

RIU

Shouldering the burdens of the poor

Validated RNRRS Output.

A new toolkit is available that makes clear the benefits of using draught animals to provide power on-farm. It's now being recognized that the use of animals is not a backward technology, but rather one that provides real benefits. They can, for example, be used to apply minimum tillage and prevent erosion in fields—because they do not tear up the ground in the same way that a tractor would. Available on CD-ROM, the new toolkit contains a large amount of information and training materials on animal power, including examples and case studies from Africa, Asia and Latin America. Subjects covered include animal welfare and keeping animals healthy, as well as techniques for conservation agriculture.

Project Ref: **LPP09** :

Topic: **2. Better Lives for Livestock Keepers: Improved Livestock & Fodder**

Lead Organisation: **Kenya Network for Draught Animal Technology, Kenya**

Source: **Livestock Production Programme**

Document Contents:

[Description](#), [Validation](#), [Current Situation](#), [Current Promotion](#), [Impacts On Poverty](#), [Environmental Impact](#), [Annex 1](#), [Annex 2](#),

Description

LPP09

Research into Use

NR International
Park House
Bradbourne Lane
Aylesford
Kent
ME20 6SN
UK

Geographical regions included:

[Eastern Africa, Southern Africa,](#)

Target Audiences for this content:

[Livestock farmers,](#)

A. Description of the research outputs(s)

1. *Working title of output or cluster of outputs.*

In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

The project for which the outputs are being described was referred to as:

A computer-based Tool-box for promoting and supporting draught animal power

Working title of the proposed project is:

Consolidated end-user toolkits for promoting and supporting access and efficient exploitation of agricultural power for farming, processing and transport operations.

2. *Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.*

RNRRS: NRIL: Livestock Production Programme (LPP) *Attn Wyn Richards, Andy Frost.*

Other sources of funding:

- No highly significant ones. Many provided user-trial feedback that called for time sacrifice.

3. *Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.*

The project R number was ZC0204

Institutional Partners

Animal Traction Network for Eastern and Southern Africa

Contact Person: Prof. Timothy Simalenaga

Currently: Agricultural Research Council of South Africa

Private Bab X519, Silverton, 0127. South Africa

Tel: 012-842 4058

Centre for Tropical Veterinary Medicine

Contact Person: Dr R. Anne Pearson

Currently: Royal (Dick) School of Veterinary Studies

University of Edinburgh

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4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? (**max. 400 words**). This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address. Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.

1. *Tool kit - Computer based information resource*

A computer based (CD-ROM) **toolkit** was produced, assembling LPP sponsored, **actionable research outcomes** and others' research and experience reports. These included KENDAT recommended practices and recorded as well as grey literature or **end-user experiences** from the rest of Africa, with examples and cases from Asia and Latin America. The toolkit was a consolidation and storage of actual as well as **recommended practices for animal power** with comprehensive information that also captured animal welfare and other state of the art in **animal traction** applications such as **work animal nutrition** and **conservation agriculture**.

2. *Training and education materials*

The toolkit included numerous **best-practice** experiences and examples in a comprehensive **IT for Farm Power** package. It was an animal power venture and user-support resource, complete with downloadable promotional and training materials in form of handouts for **training of trainers** as much as animal power users. Aspects of **gender issues of animal traction** are covered in the toolkit.

3. *Linkages with other sources of information*

The toolkit received much commentary and email discussions towards perfection from animal power experts and enthusiasts from around the world and particularly from the Eastern and Southern Africa **animal traction networks**. LPP uploaded the toolkit on their website with the appropriate linkages to other sources of **animal power information** around the world.

5. What is the type of output(s) being described here?

Please tick one or more of the following options.

Product	Technology	Service	Process or Methodology	Policy	Other Please specify
	X	X			

6. What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment

The main commodity upon which the output (s) focused was **Intermediate Technology for Farm Power and Transportation Support**. CD ROM toolkits can be applied to virtually all other aspects of agricultural development and advancement.

7. What production system(s) does/could the output(s) focus upon?

Please tick one or more of the following options. Leave blank if not applicable

Semi-Arid	High potential	Hillsides	Forest-Agriculture	Peri-urban	Land water	Tropical moist forest	Cross-cutting
							X

8. What farming system(s) does the output(s) focus upon?

Please tick one or more of the following options (see Annex B for definitions).

Leave blank if not applicable

Smallholder rainfed humid	Irrigated	Wetland rice based	Smallholder rainfed highland	Smallholder rainfed dry/cold	Dualistic	Coastal artisanal fishing
X	X	X	X	X		

9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (max. 300 words).

ICT based information and training resources can be clustered with virtually all other outputs dealing with farm power sources of intermediate nature, efficient information dissemination and even interactive end-user support to rural development. Some of the ways in which this output and its related projections can have added value includes:

- Hard copies of the kit for those without access to, or comfort with computers.
- Insertion of Video clips for animal power applications, including commentary and opinions by animal power farmers and transport providers.
- Additional Back-up fliers and handout materials than available currently, especially in animal welfare and conservation agriculture which have seen tremendous development needs in the recent past.
- Translating into more languages.
- Add the cases of more work animals like buffalo and llama etc. to make the toolbox more international and worldly.
- Insertion of location specific case studies on experiences with animal power applications including animal powered business management, comparison with manual and tractor operations, operational gross margins, traditional good habits and practices of animal care and manufacture of animal handling equipment including cow-hide “ropes” for harnessing etc.
- Add more materials for other farming systems like on wetlands with clay soils and other peculiarities.
- Add materials for post – harvest operations including food processing transport and marketing business.
- Linking the toolkit even more widely - in the information super highway.
- Linking the toolkit with learning institutions – e.g. universities and colleges and ICT libraries.

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

KENDAT outputs on this project could be clustered with projects with the following R numbers:

R6153, R5732, R6619, R6610, R7637, R6970, R7376, ZC0204, R6621, Livestock in challenging environments: Coping strategies for progress, R7425, Tropical Forages CD ROM.

Validation

B. Validation of the research output(s)

10. How were the output(s) validated and who validated them?

*Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the “who” component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation (**max. 500 words**).*

The toolkit was validated by animal power promoters, trainers and some users after commentary and email discussions towards perfection from animal power experts and enthusiasts from around the world.

The Kenya Network for Dissemination of Agricultural Technologies (KENDAT) has used the toolkit for regular animal power training courses in Conservation Agriculture for Sustainable Agriculture and Rural Development (CA-SARD: GCP/RAF/290/GER, FAO, German Trust Fund Project), Farmer Field School Facilitators and District Coordinators as well as in Animal Welfare training: The *Heshimu Punda* (Respect the Donkey) Programme, Community Groups and Primary School Programmes.

The Toolkit has also been used under the FARM Africa supported Conservation Agriculture equipment and Artisanry Training project by KENDAT in Kenya and CAPA in Tanzania.

Other users have been market transporters under the International Forum for Rural Transport and Development (IFRTD) Poverty Watch Programme who used the KENDAT Community Parliament platform for advancing the inclusion of transport issues in poverty discussions under the topic of “Intensified Use of Intermediate Means of Transport”.

Overall; topics covered included work animal selection and utilization including equipment and accessories (harnessing, panniers etc.), equipment sizing and adjustments (carting and tillage equipment, loading) and welfare (nutrition, watering, husbandry etc.) Download handouts for users including learner’s fliers were used in the training courses. Equipment hirers and village artisans under CA-SARD training back-up services (by KENDAT) learnt about equipment and cart loading, adjustments and limits, among other issues of business

venture.

The training materials were accepted as very useful to the various trainers who had previously suffered from the lack of pertinent coherent information in topics of training among end-user practitioners. Handouts and fliers received in the training of trainers courses proved useful as re-circulated training materials for subsequent training at Farmer Field Schools, Donkey User Groups and other sittings. Some 400 formal and informal trainees (in about equal ratios of men and women) in field level remote areas (across some 50 FFS of the CA-SARD Project) must have benefited from the Toolkit.

No formal evaluation of the impact on agricultural “behaviours and practices” have been observed. Advances in CA would be difficult to link directly to the use for the toolkit, which is a means to a training end.

11. *Where and when* have the output(s) been validated?

Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above (max 300 words).

The toolkit was validated by animal power promoters, trainers and some users in Europe, Asia, Latin America and the East and Southern Africa region in early 2005. The Kenya Network for Dissemination of Agricultural Technologies (KENDAT) has used the toolkit for regular animal power training courses in 2005-2006 including the CA-SARD: GCP/RAF/290/GER, FAO, German Trust Fund Project which was conducted 2004-2006 in Kenya and Tanzania.

The *Heshimu Punda* (Respect the Donkey) Programme, Community Groups and Primary School Programmes were carried out in two Districts in Kenya: Kiambu and Kirinyaga.

Copies of the Toolkit were circulated as learning and training tools across member countries of the Animal Traction Network for Eastern and Southern Africa (ATNESA), namely: South Africa, Namibia, Malawi, Zambia, Tanzania, Uganda and Ethiopia.

The FARM Africa Project was conducted by KENDAT in Kenya's Machakos District and by SCAPA in Arumeru District in Tanzania (2004-2006). The Livestock Production Programme of NRIL uploaded the toolkit on their website (December 2005) with the appropriate linkages to other sources of animal power information around the world.

Farming systems involved were the Smallholder rain-fed humid and Smallholder highland farming systems, some with semi-arid conditions.

Current Situation

C. *Current situation*

12. How and by whom are the outputs currently being used? Please give a brief description (max. 250 words).

Outputs are currently being used by animal power trainers in NGOs and government extension services in the Eastern and Southern Africa region. Toolkit copies were particularly circulated to animal power activists in the region through mailing and distribution at Poverty Watch meetings, regional NRIL meetings in the East Africa region as organised by NIDA and other partners.

Other circulation opportunities were during the Conservation Agriculture meetings such as the 3rd World Congress on Conservation Agriculture held in Nairobi in September 2005. Some 54 countries with an attendance of 320 delegates were represented. Not all the delegated received copies of the Toolkit as only those known to have direct links to DAP promotional activities were included.

Others, worldwide are reaching the toolkit through the LPP/NRIL and by contacts made through the Animal Traction Network for Eastern and Southern Africa (ATNESA) and associated websites such as KENDAT and Africa Conservation Tillage Network.

13. Where are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used (max. 250 words).

As stated above (12) outputs are currently being used in various parts of the world and specifically in the Eastern and Southern Africa countries. At the 3rd World Congress some DAP activists from West Africa, Asia and Latin America were provided with copies of the Toolkit. Those in regular training for DAP are most likely using the same on a regular basis. No formal survey of users has been made but word-of-mouth and/or occasional email feedback would indicate that the toolkit has been found to be most valuable by those who have used and continue to use it. Tanzania users will eventually need Swahili version, especially for user handouts and fliers.

14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading (max 250 words).

It is hard to report the scale of current use of the Toolkit. Its use was established immediately draft copies were sent around the world for comments and suggestions on errors, omissions or additional material. KENDAT has continually made copies for visitors to her headquarters in Nairobi Kenya. Copies have also been made and carried to colleagues met at various meetings attended nationally, regionally and internationally.

It is likely that the free-to-copy CD-ROM versions availed to KENDAT, DAP collaborators and partners are copied for other colleagues and various field staff of collaborating organisations.

15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? (max 350 words).

There is increasing discussion, programmes and activities in the intensified fight against poverty.

In her Strategy for Revitalising Agriculture (SRA – 2004-2014), an off-shoot of the Economic Recovery Strategy for Wealth and Employment Creation (ERS – 2003-2007) of the current administration of the Kenya Government states under:

- Output 3.3 (pp92): Industry-Driven Agricultural Training Strengthened: Activity Item 3.3.2 is: Develop and introduce modules for demand driven courses for farmers and other stakeholders.
- Output 3.9 (pp99): Mechanization and Labour Saving Technologies Promoted: Activity Item 3.9.3 is: Promote Use of draught power where appropriate for land preparation and transport.
- Output 5.2 (pp109): Development Planning Capacity Improved: Activity 5.1.4 is Institutionalise participatory area planning tools and skills at the local level.
- Output 5.4 (pp111): Gender issues mainstreamed in Agricultural Development Plans: Activity Item 5.4.3 is: Engender new technology development and review old technologies to make them gender appropriate.
- Output 5.5 (pp111): Accelerate Programmes for Youth Employment in Agriculture: Activity Item 5.5.4 is: Promote and support private sector to develop rural agro-industries and other enterprises for alternative employment to the youth.

A key growing platform of the SRA (see bullet points immediately above) is the expressed need for Kenya Government to engage end-users and farmers more directly in processes of gaining “voice and choice”, hence determining their own challenges, if not development pace.

A key existing platform for enhanced use of the Toolkit is increased access and the extent to which use of computers, internet services etc. are quickly becoming common place. Rural persons are increasingly able to access Internet Cafés and Bureaus to use computers that were purely out of reach previously.

Key facts of success:

- **Empowerment of extension agents with comprehensive training tools:** User-friendly and comprehensive best-practice, farmer training materials are mandatory if the advances expected from the SRA activities are to be realised and even generally.
- **Research findings and other information meant for farmers needs to be re-packaged:** in forms that are readily accessible to them, in their own vicinity and localities. ICT means for farmer supporters, if not the farmers themselves provides unique and efficient means of packaging and communication, even for the poor.
- **Farmers need to engage from a more winning position with the private sector:** Informed farmers will make more direct demands on agro-industry and input and information suppliers.
- **Enhanced ICT assistance and training:** At the Budget Speech of the Kenya Parliament in June 2006, Kenya Government zero-rated (removed duty and import taxes) the price of computers and associated ICT gadgetry. This means that more people will now afford computers making them able to access information as held in our CD-ROM Toolkit.

Current Promotion

D. Current promotion/uptake pathways

16. **Where** is promotion currently taking place? Please indicate for each country specified detail what promotion is taking place, by whom and indicate the scale of current promotion (**max 200 words**).

There have been no specific and determined efforts towards promotion of the Toolkit. KENDAT and LPP have taken every opportunity to get possible users to know of its existence and how they could use it including making copies available to such individuals and institutions.

17. **What are the current barriers preventing or slowing the adoption of the output(s)?** Cover here institutional issues, those relating to policy, marketing, infrastructure, social exclusion etc. (**max 200 words**).

- Limited awareness and limited access to the Toolkit as no aggressive efforts have been put in place to promote the same among possible users.
- Limited computer literacy as much as poor access to computers and internet services by possible users in remote locations of the world.
- Lack of a specialised print version as would be a special production for those without access to computers and/or the internet.
- Limitation of language as the Toolkit is available only in English. A Kiswahili version would be most handy for the East and Central Africa region.

18. **What changes are needed to remove/reduce these barriers to adoption?** This section could be used to identify perceived capacity related issues (**max 200 words**).

- Promote the Toolkit and other such packages in a pro-active manner. Resources and innovative partnerships are a pre-requisite.
- Rural development structures and plans need to fast-track support services so that farmers and other rural business persons and practitioners can be aided to access information nearer them, while accommodating their literacy and any access issues. Special print and local language versions would help the situation.
- Farmers would need extension agents answerable to them and available to propagate information like contained in the Toolkit, according to their expressed needs such as translation, practical demonstration etc. etc. We cannot afford to wait till farmers are learned and computer literate, to explore CD-ROMs. There are many able, trained and probably jobless youth available to assist farmers in such venture and in an everyday sense.
- Special summarised audio versions of the Toolkit, which farmers can listen to as they work on their farms, backed by video-clips where applicable can be solutions to making the Toolkit accessible to the majority of the poor.
- Excerpts of the DAP Toolkit can be summarised in the highly informative *Draught Animal News* newsletter which has circulated in the region from Edinburgh University for the last 7 years or more.

19. **What lessons have you learnt about the best ways to get the outputs used by the largest number of poor people?** (**max 300 words**).

- Poor people need persistence and patient effort and to be approached in ways that build on what they have (material, culture, knowledge, time and experience).
- Poor people are often illiterate and need sifted information, best provided by a combination of audio-visual and practical demonstration exercises.

Impacts On Poverty

E. *Impacts on poverty to date*

20. *Where have impact studies on poverty in relation to this output or cluster of outputs taken place? This should include any formal poverty impact studies (and it is appreciated that these will not be commonplace) and any less formal studies including any poverty mapping-type or monitoring work which allow for some analysis on impact on poverty to be made. Details of any cost-benefit analyses may also be detailed at this point. Please list studies here.*

No poverty impact assessment studies have been conducted. Effect of a toolkit on poverty would be difficult to quantify. A toolkit is a means to an end and it would be difficult to associate reduced poverty directly to its use in a singular sense. Any such undertaking would also necessarily be a long-term affair.

21. *Based on the evidence in the studies listed above, for each country detail how the poor have benefited from the application and/or adoption of the output(s) (max. 500 words):*

- *What positive impacts on livelihoods have been recorded and over what time period have these impacts been observed? These impacts should be recorded against the capital assets (human, social, natural, physical and, financial) of the livelihoods framework;*
- *For whom i.e. which type of person (gender, poverty group (see glossary for definitions) has there been a positive impact;*
- *Indicate the number of people who have realised a positive impact on their livelihood;*
- *Using whatever appropriate indicator was used detail what was the average percentage increase recorded*

As mentioned in 20, no studies of impact of the Toolkit have been undertaken.

Environmental Impact

H. *Environmental impact*

24. *What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? (max 300 words)*

This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

The Draught Animal Power (DAP) Toolbox is a trainer and users tool to help perfect the area of a viable, dependable and efficient, renewable energy source for farming communities in vulnerable, yet intensely used soils. DAP passes the test and qualifies for categorisation as a “Green Energy” and a “Smokeless Technology”. Draught animals themselves depend on renewable energy.

Draught animals produce manure that can add to soil fertility and productivity. The Toolkit touches on use of DAP and recently introduced equipment for Conservation Agriculture which refers to farming with minimal soils disturbance, permanent soils cover and appropriate crop mixes in rotations that increase biomass and *in situ* soil life (fauna) enhancement and biodiversity.

Animal power is promoted which enhances the much needed mixed farming systems that raise the likeliness of carbon sequestration, hence the direct reduction of green house gases. DAP is attractive for agricultural and rural development as it meets the criteria for sustainable development, hence genuine contribution to advancement of livelihoods. CA which is animal powered for the majority smallholder farmers improves organic matter, improves soil structure and improves water infiltration and holding capacity. CA reduces labour input and promotes leguminous cover crops for smallholder farming, giving farmers improved yields and nutrition. Better-fed farmers using less labour have more time to concentrate on environment protection training and practice.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)? (max 100 words)

There are no known obvious or adverse environmental impacts related to the DAP Toolkit which is a CD-ROM based computer, interactive learning kit.

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? (max 200 words)

Like mentioned on 24. the DAP Toolkit is geared to help farmers turn to DAP from drudgerous manual operations. DAP is also a solution to the temptations by leaders and farmers themselves to “modernize” which often means venturing into carbon dioxide emitting motorised operations, built around unsustainable tractorization schemes which help destroy the environment. The more carbon dioxide is emitted the more planet earth and its inhabitants experience floods and droughts, brought about by global warming trends. Animal power and the CA concepts, equipment, practices and applications described in the Toolkit reduces chances of natural disaster by increasing soil carbon in the many ways mentioned in 24., thus creating resilience. CA is a careful mind engaging journey back to natural forest environment where nature is in a Carbon Cycle and other resilience generating balance.

Annex 1

Annex 1**List of Key Abbreviations**

ATIRI	Agricultural Technology and Information Response Initiative
BIAMF	Busia Integrated Agricultural Marketing Forum
CDA	Community Development Assistants
CDF	Constituency Development Fund
CFA	Community Forest Association
CGIAR	Consultative Group for International Agricultural Research
CIGS	Common Interest Groups
CP	Community Parliament
CPHP	Crop Post Harvest Programme
DAP	Draught Animal Power
DGAK	Dairy Goats Association of Kenya
EAGA	East African Growers Association
FD	Forest Department
FFS	Farmer Field School
GBM	Green Belt Movement
GOK	Government of Kenya
HCDA	Horticultural Crops Development Authority
ICIPE	International Centre of Insect Physiology and Ecology
IFRTD	International Forum for Rural Transport and Development
ILRI	International Livestock Research Institute
ITDG	Intermediate Technology Development Group
IUDD	Infrastructure and Urban Development Department
ILO/ASIST	International Labour Organization/Advisory Support Information Services and Training
ISAAA	International Service for the Acquisition of Agri-Biotech Applications
KACE	Kenya Agricultural Commodity Exchange
KARI	Kenya Agricultural Research Institute
KDUC	Kalama Donkey Users Clubs
KEFRI	Kenya Forestry Research Institute
KENDAT	Kenya Network for Dissemination of Agricultural Technologies
KHDP	Kenya Horticultural Development Programme
KHE	Kenya Horticultural Exporters
LAMP	Lari Agricultural Marketing Programme
LATF	Local Authority Transfer Fund
MDG	Millennium Development Goal
MTMO	Mwea Transport and Marketing Organization
NALEP	National Agriculture and Livestock Extension Programme
NGO	Non-governmental Organization
PA	Practical Action
PEN	Poverty Eradication Network
PIM	Partnership Innovation Model

RNRRS	Renewable Natural Resources Research Strategy
UNIDO	United Nations Industrial Development Organization
CIAT	International Centre for Tropical Agriculture
IITA	International Institute of Tropical Agriculture
AU	African Union
NEPAD	New Partnership for Africa's Development
CA	Conservation Agriculture
SARD	Sustainable Agriculture and Rural Development

Annex 2

Related documents

Click below to view the related information

[PF_LPP09_Annex2.pdf](#)
