

ISSN 1819-1878

Asian Journal of
Animal
Sciences

<http://knowledgiascientific.com>

Knowledgia
SCIENTIFIC
A Place to Publish Outstanding Research

Equine: The Ignored Working Animal of Kashmir: Status, Constraints, Research Areas and Ways for Improvement

¹M.R. Fazili and ²M.A. Kirmani

¹Teaching Veterinary Clinical Complex,

²Division of Animal Breeding and Genetics,

Faculty of Veterinary Science and Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Shuhama (Alusteng), Srinagar, J and K, 190006, India

Corresponding Author: M.R. Fazili, 78-HIG Colony, Lane-6, Green Park, Near Telephone Exchange, Bemina, Srinagar, Kashmir-190018, India Tel: 91-9419095830

ABSTRACT

In Kashmir, equine species plays a very important role in the socio-economic life of the human population. They are the beasts of burden and have also been playing important role in tourism promotion. The majority of the equine population comprises of ponies that are owned only by socially and economically deprived landless, marginal and small farmers. Unfortunately, till date the contribution of this species has neither been calculated nor recognized, their welfare often neglected. No attention has been paid to research and development of this domestic animal. In this study, the current status of equines in Kashmir, the constraints affecting their development and survival, priority research areas and establishment of species specific infrastructure is highlighted.

Key words: Equine, ponies, beasts of burden, environment, equine polo, razor blade wire, colic

INTRODUCTION

Ever since their domestication around 2000-3000 years B.C the equine species comprising of horses, ponies, donkeys and mules have contributed significantly to the human civilizations throughout the world. They have served people of every status: from kings to the poor peasants, learned elite class to the illiterate masses. The term horse power is a reminder of horse's ability to perform hard work, day after day, in a variety of conditions. In the contemporary Jammu and Kashmir State of India, this species is owned only by socially and economically deprived, landless, marginal and small farmers and plays a very important role in the socio-economic life of our population. However, the contribution from draft power of equines has neither been calculated nor recognized. They are generally given less consideration than other species of livestock by the government agencies and their welfare is often neglected. Till date very limited attention has been paid to equine research and development. The purpose of the present study is to: highlight the woeful plight of our equines, pinpoint the research areas and the urgent measures needed for saving this species and the economy of their owners.

CURRENT STATUS

Population: Almost 2% of the world's equine population and 5% of Asian equines are found in India (Chauhan, 2005). Currently it possesses 17.7 lakh equines (NRCE, 2010). Major population comprising about 17.3 lakh donkeys, mules and ponies, provide livelihood to the rural societies

Table 1: All India equine population trend (in lakhes)

Equine	1997	2003	Decrease (%)
Horses and Ponies	827	751	9.19
Mules	221	176	20.36
Donkeys	882	650	26.30
Overall decrease			18.62

Source: All India Livestock Census, 2003

Table 2: State wise distribution of equine population in thousands (2003)

State	Horses and ponies	Mules and donkeys	Total	%
Andhra Pradesh	9	33	42	2.99
Arunachal Pradesh	7	Nil	7	0.49
Assam	12	Nil	12	0.85
Bihar	117	23	140	9.99
Chatis garh	4	Nil	4	0.28
Gujarat	18	65	83	5.92
Haryana	25	8	33	2.35
Himachal Pradesh	18	9	27	1.92
Jammu and Kashmir	172	24	196	13.99
Jharkhand	5	Nil	5	0.35
Karnataka	14	25	39	2.78
Madhya Pradesh	32	39	71	5.06
Maharashtra	40	57	97	6.92
Manipur	2	Nil	2	0.14
Meghalaya	2	Nil	2	0.14
Mizoram	2	Nil	2	0.14
Nagaland	1	Nil	1	0.07
Orissa	Nil	9	9	0.64
Punjab	29	5	34	2.42
Rajasthan	25	143	168	11.99
Sikkim	2	Nil	2	0.14
Tamil Nadu	25	26	51	3.64
Uttar Pradesh	154	182	336	32.98
Uttaranchal	17	1	18	1.28
West Bengal	18	Nil	18	1.28
Delhi	1	Nil	1	0.07
Other States	Nil	Nil	Nil	Nil
Total	751	650	1401	-

Source: All India Livestock Census, 2003

living in arid, semiarid and hilly regions especially in the foot hills of Himalayas through transport (Phaniraja and Panchasara, 2009) and draught where as remaining small population is used in army, police, border security force, racing industry and sports. During last six decades, the overall population has shown a declining trend (Chauhan, 2005). The decrease registered during 1997 to 2003 is 18.62% (Table 1). The decline in the number of donkeys (26.30%) and mules (20.36%) is more pronounced than those of horses and ponies (9.19%).

Amongst the various states, Jammu and Kashmir ranks second (after Utter Pradesh) with estimated equine population of 2.39 lakh and comprises 13.9% of the national population (Table 2). In contrast to the national trend, the equine population of this state has shown

Table 3: Jammu and Kashmir population trends of equids from 1956 to 2003 (lakhs)

Year	Horses and ponies		Donkeys and mules		Total	
	Population	Over 1956 increase/decrease (%)	Population	Over 1956 increase/decrease (%)	Population	Over 1956 increase/decrease (%)
1956	0.790	-	0.176	-	0.966	-
1961	0.694	-0.096 (-12.15)	0.147	-0.029 (-16.48)	0.841	-0.125 (-12.94)
1966	0.658	-0.132 (-16.70)	0.204	+0.028 (+15.90)	0.862	-0.104 (-10.76)
1972	0.600	-0.190 (-24.05)	0.175	-0.001 (-0.56)	0.775	-0.191 (-19.77)
1977	0.691	-0.099 (-12.53)	1.020	+0.844 (+479.50)	1.711	+0.745 (+77.12)
1982	0.973	+0.183 (+23.16)	0.303	+0.127 (+72.15)	1.276	+0.310 (+32.09)
1988	1.040	+0.250 (+31.64)	0.349	+0.173 (+98.29)	1.389	+0.423 (+43.79)
1992	1.215	+0.425 (+53.79)	0.369	+0.193 (+109.65)	1.584	+0.618 (+63.97)
1997	1.412	+0.622 (+78.73)	0.432	+0.256 (+145.45)	1.844	+0.878 (+90.89)
2003	1.717	+0.927 (+117.34)	0.641	+0.465 (+364.20)	2.358	+1.392 (+144.09)

Source: J and K Livestock Census, 2003

remarkable increase from 1977 (Table 3). The increase has reached 144% in 2003 when compared to the figures of 1956. The increase in the population of donkeys and mules has been more than three times (364.20%) when compared to the increase (117.34%) in horses and ponies during the same period.

The state of Jammu and Kashmir comprises of three distinct geographical regions i.e. tropical Jammu, temperate Kashmir and cold desert Ladakh. The number of horses in Kashmir Division (including Leh and Kargil districts of Ladakh) is 1.070 lakh. The maximum number are being reared in Anantnag (0.201 lakh) and Baramulla (0.175 lakh) districts (Anonymous, 2009b). World famous tourist places like Phalgam and Gulmarg being located in these districts indicate tourism related use of this species. Turmoil during more than two decades in the State of Jammu and Kashmir lead to disruption of road net work and halt in development. Consequently, dependence of human population increased on the traditional means of transport in the rural and border terrain areas. This might have resulted in the increase of equine population.

Breeds: The majority of the equine population in Kashmir comprises of ponies (Table 3). However, military maintains mules for their work in the hilly terrains. Breed characterization and documentation of local equine population has not been under taken till date. Zanaskari horses are available in Ladakh area of Jammu and Kashmir. These horses are known for their ability to work, run adequately and carry loads at high altitude (Chauhan, 2005). Large scale breeding with nondescript ponies has endangered this breed. Kiang asses are also found in Ladakh (NRCE, 2010).

Health: Although, the number of equines has shown significant increase during last two decades but the poor quality of these animals is evident in all areas of the valley. Poor body conformation and nutritional status, use of improper carts and saddles, plying on hard surfaces and over loading ultimately results in low work out-put and reduced life of the horse. The average working life of this species in Kashmir has not been explored. However, we believe that it is definitely lower than 11 years reported from countries including Turkey, Egypt and Peru and considerably less than the 37 years average life of a donkey in United Kingdom (Blakeway, 1994).

In Srinagar city hundreds of lame and disabled ponies abandoned by owners are visible in groups wandering on streets, grave yards and residential areas even in the harsh Winter season. The owners of the female ponies visit them just to claim ownership of the foals born in free range.

ROLE PLAYED BY EQUINES IN CONTEMPORARY KASHMIR

Horses were used in warfare for most of recorded history, dating back to the 19th century BC. While mechanization has largely replaced the horse as a weapon of war, yet they are still seen today in limited military uses, mostly for ceremonial purposes or for reconnaissance and transport activities in areas of rough terrain where motorized vehicles are ineffective.

Unlike several states of the country, horses continue to have a significant impact on the economy of Jammu and Kashmir. The most significant contribution of the present day meager equine population is their sustenance as pack animals or their use for cart pulling. Unfortunately, the great value of this species to rural, urban and periurban and semi urban communities has been largely ignored by the authorities. In arid and semiarid zones other forms of mechanical transportation are either unsuitable or uneconomical. Performing throughout the year as beasts of burden they are prominently visible as pulling carts in urban as well as rural areas and are the most important means of transport in hilly and mountainous areas. Over the difficult high altitude terrains-mules are commonly used for transportation of men and material for both civilian and army supplies. In all the hilly and tedious tortuous zones of the border areas, equines are typically transporting materials such as grain from agricultural areas to home and to and from various markets, timber and fuel-wood from the forests, animal dung to fields, crop residues for animal feeding and conservation, building materials such as sand, gravel, wood and stones. No technology has been able to supersede this job of the equine kingdom in these regions.

As saddle-horses, ponies of the valley are providing entertainment to numerous tourists since many decades in world famous places like Gulmarg, Pahalgam, Sonamarg and Yousmarg etc. They also carry the tourists and their belongings up and down the Himalayan Mountains while tracking over the beautiful and breathe taking virgin slopes of the valley. The Amar Nath (Kashmir) and Veshnu Devi (Katra, Jammu) Yatra (Pilgrimage) by millions of Hindus every year would not have been possible without this quadruped.

Around the world, horses nowadays play a role within human economies, for leisure, sport and working purposes. By now horse racing has been adopted by most of the countries as an important sports activity. Their use in entertainment, pleasure and culture is also evident. In Ladakh, the equine polo introduced long ago is still entertaining not only the local population but also attracts large number of tourists. Before Indian independence, this sport had been popular in Kashmir and a playing field called Polo ground still exists as a prime location in Srinagar city. Recognizing the importance of this sport especially in tourism promotion, a polo match was organized after six decades in Srinagar by the department of tourism, Jammu and Kashmir government in Srinagar (Anonymous, 2009a).

One adult horse produces about 10 t of farm waste annually (Anonymous, 2003). The horse manure has been improving the agricultural and forest land of our state.

The therapeutic horse riding and the technique of psychotherapy involving equines as companion animals although gaining interest in the contemporary world has yet to be started in our valley.

SOME PECULIARITIES OF EQUINE SPECIES

Horses are bestowed with many anatomical and physiological attributes (unlike other animals) making them extremely suitable for becoming beast of burden and the animal of the poor. They are herbivorous and eat soft plants. They are well adapted for running and have well developed fight and flight instinct. Complexity of brain suggests that they are alert and intelligent animals and have good night vision and ability to focus on near or far objects at the same time. Horse's senses are considerably superior to humans. Being prey animals they are almost always aware of their surroundings. They have the largest set of eyes among all land mammals and can sleep either by lying down or standing up. Studies have shown that horses do extremely well at simple learning and may be able to solve advanced cognitive challenges with categorization and concept learning (Tsang, 2010). Reasonable sense of hearing, touch, taste and smell give them invaluable information about their surroundings. By agonistic behavior, these animals warn other fellows and species to keep distance. By doing so they not only save themselves and their fellow animals but also the life and property of the humans for whom they work. Horses are hard animals and become very much attached to their species and to humans. They have been bestowed with unique genetic qualities associated with ability to survive and produce under the hardships of hostile climatic conditions and limited feed resources. They are efficient users of low quality, high fiber food and can tolerate up to 30% dehydration (Yousef, 1991). Compared to production animals they require lesser quantity of food and have the ability to conserve more energy. They drink infrequently and irregularly. This makes them suitable animals for harsh environments and difficult working conditions (Swai and Bwanga, 2008). Their life expectancy is also longer. Donkey lives up to 30 plus years.

CONSTRAINTS FOR EQUINE DEVELOPMENT IN KASHMIR

Since decades, many factors acting independently as well as collectively are hampering the survival of the equine population. They include:

- Adoption of new technology during last century is the single most important reason of decline in the importance of the horses. The introduction of the automobiles minimized the need for horses. Since then the horse numbers declined and the number of automobiles continued to increase. Modern means of transport (petrol and diesel vehicles) have pushed the majority of these pack animals to the terrains and hilly areas
- In Kashmir, a pony is an important and generally the only earning member (on a day to day basis) of the poor family. The comparative or absolute poverty of the majority of horse owners has lead to many problems for this poor creature. With the passage of time decrease in the land holdings has economically weakened their masters. After a session of work or in off-season the owner's force their ponies out of their homes for fetching their food themselves. Consequently, they have no option than to consume low nutritious plant material growing naturally on any barren land or the road sides. While, nibbling along the road side or standing idle in the middle of a busy road, many of them are hit by ever increasing number of plying vehicles resulting in their death or disability. A disabled horse is worse than a dead horse
- The increased frequency of visits by the wild animals like leopards and black bear into the human habitations is posing an important threat to both the humans and animal population. Compared to other domesticated animal species, horses being provided shelter for a minimum period of the year are thus more prone to the attacks by the wild

- The network of security bunkers erected throughout valley during more than two decades with barbed wire fencing around them is also a source of trouble to all domestic animal species and particularly to the equine population. Unfortunately, the traditional less harmful barbed wires have now been replaced by razor blade type. While, wandering on the roads in search of food, greedy horses locate patch of greenery under and beyond these wires try to nibble it. In this effort they generally and easily get entangled. Due to the highly developed flight instinct of the horse, on getting hurt, the individual becomes panicky. The specially designed fatal razor bladed wire further complicates safe withdrawal. Consequently, the animal gets multiple and deep bleeding cuts (Fazili and Buchoo, 2007). At times the cuts over the abdomen even expose its delicate viscera. In severe cases, profuse haemorrhage and shock leads to death before veterinary aid is sought. The equine wound management is tedious because of the development of proud flesh (exuberant granulation) that generally does not respond to simpler treatment protocols. As compared to the farm animals, treatment of equine patients is also very costly. The general anaesthesia is an important pre-requisite for managing even the minor surgeries. Unlike ruminants they easily develop generalized peritonitis. Therefore, more stringent and impractical (in field surgeries) aseptic measures are required to prevent the development of wound complications leading to death. The treatments of cuts are generally unaffordable for the poor farmer due to the exorbitant cost of antibiotics, antiseptics and antitetanus toxoid. At times the cost is more than the sale value of the animal itself. During the postoperative period, these patients require prolonged rest and close watch to prevent self mutilation (a well developed scratching/rubbing behaviour of the injured area in this species). Unfortunately if the animal gets its superficially located vital ligaments/tendons/nerves hurt or joints and bones involved, the outcome is very poor. Nonexistent diagnostic and advanced therapeutic facilities for equines in our state further complicate the problems
- The village grazing land called gaas-charaa' in villages and towns formerly kept solely for grazing animals has been encroached and grabbed by the mighty and influential men of the area
- The animals might be suffering from malnourishment, dehydration, disease, lameness, or injury. Rest and recovery is often not a practical option. The animals have no choice but to continue working despite poor environmental or health conditions, as the livelihoods of their impoverished owners depend on the steady work they do
- Horse population in the cities and towns are generally used in horse carts to transport men and material. The conventional unloaded horse cart generally weighs more than the weight of the pony and has to be dragged by the poor creature unnecessarily. While loading the cart this weight is simply ignored
- The macadamized roads laid all around during last six decades are putting this species at further disadvantage. On these roads, over loaded and ill designed horse carts put abnormal and high stress and strain on the equine locomotor system decreasing their functional life considerably
- Poor equipment prevents a horse from working comfortably and efficiently, with prolonged use damages the animal
- Although, shoeing a horse to protect its sensitive feet from the concussion of hard surfaces had been developed as an art over decades yet there is no qualified farrier in this region of the world. Unfortunately, the illiterate farriers who learnt this practice from their ancestors have been reduced to a meager number by now

- Balanced diet is not being fed to the equines of the valley. Even the actively working and pregnant mares requiring extra calories are being fed only imbalanced and poor quality food. Ironically in the developing and developed world, most work on equine nutrition has focused on sport horses and most work on working animal nutrition has focused on ruminants. Unfortunately, there has been virtually no research work on suitable ration for horses under our conditions of maintenance, reproduction, lactation or work
- Lack of organized scientific breeding practice has added to the chunk of poor quality animals. Inbreeding in every localized area is practiced throughout the valley resulting in very low potential and weak foals. Majority of the animals have congenital conformational defects and abnormal gaits that easily lead to undue stress and strain and consequent lameness
- High worm load tells upon the health of the horse resulting not only in chronic loss of vigour and vitality but also in development of fatal colic. In our experience, many of the natural deaths in our ponies are due to colic from parasitic infestation. In Karnataka state of India, most deaths of equids have been attributed to road accidents (Ramachandran and Srinivas, 1991). Wandering equines on the streets of Srinagar city along with a large population of stray dogs (over one lakh) are prone to get the dreaded Rabies. Several animals suffering from Rabies are consequently witnessed every year. The heaps of garbage holding large quantity of un-biodegradable polythene packing materials ingested along with eatables is also posing threat to the life of equines. It leads to intestinal obstruction, colic and death in several animals
- Species specific diagnostic and health facilities are nonexistent. Inability of the owners to bear the treatment costs and lack of government support for equine production and health system has magnified the problems
- Ponies should not be worked until they are physically mature but the illiterate owners put them to work earlier thereby resulting in chronic musculoskeletal injury to many of these individuals
- Though the state of Jammu and Kashmir ranks second (13.99%) in national equine population, yet the National Research Centre on Equines (NRCE), established in Haryana having equine population of only 2.35%, has not established any of its sub-centre in this state., Kashmir division including Ladakh has temperate and cold arid geophysical features which are quite different than tropical features of Haryana. Therefore the research in equine nutrition, husbandry, disease prevalence and management conducted at NRCE can-not be applied directly to the equines of the state

RECOMMENDED AREAS FOR RESEARCH AND IMPROVEMENT

Despite the importance of horses in the Kashmir economy, no planned research relating to horses has been carried out till date. Without wasting further time research must be aimed at generation of technologies for augmenting equine performance in order to uplift the socioeconomic status of poor equine owners. The technology that is intrinsically excellent may not be appropriate. There is a need for more basic research. Farmers require technology that is effective, affordable and that can be maintained in their villages. Major thrust areas include:

Assessing contribution of equines on present local economy: A detailed survey clearly depicting the present contribution of the meager equine population on the socioeconomic life of the people of the state/valley must be undertaken at an earliest. All significant areas of impact like equine as draft animal, their role in tourism development and safe guarding environment should be adequately addressed.

Genetic studies: Loss of a breed with some unique characteristics is an irreplaceable reduction in the nature's profusion of life forms. Major tasks include characterization, documentation and conservation of the available stock. Selection of indigenous animals with particular reference to conserving desirable genes is to be followed by improvement of the stock taking all important economic traits including exploitation of equine draught power into consideration.

Breeding policy: A scientific breeding policy for the equine population has to be formulated and implemented throughout the valley to make possible the progressive improvement in the economy of the horse owners. Effective, cheap, practical and easily accessible and acceptable breeding methods are designed or evaluated so that the owners adopt them in short span of time. Breeding has to be managed scientifically in accordance with the recommended policy only.

Improvement of carts/harnesses: There is an urgent need for the improvisation of design and implements for various activities powered by ponies/donkeys and mules. They should increase efficiency of animals, reduce their strain and result in longer working life. Essentially, there are a number of good designs of harnessing equipment that have been developed around the world. They need to be evaluated in our localities and modified as per the local requirements.

Management/husbandry practices: There is a need for basic research into the behaviour of horses under human management. Husbandry factors directly affect equine welfare. The poor husbandry practices followed by majority of the illiterate owners tell upon the health and reduce the work out-put of their animals. The deficiencies need to be identified and solutions worked out. Studies involving the shelter, work pattern, extent and the deleterious effects of excessive loading have to be taken up. Permissible load and duration of work in various seasons have to be formulated. The effects of working on reproduction and implications for small holder farmers have to be pointed out. Husbandry practices to maximize survival of improved quality foals need special attention.

Equine nutrition: Evaluation of the feed and feeding practices adopted by majority of the local equine owners has to be undertaken. Assessment of nutritional requirements of ponies and mules needs priority. Identification of areas and measures of improvement in the feeding practices in different age groups and sexes with different reproductive status and as per the work load have to be studied. Investigations on the extent of mineral deficiencies and appropriate means of their control including the use of local remedies and products have to be specified.

Health and disease control: For the poor owners of the horses, safe animal means safe family and safe families make safe villages. Epidemiological surveys to determine the prevalence, incidence and economic importance of equine diseases are imperative for development of strategy to prevent or minimize their devastating effects on the animal and their owners. Economic analysis of disease control strategies needs to be worked out.

Many of the health problems in working equines are mechanical in origin resulting from mistreatment by owners or drivers/drawers and from ill-fitting or poorly designed harnesses. Monitoring of important equine diseases including emerging and existing diseases requires due attention. Development of effective, affordable and preferably field based diagnostic/immunoprophylaxis need top most priority.

The comparative or absolute poverty of the majority of equine owners could lead to two further problems in the future. Western drug companies are investing less and less in the development of drugs for diseases confined to the developing world because they feel that they will not recoup their investment. Drugs that are available are likely to remain prohibitively expensive to most working equine owners. The investigation of any traditional treatments would be worthwhile before too much knowledge and too many plants are lost, due to clearance of common land (Blakeway, 1994).

Animal welfare issues: Animal welfare, though neither a new nor exclusively western idea, is at present a popular subject for discussion. Fortunately, many of the welfare problems faced by working equines are treatable and even preventable (Sheppard, 2009). Good welfare measures encompass provision of adequate and appropriate food, water, shelter and health care, freedom from fear and distress along with attention to its behavioural need. Improvement of equine welfare must be linked to improvements in the welfare of the people who use them.

Horse manure: Popularization of the use of napkins especially designed for equines as is in vogue in some European countries would assist in maintaining sanitary conditions on our roads and tourist spots (shared by animals and human beings). The excreta produced by these equines can either be sold to the farmers with agricultural land or efficiently utilized in ventures like production of low cost mushrooms. In turn it could improve the returns for the horse owners.

Equine polo: In the era of globalization, where people are busy with things that are global in nature, interest is also being shown in preserving and projecting things that have local and traditional importance. There is need for reviving the traditional equine polo of Kashmir. It would not only open new ways to revive lost glory of equines but can also generate employment and economic returns.

IMMEDIATE STEPS TO BE TAKEN

Establishing an equine development-cum-health center: Though volumes of detailed investigations related to different aspects of horses are available yet they mainly focus on the race or sports animals that have no role in rural economy of developing nations. Most of the techniques and practices are either irrelevant or impractical for low cost draft/work animals found in our valley. Inability of most horse owners to pay for external inputs, suggests that for the improvement of horse welfare, the greater proportion of research should be conducted with or close to the people who rely on horses for their livelihood. Similarly, the methods and techniques developed for food animals cannot be applied to this entirely different species. Till date nothing has been done to save and improve the local equine population that has been involved in sustaining the poor section of the people since centuries.

A well planned species specific equine center to cater every field of development of this precious animal must be established without further delay. The center should have experts and advanced facilities related to the study of equine physiology, genetics and breeding, nutrition, management, reproduction, surgery, medicine and extension under one roof. Comprehensive, interdisciplinary efforts should be made to improve the number and type of equine population along with full attention to their health status. Early pregnancy testing for better returns to the owners has to be made available at the unit. *In vitro* fertilization, cloning and other latest biotechnological techniques used in equines of the developed world should be initiated in the days to come.

The species specific requirements for managing clinical cases need to be established preferably in the Faculty of Veterinary Sciences and Animal Husbandry, Shuhama, Srinagar. The advanced diagnostic, advisory and consultancy services provided to equine farmers and breeders would then be beneficial. Extension activities in the form of providing packages of practices, schedule of vaccination, deworming and preventive arthropod sprays would be run with full zeal and zest. Public awareness programmes have to be arranged round the year for immediate adoption of the new and advanced means of improving the equine population and organize educational seminars and workshops for all (beginners to those requiring advanced knowledge). A key to success is community participation in animal health and welfare initiatives. Two-way exchange of ideas (forward and backward linkage), understanding community priorities and providing expert feedback on efficacy will ensure the most successful outcome for the animals.

Promotion of equine polo and pilgrimage tourism: The equine polo sport, the most popular sport in the Ladakh region, has to be reintroduced in the valley. This would have a significant positive effect on the tourism industry and provide source of income to the inhabitants. The pilgrimage tourism also has to be encouraged in the days to come to boost the economic returns. The equine population directly involved in pilgrimage to various religious places located in high altitudes would then receive special attention.

Environmental friendly transport: The development of roads into the depths of forest land should be stopped and equines only used in carrying men and material in these areas. Some land management practices such as logging can be more efficiently managed with horses, to avoid vehicular disruption to delicate soil in areas such as a nature reserve. The well recognized devastating effects of vehicular movement on the endangered wild flora and fauna in the forest land and sanctuaries will also be considerably reduced in this manner. The better returns will encourage the pony owners to adopt improved and healthy stock. This would increase the job opportunity and improve the economic conditions of the poorest section of our society.

Equine curriculum: Equine curriculum for veterinary students has to be expanded and made practical oriented with a new commitment.

CONCLUSION

Despite the persistent neglect, few would argue the significant contributions equine have made to collective national achievements. Lack of any coordinated research activities and non existence of arrangements or institutions provides an opportunity to design completely new programmes for improving the number, work out put and quality of life of our horses. Many of the welfare problems faced by working equines are treatable and even preventable. Giving attention to our equine population would definitely improve the life of our disadvantaged human population and assist in restricting further damage to our environment.

REFERENCES

- Anonymous, 2003. National research center on equines. Hissar, India.
- Anonymous, 2009a. Organizing Polo match should make a beginning to the efforts of rediscovering traditional sports activities of Kashmir. Rising Kashmir Daily News Paper, October 12, 2009.

- Anonymous, 2009b. Table IX-Livestock, sheep and animal husbandry. In: Digest of statistics 2007-2008. Directorate of Economics and Statistics, Government of Jammu and Kashmir, pp: 70.
- Blakeway, S.J., 1994. The welfare of donkeys. M.Sc. Thesis, University of Edinburgh, UK.
- Chauhan, S.K., 2005. General Scenario of Equines in Equine Husbandry in the Mountains: A Socio Economic Analysis. Mittal Publications, New Delhi, pp: 26-30.
- Fazili, M.R. and B.A. Buchoo, 2007. Barbed wire wounds in ponies- some clinical observations. Proceedings of the 31st Annual Congress of ISVS held at Faculty of Veterinary Sciences and A.H, (PCIFVS'07), SKUAST-Jammu, pp: 81-81.
- NRCE, 2010. National research council on equines. Hisar, India.
- Phaniraja, K.L. and H.H. Panchasara, 2009. Indian draught animals power. *Vet. World*, 2: 404-407.
- Ramachandran, S. and R.P. Srinivas, 1991. The Contribution of the Donkey and Pony to the Economy of Rural Low –Income Groups in Karnataka State, South India. In: Donkeys, Mules and Horses in Tropical Agricultural Development, Fielding, O. and R.A. Pearson (Eds.). CTVM, Edinburgh, pp: 20-21.
- Sheppard, K., 2009. Working animal welfare: seeking sustainable solutions. <http://www.animalwelfareapproved.org/2008/11/28/wpix-news-coverage-of-animal-welfare-approved-dinner-at-food-bank-for-nyc/>.
- Swai, E.S. and S.J.R. Bwanga, 2008. Donkey keeping in Northern Tanzania: Socio-economic roles and reported husbandry and health constraints. *Livest. Res. Rural Dev.*, 20: 67-67.
- Tsang, W., 2010. Biology of horses. <http://www.buzzle.com/articles/biology-of-horses.html>.
- Yousef, M.K., 1991. Physiological Responses of the Donkey to Heat Stress. In: Donkeys, Mules and Horses in Tropical Agricultural Development, Fielding, O. and R.A. Pearson (Eds.). CTVM, Edinburgh, pp: 96.