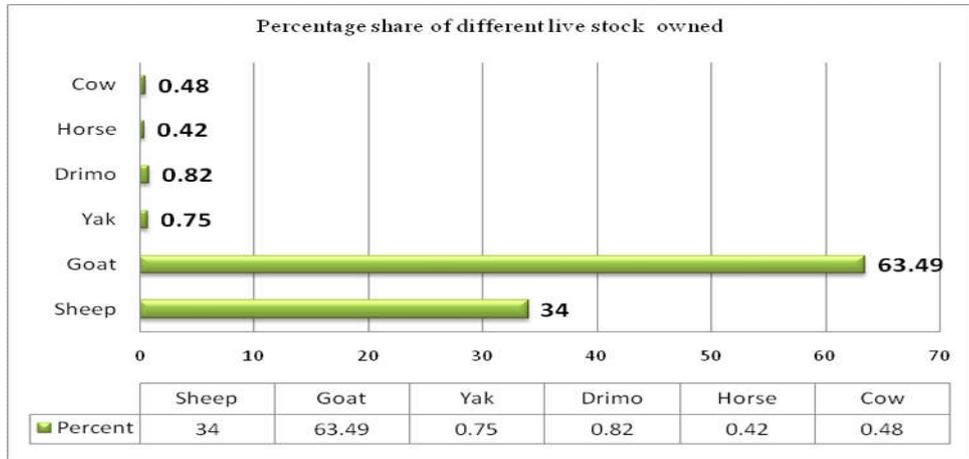


Figure 4

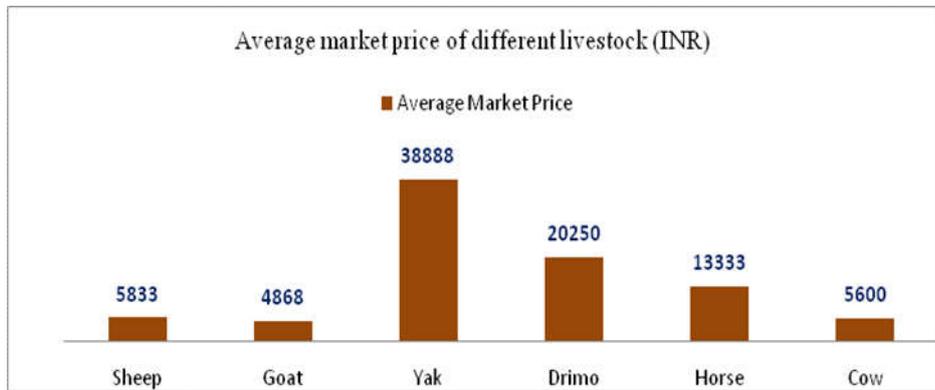
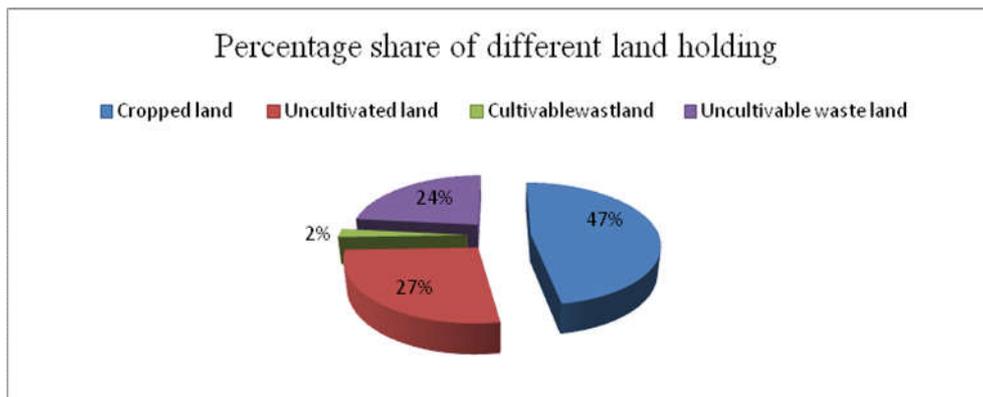


Figure 5



Sources: Tata trust (Himmothan society leh)

Figure 6

generally used for the logistics moving from one pasture land to another pasture land but owned very less in number i.e. about 96 number of yak and 110 number of drimo, drimo are used for dual purpose both logistic and milk. A very less number of horses and cows were owned respectively 55 horse and 62 cows. Above figure 4 represent the percentage share of different live stock owned by the selected household in three villages, goat is the dominated live stock about (63.49%) of total livestock owned are goat only, follow by (34%) sheep, (0.82%) Drimo, (0.75%) yak, (0.48%) cow and (0.42%) horse. Figure 5 indicate the average market price received by different live stock in the local market, one of the major segment of their income is selling livestock, since yak are very limited in population and their price in market is high yak are usually trade for their meat, its heavy weight and size which put its price high, the average market price of yak in local market is ₹ 38,888 per yak follow by female yak Drimo i.e ₹20,250 per drimo and horse ₹13,333 per hoarse. Both sheep and goat are traded for their wool and meat but the price of per sheep is higher than the goat i.e ₹5,833 per sheep and ₹4,868 per goat it may be reason that sheep were generally traded for their meat because of their better quality of meat that why price of sheep is higher than the goat.

Livestock birth: Birth of different live stock in different season, the current surveyed analyzed that usually livestock give birth to their baby in summer season, since goat are owned in large number on an average 3,192 billy were born of which 3192 billy born in summer and only 82 billy born in winter. Sheep were the second dominated livestock after goat on an average 1694 lamb were born of which 1670 lamb born in summer season and 24 lambs born in winter season follow by 60 drimo calf of which 31 calf in summer and 14 calf in winter. Whereas cow equivalently give birth to calf in both summer as well as winter.

Revenue from livestock: Average number of incomes generated from different livestock, owning livestock is the major source of their income meat, wool and milk of sheep, goat, yak, drimo and cow are selling in market. On an average maximum income generated from the sale of yak at ₹ 40, 0000 per household follow by Drimo, sheep and goat respectively ₹25,000, ₹19,091, and ₹15,044. After sale of livestock, meat is next level of income generally the meat of sheep and goat are traded on an average each household earn ₹20,000 from sheep and ₹9,667 from goat, there has been negligible income from the sale of milk either from goat, drimo or cow.

Current shelter practices: Current shelter practices/provision in the three surveyed villages shows that in summer season 59 household out of 60 household kept livestock (sheep/goat) in open field and in winter season 26 household kept livestock in open field and rest 33 livestock closed shelter (corral). The percentage share is depicted in figure 13 i.e. (98%) household keep (sheep/goat) kept out side in summer season likewise in winter (43%) in open field and rest (55%) in closed shelter.

Alternative use of lambing shed: alternative use of lambing shed, since lambing shed is not confined to sheep/goat storage but have some alternative use in summer season, the figure 14 & 15 clearly show that almost 100% household respond that yes there is alternative use of lambing shed, (93.3%) i.e. 56 household out of total 60 household use it for green house purpose, (3.3%) i.e. 2 household use it for Kitchen garden and rest (3.3%) used it for storage purpose.

Agriculture: Agriculture is the secondary occupation of the nomadic people; agriculture does not perform well in such cold semi-arid region since both livestock farming and agriculture are co interrelated to each other particularly for fodder. Despite full of challenges few crops, and tree were growing like Barley, Pea and Oats. Above figure 16 embody the percentage share of different land holding in the three surveyed area, since (1.7%) of total household has agriculture as their primary occupation and (66.7%) of total population has both agriculture and nomadic their occupation. the entire landholding is divided in to four major part out of which (47%) of total landholding is cropped land follow by (27%) of uncultivated land, (24%) of uncultivated waste land and (2%) cultivable waste land.

Different cropped area: Average cropped area covered by per household and total area covered by three crop individually in the surveyed villages, usually three main food crop grow in surveyed area namely Barley (Grim), Pea, and Oats. Barley is cultivated in the total area of 28.1 kanal of land in three villages, follow by pea on 25 kanal of land and Oats on 14.5 kanal. The average cropped area covered per household by each crop is on an average 0.76 kanal of land is used by each household to cultivate barley and around 0.66 kanal each land were used for the cultivation of Oats and Barley.

Annual revenue from agriculture: Average yield of different crop and average revenue generated annually by each crop to each household in the three surveyed area. Since pea is a perfect example of cash crop having ₹81.01 per kg follow by Barley ₹16.37 per kg and Oats ₹10.19 per kg these were shown in above figure 19. The previous figure 20 examines per household average annual production of Pea, Barley and Oats simultaneously explain the average per household yielding. Each household producing 98.75 kg of pea which generate revenue around ₹8000 per annum, likewise 209.08 kg Barley generate annual revenue ₹3428 and 173.09 kg Oats generate revenue ₹1764.28 per annum.

Irrigation: There are four major source of irrigation respectively steam, canal, river and lake out of which more than three fourth of total irrigation is done through Stream which share (76.09%) follow by Canal (13.04%), River (6.52%) and Lake (4.34%).

Conclusion

Livestock is the backbone of changthang economy epically pashmina sheep and goat for the wool production on another side yak and drimo for the logistics and meat purpose. Due to the harsh winter season and lack of proper shelter facility bear huge economics losses in term of number of loss of animal life. In this respect a proper shelters are need of time epically for the young one, since lack of proper shelter cause death of 1090 kids/adult sheep and goat which is 23.81% of total mortality from different sources, which consist (62.9%) i.e. 2879 Lamb/kids and (37.09%) i.e. 1698 adult sheep and goat which are bulk in number just in a minor section of changthang territory. Agriculture is the secondary occupation of the people thus in the summer season when there is no use of lambing shed, these shed can be used as green house to produce fresh vegetable, so lambing shed can be used for the dual purpose both for as livestock shelter in winter season and as a green house for vegetable production in summer season.

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