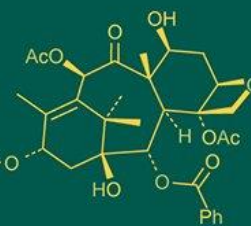
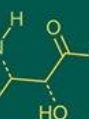
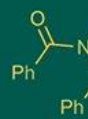


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
 ISSN Online: 2617-4707
 NAAS Rating (2026): 5.29
 IJABR 2026; 10(7): 908-911
www.biochemjournal.com
 Received: 21-05-2026
 Accepted: 26-06-2026

GB Andhale
 Department of Livestock
 Production and Management,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur,
 Mumbai, Maharashtra, India

PH Pawar
 Department of Livestock
 Production and Management,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur,
 Mumbai, Maharashtra, India

ST Hande
 Department of Livestock
 Production and Management,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur,
 Mumbai, Maharashtra, India

MN Sawant
 Department Veterinary and
 Animal Husbandry Extension,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur
 Mumbai, Maharashtra, India

SJ Komatwar
 Department of Animal Genetics
 and Breeding, Mumbai
 Veterinary College, Maharashtra
 Animal and Fishery Sciences
 University, Nagpur Mumbai,
 Maharashtra, India

NR Karambele
 Department of Animal Nutrition,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur
 Mumbai, Maharashtra, India

Corresponding Author:
GB Andhale
 Department of Livestock
 Production and Management,
 Mumbai Veterinary College,
 Maharashtra Animal and Fishery
 Sciences University, Nagpur,
 Mumbai, Maharashtra, India

Assessment of load carrying capacity of donkeys under different work types in Beed district of Maharashtra

GB Andhale, PH Pawar, ST Hande, MN Sawant, SJ Komatwar and NR Karambele

DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i71.9255>

Abstract

The present study was conducted to assess the load carrying capacity of donkeys under different work types in Beed district of Maharashtra. A field survey was carried out using a questionnaire involving 50 donkey owners selected from 10 villages to document work patterns, type of load and working practices. The survey results revealed that 100% of donkeys were exclusively used for load carrying on their back, with no involvement in other work types such as carting or agricultural operations. Brick transportation was identified as the sole type of load carried by all the animals. Female donkeys constituted the major workforce 94%, while only 6% were males. The majority of owners 80% preferred morning and evening hours for work, whereas only 20% used animals during afternoon hours. Donkeys were engaged in load carrying for 6 to 10 hours daily, with an average working duration of 8 ± 0.86 hours. The findings indicate specialized utilization of donkeys as pack animals and highlight the need for improved management and welfare practices.

Keywords: Donkey, work type, brick transportation, working duration, pack animals

Introduction

Livestock plays a vital role in the Indian economy by supporting the livelihood of about 20.5 million people. According to the 20th Livestock Census (2019), the total livestock population of India is 535.78 million, showing an increase of 4.6% over the previous census. Among various livestock species, equines—particularly donkeys (*Equus asinus*)—occupy an important place in rural production systems due to their ability to perform efficiently under harsh environmental and management conditions.

Donkeys are domesticated odd-toed ungulates known for their docile nature, endurance and adaptability to difficult terrains. They were first domesticated in Africa around 5,000-7,000 years ago and later spread to Asia and Europe. At present, the global donkey population is estimated to be approximately 50 million, with major populations concentrated in Asia and Africa. In India, however, the donkey population has declined drastically, with the 20th Livestock Census reporting only about 1.2 lakh animals, representing a reduction of 61.23% compared to the 19th census (2012). Currently, four recognized breeds of donkeys, namely Spiti, Ladakhi, Halari and Kachchhi, are registered with NBAGR.

Donkeys are indispensable working animals in dry and mountainous regions due to their remarkable ability to survive under limited feed and water availability and to carry loads across difficult terrains. They play a significant role in agricultural and non-agricultural activities such as transportation of goods, construction work and tourism. Despite their substantial contribution to the rural economy, the economic value of donkey labour is often underestimated and remains largely unaccounted for in formal economic systems (Ravichandran *et al*, 2023) [7].

In traditional sectors such as brick kilns, donkeys are extensively used for transporting raw bricks from moulding sites to kilns under challenging environmental conditions. These animals are frequently exposed to extreme heat, long working hours and rough terrain, which adversely affect their health and productivity (Bhardwaj *et al*, 2022) [2]. Overloading is another major concern in working donkeys, as animals are often made to carry loads

exceeding their physiological capacity, leading to lameness, fatigue, injuries and behavioural changes (Bukhari *et al*, 2022) ^[4]. Donkeys are primarily used as pack animals for transportation of materials, particularly in rural and hilly regions where mechanized transport is limited. Donkey rearing is generally economical, as these animals can thrive on poor quality feed resources and under minimal management conditions.

Despite their importance, there is a lack of scientific information regarding the work types and load carrying practices of donkeys under field conditions. Understanding the nature of work, type of load and working patterns is essential for developing suitable management strategies and ensuring animal welfare. Therefore, the present study was undertaken to assess the load carrying capacity of donkeys under different work types in Beed district of Maharashtra.

Materials and Methods

The present investigation was carried out in Beed district of Maharashtra to assess the load carrying capacity of donkeys under different work types in field conditions. Geographically, the study area is located between 18.27° N to 19.28° N latitude and 74.54° E to 76.57° E longitude in the Marathwada region. The area is characterized by semi-arid climatic conditions with an average annual rainfall of approximately 699.30 mm. The terrain consists of dryland farming systems interspersed with rocky landscapes and fertile river plains, making it suitable for the utilization of pack animals such as donkeys.

Survey of work types and load carrying practices

To document the different work types of load carried by

donkeys, a field survey was conducted across the Beed district. A total of 50 donkey owners were randomly selected from 10 villages, namely Satephal, Tokawadi, Chanai, Dagadwadi, Lokhandi, Shirsala, Ramnagar, Dhayguda Pipala, Chandapur and Nandghol. The villages were selected based on the availability of donkey population as per livestock census data.

A pre-structured and pre-tested questionnaire was used to collect information from the respondents. The questionnaire was designed to record detailed information on the types of work performed by donkeys, nature of load carried, working duration, preferred working time and general management practices followed by the owners. The responses obtained from the donkey owners were compiled and analyzed to understand the existing work patterns and utilization of donkeys under field conditions.

Statistical Analysis

The data obtained from the survey and experimental trials were compiled, tabulated and subjected to statistical analysis using completely randomized design (CRD). Appropriate statistical tests were applied to evaluate the effect of different load levels and working conditions on the performance of donkeys.

Results and Discussion

The present investigation was undertaken to assess the work types and load carrying practices of donkeys under field conditions in Beed district of Maharashtra. The information generated through a structured survey of donkey owners provided a clear understanding of the utilization pattern and nature of work performed by donkeys in the study area.

Socio-economic status of donkey owners

Sr. No.	Particulars	Findings	Conclusion
01	Sex	100% male	- Donkey owners were landless, middle aged, illiterate men, living in kattcha house with nuclear family. - Donkey lies in very poor & weak strata of society.
02	Age	64% (33-42 yrs.)	
03	Education	60% illiterate	
04	Family Type	76% nuclear type	
05	House Type	60% kattcha house	
06	Land Holding	86% landless	

A survey of donkey owners/keepers showed that, the participant pool was exclusively male. All 50 participants accessed during the survey of present study were male only. This gender distribution aligns with the findings of Bukhari *et al*. (2022) ^[4] who has reported that, a vast majority of survey participants 98.50% in donkey-keeping studied were men, reflecting the male dominated nature of this donkey sector.

Donkey owners/keepers were primarily composed of middle-aged individuals 33-42 years, accounting for 64% of

the participants. It was observed that about 76% donkey owners/keepers had nuclear families, however only 24% owners/keepers were living with joint families. 40% donkey owners had their owned Pakka type of house, whereas, remaining 60% donkey owners were arranged their living with kaccha type house about 86% donkey owners/keepers were landless, however only 14% donkey owners had marginal land holding. Majority of donkey owners rely on their donkeys for their livelihood.

Work profile of animals

Sr. No.	Particulars	Findings	Conclusion
01	Sex	94% female	- Only female donkeys were employed for work, all the females are used for brick load transportation on their back. - Male donkeys have very negligible role in draught power generation
02	Work hrs	Morning & evening	
03	Working pattern	100% Load carrying on back	
04	Work type	100% brick work	

The findings revealed a highly uniform and specific work profile of donkeys. It was observed that all the respondents (100%) utilized their donkeys exclusively for load carrying on their back, and no other work types such as carting,

pulling or agricultural operations were reported. This indicates that donkeys in the study area are primarily used as pack animals rather than multipurpose draught animals. Similar observations were reported by Shinde (2018) ^[18],

who stated that working donkeys are mainly engaged in load carrying activities for extended durations under field conditions. The type of load carried by donkeys showed a highly consistent pattern across all respondents. It was found that 100% of donkey owners reported brick transportation as the sole load carried by donkeys. This indicates a strong association between donkey utilization and brick kiln or construction-related activities in the study area. Such continuous involvement in brick transportation may impose considerable physical stress on animals due to repetitive workload and harsh working conditions. Similar concerns regarding heavy workload, overloading and associated welfare issues in working donkeys have been reported by Bukhari *et al.* (2022) ^[4].

Sex-wise utilization of donkeys

A clear preference for female donkeys in load carrying work was observed in the present study. It was recorded that 94% of the donkeys used for work were females, whereas only 6% were males. This indicates that female donkeys constitute the major workforce in load carrying activities. The higher utilization of female donkeys may be attributed to their better adaptability, docile nature and ease of management under field conditions. Similar trends in donkey utilization patterns and management systems have

been reported by Tesfaye *et al.* (2016) ^[11], who highlighted gender-based roles in donkey husbandry practices.

Working hours

The working schedule of donkeys showed a clear preference among the respondents. It was observed that 80% of donkey owners preferred morning and evening hours for load carrying work, while only 20% of respondents used their animals during afternoon hours. This pattern suggests that donkey owners tend to avoid working during peak heat stress periods, thereby reducing the adverse effects of high ambient temperature on animal performance and welfare. Earlier studies have indicated that limited awareness regarding welfare and environmental stress factors affects donkey management practices (Tefaye *et al.*, 2016) ^[11].

The results indicated that donkeys were engaged in load carrying activities for 6 to 10 hours per day, with an average working duration of 8 ± 0.86 hours. Such prolonged working hours highlight the intensive utilization of donkeys in the study area and their significant contribution to the livelihood of their owners. The present findings is agreement with Shinde (2018) ^[18], who reported that working donkeys are commonly utilized for more than 6 hours per day under field conditions.

Animal holding & rearing system

Sr. No.	Particulars	Findings	Conclusion
01	Animal Holding	8-16 donkeys only	- Donkey owners were managing 8-16 donkeys for load carrying work for 8 hrs daily without proper feeding and housing arrangements. - Production cost was almost Zero
02	Animal use	100% load carrying	
03	Work Duration	8±hours	
04	Rearing system	44% tethering	
05	Feeding	Natural grazing	
06	Animal shed	68% No housing	

Out of fifty donkey owner's majority 80% had 8 to 16 animals, 14% donkeys' keepers had less than 8 animals and 6% of them had more than 16 animals. In this study, all respondents reported that donkeys were primarily utilized for load carrying work on their back. The animals typically worked for between 6 and 10 hours per day, with an average duration of 8 ± 0.86 hours. Consistent with findings by Shinde (2018) ^[18]. The majority 44% donkey were kept

tethered only at night-time with rope to restricted movement, 28% animals kept free all the time & tied only at nighttime, 24% donkeys had kept free stall in the house, 4% donkeys had kept tie stall in house in night time. Majority of owners 68% were not provided any kind of shed for the animals and these animals remain in open space all the time, and remaining 32% owners had kept their animals in shed to avoid the direct sunrays exposure to donkeys.

Technical knowledge of donkey husbandry

Sr. No.	Particulars	Findings	Conclusion
01	Breeding	100% No Idea	- Huge population of donkeys owners were no idea about the essential technical knowledge. - They were just the donkey keepers with traditional information only.
02	Pregnancy diagnosis	68% No idea	
03	Vaccination	80% No Idea	
04	Deworming	58% No idea	
05	Vet. Service	LSS/Diploma private practioners	
06	General Physiological norms.	98% No idea	

Regarding Breeding management of donkeys, it was reported that, all the owners were allowed their animals for natural breeding by random selection method. Usually, a male animal was found kept along the flock of female donkeys for breeding purpose, however no specific scientific breeding strategies were followed by the donkey owners/keepers in this region. Singh *et al.* (2007) ^[12] agrees with selective breeding was adopted by only a few owners due to limited awareness and a shortage of high-quality jacks. In relation to the identification of pregnancy in animals, it was a common observation that, Generally

female animal considered pregnant on the basis of not returning in normal oestrus and pregnancy diagnosis done by rectal method by veterinary doctor or Veterinary Science diploma holder local practitioners, only 28% donkey keepers were aware about pregnancy diagnosis of pregnant female however, remaining majority 68% owners were not found aware about the importance of pregnancy diagnosis method. Regarding health management of donkeys, majority of the donkey owners were unaware about the importance of vaccination and deworming like scheduled health programmes. Tesfaye *et al.* (2016) ^[11] found agree with

Majority of respondents 94.2% in the study area lacked any knowledge or information regarding donkey welfare. It was also recorded that, 98% donkey owners had veterinary services at their level either by Government veterinary doctors or private diploma holder veterinary practitioners.

Conclusion

Donkey husbandry practices is restricted to socially and economically weaker section, rely completely for their livelihood upon providing load carrying services by female donkeys primarily. In survey area, transmission of brick, in and around brick kiln was the major work type accomplished by donkeys. Donkey sector needs to be addressed practically on scientific platform to restricts with journey towards the verge of extinction. Generally female donkeys can be managed easily as draft animal as compared with the male donkeys.

References

1. Amante M, Hunde A, Endebu B, Hirpa E, Mamo B. Health and welfare assessment of working equine in and around Nekemte Town, East Wollega Zone, Ethiopia. *American-Eurasian Journal of Scientific Research*. 2014;9(6):163-174. doi:10.5829/idosi.aejr.2014.9.6.86135.
2. Bharadwaj S, Chittora RK, Upreti NC, Chougule S. Impact of mechanisation on socio-economic condition of donkey guardians of District Sangli, Maharashtra, India. *International Journal of Education and Social Science Research*. 2022;5(1):252-260. doi:10.37500/IJESSR.2022.5121.
3. Birhan G, Chanie M, Tesfaye T, Kassa A, Mekonnen B, Wagaw N. Incidence of wound and associated risk factors in working donkeys in Yilmana Densa District. *Global Veterinaria*. 2014;13(1):133-140.
4. Bukhari SSUH, Rosanowski SM, McElligott AG, Parkes RSV. Welfare concerns for mounted load carrying by working donkeys in Pakistan. *Frontiers in Veterinary Science*. 2022;9:886020. doi:10.3389/fvets.2022.886020.
5. Fsahaye S, Kumar N, Kebede E, Abebe N. Health and welfare assessment of working donkeys in and around Rama Town, Tigray, Ethiopia. *Ethiopian Veterinary Journal*. 2018;22(1):26-39. doi:10.4314/evj.v22i1.3.
6. Gond SS, Channa GR, Pawankar KN, Gadegaonkar GM, Jadhav PV, Avhad SR, *et al.* Studies on socio-economic status of donkey owners and reproductive parameters of jennet in Marathwada region of Maharashtra, India. *International Journal of Veterinary Sciences and Animal Husbandry*. 2023;8(2):88-92. doi:10.22271/veterinary.2023.v8.i2b.496.
7. Ravichandran T, Perumal RK, Vijayalakshmy K, Raw Z, Cooke F, Baltenweck I, *et al.* Means of livelihood, clean environment to women empowerment: the multi-faceted role of donkeys. *Animals*. 2023;13(12):1927. doi:10.3390/ani13121927.
8. Shinde SS. Evaluation of draft ability of non-descript bullock in Latur District [PhD thesis]. Parbhani: Vasantrao Naik Marathwada Krishi Vidyapeeth; 2018.
9. Bankar PS, Kuralkar SV, Patil SD, Shinde SS. Present status of donkeys in Maharashtra, India. *Genetics & Biodiversity Journal*. 2023;7(1):22-29. doi:10.46325/gabj.v7i1.281.
10. Swai ES, Bwanga SJR. Donkey keeping in northern Tanzania: socio-economic roles and reported husbandry and health constraints. *Livestock Research for Rural Development*. 2008;20(5):67.
11. Tesfaye S, Deressa B, Teshome E. Study on the health and welfare of working donkeys in Mirab Abaya District, Southern Ethiopia. *Academic Journal of Animal Diseases*. 2016;5(2):40-52. doi:10.5829/idosi.ajad.2016.40.52.
12. Singh RP, Agrawal M. Effects of sewage sludge amendment on heavy metal accumulation and consequent responses of *Beta vulgaris* plants. *Chemosphere*. 2007 May 1;67(11):2229-2240.