

RIU

Up-to-date manual of coffee pests and diseases

Validated RNRRS Output.

Coffee growers in East and Central Africa can now refer to an up-to-date manual to help identify and control insect pests and diseases. Coffee contributes significantly to national economies in the region and, directly and indirectly, provides a living for millions along the coffee growing, processing and marketing chain. Coffee wilt disease, coffee berry disease, coffee leaf rust, coffee stem borer and coffee berry borer are just a few of the problems that growers encounter. So, identifying pests and diseases correctly and knowing how to deal with them is crucial. This manual provides descriptions of pests and advice on how to control them. Coffee scientists in East Africa now use the manual and it's also available on the internet.

Project Ref: **CPP56:**

Topic: **7. Spreading the Word: Knowledge Management & Dissemination**

Lead Organisation: **CABI, UK**

Source: **Crop Protection Programme**

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Description

CPP56

Research into Use

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

Geographical regions included:

[Eastern Africa, Kenya, Uganda,](#)

Target Audiences for this content:

[Crop farmers,](#)

A. Description of the research output(s)

1. Working title of output or cluster of outputs.

Promotion of current knowledge on pests of coffee in East Africa

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

DFID Crop Protection Programme

3. Provide relevant R numbers

R8513 (ZA0726)

Institutional partners:

Project Leader: Dr Mike Rutherford
CABI
UK Centre, Egham,
Surrey, TW20 9TY
United Kingdom
Email: M.Rutherford@cabi.org

Dr Noah Phiri
CABI Africa
UN Avenue
ICRAF Complex
P O Box 633-00621
Nairobi
Kenya
E-mail N.Phiri@cabi.org

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.

Coffee production in East Africa is a major industry contributing to national economies, providing a major source of foreign exchange earnings, and as a cash crop, supporting, directly or indirectly, the livelihoods of millions involved in cultivation, processing and marketing. However, cultivation of coffee is constrained by a wide range of **pests** and **diseases**, including **coffee wilt disease (CWD)**, coffee berry disease (CBD), coffee leaf rust (CLR), coffee stem borer (CSB), and coffee berry borer (CBB).

The primary purpose of the project, which was carried out from 1st September 2005 to 31st January 2006, was to collate current knowledge on the major insect pests and diseases of coffee in East and Central Africa, and to utilise the knowledge to develop an up-to-date learning and advisory **manual** suitable for uptake and application by coffee stakeholders in the region. In addition, the purpose also included a review of data from field and screen house trials in Uganda to investigate aspects of CWD in relation to on-farm management of the disease.

The outputs are therefore as follows:

A list of the major insect pests and diseases was compiled based largely on the outputs of a regional coffee stakeholder priority setting workshop organised and run by the Coffee Research Network (CORNET), during which the major constraints to coffee production in the region were identified and prioritised nationally by participants.

A **comprehensive coffee manual** comprising a series of fact sheets, each referring to a specific limiting insect pest or disease was produced. The manual provides a description, which can be used for identifying the pest, and information on importance, occurrence, biology, ecology and management. All this information is supported by photographic depictions of the pests and/or the symptoms they cause.

The data analysis showed that the CWD pathogen, *Fusarium xylarioides* survives in soil and remains infective to susceptible coffee seedlings for up to eleven months, while it remains infective in stored coffee wood for up to four months. The analysis also confirmed that wounding of healthy coffee trees with a machete previously used on coffee trees affected by CWD is sufficient to cause infection by CWD.

Overall, the project resulted in the acquisition and collation of existing and new knowledge on insect pests and diseases as major constraints to coffee production. The information is packaged in a format suitable for immediate dissemination and uptake.

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		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 outputs focused on coffee. However, the approaches/methodologies used in producing the outputs could be used in other commodities. A review of the major production constraints could be used as the basis for producing a manual for commodities such as Cocoa, Macadamia nuts, etc.

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	X	X			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			

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**). 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.

Useful information for identification and management of major coffee insect pests and diseases was collated and published into a manual. However, it is important to put the information into practice if it is to be of any value. The following value adding activities/projects are therefore proposed:

1. Participatory training of extensionists, farmers, and researchers in the identification of the major insect pests and diseases of coffee using the comprehensive manual produced by this project. Extensionists could be trained first following a Training of Trainers approach, so that they in turn train farmers.
2. Implementation of the management practices, provided in the manual, for the major insect pests and diseases. This would follow the Farmer Field Schools approach so that farmers evaluate for themselves the management practices provided in the manual and compare them to their usual ways of managing pests.
3. Enhance dissemination and impact of the outputs (outlined in section 4 above) by utilising the ongoing prioritised activities of the ASARECA Coffee Research Network (CORNET) including:
 - a. Enhance institutional capacity and industry partnerships/linkages for enhanced Integrated Agriculture Research for Development (IAR4D).
 - b. Impact of policy on production, processing and value chain efficiency of coffee in the East and Central Africa (ECA) sub-region.

CABI Africa accommodates and backstops CORNET, which provides ongoing opportunities for dissemination and integration of the outputs into relevant programmes. The following objectives/projects should be clustered together:

1. Coffee in East Africa (R8513).
2. ICPM for smallholder coffee in Malawi (R8423, R8203).

3. Epidemiology of coffee wilt disease (R8188).

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 outputs were not validated because of the short time for the project (1st September 2005 to 31st January 2006). However, the information which was collated into the manual was generated from other DFID funded projects (R6782, R7942, R8188, R6028, R7246, R6812) and literature, so was validated insofar as those outputs had been validated.

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).

Please see comment in 10 above.

Current Situation

C. Current situation

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

The outputs are being used as reference materials by coffee scientists in East Africa, though to a limited extent. The outputs are principally being used to identify coffee insect pests and diseases. In April 2006 agreement was also reached for the manual to be uploaded to the DFID CPP website.

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).

The outputs are being used at coffee research and development institutions in Uganda and Kenya.

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

Beyond the beneficiaries specified above, it is difficult to ascertain the scale of use as uptake/adoption studies have not been carried out.

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).

The main platform/programme which has assisted with the promotion of the outputs is the Coffee Research Network (CORNET) of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). CORNET coordinates coffee research activities in the Eastern and Central African sub-region, and has a database for all coffee institutions in the sub-region. CABI's ongoing projects on coffee in East Africa (funded from various sources) also provide a platform for assisting with promotion.

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).

Promotion is currently taking place on an *ad hoc* basis via CORNET and other coffee projects in the region.

New and innovative ways of using this information need to be found, including incorporation into e-learning tools, websites and other e-media. Coffee institutes, as they are currently constituted, are not set up to transform this material.

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).

Language is the main barrier which will slow down the adoption of the outputs. The manual is currently available in English only whereas coffee production occurs in a number of francophone countries. Local extension officers would prefer the manual in a local language such as Kiswahili.

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).

There is a need, firstly, to translate the outputs into other languages appropriate to perceived beneficiaries,

particularly French and Kiswahili, to enable knowledge of coffee pests and diseases to become more widely usable. Portuguese and Ahmaric would probably be the next priorities.

Secondly, the outputs must become more widely accessible through reproduction and distribution of hard copies of the manual and also via alternative pathways. As the outputs are also held in electronic format, the knowledge may be conveyed in part or as a whole, in a number of other formats and via a broad range of uptake pathways. Formats and pathways that have proven to be effective, particularly when communicating with farmers, include: radio, television, video, drama productions and processes of participatory, experiential learning such as demonstration plots and Farmer Field Schools (FFS), for which tailored knowledge or training 'packages' could be produced. Other possibilities include provision of information via internet websites and mobile phones (video clips, text messages, web access). Equally, alternative publications such as leaflets, posters, booklets, calendars and training materials may be produced, again tailored to specific needs. The intended beneficiaries will also influence selection of format and uptake pathway of the outputs. Service providers e.g. agricultural extension, national and regional agricultural advisory bodies, community based organisations (CBOs) and non-governmental organisations (NGOs), are seen as the primary beneficiaries, but the needs of research based organisations and other stakeholders can also be addressed.

Activities aimed at facilitating uptake and adoption of outputs will require adequate funding, the level of which will vary depending on the format and promotion/dissemination pathways to be utilised.

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).

The lessons learnt are as follows:

- The knowledge required by, and that will be of benefit to, intended beneficiaries (e.g. research, extension, farmers) must be clearly defined and the format and uptake pathways most suitable for delivery to those beneficiaries selected accordingly.
- There is need to incorporate dissemination activities in a project. In particular, it is important to use participatory techniques in disseminating outputs.
- Where possible, existing structures proven to be effective in disseminating outputs should be utilised as uptake pathways. These include, for example, sub-regional networks such as the Coffee Research Network in the case of disseminating coffee outputs in East and Central Africa.
- It is important to incorporate training of end users of outputs in projects.
- Need to incorporate electronic methods of dissemination (see above)

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.

Impact studies on poverty in relation to this output have not been carried out.

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*

No impact studies were carried out for the output.

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 use of the outputs will lead to more timely and targeted pest and disease control within the framework of integrated crop and pest management. This will lead to a more responsible deployment of control strategies, particularly those based on or involving chemical use, thereby sustaining or enhancing the environment in terms of the quality of air, water and soils specifically. Reduction of pest and disease levels, particularly through cultural measures, may also lead to a more balanced micro- and macrobiota.

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

There are no adverse environmental impacts related to the outputs.

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)

Yes: one of the expected side effects of the environmental change is changes in disease and insect pest patterns. The output will therefore increase the capacity of the resource-poor smallholder farmers to cope with any such changes, reduce the risk of crop loss due to the occurrence of such diseases and pests and hence indirectly contribute to the resilience of the poor communities to cope with climatic changes.

