Discussion

This review of 256 cases of euthanasia over a 3-year time period provides an overall picture of Brooke India's euthanasia policy and interrelated issues. It necessarily does not represent the skills of Brooke veterinarians or views of animal owners towards euthanasia.

The review and analysis derive from the 'Euthanasia form', which is mandatory for veterinarians to complete before euthanizing an animal, and which provides authentic operational and clinical information.

The study demonstrates that there were more cases of euthanasia for horses than for mules and donkeys. across all units. Chronic lameness, surra, and wounds were the major clinical causes for euthanasia, although the animals may also have suffered from multiple problems. Seasonality of euthanasia could not be clearly discerned. However, moderate rises shown in the months of September and May may relate to the beginning and end of summer. The data for number of animals and amount of money spent to compensate the animal owners for euthanasia varies widely across units. This may demonstrate the units' independence in decision making and the differing socio-economic status of animal owners. It is evident that money spent on compensation was not proportionate to numbers of euthanasia cases: see Saharanpur (2 cases against 1,500 rupees) and Bulandshar (5 cases against no compensation money).

The study will enable decision makers to review their activity and make necessary amendments to their policies and field operations. It will also help them to compare their direct operations with partnership operations. Organizations that care for equine animals can work on preventative measures for the main causes of euthanasia revealed in the study and other risk factors which lead to pain and suffering of animals.

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MODERNIZING RURAL LIVELIHOODS AND TRANSPORT IN AFRICA: DIRECTIONS AND DILEMMAS

D. F. Bryceson

Geographical and Earth Sciences, University of Glasgow, United Kingdom

Modernizing agriculture and building rural roads for farming populations throughout the developing world have constituted the cornerstone of post-colonial development policies for the past 5 decades. The rational appears both reasonable and laudable. In most developing countries, populations have been overwhelmingly rural. Increasing their productivity and mobility has been seen as the most effective way of alleviating poverty and modernizing the nation. In addition to facilitating access to improved agricultural inputs and techniques, roads are intended to eliminate the disadvantage of rural remoteness, making it possible for rural dwellers to raise their standard of living.

In Sub-Saharan Africa, the nature of the modernity being sought and the necessity for placing emphasis on roads rather than mobility on or off roads can be questioned. This paper considers the changing nature of African smallholder farmers, specifically their experience of deagrarianization, before turning to 3 key issues of rural welfare, namely: the improvement of agricultural yields, the diversification of non-agricultural activities, and the feasibility of rural transport interventions in Africa.

Disappearing peasant farmers

Peasantries, who have formed the bulk of the world's population for millennia, reside in rural areas, earning their living on the land as farmers engaged in both subsistence and commodity production. Their family units form the nucleus for organizing production, consumption, human reproduction, socialization, welfare, and risk-spreading.

Peasant cash crop producers provided the political force behind the national independence movements that swept the African continent in the 1950s and formed the foundation for the economies of the newly independent countries that came into being in the 1960s. During that decade the economic performance of African countries was promising. African and Asian countries were both part of the 'third world' striving for higher standards of living.

United Nations agencies and bilateral donors prioritized the modernization of peasant agriculture. The success of Green Revolution investments in raising rice and wheat yields in South Asia during the 1960s led African governments and donors to invest in developing staple food improvement packages, especially for maize. Beginning in the 1970s, peasant farmers in many African countries participated in subsidized fertilizer and seed programmes and began to experience increasing yields.

Why do African staple food yields still lag behind those of the rest of the world?

The African continent's improving staple food yields were short lived. In the mid-1970s, the economic shock of the oil crises undermined African peasants' prospects and their national economies. Most African governments had established agricultural parastatals to handle the marketing of the widely fluctuating stocks of commercial staple food crops produced by peasants. Peasants had been availed fixed pan-territorial prices regardless of the distance that they were located from urban centres of staple food demand. This, in addition to peasant farmers' subsidized crop input packages, had successfully incentivized peasant grain production. But, at the time of the oil crisis, as the cost of surface transport escalated, parastatal finances became severely stretched. This marked a profound turning point in the tripartite relationship between peasant producers, state infrastructure providers, and the global market.

Peasant households were scattered throughout the length and breadth of the immense but sparsely populated African continent. Rising oil prices quickly undermined the competitiveness of their agricultural exports, which had to be transported exceptionally long distances to ports. African governments became severely indebted and were forced to seek debt financing from the IMF. In doing so, the World Bank and IMF gained leverage and soon the lead in African policy formulation with the introduction of structural adjustment programmes (SAP) aimed at reducing the role of the state in the economy and cutting back on state-provided infrastructure and services.

SAP spelled the end of attempts to raise peasant staple food yields. Fertilizer and seed subsidy packages were retracted and yields declined: farmers deeply resented this, blaming the state for the subsidy removal. International financial institution-enforced economic liberalization policies compounded the problem with the dismantling of the market and productive service infrastructure that had ensured timely marketing and crop quality control for Africa's major cash crop exports since the colonial period. African peasant farmers' beverage and other traditional cash crop output was eroded.

The 1980s is considered to be Africa's lost decade. Cutbacks in rural health, education, and, above all, agricultural support programmes produced a widespread malaise. Western donors seemed oblivious to the impact of SAP policies on peasant producers. In effect, SAP short-circuited the African Green Revolution efforts that they had previously initiated in collaboration with African governments. Aid disbursement to agriculture declined precipitously in the 1990s along with a long-term secular decline in the terms of trade for agricultural exports. In OECD countries, the falling prices have been offset by extremely high levels of agricultural subsidy to farmers, advantaging them relative to developing country farmers.

Most recently, the growth and concentration of private agro-industrial enterprises has been impacting on commodity, rural labour, and, increasingly, land markets. Systems of biotechnology, global value chains, supermarket trade channels, and just-in-time production have spread. In the face of these trends, the remote locations and smaller scale of production of African peasants make it more difficult for them to meet delivery market specifications of regularity and product standardization and the productivity gap between African smallholder and western large-scale production. African farmers' value added averages $335 as opposed to $39,000 for farmers in the United States [1].

Rural ways of life, which have evolved over the millennia in Africa, have been finely tuned to the local environment, social consensus, and political balance. The undermining of the local economies of these communities suddenly by market shocks or gradually by worsening terms of trade, market disincentives, and obstacles has already and will continue to cause adverse welfare repercussions, social upheaval, and political destabilization.

What do people do instead of farming?

Over the last 30 years, Sub-Saharan Africa has experienced a process of deagrarianization entailing a reduction of household-based labour expenditure and agriculturally focused activities within peasant households. Rural intra-household relations are now characterized by more individualized decision-making. Local social norms are breaking down and inter-household economic differentiation is generating winners and losers, corroding the egalitarian legacy of tribal and other closely related communities. Deagrarianization in rural Africa has triggered depeasantization whereby a peasant household's work is less agricultural in nature and peasant households and communities have lost their coherence as social and economic units.

The most salient trends in Sub-Saharan Africa have been a surge in a variety of non-agricultural activities, notably trade and mining, in place of export crop production. Activities formerly done on some sort of local exchange basis or as a contribution to village life are increasingly performed for cash. Money earning on the part of various categories of family labour becomes more common. Women, as wives, as well as youth and even in some cases children, may join male heads of household in working for cash. Households have gained multiple income streams, which are not always pooled within the household. Wives and youth may acquire some degree of autonomy over their earnings and make their own discretionary purchases.

Work experimentation is widely prevalent. Engagement in non-agricultural activities is no longer reserved for the agricultural off-season. Individuals may pursue 2 or more livelihood activities simultaneously or serially switch from one activity to another in the process of experimentation, trying to offset losses in one with gains in another. In many areas rural local purchasing power has imposed severe constraints such that people, especially youth, are motivated to be more mobile or migrate in order to facilitate their trading or other occupational activities. While it has been observed that cash-based work is on the increase, people have retained a strong desire to achieve basic staple food self-sufficiency at the household level as much as possible to avert having to be reliant on purchased food. The issue is to achieve a balance between subsistence food and income-generating work such that the rural household always has a subsistence fallback in case any or all of their other cash-earning activities fail.

The array of work alternatives to agriculture is continually proliferating. Local services have dominated in more remote areas with restricted local markets and low income-earning populations that were historically not heavily involved in agricultural commodity production.

Will roads and motorization solve the mobility restrictions of African rural dwellers?

European colonial transport investment in Africa during the early part of the 20th century concentrated on railway construction, whereas the post-colonial transport policies of African states focused on building roads. Policymakers are primarily attuned to road development, but the African poor of the 21st century do not have the modal means at their disposal to fully benefit from roads. Only a small minority of the African population, those from the wealthy or possibly middle-income brackets, own cars (Table 1). The vast majority of daily trips beyond the confines of one's house in both rural and urban Africa are walking trips, even in well-connected settlements which have good road access. Historically the presence of tsetse and African horse sickness largely precluded the use of horses, although donkeys are utilized in some areas. Ethiopia is the notable exception with heavy reliance on equid transport. Approximately 4–5 percent of rural household trips are animal-aided [2].

The rural poor are the least mobile in terms of daily kilometres travelled and speed in rural Africa. A study of travel patterns in Uganda and Zimbabwe [3] showed they are generally 4 times less mobile than the rural high-income population by distance travelled and likelihood of availing themselves of fare-paid travel. The vast majority of trips are by foot. Wherever roads are built, the poor are the least likely to use and benefit from the road because the transport utility of a road – i.e. its facility to make travel faster, cheaper, more reliable and/or safer – is modal-dependent. Those without ownership of wheeled motorized transport or money to travel on buses are likely to derive minimal benefit from their proximity to a road.

A comparison of Zambian, Ethiopian, and Vietnamese rural dwellers' access to various forms of modal means of transport reveals interesting differentiation of mobility patterns. Vietnamese rural dwellers had a mobility advantage in all modes of transport except pack animals. The Vietnamese higher income groups are availed considerable access to motorized transport, notably motorbikes. By contrast, the high-, medium-, and low-income groups of Ethiopia generally do not own motor vehicles. The Vietnamese were in the habit of making shorter but far more frequent trips relative to their African counterparts.

Table 1. Household ownership/access to modal means of transport (% of households) [4]

	Motorcycle	Bus access	Pack animal	Bicycle
Vietnam	25	78	32	55
Ethiopia	0	49*	59	0
Zambia	0	15	10	38

Thus, long-trip distances are not necessarily a positive sign of high mobility. They represent forced circumstances. People seek to minimize their trip distances *especially* when they are not availed motorized transport. On the other hand, when they are not availed proximate social services they travel longer distances out of necessity. They are more mobile, in a negative rather than positive sense.

Conclusion

Contrary to the view that peasant smallholders are backward, unproductive agricultural producers representing an archaic way of life, I have argued that rural trends over the last 3 decades have testified to the ingenuity and determination of diversifying small-scale rural producers in circumstances of protracted capital and infrastructural deprivation. For millennia, peasantries, practising various combinations of commercial *and* subsistence production, have endured. It could be argued more generally that peasants represent the most demographically numerous and enduring livelihood form in the world through recorded historical time. In an age of global financial crises, perhaps the economic wisdom of such conservative, yet highly adaptive and flexible livelihoods can be better appreciated.

Why has there been such disdain and disregard for African small-scale rural producers and an inability to distinguish the potentiality of their agency as opposed to the deprivating context within which they are now marginalized? Due to a sequence of international policies triggered by the 1970s oil crises, African peasant agriculture was effectively jettisoned from the western donor development agenda. African governments, in the throes of debt conditionality, have been unable to address the productive needs of their rural electorates. In the name of modernization and efficiency, smallholder livelihoods have been marginalized with enormous consequences for social coherence and cultural continuity.

Perhaps the shock of the global food price and financial crisis will open the minds of western donors to the possibility that African smallholder peasants not only have agricultural potential but social wisdom and economic caution about trusting all to the market. It is hoped that in the future enlightened donors and African governments will substitute their food aid and food imports to the continent with investment in African smallholder agriculture.

The road bias in African transport policy is misplaced in terms of its naive assumption that road investment will necessarily lead to poverty alleviation. Motorized transport is largely the preserve of the well-off in urban areas. The key issue, so often ignored in African transport policy and which comes heavily to bear, is the mobile agent's choice of a transport modality. This is rarely a 'free choice' for the income-constrained poor. The cost of motorized transport is beyond the vast majority of rural Africans who mostly walk to their destinations. Efforts to make the poor more mobile should be directed at non-motorized transport, including equids, in the first instance in tune with environmental sustainability.

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OPPORTUNITIES FOR NGOS INVOLVED WITH THE DRAUGHT SECTOR TO CONTRIBUTE TO NATIONAL LIVESTOCK POLICY FRAMEWORKS IN DEVELOPING COUNTRIES

A. Walker-Okello

African Centre for Technology Studies (ACTS), Gigiri Court, Off United Nations Crescent, PO Box 45917 00 100, Nairobi, Kenya; and University of Edinburgh (CTVM/Centre for African Studies), 1 Summerhall Square, Edinburgh EH9 1QH, UK
walker_anna19@hotmail.com

Abstract

There is a large amount of evidence, both scientific and anecdotal, to suggest that draught power plays an important role in securing livelihoods in many developing countries. Despite this, national policies and institutional support for the draught sector, especially for working equines, is often weak or nonexistent. The reasons for this are many and varied; however, one explanation may be that livestock policies in many developing countries focus on promoting primary commercial growth (animal products), rather than supporting systems which assist the poor. Such policies may be counterproductive (or irrelevant) to the poorest people in a country, and could provide some explanation as to why draught animals are often left out of national policy dialogue. This paper, with a case example from Ethiopia, aims to demonstrate how NGOs with expertise within the draught sector may be able to utilise existing pro-poor policy channels, thus increasing the profile of draught animals in both the national and international policy arenas.

Introduction

Policy activities are undertaken by groups and organisations wishing to contribute to long-term changes in societal beliefs and attitudes towards a particular issue. Policies can be thought of as *strategies of action* used to achieve desired goals [1]. There are many levels at which policy is developed; however, the responsibility for draught animal health and welfare in most developing countries currently falls under the Ministry of Livestock, despite the unique contribution of this subsector to many aspects of society. Additionally, livestock policies in many developing countries consist of broad statements around intentions to improve infrastructure and services, rather than offering concrete strategies and budgets for implementation [2]. This makes it harder to analyse exactly where in the policy documents draught animals are/could be included, with the result that applying pressure to those responsible for policy implementation and enforcement becomes difficult.

The role of livestock in Poverty Reduction Strategy Papers (PRSPs)

The important contribution the livestock sector has, and will continue to play, towards achieving the Millennium Development Goals (MDGs) cannot be denied [3]. In many developing countries, livestock remains one of the few opportunities for the poor to generate income – a factor which does not go unnoticed by organisations involved with the draught sector. Poverty Reduction Strategy Papers (PRSPs) are the main point of policy dialogue in countries receiving concessional lending from the World Bank [2]. Analysis of the livestock policies contained in the PRSPs of 49 countries by the Food Agriculture Organisation of the United Nations (FAO) in 2003 identified a number of policy weaknesses and opportunities which could be utilised by NGOs involved with draught animals.

The overwhelming conclusion by the FAO was that all PRSPs failed to make a 'strong, coherent case for support (to the livestock sector)', with seemingly 'no connection between the importance of livestock to the national economy and the significance attributed in the PRSPs' [2]. One theory for this is that in many developing countries, more attention is given to commercial operations than species and structures relevant to the poor [2]. This fact is especially pertinent where draught power is concerned, and may offer an explanation as to why this subsector is seemingly overlooked or 'forgotten' at a national policy level in many countries.

The case of Ethiopia: an opportunity for equine NGOs

Ethiopia is a country in which at least 3 equine welfare NGOs operate [4]. The Ethiopian livestock system is the largest in Africa, with draught power, skins, hides, manure, meat, and milk all contributing significantly to the economy [2].

A specific recommendation which came out of the 2003 FAO report was that livestock policies in Ethiopia should concentrate on improving veterinary care and feed of work animals, including camels, mules and horses, species typically little-considered in the design of development projects [2]. Additionally, it was recommended that policy concerning draught animals be developed in conjunction with larger agricultural policies in Ethiopia, as their contribution 'straddles' the 2 sectors. Considering agricultural sectors are usually much better funded than the livestock, herein exists potentially an even greater opportunity for organisations experienced with draught animals.

This case serves merely as an example of the enormous potential for equine NGOs to influence national policy in Ethiopia, and possible opportunities for collaboration with stakeholders whose mandate is to improve human livelihoods. There are undoubtedly similar situations or recommendations in many developing countries; it is a matter of understanding the policy environment, and seizing the opportunities.

Practical considerations for strengthening of policies surrounding draught animals in developing countries

Draught power has been deemed one of the most important (non-food) contributions of animals to human well-being [5]. However, in order to put forward consistent policy guidelines, organisations require a clear strategy and strong evidence (socioeconomic or otherwise) to support the arguments for why their policy recommendations should be considered. For example, do organisational policy strategies pertain to all draught animals, or just working equines? Should the policy strategy focus on improving existing animal welfare legislation, or promote institutionalisation of draught animals/equines in undergraduate or paraprofessional curriculae? To a certain degree these become clearer once individual policy analysis is undertaken; however, an agreed policy strategy will provide guidance on some of these issues.

Analysis of existing policies is done in order to identify any major gaps. For example, a country may have animal welfare legislation; however, it may concern only animals which are transported to abattoirs. It is such gaps which are seen as opportunities for future policy recommendations; for example, the inclusion of all species in animal welfare legislation, regardless of the situation. Once there is an idea of the most important recommendations for that particular situation at that point in time, it is necessary to identify who the decision makers are, and what information they require.

Looking at livestock policies in light of the greater national action plan and policy frameworks may help to identify further opportunities for the future inclusion of draught animals; for example, in wider agricultural or environmental policies rather than livestock itself. It has been estimated that annual work performed by draught animals worldwide would (at the time) require 20 million tonnes of petroleum valued at over $US 6 billion [6]. With such evidence, the environmental benefits of draught power could be promoted, along with its socioeconomic contributions, in arguments for support to this sector at a national or even international level. Other organisations which identify the important role draught animals play in poor communities, despite not being directly involved with livestock themselves, may wish to collaborate on policy issues. So long as the policy frameworks of a given country are understood, there undoubtedly exist tangible opportunities for organisations to engage in policy dialogue with decision makers, and potentially increase the profile of working animals in many developing countries.

Conclusions

NGOs and advocacy groups have in the past voiced similar concerns to the FAO: that livestock policies in developing countries are more geared towards economic growth rather than to support animals which contribute to

poverty alleviation in seemingly less tangible ways. NGOs are therefore in a good position to provide governments with policy guidelines aimed at supporting those activities not necessarily prioritised by decision makers. There are 2 important necessities for policy dialogue to occur:

1. Knowledge of the actors and processes (platforms) which can be accessed to result in policy formation in that particular country, and
2. Organisational consensus on the exact messages to be portrayed and what supporting evidence exists

In particular, it would be beneficial to access policy platforms in conjunction with a number of stakeholders with similar mandates, focusing on experience sharing and common goals in order that a consistent, clear message may be delivered to in-country decision makers.

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SOCIOECONOMIC IMPACT OF EPIZOOTIC LYMPHANGITIS (EL) ON HORSE- DRAWN TAXI BUSINESS IN CENTRAL ETHIOPIA

A. Nigatu and Z. Abebaw

Addis Ababa University Faculty of Veterinary Medicine, SPANA project, PO Box 34, Debre Zeit, Ethiopia
nigatakat@yahoo.com

Introduction

Livestock contribute to the livelihood of 60-70% of the Ethiopian population and equines are important animals in the farming and transport systems of Ethiopia [5], [9]. Livestock surveys estimate that the horse population of Ethiopia was about 1.79 million which are used for transportation of people and goods (63.7%), draught purpose (8.0%) and for other uses [4]. Horse drawn cart business has long been used as a source of income for significant proportion of urban population of the country [9], [12].

Carthorses are affected by many diseases; of which the major one is Epizootic Lymphangitis (EL). In a study undertaken in 28 towns of Ethiopia, EL is reported to occur with average prevalence of 18.8 % [1]. This study indicated that both Debre Zeit and Modjo towns had a prevalence of 19.8% where another study reported a prevalence rate of 5% in Akaki town [6]. SPANA project have conducted a treatment trial using iodides and established a treatment protocol for early cases of EL which is found to be effective in more than 85% of the cases [7], [8], [11].

There is scanty information on the impact of this disease on the livelihood of cart horse owning population of the country. The objective of the current survey was to make quantitative estimate on micro-level socioeconomic impact of EL on the livelihood of carthorse owning community in central Ethiopia.

Material and methods

A semi-structured questionnaire survey was conducted on 290 cart horse owners living in three towns of central Ethiopia, Debre Zeit, Modjo and Akaki in March, 2010. In the respective towns there were 1000, 400 and 404 horse drawn carts (data from municipality) and 130 cart horse owners from Debre Zeit and 80 owners from each of the others were interviewed. Losses were estimated from reduced working hours per day, treatment cost, absence from work, and death of EL affected horses. Data analysis was made using descriptive statistics with SPSS 15.

Results and discussion

The survey revealed that within the past two years the market price of a horse had increased by approximately 20% in the three towns. Currently, the average price of a cart pulling horse is 1616 Birr (1 US$ is equivalent to 13.45 Birr, the Ethiopian local currency).

58% of all respondents in the three sites were married and overall average number of dependents per household was 4.6 individuals. 77.6% of the total respondents reported to be completely dependent on the cart business for subsistence and the rest have additional income from farming, pension and other sources. The average length of experience of respondents in carting business was 6.8 years (range one month to 40 years). 284 (97.9%) respondents reported to have only one cart. 203 (70%), 78 (26.9%), 5 (1.7%) and 4 (1.4%) of the respondents had one, two, three and four horses respectively.

Eighty six percent of the respondents recognized EL as primary health problem of cart horses followed by colic, lameness and respiratory problems. This is in agreement with other study which reported that 89.6% of the respondents prioritized EL [10]. The result showed that 161 (55.5%) of the overall respondents encountered EL on their horses at least once in their carting life. Out of 336 EL affected horses of the EL encountered group, 173(51.5%) either died or were euthanized. According to the respondents, the duration from the appearance of the first nodules to the involvement of many parts and final abandonment of the horse took on average of 14.6 weeks.

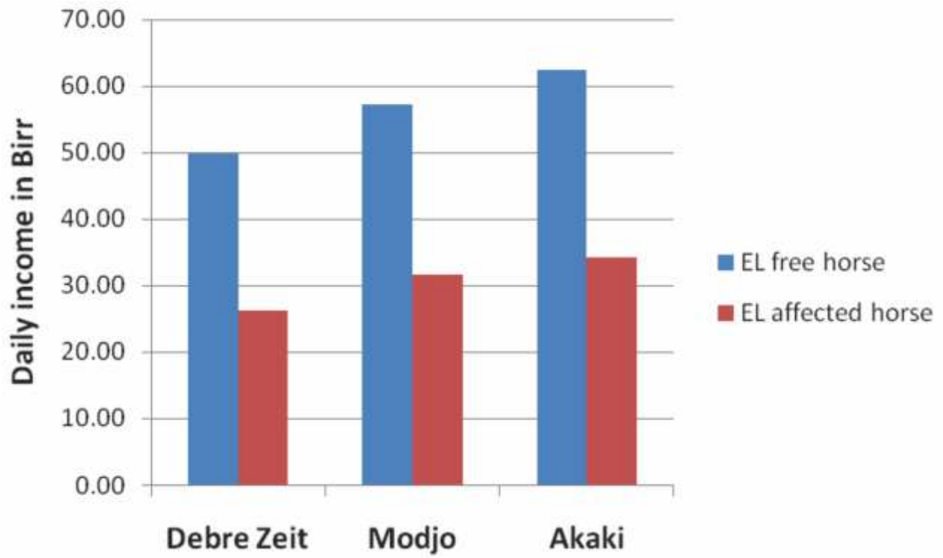
The average duration taken for recovery of an early case of EL was 3.2 weeks.

Ninety two percent of the respondents negatively associated EL with working efficiency. The survey also indicated that EL reduces daily income of owners by 25.5 Birr (46.1%) [Table 1], [Fig 1]. The data revealed that owners are forced to rest their EL affected horses for an average of 1.7 additional days per week compared to healthy ones.

Table 1. Average income differences between EL-affected and EL-free carthorses

Categories	El free horse	EL affected horse	Difference
Average income/day/horse in Birr	55.30	29.80	25.50
Average working days/week	6.1	4.4	1.7
Income/week in Birr	337.30	131.10	206.20

Figure 1. Average daily income differences between EL-affected and EL-free carthorses



Estimation of losses assumed constant prevalence of EL within each town in the 6.8 years average experience of owners. The income loss per week for horses that were affected by EL and either abandoned or died (173 horses) was estimated by multiplying the working duration of EL affected horse (14.6 weeks), income per week, and number of horses. The weekly income loss until death or recovery of EL affected horses was estimated from the difference between values obtained for EL free horses and EL affected horses i.e. 206.20 Birr. Similarly, income loss for recovered horses (163 horses) was estimated by multiplying the average recovery duration in weeks (3.2 weeks) by the average income per week. Accordingly, the total loss due to reduced income from the 336 horses EL affected horses within the 6.8 years was estimated to 628,373.88 Birr.

A further income loss derived from replacement costs for horses that died or were euthanized. It was found that 173 horses were either humanely killed through SPANA's euthanasia programme or died from the disease in the 6.8 years. Therefore the replacement cost of horses that died or were euthanized due to EL in the 3 sites is estimated to be Birr 279,568 using the current market price of horses. The overall sum of losses from reduced income and death due to EL is 907,941.88 Birr. This huge income loss from a low-income business significantly affects the livelihood of dependants. Moreover, due to the contagious nature of the disease and opportunities for transmission in the survey sites, the study may underestimate losses. A total loss of US$1,683 per case of EL in carthorses has been reported earlier in unpublished data [11]. The difference in the amounts may be attributed to different methods of estimation and the number of different business areas involved. Other authors also confirm that EL is an economically important health problem of horses [3], [8].

Out of the 336 EL-affected horses, 298 (88.7%) were taken to the SPANA clinic for free treatment. According to the respondents, 150 (50.3%) of these horses recovered from the disease. This lower rate of recovery compared to the project's reported 85% recovery rate might be attributable to the inclusion of moderate cases and lack of compliance with the protracted treatment protocol. Treatment cost is estimated only for the sake of computations; it is not practical for owners to pay. Treatment of horses in other areas was found to be cost prohibitive. Antifungal drugs for EL treatment were not available in government and private veterinary clinics. However, 38 horses were taken to government and private clinics and to traditional healers, and owners were charged around 200 Birr per case. But the recovery success was less than 30%. In the SPANA project, the current estimated cost of treatment with iodides for a single carthorse (about 250kg) is approximately 700 Birr. Therefore, the estimated loss from treatment of the 298 horses covered by SPANA is 208,600 Birr. However, treatment response depends on the stage of the disease, compliance with the treatment regimen, and provision of good management [8], [11].

Conclusion and recommendations

The survey revealed that EL is economically important disease of horses due to lesser pulling capacity, unwillingness of customers to use carts pulled by such horses, treatment cost, absence from work, and death of affected horses. EL is a primary health problem of carthorses in central Ethiopia which constrains the cart taxi business and poses severe economic crisis to the dependant community. SPANA is providing significant aid by treating early cases of EL and preventing spread of the disease through euthanasia of severely affected ones and educating owners and drivers on prevention of this economically important disease in its operation sites.

In the light of these facts the following recommendations are proposed:

- Awareness enhancement education should be provided to horse owners and drivers and to the public for early treatment of horses showing signs of EL and preventive measures.
- Low-priced and effective antifungal drugs should be sought to treat the disease which will be readily available to equine owners and drivers both in government and private animal health sectors.
- Government organizations and concerned NGOs should work together towards the development of an effective vaccine and other sustainable ways of controlling the disease.

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CONTRIBUTION OF DONKEYS TOWARDS THE LAMU ECONOMY AND THE CHALLENGES THEY FACE INFLUENCED EITHER LOCALLY OR GLOBALLY

O. J. Owiti[1] and R. Abdalla

Lamu Donkey Sanctuary, PO Box 264 Lamu, Kenya
jakomolo@yahoo.com

Abstract
Donkeys are the only mode of transport in Lamu, contributing immensely to the livelihood of the population. The donkeys are also regarded as part of Lamu culture. Despite this, donkeys face various challenges influenced by the geography and climate of the islands, and fluctuations in the global economy. Moreover, donkey users are not aware of the major contribution of donkeys to their livelihoods.

Introduction

Lamu archipelago is geographically located on the northern part of the coastal strip, bordering Somali. It comprises a series of islands inhabited either by people or mangrove forests. Major ones include Lamu Island, Pate Island, Kiwayu Island, and Manda Island. Lamu is recognised as a UNESCO world heritage site, thus making it a popular tourist destination [1].

These islands have villages which were built in the 17th century and still maintain the historical architecture and planning. Such narrow streets do not allow for the movements of motorised vehicles so donkeys are the main form of transport, especially for Lamu Island whose population is estimated to be over 30,000 people [2]. Unlike the rest of country and many other areas in the world where use of donkey transport is reserved for the less fortunate in society, Lamu Island's transport system using donkeys cuts across all social classes. The unique narrow streets of Lamu prohibit mechanisation, and so all commodities are moved from one spot to another using donkeys.

The donkey is still regarded as the least valued among animals irrespective of the income earned from its hard labour, and is faced with challenges of food scarcity amid hard economic times and unpredictable weather patterns.

Value of donkeys and their contribution to human livelihoods

Just like organised motorised transporters in a modern town, the donkey transport system in Lamu is of high importance to both donkey owners and all residents in general. On the mainland the cost of a donkey is US$77 while in Lamu a donkey costs $192. The high cost of buying a donkey on the island is based on the fact that transportation is a good earner and the majority of donkey owners do depend solely on this business to ensure the livelihood of their families.

Lamu Donkey Sanctuary is currently conducting community education with an aim to raising owners' awareness of good husbandry and appreciation of the contribution of donkeys to their household incomes. This activity has been carried out in Lamu, with attendants randomly selected among donkey users. Participants are asked for their perceptions of different animal species in terms of income generation and expenditure. The participants' perception of income is based on daily revenue: if they sell 1 'kuchi' chicken on Tuesday, they will make $38.46, but if the donkey is worked on the same Tuesday it will generate $25.60.

The economy and its effect on welfare of working equines in Lamu

Being the animal of the lowest rank in the minds of many keepers, donkeys are the hardest hit in cases where family income versus expenditure becomes out of proportion. In Lamu, donkey users get income from working with

donkeys and from here earn themselves a living, and buy feed for their donkeys and other animals. During the global economic downturn, a region which depends 90% on tourism like Lamu is often directly affected.

Inflation and low purchase power has resulted in the reduction of the number of new buildings and developments in the public arena. This is directly proportional to the work done by donkeys, meaning a lower income for the owner. A non-working donkey brings no income to the owner, and is a creator of more debts. As one donkey owner from Shella village, Twaha Mohamed, puts it, in the last 2 months: he has a debt of 45,000 Kenya shillings (€445) from the feed supplier. The majority of owners thus let their donkeys roam around town without water or proper feed.

Effects of climate change on donkeys in Lamu

The general climate changes experienced globally have not spared Lamu, with the current experience of unpredictable rainfall, indeed reduced levels of rain. Lamu Island is a hill of white sand emerging out of the sea and this has led to scarce vegetation especially grass and other ground-covering green plants, due to the poor ability of soil to retain water. The grazing fields are often bare with hot white sand present everywhere; the little rainwater there is gets swallowed faster by hungry non-fertile sand.

The body condition of donkeys is often affected, as they have a lower energy intake than is required to maintain body health. The majority of the donkeys are seen scavenging in refuse sites with the intention of filling their stomachs. Lamu donkeys are mostly fed on maize husks from the maize-milling companies. This is low in energy value and lacks the vitamins usually found in green vegetation and grass. Lamu Donkey Sanctuary (LDS) has embarked on raising awareness about the importance of providing commercial mineral licks and some green forage for the working donkeys.

While working in conjunction with local government authorities and environmental groups, LDS erected a wall on the perimeter of the town's main refuse dump site with a lockable gate, so as to keep donkeys out. In Shella, a village in the south of Lamu Island, the villagers constructed a wall around the dump and later collaborated with LDS to fix a gate and construct a small feed trough where edible waste, especially fruit peelings and vegetable remains, can be placed for the donkeys.

Climate change has also contributed to the deaths of the donkeys through colic caused by swallowing plastic bags consumed on refuse sites. The donkeys which used to rush to the farms to graze while not working are today being seen roaming the streets of Lamu town searching for anything to consume, including fish bones to chew on.

Lamu donkeys' contribution to transport systems

Lamu Island includes Lamu town, Shella village to the south, Matondoni village to the north-west, and Kipungani village to the south-west. Population distribution in Lamu is centralised, with very sparsely populated farms comprising of farm workers and their families.
The main transport system in the sea channels is boat, and on land it is donkey. Roads on the island are characterised by the presence of deep white sand which makes walking difficult. A network of footpaths crosses the island where the majority of active farms produce poultry, milk, and beef; the animal feeds are transported by donkey from Lamu town.

The second busiest village on the island is the wealthy Shella village. People use boats to travel to and from Lamu. Shops, wholesale stores, and building sites are supplied by the donkeys. It's a common scene in the morning as donkeys line up from Lamu towards Shella carrying cement, crates of soda, bread, commodities, and pulling building posts among others. These groups prefer using donkeys because they are inexpensive and will deliver the loads at the door step.

Involvement of various stakeholders to improve the welfare of donkeys
In Lamu most of the population are Muslims. The imams play a central role in influencing the behaviour of the community. Through their preaching and teachings in mosques and also their involvement as decision makers in the council of elders, we partner with them in promoting animal welfare. The local chiefs are involved in promoting donkey welfare through community education in legal issues, such as creating awareness about the Cruelty to Animals Act (Chapter 360) and enforcing it. We also work with environmental groups like Lamu Safi (translated as Clean Lamu).

Conclusion
Donkeys in Lamu play a major role in ensuring the smooth running of transport systems and survival of Lamu families. The major problem facing the donkeys is the fact that their value is poorly recognised in the community; many believe that donkeys don't get sick unless it's time for them to die. Clear involvement of all stakeholders has to be maintained in order to tackle the underlining donkey welfare issues.

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THE EUROPEAN DRAUGHT HORSE FEDERATION (FECTU) AND THE CONTEXT FOR WORK WITH HORSES IN EUROPE

P. Schlechter

FECTU asbl, 9 rue principale, L-7475 Schoos, Luxembourg
pit.schlechter@fectu.org

Abstract:
FECTU, founded in 2003, represents the interests and objectives of the European associations working for animal traction as a sustainable energy source. The draught-horse world in Europe is marked by disparate interests that arise from the many possible uses of these animals. The difference between Western and Northern countries and the countries in Central, Eastern, and Southern Europe also plays a role. Public opinion towards animals in the service of humans is paradoxical, but meanwhile the users are becoming ever more professional and realistic. Lacking is a true bottom-up movement and global co-operation.

FECTU
FECTU was founded in 2003 [1]. Its purpose is to promote co-operation throughout Europe between organisations dealing with working horses and other draught animals. FECTU advocates working methods which harm neither the environment nor people, and supports all efforts intended to render draught animals more effective and which guarantee their welfare. The number of member organisations has risen from 7 initially to 17 today, coming from 9 European nations. The Federation is primarily active in information exchange between its members; in initiatives to promote the use of draught animals as a sustainable energy source; and in raising awareness among decision-makers, government bodies, institutions, and the wider public.

Naturally FECTU has to overcome some difficulties which arise from its international nature. Within the European Union some 25 different languages are spoken [2]. In order to function FECTU is obliged to communicate with its members in English, German, and French. In addition the geographic dispersal of members hinders face-to-face meetings and participation in conferences and practical demonstrations of animal traction. The potential of the Federation is further restricted by its limited financial resources.

Inherent queries and problems within the horse scene
In taking on the task of promoting modern uses for draught horses FECTU has laid claim to an uncommonly diverse field of activity. In Europe heavy horses are used in many sectors: work in farming and forestry, in market gardens and vineyards, in municipal maintenance and transport, for competitive and leisure driving, for the production of meat and mare's milk, in maintaining traditions, in equine therapy, and in socialising excluded groups. From this arise not only interesting synergies but also differing opinions between individuals and associations which deal with breeding and the use of draught horses.

The world of draught horses in Europe is marked by differing interests and contradictions. Even the definition of ‘draught horse’ is not firmly defined anywhere [3]. Since the triumph of the internal combustion engine in farming some heavy horse breeds have been bred almost wholly for show purposes or for meat production, and as a result are hardly usable as working horses by reason of conformation or character. Within FECTU there are organisations of professional users of horses and associations of hobbyists, and this mixture exists also within member organisations. What some do professionally to earn their living others do for amusement [4]. Among the hobbyists there are many who do not believe for a moment that horses can represent a serious alternative to powered machinery.

Northern and Western Europe contrasted with Central, Eastern, and Southern Europe
The use of draught horses in Northern and Western Europe is almost non-existent in economic terms. As a means of production horses are generally not taken into account in official statistics.
In contrast, hundreds of thousands of people in Central, Eastern, and Southern Europe are dependent on their working animals [5]. The majority of their owners wish they could have tractors. Unfortunately the countries in which there are many draught animals are dramatically under-represented in FECTU.

Animals in the service of humans: public opinion
The attitude of the average European towards physical effort is paradoxical. Someone who produces meaningful work using muscle power in order to earn money to feed their family is pitied or scorned.
On the other hand, someone who pays money after work to waste muscle power through hard physical endeavour in sport or fitness training enjoys universal approval. This attitude has transferred itself to the evaluation of the use of animals. To use horses for hard work in farming or forestry is considered backward or even as cruelty to animals [6]. The picture of a team of horses has become, in the media, the stereotypical image of backwardness, a symbol of a way of life from which humankind absolutely must liberate itself. In contrast, the achievements of sport horses and their riders and drivers are admired. Farm teams in any event enjoy greater popularity in nostalgic countryside events which evoke romanticised 'good old days'. This perverted view of bygone peasants in an idealised setting, on the one hand, reinforces the image of backwardness of animal power and, on the other, is used by agro-industry to draw a veil over the high-tech conduct of food production [7].

Interestingly the rejection of animals in the service of humans applies only as far as it concerns pure muscle power. When it concerns other characteristics of which humans make use, often precisely the opposite applies. The technical progress which has ultimately driven draught animals out of forestry and farming, transport, and the armed forces, has been strangely followed by numerous projects whose highest ambition is the development of a machine which resembles as closely as possible a model taken from the animal world. For example, there is the so-called 'Iron Horse' [8] or the 'Walking Harvester' [9] for forestry, and also the imitation pack animal 'BigDog' [10] from Boston Dynamics. In the end such developments bite themselves in the tail. Where modern technology cannot serve, we take recourse to animals. Sniffer dogs, rescue dogs, and guide dogs for the blind are unsurpassable helpers; mules carry the most modern weapons to their point of use [11]; honeybees search out explosives [12]; dolphins and sea lions are used for mine detection and other similar underwater tasks [13].

Changing opinions and endeavours regarding draught animals
Undoubtedly a development has taken place in the minds of those who in recent years have been seriously involved in the use of working animals. Some opinions have become more realistic. There are still people who believe that the use of auxiliary motors alongside animals is a heresy, that the work methods of the Amish in the USA can be adopted without problems, and that draught animal power is the worldwide cure-all for small farmers [14] and has a future in organic agriculture [15]. Meanwhile other views have gained acceptance.

Distinct tendencies and assessments can be differentiated here. On the one hand, there are successful efforts to seek out niches within the existing social and economic setting in which draught animals can be used either in the short or medium term. These are usually projects where profitability has a subsidiary role and publicity a correspondingly greater one. They take place with the approval and support of local decision-makers who expect a positive response from the populace because their quality of life is improved, excluded groups are engaged, and it all fits with the general trend towards sustainability. A good example for this is the growing number of French town councils which use horses to care for parks and green spaces, to collect glass and paper for recycling, etc. [16].

On the other hand, there are efforts which involve a long-term vision of an extensive return of draught horses, for example in farming and forestry. Behind these efforts lies the conviction that industrialised agriculture and fully mechanised forestry have negative impacts on social structures and on the environment. Organic farming, which

is wrongly associated in the public mind with small local farm enterprises, is not excluded from these criticisms [15].

The use of fossil fuels and the compaction of soils in organic farming are just as high if not higher than in conventional industrial farming [17]. This explains the demand for a change in agricultural policy, for support and protection for small farming businesses in which draught animals make sense economically and ecologically, and in which the proprietors are protected from the need for large loans. In the context of such considerations FECTU strives to obtain official recognition from the EU of draught animals as a renewable energy source which is climate-friendly and avoids soil compaction, and to secure their systematic promotion in small-scale organic farming.

Prospects
The main problem remains the fact that in Europe there is no true bottom-up movement with the professional users of draught animals taking the initiative to make progress. Furthermore, there is insufficient demand for modern horse-drawn equipment to permit its logical development, its mass production, and its sale at reasonable prices. As a corollary, the lack of a varied and affordable arsenal of equipment hinders the retention or conversion to horse power.

In those countries where many people still farm with draught animals a role is certainly played by illusory notions of the alleged blessings of motor-powered western farming and forestry. These notions are often enough spread and supported by governments and large investors. Most users of draught animals in the world are not aware of the absolute dependence of 'modern' farmers on machinery manufacturers, parts suppliers, unstable prices for fuel, chemical fertilisers, seeds, and pesticides, nor of the massive state subsidies.

In the light of discussions about renewable energy, climate change, sustainable business structures, and food security, one may ask if the users of animal power should not seek stronger international collaboration in order to secure the moral and economic recognition which they deserve.

Notes and references
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[2] The European Union with its 27 member states uses 23 languages.
[3] In some European languages the term draught horse does not signify the intended use of the horse but its membership of a heavy breed.
[4] One problem which arises from this is 'unfair competition' complained of by professional horse men and women, when their prices are undercut by hobbyists who offer services at a price which hardly covers costs.
[5] In Poland, Romania, and Bulgaria alone there are far more than 1 million equines in work. Figures for equine livestock in 2006 are: Poland, 307.000; Romania, 863.000; and Bulgaria, 270.000, http://earthtrends.wri.org/searchable_db/index.php?theme=8&variable_ID=342&action=select_countries.
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MODERN HORSE-DRAWN EQUIPMENT

E. Schroll

Starke Pferde Magazine, Weisser Weg 109, D-32657 Lemgo, Germany
ESchroll@starke-pferde.de

Abstract
In the USA over the last 20 years an industry of horse-drawn implement manufacturers has developed, producing modern, up-to-date machines for a limited but growing market. In western Europe there are signs of a similar development. In this multi-media presentation you will be introduced, in words and pictures, to real implements and machines, sometimes shown at work.

The decline of horse-powered operations in developed countries
Throughout the nineteenth century, and until the middle of the twentieth century, draught animals, especially the draught horse, were the engine for the rapid development of industry and agriculture. In the USA, as early as the first half of the twentieth century, and in Europe after the Second World War, the seemingly limitless availability of oil, and the consequent mechanization of agriculture led to a dramatic decline in horse-powered operations, and the near extinction of many traditional breeds of draught horse.

Gradually the machinery manufacturers ceased the production and development of horse-drawn implements in favour of the greater profits to be made from machines used with tractors; the horse farmers had to make do with their old tools, and eventually were overtaken by 'progress'. The enforced image of a 'rusty' horse farmer served as proof that this way of working was out of date, a relic of a long forgotten time. The wearing-out of the machines and the increasing lack of spare parts led eventually to people giving up, or replacing their horses with tractors. A similar fate threatened smalll farmers in many countries across middle and eastern Europe.

New machines made by the Amish
In the USA, the Amish people were separated from these developments and, for religious reasons, continued to use horses, so the mechanization and industrialization of agriculture largely passed them by. Nevertheless, or in fact because of this, they operated their farms with great success, and are counted as among the best farmers in the world. As a reaction to the large manufacturers' hostile attitude towards horse-drawn machinery, individual farmers and small Amish firms began first to restore old machines, then to copy them, and eventually to design and build new modern machinery. In 1994, manufacturers, inventers, and users of horse-drawn equipment came together for the first Horse Progress Days in Pennsylvania. From these small seeds has grown a small industry producing horse equipment in the USA. The Horse Progress Days event, taking place each year in a different state, has today become the largest trade fair for horse-drawn machinery in the world.

Draught horses as an ecological alternative in Europe
At the same time, though on a more modest scale, the demand for horse-drawn technology in Europe has increased, and was at first largely being met by implements imported from the USA. However, pioneers such as the Englishman Charlie Pinney soon began to develop and build new equipment. In Germany in 1996, the first 'PferdeStark' ('Horse-Power') event took place. This European version of Horse Progress Days has continued in subsequent years to provide the motivation for individuals and small firms to develop and offer new machinery.

In contrast to the Amish, in western Europe the motivation for using draught horses is overwelmingly for ecological reasons. With the issues of protection of nature and environment, climate chaos, peak oil, and the renuciation of fossil fuels on one side, and the madness of industrial agriculture with its ecological and social consequences on the other, traditional agriculture with draught animals, for some people at least, is seen in a new light. In recent

years, working horse associations have been formed, with the aims of making animal power socially acceptable, encouraging politicians to recognize it as a renewable form of energy, and promoting it as a modern ecological alternative. In this regard, providing animal welfare is maintained, new high-performance equipment featuring modern design can make a persuasive case for the practicality of animal power, and improve the image of the working horse.

Overview, facts, and impressions

This online presentation, specially produced for the ICWE, shows a variety of newly manufactured, modern horse-drawn machinery, categorized by function and farm size, which highlights both the direction and actual developments current on farms in the USA and western Europe today. This presentation makes claim neither to completeness, nor to the transferability of these machines and hitches to the developing world; but it does give an impression of the possibilities and fundamental potential of working animals.

The presentation is available on the internet at www.modern-horse-power.org.

Further resources and reading

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COMPARISON OF DIFFERENT WORKING EQUINE COMMUNITIES: THEIR ANIMAL WELFARE AND SOCIO-ECONOMIC STATUS IN GWALIOR, INDIA

R. S. Kumar, R. Tomar, R. Kumar P., S. Nath, G. Murugan, and S. Ramesh

The Donkey Sanctuary India, Gwalior
drskvet@rediffmail.com

Introduction

There are about 3,000 working equines at Gwalior, central India. Most of them are mules followed by donkeys and horses. These animals are mainly worked at brick-kilns, stone quarries/crushers, construction sites, and pottery-related works. The owners of these working equines are landless labourers and all of them belong to a common community called Prajapatis. Most of the owners work mainly in the brick-kilns for a period of about 6–7 months during the summer. Some of them work at construction sites in the city, some in quarries, and a few use their animals for pottery-making and related works. Some of them do all this work on a seasonal basis.

Even though all of the owners work hard with their working equines, the welfare of their animals and their families' economic status differ significantly. The earning capacity and the economy status of the owners can be compared with the welfare status of their animals, their knowledge, skills, practices, and attitudes.

So, using animal-based welfare measures on the working equines, different working groups' economic status were studied. Consideration of both health and behaviour is important when assessing welfare [1]. Behaviour is the expression of an animal's perception of, and interaction with, its environment. Health issues affecting an animal's welfare include acute diseases and disorders causing immediate suffering and long-term, progressive conditions causing chronic pain [2]. Physical observations of particular relevance to equines include body condition score [3, 4], hoof horn quality [5], and skin turgor as an indicator of hydration status [6].

Materials and methods

Three different groups of working equines were included in this study. Group I consisted of equines working at brick-kiln sites (6–7 months); group II animals worked at stone quarries; and group III worked at city sites. Twenty five donkey owners from each group were selected and interviewed. Before interviewing the owners, their animal's welfare was assessed by animal-based measures. A list of health and behaviour parameters was devised using published research [1]. A range of indicators was selected to be representative of both behaviour and health status:

- Body Condition Score (BCS) was measured as per recognized guidelines [7].
- The extent of wounds was observed over breast, withers, spine, girth, belly, and flank and tail base.
- Lameness was confirmed by swelling of tendons/joints, limb deformities, cow hocked conformation, hoof wall(s) too long, hoof wall(s) too short, hoof horn quality abnormal, hoof avulsion, sole surface abnormalities, and gait abnormality.
- Disease conditions were measured by interviewing the owners. Injury and disease status were also measured by abnormal mucous membrane, lesions at commissures of lips, missing teeth, molar hooks or sharp molars, eye abnormalities, coat condition, ecto-parasites, diarrhoea under tail, dehydration status, tether/hobble lesions or scars, and carpal lesions or scars.
- Temperament and behaviour were measured to assess the reaction of horses, mules, and donkeys to human approach, proximity, and touch. Clamping down the tail or tucking in the hindquarters in response to an observer walking along their side was recorded for donkeys. See Table

The owners were interviewed about their earning capacity, feeding expenses, feeding and sheltering arrangements, number of animals, and their skills, knowledge, attitudes, and practices. Their economic status was assessed according to their children's education and living standards.

Results

The group I owners possessed mostly donkeys, followed by mules and horses. The reason is that the donkeys are less expensive. The group II owners also had mostly donkeys. The city-based group III owners mainly had horses and mules. Owners in the entire group had a minimum of 2 to a maximum of 7 animals. The average number of animals possessed by each group is given in Table 1.

Table 1

Particulars	Group I (n=25)	Group II (n=25)	Group III (n=20)
Average number of working equines	3	4	4
Equine species	mostly donkeys	mostly donkeys	mostly mules & horses

Table 2. Animal-based welfare measures

Welfare measures	Group I	Group II	Group III
BCS	1–2 (Poor to Moderate)	2–3 (Moderate to Ideal)	3–3.5 (Ideal to Fat)
Extent of wounds	75% suffered from various harness-related back sores	55% suffered from various harness-related back sores	15%
Hoof care and lameness	50% were lame and most of them had poor hoof care	55–60% were lame and most of them had poor hoof care	Very few were lame
Injury and diseases	8% had various injuries; a few were suffering from colic and some other diseases	14% had various injuries	Very few had injuries and there were some cases of colic
Temperament and behaviour	Mostly dull, depressed	Dull and some were aggressive	Active, friendly, and a few were aggressive

Table 3. Owners' skills, knowledge, and practices

Particulars	Group I	Group II	Group III
Harness, hobble and halter-making skills	Made within the group; commonly use old, worn-out and infected harnesses	Made within the group; about 50% of the harness materials were worn out and infected	Made within the group; harness quality excellent
Feeding practices	Chick peas straws, rice bran, and seasonal grazing	Chick pea straws, rice bran, and seasonal grazing	Chick pea straws, rice bran, chick pea, and seasonal gazing
Shelter	Temporary with bricks and polythene sheets	Sheltered in rooms and in open spaces	Sheltered mostly in rooms, very few provide fans and water coolers
Wound management	Very poor (apply mud, ash, battery oils, etc.)	Very poor (apply mud, ash, battery oils, etc.); a few use traditional medicines	Apply ointment and turmeric powders
Disease management practices	Faulty medications common	Faulty medications common among few owners	Rarely use faulty medications; mostly call vets
Working attitude	Mostly overload and overwork	Overworking common but not overloading	Sometimes overload but rarely overwork

Table 4. Owners' economic and socio-economic status

Particulars	Group I	Group II	Group III
Average monthly income (Indian Rupees)	4,000–8,000 (6–7 months a year)	3,500–5,500 (round the year)	5,000–7,500 (round the year)
Schoolgoing children	Very few	Most of them	All
Overall living standards	Poor	Good	Good

Discussion

From this study, using animal-based welfare measures it was evident that the welfare of equines belonging to group III was the best, followed by group II whereas the group I equines had the worst welfare. The group III equines were well taken care of and their welfare was compromised rarely. See Table 2.

Usually in India, during the brick-kiln season, the working equines work for around 7–8 hours a day mostly in very hot conditions during the summer months. The brick-kiln work lasts for about 6–7 months a year without a break. Therefore the brick-kiln working equines and owners (group I) tended to do more work than the other two groups, which led directly to a compromise in equine welfare. The results also indicate that the group I owners' skills, knowledge, husbandry practices, and attitude were not good. This led indirectly to the poor welfare status of group I equines. See Table 3.

There was a significant difference in income and animal welfare between group I and groups II and III communities. The socio-economic status of the group I owners was found to be comparatively poorer than that of the other groups. See Table 4. Hence group I was forced to do more work, and therefore the owners usually overloaded and overworked their animals in the brick-kilns. As they had work for about 6–7 months a year, they tried to earn the maximum during these months. The working conditions were not appropriate at the brick-kilns. There was no proper rest, no adequate drinking water, the terrain was rough, and hot weather made the Group I animals suffer the most.

Therefore, to alleviate the suffering and pain of these working equines, the efforts of animal welfare organizations should be focused and targeted at improving the donkey owners' attitudes, practices, knowledge, and skills. The owners should be educated on the importance of proper rest, enough drinking water, proper loading, etc. Training on wound and disease management, its prevention and control, should also be given priority. These efforts will not only alleviate the welfare issues but will also slowly improve the owners' earning potential, thereby leading to working equine-dependent community development. It should be a participatory, whole-community-based approach. Along with this there should be proper veterinary service providers for maintaining primary equine health care.

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SURVEY OF DONKEYS IN NORTHERN NIGERIA: A CASE STUDY OF NINGI LOCAL GOVERNMENT AREA OF BAUCHI STATE

M. Sanusi, D. J. U. Kalla, D. Zahraddeen, H. M. Mai, M. Abubakar, and I. Shuaibu

Animal Production Programme, School of Agriculture & Agricultural Technology,
Abubakar Tafawa Balewa University, P.M. B. 0248, Bauchi 740004, Nigeria.
demokalla71@yahoo.com

Abstract

The study investigates the conditions of donkeys managed by farmers in Ningi Local Government Area of Bauchi State. A total of 264 donkeys owned by 172 farmers were studied. There were significant differences between male and female donkeys in their girth, body length, and age; values being 126.1 ± 0.58 vs 123.9 ± 0.77cm (P<0.05), 79.7 ± 0.61 vs 81.3 ± 0.64 cm (P<0.05), and 6.2 ± 0.22 versus 5.4 ± 0.21 years (P<0.01) respectively. Most of the donkeys were of moderate condition score and aged 5–7 years. The common health problems of donkeys in the study area were trypanosomiasis, helminthiasis, and nutritional diseases with prevalence rates of 42.5%, 16.5%, and 15.7% respectively. Up to 8.9% of animals studied had fresh wounds on various parts of their body. Donkeys in the study area contribute to the socio-economic development of the farmers, hence the need to improve their management and welfare.

Introduction

Nigeria is estimated to have over 1 million donkeys [2]. They are distributed mainly in the northern part of the country. Donkeys are essential to the livelihood of many families, providing farm power and diversifying income. In spite of the increasing popularity of donkeys in Northern Nigeria they have received little or no attention from researchers and developmental agencies [1, 8]. In view of this, a survey for baseline information with respect to ownership patterns, management, health status, and welfare in the Ningi area of Bauchi State was undertaken.

Materials and methods

Location

The study was conducted in Ningi Local Government Area of Bauchi State, Nigeria. It is situated on at 10°10' North 9°50' East. The vegetation of the area is characterized by typical savannah grassland.

Data collection

A total of 264 donkeys owned by 172 farmers were studied from September to December 2006 at Ningi weekly market. Each animal's age, sex, body condition score (BCS), and live weight were determined [5, 6].The owners were asked to respond to questions on the management, health, and work performance of their donkey. Faecal and blood samples were also taken for trypanosomiasis and helminthiasis screening. The data obtained were subjected to simple descriptive statistics and one-way analysis of variance (ANOVA).

Results

The results showed that the majority (86.6%) of the farmers were males. The average age of the farmers was 48 and 35 years for men and women respectively (Table 1).The total mean number of donkeys per farmer was 1.53. Only 6 (3.6%) of the farmers had more than 5 donkeys.

Table 1. Profile of donkey ownership in Ningi

Age (years) group of owners	Farmers		
	Male	Female	Total(%)
≤ 20	3	2	5 (2.9)
21 – 40	52	12	64 (37.2)
41 – 60	75	7	82 (47.7)
61 ≥	19	2	21 (12.2)
Number of donkeys per respondent			
1	135	22	157 (91.3)
2	3	0	3 (1.7)
3	4	0	4 (2.3)
4	1	0	1 (0.5)
5	1	0	1 (0.5)
6	2	0	2 (1.2)
7	0	0	0
8	2	0	2 (1.2)
9	0	0	0
10	1	1	2 (1.2)
Total (%)	**149 (86.6)**	**23 (13.4)**	**172 (100)**

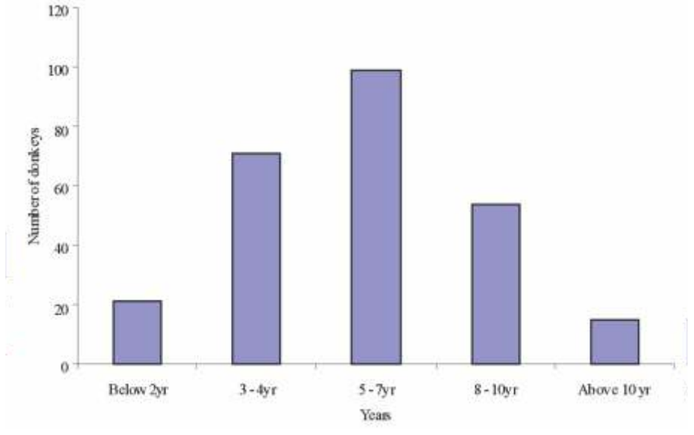
About one-third (33.7%) of the farmers bought their animals at the market; 43.6% were home bred, or inherited. Many of the farmers kept their donkeys for the purpose of transportation as shown in Table 2.

Table 2. Mode of acquisition and use of donkeys in Ningi

	Number of farmers	Percentage
Mode of acquisition		
Acquired from market	58	33.7
Home bred/inheritance	75	43.6
Gift	34	19.7
Others	4	2.3
	172	**100**
Reasons for keeping donkeys		
Farm work	42	24.4
Transport	47	27.3
Transport and farm work	80	46.5
Others	2	1.6
	172	**100**

The majority of the donkeys studied were between the ages of 3 and 10 years. Donkeys over the age of 10 are rarely seen in markets and do little work for a farmer. A relatively small number of donkeys younger than 2 years are seen in some markets (Figure 1).

Figure 1. Age distribution of working donkeys in Ningi



The mean height at withers for male and female donkeys was 119.9 ± 0.56 and 110.46 ± 0.87 cm respectively. Male donkeys had a significantly (P< 0.05) larger chest circumference than the females. The average body length of female donkeys was significantly (P< 0.05) greater than in males. The mean live weights of male and female donkeys were similar (Table 3).

Table 3. Linear measurements of height, girth, body length (cm), and weight (kg ± SEM), and estimation of male and female donkeys in Ningi

Parameters	Values		
	Male	Females	Los
Height	111.9 ± 0.56	110.4 ± 0.87	NS
Girth	126.1 ± 0.58[a]	123.9 ± 0.77[b]	*
Body length	79.7 ± 0.61[b]	81.3 ± 0.64[a]	*
Weight	148.5 ± 1.31	141.7 ± 1.76	NS
Body condition (1 – 5)score	3.2 ± 0.06	3.3 ± 0.82	NS
Age (year)	6.2 ± 0.22[a]	5.4 ± 0.21[b]	**

Means in the same row having different superscripts differ significantly, * P< 0.05, ** P<0.01, Los = level of significance, NS = Not significant at 5%

Fifty-two female donkeys aged from 2 years old had foaled at least once, while 23% of them were tentatively diagnosed pregnant at the time of the investigation (Table 4).The health problems of donkeys experienced by the farmers in the study area are shown in Table 5.

Table 4. Breeding values of female donkeys in Ningi

Age groups	Foaling per donkey				
	1	2	3	4	Total (%)
2 – 5	11	6	1	0	18 (34.6)
6 – 8	6	11	9	2	28 (53.8)
9 and above	1	1	4	0	6 (11.5)
Total	**18**	**18**	**14**	**2**	**52 (100)**

Table 5. Some common diseases of donkeys in Ningi

Disease	Frequency		
	Male	Females	Overall average
Tryponosomiasis*	126	39	165 (42.5)
Helminthiasis*	33	31	64 (16.5)
Arthritis	1	1	2 (0.5)
Ectoparasites	4	4	8 (2.1)
Eye infections	24	5	31 (7.9)
Nutritional diseases	40	21	61 (15.7)
Wounds on different parts of body	26	7	33 (8.5)
Others	15	9	24 (6.5)

*confirmed by lab analysis

Analysis of BCS showed that 37.8% of male donkeys were of moderate score, 9.8% emaciated, and 29.8% thin. On the other hand, 47% of female donkeys were moderate and 22% fat (Table 6).

Table 6. 5-scale body condition score of donkeys in Ningi (the Pearson's equivalent is indicated in parenthesis)

Condition score	Donkeys		
	Male	Female	Total (%)
1 Emaciated (1)	16 (9.8)	4 (4.0)	20 (7.6)
2 Thin (2)	49 (29.8)	27 (27.0)	76 (28.8)
3 Moderate (3, 4, and 5)	62 (37.8)	47 (47.0)	109 (41.3)
4 Fat (6 and 7)	37 (22.6)	22 (22.0)	59 (22.3)
5 Obese (8 and 9)	0 (0)	0 (0)	0 (0)
	164 (100)	**100 (100)**	**264 (100)**

Discussion
The fact that up to 13% of the respondents were females suggests that farming activities are not restricted to men in this part of the country. Donkeys, like most other livestock, are owned mostly by the adults and elderly. More than 90% of the respondents owned only 1 donkey: this is probably due to the fact that donkeys are kept only for their power, and not for any other purpose, such as milk or meat production. About 43% of the farmers were involved in home breeding of donkeys in the area. This implies that the population of donkeys in the area will increase. The largest number of the farmers in this study used their donkeys for transport only.

Robinson [7] classified donkeys by size: from the Miniature Mediterranean (under 36 inches eqv. 90cm), Standard (36.01–48" eqv. 120cm), Large Standard (48.01–56" eqv. 140cm), and Mammoth (over 56" eqv. 140cm). The average size of donkeys obtained in this study suggests that donkeys in this part of the country are the 'standard type'.

Linear measurements to estimate the weights of farm animals have been widely used. The method used in this study was described by Pearson and Quassat [6]. The small numbers of donkeys over the age of 10 years recorded in this study suggests that the life expectancy of working donkeys in Northern Nigeria is unlikely to be more than the 10 years. This is shorter than the 12 years previously reported in Morocco [6].

Most of the donkeys in this study were in moderate condition, but the number of thin donkeys was found to be very high (28.7%, see Table 2). This is an indication that donkeys in the area are fed poorly [3]. The presence of fresh wounds shows that the welfare of donkeys is being compromised [4].
The large number of adult farmers observed in the study implies that adult farmers were more engaged in farming and merchandising activities as compared to the youngsters. The farmers in this study chose mating partners for their donkeys. The aim of this was to select from the best parents.

Conclusion
Donkeys from the Ningi area of Bauchi State are used mainly as beasts of burden in various farming activities, but most of them have a poor body condition score. It is therefore suggested that the management of these animals should be improved in order to enhance their welfare and productivity.

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ECONOMIC VALUATION OF THE IMPACT OF THE WORKING EQUINE IN THE PETEN AND CHIMALTENANGO COMMUNITIES IN GUATEMALA

C. R. Chang, M. Sapón, and D. Rodríguez

Fundacion Equinos Sanos para el Pueblo (ESAP), 3a Avenida Norte No. 28, Antigua Guatemala, Guatemala
danilo@equinosano.org

Abstract
The Fundacion Equinos Sanos para el Pueblo (ESAP) promotes the welfare of working equines in the rural communities of the Peten and Chimaltenango departments in Guatemala. ESAP has identified that using an equine contributes to the family economy, being the means of transportation for people and produce, especially in communities or land difficult to access. It is therefore important to establish an economic valuation of the impact of the working equine in the Peten and Chimaltenango communities. The main results obtained were as follows. (1) The value of the working equine is greater to the small producers; in these cases, it is inferred that if the working equine is lost, the families would lose the greatest part of their productive assets. (2) The contribution of equines, for example in crop transportation, to production and sale costs is significant. In coffee and corn crop transportation using equines is of major relative importance. (3) The use of equines in agricultural and cattle-raising activities in daily distances between 5 and 10 kilometers show the highest value for economic indicators (benefit cost relations between 2.09 and 3.57).

Introduction
ESAP has identified the main problems in equine welfare as: excessive work, overloading, bad management and maintenance practices, lack of veterinary services available, and mistreating animals which results in bad nutrition, dehydration, wounds and lacerations, common diseases, and plagues.

There are no indicators at a national level to show the importance of working equines in economic terms. In order to involve potential beneficiaries and benefactors, ESAP has established that it is necessary to determine the economic importance of using working equines in the productive processes of low-income families in rural communities.

Methods
For the elaboration of the study of economic valuation of the impact of the working equine in the Peten and Chimaltenango communities, the following methodology was applied.
First a document review was carried out from local and international databases. A survey of community members was developed to determine the economic use of the working equine and its economic value. Complementary information related to costs of production of the main crops (for Peten, corn, beans, and gourd seed; for Chimaltenango, corn, beans, and vegetables, e.g. cauliflowers), management and cattle feeding costs, and equine maintenance costs for each one of the productive systems was compiled in the communities and areas influenced by ESAP.
Calculation of economic valuation indicators
Based on the information provided in the surveys performed, 5 models of production (productive systems) were established.
The cost of transportation was obtained by calculating the number of necessary trips to move the produce (equivalent to the number of days that the horse is used for this activity). The annual costs of maintenance of an equine unit were calculated using the survey results, using estimated expenses in the different categories of feeding, good management, care practices, and necessary equipment.
The benefits that the working equine generated were calculated estimating the savings that the producers made because they did not have to rent one for their productive activities. The savings were calculated considering the

renting cost per day or trip according to the distance that the equines had to travel multiplied by the days they were needed.
Afterwards indicators such as benefit–cost relation, net present value, and the internal rate of return were calculated for farmers using an equine in the different productive systems.

Results and discussion
For the economic analysis in this study, based on the results of the surveys and the complementary information obtained, 2 productive systems are considered for the Peten communities and 3 for the Chimaltenango communities:
Peten Productive System 1
Producers with 34 acres or more, about 20 cattle units (average), and use of at least 3 equines for cattle ranching and transporting agricultural produce
Peten Productive System 2
Producers who work mostly on their own agriculture plots and lend their services as day workers on near-by farms; they have less than 8 acres, in some cases rented, and usually 1 or 2 horses for transporting people and goods
Chimaltenango Productive System 1
Producers who own between 0.33 and 0.55 acres of land for corn, beans, and vegetables, and a horse for transporting people and cargo (produce and wood)
Chimaltenango Productive System 2
Producers who own 3 acres of land to grow corn, beans, and coffee, and a horse for transporting people and cargo (produce and wood)
Chimaltenango Productive System 3
Producers who own 3 acres of land to grow corn, beans, and vegetables, and also have at least 2 cattle units for milk (cheese production), and have 2 equines for transporting people and cargo (produce and wood).

Composition of productive assets of producers
An economic indicator that shows the importance of working equines in the families of the producers is the composition or structure of the productive assets they own. Productive assets are assets or investments that producers use for their productive activities, the main ones being: land (working places) for harvesting or pasture, either owned or rented, cattle, facilities such as stockyards, galleys, feeding stations, and others (irrigation, storehouses, etc.), and the equine units owned. Table 1 shows the composition of the productive assets of the 5 productive systems

Table 1. Structure of the Productive Family Assets for each Productive System (Percentage)

Productive System	Lands	Cattle	Equines	Others
Peten: Productive system1	82%	10%	3%	5%
Peten: Productive system2	55%	-	45%	-
Chimaltenango Productive system1	43%	-	57%	-
Chimaltenango Productive system2	88%	-	12%	-
Chimaltenango Productive system3	67%	10%	9%	14%

Source: Based in the information from the Economic Analysis of the community surveys.

As shown in Table 1, the economic importance of equines is greater to small producers. If the equine owned by a Chimaltenango small producer family is lost (productive system 1), these people would be losing almost 60% of their productive assets; and in the case of small producers in the Peten communities they would be losing 45% of their productive assets. The importance of the equine decreases as producers own more land and dedicate it to cattle raising. A similar situation applies to the productive system 2 of Chimaltenango (including as a main activity coffee planting).

Added value of equines
The contribution of the equine, as transporter of crops, to production and sale costs is significant. It is an added economic value in the costs, because in most cases it is an imputed cost since if the producer did not have an equine they would have to spend the same cost to rent it (real or financial cost). Table 2 shows the estimates of the contribution of equines to production and sale costs for each of the 5 productive systems..

Table 2. Contribution (Added Value) of the use of equines in the production and sale costs for each Productive System and Product

Productive System	Corn	Beans	Gourd seed/ Vegetables/Coffee *
Costs of Production (Quetzales)			
Peten: Productive system1	26,000.00	7,500.00	3,500.00
Peten: Productive system2	13,000.00	7,500.00	1,750.00
Chimaltenango: Productive system 1	2,700.00	1,400.00	2,400.00
Chimaltenango: Productive system 2	3,600.00	1,400.00	2,400.00
Chimaltenango: Productive system 2 (Coffee)	-	-	11,250.00
Chimaltenango: Productive system 3	3,600.00	2,100.00	6,600.00
Costs Moving the Product using equines from 5 - 10 Km (Quetzales)			
Peten: Productive system 1	1,250.00	500.00	200.00
Peten: Productive system 2	1,000.00	375.00	150.00
Chimaltenango: Productive system 1	600.00	200.00	400.00
Chimaltenango: Productive system 2	800.00	250.00	400.00
Chimaltenango: Productive system 2 (Coffee)	-	-	1,350.00
Chimaltenango: Productive system 3	800.00	375.00	1,100.00
Added value for using equines in the production costs (Percentage)			
Peten: Productive system 1	5%	7%	6%

Peten: Productive system 2	8%	5%	9%
Chimaltenango: Productive system 1	22%	14%	17%
Chimaltenango: Productive system 2	22%	18%	17%
Chimaltenango: Productive system 2 (Coffee)	-	-	12%
Chimaltenango: Productive system 3	22%	2%	17%

* Gourd seed for the productive systems of Peten, and vegetables and coffee for the Chimaltenango productive systems.
SOURCE: Based on the Information from the Economic Analysis of community surveys.

Equines are of major importance in the transportation of corn crops. Their significance is bigger in the productive systems in the Chimaltenango communities that produce mainly for family consumption. Equines also have a significant relative importance in the transportation of vegetables because of volume. Moving the coffee harvest is the activity where the working equine is used more, 27 trips for an average output of 54 hundredweight in the Productive System 2 of Chimaltenango; and moving the corn production in the Productive System 1 of Petén follows in importance (25 trips).

Costs incurred by not having a working equine
Table 3 shows costs incurred by farmers who do not have a working equine.

Table 3. Annual costs that the producers must incur for not having a working equine (In Quetzales)

Communities/ Productive Activity	Daily distance they have to travel	
	Less than 5 km	From 5 to 10 km
Peten: Cattle raising activity	Q.7,200.00	Q.12,000.00
Peten: Agricultural activity	Q.5,400.00	Q.9,000.00
Chimaltenango: Cattle raising activity	Q.5,400.00	Q. 9,000.00
Chimaltenango: Agricultural Activity	Q.5,400.00	Q.9,000.00

SOURCE: Based on the information from the Economic Analysis of the community surveys.

Economic valuation of working equines
The calculation of economic evaluation indicators was elaborated, comparing the benefits that the equine generates in the family productive activities with the investments involved in having them and the annual maintenance costs. Table 4 gives an analysis for a 5-year period, applying a 12% updating rate (the one used for development projects).

Table 4. Calculation of economic evaluation indicators of using working equines

Alternatives	Evaluation Indicators	
	Benefit / Cost	Net Present Value (Quetzales)
Peten: Using an equine for cattle raising from a 5 to 10 kilometer distance	2.09	22,543
Peten: Using an equine for cattle raising, in less than a 5 kilometer distance	1.25	5,240
Peten: Using an equine in agriculture, in a 5 to 10 kilometer distance	2.56	19,763
Peten: Using an equine in agriculture, in less than a kilometer distance	1.54	6,786
Chimaltenango: Using an equine for cattle raising, from a 5 to 10 kilometer	2.42	19,027
Chimaltenango: Using an equine for cattle raising, in less than a 5 kilometer distance	1.45	6,050
Chimaltenango: Using an equine in agriculture, in a 5 to 10 kilometer distance	3.57	23,350
Chimaltenango: Using an equine in agriculture, in less than a 5 kilometer distance	2.14	10,373

SOURCE: Based on the information from the Economic Analysis of the community surveys.

The results of the calculations of the internal return rate were not shown in Table 4: in all cases this indicator was bigger than 100% because since the first year of analysis the fund of flows is positive.
The small producers with less than 0.55 acres of land (productive system 1 of Chimaltenango), who travel a 5–10 kilometre distance show the highest benefit–cost relation of 3.57 and a NPV of Q.23,350.00. The NPV [1] in this case shows the profit generated by the use of a working equine for 5 years.

Conclusions
By employing working equines low-income communities have a positive economic impact. It is important to understand that the significance of the equines' contributions increases with small producers: local, regional, and national authorities must devise programmes to protect this valuable asset.

Note
[1] The net present value (NPV) signifies the present value of the net benefits (income minus costs) generated by an investment when considering an updating rate in a determined period.

DONKEY BREEDS OF NORTH-EASTERN BALOCHISTAN, PAKHTOONKHUA, AND SOUTHERN AFGHANISTAN

A. Raziq[1], M. Khudaidad[2] Yahya, Z. Rehman[2], and A. Jabbar[2]

[1] President of the Society of Animal, Veterinary and Environmental Scientists (SAVES)
[2] Livestock and Dairy Development Department, Balochistan, Pakistan

Abstract
The donkey is a very important draught animal of in north-eastern Balochistan, Khyber Pakhtoonkhua, and southern Afghanistan. In this region, it is mostly used for pastoralism, pneumatic wheel carting, and light agricultural operations. The region is the habitat of many livestock breeds and the donkey is one of the most important. Unfortunately, the role of donkey is never praised by scientists and policy makers of the region. Studies of the breeds are even scarcer. This study was, therefore, conducted to discover the genetics of the donkeys of the region. The research was based on a survey report, prepared using a pre-tested questionnaire according to the perspectives of the donkey keepers and breeders. It was found that there are two donkey breeds (Shinghari and Sperki) in the region, which each play important roles in providing draught power in pastoral migration and other draught operations. This study suggests further work on the issues related to the donkey, especially its socioeconomic role in the life of donkey herders of the region.

Introduction
The study area (mostly composed of Pashtoon land) is the home tract of many important livestock breeds (Figure 1). The region has a very rich history. Avesta, the holy book of Zoroaster written in 2570–2523 BP, named the region Orawah. The expanse was also called Arya Warsha ('the place for grazing'). The Pashto word is 'Warsh' (grazing land). The region is still very famous for nomadic life and extensive livestock production [1]. The area lies in a semi-arid region, receiving 200–500mm precipitation bimodal. The region receives its precipitation both from the summer monsoon and Mediterranean breeze.

There is an extensive livestock production system in the region. The livestock keepers practise nomadic, semi-nomadic, and sedentary production systems. The donkey, especially the Shinghari, is kept by the Afghan nomads and the Shinghari donkey breeders of north-eastern Balochistan. The Afghan nomads usually use the Shinghari donkey for pastoral migration. The migratory period starts with the onset of winter. A migration may originate from central and southern Afghanistan and may end up in any part of Balochistan or the Indus plains. With the onset of the spring season, the nomads return to the mountainous areas. The movement is along traditionally fixed routes. The migration involves both pastoral and trading activities: the migrants are accompanied by their flocks and trade goods which they transport on camels. The sperki breed of donkey is mainly used for light work, carting, and water transportation. This breed is mainly used by the semi-nomadic livestock keepers and the sedentary peoples.

Materials and methods
This study was conducted in 2009. Data were collected on the habitat, phenotypic characteristics of the donkey, vegetation of the region, donkey population size and trend, and special traits of the donkey, e.g. hardiness, disease resistance, walking ability, etc. The donkey's economic importance and socio-cultural role was discussed with the donkey herders on a pre-tested questionnaire. This study was entirely based on the information given by the donkey keepers, and the breeds were documented according to the perspectives of the relevant breeders.

Results and discussion
There are two breeds of donkey in the region. The Sperki breed is mostly found in the Suleiman mountain region, while the Shinghari breed is found in southern Afghanistan and the adjoining area of Kakar Khurasan. Larger breeding herds of Shinghari breed are found in the Suleiman mountain region (north-eastern Balochistan). Both

breeds are very important for work: they are very hardy and drought-resistant animals. Each breed is discussed in turn, giving its qualitative characteristics.

Shinghari breed
Habitat: The production area of this breed is Khurasan, the Suleiman mountain region, and the Marri and Bugti hills. The nucleuses of the breed are Kakkal of Kibzai tribe, Meerkhani of Buzdar tribe, Salatha and Hazargat of Maghdozai tribe, Zamari, Shighala of Mardanzai tribe, Sharan of Babakarkhail tribe, Kohai of Issot, Goshani area Baloch tribe and Masuri tribe of Bugti area. The nomads are the main traders and users of the breed. Figure 2 gives an example of the Shinghari breed.
Phenotypic characteristics: There are many colours in the Shinghari breed of donkey, but the dominant and selective colour is white. The breed is large and well adapted to the ecology of the area. It can carry a load on its back up to 240kg on the plain and 160kg in mountainous areas. Age at first mating is 2–4 years depending upon feed availability and type of work.
Vegetation: It consumes all types of grasses and bushes, and will even eat bark and wood from trees in times of feed scarcity.
Population: There are about 1.2 million Shinghari donkeys and the trend is increasing in breeding herds. The sporadic use by ordinary people and carters in cities is decreasing because of Chinese-made rickshaws. However, a decrease in the cities is made up for by the mining industry.
Special traits:
- Very hardy and consumes very fibrous feeding materials
- No leech infestation because it drinks water with closed jaws
- Highly resistant to diseases
- Very fit to work in mountainous terrain
- Can walk long distances, making it fit for the nomadic system

Economic importance: It is used equally by city carters, nomads, and pastoral people. It is also widely used in the chromite mines, where demand for it is increasing [2]. The main marketing place is Mangrota camel fair. The price of a vigorous healthy male may reach 50,000 Rupees per head [3].

Sperki breed
Habitat: The production area of this breed is as for the Shinghari, i.e. Khurasan, the Suleiman mountain region, and the Marri and Bugti hills. It is mostly found in the Kohlu district. Figure 3 gives an example of the Sperki breed.
Phenotypic characteristics: Small, very wild, and not easy to handle, it is a threat to the Shinghari breed because of its high libido and ability to mate with Shinghari females. It can carry a load on its back up to 160kg on the plain and 60–80kg in mountainous areas; it is used mainly for water transportation and light agricultural operations. Age at first mating is 2 years depending upon feed availability and type of work.
Vegetation: It consumes all types of grasses and bushes, and will even eat bark and wood from trees in times of feed scarcity.
Population: There are about 0.5 million Sperki donkeys; the trend is stable or even decline.
Special traits:
- Very hardy and consumes very fibrous feeding materials
- No need of any care and management
- Highly resistant to diseases
- Ability to run fast

Economic importance: This breed is mainly used for water transportation and light agricultural operations. The children of nomads are also carried by this donkey. In the cities of Punjab and Sind it is used to pull light carts; in these provinces it is used as a game animal for cart racing, hence fetching a high price.

Conclusion
The region has significant animal genetic resources and the donkey is one of the most important and useful of them. The donkey works hard for a long time but its role is not appreciated. Physical cruelty, wounds, and low-grade

feeding material are the common problems of the donkey in the region. There is no veterinary facility for this neglected animal. It is time to help the donkey of the region and mobilize donkey owners to give proper attention and care to this neglected animal.

References

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Figure 1. Map of the region

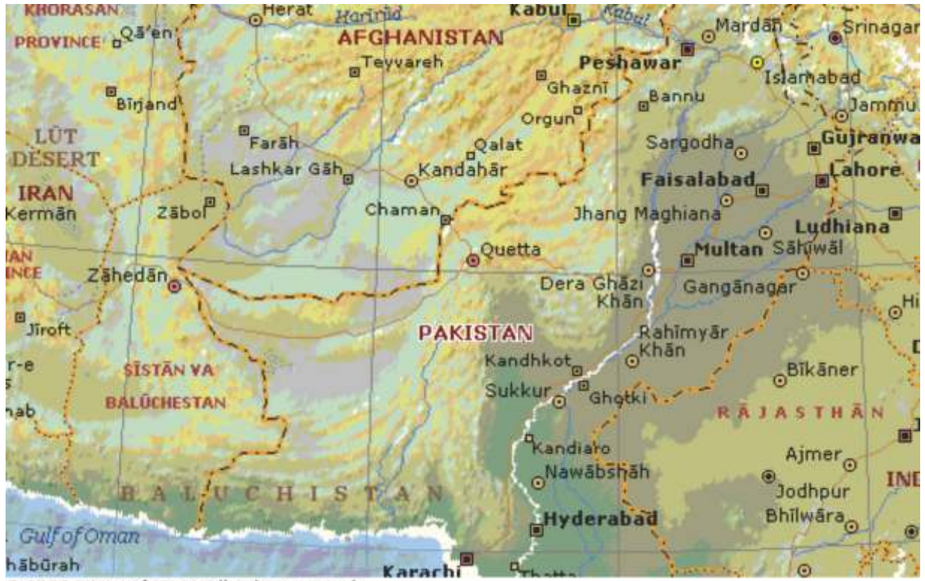

Figure 2. Shinghari donkey

Figure 3. Sperki donkey