



International Coffee Organización Internacional del Café Organização Internacional do Café Organisation Internationale du Café 25 April 2005 English only

Projects/Common Fund

International Coffee Council Ninety-third Session 18 – 20 May 2005 London, England Integrated stem borer management in smallholder coffee farms in India, Malawi and Zimbabwe

Project progress report as at December 2004

Background

The attached document contains extracts from the latest progress report for the project "Integrated stem borer management in smallholder coffee farms in India, Malawi and Zimbabwe", and covers the period from January to December 2004. A copy of the full progress report is available to Members on request.

Action

The Council is requested to note this report.

Progress Report: January - December 2004 Report No. 05/2004 December 2004 CABI Ref: U 2998

CFC/ICO/18

Project Progress Report January – December 2004

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PROJECT PROGRESS REPORT

Integrated Stem Borer Management in Smallholder Coffee Farms in India, Malawi and Zimbabwe

Report No. 05/2004

I. <u>Project Summary</u>:

- 1. Title: Integrated Stem Borer Management in Smallholder Coffee Farms in India, Malawi and Zimbabwe
- 2. Number: CFC/ICO/18
- 3. Project Executing Agency (PEA): CAB International
- 4. Location: India, Malawi, Zimbabwe
- 5. Starting Date: 1st June 2002
- 6. Completion Date: 31st May 2006
- 7. Financing:
 - Total Project Cost: 3,103,778

of which:

- CFC Financing (Grant): USD 2,262,316
- Co-financing: USD 122,744 (46,574+76,170)
- Counterpart Contribution: USD 718,717 (365,926 + 191,150 + 161,641)

II. <u>Period Covered by this Report</u>:

From: 1st January 2004

To: 31st December 2004

Periods Covered by Previous Reports:

1 st July 2002	To: 31 st December 2002
1 st January 2003	To: 30 th June 2003
1 st January 2003	To: 31 st December 2003
1 st January 2004	To: 30 th June 2004

III. <u>Status of Project Implementation</u>

Planned Activities	Targets Set	Present Status	Remarks
INDIA: <u>Component I: Development of new control methods within an IPM and farmer participatory</u> <u>research framework:</u>			
Activity 1.1. Socioeconomic survey of smallholders including current practices and efficiency, and economics of current pest control methods. Perceptions and plans for the future, PRAs with the farmers and extensionists.	Fieldwork completed by end Q1, draft recommendations on WSB management strategy by end Q2.	This survey of small holders was completed in 2004 and a draft report available for Karnataka and Tamil Nadu.	Major constraints facing farmers have been identified: new issues not reported include poor shade use in marginal areas and lack of village tracers. Also Extension capacity for CWSB needs building.
Activity 1.2. Current distribution of WSB and incidence of CWSB.	Incidence in relation to major agro- ecological factors by Q2.	A new smaller survey was conducted at CCRI (17 plots) to examine the relation of CWSB incidence to different levels of shade (tree species, density of planting etc.)	This data is currently being analysed
Activity 1.3. Sampling of native trees for CWSB attack in non-coffee forested areas.	Incidence in relation to major agro- ecological factors.	CWSB has been recorded breeding in one native tree (<i>Olea dioica</i>) that is also used as a shade tree (but not commonly)	The studies to date give a strong indication that CWSB is endemic to some forest types in the Western Ghats.

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Activity 1.4. Shade and planting density studies and their relation to CWSB abundance.	Incidence in realtion to major agro- ecological factors.	See 1.2.	
Activity 1.5. Population dynamics and distribution.	Mortality factors identified by end of Q4.	The long term population studies indicate heavy mortality at the egg stage. New larval parasitoids to India have been confirmed. Some of these species have also been recorded from the forest areas. Predation by birds also appears significant.	The regular sampling data from the Coffee Research Institute is providing the most valuable information. Data extends back to 2002 and has now all been entered into spread sheets for analysis.
Activity 1.6. Natural enemy surveys in India and SE Asia.	Sampling protocol for natural enemies by end Q4	See 1.4. The new parasitoids for India are species that have been recorded from other parts of tropical Asia. This information adds to the hypothesis that the CWSB is native to India (and other parts of Asia).	Surveys have been under way in all the major coffee growing areas of India and several new species are being confirmed – more species may be confirmed soon. Some species appear to be important and need further study. Thus, the work to date negates the need to survey in other countries.
Activity 1.7 & 8 Stock lab cult of CWSB maintained/New insectary unit.	Stock in bulk by end Q4/building completed by Q2.	A stock culture (using traditional methods) is maintained but artificial diet work is progressing. The insectary will be officially opened in April 2005.	To date, CCRI and the regional stations have been able to maintain enough culture for the studies but the new insectary will greatly improve the efficiency of operations.

Activity 1. Studies on the relative efficacy of the available parasitoids.	Impact quantified by Q2.	The work on the bethylid <i>Apenesia</i> is on-going but new work has begun to look at the potential of utilizing parasitoids that may be more significant in terms of impact. Of particular interest is the braconid, <i>Allorhogas</i> sp.	A priority topic for 2005 will be examine the cost- benefits of utilizing native parasitoids for the control on CWSB. The Coffee Board has started to solicit feedback from farmers re the use of <i>Apenesia</i> .
Component II: Optimization of cu	rrently available techno	blogies:	<u> </u>
Activity 2.1 Evaluation of best practices/ Field trials of best practices.	Assessment through PRA by Q2.	Additional assessments in Karnataka have shown that farmers in marginal areas are not using shade properly and there is also a lack of tracers in many villages.	These assessments were made by the Coffee Board Extension through a mass communication programme held between Extension, Farmers and Researchers; they have also identified the need to strengthen CWSB management knowledge at the field Extension level.
Activity 2.3 Economic analysis of best practices.	Assessment through PRA by Q3.	An evaluation was started of the CWSB IPM plot farmers (see previous reports) but data difficult to quantify as most plots were smaller than the farms.	New evaluations are planned for 2005 which will include farmers identified using full CWSB management effectively (from the Extension studies – see 2.1).

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Activity 2.4 Evaluation of previous implementation projects.	Report with recommendations by Q3.	This is still on- going. The ICB is looking at projects where efforts have been made to approach Extension work with farmers in different ways.	This is a difficult subject and may need external sociological inputs.
Activity 2.5 Further field trials with pheromone.	Further assessments of trap viability completed.	A study earlier in the year indicated that there are now differences (in terms of catch) in the lure produced in India vs NRI. Quality studies at NRI show that the rate of pheromone release is higher for the Indian produced lure.	CCRI are moving toward producing a standard trap with a protocol for its use by researchers and Extension
Activity 2.6 Trap improvement studies.	Ditto.	Trials with traps at different heights (1m and 2 m) were not sig different. Also increasing the rate of release of pheromone does not affect catch.	Ditto.
Activity 2.7 Trap calibration and impact studies.	Ditto.	Correlation of trap catches with CWSB densities on the ground at CCRI are giving estimates of catch rates on between $20 - 60\%$	Ditto. This work in on-going.
Activity 2.8/2.9 Examination of current provisions of Pest Act/Review of 1 st year activities and draft recommendations	Report	The ICB have been in discussions with the State Gov. of Karnataka and the Gov has given the ICB the powers to implement the Pest Act, if and when appropriate.	The issue now is how the Extension will use this new power as they must not lose the confidence of the farmers. However, this is a significant step forward.

<u>Component III: Extension and dissemination of project results and economic assessment of benefits of the use of improved WSB management technologies</u>			
Activity 3.2/3.3 Training programme on the CWSB management and dissemination strategy to farmers for extension workers/pilot training for farmers – start up workshops.	Training document and tools defined.	Pilot training schemes for extension workers and separately for farmers will be set up at three sites in Karnataka. These will be also used to develop training tools.	The training scheme will based on village level interaction as much CWSB is done through community level actions.
Component IV: Project coordination	<u>on</u>		
Activity 4.1. Project stakeholder meeting – researchers, extensionists, farmer's groups.	Hold meetings between stakeholders	The coffee Board held several 'mass communication' meetings in 2004 involving all stakeholders (see above – 2.1)	Target met
Activity 4.2. <i>Maintain effective</i> <i>communication channels</i> <i>between PI and PEA</i> .	Regular contact maintained.	Contact has been very regular – by e mail and by phone.	Target met
Activity 4.4. <i>Develop detailed</i> <i>workplans and budgets</i>	Plans etc agreed by all parties	Workplan/budget was agreed in early 2005	Target met
Activity 4.4. Maintain an effective monitoring and evaluation process.	Project activities assessed twice a year.	Monitoring visits made (Murphy)	Target met

Planned Activities	Targets Set	Present Status	Remarks
MALAWI			
<u>Component I: Development of new</u> research framework:	v control methods withi	n an IPM and farmer	<u>participatory</u>
Activity 1.1: Identify natural enemies (parasitoids, predators and/or pathogens) of coffee stem borers, and evaluate their potential as biocontrol agents.	Collect, identify and evaluate natural enemies of CSB	Searches in Kenya have isolated the fungus <i>Metarhizium</i> <i>anisopliae</i> from CSB larva. Pathogenicity of <i>M.</i> <i>anisopliae</i> to CSB confirmed in lab at CABI-ARC. Exotic <i>Beauveria bassiana</i> maintained at the quarantine facility at CABI-ARC, and permission to evaluate it at CABI- ARC sought from Kenyan regulatory authorities. Entomopathogens sent to CABI UK for molecular	More searches continue, including in the soil.
Activity1.2: Establish mass production/ rearing programmes for indigenous and/or exotic natural enemies.	Identify suitable hosts/artificial media for maintaining and rearing identified collected natural enemies.	characterisation. Artificial solid growth medium for producing <i>B.</i> <i>bassiana</i> and <i>M.</i> <i>anisopliae</i> established and used to maintain these pathogens.	Artificial Medium is very appropriate but is still being evaluated further for suitability for mass rearing <i>B.</i> <i>bassiana</i> and <i>M.</i> <i>anisopliae.</i>
<i>Activity 1.3:</i> Evaluate pheromones as potential control agents against coffee stem borer.	Set field trials to assess presence of chemical cues	Field trials failed to show attraction of adult CSB to traps. Male CSB found to produce chemical not produced by females. This compound being synthesised for further studies including in field.	Additional trials to be set. Further studies on mating behaviour to be included.

Activity 1.4: Screen a range of coffee varieties to ascertain their resistance at a range of different physiological ages to coffee stem borers.	Identify coffee varieties for screening for resistance to CSB on- farm. Assess field tolerance of coffee varieties to CSB	Several coffee varieties in on-farm trials (40 farms) were assessed for their susceptibility to CSB in June and December 2004. Assessment shows that all tested varieties are succumb to infestation	Activity on-going
Activity 1.5: Integrate effective control options into a management strategy for stem borer.	Not before completing activities 2.3 and 2.4 of Component II. Identify alternative hosts of CSB.	Not started. Over 15 species of plants (trees and shrubs) with suspected CSB damage collected from the field and incubated in the laboratory at Lunyangwa. Several wood boring insects were recovered but not CSB.	Search for alternative hosts to continue
<u>Component II: Optimization of cur</u>	rently available techno	logies:	
Activity 2.1: To identify socio- economic factors influencing stem borer management by smallholder coffee farmers.	Develop and agree protocol and conduct socio-economic survey	Surveys completed, data analysed and report written	Target fully met
Activity 2.2: Conduct a survey in order to quantify the effect of a range of agricultural and environmental parameters on the incidence of coffee stem borers and their natural enemies.	Develop and agree protocol and conduct biological survey	Surveys completed, data analysed and report written	Target fully met

Activity 2.3: Quantify the efficacy of existing control methods including improved agronomic practices, inorganic pesticides and botanical repellents.	Identify promising control treatments and set field (on-farm and on-station) trials	Trials on chemical [21 sites] and physical [25] (in smallholder and plantation farms) and cultural [15] (in smallholder farms) methods against CSB set up in Oct/Nov 2003. Data collected in April and October 2004. A few infested trees were observed in most treatments.	Activity on-going
Activity 2.4: Establish field trials to quantify the efficacy of potential control methods including improved agronomic practices, inorganic pesticides and botanical repellents.	Identify promising control treatments and set field (on-farm and on-station) trials	Same as above. However cultural control trials being jeopardised by some farmers weeding plots that were agreed to be left unweeded.	Activity on-going
Component III: Extension and diss			sessment of
benefits of the use	of improved WSB man	agement technologies	
Activity 3.1: Train extension workers in appropriate strategies for the management of stem borers to disseminate methodologies to smallholder farmers.	In collaboration with DFID project, organise and hold training workshop for coffee extensionist.	Thirty five coffee extensionists trained (Training of Trainers) on integrated management of CSB and on the broader concept of Farmer Field Schools in September at Mzuzu. Certificates of Attendance printed signed and issued to all participants. Report written.	Activity on-going.
Activity 3.2: Train farmers in appropriate strategies for the management of stem borers using farmer participatory approaches.	Conduct training of farmers.	A continuous activity especially after the ToT. Ten pilot FFS established in different zones.	Activity on-going.

Activity 3.3: Global dissemination of information on management strategies for the control of stem borer.	Produce dissemination materials. Gather information on cost and benefit of currently used technologies. Review literature on Agricultural Development Policies on the coffee industry in Malawi.	Three quarterly Project Newsletters produced and disseminated. Socio-economic data on technologies being gathered. A document on "Policies that affect coffee production in Malawi" compiled.	Activities on- going.
Training of staff	Project members attend relevant short courses	One person attended financial management course, one person attended a secretarial course, the other on research proposal writing and 3 people attended one on data analysis	Activities on- going.
Component IV: Project co-ordinati	ion (execution, monitor	ing, financial administ	ration etc.)
Activity 4.1: Organise project stakeholder meetings i.e. local project co-ordinators (PI), researchers, extensionists, farmers' groups, etc.	Hold meetings. Establish effective linkages with stakeholders	Stakeholders meeting held in July and coincided with the project evaluation visit by CFC/ICO/CABI. One joint meeting of SCFT, CFC staff and government staff held (21 participants). Participated in Coffee IPM workshop involving CRU, SCFT, Lunyangwa Research, NRI, and CABI (18 participants) in June. Regular field visits accomplished.	Activity fully met. However, further contacts to be made.

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Activity 4.2: Establish effective communication channels between PIs and PEA.	PI and PEA in constant contact.	Email and telephone contacts made regularly. Visits too when possible (Oduor, Akiri)	Target fully met.
Activity 4.3: Establish administration and accounting procedures and provide training in these.	Project running smoothly.	Training carried out especially on financial procedures (Akiri & Oduor) and subsequent visits made. Following the resignation of the Project Accountant, an office assistant was employed and accounting Services contracted [Graham Carr Co.]. Annual audit for period ending December 2003 undertaken by independent audit firm in December.	Target fully met.
<i>Activity 4.4:</i> Develop detailed work-plans and budgets.	Activities to be implemented and required funds discussed and agreed.	Workplans and budgets for 2005 developed and submitted to CFC/ICO.	Target fully met.
<i>Activity 4.5:</i> Establish an effective monitoring and evaluation process.	Project activities assessed regularly.	Several monitoring visits made (Oduor & Akiri) and by CFC/ICO/CABI- ARC in July.	Target fully met.
Activity 4.6: Prepare regular progress reports, a mid-term evaluation report, annual accounts, audits and project completion report for each country.	Prepare reports every 6 months.	Reports (technical and financial) for the periods Jan-Jun and Jan-Dec 2004 prepared.	Target fully met.

Planned Activities	Targets Set	Present Status	Remarks
ZIMBABWE	1		l
Component I: Development of new	v control methods with	in an IPM and farmer	<u>participatory</u>
research framework:		1	
Activity 1.1: Identify natural enemies (parasitoids, predators and/or pathogens) of coffee stem borers, and evaluate their potential as biocontrol agents.	Collect, identify and evaluate natural enemies of CSB.	Several CSB larvae collected and incubated but no natural enemy recovered yet. Insect specimens collected earlier were sent to the UK for identification, however funds limiting. CIRAD id costs equally high, now looking at possibilities of doing this by PPRI in S. Africa.	Activity on-going. Natural enemies isolated from Kenya (see also for Malawi above)
<i>Activity1.2: Establish mass</i> <i>production/ rearing</i> <i>programmes for indigenous</i> <i>and/or exotic natural enemies.</i>	Identify suitable hosts/artificial media for maintaining and rearing identified collected natural enemies.	Artificial solid growth medium for producing <i>B</i> . <i>bassiana</i> and <i>M</i> . <i>anisopliae</i> established and used to maintain this pathogen.	Medium appropriate but still will be evaluated further for suitability for mass rearing <i>B</i> . <i>bassiana</i> and <i>M</i> . <i>anisopliae</i> .
Activity 1.3: Evaluate pheromones as potential control agents against coffee stem borer.	Set field trials to assess presence of chemical cues.	Field and laboratory bioassays done at CRS and ARDA Rusitu Valley Estate. No attraction of CSB observed yet. A chemical has been observed to be produced by male CSB and other studies are similar to those in Malawi as reported above.	Activity on-going.

Activity 1.4: Screen a range of coffee varieties to ascertain their resistance at a range of different physiological ages to coffee stem borers. Activity	Assess field tolerance of coffee varieties to CSB.	Field trials set up at 25 sites and assessed in May/June and November 2004. The varieties tested all appear to be susceptible to CSB.	Activity on-going.
Activity 1.5: Integrate effective control options into a management strategy for stem borer.	Not before completing activities 2.3 and 2.4 of Component II Identify alternative hosts of CSB.	Not started. However, botanical survey done and several plants especially in family Rubiaceae evaluated as host to CSB.	Search for alternative hosts of CSB is continuing
Component II: Optimization of cur	rently available techno	logies:	
Activity 2.1: To identify socio- economic factors influencing stem borer management by smallholder coffee farmers.	Develop and agree protocol and conduct socio-economic survey.	Surveys completed, data analysed and report compiled.	Target fully met.
Activity 2.2: Conduct a survey in order to quantify the effect of a range of agricultural and environmental parameters on the incidence of coffee stem borers and their natural enemies.	Develop and agree protocol and conduct biological survey.	Surveys completed, data analysed and report compiled.	Target fully met.
Activity 2.3: Quantify the efficacy of existing control methods including improved agronomic practices, inorganic pesticides and botanical repellents.	Identify promising control treatments and set field (on-farm and on-station) trials.	Monitoring of 27 physical control trials, 27 chemical control trials and 26 cultural control trials set up in Oct/Nov 2003. Data was collected in May and November 2004 and chemicals appear to be effective, although termites attack banana fibre wrapped round coffee stems. Reapplication of treatments done in November.	Activity on-going.

Activity 2.4: Establish field trials to quantify the efficacy of potential control methods including improved agronomic practices, inorganic pesticides and botanical repellents.	Identify promising control treatments and set field (on-farm and on-station) trials.	Same as above.	Activity on-going.			
	<u>Component III: Extension and dissemination of project results and economic assessment of</u> <u>benefits of the use of improved WSB management technologies</u>					
Activity 3.1: Train extension workers in appropriate strategies for the management of stem borers to disseminate methodologies to smallholder farmers.	Train extensionists to improve their capacity to transmit information to farmers	Forty-three extensionists trained (Training of Trainers) through out the country in April, i.e. Chipinge (7 trainees), Chimanimani (7), Mutasa (12) and Mashonaland West (17). Extensionists to serve as Trainers of farmers and other extensionists.	Activity on-going.			
Activity 3.2: Train farmers in appropriate strategies for the management of stem borers using farmer participatory approaches.	Train farmers on the identification and control of CSB	Trained extensionists commenced training farmers soon after the training. Field day conducted in July in Mutasa district to disseminate project findings to farmers.	Activity on-going.			

Activity 3.3: Global dissemination of information on management strategies for the control of stem borer.	Produce dissemination materials including a project newsletter. Gather information on currently used technologies. Draft policy document on the coffee Industry in Zimbabwe.	First and second issues of the "Coffee Times" newsletter published and distributed. Socio-economic data on technologies gathered. A draft report on "financial analysis for CSB management options" written. A policy document entitled "Vision for the Zimbabwe coffee sector" published leading to the saving of over 50% of the coffee farms from repossession.	Policy document to be tabled to Government during the project evaluation visit.			
Training of staff	Train staff	National Coordinator underwent a training attachment at NRI as part of his PhD studies.	Training continues on-the- job.			
Component IV: Project co-ordinati	Component IV: Project co-ordination (execution, monitoring, financial administration etc.)					
Activity 4.1: Organise project stakeholder meetings i.e. local project co-ordinators (PI), researchers, extensionists, farmers' groups, etc.	Hold meetings. Establish effective linkages with stakeholders	Meeting held in Mutare during the project evaluation in July.	Target fully met.			
Activity 4.2: Establish effective communication channels between PIs and PEA.	PI and PEA in constant contact.	Effected regular email/telephone contact in addition to visit (Oduor, Akiri)	Target fully met.			

Activity 4.3: Establish administration and accounting procedures and provide training in these.	Project running smoothly.	Due to resignation of Project Accountant, training of successor carried out. Regular email/telephone contact effected, in addition to visit (Oduor, Akiri) Annual audit for period ending December 2003 undertaken by independent audit firm in December.	Target fully met.
Activity 4.4: Develop detailed work-plans and budgets.	Activities to be implemented and required funds discussed and agreed.	Workplans and budgets for 2005 developed and submitted to CFC/ICO.	To be undertaken
Activity 4.5: Establish an effective monitoring and evaluation process.	Project activities assessed regularly.	Monitoring visits made (Oduor, Akiri) and project reviewed by CFC, ICO and CABI- ARC in July.	Target fully met.
Activity 4.6: Prepare regular progress reports, a mid-term evaluation report, annual accounts, audits and project completion report for each country.	Prepare reports every 6 months.	Reports (technical and financial) for the periods Jan-Jun and Jan-Dec 2004 prepared.	Target fully met.