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Utilization patterns and livelihood implications of donkeys and mules among equine owners in Northern India

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Abstract

Working equines, particularly donkeys and mules play pivotal role of in enhancing livelihoods of underprivileged section of society. Despite historically being associated with poverty donkeys and mules are indispensable sources of draft power and transportation contributing to food security, poverty alleviation and social equity. However, the equine population has sharply declined in the past fifty years with a notable decrease in donkeys. The present study was conducted across four states in India delves into the socio-economic impact on the livelihoods of working equine owners. It explores prevailing utilization patterns and constraints faced by equine keepers through surveys and interviews. The socio-economic analysis reveals disparities in income, education and experience among equine owners influencing access to resources and livelihood patterns. Key findings indicate a reliance on donkeys and mules for cart transportation and pack animal services to specific socio-economic and environmental conditions. Despite their crucial role equine owners encounter socio-economic challenges such as distorted perceptions of donkey value, bargaining over transportation fees and fluctuating demand during peak and off-season. By unraveling the complexities surrounding equine utilization patterns and livelihood implications, the study offers valuable insights for policymakers, practitioners and stakeholders to address socio-economic disparities and ensure the welfare of both equines and their owners in northern India.

Keywords: Equine, livelihood, donkeys and mules, utilization pattern patterns

Introduction

Working equines play a fundamental role in livelihoods improvement as they provide draft power and contribute to food security and poverty reduction, income generation and social equity. Donkeys and mules are a source of livelihood for many underprivileged people in rural and peri-urban communities benefiting directly from working equines. Donkeys and mules have often been associated with poverty unlike cattle, camels or horses. During the last fifty years equine population declined at an alarming rate except mule which had increased in spite of mechanization. At present, equine population in India is 0.55 million, which includes 0.34 million of horses and ponies (62.96%), 0.08 million mules (14.81%) and 0.12 million donkeys (22.22%) as per 20th livestock census 2019. Total Population of Horses, Ponies, Mules & Donkeys has decreased by 51.9% over previous Livestock Census 2012. The decrease is highest in donkeys by 61.23 percent followed by mules (57.09%) and horses and ponies (45.58%).

Donkeys and mules are the salient workers carrying the beast of burden on roads, tracks, fields and farms, beside river banks, brick kilns, hills, at construction sites. They transport everything from people, farm produce, construction materials, market products, water, clay, fodder, manure and fuel wood. These working equines share a

mutual interdependence with their owners. Tiwari *et al.* (2003) ^[9] stated that the donkey is economical to buy and to maintain. It is very friendly, hardy and a quiet, gentle animal if well handled, which can be trained very easily. Donkeys are generally used as pack animals and for hauling goods on carts in and around cities. Oudman (2004) ^[5] stated that generally the buying and selling price of donkeys is far below their true value, which should be calculated on the basis of the work they give over the 14 years they are able to work, if well cared for. If a donkey works six hours a day, four days a week over that many years, it will have given about 15,000 hours of work. The low price of donkeys, therefore, is a reflection of distorted perceptions of their role. BIRTHAL *et al.* (2002) ^[1] reported that under these mountain specificities, equines carry out multifarious activities such as immediate transportation of highly perishable cash crops like fruits and vegetables grown in hills in the event of road blockades due to landslides. Chauhan (2008) ^[2] stated that equine-rearing was concentrated among the other backward classes and average family size was larger (5 and more) in the aged (41-60 years) category of equine-rearers. Pal *et al.* (1997) ^[6] reported that Donkeys are capable of thriving in hot climate and are only source of livelihood for a particular section of the society which includes poorest of poor countrymen

(nomadic tribes etc.). The present study aimed to study the socio-economic impact on the livelihood of these working donkey and mule owners, the prevailing feeding, housing and management and equine husbandry practices adopted by these owners and also to study the pattern of utilization of the donkeys and mules in different activities.

Materials and Methods

The survey was conducted in equine populated four states viz., Haryana, Rajasthan, Uttarakhand and Uttar Pradesh. The data was collected from equine populated districts of these four states where working donkeys and mules are used by equine keepers as a source of livelihood for their families. Donkey and mule populated areas were selected purposely for survey and information collection through personal interview. During the survey a total of 603 respondents comprising of 78 respondents from Hisar, Rohtak, Yamuna Nagar, Bhiwani, Jhajjar, Rewari, Jind districts in Haryana, 148 respondents from Churu, Sikar, Jhunjhunu, Jodhpur, Pali, Sri Ganganagar, Hanumangarh, Bikaner, Bundi districts in Rajasthan, 202 respondents from Nainital, Udham Singh Nagar, Chamoli, Tehri Garhwal, Uttarkashi, Rudrapur districts in Uttarakhand and 175 from Saharanpur, Muzaffarnagar, Meerut, Bijnor, G.B. Nagar, Hardoi, Lucknow, Barabanki, Allahabad, Varanasi

districts in Uttar Pradesh were selected as respondents. The information on socio-economic status of equine owners, utilization pattern of donkeys and mules and constraints faced by equine keepers were collected through personal interview, focus group discussion and using PRA tools. The collected data was compiled, tabulated and analysed using suitable statistical tools and techniques in terms of frequency, mean standard deviation, ranking and correlation etc. for interpretation of the findings. The findings of the study were analysed and reported in form of salient findings of the study.

Results and Discussion

Socio-economic variables reveal inequalities surrounding wealth, education, experience and social status. Socio-economic status has a profound role in determining one's accessibility to the common resources, livelihood pattern, household food & nutritional security etc. These background factors play a role in an individual's life decision, such as their occupation, family choices, social position etc. The comprehensive analysis of socio-demographic characteristics among equine owners across four states in India viz. Haryana, Rajasthan, Uttarakhand and Uttar Pradesh are presented in Table 1.

Table 1: Socio-economic profile of respondents

Parameter	Category	Haryana (n1=78)		Rajasthan (n2= 148)		Uttarakhand (n3=202)		Uttar Pradesh (n4= 175)		Total (N= 603)	
		F	%	F	%	F	%	F	%	F	%
Age	Young (<27)	4	5.13	25	16.89	34	16.83	32	18.29	95	15.75
	Middle-aged (28-46)	69	88.46	100	67.57	147	72.77	102	58.29	418	69.32
	Old (>47)	5	6.41	23	15.54	21	10.4	41	23.43	90	14.93
Category	SC/BC	69	88.46	78	52.7	114	56.44	103	58.86	364	60.36
	OBC	9	11.54	44	29.73	67	33.17	64	36.57	184	30.51
	General	0	0.00	26	17.57	21	10.4	8	4.57	55	9.12
Education	Illiterate	23	29.49	52	35.14	35	17.33	90	51.43	200	33.17
	Read & write	25	32.05	49	33.11	23	11.39	50	28.57	147	24.38
	Primary	29	37.18	26	17.57	51	25.24	21	12	111	18.41
	Middle	1	1.28	19	12.84	78	38.61	10	5.71	108	17.91
	High school	0	0	2	1.35	15	7.43	4	2.29	44	7.30
Family size	Small	26	33.33	18	12.16	22	10.89	5	2.86	71	11.77
	Medium	50	64.1	94	63.51	157	77.72	112	64	413	68.49
	Large	2	2.56	36	24.32	23	11.39	58	33.14	119	19.73
Experience (yrs.)	Low	3	3.85	19	12.84	29	14.36	31	17.71	82	13.60
	Medium	62	79.49	114	77.03	150	74.26	112	64	438	72.64
	High	13	16.67	15	10.14	23	11.39	32	18.29	83	13.76
Average Income (Rs/day)	Up to Rs. 350	2	2.56	54	36.49	15	7.43	7	4.00	78	12.94
	Rs. 351-500	52	66.67	64	43.24	32	15.84	134	76.57	282	46.77
	Above 500	24	30.77	30	20.27	155	76.73	34	19.43	243	40.30

Table 1 illustrates various parameters such as age, category, education, family size, experience (in years) and average income (in rupees per day). Notably, the middle-aged population constitutes the largest segment in each state, ranging from 58.29% to 72.77%. Meanwhile, young individuals comprise between 5.13% to 18.29% and the elderly represent between 6.41% to 23.43% across the states. Within the Category parameter, SC/BC individuals constitute the majority, ranging from 52.7% to 88.46%, while OBC individuals range from 29.73% to 36.57%. In terms of Education, the Read & write and Primary categories dominate, except in Haryana where Middle education levels prevail. Illiterate individuals

range from lowest 17.33% in Uttarakhand and highest 51.43% in Uttar Pradesh. Whereas High school-educated individuals range from 0% to 7.43%. Family sizes predominantly fall within the medium category, ranging from 63.51% to 77.72%, followed by small and large categories. Medium experience levels are predominant, ranging from 64% to 79.49%, while Low and High experience levels vary between 10.14% to 18.29%. Regarding average income per day, the majority falls within the Rs. 351-500 income bracket, ranging from 36.49% to 76.73%, with the lowest income bracket (Up to Rs. 350) ranging from 2.56% to 12.94% and the highest (Above 500) ranging from 19.43% to 76.73%.

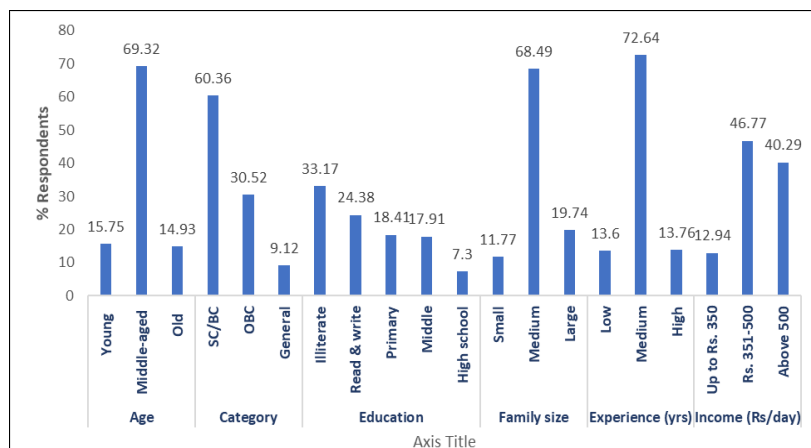


Fig 1: Socio-economic status of equine owners

In summary, the Fig 1 provides valuable insights into the socio-economic dynamics of the specified states, highlighting both commonalities and disparities across various socio-demographic parameters. About 95 percent of the households had adopted sedentary equine-rearing, while for about 5 percent, it was of migratory nature.

Ownership pattern and equine holding of the respondents: The equines are used for different purpose

like pleasure riding, sports, transportation of goods and humans. Although the present study focused on donkeys and mule the comprehensive equine holding of respondents including horses, mules and donkeys was recorded during the study. A perusal of Table 2 indicates that majority of respondents (72.64%) were having mules. Whereas donkeys were kept by 32.67 percent and horses by 18.91 percent respondents.

Table 2: Distribution of respondents according to equine holding

Sr. No.	Equine	Percentage of respondents having of different equines				
		Haryana (n1=78)	Rajasthan (n2= 148)	Uttarakhand (n3=202)	Uttar Pradesh (n4= 175)	Total (N= 603)
1.	Horse	24.36	6.08	11.39	36.00	18.91
2.	Mule	80.77	34.46	98.51	69.71	72.64
3.	Donkey	30.77	68.92	4.46	41.14	32.67

Donkey ownership was high among economically deprived resource poor equine keepers in Rajasthan and Haryana as donkeys are relatively very cheap among horses, ponies and mules. Whereas mules were preferred by the equine keepers in Uttarakhand in view of its working potential in hilly terrain and who have enough financial resources to purchase mules to gain sustainable livelihood.

As indicated in Table 2 Donkey ownership was highest in Rajasthan (68.92%), followed by Uttar Pradesh (41.14%), Haryana (30.77%) and Uttarakhand (4.46%). The mule ownership was highest in Uttarakhand, where 98.51 percent respondents kept mules followed by Haryana (80.77%), Uttar Pradesh (69.71%) and Rajasthan (34.46%).

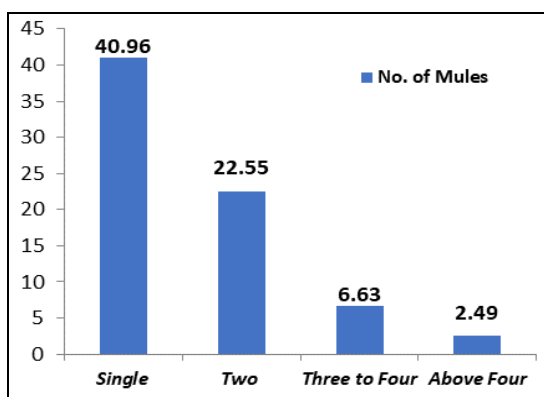


Fig 2: Percent distribution of respondents on basis of mule holding

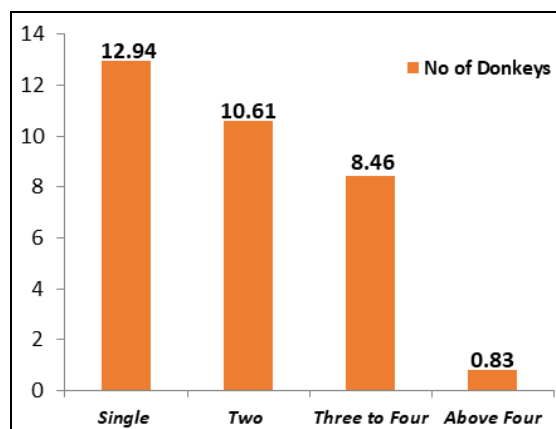


Fig 3: Percent distribution of respondents on basis of donkey holding

A cursory look at Fig. 2 shows that 40.96 percent respondents had single mule, whereas 22.55 percent respondents had pair of mules and 6.63 percent respondents had three to four mules and only 2.49 percent had more than four mules per household. In case of donkeys as reflected in Fig. 3 regarding donkey ownership 12.94 percent of respondents had single donkeys, whereas 10.61 percent respondents had pair of donkeys and 8.46 percent respondents had three to four donkeys and a negligible number of respondents i.e. 0.86 percent only had more than four donkeys per household.

Utilization Pattern of donkeys and mules by the respondents: The working donkeys and mules are the source of livelihood for the respondents these equid are used either in pack transportation or cart transportation. The donkeys and mules are used as pack animal at construction site, brick kilns. The donkeys are also used for transportation of goods and construction material form In

Rajasthan and Haryana. Working equine keepers are mostly kept by underprivileged resource poor people in the society. Single Mule used by respondents in cart for transportation main source of livelihood by entire household. Whereas, on *Chardham Yatra* route in Uttarakhand most of the equine keepers usually keep a pair of mules for transportation of pilgrims providing livelihood to their family.

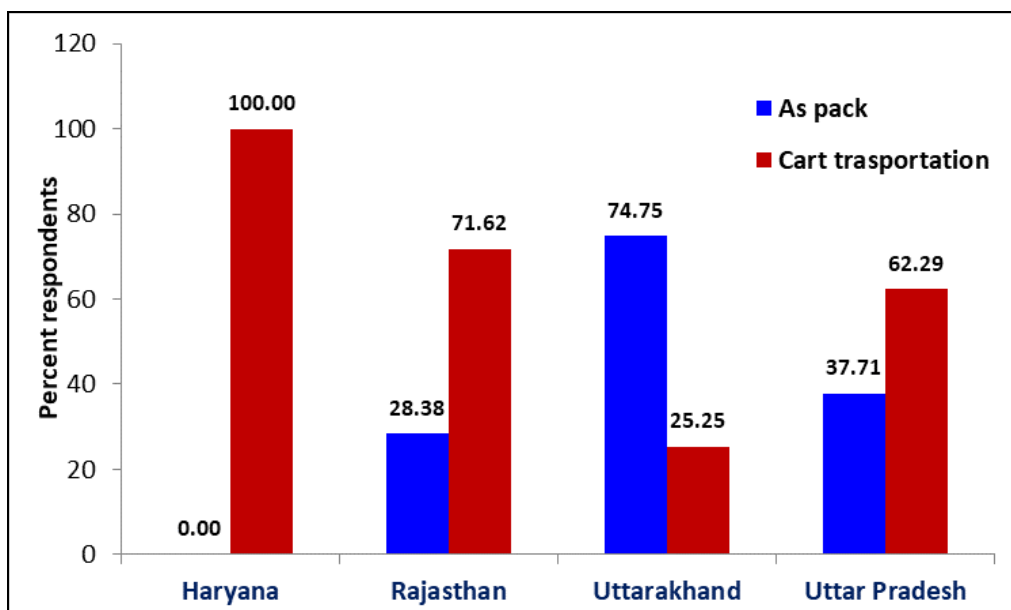


Fig 4: Utilization of donkeys and mules by the respondents

As depicted in Fig. 4, it can be observe that donkeys and mule were used in cart transportation by the respondents in Haryana. In Rajasthan majority of the respondents 71.62 percent used donkeys and mules in cart transportation and 28.38 were using their equid as pack animal. In Uttarakhand majority of respondents 74.75 percent were using donkeys and mules as pack most of which were used in hilly areas for transportation of pilgrims on *Chardam Yatra* route and in plain regions of Uttarakhand 25.25 percent respondents were using their animals in cart transportation. Where as in Uttar Pradesh 62.29 percent respondents were using their equid for cart transportation and 37.71 percent were using donkeys and mules as pack.

Utilization in cart transportation

Mule carts were used for transportation farm produce to market and goods and other material from market to villages in all the four states. Donkeys are used for cart transportation in mostly in Rajasthan & Haryana. Donkeys and mules are widely used for transportation of bricks at brick kilns and in cities for transportation of construction material and market goods and people in rural areas in the survey areas. A perusal of Table 3, shows utilization of mules and donkeys by respondents in cart transportation for earning their livelihood.

Table 3: Equine Utilization and Livelihood of Respondents

Parameter	Haryana	Rajasthan	Uttarakhand	Uttar Pradesh
Load	4-8 quintal/ cart/trip, 250-400 bricks/ cart/trip	2-4 quintal/ cart/trip	4-5 quintal/ cart /trip, 250-400 bricks/ cart/trip	4-6 quintal/ cart/trip, 250-400 bricks/ cart/trip
Payment	Rs 20-25/bag (50kg) depending on goods	Rs 100-150/trip or Rs 15-25/quintal depending on goods and distance	Rs 100-150/trip depending on distance	Rs 150-185for 1000 bricks Rs 15-20 for 30-50-kg load to market
No. of trips	one round trip of 15-25 km/day	3-8 trips/day depending on distance	4-6 trips/day	4-6 trips/day
Earnings/day	Rs 400-700	Rs 300-500	Rs 500-800	Rs 350-600

The animals were mainly used for transportation of farm produce and inputs, goods from market, construction material, bricks at brick kilns. The equines usually carried weight between 2-6 quintals in cart transportation depending on size of animal. However, at some places in Haryana and Uttar Pradesh mules were carrying load upto 6-8 quintals in carts. Equine owners get a payment of Rs 20-30/bag of 50

kg depending on type goods and distance. At brick kilns they were paid Rs 150-185 for 1000 bricks depending on distance travelled.

In Haryana equine owners mostly had one round trip of 15-25 km/day. Whereas in Rajasthan they had 3-8 trips/day in span of 2-6 km, In Uttarakhand and Uttar Pradesh they had 4-6 trips/day in span of 2-5 km. The per day earnings for

cart transportation ranged from Rs 400-700 in Haryana, Rs 500-800 Uttarakhand, Rs 300-500 in Rajasthan and Rs 350-600 in Uttar Pradesh.

B. Utilization as pack animal

Donkeys and mules were used for pack transportation

mostly at brick kilns, river beds for lifting of sand, construction sites. In hilly areas of Uttarakhand mules were widely used for transportation of goods, farm produce etc. from fields to villages and market. The respondents using their equines as pack animal for transportation on an average keep 4-6 donkey and 2-4 mules per household.

Table 4: Utilization pattern of mules and donkeys in pack transportation

Pack transportation	Mule	Donkey
Load	50-90 brick or 100-220 kg load per trip	30-45 brick or 70-130 kg load per trip
Payment	Rs 150-185 for 1000 bricks depending on distance	
No. of trips	Completes 5-8 trips/day/animal and usually transport 3000-6000 bricks/day/household using 4-6 animals	
Working time and duration	Summer season: 4 am to 12 noon in summer season Winter season: 8-9 am to 3-4 pm in winter season Work duration: 6-8 hours a day/animal	

As indicated in Table 4, the donkeys carry 25-45 bricks or 70-130 kg load as pack load on their back whereas mule carry 50-90 bricks or 100-220 kg load per trip depending on the size of mule. The donkeys and mules usually travel upto 1 km distance per trip and each animal is used to cover 5-8 trips/day. Each household generally have 4-6 animals and transport 3000-6000 bricks/day/household. The owners receive Rs 150-185 for 1000 bricks depending on distance travelled per trip.

In Uttarakhand on *Chardham Yatra* route the mules were also used as pack for carrying pilgrims and tourists to the holy places. They were also used for transportation of agricultural produce from farms and construction material and goods in hills during the non-yatra season which starts from April to October every year.

The working equines carry one person on their back and usually carry load upto one quintal as pack. They are used for transporting pilgrims and goods on *yatra* route at Kedarnath, Yamnotri and Hemkund Sahib. As depicted in Table 7, the working equines generally travel 20-24 km distance per day. The working equine owners on an average earns Rs 45000-80000/animal/season from April to October. Although the rates for carrying tourist and pilgrims are fixed by the district administration and *yatra* committee in event of less number of pilgrims the people bargain with equine owners and give less than the prescribed fees for carrying the pilgrims on *yatra*.

Constraints and welfare issues in donkey and mule utilization

Overloading of donkeys of and mules was common in all the four states covered under the survey. Overloading results in injury to animal and bad effect on health resulting in loss of livelihood in long run. Working donkeys carry sometimes upto 60 bricks and mules are loaded with upto 90 bricks/animal as pack. The pack load is nearly equal to mules body weight. Poor harness with hard leather padding causing injury to animal. Hard padding matrail, use of iron chains casue pain, dicomfort and injury to the animal. This reduces the work efficiancy and also badly affects the health of animal. Uneven load and poor quality of pack saddle worsen the situation for animal causing pain and trauma. The intervention is needed to educate equine owners about bad effects of overloading and welfare aspects of working equines.

Conclusion

Donkeys and mules play significant role in the livelihoods of underprivileged communities across different states in India. The present study in northern states underscores the interdependence between working equines and their owners highlighting the socio-economic dynamics that shape their utilization patterns and livelihood implications. The findings reveal a stark reality of declining equine populations, particularly among donkeys, which have historically been vital assets for the marginalized sections of society. Despite facing socio-economic constraints, donkeys and mules continue to serve as indispensable sources of draft power and transportation facilitating the movement of goods, construction materials and pilgrims in challenging terrains. These factors influence the accessibility to resources, livelihood patterns and household economic stability, further underscoring the need for targeted interventions to uplift vulnerable communities dependent on working equines. The study accentuates utilization patterns of donkeys and mules, ranging from cart transportation to pack animal services. Analysis of equine utilization provides valuable insights into the diverse livelihood strategies adopted by equine owners across different states in northern India. Furthermore, it also highlights the socio-economic challenges faced by equine owners, such as distorted perceptions of the value of donkeys, bargaining over fees for transportation services and fluctuations in demand during peak and off season. By unraveling the complexities surrounding equine utilization patterns and livelihood implications, the study offers valuable insights for policymakers, practitioners and stakeholders to formulate targeted interventions aimed at promoting sustainable equine welfare and socio-economic development in northern India. These challenges underscore the need for comprehensive policy frameworks and support mechanisms to safeguard the welfare of both equines and their owners.

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References

1. Birthal PS, Joshi PK, Kumar A. Assessment of research

- priorities for livestock sector in India. New Delhi: National Centre for Agricultural Economics and Policy Research; 2002. Policy Paper 15, 47 p.
2. Chauhan SK. Socio-economic Dimensions of Equine-rearing in Himachal Pradesh. *Agric Econ Res Rev*. 2008;21:211-220.
 3. DAHDF. 20th Livestock Census-2019. All India Report. New Delhi: Ministry of Agriculture & Farmers Welfare, Department of Animal Husbandry, Dairying and Fisheries, Gov. Of India; 2022.
 4. DAHDF. 19th Livestock Census-2012. All India Report. New Delhi: Ministry of Agriculture Department of Animal Husbandry, Dairying and Fisheries, Gov. Of India; 2014.
 5. Oudman L. Donkeys for traction and tillage. Wageningen: Agromisa Foundation; 2004. ISBN: 90-77073-95-7.
 6. Pal Y, Ghei JC, Gupta AK, Yadav MP. Comparative studies on heat tolerance in ponies and donkeys. *Indian Vet J*. 1997;75:78–79.
 7. Roy ML, Chandra N, Kharbikar HL, Joshi P, Jethi R. Socio-economic status of hill farmers: An exploration from Almora District in Uttarakhand. *Int. J Agric. Food. Sci Technol*. 2013;4(4):353-358.
 8. Singh V, Partap T. Draught Animal Power Management Scenarios in the Indian Central Himalayas. *Draught Animal News*. 2003;(38):36-55.
 9. Tiwari G, Verma RN, Garg R, Shrimali H, Chaudhary JL. Donkey carts of Rajasthan. *Draught Animal News*. 2003;(38):13-22.