Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
www.entomoljournal.com
JEZS 2020; 8(6): 509-514

Received: 25-09-2020
Accepted: 27-10-2020

Aman Deep Singh Dhaliwal
M.V.Sc. Scholar, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

Rajesh Kasrija
Associate Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

Parminder Singh
Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

YS Jadoun
Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

Sandeep Kaswan
Assistant Professor, Department of Livestock Production and Management, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

Corresponding Author:
Rajesh Kasrija
Associate Professor, Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

A comparative study on goat farming practices under stall fed and extensive rearing system in Punjab

Aman Deep Singh Dhaliwal, Rajesh Kasrija, Parminder Singh, YS Jadoun and Sandeep Kaswan

DOI: https://doi.org/10.22271/j.ento.2020.v8.i6g.7902

Abstract
The present study was conducted in all the six different agro-climatic zones of Punjab to compare the goat farming practices followed under stall fed and extensive rearing system. The goats farmers were divided in to two groups- Group I (Stall fed goat farmers, n=60) and Group II (Extensive rearing goat farmers, n=60). For both Group I and II, predominant goat breed reared is Beetal and goats are mainly kept for meat and milk purposes and at a considerable number of farms, children and women and all members of family were involved in goat farming. 51.67% of Group I, 46.67% of Group II and 49.17% of overall Punjab were selling milk at village level. 41.67% of Group I, 50% of Group II and 45.83% of overall Punjab were selling goat at village level for meat purposes. The different goat farming practices were inter-correlated at $P < 0.01$ level for Group I Group II. The present scenario of goat farming practices should be taken in to consideration while planning extension programme for upliftment of goat farmers.

Keywords: Extensive, farmer, goat, Punjab, stall fed

Introduction
As per 20th livestock census (2019), goat population of India and Punjab is 1488.8 lakhs and 3.48 lakhs respectively [1]. The goats are among the main meat-producing animals in India, whose meat (chevon) is one of the choicest meats and has huge domestic demand. Besides meat, goats provide other products like milk, skin, fiber and manure. Goat provides food and nutritional security to the millions of marginal and small farmers and agricultural labourers. Goats are reported to be more economical than cattle and sheep under natural grazing and browsing [2] and is hardy, prolific and can be cheaply reared [3]. Two types of rearing system are prevalent for goats- stall fed and extensive rearing system. In Stall fed/intensive/zero grazing system, the goats are continuously kept under housing in confinement and are fed on manger and it requires more labour and high cash input. But, there is the advantage of close supervision and control over the animals. In extensive/grazing system of rearing, goat farmer roam from one place to another along with their flocks and goat sustain on grazing. In extensive system, cost is very much reduced. But, these days, grazing lands are decreasing and there is entry of educated rural youth, businessmen in to goat farming. In Punjab state, there is no systematic study about goat farming practices followed by stall fed and extensive rearing system.

Materials and Methods
The present study was conducted in all the six different agro-climatic zones of Punjab, namely Sub mountain undulating zone (Zone I), Undulating plain zone (Zone II), Central plain zone (Zone III), Western plain zone (Zone IV), Western zone (Zone V) and Flood plain zone (Zone VI). The goats farmers were divided in to two groups- Group I (Stall fed goat farmers, n=60) and Group II (Extensive rearing goat farmers, n=60). From each agro-climatic zone, 10 goat farmers belonging to both the groups were randomly selected. Thus, the total number of respondents was 120. The goat farmers were personally interviewed by visiting their farm at field level. The collected data were carefully examined for completeness and correctness

before tabulation. For analysis, simple tabular techniques and appropriate statistical methods were employed by using SPSS version 20.0 for Frequency and Percentage analysis and Correlation coefficient analysis.

Results and Discussion

Table 1 and Table 2 describe different goat farming practices followed in different agro-climatic zones of Punjab for Stall fed (Group I) and Extensive rearing (Group II) goat farmers indicate that predominant goat breed reared in different agro-climatic zones of Punjab is Beetal. Figure 1 also depict that in stall fed and extensive rearing system and for overall Punjab, the main goat breed reared is Beetal. This suggests popularity and preference of Beetal goat among the farmers. For Group I goat farmers, the goats were mainly kept for both meat and milk in agro-climatic zones I, II, III and V, where as for zone IV and VI, goats were mainly kept for meat purpose (Table 1). However, for Group II goat farmers, the goats were mainly kept for both meat and milk in agro-climatic zones I, II, III and VI, where as in zone IV and V, goats were mainly kept for meat purpose (Table 2).

Table 1: Distribution of Group I goat farmers of different agro-climatic zones of Punjab according to goat farming practices

Attributes	Parameter	Zone I (n=10)	Zone II (n=10)	Zone III (n=10)	Zone IV (n=10)	Zone V (n=10)	Zone VI (n=10)	Overall (n=60)
Predominant Goat Breed	Beetal	9 (90)	8 (80)	10 (100)	9 (90)	9 (90)	8 (80)	53 (88.33)
	Other indigenous breed	1 (10)	2 (20)	0 (0)	1 (10)	1 (10)	1 (10)	6 (10.00)
	Non – descript	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	1 (1.67)
Purpose of keeping Goat	Meat	0 (0)	4 (40)	1 (10)	5 (50)	1 (10)	7 (70)	18 (30.00)
	Both meat and milk	8 (80)	5 (50)	8 (80)	4 (40)	8 (80)	2 (20)	35 (58.34)
	Both milk and selling of kids	2 (20)	1 (10)	1 (10)	1 (10)	1 (10)	1 (10)	7 (11.66)
Number of adult goats	1-10	2 (20)	3 (30)	1 (10)	1 (10)	0 (0)	4 (40)	11 (18.33)
	11-20	2 (20)	2 (20)	3 (30)	6 (60)	3 (30)	2 (20)	18 (30.00)
	21-50	2 (20)	5 (50)	6 (60)	3 (30)	7 (70)	4 (40)	24 (40.00)
	>50	4 (40)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (6.67)
Family members involved in goat farming	Children and Women	2 (20)	3 (30)	1 (10)	1 (10)	0 (0)	4 (40)	11 (18.34)
	Only Adult	4 (40)	4 (40)	5 (50)	5 (50)	3 (30)	5 (50)	26 (43.33)
	All	4 (40)	3 (30)	4 (40)	4 (40)	7 (70)	1 (10)	23 (38.33)
From how long involved in goat farming	≤ 6 months	2 (20)	3 (30)	1 (10)	1 (10)	0 (0)	4 (40)	11 (18.33)
	>6 months -≤ 1 years	2 (20)	1 (10)	2 (20)	2 (20)	1 (10)	1 (10)	9 (15.00)
	>1 year-2 year	1 (10)	1 (10)	2 (20)	2 (20)	2 (20)	2 (20)	10 (16.67)
	>2years	5 (50)	5 (50)	5 (50)	5 (50)	7 (70)	3 (30)	30 (50.00)
Utilization of goat milk	Home consumption	2 (20)	3 (30)	1 (10)	1 (10)	0 (0)	4 (40)	11 (18.33)
	Selling in Village	4 (40)	4 (40)	6 (60)	8 (80)	4 (40)	5 (50)	31 (51.66)
	Selling in Market	4 (40)	3 (30)	3 (30)	1 (10)	6 (60)	1 (10)	18 (30.00)
Utilization of goat for meat purpose	Home consumption	2 (20)	3 (30)	0 (0)	1 (10)	0 (0)	4 (40)	10 (16.66)
	Selling in Village	4 (40)	3 (30)	5 (50)	7 (70)	3 (30)	3 (30)	25 (41.67)
	Selling in Market	4 (40)	4 (40)	5 (50)	2 (20)	7 (70)	3 (30)	25 (41.67)

Figure in parenthesis indicate percentage

Table 2: Distribution of Group II goat farmers in different agro-climatic zones of Punjab according to goat farming practices

Attributes	Parameter	Zone I (n=10)	Zone II (n=10)	Zone III (n=10)	Zone IV (n=10)	Zone V (n=10)	Zone VI (n=10)	Overall (n=60)
Predominant Goat Breed	Beetle	4 (40)	6 (60)	8 (80)	7 (70)	8 (80)	4 (40)	37 (61.67)
	Other indigenous breed	3 (30)	2 (20)	2 (20)	2 (20)	2 (20)	3 (30)	14 (23.33)
	Non – descript	3 (30)	2 (20)	0 (0)	1 (10)	0 (0)	3 (30)	9 (15.00)
Purpose of keeping Goat	Meat	0 (0)	0 (0)	0 (0)	10 (100)	9 (90)	0 (0)	19 (31.67)
	Both meat and milk	9 (90)	10 (100)	10 (100)	0 (0)	0 (0)	10 (100)	39 (65.00)
	Both milk and selling of kids	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	2 (3.33)
Number of adult goats	1-10	3 (30)	3 (30)	2 (20)	2 (20)	1 (10)	3 (30)	14 (23.33)
	11-20	2 (20)	2 (20)	1 (10)	3 (30)	1 (10)	3 (30)	12 (20.00)
	21-50	2 (20)	1 (10)	3 (30)	2 (20)	3 (30)	2 (20)	13 (21.67)
	>50	3 (30)	4 (40)	4 (40)	3 (30)	5 (50)	2 (20)	21 (35.00)
Family members involved in goat farming	Children & Women	2 (20)	3 (30)	2 (20)	2 (20)	1 (10)	3 (30)	13 (21.67)
	Only Adult	5 (50)	4 (40)	3 (30)	3 (30)	4 (40)	5 (50)	24 (40.00)
	All	3 (30)	3 (30)	5 (50)	5 (50)	5 (50)	2 (20)	23 (38.33)
From how long involved in goat farming	≤ 6 months	0 (0)	1 (10)	2 (20)	2 (20)	1 (10)	3 (30)	9 (15.00)
	>6 months -≤ 1 years	3 (30)	4 (40)	1 (10)	2 (20)	0 (0)	1 (10)	11 (18.33)
	>1 year-2 year	2 (20)	2 (20)	2 (20)	3 (30)	3 (30)	4 (40)	16 (26.67)
	>2years	5 (50)	3 (30)	5 (50)	3 (30)	6 (60)	2 (20)	24 (40.00)
Utilization of goat milk	Home consumption	4 (40)	2 (20)	3 (30)	2 (20)	1 (10)	2 (20)	14 (23.33)
	Selling in Village	3 (30)	6 (60)	4 (40)	5 (50)	4 (40)	6 (60)	28 (46.67)
	Selling in Market	3 (30)	2 (20)	3 (30)	3 (30)	5 (50)	2 (20)	18 (30.00)
Utilization of goat for meat purpose	Home consumption	2 (20)	1 (10)	2 (20)	2 (20)	1 (10)	2 (20)	10 (16.67)
	Selling in Village	5 (50)	5 (50)	4 (40)	5 (50)	5 (50)	6 (60)	30 (50.00)
	Selling in Market	3 (30)	4 (40)	4 (40)	3 (30)	4 (40)	2 (20)	20 (33.33)

Figure in parenthesis indicate percentage

Table 3: Distribution of goat farmers according to goat farming practices in different rearing system

Attributes	Parameter	System of rearing		Overall (n=120)
		Group I (n=60)	Group II (n=60)	
Predominant Goat Breed	Beetle	53 (88.33)	37 (61.67)	90 (75.00)
	Other indigenous breed	6 (10.00)	14 (23.33)	20 (16.67)
	Non – descript	1 (1.67)	9 (15.00)	10 (8.33)
Purpose of keeping Goat	Meat	18 (30.00)	19 (31.67)	37 (30.83)
	Both meat and milk	35 (58.34)	39 (65.00)	74 (61.67)
	Both milk and selling of kids	7 (11.66)	2 (3.33)	9 (7.50)
Number of adult goats	1-10	11 (18.33)	14 (23.33)	25 (20.83)
	11-20	18 (30.00)	12 (20.00)	30 (25.00)
	21-50	24 (40.00)	13 (21.67)	37 (30.83)
	>50	4 (6.67)	21 (35.00)	25 (20.84)
Family members involved in goat farming	Children Women	11 (18.34)	13 (21.67)	24 (20.00)
	Only Adult	26 (43.33)	24 (40.00)	50 (41.67)
	All	23 (38.33)	23 (38.33)	46 (38.33)
From how long involved in goat farming	≤ 6 months	11 (18.33)	9 (15.00)	20 (16.67)
	>6 months -≤ 1 years	9 (15.00)	11 (18.33)	20 (16.67)
	>1 year-2 year	10 (16.67)	16 (26.67)	26 (21.67)
	>2years	30 (50.00)	24 (40.00)	54 (45.00)
Utilization of goat milk	Home consumption	11 (18.33)	14 (23.33)	25 (20.83)
	Selling in Village	31 (51.66)	28 (46.67)	59 (49.17)
	Selling in Market	18 (30.00)	18 (30.00)	36 (30.00)
Utilization of goat for meat purpose	Home consumption	10 (16.66)	10 (16.67)	20 (16.67)
	Selling in Village	25 (41.67)	30 (50.00)	55 (45.83)
	Selling in Market	25 (41.67)	20 (33.33)	45 (37.50)

Figure in parenthesis indicate percentage

Figure 2 depicts that for Group I, Group II and Overall Punjab, goats are mainly kept for meat and milk purposes. This might be the reason for popularity of Beetal goat among goat farmers, as Beetal breed is a dual purpose breed i.e. reared for both milk and meat. However, Hopwever, in the northern part of Kerala, most of farmer rear goats exclusively for meat production [4]. For Group I, most of the goat farmers fall in the categories of 11-20 and 21-50 adult goats in overall Punjab and only 6.67% goat farmers had > 50 adult goats. For group II, number of farmers with > 50 goats, 21-50 goats, 11-20 goats and with 1-10 goats were 35%, 21.67%, 20% and 23.33% respectively (Figure 3). However, in Southern Karnataka, the flock size ranged from 27 - 40 which were not of any distinct breed [5]. In West Bengal and Uttar Pradesh, the average flock size was about 18 goats and goats were mainly reared for meat purpose [6]. In Martinique, 97% of does were crossbred and 56% of bucks were of imported breeds (Boer or Anglo-Nubian). The number of goats per farm varied from 16 to 582 [7]. However, in Orrissa, the flock size ranged from 50 to 200 for the Ganjam goat [8].

Table 3 depicts that for Group I, only adults; all the members of family; only children and women were involved in goat farming for 43.33%, 38.33% and 18.34% farms respectively. However, for Group II, only adults; all the members of family; only children and women were involved in goat farming for 40.00%, 38.33% and 21.67% farms respectively. This indicates that for both group I and group II, in considerable farms, children and women and all members of family were involved in goat farming. So, besides the main owner of goat farm, all others members of family should also be educated about goat farming as this is a joint operation done run by family members.

Figure 4 depicts time period in goat farming for stall fed and extensive rearing system. The number of farmers doing goat farming in overall Punjab since ≤ 6 months, >6 months -≤ 1 years, >1 year-2 year and >2years were 16.67%, 16.67%, 21.67% and 45.00% respectively.

Figure 5 and Table 3 show that 51.67% of Group I, 46.67% of Group II and 49.17% of overall Punjab were selling milk at village level. Milk is not being sold at urban level so goat farmer might be getting less price of milk. There is dire need to educate both Group I and Group II goat farmers for selling milk in market or at urban level. This will help them to fetch good price and will help in getting the farmer to get more economic return from goat farming system in both type of rearing system. Only 18.33% of Group I, 23.33% of Group II and 20.83% of overall Punjab were utilizing milk for home consumption. This indicates that goat milk is an important constituent of family diet and it provides nutritional security to a number of farm families. In Western Uttar Pradesh, 50.66% of produced milk was sold by the goat owners at village level, while 49% was consumed by the members of families of goat owners [9].

It is clear from Table 3 and Figure 6 that 41.67% of Group I, 50% of Group II and 45.83% of overall Punjab were selling goat at village level for meat purposes. In Andhra Pradesh, most of the goats were disposed of in villages according to the wishes of butchers, intermediaries and traders, depending on the size and animal size and shape [10]. At village level, farmers were not getting good price for meat as compared to urban level. There is need to educate the goat farmers about different market channel for getting remunerative good price for his produce i.e. goat at market/urban level. Only 16.67% of Group I, Group II and overall Punjab each were utilizing goat meat for home consumption. This suggests that goat meat is an integral part of human diet.

Table 4 and Table 5 indicate that different goat farming practices were inter-correlated at $P < 0.01$ level for Group I Group II respectively. It means that more the number of goats, more is the time involved in goat farming, more number of family members are involved in goat farming, more is the utilization of goat milk and meat at urban level.

Table 4: Correlation coefficient of different goat farming practices for Group I goat farmers

Parameters	Number of goats	How long in goat farming	Family members in goat farming	Utilization of goat milk	Utilization of goat meat
Number of goats	1	0.600**	0.753**	0.854**	0.841**
How long in goat farming	0.600**	1	0.824**	0.830**	0.778**
Family members in goat farming	0.753**	0.824**	1	0.925**	0.828**
Utilization of goat milk	0.854**	0.830**	0.925**	01	0.913**
Utilization of goat meat	0.841**	0.778**	0.828**	0.913**	1

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

Table 5: Correlation coefficient of different goat farming practices for Group II goat farmers

Parameters	Number of goats	Family members in goat farming	How long in goat farming	Utilization of goat milk	Utilization of goat meat
Number of goats	1	0.902**	0.855**	0.824**	0.787**
Family members in goat farming	0.902**	1	0.870**	0.858**	0.812**
How long in goat farming	0.855**	0.870**	1	0.747**	0.757**
Utilization of goat milk	0.824**	0.858**	0.747**	1	0.845**
Utilization of goat meat	0.787**	0.812**	0.757**	0.845**	1

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

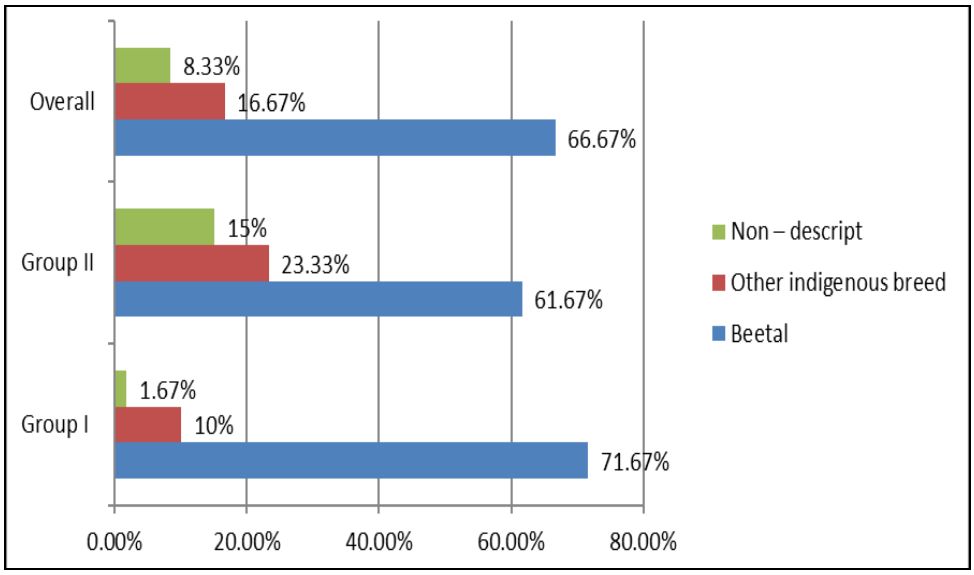

Fig 1: Distribution of goat farmers according to predominant breed reared

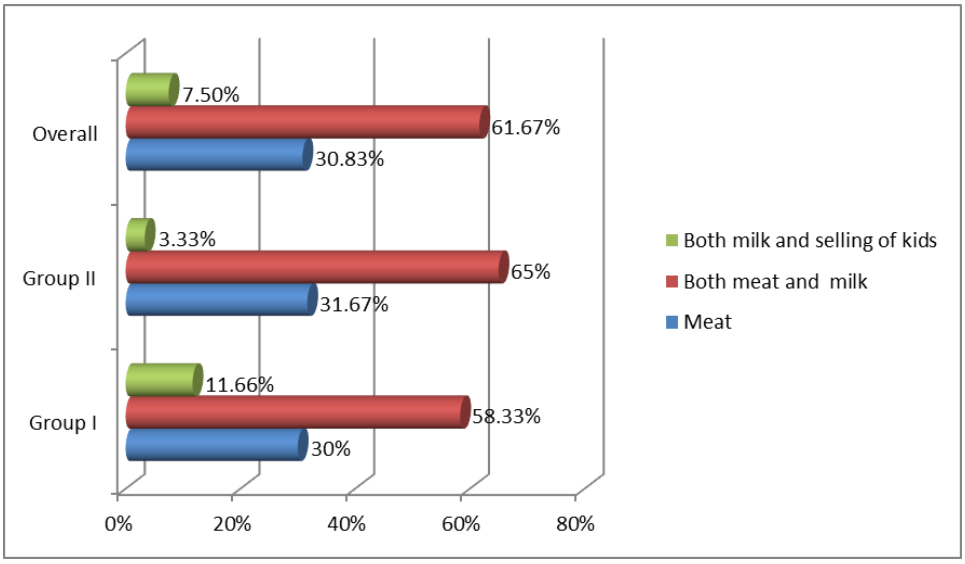

Fig 2: Distribution of goat farmers according to purpose of keeping goat

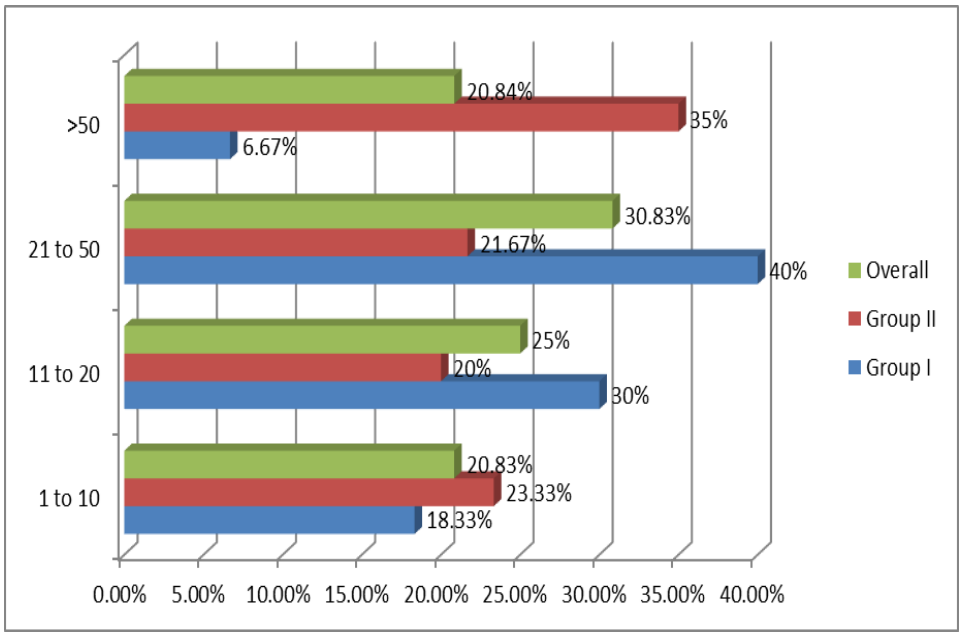

Fig 3: Distribution of goat farmers according to number of adult goats

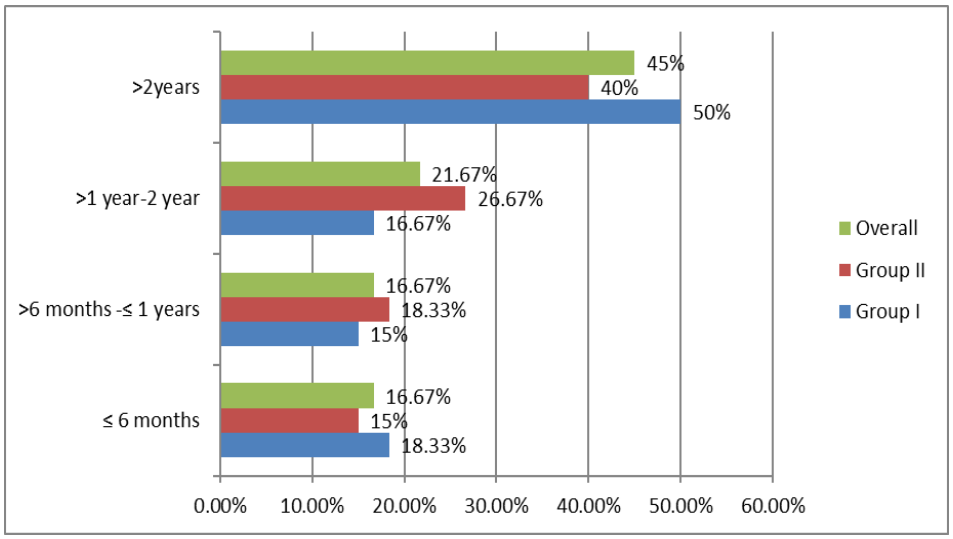

Fig 4: Distribution of goat farmers according to how long involved in goat farming

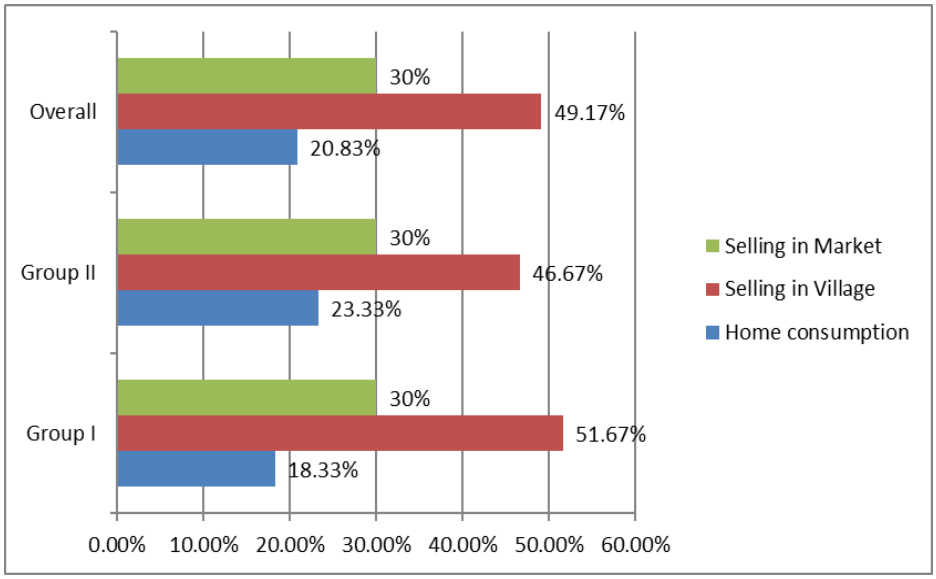

Fig 5: Distribution of goat farmers according to utilization of goat milk

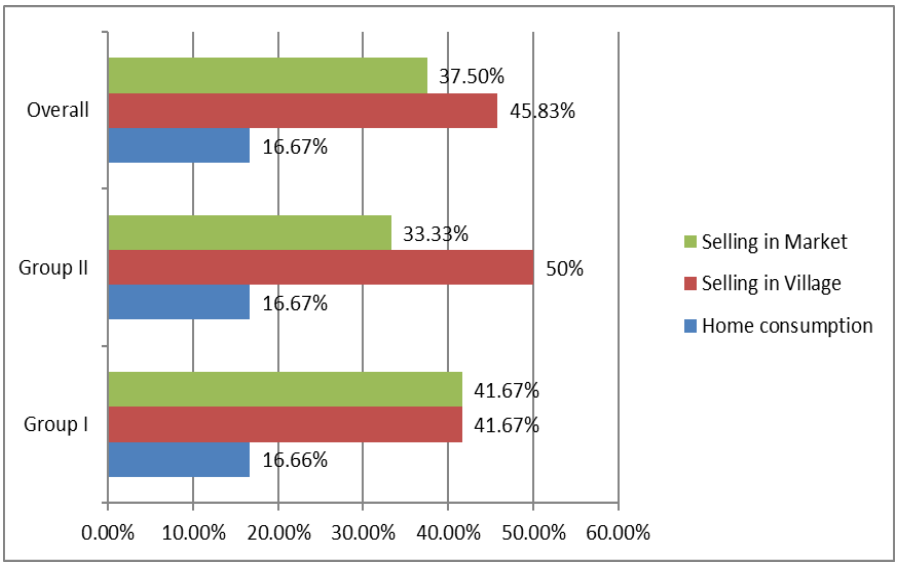

Fig 6: Distribution of goat farmers according to utilization of goat for meat purpose

References

1. Anonymous. BAHS (Basic Animal Husbandry Statistics-2019) 2019 retrieved from http://dahd.nic.in/circulars/basic-animal-husbandry-statistics-2019.
2. Sharma MC, Jindal SK. Prospects of goat production in India. Compendium of lectures, ICAR sponsored winter school November 25 to December 15, 2008 on Recent advances in improvement of productive and reproductive efficiency of goats through physiological and nutritional interventions, CIRG, Farah, Mathura, U. P 2008, 13-18.
3. Banerjee GC. A Text Book of Animal Husbandry. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi. 8th edition 2004, 933-961.
4. Bashir BP, Venkatachalapathy RT. Study on supply chains of goats in northern Kerala. Advances in Animal and Veterinary Sciences 2017;5(10):395-399.
5. Jayashree R, Jayashankar MR, Nagaraja CS, Satyanarayana K, Shrikrishna I. Goat rearing practices in Southern Karnataka. International Journal of Science and Environment 2014;3(4):1328-1335.
6. Roy R, Tiwari R. Socio-personal and Socio-economic profile of goat owners in India. Indian Journal of Extension Education 2016;52(3, 4):57-60.
7. Alexandre G, Leimbacher F, Maurice O, Domarin D, Naves M, Mandonnet N. Goat farming systems in Martinique: management and breeding strategies. Tropical Animal Health and Production 2009;41(4):635-44.
8. Rao PK, Dash SK, Singh MK, Rai B, Singh NP. Ganjam goat of Orissa and its management practices. Indian Journal of Small Ruminants 2009;15(1):44-50.
9. Ekambaram B, Gupta BR, Prakash MG, Sudhaker K, Reddy VR. Housing, breeding and management practices of Mahabubnagar goats. Indian Journal of Animal Sciences 2011;81(8):875-79.
10. Kumar S, Chauhan HS, Kide W, Mayekar AJ. Socio-economic profile of goat farmers in western Uttar Pradesh (India) Life Sciences International Research Journal 2015;2(2):43-46.