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Goat Husbandry: An Opportunity to Strengthen Rural Economy in Devipatan Region (Trans-Ghaghara) of Uttar Pradesh

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Abstract: Agriculture is the main economic activity in India which mostly practiced in association with livestock husbandry. Goat is one the most important species of livestock which reared by the poor and socio-economically backward section of rural population. Great market demand for livestock product, diversification of agriculture, rising unemployment level, nutritional requirements, lack of capital to purchase the big ruminants and lack of labour to rear the big animal have fuelled the growth of goat rearing in India. Present study has been under taken to understand the distribution of goat population in time and space, their density and share in total livestock and explore the causes of growth of goat husbandry, in the form of milk and meat production, employment and income generation. The role of goat rearing in rural socio economic transformation has been also explored for development of strategy for alleviation of rural poverty and women economic empowerment in the study area. Devipatan region in Eastern Uttar Pradesh has been selected as the study area to conduct the study. The study has revealed that goat has increased by 21.74 percent in the study area. It also revealed that 20.69 percent Hindu and 78.16 percent are Muslims are rearing goat. The caste-wise involvement shows that there are 20.00 percent Schedule caste, 71.92 other backward castes and 7.69 High caste goat farmers. The cost –income analysis showed positive performance with income over total production cost at least Rs.11854.00 per female goat per annum which varies with stock size up to Rs.14000.00 for big stock size (more than 12 female adult goat). Moreover, nutrition intake is also improved through consumption of milk produced and indirectly helps in saving expenditure for purchasing milk from outside. 71.79 percent responded in positive for improvement in nutrition intake. Economic women empowerment through this occupation is also enhanced as believed by 83 percent of respondents.

Keywords: Market Demand, Fuelled, Meat Production, Income Generation, Women Empowerment, Improvement in Nutrition

1. Introduction

India is dominated by rural economy and still 70 percent of workforce of the country is dependent on agriculture and rural industries for their livelihood and employment. Livestock husbandry has been an integral and complimentary activity to cropping system since antiquity and today this sector played an important role in development of agricultural economy with contribution of 26% to agriculture GDP and 4.11% to national GDP of the country during 2020-21. Indian agriculture transformed and developed in different ways after independence and achieved success in boosting up food crop production and maximum area has been brought under cultivation on account of use of scientific agricultural technology, irrigation and best water management, application of most effective technology like chemical fertilizer, insecticide, pesticide and efficient management of post-harvest operations like storage, transport and marketing and distribution to consumers. Such miracle in agriculture took place at the cost of diversification of crops, livestock husbandry and some allied works as well as environment sustainability. The up surge in area and productivity have been gradually shifted to level of saturation and input cost and output price ratio expanded and resulting in shattering of economic viability of crops under cultivation.

Further, the reduction in agricultural land area due to

increasing urbanization, development of broad road network as express way, allocation of area under special economic zone (SEZ), and development of other infrastructural facilities in recent decades. Million hectares of fertile agricultural land had been encroached and eaten by these activities. Size of operational holding also declined to considerable level with domination of small and marginal farmers holding land less than 2 hectares. The absorption capacity of present cropping based farming system is not sufficient to employ the household as well as hired labours in villages. Such critical situation urges the policy makers, government and the farmers to explore new opportunities of livelihood and employment from treasure and hidden potential of rural environment.

The concept of second green revolution was propagated and introduced by agricultural scientists to tackle the new emerging issues generated as side effects of implementation of first green revolution during 1970's. Diversification of crops and farming systems through development of value added crops and livestock in the form of dairy farming, aquaculture, goat rearing, pig rearing, poultry and horticulture are suggested and adopted by farmers to remove the poverty and improve economic viability of farmers and farming systems.

Goat farming is one of the very important form of livestock husbandry in developing countries especially in India and Pakistan in Asia which accounted for 95 percent of world goat population [1]. India is the largest goat rearing country having 148.90 million heads with 25% share in world. In addition to food, agro-forest-pastoral systems with the presence of goats can provide a wide range of benefits and services to society [2]. They could be reared in harsh and can survive in arid, semi-arid, mountainous agro climatic conditions and even in humid tropical region. Their sustenance mainly depend upon grazing. They are able to browse on plants that would not normally useful for other animals [3, 4].

Goats play an important role in the rural economy at national level. More than 70 percent of the landless agricultural labourers and marginal and small farmers of the rural India rear them. The socio-economic value of goat rearing as compared to other livestock species has been immense for the poors [5, 6]. The cost of production and rearing goat is rather less as they do not need much capital as for cows and buffalo, survive on grazing and agriculture and household wastes, easily marketed for immediate cash need. Among the livestock population goats make an important contribution to the sustenance of small and marginal landholders and landless rural people by their contribution towards marketable commodities such as meat, milk, fibre and skin [7]. A major part of their fodder requirement is met through such waste and other common property lands. Those people who do not have capital to purchase large animals prefer to purchase small ruminant like goat which are mainly reared for household milk production and meat production [8]. The initial investment required for goat farming is quite low and, housing requirements & management problems with goats are less because of their small body size & docile nature. In drought prone areas, risk of goat farming is very low as compared to other animals. Goats are prolific breeders & reach sexual maturity at the age of 10 to 12 months, gestation period is also short & at the age of 15 to 17 months it starts giving milk. Goats are best for mixed species grazing. It can thrive well on wide range of thorny bushes, weeds, crop residues. The cost of production and rearing goat is rather less as they do not need much capital as for cows and buffalo, survive on grazing and agriculture and household wastes, easily marketed for immediate cash need. A major part of their fodder requirement is met through such waste and other common property lands. Almost all farmers rear goats under extensive systems using common property resources (CPR) or natural vegetation on common grazing lands and tree lopping [9]. Goat meat is more lean i.e. low cholesterol & is relatively good for those who prefer low energy diet especially in summer. They are considered as cows and ATM of poor. They have advantage of over other milch livestock in term of milk production too due to their milk rich in nutrition value milk and value in medicine. It contains 3.80% fat, 3.4% protein, 4.1% lactose, 0.80% SNF and considered a good substitute for mother milk infant feeding [10]. Goats are also among the main meat-producing animals in India, whose meat (chevon) is readily preferred irrespective of caste, creed and religion. They produce a variety of products, mainly meat, milk, skin, fibre and manure [11].

Marketing of goat, especially males, are performed through rural markets and farm gate by village traders as well as by butchers. Most of the live animals follow small length of market channels. Goat or Bakra markets are also located as permanent place for transaction to mutton meat companies or butchers located in or near urban centres. National and inter-state trade are also occurred especially during Eid-ul-Azha, a religious festival of Muslims for sacrificing animals. The demand for mutton has been continuously increasing to meet internal demand as well as export to some countries of world [12].

The increasing demand of both live and meat in national and international markets, increasing number of poor farmers, unemployment and decline in profit from cropping system have an opportunity and causative factors for goat rearing at commercial level with large herd size as well as household level in subsistence form in developing countries in fragile area, among poor and resource poor people as well as deprived castes and women. Goats and sheep are conveniently cared for by unpaid family labour (women and children), occupy little housing space and supply both meat and milk in quantities suitable for immediate family consumption [13].

1.1. Objectives

Researchers aim to understand the distribution of goat population in time and space, their density and share in total livestock. Socio economic profile of goat rearers and

economic performance of goat husbandry have been also undertaken in the study. The role of goat rearing in rural socio economic transformation has been also explored for development of strategy for alleviation of rural poverty and women economic empowerment in the study area.

1.2. Study Area

The researchers have selected a backward micro level region, called as Devipatan in Eastern Uttar Pradesh as a study area. It lies in western part of the Trans-Ghaghara plain including four districts of Bahraich, Shrawasti, Balrampur and Gonda. Devi Patan plain is the most backward region of Uttar Pradesh, which lies in the western part of trans Ghaghra plain along the foothills of the Shiwalik range (Figure 1). The total geographical area of Devi Patan is 14,229 sq. km. Its latitudinal extent is 26° 40′ 30″ to 28° 24′ 30″ North and longitudinal extent is 81° 03′ to 82° 49′ East. It is bounded on the north and north-east by Nepal fringed by a belt of forest running at the foot hills of the outer ranges of the Himalayas, on the east and south-east by districts of Basti and Siddharthnagar. To its south and south-west it is bounded by Bara Banki and Faizabad and on the west by Kheri and Sitapur districts. The total population of the region is 10.18 million while it accounts for 199.81 million in Uttar Pradesh as a whole (2011 census of India). The distribution of population by districts in the Devi Patan is 3.48 million in Bahraich, 1.12 million in Shrawasti, 2.15 million in Balrampur and 3.43 million in Gonda. This region accounts for the population density of 716 persons/ km^2 which is far below the U.P. average of 828. The region has 3657050 heads of total livestock out of which 1480603 are cattle, 1058143 buffalo, 1068932 goats and 49372 are sheep. Paddy, wheat, sugar cane as well as maize are important crops grown in the area.

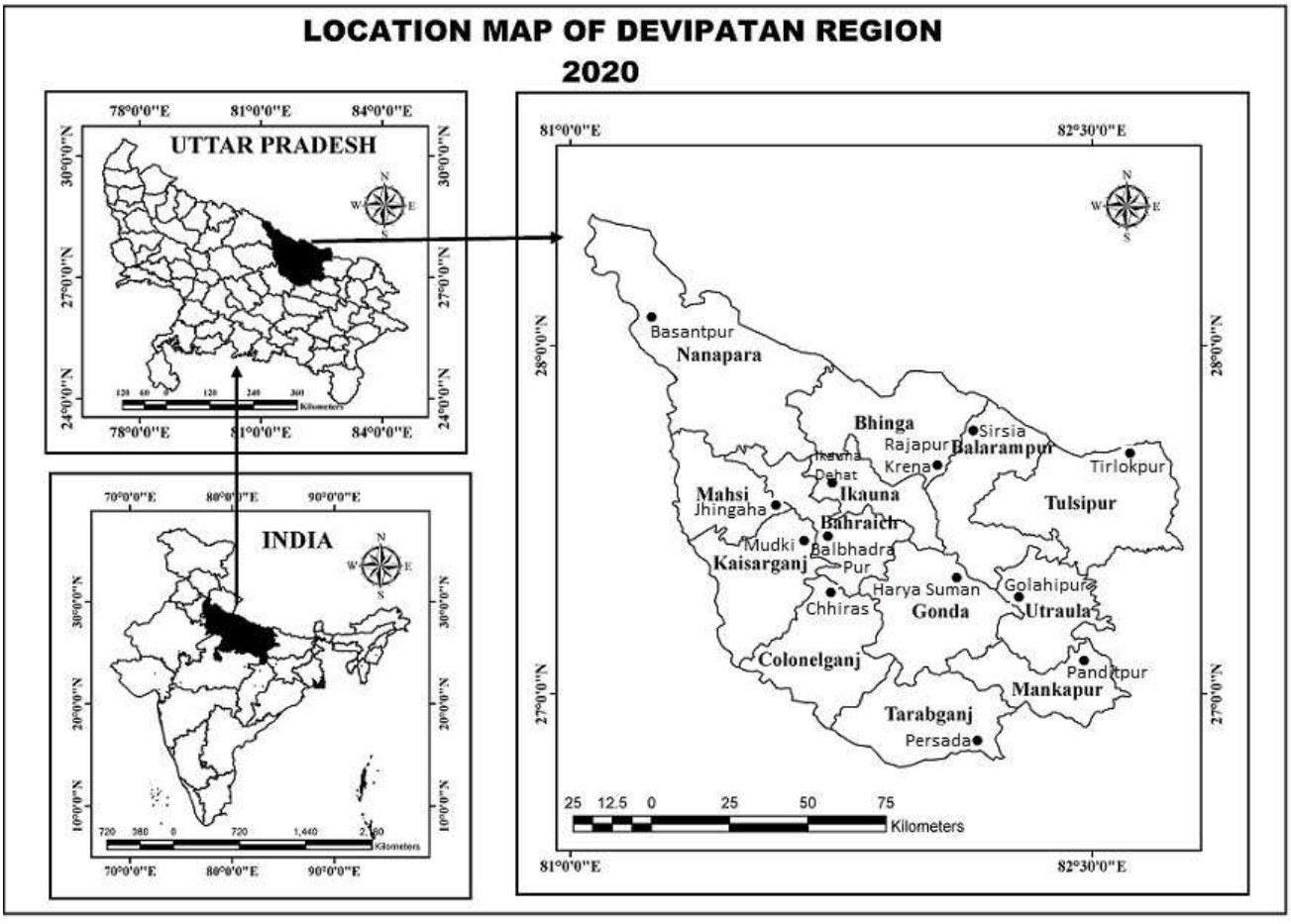

Figure 1. *Research Methodology and Data Collection.*

The present study is based on primary as well as secondary source of data. Livestock census of different period were consulted for goat number in different districts of the study area. Primary data, regarding social and economic structure and profile of goat rearers and people involved in its allied activities like marketing and slaughtering, have also generated through purposive sampling techniques. One village from each tehsil (sub-division) has been selected randomly and overall 13 villages have been surveyed while 30 households from each sampled village were selected for interview on the stratified sampling method. Multiple regression statistical technique is applied for analysis of factors responsible for development of goat rearing in the study area. Perception survey was also conducted to understand the views of farmers with respect to overall benefits of goat rearing in the area.

2. Discussion

2.1. Spatial Pattern of Goat Husbandry

The Devipatan region appears one of the most important goat rearing area in eastern Uttar Pradesh with 12.55 lakh head of goat during 2019. It varied from 111488 in Shrawasti to 581585 heads in Bahraich. Balrampur and Gonda have 270790 and 290621 heads respectively. Bahraich shared approximately 50 percent of goat in the area. Tehsil wise variation is also observed ranging from 43,494 heads in Ikauna to 2, 19,490 in Nanpara during same period (Table 1). The density of goat per hectare and per thousand population are important index of livestock geographical concentration. Table 2 indicates that the study area has 1.82 goat per hectare and 132.54 goat per thousand population during 2019. They also varied among tehsils from 0.69 in Utraula to 132.54 in Tarabganj and from 82.05 in Colonelganj to 204 in Kaisarganj respectively. The regional variation in goat rearing in the study area is attributed to religion, castes, size of land holdings, level of out migration, availability of facilities as goat shed, fodder, credit, market and gender composition in respective geographical areas. Religion played an important role in goat rearing in the country in general and specially in the study area (Table 3). Muslim dominated areas showed, as found through field survey of sampled villages and correlation analysis as shown in table 3, highest share in goat rearing profession in almost all districts of the study area. Religion is having pivotal role in inter villages and intra village variation in goat rearing. Castes is the next important factors and other backward castes and scheduled castes share more than $2/3^{rd}$ of total goat farmers in all sampled villages in particulars in all districts of the study area. Women are particularly involved with largest share in this activity. The OBC's women have more freedom to work outdoor and also participated in other agricultural operations as compared to high castes irrespective of any religion. Similarly, land less, marginal and very small farmers having less than two hectares of land contributed largest share in goat rearing (Table 4). They are resource poor group and opted new option of enhancing income in addition to income from harvesting. Some of them, more than 50 percent of respondents during village survey, replied that due to space and capital problem, dairy farming could not be started and goat rearing easily could be managed in residence house with very small capital. Availability of pasture land is attributed to the larger number of goat in Bahraich and Balrampur district as the goat survive on grazing and some green fodder and leaves of trees. These areas have rather more areas of pastureland due to terai and river khadar existence along Nepal border.

Table 1. *Growth of Goat in Devipatan Region during 2007-2019.*

S. N.	Tehsil Name	Goat		% Change (2007-12)	Goat	% Change (2012-19)
		2007	2012		2019	
1	Balrampur	40352	41008	1.63	66611	62.43
2	Tulsipur	63794	64832	1.63	101831	57.07
3	Utraula	62943	63968	1.63	102348	60.00
	Total	167089	169808	1.63	270790	59.47
4	Gonda	80287	81161	1.09	97173	19.73
5	Colonelganj	53095	54203	2.09	67127	23.84
6	Tarabganj	51367	51565	0.39	61319	18.92
7	Mankapur	64072	62982	-1.70	65002	3.21
	Total	248821	249911	0.44	290621	16.29
8	Bhinga	76494	81484	6.52	67994	-16.56
9	Ikauna	51494	53499	3.89	43494	-18.70
	Total	127988	134983	5.47	111488	-17.41
10	Nanpara	152725	178285	16.74	219490	23.11
11	Bahraich	90818	96445	6.20	119687	24.10
12	Mahasi	62259	55296	-11.18	67130	21.40
13	Kaisarganj	121419	145755	20.04	175278	20.26
	Total	427221	475781	11.37	581585	22.24
Total Devipatan		971119	1030483	6.11	1254484	21.74

Source: Livestock Census 2007, 2012 &2019.

Table 2. *Availability of Goat per Hectare and per 1000 population in Devipatan Region (2019).*

S. N.	Tehsil Name	Goat Per Hectare	Goat Per 1000 Population
1	Balrampur	1.57	114.88
2	Tulsipur	1.47	139.14
3	Utraula	0.69	152.60
	Total District	1.20	136.60
4	Gonda	1.29	95.62
5	Colonelganj	0.90	82.05
6	Tarabganj	3.03	82.36
7	Mankapur	2.74	103.17
	Total District	0.29	90.57
8	Bhinga	0.95	105.17

S. N.	Tehsil Name	Goat Per Hectare	Goat Per 1000 Population
9	Ikauna	2.55	103.30
	Total District	3.92	104.43
10	Nanpara	0.53	174.10
11	Bahraich	0.89	183.50
12	Mahasi	1.44	154.03
13	Kaisarganj	0.43	204.44
Total District		0.68	181.40
Total Devipatan		1.82	132.54

Source: Livestock Census 2019 and Census of India 2011.

2.2. Dynamics of Goat Husbandry

Goat farming in the study area is witnessing promising trends and recorded a breakthrough during both 2007-12 and 2012-19. The growth rate was 6.11 percent and 21.74 percent respectively in Devipatan region. Table 1 indicates that the rate of change in goat production is variable among the districts as well as sub divisions or tehsils during both periods of time under discussion. It varied from 0.44 percent in Gonda district to 11.37 percent in Bahraich district during 2007-12 and 16.29 percent in Gonda to 59.47 percent in Balrampur during 2012-19. Similarly sub division also showed variation in growth rate from 0.39 percent in Tarabganj to 20 percent in Kaisarganj and from 3.21 percent in Mankapur to 62 percent in Balrampu rsub division. Negative trends have been also observed in subdivision of Mankapur (Gondadistt.) and Mahasi (Bahraich) during 2007-12 and Ikona and Bhinga in Sarawasti district during 2012-19.

An appraisal of the data and a comparative analysis of dynamics of goat production during two period discussed, reveals that two district Bahraich and Balrampur recorded higher share in number as well as in growth of goat in the study area. It has been attributed to higher share of Muslim population and pasture land and forest areas along tarai belt. Gonda and Sarawasti rather have Hindu dominated area and less pasture land. The negative growth in Shrawasti district is also due to same reasons. The overall tremendous positive growth during 2012-19 in all subdivisions except Ikauna and Bhinga occurred due to increasing demand of mutton on account of strict prohibition of cattle beef production after 2014. Mass level demand of goat (males) for sacrifice on occasion of Muslim festival Edul-Azha and for marriage occasion in the area of Muslim domination is very dominating factor in the growth of goat farming. Increasing urbanization, improvement in disposable income among middle income group population, increasing purchasing power in villages on account of flow of money from outside like Mumbai, Delhi, Ahmadabad, Middle East and change in food habits even in vegetarian population led to enhancement of demand for goat meat in recent decades. All religion acceptability for mutton is also a strong causative factor for growth of goat in the study area. Despite continuous hiking in price, highest among all meat, its demand is following upward trend and considered as VIP products among all religious groups. The low input cost, high fecundity, easy marketing and unprejudiced social acceptance of their products are few advantage of this enterprise that is attracting the farmers, unemployed educated youths, landless capitalists, women, and big enterprises in the study area [14]. Observation and discourse with farmers in sampled villages have also reflected the very optimistic opinion and potentiality of scaling up and commercialization of goat farming in future. At present the stock size of goat ranges from 5 to 15, mostly reared at small scale in traditional way in residential house. All operations of goat husbandry are controlled by women members of household except selling in the markets.

Moreover, the goat production also increased at rather higher rate during 2012-19 as compared to 2007-12 in all subdivisions except Mankapur of Gonda district. It varies from 18.92 (Tarabganj) to 23.84 percent (Colonelganj) during same period. It indicates the increasing demand of goat meat in Hindu dominated areas as well as involvement of Hindus of lower castes and low socio economic profile. Live goat are traded in villages as well as in rural weekly markets for slaughtering in urban areas/ centres by traders [5].

Table 3. *Correlation of Variables Affecting Goat Rearing.*

		No. of Goats	Marginal	Small	Medium	Large	Goat per hectare	Goat 1000 population	Forest and pastures	Hindu	Muslim
No. of Goats	Pearson Correlation	1									
	Sig. (2-tailed)										
		4									
Marginal	Pearson Correlation	-.147	1								
	Sig. (2-tailed)	.853									
		4	4								
Small	Pearson Correlation	.665	.637	1							
	Sig. (2-tailed)	.335	.363								
		4	4	4							
Medium	Pearson Correlation	.212	.921	.869	1						
	Sig. (2-tailed)	.788	.079	.131							
		4	4	4	4						

		No. of Goats	Marginal	Small	Medium	Large	Goat per hectare	Goat 1000 population	Forest and pastures	Hindu	Muslim
	Pearson Correlation	.563	.722	.990**	.927						
Large	Sig. (2-tailed)	.437	.278	.010	.073						
		4	4	4	4						
	Pearson Correlation	-.166	1.000**	.621	.911	1					
per hect	Sig. (2-tailed)	.834	.000	.379	.089						
		4	4	4	4	4					
	Pearson Correlation	.826	.137	.702	.341	.130	1				
1000 pop	Sig. (2-tailed)	.174	.863	.298	.659	.870					
		4	4	4	4	4	4				
	Pearson Correlation	.560	.386	.669	.459	.387	.926	1			
Forest	Sig. (2-tailed)	.440	.614	.331	.541	.613	.074				
		4	4	4	4	4	4	4			
	Pearson Correlation	-.176	-.613	-.536	-.533	-.622	-.685	-.909	1		
Hindu	Sig. (2-tailed)	.824	.387	.464	.467	.378	.315	.091			
		4	4	4	4	4	4	4	4		
	Pearson Correlation	.157	.623	.529	.536	.632	.670	.901	-1.000**	1	
Muslim	Sig. (2-tailed)	.843	.377	.471	.464	.368	.330	.099	.000		
		4	4	4	4	4	4	4	4	4	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

2.3. Socio-economic Dimension of Goat Rearers

The livestock in general and goat husbandry in particular is the function of socio economic fabrics of the concerned areas in India. Religion, castes, gender, literacy and size of holdings are important attributes of goat rearing in the study area. Data on socio economic structure of livestock keepers are rarely available in published form. Sample survey is only way for obtaining information on castes, gender and income of goat rearers. Table 4 reflects the proportion of various socio-economic groups of goat keepers in various sampled villages of Devipatan region.

Table 4. *Socio-economic Dimension of Goat Farmers (Proportion of total households) N=390 Household.*

Sampled Villages	Religion			Castes			Size of Holdings		
	Hindu	Muslim	Other	High	Backward	Scheduled Castes	>01 hect.	1-2 Hect.	<3 Hect.
Sirsia	20	80		10	70	20	50	35	15
Tirlokpur	25	75		20	70	10	40	40	20
Golahipur	10	90		25	60	15	55	30	15
Rajapur Kurena	30	60	10	20	60	20	60	30	10
Ikauna Dehat	30	70		25	65	10	50	30	20
Basantpur	20	80		20	80	-	50	25	25
Balbhadrapur	15	85		25	75	-	55	30	15
Jhingaha	25	70	05	15	80	05	65	30	05
Mudki	25	75		15	85	-	45	30	25
Harya Suman	15	85		25	70	05	55	30	15
Chhiras	20	80		25	65	10	50	30	20
Persada	10	90		20	75	05	55	40	05
Panditpur	24	76		15	80	05	50	30	20
D. P.	20.69	78.16	1.15	20	71.92	7.69	52.37	33.01	14.62

Source: Field Survey 2019-20.

The table 4 reveals the domination of Muslim as goat keepers and rearers with the share of 78.16 percent in the study area. It varies between 70 to 90 percent in sampled villages. It is due to religious belief that almost all prophets, mostly were from crescent of civilization (SW Asia), reared goat in the past. Besides, it is source of income and milk for poor Muslims who do not have due capital for purchasing cows and buffalo. They also prefer to rear goat for getting male baby for performing sacrifice, religious obligation on occasion of Edul-Azha. Goat are also sacrificed on occasion of child birth as Aqeeqa. Caste structure, like other economic activities, plays important contribution in goat husbandry. Backward castes, both from Hindu and Muslim community are involved in larger share with more than 70 percent of goat rearers in Devipatan region. They are mostly poor farmers and land less people as agricultural labours as well as resource poor persons. Women are also working and helping in agricultural activities outdoor work, so caring for goat husbandry at small scale has been convenient for them. Women income, partially, is added through sale of goat and milk and it is generally considered as ATM of women and poor. Scheduled castes, most socially and economically deprived community, also are involved in goat keeping and rearing and shared with 7.69 percent in the study area which varies from 5 to 20 percent depending on proportion of their population in sampled villages as shown in the table.

Moreover, High castes, both Hindu and Muslim, also show an appreciable share with 20 percent to total goat rearers. High demand for goat and its products with potential of good return have been attracting many progressive, rich resource farmers, businessmen, Professionals and even educated unemployed youths to take up goat husbandry at commercial level, irrespective of any religion and castes [14].

2.4. Economic Performance of Goat Husbandry

In the study area, the goat rearing is at small scale with low facilities, generally depend upon grazing and some household waste materials of grains and food for their survival. Household labours especially from women and children are used for their husbandry. The assessment of quantum of employment through this farming is very tedious job as it is performed with other economic activities. Partial involvement of household members could be summed up to 60 hours per household per month keeping 1-5 goats as found through field survey. So, four households generate one person employment per month from goat rearing. The income is added at the rate of at least Rs.6000 per goat of 12-15 kg weight which is increasing as size of stock increases.

Table 5 highlights the distribution of different categories of goat keepers on the basis of flock size with female adult goat. There are five flock/ size of stock goat keepers as very small (1-3 she goat), small (4-6), Medium (7-9), big (9-12) and very big (More than 12) in the study area. Their shares are 30, 40, 20, 8 and 2 percent respectively. More than 70 percent of goat keepers, as revealed through field survey of 390 households, have less than 6 female adult goat. It is practiced as a traditional profession with less capital and low technology.

Table 5. *Percentage of Households According to flock size of Goat in Sampled Villages of Devipatan Region N= 390 households.*

S. N.	Flock Size (No. of She Goat)	Number of Goat Rearing Households	Percentage to Total Goat Rearing Households	Average No. of adult goat per household
1	1-3 (Very Small)	117	30	2
2	4-6 (Small)	155	40	5.5
3	7-9 (Medium)	78	20	8.5
4	9-12 (Big)	31	08	10.35
5	More than 12 (Very Big)	9	02	15.50
Total		390	100	8.37

Table 6. *Economics of Goat Husbandry Average investment (Rs.) Required for per household in various flock size per annum.*

Flock Size (Adult She Goat)	Goat Price	Shed	Equipment	Total Cost (Rs)	Investment (Rs) per goat
1-3 (Very Small)	8000	1245	300	9245	4622.50
4-6 (Small)	19500	1800	500	21800	3963.63
7-9 (Medium)	30000	2000	700	32700	3847.05
9-12 (Big)	35000	3000	1500	39500	3816.42
More than 12 (Very Big)	45000	3200	1550	49750	3209.67
Over all	27500	2249	910	30659	3662.96

Table 7. *Overall Cost and Income (Rs.) per Goat Rearing House hold per Annum.*

Particular	Very Small	Small	Medium	Big	Very Big	Over All
Variable Cost						
Labour	4500	7500	11000	13000	15000	10200
Feed & Fodder	2000	2500	3500	4000	4500	3300
Miscellaneous	1000	1200	2000	3000	4000	2240
A-Total Variable Cost	7500	11200	16500	20000	23000	15740
Interest on Fixed investment (12%)	1109	2616	3924	4714	5910	440
Depreciation cost on Equipment (7%)	210	350	490	1050	1085	63
Depreciation cost on shed (7%)	871.50	1260	1400	2100	2200	157.43
B- Total Fixed Cost	2190.50	4226	5814	7864	9195	669.43
Gross Cost (A+ B)	9690.50	15426	22314	27864	32195	16409
Gross Cost per goat	4845.25	2804.72	2625.18	2692.17	2077	2051
Income						
Sale of Kids/ culled goat	30000	60000	120000	150000	222000	116400
Sale of Manures	700	1375	2200	2900	3500	2135
Price of Milk	2700	8100	11475	13500	20250	11205
Gross Income	33,400	69475	133675	166400	245750	129740
Gross income / goat	16700	12631	15724	16077	15854	16216
Net Income						
Net income over gross cost	23709	54049	111361	138536	213555	113331
Net income per goat over gross cost	11854.50	9827.09	13101	13193	14237	14166
Net income over gross variable cost	25900	58276	117175	146400	222750	114000
Net income per goat over variable cost	12950	10596	13785.29	13942.85	14850	14250
Benefit/ cost ratio	2.44	3.50	4.99	4.97	6.63	6.90

The economic performance of goat husbandry is the combined effect of investment, cost and benefit assessment. Appraisal of investment is given in table 6. Capital for she goat purchase, construction of shed and cost of some equipment are the components of initial investment spent by a particular household to start even traditional form of goat rearing. Cost of purchasing goat covers more than 80 percent of total investment. Investment (Rs.) varies with the size of flock in direct proportion; lower the stock size, lower the investment cost and higher the rank, higher investment cost. But the investment rate per goat decreases as the rank of flock size increases due to the effect of agglomeration and adjustment and distribution of cost among larger number.

Table 7 the economic structure of goat farming through the analysis of cost and income (Benefit) analysis. Cost includes variable and fixed cost. Fixed cost refers interest on capital (purchase cost for goat), depreciation on shed and equipment investment, while the labour cost, fodder cost and some miscellaneous are parts of variable cost. Both costs are increasing as size of stock increasing but the rate of enhancement has been decelerating with higher stock size [15]. Similarly the income or output generated through sale of kids/ adult goat, manures and milk (sold/ self-consumed). Gross income (Rs.) incurred per goat (female) is rather higher with enhancing flock size due to decreasing investment, variable and fixed in the same way. Study reveals that gross income per goat is assessed as Rs.16700.00 for very small flock size (1-3 she goat) per annum, which successively decreasing to very big category. Moreover, net income, over gross cost per female adult goat (Gross income-gross cost) has been improving with elevation of flock size category as shown in the table. It varies from Rs. 11854.00 (small Flock) to Rs. 14237.00 (Big Flock). The benefit cost ration is also variable in positive and progressive direction between 2.40 to 6.90 for different categories of flock size in ascending order. The income level in absolute term and ratio will be rather high for successive three first flock size if the unpaid household labour is included in variable cost as compared to higher size where hired labours are utilized for rearing operations. Moreover, the income per goat over total cost spent is Rs. 14166.00 per annum in general, though it is variable with flock size (Table 7) per household.

Table 8. *Perception Survey about Benefits of Goat Husbandry N= 390 households/ respondents.*

S. N.	Benefits/ Items	Number of Respondents Answered Yes	Percentage of Respondents
1	Income Added	350	89.74
2	Nutrition intake Added	280	71.79
3	Women economic saving improved	325	83.33
4	Manures Added	290	74.35
5	Employment Generated	250	64.10
6	Help in Social obligation	300	76.92
7	Help in Children Education and Health	340	87.18

Source: Field Survey 2020.

2.5. Over All Benefits of Goat Husbandry

Goat rearing/ keeping has various kind of socio economic performance, both direct and indirect ways. The quantitative explanation in absolute term is very difficult due to non-availability of standardized secondary data. The perception survey method has been used in this study to know social and economic performance in study area. Income addition to goat keepers is very important role of goat husbandry. 89.70 percent of respondents confirmed it. It is generally described as ATM or bank or cows of poor. Nutrition intake is also improved through consumption of milk produced and indirectly helps in saving expenditure for purchasing milk from outside. 71.79 percent responded in positive for improvement in nutrition intake. Economic women empowerment through this occupation is also enhanced as believed by 83 percent of respondents. Most of the traditional goats rearing operations are controlled by females' household members except the marketing in the markets. Employment is also generated especially by big flock / stock holders as care takers and traders through hiring labours as answered by 64.10 percent in its favour. Manures addition, help in performing social obligation as well as enhancement in education and health of children are another contributions performed by goat rearing in study area particular and in the country in general as shown in table 8.

3. Conclusion

Goat rearing is one of the important form of farming system prevailed in Devipatan region. Traditionally majority of households are well trained and skilled for rearing this small ruminant along with work of cropping system. The socio economic fabrics of the area reflected its impact on goat keeping behavior. Spatial variation has been common phenomena among districts as well as intra district. Bahraich and Balrampur, lying along terai area equipped with high proportion of pasturelands, poverty and Muslim dominated population. The need of unemployed household labour to involve in gainful employment have augmented the goat rearing in Trans-Ghaghra region. Other Mostly women in the household are taking care of goat and they also have control over income generated from them. So this enterprise is immensely contributing in the socio-economic upliftment Backward (OBC) especially poor and resource poor are involved in this profession in larger proportion. The perception survey has indicated that goat rearing has added extra income, supplied manure for agriculture,

enhanced income of women, provided employment opportunities, provided rich nutrition and helped in funding education and health of household members. It appeared as instrumental and financial tools for alleviation of poverty and income generation in study area. Although, government agencies have repeatedly acknowledged the role of goat farming in rural economy but there is lack of consideration of this enterprise at policy making level. There is no price determination mechanism, there are not much government schemes available targeting the goat rearers, lack of organized marketing channel are hindering the growth of goat farming at required pace. There is need to initiate the programmes and policies especially for goat farmers through which necessary financial and infrastructural support can be provided for the farmers.

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