STCP REGIONAL PROJECT ON RESEARCH, TECHNOLOGY TRANSFER AND IMPACT

Activity Overview Year Two

(Version 3rd October 2003)

1.1. IPM Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Integrated pest and disease management of cocoa	PM1-1. Isolation and screening of antagonistic fungi, bacteria and yeast from cocoa agroforests for biocontrol potentials against P. megakarya in Nigeria	Collection, isolation and lab evaluation of microbial agents	Laboratory tested population of promising microbial isolates selected for field testing	Technical reports on lab results. No. of isolates tested Technical reports	Continuation of Year 1 of effort
	PM1-2. Isolation and screening of antagonistic fungi, bacteria and yeast from cocoa agroforests for biocontrol potentials against P. megakarya in Cameroon	Ibid	Ibid	Ibid	Continuation from Y1
	PM1-5. Development of appropriate fermentation and formulation methods for mycopesticides..	Formulation research, testing of conidia production, testing of spray application technology	Development of commercially feasible production technology for mycopesticides	Technical report No. of formulations developed No. of application methods	Continuation from Y1
	PM1-6. Field trials of T. asperellum biocontrol agents	RCBD trial of promising isolates on farm	Preliminary indications of effectiveness in field of biocontrol agents	Technical report Control effectiveness	Year 1 of field trials

1.2. Germplasm Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Germplasm improvement and the production and widespread dissemination of quality planting materials	GP1-1. The use of molecular markers to assess genetic diversity present in germplasm collections in four West African countries. (USDA Collaborative Activity)	1. Establishment of research network in Nigeria, Cameroon, RCI, and Ghana. 2. Use of a common strategy for germplasm to generate unified database. 3. Sampling of field gene bank collections (Upper Amazon parental clones, F1 and F2 clones) and farmers' collections (sample best and worst performing trees in terms of bean size, productivity, disease resistance etc.) 4. Germplasm collections to remain with NARS, leaf tissue of DNA samples to IITA for molecular analysis 5. Develop capacity of NARS in advanced breeding and molecular biology technologies 6. Linkages with advanced research institutes (USDA, CIRAD, CABI)	1. Comparison of diversity in farmers' fields with the relatively restricted basis of germplasm in breeding programs 2. Comparison of the level of heterozygosity of these materials to assess the possible level of inbreeding 3. Collection of interesting genetic diversity (such as high yielding trees, trees with suspected black pod resistance,) for evaluation in observation plots at research stations and in the planned on-farm trials in the CFC project.	MOUs signed with Ghana, Nigeria, and Cameroon 344 germplasm accessions collected from two gene pools (research and onfarm) in Nigeria Ongoing collection in Cameroon, Nigeria and Ghana Visits to CABI, CIRAD, USDA Joint planning meeting with CFC project on 'Cocoa Productivity and Quality Improvement, a Participatory Approach' and STCP in April 2003 Two MSc, and 1 PhD student in training	Continuation with third year of project.

1.2 Germplasm Research (continued)

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Germplasm improvement and the production and widespread dissemination of quality planting materials	GP1-2. Ex ante economic evaluation of the costs of alternative methods of delivering improved planting materials to farmers	Site visits to existing dissemination centers of cocoa planting materials Calculation of economic costs of seedgardens,tissue culture, budwood gardens & grafting, hand pollination, cooperative nurseries vs. individual nurseries, bareroot seedlings versus polybag, etc	Recommendations for low cost effective dissemination of improved planting material	Research protocol and workplan Site visits to Ghana, Nigeria, Cameroon, RCI Trip reports Technical report Journal article	Continuation of Y1 activity with committed Y1 funding of $23,700 USD

1.3. Rehabilitation and Establishment Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Rehabilitation of existing tree crop farms and establishment of new farms on already deforested lands	RE1-1. The establishment of multi-strata cacao agroforests in *Chromolaena odorata* and *Imperata cylindrica* fallow	Two– factorial on-farm trial design, conducted in nine replicates. Farmer sites were either C. odorata or I. Cyclindrica degraded fallows Farmer chosen selection of upper canopy shade (fruit and timber species)	Agronomic evaluation report of establishment trial Economic evaluation report of establishment trial including cost of carbon sequestration over four years. Recommendations for establishing multiproduct cocoa based agroforests on degraded land. Three conference presentations Two book chapters One draft articles for publication in peer reviewed journals.	Tree crop component measurements made in May 2003, November 2003, March 2004, May 2004, November 2004.	Continued from Y1 activity.
	RE1-2. Effects of shading, soil water content, fertilizer, soil type on germination and growth of seedling cacao	On-station experiment, four-factorial design in five replicates.	Technical report on the impacts of shade, soil water, fertilizer and soil type and their interactions on cocoa establishment and early growth. Draft article for publication in peer reviewed journals	Trial initiated in May 2003 Trial to be completed in December 2003 and repeated in 2004, ending in December 2004 Results to be communicated to local farmers groups near Mbalmayo	Repeat of Y1 effort

1.3. Rehabilitation and Establishment Research (continued)

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
	RE1-3. Establishment of cocoa in timber plantations thinned to various densities	1. Plant cocoa seedlings as an understorey in a 14-yr old *Terminalia ivorensis* plantation with tree density of 0, 40 and 192 stems ha. 2. Clean the understorey of the plantation and plant cocoa and food crops and monitor the effects of different tree densities and intercropping.	Recommendations for the establishment of cocoa-*Terminalia* agroforests Impact of shade on establishment of young cocoa	July 2003 establishment of cocoa seedling nursery (2000 trees). August 2003, all timber trees measured. August 2003, discussions completed with collaborating farmers September 2003, full biophysical assessment of site and initial land preparation December 2003, full assessment of aboveground carbon stocks in different treatments December 2003 peer reviewed journal article in press on the development of such systems April 2004, planting of cocoa Measurement of cocoa establishment and growth, shade canopy development from April 2004 on a monthly basis, as well as soil water content	Continuation of Y1 activity, with intensification of effort expected ni 2004. Trial to be planted in April 2004

1.4. Environmental Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
	ER1-2. Comparison of shaded and unshaded cocoa systems	1. Paired shaded and unshaded sites for ecological and economic characterisation to assess shade effects. 2. In each plantation, 10 m x 10 m plots will be delineated. 3. Ecological characterization Measures/Counts of : Cocoa tree density and growth characteristics Non-cacao tree species density and girth. Tree mass of hardwoods Pod counts, yield estimates and nutrient exports by cocoa Soil sampling Soil water content Pests and diseases scoring scoring of lichen and bryophyte density on trees Litter sampling & decomposition. Soil faunal activity.	Draft review article for international journal on shade effects Technical report on the impact of shade on the agronomic performance of cocoa agroforests. Recommendations to farmers in the area on shade management	By June 2003. Visit and select potential sites for study. By November 2003 Observation plots established By December 2004 Completion of measurements By January 2005, draft article	Continuation of Y1 activity.

1.4 Environmental Research (continued)

Objective	Activity	**Implementation Strategy**	**Expected Results / Deliverables**	**Performance Indicators**	**Status**
Enhanced environmental services provided by tree crop based cropping systems	ER1-3. Farmers' agronomic and ecological knowledge and management of cocoa multistrata systems in Southern Cameroon.	Acquisition of farmers' ecological and agronomic knowledge of cocoa farming using participatory research techniques. Formal representation of local knowledge Quantitative survey to validate knowledge abstractions within cocoa producing population	Recommendations for extension programs and farmer field schools Recommendation for applied research programs	Completed thesis 1 Journal article submitted, 1 draft under internal review, Four knowledge databases Survey database	Continuation of Y1 activity with no cost extension. Thesis to be completed by Sept 2004.
	ER1-4. Literature review on shade effects in cocoa	Collection and evaluation of existing literature on the effects of shade on cocoa growth	Draft review article for international journal on shade effects Technical report on the impact of shade on the agronomic performance of cocoa agroforests.	By July 2003, literature collection completed. By October 2003, literature collection documented and databased in Endnote By April 2004, draft article	Continuation of Y1 activity. Writeup into early 2004.

1.5. Post Harvest Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Improving post-harvest practices to ensure quality	PH1-1. An evaluation of genetic and geospatial factors associated with red powder of Cameroon bulk cocoa origins	Conduct in conjunction with farmer's germplasm collection of Activity 1. in Table 1.2 above. Test collected cocoa beans for reddish color.	Understanding of the origins of the reddish color of Cameroon cocoa powder Trade strategy for marketing cooperatives for recapturing the $5 million annual premium once received for red color.	Accessions collected and cocoa beans sent for color analysis	Collection scheduled to begin in mid September 2003.

1.6 Policy Research

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Identification and analysis of policies and institutions for increased competitiveness of the West African tree crops sector	PR1-1. Analysis of major production and marketing constraints at the household level in current cocoa and cashew systems of West Africa	1. Conduct baseline surveys of tree crop producing households in Nigeria, Cameroon, Cote d'Ivoire, Ghana, and Guinea characterizing production systems, tree stock investment behavior, labor utilization, tree stock quality, agronomic practices, farm gate marketing channels, and rural service provision 2. Conduct econometric and descriptive analyses.	Country baseline reports analyzing supply response and investment behavior of small farmers, marketing behavior, spatial pricing patterns at farmgate, rural credit provision, use of child labor. Policy recommendations for increasing farmer incomes and reducing marketing margins.	Country databases Baseline reports Synthesis reports Journal articles	Continuation of Y1 activity funded out of Research and Impact Coordination budget with $1,900 carryover

1.6 Policy Research (continued)

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Identification and analysis of policies and institutions for increased competitiveness of the West African tree crops sector	PR1-3. Analysis of the role of child labor in West Africa tree crops sector	Descriptive and econometric analyses of the extent and role of child labor in the cocoa sectors of Nigeria, Cameroon and Ghana	Policy recommendations for alleviating the worst forms of child labor in the cocoa sector of West Africa	Three STCP monographs on labor with special focus on child labor Synthesis report on child labor findings for RCI, Nig., Cam., & Gha. Quantitative report on RCI child labor situation	Continuation of Y1 activity, focus on synthesis of RCI quantitative worker survey
	PR1-4. Spatial analysis of baseline survey	Combine baseline survey parameters by administrative divisions with existing GIS layers on administrative boundaries.	Spatial differentiation of major production and marketing parameters in the cocoa sector of West Africa for informing spatially explicit policies and rural development efforts.	Report on spatial representations of key production and marketing parameters for cocoa sectors of Ghana, Cameroon, and Cote d'Ivoire completed by December 2003.	Wrap up of activity early in Y2.
	PR1-5. Investigating the determinants of child labor and schooling in cocoa sector	Micro-econometric analysis of child labor household data set from Cote d'Ivoire	Policy recommendations for increasing children's schooling in rural cocoa producing areas relative to work.	Analysis completed in Juillet 2003 Draft article completed in August 2003 Expected publication in March 2004	Final revisions in Y2 to existing study.
	PR1-6. Literature review of agricultural labor markets and labor migrations in West Africa.	Literature review of agricultural labor markets in West Africa	Compilation of knowledge on labor markets and labor migration in West Africa for better informing labor policies.	Draft report submitted in June 2003 Annotated bibliography	Wrap up activity in Y2.

2.1 Technology/knowledge dissemination thru FFS:

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Improve farmers' decision-making capacity thru FFS	FS1-2. Curriculum development	Workshops, protocol development and testing by resource persons, compilation of validated protocols, development of country specific curriculums, documentation on the steps in setting up a FFS.	Validated protocols STCP FFS manual	Number of protocols developed, validated and in use Workshop report	On-going
	FS1-3. Provide technical backstopping to farmer field schools	Field visits and email communication Informal training of master trainers	Manual on how to implement FFS for tree crops M&E framework for FFS Well trained facilitators and master trainers	Percentage of facilitators with high test scores at final TOT Improved performance of facilitators and master trainers as measured by performance evaluations	On-going
	FS1-4. Promote institutionalization of farmer field schools	* Train master trainers from farmer organizations and national extension systems * Raise awareness among farmer organizations about the FFS approach through field visits, discussion etc. * Develop guidelines and procedure for recruiting new master trainers from farmer organizations and extension and supported by them	* Improved understanding by farmer organizations of FFS approach *FFS managed and supported by farmer organizations	* Number of FFS supported by farmer organizations * Number of master trainers and facilitators supported by farmer organizations	New activity

	FS1-5. Integrate social messaging on child labour in FFS curriculum and activities	* Protocols to develop awareness of child labour issues * Develop and test other approaches for use in FFS	* Validated protocols * New approaches to advocacy role of FFS	* Number of protocols developed, validated and in use * Level of awareness among facilitators and FFS participants of child labour issues	4 protocols in use Collaborative activity with WACAP

2.2. TECHNOLOGY DISSEMINATION THRU PARTICIPATORY TECHNOLOGY DEVELOPMENT

Objective	**Activity**	**Implementing strategy**	**Expected results/deliverables**	**Performance indicators**	**Status**
2. Increase farmer involvement in tree crops research through participatory technology development (PTD)	TD1-1. Provide leadership and technical backstopping to pilot projects	Field visits and email communication	Methods for organizing and implementing PTD activities and forming linkages with FFS	Number of farmers involved in PTD	New activity
	TD1-2. Coordinate training of master trainers and facilitators on PTD	Formal and informal training	Training materials on PTD for cocoa	Number of MTs and facilitators trained	New activity

2.3. TECHNOLOGY DISSEMINATION THRU INNOVATIVE EXTENSION APPROACHES

Objective	Activity	Implementing strategy	Expected results/deliverables	Performance indicators	Status
3. Disseminate information on sustainable tree crop management practices through innovative extension approaches	IE1-1. Provide leadership and technical backstopping to pilot projects and collaborating institutions	* Field visits and email communication * Coordinate training of partner institution staff	Extension materials e.g. posters, radio messages	* Number of extension messages developed and in use * Number of dissemination approaches tried * Number of partner institution staff trained *Number of farmers reached	New activity
	IE1-2. Integrate social messages on child labour in extension approaches	Social marketing	Extension materials with both technical and social content	* Number of messages with both technical and social content * Number of farmers reached	New activity

2.4.TECHNOLOGY/KNOWLEDGE DISSEMINATION--MANAGEMENT AND COORDINATION

Objective	Activity	Implementation strategy	Expected results/deliverables	Performance indicators	Status
4. Coordinate and manage project activities	MC1-1 Monitor project activities	Field visits, email communication, compiling information from reports	Publication on STCP's experience with FFS on cocoa	Reports, publication	M&E framework for FFS drafted
	MC1-2 Seek new funding	Coordinate with other STCP components and other projects	New funding	Proposals	New activity

3. IMPACT ASSESSMENT

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Measure economic, environmental and social impacts of tree crop systems & interventions.	IA1-2. Development of a monitoring, evaluation and impact assessment framework for project interventions.	Develop theory of market failures, measurement, normative prescriptions (e.g. child labor) and specificity of perennial tree crops. Use input from IA1-1 to illustrate approaches to different categories of problems.	Robust methodology for fine tuning tree crop interventions and measuring their impacts.	Draft manual on ME&I distributed to pilot project managers in November 2003..	Revision of manual and illustration with practical examples ongoing thru 2005.
	IA1-4 Estimated economic value of secondary products and environmental services provided by cocoa agroforests in Nigeria and Cameroon.	Market and non market valuation techniques combined with ecological characterization of agroforests to impute values to the medicines, fruits & timber, biodiversity, watershed services and climate mitigation of these land use systems.	Estimation of the value ofsecondary products, non-market goods & services produced by cocoa agroforests.	Inventory and classification by use of plant species and densities in cocoa agroforests determined in both Cameroon and Nigeria by January 2004. Initial draft technical report by September 2004	New activity. In Cameroon this activity will benefit from the ecological characterizatio ns already undertaken (ASB, STCP, and Tropenbos)
	IA1-5 Determination of chronic poverty thresholds and poverty traps among cocoa sharecropper tenants in Nigeria and Cote d'Ivoire.	Use of qualitative and quantitative rural sociology research methods to describe dynamic poverty thresholds among sharecropper population of Nigeria and their coping strategies	Relationship between household characteristics, farm productivity, farm size and poverty traps among tenants established. Impact of innovations on leasehold tenants described.	January 2004 first round of scoping interviews conducted. April 2004 quantitative survey of sharecroppers completed. May 2004 data base created July 2004 technical report Sept 2004 draft article for referred journal	New activity

	IA1-6 Needs assessment of producer marketing organizations for enhanced supply chain management	Needs assessment methodologies applied to the issue of information systems and new trading systems required to ensure quality and maintain product identity in supply chain	Development of a project proposal for supporting enhanced supply chain management in key export commodity sectors of sahelian and coastal West Africa	Initiate assessment in October 2003 Report findings at proposal design workshop in February 2004 Present proposal to USAID and private investors by March 2004 for funding	New activity contingent on getting funding for design phase of project from USAID WARP.
Measure economic, environmental and social impacts of tree crop systems & interventions.	IA1-7 Evaluation of credit impacts on intensification of cocoa production systems.	Econometric and descriptive analysis of STCP baseline data to examine the effects of rural credit on the intensification of cocoa production.	Understanding of the role of rural credit and its potential for increasing the competitiveness of West African cocoa sector.	Produce initial descriptive analysis of data sets by Dec 2003 Econometric analyses completed by February. Final report by March 2004 Referred Publication by May 2004.	New activity
Conduct evaluations of potential innovations, institutional change and policy change on net social welfare	IA2-1. Ex ante economic evaluation of the costs of alternative methods of delivering improved planting materials to farmers	Site visits to existing dissemination centers of cocoa planting materials Calculation of economic costs of seedgardens,tissue culture, budwood gardens & grafting, hand pollination, cooperative nurseries vs. individual nurseries, bareroot seedlings versus polybag, etc	Recommendations for low cost effective dissemination of improved planting material	Research protocol and workplan developed by Sept 2003 Site visits to Ghana, Nigeria, Cameroon, RCI by January 2004 Trip reports Technical report by March 2004 Journal article	Continuation of Y1 activity

	IA2-2. Structure conduct and performance studies of liberalized cocoa markets in Nigeria, Cameroon and Ghana	Marketing analysis of **structure** (no. of buyers, grades and standards, brands, vertical and backwards integration, barriers to entry, market share concentration) **conduct** (price discovery mechanisms, buying strategy) and **performance** (innovations, efficiency, cost margins at various levels in system).	Identification & prioritization of interventions (policies, institutional or trading) to improve efficiency of supply chain management.	Initiate assessment in October 2003 Report findings at proposal design workshop in February 2004 Present proposal to USAID and private investors by March 2004 for funding	New activity contingent on getting funding for design phase of project from USAID WARP.

4. Management and Coordination:

Objective	Activity	Implementation Strategy	Expected Results / Deliverables	Performance Indicators	Status
Impact & research coordination	MC1-1. Functioning of office				
	MC1-2. Travel				