

RIU

Videos help cocoa farmers see the big picture

Validated RNRRS Output.

Poor farmers in West Africa are using a participatory learning curriculum to reduce the impact of pests and stabilise the productivity of their tree crops, reducing their input and labour costs and improving their living conditions. The curriculum helps farmers, support staff and advisors build up video production capacity to spread the use of improved techniques. Several digital videos, as well as a video training guide, now exist in local and English languages. Improved pesticide use and pheromone traps are among the technical options promoted in the videos. A global, discovery-based learning manual, in hard and electronic copy, is also being used throughout West Africa, as well as in other global regions, to get the word out.

Project Ref: **CPP05:**

Topic: **1. Improving Farmers Livelihoods: Better Crops, Systems & Pest Management**

Lead Organisation: **CABI, UK**

Source: **Crop Protection Programme**

Document Contents:

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Description

CPP05

Research into Use

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Geographical regions included:

[Cameroon](#), [Ghana](#), [Nigeria](#), [Western Africa](#),

Target Audiences for this content:

[Crop farmers](#),

A. Description of the research output(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.

Implementation of Cocoa IPM in West Africa (Phase 1 and 2)

Helping West African cocoa farmers grow a healthy crop.

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

CPP commissioned the work with co-financing from, Master Foods, World Cocoa Foundation, STCP-IITA.

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.

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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.

The outputs of the cluster contribute towards promotion of strategies to reduce the impact of **pests** and stabilise productivity of **tree crops** important to **livelihood security** of poor people in **Forest Agriculture Systems**. New knowledge sought concentrated on innovative ways of facilitating **uptake** and **adoption** by farmers of **cocoa IPM** measures in **West Africa**.

Under R8313, a tailor-made farmer participatory learning curriculum was developed in English and French and trialled for extension of cocoa IPM in West Africa. A range of technical IPM bulletins and field guides for use by farmer facilitators and master trainers was developed. A global, discovery based learning manual (Discovery Learning Manual for Cocoa) was produced as hard copy and electronic version with co-financing from CABI Partnership Facility and bilateral industry donors (2003).

Farmers and trainers, including scientists from NARES were trained in **farmer participatory research** processes. These concentrated on **black pod** and **mirid management** including trials for improved pesticide application, rational pesticide use, biocontrol and cultural management (2003-2005).

Models for **optimising management inputs** to cocoa production were adapted for **West Africa**. Modules relating climatic factors to leaf flushing and to variable shade were included as these affect incidence of **black pod** and cocoa **mirids** in West Africa. Harvesting intensity and frequency and the degree of shade can be manipulated to show direct effects on pod/leaf dynamics and indirectly effects on pod diseases and leaf/pod insects. (2004)

Pheromone blends and **trap designs** were **optimised** for the two main mirid species in Ghana. Two CRIG staff were trained in production of pheromone traps.

R8448 focused on **up-scaling** in **dissemination outputs**. Cocoa research scientists (CRIG), cocoa training specialists (STCP), cocoa farmer FFS graduates and local Ghanaian media professionals assisted farmers to produce two **farmer participatory digital videos** on pruning of old cocoa trees for rehabilitation and improved yield and control of black pod disease by cultural and chemical methods. Videos are available in **local language and English** and a participatory video training guide describes the process employed (January 2005- June 2006).

Traps and lures for **cocoa mirids** were **distributed** to 14 **farmers** in three STCP pilot villages around Kumasi and a similar number to farmers at two extension sites round Tafo. **Farmers** were **trained** in Ghana and Cameroun in the **use of the traps**. NRI and CRIG staff visited IRAD and STCP in Yaounde, Cameroun and on-station experiments planned.

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
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X	X	X	X		
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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 are focussed on cocoa. The principles embodied in the Farmer Participatory Research and in the Participatory Video approach are general and could be applied to other production systems/commodities. FFS curricula development, learning manuals and the models could also be adapted for other commodities and other production systems. Many of these outputs have been adapted from other productions systems in other regions such from rice based farming systems of East and South Asia.

Although the specific pheromone traps and lures developed would not be directly applicable to other species, the technology around pheromone trapping can be applied to other production systems/commodities.

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	

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						

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)? At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared. (max. 300 words)

The outputs described here arose from projects R7249 (Development of mycopenesticides and pheromones for cocoa mirids; October 1998 – March 2002) and R7326 (Control of *Phytophthora megakarya* diseases of cocoa with phosphonic acid; October 1998 – March 2002). Clustering these with technical outputs from R8313 and communicating new knowledge through revised curricula for FFS, use of participatory video (as in R 8448) and radio or through products such the Ghana Cocoa Farmers Newspaper (a public-private partnership of CRIG, Cadbury's and CABI) and through ICTs, would add value to the outputs. A cocoa industry funded project (CABI/NARES) to understand more about pesticide usage across the region especially in relation to EU safety regulations (MRLs) would gain value from these project outputs as part of promoting Good Agricultural Practice (GAP).

Video production capacity built up in 2005 under R8448 was used by STCP in 2006 to commission three additional participatory farmer videos in Ghana. These videos addressed cocoa fermentation, harvesting and drying.

CABI has already facilitated global use of the Discovery Learning Manual which is available in South & Central America and SE Asia (English, French, Spanish, Indonesian, Vietnamese translations). It is being used by a number of private-public partnerships e.g. the Sustainable Cocoa Extension Services for Smallholders' (SUCCESS) project in Indonesia and Vietnam, PRIMA Project (Pest Reduction and Integrated Management for Cocoa) in Indonesia and by PROMACACAO in Ecuador.

Other outputs that would add value are from R7441, R8300, R8411 (Pheromone traps for *Maruca vitrata*). Although these targeted a different pest in different agricultural systems, the respective technologies developed (pheromone traps) were the same, many constraints and problems were similar and the outputs were developed in the same region/country. Common issues were those of commercialisation of the technology, and of introducing a novel technology to small-holder farmers. These issues were also dealt with in R8430 (Biopesticide guidelines: public-private partnerships in Ghana) which could also be clustered here.

Other outputs that could be clustered are those associated with IPM practices in other perennial crops such banana (R8342, R7567, R7529, R7972) and coffee (R8513/R8188) (coffee) as well as those related to banana IPM (R8342, R7567, R7529, R7972) where further up-scaling and dissemination of technical outputs is required.

10. 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.

R7441, R8300, R8411 ("Pheromone traps – *Maruca vitrata*" projects) and R8430 – biopesticide guidelines: public-private partnerships in Ghana could also be clustered here.

Other outputs that could be clustered are those associated with IPM practices in perennial crops such banana and coffee – R8513/R8188 (coffee) as well as those related to banana IPM (R8342, R7567, R7529, R7972) where further up-scaling and dissemination of technical outputs is required.

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).

R 8183: The FFS curriculum developed under this project helped crystallise many of the FFS activities for this crop in West Africa since 2003 and has subsequently been validated through the STCP and other in-country programmes by trainers, end-users and intermediary organisations. Pilot FFS projects were initiated in Ghana, Nigeria and Cameroun (from 2003-05) and the curriculum was adapted to local needs based on assessments done with communities (moderate poor as well as extreme poor (sharecroppers) both male and female.

The Discovery Learning Manual has been validated globally by numerous trainers and extensionists. It has also been used in the NARES in West Africa and by a number of private-public partnerships, intermediary organisations and end users (See Q9).

The climatic model has been validated logically, but requires field verification, which will require data from several seasons and locations in W Africa.

FPR outputs have been, and continue to be validated and adapted by NARES scientists and farmer organisations such as the Tonikoko Farmers' Union (TFU). Trials using cultural management and rational pesticide use (RPU) as compared to normal farmer practice has been initiated in Nigeria, Cameroun and Ghana; biological control trials in Cameroun. In Nigeria, percentage losses from black pod was 8% in RPU plots compared to 19% in Farmer Practice plots, with only one third of the amount of fungicide needed in the RPU plots and large cost savings in labour too. Use of RPU has been adopted in some communities in Nigeria and Ghana with farmers already experiencing significant reductions in costs of inputs (chemicals).

R8448. Validation of the farmer video rough edits involved review by intermediary organisations (CRIG, CABI, STCP and private media specialist advisors) and end users represented by the farmer video team and 34 other cocoa farmers (men and women). This helped identify problems with content and presentation that interfere with end user comprehension and helped refine the video and enhance its value as a communication tool. At village level, rough edits were shown and farmers aired their comments on the technical qualities of the film, the relevance/completeness of the topics and the participatory nature of the production. Separately, rough edits were viewed by CRIG and STCP staff. After this procedure, in each case, the farmers' video team with their media advisor reviewed the responses and revised versions were made.

A suggested adaptation of the procedure for production with many partners, as here, is to try to ensure that the video production team (farmers in this case) are able to receive feedback/comments *directly* from those who reviewed the rough edit, rather than through an intermediary (the media advisor) as in the cocoa case. This will allow fuller exchanges where the reasons for a particular scene or expression can be debated and reduces the possibility of misinterpretations if an advisor has to convey comments from one party to the other.

The mirid pheromone blend, dispensers and traps were optimised and validated in replicated trials in Ghana by CRIG scientists in collaboration with NRI. Similar replicated trials both on- and off-station showed that the traps could be used for monitoring mirid populations and could be used to cause a reduction in pest populations. Use of the traps for detection of mirids by growers is being validated in two areas of Ghana and in Cameroun.

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**).*

R8313. All the outputs fall within the Forest - Agriculture production system and the smallholder rain fed farming system with moderate poor families and the extreme vulnerable poor such as sharecroppers (male and female) targeted.

The FPR outputs have been, and continue to be validated and adapted by NARES scientists in region. In Ondo State in Nigeria, a total of 20 farms were selected in 4 areas; Alade/Idanre, Wasimi, Bamikemo 1 and Bamikemo 2. These trials have been running since 2004 (results presented at the Int. Cocoa. Res Conference in San Jose Oct 2006, paper in press). In Ghana, RPU is being trialled in 2 districts in the Ashanti region and are being facilitated by CRIG scientists. Biological control trials were initiated on the IRAD field station in 2004 and ran for 6 months.

The FFS outputs have been validated across the region from 2003 (See Q10) under the auspices of the STCP (Working Papers Series Issue 1) [1] and globally, through the Discovery Learning Manual exercises.

R8448. Validation of participatory videos was carried out in May and October 2005 at Gyeninsu village, Amansie West District, Ghana. The farmers who participated in validation were typical of farmers (moderately poor) who had taken part in FFS and also non FFS inhabitants of the home village cluster from which the farmer video team had been drawn.

Pheromone traps are being trialled with farmers in 2 communities in Ghana, one in Ashanti Region and one around Tafo. These trials started during the Phase 2 of the project and are ongoing. The traps have also been introduced to Cameroun.

[1] STCP Working Papers Series Issue 1. An Evaluation of Farmer Field School Training on the Livelihoods of Cocoa Farmers in Atwima District, Ashanti Region, Ghana. www.treecrops.org

Current Situation

C. Current situation

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

R8313. The Discovery learning manual is being used by extensionists and facilitators from NGOs, NARES and IGOs in all cocoa producing regions as source material for FFS curriculum development. Further, the curriculum developed under the project is being utilised (and adapted to local needs) across the West African region through the STCP but also directly by the NARES such as CRIN and CRIG, farmer organisations (SOCODEVI) and Licensed Buying Companies. Similarly, FPR outputs such as the RPU trials are being used in Nigeria and Ghana

(by NARES) to demonstrate the cost savings of this approach to farmers (reduced inputs and labour costs) as well as improved control of major diseases (black pod) and improvements to their living conditions (less environmental contamination and safer application).

R8448: Video production capacity built up in 2005 amongst farmers and support staff/advisors was used by STCP to make three additional participatory farmer videos in Ghana in 2006. These videos addressed cocoa fermentation, harvesting and drying. These new videos plus the original two videos were shown in five video viewing clubs launched by STCP in July 2006 in the Ashanti region. The original two videos have also been screened by the farmers' cooperative/licensed cocoa buying organisation Kuapa Kokoo to 8 member cooperative societies. Plans are being made to show the videos in many more of the organisation's almost 1000 other village societies (totally some 45,000 members).

CABI has distributed 60 copies of the first two video episodes to 13 countries in Africa following requests by farmers, local/country libraries and government extension services.

Pheromone traps are being used in Ghana and Cameroun.

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).*

R8313: FPR outputs (RPU) are being trialled in Ondo State in Nigeria, a total of 20 farms were selected in 4 areas but increasingly, CRIN are encouraging all farmers to adopt these approaches.

FFS project outputs are being used across West Africa under the auspices of the STCP, farmer organisations and the NARES. In Ghana, FFS started in the Central Region (15 communities) but demand has grown in Ashanti region due to low yields and constraints such as aggressive black pod (*P.megakarya*) and mirids and consequently, FFS have been implemented there. The discovery learning manual is being used globally (Q9).

R8448: The video clubs are located in three villages in Ashanti Region, Ghana. Led by a facilitator, use of the videos, discussions and field activities are part of weekly farmer training over a four-month period targeted at women farmers. Kuapa Kokoo have screened the videos in one District Bekwai (Ghana).

Pheromone traps are now being tested in communities in the Ashanti Region and around Tafo.

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

R8313: Pilot FFS took place from 2003 and have continued. To date, 13000 farmers have been trained in over 400 FFS and 25,000 farmers reached through guided farmer to farmer dissemination (STCP) but pilot schemes are also underway with LBCs such as Kuapa Kokoo and the curriculum also adopted by NARES and farmer organisations. The Discovery learning Manual has and is being used globally, reaching e.g. an estimated 20,000 farmers in Indonesia.

R8448: The five video clubs in Ghana comprise some 100 farmers (some of these sourced through District

extension services) and represent a pilot to test integrated use of farmers' own videos with associated discussions and field practise as an extension method. As of August 2006 (pers. comm. STCP), there are plans awaiting financing to run similar video clubs in Cote d'Ivoire in 2006. STCP has also made plans (waiting funding) to hold a participatory video training for Ivorians using the video expertise from Ghana. Kuapa Kokoo has screened the original two (2005) videos for members of eight village societies in Bekwai District, Ghana averaging some 50 members each. This was established within a few months of the outputs being produced. Plans are currently being made to show the videos in many more of the organisation's almost 1000 village societies (total 45,000 members).

Pheromone traps are currently used on small scale by farmers in two areas of Ghana and in Cameroun.

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).

Since the end of R8313 and R8448, the Sub-Regional Programme, STCP, that partnered CABI for original curriculum development and for original video production, has taken a lead in promoting the outputs of these projects both in FFS and in commissioning further videos, and is working to integrate these in structured farmer educational events (the video viewing clubs), albeit so far on a pilot scale. Technology and knowledge dissemination is a key component of the STCP which is coordinated through IITA and funded by USAID with some additional funds provided from the American based chocolate industry. STCP has its own hired staff in each member country rather than formal working links to the NARES. STCP therefore has had the interest and the flexibility to act to explore strategies for implementing and scaling up the FFS and video outputs but has limited staff resource. Other organisations have also adapted the project outputs to some extent including Kuapa Kokoo which is a membership based farmers' cooperative with both a central administration and District based technical staff. Village societies are the self-standing units of the organization. There is a clear policy of member education. This structure plus a large membership with a direct vested interest in cocoa farming (some 45,000 cocoa farmers) make it an ideal platform for uptake of outputs of the current cluster.

CRIG has also played an important supportive role in development of the technical outputs (FPR and pheromone work) and advice on, FFS and video content. Directly under COCOBOD, it is responsible for technical advice on FFS managed by STCP but CRIG is well positioned to backstop and promote other technical outputs yet also needs further technical support and capacity building. This is also true for CRIN (Nigeria) and IRAD (Cameroun). FPR is being conducted mainly through NARES with support from partners (CABI and NRI) examining rational pesticide use and production of pheromone traps for mirids. DFID funding has been critical in the involvement of technical agencies (CABI and NRI) in cocoa work in the region.

Strengthening communication networks and partnerships between these players is key to further future success, as is maximising resources available to enable groups with complementary skills can work effectively.

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 of FFS is currently taking place across the West African Region. 13000 farmers have been trained in over 400 FFS under the auspices of the STCP and 25000 farmers have been reached through guided farmer to farmer dissemination through involvement with farmer organisations SOCODEVI and Licensed Buying Companies (Kuapa Kokoo) in Ghana. Kuapa Kokoo has screened the original two (2005) videos for members of eight village societies in Bekwai District, Ghana and plans are currently being made to show these videos in many more of the organisation's almost 1000 village societies (totally some 45,000 members).

The Discovery learning manual is being used in all cocoa producing regions eg in Indonesia and in Ecuador and Central America.

Promotion of FPR is taking place at specific locations under the auspices of the NARES (Ondo state in Nigeria) and Ashanti District in Ghana while promotion of pheromone traps are being conducted in 2 communities in Ashanti region and around Tafo also.

Pheromone traps for mirids are being promoted by CRIG in Ghana within their pilot areas.

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**).

R8313/R8448: Although some farmers know about the benefit of RPU, many more do not and further dissemination is needed; once farmers know of the benefits (reduced input costs, reduced labour costs, safer application) they are keen to adopt RPU (pers. comm. NARES from Nigeria and Ghana to J. Flood during interviews at Int. Coc. Res. Conf. Oct 2006). Thus, one the main barriers to uptake is not being aware of the available technologies. Also, there are associated increased initial costs (improved spray nozzles and different sprayers) which can prevent uptake by the extreme vulnerable poor (sharecroppers- prevalent in Ondo State). One factor could have delayed Kuapa Kokoo's greater involvement to date is that 2006 is an election year for them and this has delayed implementation of farmer education. CRIG is in the initial stages of planning an official national launch of the videos, but there have been delays linked in part to leadership change. Also, participatory video production has only occurred in Ghana. There is a huge demand in Nigeria (in local languages and English) and in Francophone countries (in French) so removing linguistic barriers would aid adoption. Following the end of DFID-CPP project, R8448, video capacity has to date been mostly located within STCP (and decision making and funding are under their control) adoption would be further enhanced if more farmer organisations developed links with media specialists and technical staff so as to demystify the use of video and aid decision making on which messages to be distributed.

Limited human and financial resources have also slowed uptake, as has competition between the major stakeholders. Improved co-ordination and networking amongst the various stakeholder groups should help promote these technologies.

With pheromone traps, a major constraint has been the availability of local materials to make the traps. Also, the development and adoption of pheromone traps for mirids has been greatly slowed by perceived difficulties over ownership of IP amongst the institutions involved and by inability to establish local facilities for manufacture and distribution of the technology.

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).

Updating the FFS curriculum and incorporating new results from FPR plus wider dissemination of these outputs is needed and thus, access to further funding is required. Participatory video is one tool for scaling up messages and can be presented and interpreted by people with whom the audience can identify. To date, video production has been limited to one group (STCP) in Ghana but further videos should be commissioned and disseminated by other stakeholders in Ghana (CRIG/ Kuapa Kokoo, the District based extension services/ NGOs) and throughout the region (with support from CABI/NARES). Monitoring and moderation of the quality and technical content would be needed so as not to send out conflicting messages to producers. Messages could also be available to numerous viewers (eg via MOFA with TV programming), through radio, through Ghana Cocoa Farmers Newspaper (PPP of CRIG/CABI/Cadbury's with a distribution to over 70000 farmers) and through the ICT movement that is gaining momentum in provincial/rural Africa and where there is a interest in and demand for, local content in the media. Access to micro-credit via farmer cooperatives to buy improved spray equipment would help extend the uptake of RPU by the poorest farmers including sharecroppers.

Problems associated with IP that have slowed development of pheromone technology can be solved by experience and better understanding of the processes involved. Resolution of these issues would make easier the establishment of local production of traps and lures. Experience of and willingness to engage with local SME's is also necessary to ensure commercial uptake and provision of the technology to farmers.

Greater networking and co-ordination between partners with complementary skills working to an agreed agenda (action plan) is crucial here especially if the outputs are to be extended across West Africa eg into Nigeria. Co-ordination and monitoring of the quality of the messages is also needed as more stakeholder groups seek to produce information messages for farmers.

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).

R8313/R8448: Working with and listening to, local groups and organisations is crucial for getting outputs used by the largest number of people. Communication credibility and ownership is fundamental when the intention is to empower people to take more control over decision making. Therefore when considering location of farmer empowering projects, it is essential to consider who has direct interest in, and need for control over local capacity building. This is particularly the case for up-scaling of outputs of research. People's own organisations and institutions close to them (churches, trades unions, NGOs, schools) should receive special consideration and be enabled to draw down necessary technical advice (from organisations/programmes like CABI /NRI/NARES/ STCP). ICT centres are fast developing in Ghana and other West African countries. Through this, centralised open access facilities and training in their use are becoming established together with decentralised services (e.g. use of video vans to take media from the centres to remoter villages). It will be imperative to link participatory

media (on agricultural/ natural resource topics) to this development in order to democratise media skills, increase the local nature of content, enhance access to media products. This will help considerably to stimulate much greater public awareness (amongst young and old) and debate on natural resource use issues that will remain central to very many livelihoods in the Region for decades to come. Upscaling of these technologies will require good resourcing (human and financial) as well as good co-ordination and planning.

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.

Some impact studies of the FFS programme have been conducted in West Africa under the auspices of the STCP. An external review of the STCP (D'Alessandro, Eckman, Gilbert and Lockwood, 2005) 2 concluded that the most recognisable activity of the STCP was the FFS programme and the initial curricula for that programme was an output of R 8313 with STCP and CABI working in partnership. Further, STCP has produced Impact Brief No 2 (April 2005) and No 3 (April 2005) which included some cost- benefit analysis. See www.treecrops.org These are attached as annexes here.

FFS participants (near Akure, Nigeria) observed that where normal farmer practice was applied there was a yield loss (on average 58 kg less per ha) as compared to ICPM practice promoted in the FFS. With an average farm size of 4 ha, the potential gain from implementing ICPM would be on the order of 250 kilograms per household which would be a substantial contribution to household income.

Surveys were conducted in early 2005 with 2003 FFS graduates in countries in West Africa to see what if anything has changed following FFS training. In Cameroon, the focus of ICPM was on black pod management. 90 FFS graduates estimated a net \$17 decrease in the costs of controlling black pod under the ICPM management regime as compared to pre-FFS practice. Better crop husbandry combined with targeted spraying techniques and the use of appropriate sprayer nozzles generated 20% savings on the quantity of fungicide applied per spraying and labour costs for spraying were reduced although labour inputs for pruning and husbandry increased.

In Ghana and Nigeria, surveys of FFS participants and non-participants conducted in March 2005 measured changes in productivity. In Ghana, preliminary analysis suggested a 20% yield differential between participant and non-participants but the low yields recorded in the study (Atwima District, Ashanti region) [2] raised sustainability concerns and outlines the need for continued reinforcement of the ICPM concepts through training.

In Nigeria, there was no overall difference in the mean cocoa yields of FFS-trained versus non-FFS-trained producers but there was a decrease of slightly more than 1 kg per ha in the amount of copper sulphate applied to

control black pod with an estimated savings of \$10 per producer.

In Ghana, government spraying campaigns against mirids cost in excess of US\$ 35 million per annum, and are considered to have limited effect. Adoption of alternative approaches for use by the farmers themselves, such as pheromone traps, could have a large impact on the economy as well as the environment.

[2] External Review Report of the STCP (Stephan D'Alessandro, Karlyn Eckman (chair), Elon Gilbert, Rob Lockwood).

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.*

Project outputs have addressed vulnerability in terms of reducing pest constraints, improved crop management, reduced excessive or mis-use of pesticides, and consequently, less risk of ill health from contaminated food crops (spray drift) and water sources, as well as made some improvement in yields and improved farmer incomes (more yield and less input costs).

For **moderately poor farmers** in West Africa, positive impacts on livelihoods include improved capacity to understand how to manage cocoa, improved decision making as well as improved health and less water source and food crop contamination (Human capital) through a reduction in pesticide usage (and mis-use) and consequently, have a better environment (Natural capital). Producers have access to improved spray equipment and have access to (and wish to use) higher yielding planting material (Physical capital) (see ¹ Annexe 3). These hybrids will contribute towards better productivity (yield/ha) and less need for larger, low yielding plots or for further forest clearance.

Through the FFS which have been held to date, producers have been sensitized on negative effects of child labour in cocoa farms (social capital) and have addressed the issues of vulnerability (the hazardous employment of children on farms) such that there is a greater awareness of risks of pesticide use, need for protective clothing, and dangers of carrying heavy loads and using machetes. A statistically significant lower participation of children have been found to be involved in hazardous tasks among FFS participants (Annexe 3). The establishment of FFS has also aided the development of trust relationships within communities.

Farmers' incomes have improved owing to reduced input costs especially chemicals and some improved yields have been recorded (financial capital). Thus, in Ghana increased productivity (estimated at 20% yield increase) has been reported (Annexe 2) while in Nigeria, 33% less pesticide is being used using RPU as compared normal farmer practice and increases of \$29 per annum in income have been recorded (Annexe 2). Also, some cost savings on labour inputs (spraying) and yield increases (250kg) per household have been demonstrated. In

Cameroun, 20% cost savings were recorded in impact studies (Annexe 2) with a net decrease of \$17 in the costs of controlling black pod disease following FFS training. Average per capita gross revenue does not exceed one dollar per day in any of these countries so additional income of \$29 per annum has a significant effect on livelihoods.

Currently the number of producers involved range from a few hundred to a few thousand.

All of the above can be applied to the **Extreme vulnerable poor (share-croppers)** who have been significant participants in the FFS. They show greater vulnerability receiving only one third of the cocoa producers' output as remuneration and are often migrant workers without support systems and tenure rights. Similarly, **woman headed households** have enhanced vulnerability due to gender discrimination, problems with physical labour inputs, greater costs to pay for some labour intensive actions such as pruning. However women farmers have attended FFS in significant numbers and participated in the video production.

All impacts were recorded over the time period 2003 to date.

The FFS curriculum developed under this project and the Discovery Learning Manual exercises is being used globally e.g. to over 20,000 farmers in Indonesia so there are beneficiaries worldwide. Development of the videos in Ghana can be extended to all Anglophone countries especially to Nigeria. The use of pheromone traps developed in Ghana can be extended across the region and the technology used, world-wide.

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)

Outputs from this cluster have direct environmental benefits. Under 8313, RPU resulted in improved farmer understanding of the importance of spray equipment in securing impact of pesticide applications, reducing pesticide waste and inputs as well as improved understanding of health and safety issues such as use of protective clothing. Training in more appropriate spray application methods including awareness for appropriate protective clothing and problems of operator contamination as well as access to improved equipment has resulted in a reduction of pesticides (1kg/ha less copper sulphate used in Nigeria). Consequently, there is less contamination of soil, of water courses and of food crops within the farmers' plots.

In Nigeria, the focus was on black pod control to seek an improvement on the use of self-made fungicides applied with trombone sprayers, in Cameroon, farmers were involved in the evaluation of biological control agents in the search for more effective management of black pod and in Ghana, farmers evaluated the use of mirid pheromones to reduce the use of persistent insecticides (some which are on the restricted use list) which are sprayed repeatedly throughout the season often contaminating food crops. Reduction in insecticides also increases natural enemies for promotion of mirid control. The Discovery Learning Manual which promoted RPU

and awareness of issues of pesticide application and safety has also been distributed globally and has raised awareness of these issues with extensionists and trainers globally.

Under 8448, the trialling of pheromone traps continued on farm in the Ashanti Region of Ghana and the production and presentation of participatory videos on black pod control allowed the up-scaling of messages concerned with more appropriate usage of pesticides and the general principles of ICPM and with Good Agricultural Practice (GAP)

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.

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

No adverse environmental effects are envisaged. The outputs aim at reducing pesticide use in cocoa production areas of West Africa and in other cocoa producing countries in Latin America and SE Asia. However, some pesticide inputs remain necessary (to date) as management tools against pests (*sensu lato*) such as mirids and black pod disease. It is the reduction of these pesticides to a level that is absolutely critical for control rather than applied as blanket sprays without understanding of the pest ecology, that is key to some of the project outputs.

25. 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)

The outputs reported have had positive impacts on farmer incomes in the West African region. Where many households exist on \$365 per annum, 20% yield improvements (Ghana) or \$10 savings per producer on chemical inputs (Nigeria), will have enormous impacts on farmers livelihoods. An increase in income helps the poor to be more resilient to change in whatever form that takes and to increase their adaptive capacity. Income can be spent helping to diversify their farm to mitigate effects of climate change as well as allowing them access to micro-credit schemes to allow investment in assets that could be sold in times of greater needs (such as livestock) and which act as forms of informal insurance.

Annex 1

Impact Brief, Issue No 2, April 2005

Click below to view the related information

[PF_CPP05_Annex1.pdf](#)

Annex 2

Impact Brief, Issue No 3, April 2005

Click below to view the related information

[PF_CPP05_Annex2.pdf](#)

Annex 3

An Evaluation of Farmer Field School Training on the Livelihoods of Cocoa farmers in Atwima District, Ashati Region, Ghana.

Click below to view the related information

[PF_CPP05_Annex3.pdf](#)
