# DRAUGHT ANIMAL NEWS

# No. 43

**December 2005**

**Produced by:**

**Centre for Tropical Veterinary Medicine, University of Edinburgh**

**Sponsored by:**

World Society for the Protection of Animals
25 years of animal welfare 1981-2006

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◊ This issue is the first one of four which will be sponsored by WSPA the World Society for the Protection of Animals. See page two for some information on WSPA.

◊ Draught Animal News accepts articles in Spanish and French, as well as in English. If you submit an article in Spanish or French we would also like a short summary in English to accompany it. For those sending in articles, notes and news we prefer you to send us your input (especially if it is a longer article), on a 3" disk (using Microsoft Word, Word Perfect or Rich Text Format) or via email. If you wish to include photographs, please ensure these are original and of good quality because of losses in the reproduction process. High-resolution photographs saved in .jpeg format are preferable (using Winzip to compress the file if necessary). We always acknowledge the person taking the photograph so please give us the name. For those without access to a computer, contributions are especially welcome, hand-written or typed.

◊ We are always pleased to hear of any meetings, forthcoming events, new books and useful websites that can be advertised in the newsletter. Letters from draught animal owners, users or those people wanting information on a particular topic or problem are always welcome.

◊ Please send in articles and news, letters and comments to the editor, Dr R.A. Pearson, Draught Animal News, Centre for Tropical Veterinary Medicine, Division of Animal Health and Welfare, University of Edinburgh, Easter Bush Veterinary Centre, Roslin, Midlothian, EH25 9RG, Scotland, UK (fax +44 (0) 131 651 3903; email anne.pearson@ed.ac.uk).

◊ The drawing on the front cover is by Archie Hunter of a working horse in Lithuania, Eastern Europe.

◊ This issue is funded by the WSPA for the benefit of working animals. The views expressed in it are not necessarily those of WSPA.

World Society for the Protection of Animals
25 years of animal welfare 1981-2006

## NEW SPONSOR FOR THE NEWSLETTER

WSPA, the World Society for the Protection of Animals has offered to fund the Draught Animal News for the next two years. We are delighted to welcome them and much appreciate their support for these next four issues. For those of you who are not aware of the work that WSPA does, Alistair Findlay from WSPA has written a short introduction to the organisation, this was also included in DAN 42:

**Introduction to WSPA**

The World Society for the Protection of (WSPA) is an international animal welfare charity recognised by the United Nations (UN) and with observer status at the Council of Europe and numerous other international bodies. WSPA works to raise the standards of animal welfare throughout the world and is the world's leading international federation of animal welfare organisations.

WSPA has a network of 12 offices and more than 600 member societies in more than 130 countries. WSPA works internationally to campaign against cruelty, save abandoned animals or those stricken by disasters, and promote humane education and practical workshops to encourage respect for animals and improve standards of animal care. WSPA aims to promote the protection of all animals to prevent cruelty and to relieve suffering, through its campaigns, education, training and animal rescue initiatives, WSPA seeks to ensure that the principles of animal welfare are universally understood and respected, and protected by effectively enforced legislation.

Find out more on: www.wspa-international.org

WSPA are currently operating working animal projects many countries throughout Asia, Africa and Latin America. Each edition of DAN will feature reports on WSPA's projects.

WSPA can be contacted at :

89 Albert Embankment London SE1 7TP United Kingdom

Phone +44 (0)20 7587 5000 Fax +44 (0) 7793 0208

Email: wspa@wspa.org.uk Website: www.wspa-international.org

Registered UK charity 1081849

# RESEARCH AND DEVELOPMENT PROJECTS

## 1. Africa

### (a) South Africa and Namibia

### Reflectors for donkeys in Namibia and South Africa

***Peta Jones[1] and Russell Hay[2],***
*[1]Donkey Power Facilitation and Consultancy, South Africa and [2]Donkey Welfare of Namibia.*

Donkeys in both Namibia and Botswana are being much maligned for causing road accidents; collisions with donkeys account for about 25 per cent of road accidents in Namibia. However methods that ensure the donkeys can be seen more easily at night can help reduce the number of accidents that occur. At night the warm tarmac attracts the donkeys and they can be found lying in the middle of the road invisible to oncoming traffic, until too late. Many of the worst accidents are caused by donkey carts that fail to reach their destination before dark. Two separate organisations have come up with novel ways of ensuring the donkeys can be seen at night:

Peta Jones of the Donkey Power Facilitation and Consultancy in South Africa has designed a fairly cheap reflecting headband (Figure 1 and Plate 1) that can be used

*Figure 1*

*Plate 1. Reflective headband for working donkeys in Southern Africa (Peta Jones)*

with a rope bridle, and can be seen from 500 metres away, but she says ‘of course this assumes a person is present as well, and then there would be a cart with reflectors on the back – currently being legislated for in our province’.

In Namibia there are over 200,000 donkeys, many of them left to roam loose at night for grazing. Poor supervision and inadequate fencing also mean donkeys can escape on to the road sides after work in the search for food. Russell Hay and a friend have set up Donkey Welfare of Namibia. With the Namibian government’s blessing, the organisation is planning to attach reflective tags to their ears (Plate 2). The bright yellow tags will warn motorists of the presence of donkeys on roads at night.

A pilot scheme is about to be started in two or three of Namibia’s donkey hot spots. If it works, Donkey Welfare may enroll local schools to tag the animals for a small fee. As Peta Jones points out ‘It’s a good idea, provided the donkeys are left with their ears!

In South Africa, either uncastrated donkeys shred the ears of their rivals, or their owners crop ears for identification purposes or “to get rid of ticks”. With reflectors in place, they may be discouraged from doing this’.

Donkey Welfare of Namibia has donated 200 reflective ear tags to the Omuthea community just north of Oshivelo, and another 200 to the Mayor of Rehoboth. These are areas where most collisions with donkeys occur but they would like to eventually tag all donkeys in the country. The ear tags are free and can be obtained from the Charity or from the Municipalities in the two areas above.

*Plate 2. Russell Hay of Donkey welfare of Namibia introduces reflective eartags for donkeys in Namibia (Ralf Hoffmann)*

**(b) Zambia**

**Draught animals play a part in a tale of the success of Sustainable Agriculture**

*Swedish Cooperative Centre (SCC), Harare with Kasisi Agricultural Training Centre, Zambia*

Kasisi Agricultural Training Centre (KATC) is a church-run training institution in Lusaka, Zambia offering a number of short courses ranging from three days to six weeks. KATC has been SCC’s partner since 1997. Under the two partners’ Eco Rural Development Project, SCC supports sustainable agriculture related training for small-scale farmers, mobilisation of smallscale farmers and study circle development.

An example of a smallscale farmer who has benefited and used the skills gained from this joint project is Mr Pitts Ndalama of Muyanga village in Chinyunyu area, east of Chongwe District. His farm is located 97 km from Lusaka and nine kilometres (9 km) from the tarmac road. He is a former teacher. Soon after retiring from teaching he worked for several organisations such as Chilanga Cement Limited and Credit Bank Company where he served as a Commercial Loans Officer. He is married with seven children (four girls and three boys). Mr Ndalama has attended a number of courses offered at Kasisi Agricultural Training Centre such as Sustainable Agriculture, Beekeeping and Business Management.

He started practising the technologies promoted by KATC in 2000 and has benefited tremendously. He recently joined Chongwe District Organic Processors and Producers Association of Zambia (CHOPPA) whose main objective is to link smallscale farmers to export markets. His farm is nine hectares and was certified organic by Ecocert International of Germany in 2003. He hopes to export to the European market as soon as marketing channels are well established.

"When I did my training in Sustainable Agriculture for the first time at KATC I thought the training was based on consoling the poor who were not able to acquire agriculture inputs and to realise income from farming. Later I realised that I was climbing a better tree", says Mr Ndalama.

Furthermore, KATC hosts field days at his farm every season whereby smallscale farmers come and share knowledge and ideas concerning sustainable agriculture and other related issues. When interviewed Mr Ndalama talked highly of the knowledge he got from the Business Management workshop. The management and marketing skills he learnt enabled him to look for buyers of some of his farm produce and managed to sell tonnes of velvet beans (soil improving crop) and realised millions of kwacha. The money he got from the sales enabled him to buy assets such as a diesel propelled grinding mill, a colour television set, a bicycle, and two solar panels with invertors to electrify his house.

He also used part of the money to sponsor his daughter in pursuing a degree in Natural Science at the University of Zambia. He has also bought donkeys, which he uses for cultivation in addition to his eight draught animals.

"My life has improved greatly and I am able to make ends meet. I would also wish to encourage others not to keep away from training courses offered by KATC. Extension advisory services offered by KATC are beneficial. The benefits I have acquired make me very willing to do farmer-to-farmer extension so that other farmers can benefit from my knowledge and experience. I am currently growing twelve different crops and with good rains I would improve a lot in my production", said Mr Ndalama.

**Background on SCC**

The Swedish Cooperative Centre (SCC) was founded in 1958 by the Swedish Cooperative Movement. SCC is an international non-governmental and non-profit making organisation that offers support to self help development initiatives to cooperatives, farmers' organisations and informal groups.

The SCC implements its work with its more than 60 member organisations in Sweden. The current members of SCC cover a wide spectrum of sectors including Farmers' Organisations, Consumer Cooperatives, Banking, Insurance and Housing Cooperatives.SCC's head office is in Stockholm, Sweden and there are three regional offices in Harare, Nairobi and San Jose. SCC works with various partners in various countries in Southern and Eastern Africa, Latin America and Eastern Europe in the areas of sustainable rural development, habitat and rural finance.

**SCC in Southern Africa**

The SCC Regional Office for Southern Africa (SCC ROSA) is based in Harare and there is a country coordination office in Lusaka, Zambia. In the region, SCC supports projects in Madagascar, Malawi, Mozambique, South Africa, Zambia and Zimbabwe. In all the six countries ROSA focuses on eight strategic objectives which are to:

1. Promote sustainable agricultural production, food security and local business development
2. Promote financial services
3. Promote adequate habitat
4. Promote Democracy and Human Rights
5. Promote gender equity

6. Promote youth participation and empowerment
7. Promote HIV/AIDS prevention and mitigation
8. Support regional organisations and networks in the social economy.

For views and comments info@sccrosa.org, Tel: +263 4 707494 Fax: 700136 URL: www.sccrosa.org, www.sccrosa.se

## 2. Latin America

### (a) Brazil

**Importance of body composition evaluation in working horses as an education tool**

***Hélio C. Manso Filho[1], José Mário G. de Abreu[2], Helena Emília C. da C. C. Manso[1] and Lúcia M. C. Ferreira[1]***

*[1]Federal Rural University of Pernambuco, Recife-PE, Brazil; [2] Ceará State University, Fortaleza-CE, Brazil*

**Introduction**

Working horses have an important function in Brazil. In the State of Ceará (northeast of Brazil), they work in different kinds of activities but there are few studies that show how people take care and use these animals. In this state, we observed that working horses are used in different activities in rural and urban areas. Fortaleza, the state capital, has a large human population, near 3 million, and it is very common to see working horses transporting different materials and helping people collect recycled materials.

Recently the Ceará Military State Police (PMCE) adopted a new horse cavalry detachment programme to maintain a small group of horses that can be used to help some communities to control violence and to work in large events, like football matches and musical events. At same time, PMCE opened a small horse farm where it can prepare and train horses that would be used as police horses. However, because this type of management is relatively new for the PMCE, some horse keepers and trainers, who work at this cavalry detachment, do not understand the importance of a correct nutritional evaluation and a training programme. The two misunderstood concepts in this group of horse people are: first, the idea that the good horses are fat horses, and second, horses that spent a short period without exercise/training could be used immediately in regular police activities without any re-training programme.

*Plate 3. View of the Fortaleza cavalry detachment stables (HC Manso Filho)*

To introduce a faster and easier method to evaluate these animals, we proposed to develop a project to characterise the body composition and body corporal score in working horses that are used at the Fortaleza Cavalry Detachment. The objective of this study was to determine the body composition of these working horses and to use this method to show the efficiency of the nutritional and/or training programmes, teaching horse keepers and others professionals associated with them, horse management activities. We expected that active horses have lower fat mass when compared with inactive horses.

**Material and Methods**

We used two groups of working horses at the cavalry detachment (Plate 3) of the Ceará Military State Policy (PMCE) in this experiment. The first group contained 17 horses (active horses - AH) that did patrol activities in different areas of Fortaleza City, at least 3 times per week (6 hours per day of activity), and the second group contained 14 horses (inactive horses - IH) that were not used in those activities during thet 4 weeks before our measurements, because this last group have some kind of illness (except infectious and severe chronic lameness).

All horses received forage (Elephant grass, *Pennisetum ssp.)* and grain mix (commercial pellets, protein minimum 14%, fibre maximum 10%, fat minimum 2.0%) approximately 2,0 kg, two times per day. The grain's supplementation was not weighed before feeding all animals, and the horse keepers normally used volume instead of weight when feeding them. Fresh elephant grass was given in amounts of about 12,0 kg, two times per day (but this amount would change in association with the quality of this grass; normally these horses received very good quality). Horses were fed in individual stalls with free access to water and salt.

Evaluations (ultrasound, body score and weight) were made with horse keepers watching all procedures. Also, we taught all workers how to do body score evaluations and to do a correct weight determination. In this way, we achieved an improvement in the exchange of knowledge between all cavalry workers and us.

Body composition was estimated using body weight and rump fat thickness (Westervelt et al., 1976). Body mass was measured using an electronic scale. Measurements of subcutaneous fat thickness at the rump was made by ultrasound (Scanner 450®, Pie Medical, probe 5.0 MHz) at the anatomical site described by Westervelt et al. (1976). Corporal score was determined by the method described by Manso Filho (2001) that divided this evaluations into 7 levels, where score #1 is very thin and score #7 is obese. Differences between measurements were compared using a one-way ANOVA. Post-hoc differences were identified using the Tukey test. The SigmaStat® 3 software package (Jandel Scientific, San Rafael, CA) was used for statistical computations.

**Results and Discussion**

Results showed that there was only a significant difference at fat-free mass ($p<0,05$) between both groups (Table 1). All other characteristics analysed did not show statistical differences ($p>0,05$), however body weight showed a tendency to be different between both groups ($p=0,05$). This was the first time that the cavalry horse keepers followed this kind of evaluation.

**Table 1. Results of the body composition and body score in horses from the cavalry detachment in Fortaleza City (BRA).**

| | Animal groups | | |
|---|---|---|---|
| **Measurements** | **Active horses** | **Inactive horses** | **p value** |
| Weight (kg) | 345.0±13.0 | 311.0±10.0 | = 0.05 |
| Fat-free mass (kg) | 300.0±11.0 | 269.0±9.0 | < 0.05 |
| Fat mass (kg) | 45.0±1.5 | 42.0±2.4 | > 0.05 |
| Percentage of fat (%) | 13.0±0.4 | 13.0±0.6 | > 0.05 |
| Ultrasound (cm) | 0.96±0.09 | 1.05±0.12 | > 0.05 |
| Body corporal score | 4.70±0.13 | 4.30±0.20 | > 0.05 |

It was observed that both groups of working horses had large fat mass and percentage of fat (~13%), which was not expected in the AH group. After these initial evaluations, the horse keepers started to speculate on some possible causes of the large fat accumulations that were observed during ultrasound evaluations. Also, they asked if these local results are similar to other evaluations in athletic horses, because these horse keepers understand that cavalry horses doing exercise should be considered to be equine athletes.

Because of those observations, we commented that typical athletic horses have lower fat mass and percentage of fat (~7-9%), such as was observed by Kearns et al. (2002) in Standardbred horses, which is similar to the results observed by Manso Filho et al. (2004) in lactating mares and growing foals. Large fat mass was observed in obese ponies with insulin resistance (Freestone et al, 1992). Also, we commented that a large fat mass should be produced by an excessive supplementation with concentrate and/or absence of exercise. In addition, excessive grain supplementations associated with large fat mass may disrupt intestinal flora and are associated with colic and other diseases (Freestone et al, 1992; Malinowski et al, 2003; Manso Filho et al, 1999). Finally it is important to remember that regulation of the quantity of grain for each individual horse may reduce the expense of purchasing grain.

This project was initiated in January 2006 and we will do more evaluations in this year. Actually we did not proposed any change in the current management practice at the policy's cavalry detachment, but we proposed the acquisition of one electronic scale, because they can used this equipment to do routine horses' body weight evaluations. This suggestion was proposed because some horse keepers observed that their horses probably received more grain than they need and they said that they did not follow nutritional recommendations from the food company. The main idea of this project was to clarify that the athletic horses need muscle instead fat and to highlight the importance of a continuous education programme for all people that work with horses and other working animals.

**Conclusions**

Lack of exercise apparently reduced the fat-free mass in police horses that were not used during police patrol, as long as four weeks, when compared with animals that

were used frequently for police patrol. Body corporal score was not a good method to characterise some changes in body composition in inactive horses.

Understanding how different body composition's compartment changes during exercise, illness and/or nutritional management may help horse keepers, trainers and scientists to understand some aspects of the horse management, without subjective evaluations that are frequently observed during body corporal score and visual body weight evaluations.

**Acknowledgements**

To the cavalry detachment of **the Ceará State Military Policy** because it opened its farm to our project. This project was supported by **IRCA Nutrition SA**.

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## 3 Asia

### (a) Mongolia

### WSPA Project – Equines & Livestock in Mongolia

***Alistair Findlay***

*Society Programmes Europe and Middle East, World Society for the Protection of Animals, London*

#### History

Mongolia has a total land area of 1.567 million square kms, over 80% of this is grassland, forming what is today, the largest remaining natural grasslands in the world. For thousands of years the high steppe of Mongolia has been home to the nomadic herders, their horses and livestock. Horses and yaks are used as draught and pack animals, particularly in the north of the country. Mongolia has a human population of only 2.6 million, 42% of these are nomadic herders.

In a country of extremes, intense winds and summer droughts can be followed by severe winters (dzuds). There are three categories of dzud, "white dzud", which means a heavy snowfall denying the animal's access to the grass. "iron dzud", which is when

the spring or autumn snows thaw and then re-freeze covering the grazing in a sheet of ice and lastly “black dzud”, which is a lack of rain, reducing the growth of grass. One, or in many cases a combination of these takes its toll on the grasslands and animals alike.

Temperatures can dip as low as minus 50 °C and snow can fall for between 5-8 months of the year. The growing season is minimal, lasting only 90 – 100 days. All this coupled with the constant movement of grazing animals has led to a large proportion of the steppe suffering varying degrees of degradation.

Historically the pasture management was state owned, regulated and collectively grazed in rotation under the Soviet- style government. This method was successful in terms of helping sustain the pasture, but in the early 1980’s following the end of the communist era, herders were left confused over the pasture rights and through the early 1990’s, most of the animals were transferred to private ownership. By the end of the decade, government resources to mobile herding were drying up and the gap between wealthy and poor herders was widening.

During the collective era, Mongolia was exporting tens of thousands of tons of livestock, meat and horses each year (mainly to the Soviet Union). At the end of the nineties this had dwindled to an insignificant 7,500 tons and found itself importing most of its machinery, fuel and consumer goods from the Soviet Union. The economic crisis led to a general decline in living standards, crop production decreased and public services were affected, and this also had a big impact on the veterinary services. Mongolia is now among the poorest countries in Asia.

Herders were no longer receiving the government hay provisions and other benefits they had enjoyed during the collective era and were unable to produce and provide sufficient hay for winter fodder. This situation has left the herds vulnerable, with many facing starvation during dzud.

1999 saw the start of consecutive summer droughts and winter dzud, which continued until 2003. During this time Mongolia’s nomadic herders suffered losses of 6 million livestock and horses. The nomadic herders rely entirely on their animals for their survival and it is estimated that a family needs approximately 150 mixed livestock and horses to sustain it. The few herders fortunate to own large herds (thousand plus) have the wealth to afford the equipment and vehicles that allow them to travel long distances to find good seasonal pasture. Many of the poorer herders, with just a handful of animals, tend to stay put and survive on the pasture around their gers (round felt tents).Recent talks with the Mongolian Government have revealed that there are draft laws in process to regulate grazing fairly among herders and reserve cutting areas for hay. At present herders can gaze their animals anywhere.

In the far north, close to the Russian border, the last of Mongolia’s reindeer herders can be found. They base themselves at the foot of the White Mountains for the winter and early spring, moving higher up into the mountains for summer to escape the mosquitos and to feed on the mountain grasses to which they are more suited. The numbers of reindeer have sadly dwindled over the years and now only 600 or so remain.

The herders of these animals are very poor and are regularly forced to sell the antlers to purchase basic provisions. They use them mainly as pack or draught animals

on their seasonal moves to the mountain pastures and also for the provision of milk and meat. Predatory attacks on the reindeer are common, particularly around calving time. Like the livestock, dogs are used for guarding against the wolves during grazing and when they are brought in close to the camp at night.

As an example, during the winter of 2000/2001 livestock and horse fatalities in the provinces of Khuvsgol and Bulgan (the project areas) are illustrated:

| | Khuvsgol | Bulgan |
|---|---|---|
| Camels | 219 | 59 |
| Cattle | 160,251 | 27,961 |
| Sheep | 114,839 | 39,301 |
| Goats | 67,813 | 10,680 |
| Horses | 27,944 | 12,334 |

**Pilot scheme**

In the summer of 2003, WSPA were made aware of the plight of Mongolia's animals by UK based charity and now WSPA member society, Cambridge And Mongolian Disaster Appeal (CAMDA). They had been working in Mongolia for 2 years running small programmes, mainly in the south of the country, restoring water facilities for the animal herds.

The project field manager, also a Mongolian vet based in the capital Ulaan Baatar, was particularly concerned at the huge losses of animals in the 2 northern provinces of Khuvsgol and Bulgan.

In the autumn of that year following an assessment visit to Bulgan province, along with CAMDA staff, we met with local vets, Ministry of Agriculture officials, herders and the province Governor. There were several factors revolving round the severe weather which combined, were resulting in the large number of livestock and horse fatalities.

1. Parasitic related disease
2. Lack of veterinary services (rural)
3. Predatory attacks (wolf)
4. Weak and vulnerable animals
5. Extreme weather conditions
6. Lack of preventative medicine
7. Reliance on herbal remedies (hit and miss)
8. Lack of winter fodder reserves

WSPA/CAMDA put into place a pilot scheme, which provided a mobile vet clinic to treat 10,000 horses against parasites, prior to the onset of winter. Snow was falling as the team raced against the weather to complete the treatments. The clinic also offered veterinary care to all livestock and camels where necessary. The province Governor ensured that the herders were notified, through local radio and given the location of their nearest treatment centre and the dates our team would visit.

Statistics that winter, of total horse losses in the whole of Bulgan province totalled 13,329 (Ministry of Agriculture), but did not include livestock or camels. In the following spring the results in the area of the pilot scheme were encouraging, although the weather that winter had been much kinder than that of previous years and would have been a major factor.

Mongolian herders value their horses above any other animal, using them for herding livestock, main source of transport, draught and pack animals and also racing (one of the country's main sports). Mongolian range–bred horses, having to cover long distances, are bred for their stamina, the races usually with child jockeys, can

last for distances of 30 kms. After a race, it is the horse that is credited and honoured with winning as opposed to the rider. The mares are also milked and the milk fermented to create a mildly alcoholic drink known nationally as airag.

Airag is produced during the summer months when mares can be milked up to 6 times daily ( Plate 4). The milk is put into carriers made of animal skin and stirred regularly to keep up the process of fermentation.

*Plate 4. A nomadic herder milking one of his mares (WSPA)*

**Project**

WSPA policy on working animals.

*WSPA believes that working animals must be treated with consideration and must be given adequate shelter, care, food and water. Any condition which may impair their welfare must be treated promptly, and if necessary they must not be worked again until they are fit. They must not be overworked or overloaded, nor must they be forced to work through ill treatment.*

The purpose of the project was to:

- Provide preventative treatment and veterinary services to the livestock and horses in selected areas of Khuvsgol and Bulgan provinces.
- To provide each province with a rough terrain mobile clinic
- The project areas were chosen due to the large numbers of animal fatalities
- To relieve suffering and reduce the number of winter livestock and horse fatalities experienced during winter.
- To assist the nomadic herders in re-building their livelihoods.

During 2004, WSPA/CAMDA put an additional mobile clinic into Khuvsgol province. After the success of the pilot scheme it was decided that we would treat 12,000 horses in each province in both spring and autumn. The treatment areas (Plate 5) consist of wooden corrals constructed using logs, normally made of pine (capacity to hold 60 horses). The location of the treatment pens are important to ensure the distances that herds have to travel is not too extreme. It is important that the horses do not burn off their fat reserves (needed for winter) when travelling for autumn treatments. Equally important, the horses are usually in poor condition and very weak following the winter, when they have to travel for the spring treatments.

Faeces samples taken from horses in both areas prior to the treatments were sent to the Mongolian Veterinary Science Institute for Investigation. Strongylidae (round worm) was 83% in prevalence. Parasitic infections in Khuvsgol province are the highest in the country, mainly due to the greater movement of animals that follow traditional

*Plate 5.*
*A typical treatment centre in Khuvsgol province in August 2005 (WSPA)*

routes through the area, to seasonal grazing pastures. There have not been any mass preventative treatments for Mongolian horses in over 15 years and herders have noticed that the condition of their horses had deteriorated over the years and there had also been a significant increase in the number of abortions. Since the treatments started the number of foals born has increased but foal fatalities have been high due mainly to wolf attacks.

Local vets are employed for the project, which have knowledge of their respective province and its herders. They keep meticulous records of treatments, herders, their horses, amounts of medication used and even record the weather during the winter and any other veterinary services carried out. Detailed reports are submitted following the completion of each treatment period. All herders are eligible for the treatments, regardless of their state of wealth, although those with larger herds are asked to contribute 100 tugrik per horse ($0.082 US), although only a small amount, when totalled it helps brings some sustainability to the project.

In addition to the treatments the project is now addressing the herder's lack of winter fodder reserves. Although the Mongolian Government is now trying to develop long term

*Plate 6. The mower being field tested in the UK June 2005 (WSPA)*

preservation of fodder using the vacuum process, there is still a need to increase the production rate. Many herders use the scythe and sickle method which is painstakingly slow. WSPA and CAMDA along with technical expertise of the Imperial College London (Department of Mechanical Engineering) have developed a mechanised horse drawn mower driven by an auxiliary engine rather than by the wheels of the mower (Plate 6). This reduces the towing effort needed and can be easily pulled by one horse.

Recent comprehensive trials of the mower were carried out on the Mongolian steppe (August 2005) against other machinery currently used in various parts of the country. The machine was found to be more efficient and the process of local production (reducing costs) is now underway. During 2006 we will put several machines into various provinces. The project is also increasing the number of horses treated this year, to 20,000 in Bulgan and 18,000 in Khuvsgol.

Mongolian herders will always welcome strangers to their gers and will offer them food and airag. Traditionally the right side as you enter is reserved for the women. The word ger simply means “home”. Doors to the ger normally face south, away from the cold winds. The construction consists of sections of wooden lattice (bound together in a circular shape) covered with greased felt and canvas (Plate 7).

*Plate 7. Typical nomadic herder’s ger (WSPA)*

A family can carry out erecting or dismantling the ger, in a little over an hour. During the winter many herders have wooden built shelters for their livestock to protect them from the extreme weather, but the horses have to take their chances on the open steppe. Depending on the winter weather conditions this can mean a fine line between life and death. The work that WSPA supports goes some way to helping the herders maintain their livestock and reduce the number of deaths over the year.

*Plate 8. A herder brings his horses for treatment in Khuvsgul (WSPA)*

**(b) India**

## The effect of duration of work and draught level on physiological changes in bullocks in summer

***R.L. Srivastava and K.N. Gaur***
*AICRP on Animal Energy, CAET, Farm machinery and Power Engineering; Allahabad Agricultural Institute – Deemed University, India*

**Abstract**
A significant ($P < 0.01$) effect of duration of work, draught and draught and duration interaction was observed on respiration rate, pulse rate and body temperature of four bullocks. The increase from the initial level was observed between 67 to 266% in respiration rate, 35 to 99% in pulse rate and 2 to 6% in body temperature with 10%, 12% and 14% draught load during summer. These factors may be considered for loading the bullocks for work and designing bullock-drawn agricultural implements.

**Introduction**
In India, there are a large number of farmers that depend on animal power to perform their agricultural farm operations. Draught animal power (bullocks) is the most easily available source of farm power in India. It is economical too. The draught capability of bullocks which provide more than half of the farm power requirement in South East Asian countries has been evaluated very little (Ramaswamy,1981). Very limited work have been carried out to measure the physiological responses of bullocks during work (Singh *et al*., 1968, Devdattam and Maurya, 1978; Acharya *et al*., 1979; Rao and Upadhyay, 1984; Upadhyay and Madan, 1985a, b). An attempt has been made to observe physiological changes of bullocks during work because physiological parameters play a major role in fatigue in animals.

**Materials and methods**
*Selection of animals*: Four good condition non-descript bullocks were selected for the study. The body weights of these bullocks were between 380 and 460 kg. The body weight and body conformation were very close. They were between 7 to 8 years age.

*Loading car:* To apply the desired draught load on each animal the CIAE Loading Car was used. A load cell indicator was used to observe the loads on animal.

Animals pulled at 10% (88 kg), 12% (105 kg) and 14% (123 kg) equivalent to live weight draught load continuously for four hours. The trials were conducted on the standard cemented test track. Trials were carried out for three days at each draught setting (replication). Respiration rate was measured by counting the number of exhaled air per minute by putting the hand in front of the nostril of the animal, pulse rate by feeling the beats/minute between the coccigeal artery beneath the tail and body temperature by rectal thermometer. These parameters were recorded by stopping the animals for five minutes on each hour during the trials. Trials were conducted during the summer season in the morning from 7am to 11am. The data was statistically analysed according to Snedecor and Cochran (1968).

**Results and discussion**
The mean values of respiration rate, pulse rate and body temperature have been calculated (Table 1, 2 and 3). Analysis of variance for respiration rate, pulse rate and

Table 1. Mean respiration rate and percent increase in respiration rate from initial.

| Duration of work (hr) | 10% live weight draught | | 12% live weight draught | | 14% live weight draught | |
|---|---|---|---|---|---|---|
| | Mean respiration rate (breaths/min) | % increase in respiration rate from initial level | Mean respiration rate (breaths/min) | % increase in respiration rate from initial level | Mean respiration rate (breaths/min) | % increase in respiration rate from initial level |
| Initial ($T_0$) | 19 | - | 20 | - | 20 | - |
| After 1st hr ($T_1$) | 32 | 67 | 40 | 102 | 42 | 114 |
| After 2nd hr ($T_2$) | 44 | 126 | 52 | 166 | 54 | 173 |
| After 3rd hr ($T_3$) | 53 | 174 | 60 | 205 | 65 | 232 |
| After 4th hr ($T_4$) | 57 | 195 | 66 | 234 | 72 | 266 |



Table 2. Mean pulse rate and percent increase in pulse rate from initial.

| Duration of work (hr) | 10% live weight draught | | 12% live weight draught | | 14% live weight draught | |
|---|---|---|---|---|---|---|
| | Mean pulse rate (beats/min) | % increase in pulse rate from initial level | Mean pulse rate (beats/min) | % increase in pulse rate from initial level | Mean pulse rate (beats/min) | % increase in pulse rate from initial level |
| Initial ($T_0$) | 45 | – | 45 | – | 45 | – |
| After 1st hr ($T_1$) | 61 | 35 | 64 | 41 | 65 | 43 |
| After 2nd hr ($T_2$) | 68 | 51 | 73 | 63 | 77 | 70 |
| After 3rd hr ($T_3$) | 74 | 63 | 78 | 71.32 | 85 | 88 |
| After 4th hr ($T_4$) | 80 | 77 | 83 | 84 | 90 | 99 |

body temperature showed significant (P < 0.01) effects of draught, duration and draught and duration interaction.

### *1. Respiration rate*

Respiration rate increased with increase in duration of work and draught level (Table 1), in agreement with Rao and Upadhayay (1984), Upadhayay and Madan (1982) and Kumar *et al*. (1996). Significant (P < 0.01) differences in respiration rate due to duration and draught and the interaction were observed in the present study. No significant effect was seen in replication. The increases in respiration rate from the initial level over time (Table 1) were similar to those reported earlier (Anonymous, 1993, and Anonymous, 2002).

### *2. Pulse rate*

Pulse rate of bullocks increased from the initial level with the increase in duration of work and draught (Table 2). The increase in pulse rate due to duration of work may be due to higher metabolic rate and thermal stress in summer to supply more energy to muscles and to dissipate the extra heat load. A significant (P < 0.01) differences in pulse rate due to increase in duration of work and draught was observed. Similar findings were reported by Rao and Upadhayay (1984) and Kumar *et al*. (1996). Maurya and Devadattam (1986) have also reported significant increase in pulse rate due to draught. The increases in pulse rate from the initial level over time (Table 2) were in agreement with earlier work (Anonymous, 1990).

### *3. Body temperature*

Data for body temperature with duration and draught are presented in Table 3. There was a significant (P < 0.01) effect of duration of work, draught and interaction of duration and draught on body temperature of the bullocks over the working period. Body temperature increased significantly with increase in duration of work and draught level from the initial level (Table 3). It may be due the heat generated during the work as a result of muscle contraction (Garg *et al*., 1981 and Sastry *et al*., 1970). Similar trends were reported earlier (Anonymous, 1993).

## Conclusions

Duration of work and draught significantly affected respiration rate, pulse rate and body temperature of bullocks during summer. These factors may be considered when loading the bullocks for work and designing the bullock-drawn agricultural implements.

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Table 3. Mean body temperature and percent increase in body temperature from initial.

| Duration of work (hr) | 10% live weight draught | | 12% live weight draught | | 14% live weight draught | |
|---|---|---|---|---|---|---|
| | Mean body temperature (°C) | % increase in body temperature from initial level | Mean body temperature (°C) | % increase in body temperature from initial level | Mean body temperature (°C) | % increase in body temperature from initial level |
| Initial ($T_0$) | 37.7 | - | 37.7 | - | 37.7 | - |
| After 1st hr ($T_1$) | 38.3 | 1.7 | 38.5 | 1.9 | 38.6 | 2.3 |
| After 2nd hr ($T_2$) | 38.6 | 2.5 | 38.8 | 2.8 | 39.3 | 4.2 |
| After 3rd hr ($T_3$) | 39.0 | 3.4 | 39.3 | 4.2 | 39.7 | 5.3 |
| After 4th hr ($T_4$) | 39.2 | 3.9 | 39.4 | 4.5 | 40.0 | 6.2 |


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## (c) Vietnam

### Improved use of draught animals in sustainable agriculture in Vietnam

***Mai Van Sanh[1] and Anne Pearson[2]***

*[1]National Institute of Animal Husbandry (NIAH) , Hanoi, Vietnam, [2]School of Veterinary Medicine, University of Edinburgh, UK*

**Introduction**

In the Red River and Mekong deltas of Vietnam increased availably of motorised tractors and good prices for rice have meant that the working buffaloes and cattle have largely been replaced by two-wheeled tractors. However in the rest of Vietnamese agriculture buffalo and cattle continue to play an important role, particularly in the North where the buffalo and cattle density is very high compared to other areas. Buffalo and cattle provide the main source of draught power (about 95-96%) for cultivation in the hilly and mountainous areas of the North and west of Vietnam. Much of the rice produced for home consumption and for export is produced on small farms powered by the buffalo. The working buffalo is very often a female, which is also required to produce a calf every two years. Male buffaloes fetch good prices for meat.

In 2003 the University of Edinburgh and NIAH were given a grant from the higher Education Link programme from British Council to work with people to improve the health care and management of the working buffaloes and cattle in Vietnam. The aims of the link programme were to:

- To improve the knowledge and skill of research staff, extensionists and farmers
- To promote the development of the cattle and buffalo in hilly areas
- To contribute to the orientation of agro-mechanisation in the provinces of Vietnam

**Activities**

Six training courses were organised in Thai Nguyen, Ha Tay, Vinh Phuc and Nghe An Provinces in Vietnam for over 100 researchers, technicians, extensionists and separately for 420 farmers (Plate 9). The farmers attended a half day course in groups of about 30,

*Plate 9. Researchers and extensionists on training course in N Vietnam (A Pearson)*

where planning exercises were tried out and feeding, working and breeding practices were discussed as well as general health care of the buffalo and cattle. The emphasis was on multipurpose female animals used both for reproduction and work.

Two books of feeding, management and use of draught animals (a pictorial book for farmers and a hand book for technicians and extensionists) were published and 4000 copies were distributed to 5 provinces with the help of DFID Livestock Production Programme funds (Plate 10). A follow-up one year after distribution was undertaken to get feed back on the usefulness of the manuals with both farmers and extension workers so modifications can be made to future issues.

A training course on improving the utilisation of draught animals was organised in Chiangmai University, Thailand to allow exchange of ideas and knowledge on buffalo within the region. Discussions were also held with national training and research institutions in Indonesia specialising in buffalo production to form the basis of future collaboration on buffalo production.

In the three years, the activities of the Link project improved the knowledge and skill of research staff, technicians, extensionists and farmers on the effective use of animal power in sustainable agriculture through the training courses. It contributed to promote the development of the cattle and buffalo in hilly and mountainous areas.

*Plate 10. Manual on husbandry of working cattle and buffaloes produced for farmers in Vietnam (A Pearson)*

**(d) India**

**Pneumatic wheeled multipurpose tool frame for efficient utilization of draught animal power**

***Rajiv Garg, G.S. Tiwari, C.P.Doshi and Hemant Shrimali***

*Department of Farm Machinery and Power Engineering,* College of Technology and Engineering, *M.PUA and T, Udaipur, Rajasthan, India*

**Introduction**

The Indian population of working animals is one of the largest in the world, contributing a sizable proportion of the total energy (33 per cent) into agriculture. It is estimated that about 55 per cent of land is still cultivated by draught animals and they continue to be major source of motive power (tractive and rotary) in India. Bullocks, buffaloes, camels and donkeys are catering to the energy needs of small and marginal farmers commanding about 80 per cent of land holdings. This group of farmers is still using traditional implements and achieving low production.

The animal drawn tool frame is a multipurpose machine that can perform various agricultural operations and transport. It consists of a rigid frame supported by two wheels with a provision for attachment of different implements. It is provided with a lifting mechanism to raise or lower the frame. A beam is used to hitch the frame with the yoke

of animals. An arrangement is provided with the beam to change the hitch angle.

A number of multipurpose animal-drawn tool frames (MPT) have been developed and used in India and abroad. These include different MPT's like Versatool, Sinhoe, Unibar, Ariana, Kolba, Tropicultor, Colombiana Balwan, Shivaji, Akola, Rajkot, Nikart, TNAU, Udaipur and CIAE. They vary greatly in size and draught requirements, implements such as the MB plough, spring tyne cultivator, ridger, plough, sweep shovels, and seed drills can be attached to these frames as needed.

Bansal and Srivastava (1981), Kateva and Sood (1983), Acharya and Jindal (1987), Tomar and Agrawal (1988) Garg and Devnani (1992) and Anonymous (2004) observed that the field capacity of the MPT was higher with less draught requirement as compared to traditional implements. Further they found that it is suitable for operations like ploughing, interculture and sowing. During the field trials in different types of soils more sinkage was observed in the case of MPT consisting of steel wheels which resulted in increased draught requirement and lower field capacity (Plate 11 and 12). Keeping this in view steel wheels of the MPT were replaced with automobile discarded tyres of 5.65-12 size (Plate 13). A special wide rim was designed and fabricated for this purpose. The rim developed for the pneumatic wheels was made by 4mm thick MS sheet with the outer diameter of 300mm and the width 180 mm.

*Plate 11. Multi purpose tool frame (MPT) with steel wheels in sandy soil (R. Garg)*

Field trials were conducted in farmers' fields. The performance of MPT frames was evaluated on the basis of their draught requirement and effective field capacity in similar operating conditions. The performance of the pneumatic wheeled MPT was better than the MPT with steel wheels in different field operations (Plate 14). The draught requirement for ploughing with the MB plough attachment was lower (20 per cent) as compared to that of the steel wheeled MPT.

The pneumatic wheeled MPT had 25 to 30 per cent lower draught than the steel wheeled MPT in sowing operations. Similar to other operations the increase in field capacity

*Plate 12. MPT with steel wheels in sandy loam soil (R. Garg)*

*Plate 13. Pneumatic wheeled MPT with cultivator tynes (R. Garg)*

was observed in the range of 20 to 30 per cent.

Based on the results discussed above the use of pneumatic wheeled MPT is suggested for the efficient use of available draught animal power.

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*Plate 14. Pneumatic wheeled MPT being used in sowing (R Garg)*

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# SHORT NOTES AND NEWS

Websites concerned with working animals:
**http://fr.wikipedia.org/wiki/Traction_hippomobile**
**http://users.skynet.be/lesflocons/index_fichiers/Page367.htm**
**http://membres.lycos.fr/chuchote/cheval/ut_halage/ut_halage.html**

*Belgium*
**Energie Hippomobile http://www.hippomobile.be**
**Agenda équestre http://www.equinfo.org/2000**
**Forums équestres http://www.equinfo.org/forum**

*Germany*
**http://www.starke-pferde.de/aaastarke-pferde.htm**

*France and Burkina Faso work of Prommata*
**http://www.village.tm.fr/index.php?Menu=Actu&ids=beCKUVdPMJDukCiweJqs&Action=777&idn3=1168**
**http://www.bourricot.com/prommata/**

*Canada*
**http://www.prairieoxdrovers.com/**

*China*
**http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/w0613t/w0613t0p.htm**

**Rural Heritage update**

Gail Damerow writes: “The following new books have been added to our online Rural Bookstore:

- *Why Cows Learn Dutch* (and why horse farming is good economics)
- *ABCs of Early Americana* (another great Eric Sloane sketchbook)
- *The Blacksmith’s Craft* (using a simple home-built forge)

Brandt Ainsworth has made a new video/dvd on Driving Draft Horses, also available in the Rural Bookstore.

Some handy new directories have been added to the website. In the Village Smithy you will find a directory for farriers who specialise in draft horses, mules, or oxen. If you have a favourite farrier or bovine podiatrist, invite him or her to be included in this directory. We also have a new Team and Teamster Trainer directory, which may be found via any of the Paddocks (Horse, Mule, Ox). If you are available to train teams or teamsters, please let folks know about your service. A listing in either directory is free.

The Tack Room at ruralheritage.com now features Miller Harness Shop, a full-service harness maker offering custom harness in the material of your choice, whether leather or synthetic”.

Website: **http://www.ruralheritage.com**

## News from the American Livestock Breeds Conservancy (ALBC)

***Progress for endangered breeds***

ALBC is pleased to report that many breeds on their Conservation Priority List (CPL) are growing in number. Four breeds have successfully moved to the recovering category. The extravagantly long-horned Ankole-Watusi cattle is reported as having a population of roughly 2.9 million head in Uganda alone, according to Food and Agriculture Organization of the United Nations. The Friesian horse now reports a global population of approximately 10,000. A number of working breeds have shown good population growth and have moved to a less endangered status. Small and thrifty, and of Irish origins, Dexter cattle have moved from Threatened to Watch, as their global population nears 10,000. The elegant, metallic-sheened Akhal-Teke horse has moved from Critical to Threatened with the global populations estimated at 3200; approximately 25% of these in the United States. The gaited, smooth riding Rocky Mountain horse, now listed with its close relative the Mountain Pleasure horse, reports 1233 registrations in 2004, and a total population nearing 10,000. It moves from Threatened to Watch.

The Colonial Spanish horse has increased in number, moving from Critical to Threatened. Also known as the Spanish Mustang or Spanish Barb, Colonial Spanish horses encompass the many strains of horses of Spanish descent that were brought to North America by Spanish explorers as early as 1512. These horses are often known by different names depending on the region from which they hail. Examples of regional or strain names are Sulphur, Choctaw, Pryor Mountain, Wilbur-Cruce, Cerbat Mountain, among others. These modestly sized, colourful horses are well known for their stamina and self-sufficiency; as portrayed in the movie “Hidalgo.” While this increase is good, ALBC estimates fewer than 5,000 purebred Spanish Colonial horses worldwide.

Not all is good news however. ALBC still lists 26 livestock breeds and 37 poultry breeds as critically rare. Another 20 breeds of livestock and 12 breeds of poultry are listed as threatened. Of these 95 breeds, 41 are of American origin. Action is needed to re-integrate these breeds back into production niches which take advantage of each breed’s individual characteristics.

Note: ALBC’s Conservation Priority List categories are (in order of urgency): Critical, Threatened, Watch, and Recovering. Breeds placed in Study category await ALBC’s final decision for the possibility of their admittance to the CPL.

The American Livestock Breeds Conservancy contact details are: PO Box 477 Pittsboro, NC 27312 (phone: 919/542-5704; fax: 919/545-0022; email: editor@albc-usa.org web: www.albc-usa.org)

# BOOK REVIEW


## Barb Lee: Understanding Harness

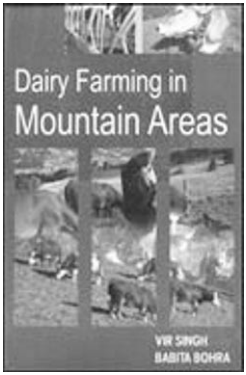
Barb Lee's discourse on *Understanding Harnesses* is attractively produced and illustrated. She displays great diligence and enthusiasm in her quest for perfection in the design of a well fitting collar harness providing the utmost comfort for a single horse pulling a light four wheel carriage. The section on 'Fitting a neck collar' is particularly helpful in identifying potential deficiencies in currently available collar harnesses for light carriage work and in giving notably useful hints on checking for fit. The section headed 'If you are really serious' draws attention to the need to spread the pulling load between collar and horse as evenly as possible by judicious selection of the point of attachment of pulling traces to the hames – a point which may well be overlooked.

Barb Lee's improvements have two specific objectives: to present a well turned out combination of horse, harness and carriage and to promote the maximum comfort and wellbeing of the horse. These objectives have been met by developments of traditional collar harness designs. Her attempt, in conjunction with collaborators, to promote an explanation through a 'Theory of balanced draught' is not relevant to this procedure and its plausibility is questionable. However this does not detract from the results achieved by well trodden empirical processes.

Barb Lee's discourse is useful for a specific application in a sophisticated environment where leather working and harness making skills are available at acceptable cost and lightweight carriages with low rolling resistance (large diameter wheels running on firm surfaces) are in use. Such skills exist in countries such as Pakistan, India and Jordan though some variations in design may be necessary for the two wheel passenger carrying Tongas which are popular in these and other countries. Harnessing of horses for high draught operations, such as pulling load carrying carts and agricultural implements, is not considered in this publication, nor is the design of breastband harnesses which are simple, cheap and widely used by equids for these and other agricultural purposes. The design of harnesses for other widely used draught animals such as oxen is not explored.

*Frank Inns*

# NEW BOOKS




## Dairy Farming In Mountain Areas

**by Vir Singh and Babita Bohra**

ISBN 8170354374 (191 + xix pages; price: Indian Rs. 500.00)

Dairy farming is one of the key economic activities livestock-dependent farming communities in mountain areas depend upon. Dairy farming involves the natural resource base – forests/ rangelands, croplands, livestock breeds – feeding, breeding, health management, marketing and consumption of the products. This book presents a synthesis of the smallholders' resource management in the mountains. Smallholders constitute the majority of the mountain communities. Their strategies of resource management this book portrays provide interesting materials for institutions considering interventions into dairy farming.

Mountain areas are altogether distinguishable from those of the mainstream plain areas and so are their production systems. Peri-urban areas in the region constitute the high-pressure areas. Dairy farming in these areas is essentially market-oriented. The book especially characterises the smallholder dairy farms in the vicinity of urban milk-consuming centres. These scenarios are different from those in the remote areas.

Smallholder dairy farming has enormous potential. It can contribute to family income, generate gainful employment especially for women, elevate living standards of the producers, fight malnutrition especially amongst children and enhance processes of sustainable agriculture. Crop-livestock-forest/ rangeland integrity is a key factor to the sustainability of mountain livelihoods. Augmentation of dairy farming systems leads to the enhanced performance of the overall production system. The book discusses perspective-based approaches to sustainability in the mountains.

The book is a landmark publication in the area of sustainable mountain development. India is one of the leading milk producers in the world today, which is largely thanks to the smallholders' contributions.

**Please place orders with the publisher:** Daya Publishing House, 1123/74, Deva Ram Park, Tri Nagar, Delhi – 110 035 (Phones: 011-27383999; Fax: 011-23244987; e-mail: dayabooks.com)

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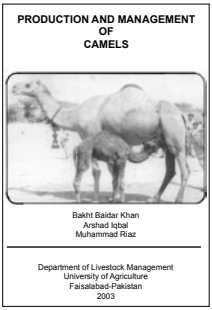
The book includes sections on:

- Dairy development in retrospect (livestock in mixed farming systems; development interventions and temporal changes; case studies
- Dairy development indicators (mountain specificities; dairy indicators; production traits/individual performance indicators)
- Livestock population, composition and dynamics (population; livestock in diverse agro-ecological zones; livestock in a village; livestock holding)
- Feeds and feeding management (why uncultivated fodder?; phenology of fodder plants; contributions of different resources; nutritive value; feeding management
- Dairy breeds and breeding management (breeds in Indian Central Himalayas; conventional breeding management; alternate husbandry practices)

- Health management (main diseases; effect of diseases; health services and policies; the Ethno-vet System)
- Milk production, marketing and consumption pattern
- Constraints to dairy farming in the hkh region
- Livestock in high pressure peri-urban areas: a case of the Central Himalayas
- Potentials of dairy farming and approaches to sustainability (livestock and natural resource base; natural resource management; livestock resource base; technological options; institutional intervention)

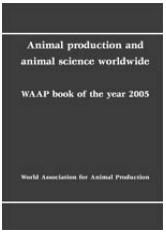
**Authors contact addresses:**
Prof. Vir Singh CBSH, GB Pant University of Agriculture & Technology, Pantnagar 263145 Uttaranchal, India (Tel: 91-5944-233887; Fax: 91-5944-233473/ 233611; e-mail: drvirsingh@rediffmail.com)

Babita Bohra, Department of Livestock Production and Management, College of Veterinary & Animal Sciences, GB Pant University of Agriculture & Technology, Pantnagar 263145 Uttaranchal, India (Mobile: 09412923861; e-mail: babitabohra@rediffmail.com)




A book titled ***Production and Management of Camels*** has been compiled by Drs. Bakht Baidar Khan, Arshad Iqbal and Muhammad Riaz, Department of Livestock Management University of Agriculture Faisalabad (Pakistan). Price of the book including postal charges is US$ 30.00 from the author.

This book is written in the questions answers format covering almost all camel's aspects. This will be of great help for students, researchers and extension workers. For further information contact Dr Arshad Iqbal (drarshad_iqbal@hotmail.com)




## *Animal production and animal science worldwide*

### WAAP book of the year 2005

### Edited by A. Rosati, A. Tewolde and C. Mosconi

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After the experience of the first volume, The World Association for Animal Production (WAAP) continues the publication of the Book of the Year series for the benefit of animal scientists and policy makers in the field of livestock systems. The WAAP asked the best known and significant animal scientists in the world to contribute to the preparation of this book.

Following the success of the first volume of the series, the WAAP Book of the Year 2003, many authors from the six continents are contributing to this 2nd volume. The importance of this publication is to have already established a worldwide reference for the animal science and production sectors. There are the usual four sections that raised much interest in the previous volume of the series. The first section has six articles, describing the changing conditions of livestock systems in each of the six continents. The second section has more than twenty papers, describing the development of the

many sectors in which the animal science field has been divided. The third section, dealing with contemporary issues, is declared by our readers to be the most interesting. It allows participating authors to describe current and significant issues important in these last years for the animal science and production sectors. The statistics produced in the previous volume are updated and enhanced with new figures in this book to form the fourth section.

The papers included in this book speak clearly of the development in the last twelve months in the livestock systems worldwide. Major space is also devoted to the list of references from where every author can start to deepen his knowledge.

This book is essential for libraries that want their readers to be easily updated. Also scientists, policy makers and scientific writers, who need, to enhance their competence, to have the most practical way of knowing what is going on in the world in the field of livestock science and production will find this book of great value.

For table of contents of the book go to: www.WageningenAcademic.com/WAAP2005. Publishers: Wageningen Academic Publishers, P.O. Box 220, 6700 AE Wageningen, The Netherlands (phone: +31 317 476516; fax: +31 317 453417; website: www.wageningenacademic.com)

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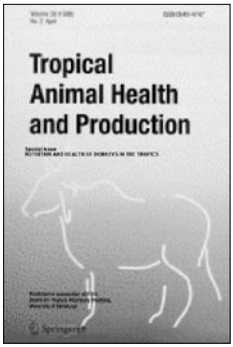


## Special Issue

*A special issue has been produced by the Journal Tropical Animal Health and Production, on the Nutrition and Health of Donkeys in the Tropics*

David Smith who put together the issue writes:

"The aim of this special issue is to provide scientists working in tropical countries with more information about the health and welfare requirements of donkeys. Donkeys continue to play a number of crucial roles in the security and livelihoods of poor people in developing countries. However, research on the management of donkeys in resource poor environments is still limited. This issue consists mainly of papers generated from two projects that were carried out in Ethiopia and Mexico, two countries where donkeys are likely to remain important to the livelihoods of poor people for the foreseeable future.

The Ethiopian project was developed in 1998 in response to a call for research proposals from the Livestock production Programme of the British Government department for International Development to address problems related to the marketing and processing of produce in peri-urban production systems…. A donkey provides a cost effective means of transporting a range of products more rapidly to urban markets and in greater amounts than can be done on foot. It also increases the range of distances over which produce from a farm can be sold. The project aimed to improve donkey availability and work performance by developing simple intervention strategies

that increased donkey health and welfare and to investigate the impact of existing interventions on poor people's livelihoods.

The Mexican project, sponsored by The Donkey Sanctuary, UK, began in 2003 and aimed to provide a set of scientifically derived feeding guidelines for donkeys with the goal of improving donkey health and welfare. In Mexico, donkeys are commonly used as the sole source of farm power by smallholder farmers or are used to produce mules, which are the preferred draught animal in this region".

Copies of the special issue can be obtained from DG Smith, Department of Agriculture and Forestry, University of Aberdeen, Aberdeen, AB24 3FX, UK, email: d.g.smith@abdn.ac.uk. And some of the papers are on the LPP website: http://www.lpp.uk.com.

## LETTERS TO THE EDITOR

### Training materials for India

*From Ahavan A. Muthu Ramalingham, Grass Roots Foundation*

"GRF is a registered voluntary service organisation, which is working in and around of the Madurai District, Tamilnadu State in India since 1966. We are working for the upliftment of rural poor people especially women and children. We are concentrating in the non formal education, health, environment, agriculture, and child development programme.

To strengthen our programme and reach our aims and objectives, we would like to update and disseminate information to ouru project people and neighbour NGOs. We are happy to receive any periodicals, newsletters and books on the topics above.

Thank you for your co-operation."

Grass Roots Foundation, B-9/27 Malligai Kudiyiruppu,
K.K. Nagar, Madurai, 625 020, India

### Conservation agriculture?

*from Frank Inns (formerly Professor of Agricultural Machinery Engineering, Silsoe College)*

What is 'Conservation Agriculture'? Brian Sims suggests it is nothing new (DAN No. 42 – Technology transfer: Conservation Agriculture in sub-Saharan Africa). Yes, the concepts and principles of crop rotations and of soil and water conservation are by now well established. Direct planting has indeed "been around for a very long time" though not yet widely practised, with the possible exception of the USA using high-powered tractors sustained by cheap fuel.

IITA, Ibadan, and other research organisations attempted to develop improved human powered 'no tillage' systems for smallholder farmers in the 1960s/70s, based on herbicide application and direct planting and also a more advanced system using a 'rolling injection planter'. The machines were made in their hundreds but have now rusted away or are gathering dust in store. The 'top down' approach failed then and is now widely discredited — we need to know how and why a new initiative will be more successful.

Animal powered planters and fertiliser distributors have also been produced in Africa in their hundreds, although not in 'direct injection' versions, but how many are in active farm use now? What is the actual commercial (unsubsidised) price of an imported Brazilian no-till planter and how does it perform in Africa on the farm, as distinct from on a demonstration plot? What is the draught of specific machines and how many animals will be needed to pull them for a full working day? What of reliability of planting: how will the farmer know — before it is too late — that the machine has indeed injected the required seeds into a good environment for germination?

Prudent farmers cannot afford the price of failure. Enthusiasts for change may denounce current methods as outdated and it is true that the design, manufacture and/or upkeep of much of the equipment in current use, based as it is on traditional European models, should be improved to meet African needs — as it certainly can be. Has the farmer been given the opportunity to make a balanced choice between successful evolution or failed revolution?

Frank, Inns, 1 Manyweathers Court, Ampthill, Bedfordshire, MK45 2JN
email: frank.inns@tesco.net

## Tillage techniques

*From Ray Wijewardene (also, Chancellor, University of Moratuwa), Sri Lanka.*

"Having long read *Draught Animal News* with the greatest interest, and having myself farmed (ploughed, harrowed, levelled, bunded etc) with animals in the humid-tropical regions of Asia and Africa, ...also helped evolve alternate systems for 'land-preparation' in these humid-tropical regions, I write to enquire of the readers whether alternative systems have been evolved for such high-energy (soil-inversion), high-time, operations as ploughing in the semi-humid and arid regions where one still sees animals (camels, donkeys and oxen) extensively used for tillage.

In the regions of **humid-tropical** farming we have learned that ploughing (tillage) was resorted to primarily to invert (or disturb) soil for control of surface weeds... Such inversion also involved undesirable factors such as erosion (of the bare soil) exposure (to sunshine and subsequent 'baking' of the soil and its micro-organisms) ... The weed-managing alternatives being:

- flooding such as for rice, which necessitated prior puddling and levelling, and is very wasteful where water is now an increasingly rare commodity... Viewed as H2O, water is yet another chemical (herbicide!!), albeit a matter of cost!
- shading and mulching where such 'cover-crops' are available
- herbicides (with availability of high LD50 herbicides) not as drastic as earlier considered, but still occasionally an externally-sourced commodity.

Plant-based (allelopathic) herbicides are increasingly being brought into farming systems as a complementary cropping system. These systems now exhibit additional benefits such as for providing fertility (green- manures, composts etc) and food for soil-organisms, bacteria, etc.

My question, is whether ALTERNATIVE - yet perhaps effective and beneficial -SYSTEMS have correspondingly been evolved for resolving the high-energy/time operations of tillage in SEMI-ARID REGIONS where one still sees draught animals used to drag implements over (through) the field.

As one who has for very many decades been intimately (also as designer and manufacturer) involved in tools for farming... as well as in the personal use of these tools for farming (and for alternative systems of farming, both arable as well as perennial) I have learned the tremendous need to take the farmer off the constraint of his legs (walking) in order to enable him to increase his productivity VERY considerably. Such have already made significant improvements to small-farmer productivity in many humid-tropical regions.... Would any of the readers be able, kindly, to direct me to sources for information/advice on comparable alternative (systems and/or complementary tools) for farmers in the arid or semi-arid regions?

I seem to recall that such 'animal-drawn-tool-(and-farmer)-carriers' have been manufactured in India and East/West-Africa in years gone by, but I do not recall that they have made much impact, and wonder whether they were introduced just as alternative tools, or as a component of alternative systems. Please do not misunderstand me... I do not endeavour to 'replace' the animal (which input I see as of increasing importance with-in small-farmer regions), but to identify systems that increase the productivity of the farmer (and his/her animals) with minimal (negligible) need-for or impact-of external resources.

My special interest is as we are evolving farming systems for the humid-tropics which combine complementary crops (both perennial as well as arable), both C3, C4, and NF, for minimal-external-input farming systems for the increased production of food and fuel and fibre and fertility. The latter being the most significant. We could learn a VERY great deal by drawing-upon and exchanging experiences with soundly-practical researchers with parallel objectives in other regions, too.

Thanking you, kindly."

Dr. Ray Wijewardene, 133 Dharmapala Mawatha, Colombo 00700, Sri Lanka
tel/fax: +094 011-2421881

## Rotational grazing in the tropics?

*Norma Petroff writes from the USA*

"My son Alexander and a Congolese friend are trying to put together a very small development project in DR Congo. They are planning to use working oxen. One consideration is grazing for the animals. We're wondering if anyone has insights into rotational grazing in the tropics. This would be in Ruzizi Valley, northern tip of Lake Tanganyika, which has abundant rainfall, and is quite fertile.. One of the main challenges might be how to protect cows from with poisonous snakes while they are in a rotational grazing programme. Thanks for any suggestions."

Norma Petroff (email: npetroff@bowdoin.edu)

## Request for information on animal-drawn implements

*from Hajarivony Andriamarofara in Madagascar*

"Bonjour,

Je recherche de informations sur les outils utilisant la traction animale pour les travaux de champs. je travaille avec des associations de paysans ici a Madagascar. Ces associations sont souvent enclavée et n'ont pas accès des outils motorisés (chèreté et dépendance pour l'entretien), alors qu'elles ont la possibilité d'exploiter de tres grandes surfaces.

Ces outils modernes utilisant la traction animale pourraient nous être d'une grand secours. Merci"

Hajarivony Andriamarofara (email hrivony@iospartners.com)

**Request for exchange of experiences**

*from Balu Hegde in India*

"I am farmer living in remote village situated in tropical forests of Western Ghats, Karnataka, India. I am cultivating crops like arecanut, coconut, pepper, Vanilla, cardamom, nutmeg, clove, cinnamon, coffee, cocoa, egg, fruit, all spice, Noni fruit, Kokum, butter fruit, yam, etc in a multi storied agroforestry system. We also keep livestock for milk and manure. I am interested to learn from the experiences of farmers all over the globe, particularly those keeping animals for work.

Thanking you,"

Balu Hegde, c/o Balachandra Hegde, PO.:Nilkund, Via: Heggarni, Sirsi
(Uttara Kannada), Karnataka, India- 581 331
Tel: 08389 -249478/249379, Mob; 9448774778 (reachable only when I am mobile)
Email: baluhegade@sancharnet.in

**Heavy traffic**

*Hrimati dasi from India writes:*

"...Just wanted to share this picture with you all (Plate 15). It was taken this morning from my bullock cart on the way to the ISKCON temple. The Buffalo carts were on the way to pick up jute from the new harvest.

Hrimati dasi. Email hrimati.ACBSP@pamho.net.

*Plate 15. Heavy traffic in Mayapur, India (Hrimati Dasi)*

### Two letters from the All India Coordinated Research Project on Utilisation of Animal Energy

*Department of Farm Machinery and Power Engineering College of Technology and Engineering, Udaipur, Rajasthan, India- 313001*

1. Dr. G.S.Tiwari writes in reply to the letter from Simon Richards in DAN 42.

"I am a regular reader of *Draught Animal News*. I have found your request in DAN No. 42 regarding suitable donkey cart. Our centre has done lot of work on animal-drawn vehicles including donkey carts. We have also standardised the donkey cart. If you are interested kindly let me know about the same so that further process may be started at the earliest possible.

Dr. G.S.Tiwari (email: tiwarigsin@yahoo.com)

2. Dr. Lokesh Gupta writes with a request

"I would like to work on animal bio-mechanics in our scheme utilisation of animal energy but I don't have much technical and research information on this aspect. So I am looking for more information on Animal Bio-Mechanics and on the scientists who are working on these aspects.

Awaiting a favourable response from the readers of Draught Animal News."

Dr. Lokesh Gupta
Ph. No. 00 98 29991090 (Mobile), email lokesh_pup28@yahoo.co.in.

## MEETING REPORT


The Animal Husbandry Association of Thailand (AHAT) and the British Society of Animal Science (BSAS) collaborated on a jointly organised conference held in Khon Kaen, Thailand from 14th to 18th November 2005. The conference was on 'Integrating Livestock-Crop Systems to meet the Challenges of Globalisation' The meeting was well attended with over 320 people attending from many different countries. Main sessions were held on the environment, dairying in the tropics, rumen ecology, animal genetic resources, local feed resources, multipurpose role of work animals, medicinal plants and organic livestock. Many short communications and posters were also presented and there was the opportunity to visit the surrounding agricultural systems in a day of different field visits (Plate 16).

The papers and contact addresses of the speakers in the session on the *Multipurpose role of work animals – improving integration in agricultural and transport systems were as follows:*

- **Experimental methods in draught animal research**
  R. Anne Pearson, CTVM, School of Veterinary Medicine, University of Edinburgh, Easter Bush Veterinary Centre, Roslin, Midlothian, EH25 9RG (anne.pearson@ed.ac.uk)

*Plate 16. Participants enjoying one of the field visits at the AHAT/BSAS conference in Thailand (AHAT/BSAS)*

- **Effects of supplementation on feed intake, work capacity and body weight change of swamp buffaloes under smallholder grazing systems in Vietnam**
  Mai Van Sanh, Head of Buffalo Department, National Institute for Animal Husbandry, Thuy Phuong, Tu Liem, Hanoi, Vietnam (mvsanh@netnam.vn)
- **Multipurpose use of cattle and swamp buffaloes in Lao PDR**
  Phanthavong Vonsamphanh, Planning and Cooperation Division, Department of Livestock and Fisheries, P.O. Box 811, Vientiane, Lao PDR (pvongsamphanh@yahoo.com)
- **Economics of rice farming using draught buffalo and two-wheel tractor**
  Pakapun Skunmun, Kasetsart University, PO Box 1014, Kasetsart, Bangkok 10900, Thailand (swkppb@kku.ac.th)
- **Multiple uses of cows for milk, meat and traction in West African mixed crop-livestock farming systems. Challenges and the way forward**
  Abdou Fall, International Trypanotolerance Centre, PO Box 14, Banjul, The Gambia (abdou.fall@itc.gm)
- **An assessment of gait and limb abnormalities in working equines in Delhi and adjacent areas**
  Dr Shabir Ahmed, The Brooke Hospital for Animals, India, F-86, Preet Vihar, Delhi, 110092 (shabir@thebrookeindia.org)

The short communications on working animals were as follows:

- **Draught animal power management in mountain agriculture: scenarios of central Himalayas, India**
  V. Singh and T. Partap, respectively – CBSH, GB Pant University of Agriculture and Technology, Pantnagar 263 145, India and ICCOA, Raja Rajeshwari Nagar, Ideal Homes Township, 951C/15, Cross/8th Main, Bangalore 560 098
- **The importance of buffalo draught power in Pakistan with particular reference to welfare aspects**
  S.R. Raza and P Rowlinson, respectively, the Department of Livestock management, University of Agriculture, Faisalabad, Pakistan and School of Agriculture, Food and Rural Development, University of Newcastle upon Tyne, NE17RU, UK

# FORTHCOMING EVENTS

## The 5th International Colloquium On Working Equines

30th October – 2nd November 2006
Addis Ababa, Ethiopia

## The Future for Working Equines

*For further information on this meeting look on the website:*
*http://www.thedonkeysanctuary.org.uk/site/1/Colloquium_2006.html*
*... or contact the organisers at the address below.*

The theme and venue will stimulate discussion of new and traditional technologies, consider questions faced by researchers and those that work in education, extension and development. The plenary papers will provide overviews of the themed topics and the oral and poster sessions will provide a platform for new research and experiences to be shared. The field visits, workshops and practical demonstrations endeavour to highlight important areas and inspire discussion amongst the delegates from multidisciplinary fields.

**The 5th International Colloquium on Working Equines**
The Donkey Sanctuary, Sidmouth, Devon, EX10 0NU
Tel: +44 (0) 1395 578222 • Fax: +44 (0) 1395 573029
Email: colloquium2006@thedonkeysanctuary.com • Web site: www.thedonkeysanctuary.org.uk

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HORSE HEALTH NUTRITION
17-18 March 2006
THIRD EUROPEAN EQUINE HEALTH & NUTRITION CONGRESS

**The 3rd European Equine Health and Nutrition Conference** offers the following two-day programme for veterinarians and equine professionals on 17 and 18 March 2006

### Invited Speaker Programme

| | | |
|---|---|---|
| Donald Topliff | - | Electrolyte management |
| Ingrid Vervuert | - | Feed technology |
| Eleanor Kellon | - | Nutraceuticals |
| Ellen Kienzle | - | Bioavailability of minerals |
| Veronique Julliand | - | Pre-and probiotics: Potentials for equine practice |

+ Free communications

### Workshop Programme

| | | |
|---|---|---|
| Gunther van Loon | - | Ultrasonographic examination of the equine gastro-intestinal tract |
| Lieven Vlaminck | - | Principles of basic equine dentistry |
| Piet Deprez & Eleanor Kellon | - | Feed related influences on blood parameters |
| Peter Bollen | - | Ration formulation and evaluation |

**Information and registration:**
www.equine-congress.com
E-mail:
info@equine-congress.com

# RECENT PUBLICATIONS

Bale, O.O.J., Lakpini, C.A.M., Mohammed, A.K., Amodu, J.T., Chiezey, U.F., Ahmed, H.U., Achazie, A.A. and Otchere, E.O. (2003). An appraisal study of donkey in three Northern states of Nigeria. *Nigerian Journal of Animal Production* **30**: 203–

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Mostafa, M.B. and Kaitaita, D.O. (2003). Donkey foot axis measurements in overgrown hoof. *Indian Journal of Veterinary Surgery* **24**: 50.

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Vivak Kumar, Sharma, D.N. and Garg, M.K. (2005). Recent trends in use of farm machinery in Haryana State. *Environment and Ecology* **23**: 489–493.

# CONTRIBUTORS TO DAN 43

Peta Jones, Donkey Power Facilitation and Consultancy, P.O. Box 414 Tshitandani/ Makhado, 0902 South Africa (Email: astute@lantic.net)

Russell Hay, Donkey Welfare of Namibia, P.O. Box 495, Harrow HA1 9BA, UK (Email: info@donkeywelfare.com)

Swedish Cooperative Centre, Regional Office for Southern Africa, 70 Livingstone AV, Harare, Zimbabwe (Email: info@sccrosa.org)

Hélio C. Manso Filho et al., Federal Rural University of Pernambuco, Recife-PE, Brasil (Email: hmanso@ufrpe.br.)

Alistair Findlay, Society Programmes Europe and Middle East, World Society for the Protection of Animals, 14th Floor, 89 Albert Embankment, London SE1 7TP, UK (Email: alistairfindlay@wspa.org.uk)

R.L. Srivastava and K.N. Gaur, AICRP on Animal Energy, CAET, Farm Machinery & Power Engineering, Allahabad Agricultural Institute – Deemed University, Allahabad – 211007 (INDIA) (Email: rlsrivastava_64@yahoo.co.in)

Rajiv Garg, G.S. Tiwari, C.P.Doshi and Hemant Shrimali, Department of Farm Machinery and Power Engineering, College of Technology and Engineering, M.PUA&T, Udaipur, Rajasthan, India

Mai Van Sanh, National Institute of Animal Husbandry, Thuy Phuong, Tu Liem, Hanoi, Vietnam (Email: mvsanh@netnam.vn)

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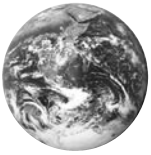

The world may be getting smaller, but the big issues about animal welfare are still going largely unnoticed.

We understand the importance of taking action locally but to achieve fundamental reforms we have to act globally.

WSPA has been active on a worldwide basis for 25 years and our greatest achievements have come from collaborating with other animal welfare societies.

Today WSPA is the largest animal welfare federation in the world, with +600 Member Societies operating in +130 countries.

Recently, WSPA has co-ordinated aid to animals afflicted by the Tsunami, funded a campaign to help end foie gras production in Israel and helped maintain the moratorium on commercial whaling.

Throughout all of this, we have continued to work with our Member Societies to foster and promote general animal welfare.

If we are to continue this animal welfare progress, we need to think bigger.

WSPA is calling for all animal protection societies to join this global movement.

Only by working closely together, sharing our knowledge and skills, can we make faster and long-lasting progress for animals.

Member Societies work in co-ordination with each another, and independently, to find effective ways of addressing all aspects of animal suffering.

WSPA and its global network also provide advice, support, training and materials for organisations working in communities where there remains great indifference to animal cruelty.

Animal protection groups in any country may apply to become a WSPA Member Society.

If your organisation is interested in joining our Global Member Society Network, please email: membersocieties@wspa.org.uk

WSPA

World Society for the Protection of Animals

WSPA, World Society for the Protection of Animals, 14th Floor, 89 Albert Embankment, London SE1 7TP
PHONE: +44 (0) 207 587 5000. FAX: +44 (0) 207 793 0208. WEB: www.wspa-international.org