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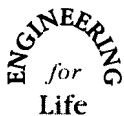
## **Draught Power Performance and Production Management**

**(Optimising DAP for Cropping)**

**Project R7352**

**Best Practice Guidelines  
Views by Focus Groups in Chivi and Masvingo**

**IDG/01/15**



# Draught Power Performance and Production Management (Optimising DAP for Cropping)

A synthesis of views expressed by farmers on Best Practice Guidelines

## Authors

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## Views expressed by farmers on Best Practice Guidelines (BPGs) through individual interviews and focus groups discussions in Chivi and Masvingo

**Introduction and purpose:** The purpose of the exercise was to obtain views from members of the community with regard to developing Best Practice Guidelines on draught animal power (DAP) utilisation. The exercise was conducted in six project areas of Chivi and Masvingo districts namely, Mutangi, Nyimai, Gari, Chedenje Mushagashe and Mushandike from 30 April to 10 May 2001.

### Objectives

The main objective was to discuss and obtain farmers' views on best practice guidelines to enable the production of a document that will help farmers solve problems related to the use of DAP technology. Specific objectives were:

- ◆ To explain to farmers the intention of the project to produce literature/documents that guide them through technical problems they may be facing.  
To find out from farmers what kind of guidance would be helpful to them on topics such as tools and implements.  
To get farmers to indicate what kind of document and format would be the most helpful and usable.  
To find out if farmers refer to any documentation and find out the reasons why.

### Methodology

Focus group meetings were held at three sites namely Mushandike Irrigation Scheme, Mutangi Dam and Nyimai Dam. Information was also gathered at Chedenje Dam (resettlement area), where three farmers were interviewed together and individual interviews were held with participating farmers from Gari and Mushagashe as shown in Table 1. Farmers, where possible, were expected to bring some copies of extension literature or documents to which they refer for their information as examples. Farmers were shown examples of already available documents (e.g. leaflets, factsheets, manuals, instructions, posters etc from local sources such as Agritex, Care, Farnesa, ZFU etc.)

**Table 1: Farmer feedback meetings and individual interviews**

Place	Date	Attendance
Mushandike (Irrigation scheme)	30.04.01	13 men, 5 women
Mutangi Dam (CA)	02.05.01	1 man, 19 women
Nyimai Dam (CA)	03.05.01	10 men, 9 women
Gari Dam (CA)	08.05.01	Individual interviews (Mrs Mhaka, Mr Makuve, Mr Tazvigwira)
Chedenje Dam (RA)	09.05.01	3 farmers interviewed together (Mr T Zhira, Mr Maziva, Mr Charuma)
Mushagashe (SSCA)	10.05.01	Individual interviews (Mrs Machiri, Mr Nehowa)

### Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that guide farmers through technical problems they may be facing when using draught animals and implements.

### The kind of guidance that would be helpful to farmers on topics such as tools and implements

Farmers discussed technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document:

- ◆ Functions and importance of different parts of their animal-drawn implements.
- ◆ Functions of different parts on the plough.
- ◆ Maintenance and storage of implements.
- ◆ Setting and adjustments on the plough (depth, width).
- ◆ Harnessing specifications (especially yoke shaft dimensions and positioning of skeis on the yokes).
- ◆ Importance of the drawbar hitch assembly.
- ◆ Reasons why some plough parts should not be removed.  
Alternative wider strops to the standard one for cattle that may have difficulties with breathing.
- ◆ Timing of field operations.  
Specifications for chain lengths (front and rear chains).

- ◆ How the front chain is linked to the rear chain when using two spans during ploughing for effective use of available draught. How to avoid front animals pulling rear animals.
- ◆ Donkey harnessing especially when mixed spans (donkeys and cattle) are working together
- ◆ Proper setting and adjustment procedures on the plough and cultivator.
- ◆ Yoke specifications for different operations (ploughing, weeding, carting).
- ◆ Harnessing donkeys correctly.
- ◆ Describe operation of implements.
- ◆ Replacement of parts (rates of wear of soil engaging parts such as share and landside).

#### **Document and format that would be the most helpful and usable**

The following points were suggested by farmers.

- ◆ Many illustrations that are easy to see and follow.
- ◆ Large print for clarity.
- ◆ Guidelines to be in local languages (vernacular).
- ◆ All topics to be in one booklet with specific chapters.
- ◆ Document to be similar in size to the ZFU/Agritex-A guide for farmers on good land husbandry booklets (i.e. A5)

#### **Documentation that farmers refer to**

- One farmer from Mushandike confirmed that he had literature on different topics on farming practices but not necessarily on DAP.
- BPGs to be produced would act as a reminder for farmers.

#### **Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced:

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

#### **Other comments made by farmers**

- Farmers (all) had received training on tillage implements from Agritex extension staff based at Mushandike.
- This project was reinforcing skills acquired from previous training.
- Researchers were requested to involve more farmers by holding demonstrations or by inviting a group of farmers during visits to selected farmers.
- Farmers requested the project to produce a magazine/newsletter with information on findings from the other project sites.
- Farmers could also demonstrate what they know.

#### **Conclusions**

Main conclusions drawn are:

- Farmers have a number of technical problems with the use of DAP technology that are inter-linked.
- Best Practice Guidelines need to be designed to provide information to assist in addressing the problems that are summarised as follows.
  - Lack of knowledge in the importance and functions of the different parts on implements.
  - Farmers require knowledge and skills in the operation, maintenance and repair of implements.
  - Lack of knowledge in setting and adjusting implements is common even though some farmers have received Master Farmer training.
  - Lack of knowledge in harnessing systems -
    - Specifications for donkey harnessing.
    - Specifications for yokes for common field and transport operations.
    - Specifications for traction and hitch assemblies for cattle.
- Farmers require guidelines that:
  - Are written in vernacular;
  - Are clear, easy to read and follow;
  - Are well illustrated;
  - Are contained in a handy, durable document.

- In addition to having documented guidelines farmers need practical training in -
  - Donkey harness making;
  - Yoke making;
  - Correct use of donkey harnesses;
  - How to harness donkeys that work in a team with cattle;
  - Operation, repair and maintenance of implements;
  - Implement setting and adjustment techniques.

### **Acknowledgements**

The work being reported is a collaborative effort of R & D agencies in Zimbabwe and UK and farmers in Masvingo and Chivi districts. We would like to acknowledge the following people for their input:

<b>Chivi and Masvingo farmers:</b>	Households from Gari, Nyimai, Mutangi, Chedenje Mushagashe, and Mushandike
<b>CARE:</b>	V Zvarevashe, Z Mutimusekwa, J Ruchaka
<b>UZ:</b>	Aidan Senzanje, Norman Mhazo
<b>Agritex-Masvingo Province:</b>	N Pambirei, O Chaibva, J Mazodze, Mashingaidze, Madzore, LJ Mapfumo, Mudzingwa, O Moyo

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Mushandike Irrigation Scheme- 30 April 2001

Composition of farmers: 18 farmers (13 men, 5 women)

Facilitators: Tiri Koza, Bertha Mudamburi and LJ Mapfumo

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**

Farmers discussed technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document.

- ◆ Functions and importance of different parts.
- ◆ Importance of the drawbar hitch assembly.
- ◆ Reasons why some plough parts should not be removed.
- ◆ Replacement of parts (rates of wear of soil engaging parts).
- ◆ Alternative wider strops to the standard one for cattle that may have difficulties with breathing.

**Document and format that would be the most helpful and usable**

The following point was suggested by farmers:

- ◆ Easy to see and follow.

**Documentation that farmers refer to**

- Farmers did not bring any documents to the meeting but promised to bring some of the documents when the project team visits again.
- Farmers (at least one of them) confirmed that they had literature on farming practices but not necessarily on DAP.
- BPGs to be produced would act as a reminder for farmers.

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

**Other comments made by farmers**

- Farmers (all) had received training on tillage implements from Agritex extension staff based at Mushandike.
- This project was reinforcing skills acquired from previous training.
- Researchers were requested to involve more farmers by holding demonstrations or by inviting a group of farmers during visits to selected farmers.
- Farmers requested the project to produce a magazine/newsletter with information on findings from the other project sites.
- Farmers could also demonstrate what they know.

**Mutangi Dam: - 02 May 2001**

**Composition of farmers: 20 farmers (1 man, 19 women)**

**Facilitators: Tiri Koza, Bertha Mudamburi and Madzore**

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**

Farmers discussed technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document.

- ◆ Functions of different parts.
- ◆ Replacement of parts (rates of wear of soil engaging parts).
- ◆ Maintenance and storage of implements.
- ◆ Setting and adjustments on the plough.
- ◆ Harnessing specifications (especially yoke shaft dimensions and positioning of skeis on the yokes).

**Document and format that would be the most helpful and usable**

The following points were suggested by farmers:

- ◆ More illustrations that are easy to see and follow;
- ◆ Large print;
- ◆ Guidelines to be in local language.

**Documentation that farmers refer to**

Nil

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

Nyimai Dam - 03 May 2000

Composition of farmers: 21 people (11 men, 10 women)

*Facilitators: Tiri Koza and Bertha Mudamburi*

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**  
Farmers discussed technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document.

- ◆ Timing of field operations.
- ◆ Replacement of parts (rates of wear of soil engaging parts).
- ◆ Maintenance and storage of implements.
- ◆ Setting and adjustments on the plough.
- ◆ Harnessing specifications (especially yoke shaft dimensions and positioning of skeis on the yokes).

**Document and format that would be the most helpful and usable**

The following points were suggested by farmers:

- ◆ All topics to be in one booklet with specific chapters;
- ◆ Booklet to be similar in size to the ZFU/Agritex-A guide for farmers on good land husbandry booklets;
- ◆ More illustrations that are easy to see and follow;
- ◆ Large print.

**Documentation that farmers refer to**

Nil

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

**Other comments made by farmers**

- Ploughing tests need to be conducted early when soils are moist (taking note of varying soil types).
- Farmers requested exchange visits to be arranged to Matabeleland to learn how farmers harness their donkeys.
- Spanner supplied with implements is not suitable, as it is not strong and not durable. Farmers resort to using adjustable spanners that damage bolts and nuts. Farmers recommended a good spanner e.g. 17mm-19mm combination ring spanner made from strong material to be provided with the implements irrespective of the possible higher cost.
- One farmer ( Mr Mafa) made an observation on the drawbar hitch assembly. He said that the front end of the drawlink bends easily, suggesting that it is now being made from weak material. The durability of the adjustable bar holder was questioned due to the set-screw that easily gets cross-threaded (it gets worn out fast) or it just breaks rendering the plough to be unadjustable. This has been discovered as one of the sources of the problem of removing the drawbar hitch assembly.



**Gari Dam: - 08 May 2001**

**Composition of farmers: 3 farmers interviewed individually**

*Facilitator: Tiri Koza*

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**

Farmers were asked to indicate technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document:

Mrs Mhaka

- ◆ Maintenance and storage of implements.
- ◆ Setting and adjustments on the plough (depth, width).

Mr Tazvigwira

- ◆ Functions of different parts.
- ◆ Maintenance of ploughs.
- ◆ Setting and adjustments on the plough (depth, width).

Mrs Makuve

- ◆ Setting and adjustments on the plough (depth, width).

**Document and format that would be the most helpful and usable**

The following point was suggested by farmers:

- ◆ Document to be written in Shona.

**Documentation that farmers refer to**

Nil

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

**Chedenje Dam:** - 09 May 2001

**Composition of farmers:** 3 participating farmers (Messrs Zhira, Maziva, Charuma) interviewed together with Mr Zhira's two eldest sons.

*Facilitators: Tiri Koza, Mudzingwa*

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**

Farmers were asked to indicate technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document.

- ◆ Functions of different parts e.g. frog.
- ◆ Maintenance of implements.
- ◆ Proper setting and adjustment procedures on the plough and cultivator.
- ◆ Harnessing specifications (especially yoke shaft dimensions and positioning of skeis on the yokes).
- ◆ Yoke specifications for different operations (ploughing, cultivator, carting).
- ◆ Harnessing donkeys correctly.

**Document and format that would be the most helpful and usable**

The following points were suggested by farmers:

- ◆ Illustrations that are easy to see and follow;
- ◆ Document to be written in local language.

**Documentation that farmers refer to**

Nil

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

Farmers were interested in the contents of the booklets as they had no knowledge of the existence of this information.

**Other comments made by farmers**

- One of the farmers (Mr Maziva) explained how he determines the length of a ploughing and cultivator yoke. He demonstrated by counting 9 feet (pacing heel-to toe 9 times). This converts to approximately 30 cm x 9 = 270 cm.
- Mr Zhira's son said he was able to tell if a new plough has good characteristics for it to penetrate and plough properly by visual assessment. It was deduced that he was referring to plough beam clearance.

Mushagashe West: - 10 May 2001

**Composition of farmers:** Two farmers were interviewed individually

*Facilitator: Tiri Koza*

**Explanation to farmers on the intention of the project to produce literature/documents that guide them through technical problems they may be facing**

A handout giving a brief background to the project and the purpose of the meeting was distributed to farmers present at the meeting. Explanation was given to farmers on the intention of the project to produce a document with information that would guide farmers through technical problems they may be facing when using draught animals and implements.

**The kind of guidance that would be helpful to farmers on topics such as tools and implements**

Farmers were asked to indicate technical problems that they frequently encounter during ploughing and mechanical weeding operations. The following topics were identified by farmers for inclusion in the document:

Mrs Machiri

- ◆ Functions of different parts.
- ◆ Describe operation of implements.
- ◆ Replacement of parts (rates of wear of soil engaging parts such as share and landside).
- ◆ Maintenance and storage of implements.
- ◆ Correct setting and adjustments on the plough.

Mr Nehowa

- ◆ Functions of different parts on the plough.
- ◆ Setting and adjustments on the plough.

**Document and format that would be the most helpful and usable**

The following points were suggested by farmers:

- ◆ Diagrams that are easy to see and follow;
- ◆ Document to be written in Shona.

**Documentation that farmers refer to**

Mrs Machiri said she only had information from training sessions written in her notebooks.

**Available documents that were shown to farmers as examples**

The following booklets were shown to farmers by way of giving examples of similar work already produced.

ZFU/Agritex-A guide for farmers on good land husbandry: Tillage Implements

ZFU/Agritex-A guide for farmers on good land husbandry: Draught Animal Harnessing

**Other comments made by farmers**

'Implement spares are very expensive these days', said Mr Nehowa when asked why he had not bought a new regulator bar holder for his plough.

**BPGs Handout for farmers (Shona version)**

Project title: Draught Power Performance and Management (Optimising Draught Animal Power for Cropping)

**Kugadzirwa Kwechinyorwa Chinotsanangura Mabatiro Anokurudzirwa Pakurima Nemombe Kana Madhongwi.**

**Mavambo**

Project iyi inowana rubatsiro kubva kuUK, Department for International Development (DFID). Basa reproject riri kubatwa neAgritex-Institute of Agricultural Engineering vachibatsirana neUniversity of Zimbabwe (Department of Soil Science and Agricultural Engineering) neCARE.

Uno wava mwaka wechipiri kubva project yatanga munaSeptember 1999. Kubva pakutanga kwe project iyi, varikuita basa rekuongorora (vereseearch) vari kushanda pamwe nevarimi. Basa rakaitwa kusvika parizvino rinosanganisa zvinotevera:

- a) Misangano yekukurukura nevarimi kuti tiongorore mabasa ese ekurima nekuona kuti ndeapi matambudziko anowanikwa mukurima nemombe nemadhongi.
- b) Zviedzwa zvekurima pakutanga kwemwaka nekuzoundukura.
- c) Misangano yekuti tiongorore zvakabuda muzviedzwa zvemwaka wekutanga.
- d) Kuoongorora magariro evarimi, zvibatiso, zvipfuwo, kukura kweminda negoho rinowanikwa nemhuri dzirikubata pamwe muzviedwa nevereseearch.
- e) Workshop yakaitwa muna September 2000.  
Zviedzwa izvi zvirikuitwa pamwe nevarimi vekumaDistrict ekwa Chivi neMasvingo munzvimbo dzeGari, Mutangi, Nyimai, Chedenje, Mushandike neMushagashe.

**Chinangwa cheProject**

Chinangwa cheProject ndechekushanda pamwe nevarimi mukuongororwa kwezviedzwa zvekurima nemombe kana madhongwi kuti varimi vazokwanisa kurima nenzira dzinowanisa goho rakawanda zvichizopa pundutso mukurima kwavo.

**Kugadzirwa kwechinyorwa chinotsanangura mabatiro anokurudzirwa pakurima nemombe kana madhongwi.**

**Zvinangwa zveumusangano**

1. Kuzivisa varimi kuti project inetarisiro yekugadzira chinyorwa chino tsanangura kugadziriswa kwezvinonetsa pakurima nemombe kana madhongwi pamwe nezvibatiso zvacho (magejo).
2. Kuziva kuti ndezvipi zvinodiwa nevarimi kuti zviiswe muchinyorwa kuti chizovabatsira pakushandiswa kwezvibatiso zvekurimisa.
3. Varimi vachatsanangura kuti chinyorwa chavangada, vanoda kuti chinyorwe nenzira ipi kuti chizovabatsira.
4. Kuziva kuti varimi vane zvimwewo here zvinyorwa zvavanoshandisa, nezvikonzero zvavanozvishandisira.
  - ◆ Varimi vanokurudzirwa kuti vauye kumusangano nezvinyorwa zvavanazvo, uye zvavanoshandisa.
  - ◆ Varimi vacharatidzwa zvimwewo zvinyorwa (zvakaite sema-leaflets, factsheets, manuals, instructions, posters zvakanorwa nemasangano akaite seAgritex, Care, Farmesa, ZFU).
  - ◆ Zvimwe zvakanaka zvinowanikwa muzvinyorwa zvakasiyasyana zvinogona kutorwa kuti zviumbe chinyora chimwechete.

**BPGs Handout**

Project title: Draught Power Performance and Management (Optimising Draught Animal Power for Cropping)

**Development of Best Practice Guidelines****Introduction**

The project is funded by the UK Department for International Development (DFID). It is being implemented by Agritex-Institute of Agricultural Engineering and the University of Zimbabwe (Soil Science and Agricultural Engineering). This is the second cropping season since the project started in September 1999. Farmers have been involved in focus group discussions, spring and winter ploughing trials, trial evaluation discussions, cluster analysis and a workshop held in September 2000. On-farm trials have been established in six project areas namely, Gari, Mutangi, Nyimai, Chedenje Mushandike and Mushagashe in Chivi and Masvingo districts.

**Purpose of the project**

The purpose of the project is to increase productivity through participatory development of improved utilisation of draught animal power systems by smallholder farmers.

**Developing Best Practice Guidelines****Objectives of the meeting/discussions**

1. To explain to farmers the intention of the project to produce literature/documents that guide them through technical problems they may be facing.
  2. To find out from farmers what kind of guidance would be helpful to them on topics such as tools and implements.
  3. To get farmers to indicate what kind of document and format would be the most helpful and usable.
  4. To find out if farmers refer to any documentation and find out the reasons why.
- ◆ Farmers, where possible, will be expected to bring some copies of extension literature or documents to which they refer for their information as examples.
  - ◆ Farmers will be shown examples of already available documents (e.g. leaflets, factsheets, manuals, instructions, posters etc from local sources such as Agritex, Care, Farnesa, ZFU etc.).
  - ◆ Various examples of documents may have good characteristics that may be helpful if combined.