

Networking introductions, announcements and resources

(For the addresses of these organisations, please refer to the address list on pages 61–64)

AGROTEC (Agricultural Operations Technology for Small Holders in East and Southern Africa) is a regional programme of UNDP (United Nations Development Programme). Based in Zimbabwe, it is funded by the Swedish International Development Authority (SIDA) and operates in Lesotho, Kenya, Tanzania, Uganda, Zambia and Zimbabwe. It is funding small agricultural engineering research programmes in the six countries, which are monitored by regional reference groups. It holds training workshops and will help establish a regional MSc course. One of its areas of interest is animal traction. It was at an AGROTEC workshop in Harare that ATNESA was launched. It produces a newsletter and will publish manuals relating to animal-drawn implements and transport. Publications include:

Kalisky J (ed), 1990. *Proceedings of a regional course on planning an integrated animal draught programme, held Harare, Zimbabwe from 5–13 November 1990*. Bulletin No 2. AGROTEC (Agricultural Operations Technology for Small Holders in East and Southern Africa), Harare, Zimbabwe. 235p.

The *Centre for Tropical Veterinary Medicine*

(**CTVM**) of the University of Edinburgh is carrying out research on the nutritional and physiological implications of draft work, using cattle, buffaloes, horses and donkeys. Equipment had been developed that allows the measurement and logging of many factors associated with animal work, including force, distance travelled, animal temperature and oxygen consumption. At CTVM, this equipment can be used with treadmills and climate chambers. Portable versions of the equipment have been used in the field in several countries. Staff of CTVM have published many scientific papers relating to animal power. CTVM publishes *Draught Animal News* twice a year and welcomes contributions from ATNESA members. CTVM offers MSc degrees in Tropical Animal Production and cooperates with Larenstein International Agricultural College in Deventer, The Netherlands, in the holding of more practical courses on animal traction. In 1990, CTVM hosted an international colloquium on working equines in tropical agriculture, the proceedings of which were published as:

Fielding D and Pearson R A (eds), 1991. *Donkeys, mules and horses in tropical agricultural development*. Centre for Tropical Veterinary Medicine, University of Edinburgh, Edinburgh, UK. 336p.

The **Commonwealth Secretariat** is aware that animal traction is important in Commonwealth countries. For some time, the Agriculture and Rural

Development Division has been concerned with the closely related issues of appropriate technology and agricultural mechanisation. It organised meetings which aim to establish a Network for Agricultural Mechanisation in Africa (NAMA), and it hopes there will be scope for valuable collaboration between NAMA and ATNESA. Publications include:

Commonwealth Secretariat, 1991. *Agricultural mechanization in Commonwealth Africa*. Report of a workshop held 13–17 August 1990, Zaria, Nigeria. Commonwealth Secretariat, London, UK. 80p.

FAO, the Food and Agriculture Organization of the United Nations, has for many years been supporting projects and initiatives in the region concerned with animal traction. Over the years, FAO has produced a variety of animal traction publications, and it is presently preparing an animal traction training manual in consultation with an FAO-supported project in Malawi.

The **Farming Systems Programme** is a regional programme, based in Botswana, that is supported by FAO and SIDA. While it does not specialise in animal traction, draft animals are important in many farming systems in the region. It would like to see the formation of a regional farming systems network which could collaborate with ATNESA in activities and topics of mutual interest.

GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) is financing several projects in Africa undertaking research and development on animal traction. The **German Appropriate Technology Exchange (GATE)** is a specialised division of GTZ that is supporting research and development on animal powered gears, mills and water-lifting devices in several countries, including Zambia (see paper by H Dreschel and C Löffler, p 440). GATE publishes the journal *GATE: Questions, Answers, Information* which sometimes includes articles relating to animal traction. GATE normally supplies its journal and publications free-of-charge to people working in developing countries. Among the publications available are:

Boie W, 1989. *Introduction of animal-powered cereal mills*. Vieweg for German Appropriate Technology Exchange, GTZ, Eschborn, Germany. 70p.

Schmitz H, Sommer M and Walter S, 1991. *Animal traction in rainfed agriculture in Africa and South America*. Vieweg for German Appropriate Technology Exchange, GTZ, Eschborn, Germany. 311p.

Starkey P H, 1988. *Animal traction directory: Africa*. Vieweg for German Appropriate Technology Exchange, GTZ, Eschborn, Germany. 151p.

Starkey P H, 1988. *Perfected yet rejected: animal-drawn wheeled toolcarriers*. Vieweg for German Appropriate Technology Exchange, GTZ, Eschborn, Germany. 161p.

Starkey P H, 1989. *Harnessing and implements for animal traction*. Vieweg for German Appropriate Technology Exchange, GTZ, Eschborn, Germany. 245p.

The **International Development Research Centre (IDRC)** has funded several animal traction research and development projects in Africa and has supported animal traction and farming systems networking activities in West Africa. It maintains an interest in these fields and supported several participants at this workshop. Although the head office of IDRC is in Canada, correspondence relating to eastern and southern Africa should be addressed to the IDRC regional office in Nairobi.

The **International Livestock Centre for Africa (ILCA)** has its headquarters in Ethiopia. Animal traction has been one of its "research thrusts". ILCA received a grant from the European Community to assist networking activities relating to animal traction research in sub-Saharan Africa, and this has concentrated on activities in West Africa, including the development of animal traction research protocols and support to the 1990 workshop of the West Africa Animal Traction Network. In the highlands of Ethiopia, ILCA is undertaking research on the effect of work on the fertility and milk production of crossbred cows (see paper by E Zerbini et al, p. 130) and the use of simple animal-drawn implements in vertisols (see paper by A Astatke and M Mohammed-Saleem, p. 301). ILCA publishes a newsletter (available free-of-charge) and the journal *African Livestock Research*. ILCA has published an annotated bibliography on animal traction containing 1350 entries in the form of a book and a searchable computer database. ILCA publications, which are normally available free-of-charge to scientists in Africa, include:

Starkey P H, Sirak Teklu and Goe M R, 1990. *Animal traction: an annotated bibliographic database*. International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia. 203p

Lawrence P R, Lawrence K, Dijkman J T and Starkey P H (eds), 1993. *Research for development of animal traction in West Africa*. Proceedings of fourth workshop of West Africa Animal Traction Network held 9-13 July, 1990, Kano, Nigeria. International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia. 322p.

IMAG-DLO is an agricultural engineering institute based in The Netherlands. It has provided technical support to several animal traction programmes in Africa, notably in Mali and Zambia. Its publications include:

Starkey P H, Dibbitts H J and Mwenya E, 1991. *Animal traction in Zambia: status, progress and trends*. Ministry of Agriculture, Lusaka, Zambia and IMAG-DLO, Wageningen, The Netherlands. 105p.

Dibbitts H J and Mwenya E, 1993. *Animal traction survey in Zambia*. Ministry of Agriculture, Lusaka, Zambia and IMAG-DLO, Wageningen, The Netherlands. 105p.

The **Intermediate Technology Development Group (ITDG)** is a British NGO involved with "appropriate technology". Over the years, emphasis has moved away from the mere development of hardware prototypes to socially sensitive, participatory development initiatives, including animal traction projects in Sudan and Kenya (reported here by S Croxton, p. 280). Publications include the quarterly journal *Appropriate Technology*.

IT Transport is a British consultancy organisation affiliated to ITDG. It has carried out consultancies relating to animal-powered transport for many different development agencies. It helps to coordinate the International Forum for Rural Transport and Development which publishes a newsletter. Some work of its staff has been published in books by IT Publications, including:

Barwell I and Hathway G, 1986. *The design and manufacture of animal-drawn carts*. Technical memorandum prepared for the International Labour Office (ILO) and UN Centre for Human Settlements (HABITAT). IT Publications, London, UK. 72p.

Larenstein International Agricultural College (LIAC), based at Deventer in The Netherlands, organises several courses relating to tropical agriculture. In cooperation with the University of Edinburgh it has organised courses specifically relating to draft animal power and harnessing techniques. LIAC would be interested in discussing possible collaboration with partner organisations in Africa. In 1990, in conjunction with CTVM, it organised a workshop on draft animal technology, the proceedings of which were published as:

den Hertog G and van Huis J A (eds). *The role of draught animal technology in rural development*. Proceedings of an international seminar held 2-12 April 1990, Edinburgh, Scotland. Pudoc Scientific Publishers, Wageningen, The Netherlands. 233p.

The French agricultural engineer **Jean Nolle**, who died in 1993, worked for many years developing animal-drawn implements for small farmers in Africa (see p. 247). Among his many designs were the *Houe Sine*, *Ariana*, *Tropicultor* and *Kanol* (on display). His experiences have been recorded in several videos (shown during the workshop) and in the book:

Nolle J, 1986. *Machines modernes à traction animale*. Harmattan, Paris, France. 478p.

Rumptstad is a commercial agricultural equipment manufacturer based in The Netherlands. Its Agricultural Tropical Machinery division has cooperated with local workshops producing animal traction implements in several countries, including Mali, Kenya and Zambia.

Silsoe College of Cranfield University is involved in teaching and research on agricultural engineering, including animal traction. Prof F Inns has retired, but continues to research on harnessing systems.

Silsoe Research Institute of UK has been working on animal traction topics for many years (formerly as AFRC-Engineering). It has collaborated with many organisations in Africa. Recent emphasis has been on instrumentation for measuring and logging the mechanical and physiological parameters associated with animal draft power. Staff members have published results from research studies in several scientific journals. Silsoe Research Institute will arrange an international workshop on a topic related to animal power in the region in 1993, and would welcome involvement of ATNESA members.

The **Swedish University of Agricultural Sciences (SUAS)** is based in Uppsala. It provides technical support services to several farming systems and agricultural engineering projects in the regional, including AGROTEC and the Farming Systems Project. Research at SUAS includes mechanical studies on animal-drawn plows. Publications include:

Gebresenbet G, 1992. *A literature search for agricultural system engineering education in developing countries: selected bibliography*. Report 160. Department of Agricultural Engineering, Swedish University of Agricultural Sciences, Uppsala, Sweden. 82p.

The **West Africa Animal Traction Network (WAATN)** organises animal traction workshops and information exchange in West Africa. Since 1986, it has invited people from eastern and southern Africa to participate in its workshops and is pleased that this influenced the decision to form ATNESA. It looks forward to close cooperation and collaboration with ATNESA. People working on animal traction in Africa can generally obtain the proceedings of its past workshops free-of-charge from the respective publishers listed here: *Animal power in farming systems* (1986 workshop) from GATE/GTZ; *Animal traction for agricultural development* (1988 workshop) from CTA; *Research for development of animal traction* (1990 workshop) from ILCA.

The **West African Farming Systems Research Network (WAFSRN)** organises workshops, produces a bulletin and journal and is developing databases and a documentation centre. Farming systems and animal traction networks have much in common and there is scope for joint activities. WAFSRN would welcome the formation of a farming systems network for eastern and southern Africa and the holding of an all-Africa farming systems workshop.

The **Technical Centre for Agricultural and Rural Cooperation (CTA)**, financed by the European Community under the Lomé Convention with ACP

(Africa, Caribbean and Pacific) countries is based in The Netherlands and is actively involved in gathering and disseminating information relating to rural development in tropical Africa and elsewhere. Animal traction is an area of interest of CTA, which has co-sponsored several animal traction workshops in Africa, including this one. CTA has co-funded the publication of some French-language annotated bibliographies on animal traction and the proceedings of the 1988 WAATN workshop which are normally available free-of-charge from CTA.

Starkey P and Faye A (eds), 1990. *Animal traction for agricultural development*. Proceedings of workshop held 7-12 July 1988, Saly, Senegal. Technical Centre for Agriculture and Rural Cooperation (CTA), Ede-Wageningen, The Netherlands. 475p.

Marti A, Second C, Lhoste P et le Thiec G, 1988. *Traction animale et développement agricole des régions chaudes: bibliographie annotée*. No 1, Expériences et bilan. No 2, Les outils: fabrication, conduite et entretien. No 3, Les animaux. Centre technique de coopération agricole et rurale (CTA), Wageningen, The Netherlands et Centre d'Information et de Documentation en Agronomie des Régions Chaudes (CIDARC), Montpellier, France. 254p. 421p. 240p.

Tool is an NGO based in The Netherlands whose work includes the Farm Implements and Tools (FIT) Project with funding from ILO (see paper by H Helsloot p. 374). Publications include:

FIT, 1992. *Small-scale tools and implements for agriculture and food processing in sub-Saharan Africa: an annotated bibliography*. Farm Implements and Tools Programme (FIT), Tool, Amsterdam, The Netherlands with International Labour Organisation (ILO), Geneva, Switzerland. 72p.

The **Regional Tsetse and Trypanosomiasis Control Programme** is based in Zimbabwe. With support from the European Community, it is engaged in work in several countries including Malawi, Mozambique, Zambia and Zimbabwe. As animal power provision is an important function of cattle in the target countries, and draft work is affected by trypanosomiasis, the programme is interested in exchanging information and collaborating with animal traction programmes in the region (see paper by R Connor p. 155).

The United Nations Development Fund for Women **UNIFEM** is concerned with numerous aspects of women in development. In Zimbabwe, UNIFEM commissioned a study relating to women's access to animal power (see paper by J Doran p. 272). UNIFEM is to produce a source book covering rural transport issues, including sledges, carts and packing.

Staff of the **University of Hohenheim** in Germany have carried out several studies relating to animal traction in Niger and elsewhere. Research has included measurement of power of draft animals and the draft forces imposed by different implements. A simple donkey-drawn weeding implement has been developed (see paper by F Emhardt p. 210) and

some animal-powered systems have been tested (see paper of K Dippon, p. 436).

The Development Technology Unit of the *University of Warwick* in UK has carried out research and development work on the use of animal power to drive stationary machinery, such as that used for water-lifting and crop processing. It has developed

prototypes including a rope engine and a simple gear system. Research is also being undertaken on various bearings suitable for animal-drawn carts, and methods of testing and evaluating these. It is interested in testing and evaluating these technologies with partner organisations in Africa (see paper by C Oram, p. 428).

National programmes in Africa

In *Botswana* teams of oxen are widely used for cultivation, and animal traction has been assisted by several government-sponsored credit schemes (see paper by A Panin et al, p. 104). The *Botswana College of Agriculture* has staff from several African countries and people in various departments are interested in animal traction research, with topics including socioeconomic issues, mechanisation policies and donkeys (see paper by A Aganga and K Maphorisa, p. 146). The *Rural Industries Innovation Centre* at Kanye has been working on appropriate technologies for several years, and areas of interest include animal-powered pumps and gear systems and animal-drawn carts.

In *Ethiopia* most farmers employ oxen for plowing and pack donkeys are very widely used. The *Rural Technology Promotion Division* of the Ministry of Agriculture is working on implement and cart design and testing (see papers by Kebede Desta, p. 454 and Oumer Taha, p. 292). The Selam Vocational Training Centre in Addis Ababa is an NGO with an interest in developing local production of steel implements (see paper by H Zaugg, p. 244)

In *Kenya* animal traction research is being carried out at the Department of Agricultural Engineering of the *University of Nairobi* (see paper by L Oudman, p. 422). Staff of this department have been cooperating with the NGO *Christian Mission Aid* on regional and national animal traction networking initiatives, and a national workshop on draft animal technology is scheduled. The *Ministry of Agriculture* has been involved in the development and testing of animal traction implements and farming systems research (see papers by P Maina, p. 110, and J Kahumbura, p. 222). The Dutch firm *Rumpstad* is establishing a joint-venture company to manufacture animal traction implements in Nairobi. Other organisations interested in animal traction include *Egerton University*.

Animal traction is increasingly being used in *Malawi*, notably in the northern and central areas. For many years, staff of the *Chitezde Research*

Station have been involved in the development and testing of animal-drawn implements (see paper by W Kumwenda and P de Roover, p. 340). FAO has been supporting the national *Animal Power Utilisation Project*, and activities have included training staff of local Agricultural Development Divisions. A simple wooden ox cart has been developed. The *Forestry Department* uses oxen for logging in several plantations (see paper by D Singa, p. 460). Several staff of Bunda College of the University of Malawi are interested in animal traction research (see paper by M Mwinjilo, p. 456).

In *Mozambique* the *Agro-Alfa* factory is manufacturing animal-drawn equipment and is looking for export markets. Present implements are similar to *Safim* designs, but the company hopes for product development and diversification.

In *Tanzania* a national network has been formed to link the many organisations involved in animal traction, and a national animal traction workshop was held in 1991. The *Animal Traction Network Tanzania (ATNET)* receives support from the *Mbeya Oxenization Project (MOP)*, a development programme in the south-west highlands that is actively involved in implement and cart production and testing and the analysis of gender, marketing and credit issues (see papers by K Marshall and M Sizya, p. 266, and J Jumbe, p. 256). The ATNET secretariat is based at *Sokoine University of Agriculture*, where animal traction is an area of particular concern of the Department of Agricultural Engineering (see papers by G Mgaya et al, p. 139, and A Luzigo et al, p. 136). The *Uyole Agricultural Centre* in Mbeya is a research and training institution that has been undertaking research on animal-drawn weeding technologies (see paper by E Kwiligwa et al, p. 182). Uyole has also been cooperating with MOP and the Usangu Irrigation Project (see paper by M Lecca et al, p. 218). The Ministry of Agriculture has been responsible for a national extension programme involving oxen training centres (see papers by A Kayumbo, p.191–197). The Ministry of Industry has

responsibility for the parastatal implement factories, notably *UFI*, and for *Camartec* (Centre for Agricultural Mechanisation and Rural Technology). Camartec is an appropriate technology organisation charged with developing and testing animal traction implements and carts (see paper by F Mujemula, p. 414). At the University of Dar es Salaam, the *Institute of Production Innovation* has been working on animal-drawn carts (see paper by J Wirth, p. 405), while the *Institute of Resource Assessment* has been studying socioeconomic aspects of animal power (see paper by H Sosovele, p. 318). Among the many area-specific development programmes with animal traction components are *Mifipro* and *Tanga* in the north-east and *Mbozi* in the south-west (see papers by A Galema, p. 321, R Fischer, p. 296, A Makwanda, p. 276, and G Mwakitwange, p. 328). Publications include:

Simalenga T E and Hatibu N (eds), 1992. *Proceedings of an animal traction workshop held 8-10 April 1991, Morogoro, Tanzania*. Mbeya Oxenization Project, Mbeya, Tanzania. 57p.

In *Togo*, *PROPTA* (Projet pour la Promotion de la Traction Animale) provides a national service to undertake and coordinate research, development, monitoring and evaluation work relating to animal traction. Topics of interest include the use of draft cows, harnessing single animals and animal power for tuber crops. *PROPTA* publishes *Force Animale*, a quarterly animal traction newsletter, in French.

In *Uganda* animal traction is being promoted by the *Ministry of Agriculture* and by several NGOs (see papers by A Akou, p. 331, J Omoding, p. 334, A Okuni, p. 468, and E Ojirot, p. 338). A dairy project supported by FAO has been promoting the use of draft animals and has produced a video (shown at the workshop). In recent years, animal traction implements have been imported, and have tended to be of poor quality. *Saimmco* in Soroti has recently started the local manufacture of implements.

In *Zambia*, the national *Draft Animal Power Coordination Programme* is based within the Agricultural Engineering Section of the Department of Agriculture (see paper by E Mwenya et al, p. 469). The *Draft Animal Power Research and Development Programme* based in Magoye has been engaged in the on-station and on-farm testing of animal-drawn carts, implements and tillage systems. It has published many test reports, and its work is mentioned in the papers by P Stevens (p. 168) and R Meijer (p. 369). The *Palabana Draft Animal Power Training Centre* conducts in-service training courses for extension workers, and is starting an outreach programme. It is developing training manuals and training videos (see papers by

M Bwalya, p. 350 and J de Graaf, p. 116). Several departments of the *University of Zambia* have an interest in animal power including *TDAU* which has been working on animal-drawn carts (see paper by H Vroom, p. 418). The parastatal company *Zaffico* is using oxen for logging operations (see paper by C Kalima, p. 445). Some large-scale commercial farmers use animal power (see paper by B Dankwerts, p. 108). The manufacturing firm *Lenco* has been collaborating with Rumpstsd in producing a range of implements. The bearing company *SKF-Zambia* has designed and manufactured axles for ox carts. Within Zambia there are many area-specific programmes and projects with animal traction components, concerned with a variety of issues including implement and cart supply, credit, gender issues and animal health. Among those represented at the workshop were programmes in Copperbelt (see paper by A Mkwawire, p. 364), Luapula Province (see paper by S Lubumbe, p. 366), Northern Province (see paper by M Lombe et al, p. 284), North-Western Province (see papers by C Löffler, p. 354, and I Mukuka, p. 293) and Western Province (see papers by H Kamphuis, p. 360 and C Hocking, p. 288). The various projects and programmes in Zambia are very aware of the need to exchange information relating to animal traction and are keen to participate in networking activities in the region.

In *Zimbabwe*, animal traction is an integral part of most smallholder farming systems. The national agricultural extension service *Agritex* with technical cooperation from GTZ has developed an Agricultural Extension Training Centre (*AETC*) which holds courses on draft animal technology and blacksmithing. *Agritex*, with support from GTZ, is also investigating soil and water conservation on farms where draft animals are employed (see paper by J Hagmann, p. 198). At the *University of Harare* and *Makoholi Experimental Station* research is being carried out on the nutrition of draft animals, as described in papers by J Francis et al (p. 158) and V Prasad et al (p. 164). Animal traction has been an area interest of the *Farming Systems Research Unit* of the Ministry of Agriculture (see papers of S Chikura, p. 162 and p. 203). There is increasing interest in the use of donkeys for work in Zimbabwe (see papers of P Jones, p. 426, and R Mpande, p. 150). *Bulawayo Steel* is one of the Zimbabwean manufacturers of animal traction equipment. Publications of the AETC include:

Jones P A, 1991. *Training course manual on the use of donkeys in agriculture in Zimbabwe*. Agritex Institute of Agricultural Engineering, Harare, Zimbabwe. 81p.