INIAP
ESTACION EXPERIMENTAL TROPICAL PICHILINGUE
PROGRAMA NACIONAL DE CACAO Y CAFÉ

COCOA RESEARCH AND TECHNOLOGY TRANSFER TEAM

INIAP-BIOVERSITY Project on:

COCOA PRODUCTIVY AND QUALITY IMPROVEMENT, A PARTICIPATIVE APROACH

Planting and management of young cocoa clones as part of collaborative and participative research activities in the zone of Moraspungo (piedmont), province of Cotopaxi.

TECHNICAL PROGRESS REPORT
FIRST SEMESTER REPORT - YEAR 4 (June 2007 – May 2008)

QUEVEDO - ECUADOR
July – 2008

CFC/ICCO/IPGRI Project Progress Report Format

B. End-of-year Progress Report (5-15 pages)

1. **Cover page**
    - According to the IPGRI Fact Sheet, see format below.
2. **Introduction**
    - General presentation of the achievements, mentioning also any substantial changes from the agreed yearly work programme
3. **Results**
    - Describe briefly the most significant results for each Component. You may wish to refer to the Annex 1 and to other annexes for any detailed results or reports on specific activities carried out.
    - Discuss any significant finalised result, such as on new selections made, disease or pest resistance screening and possible other studies undertaken within the project)
4. **Additional activities**
    - Activities not mentioned in the Annex 1 (annual work plan of your institution)
5. **Constraints**
    - Identify any general technical or administrative problem related to project implementation.
    - Give technical justifications for any significant change in use of the budget
6. **Recommendations for next reporting period**

Annex1. Summary of results by Project Component and Activity

- Use table format according to annual work plan (see format below)
- Quantify clearly the targets achieved: number of clones established or screened, crosses made, ha of land cleared, planted, *etc.*
- The first two columns should be identical to the work plan.
- Estimate the degree of advancement in relation to the annual Work Plan: "On schedule", "Behind schedule", "Postponed", *etc*

Other Annexes:

- Reports on specific activities such as disease and insect resistance testing.
- Tables with new trials planted.
- Tables with any significant quantified results only (no need to present intermediate results on one year observations of field trials)
- Do not present tables already presented earlier reports

FULL TITLE of REPORT/PROJECT	Cocoa Productivity and Quality Improvement: a Participatory Approach	
AUTHOR(S) of Report	Freddy Amores (Local Project Coordinator) Alfonso Vasco (Senior researcher) Juan Jiménez (Junior researcher) Carmen Suárez (Senior researcher) Silvia Baño (Research student) Luis Quinaluisa (Research student) José Montoya (Research student) Jorge Vera (Research student)	
NAME/ADDRESS of Commissioned Organization or Contractor	Instituto Nacional Autónomo de Investigaciones Agropecuarias (INIAP), Edificio del Ministerio de Agricultura, Piso 4, Quito-Ecuador.	
DATE REPORT SUBMITTED	July 1/2008	
TYPE OF REPORT	End-of-Year 4 Report	
PREVIOUS ANNUAL REPORTING DATES	Year 1, Year 2 and Year 3	Dates: June 2007- May 2008
IPGRI LETTER OF AGREEMENT *To be completed by IPGRI Coordinator*	LOA COCOA	
IPGRI PROJECT CODE	CFL-E08	
IPGRI CONTACT	Bertus Eskes (International Project Coordinator)	
ABSTRACT *(100-200 words)*	Possibilities to prospect and collecting of additional promising cocoa genotypes in the northern zone of the Esmeraldas 's province, mainly Criollo type germplasm, have concreted and will take place in the next few weeks. Thus Bioversity efforts will besupported and complemented by a local project. Data recording and maintenance continued on the participative and collaborative evaluation trials currently conducted in the zones of northern Esmeraldas, southern Esmeraldas, Las Naves, Milagro, Morasplungo, Puerto Maldonado and E. Pichilingue. A new trial was just set up in April in the zone of Simon Bolivar. All genotypes identified in early prospected zones have been introduced into the E.Pichilingue germplasm bank. New introductions were also made in 2008. Fermented and dried bean samples from the ICT trial were sent to CIRAD for sensorial and chemical evaluation. An experiment to measure the response of several cocoa clones to different pruning intensities is ongoing and generating very informative data. Some of this information has already been disseminated to farmers during a field day. A study to identify new genetic sources for Monilliasis 's resistance was successfully completed with relevant results for future breeding schemes. Best trees from several hybrid trials have been selected and are ready for clonal multiplication to set up corresponding observation plots. A group of them have actually been cloned and field planted last March. A research to evaluate the flavor profile of the fresh beans and compatibility characteristics of these trees is also ongoing. Based on the information provided by these trees a new crossing scheme to generate segregating progenies has been designed and first manual pollinations started. Finally, one workshop related to collaborative and participative approaches on cocoa, and a international Seminar on improving of cocoa varieties in the Americas were successfully planned and executed within the reported period.	
KEYWORDS	Country/Region: Crop(s): Cocoa Subject: Productivity, Quality, Improvement, Participatory selection	

Annex 1. Summary of results obtained during the reporting period (June 2007-May 2008)

Code	Description of activity and of sub-activities (as in Year 4 work plan)	Quantifiable Outputs for Year 3 (numbers of accessions planted, number of farms visited, etc)	Degree of advancement (On schedule, Delayed, Postponed)	Comments (justification for any changes)
1.1.1	Survey on planting material present in cocoa farms and on criteria applied by farmers		On schedule	A complementary survey in an unexplored area and with the support of other project, has been planned to take place definitively in the second semester 2008. Some 150 new trees are expected to be identified to collect budsticks and make the necessary graftings. A duplicate of this material will remain in the University of Esmeraldas and other duplicate in the E. Pichilingue of INIAP
1.1.2	Identification and collecting of promising mother plants in farmer 's populations according to selection criteria applied by farmers and researchers	Some of the germplasm selected and introduced in the early years of the project did not survive. However, since trees selected in cocoa farms were duly identified in most cases, it facilitated collecting again budsticks for grafting to replant accessions that failed during establishment. Currently some 45 accessions were grafted totaling 200 clonal seedlings which are being taken care of in the project's nursery. These will be field planted in the next few months.	On schedule	

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1.3.1	Nursery multiplication, field planting and maintenance of interesting planting material collected in farmer 's field and established in observation plots on station.	Maintenance work has been conducted in the participative trials established in the zones of Las Naves, in the southern zone of the province of Esmeraldas (site known as "Tres Vias"), in the northeastern zone of the province of Esmeraldas (site known as Colon Eloy), in the zone of Milagro (site known as "La Constancia"), in the north western zone of the province of Pichincha (site known as "Puerto Maldonado"), in the zone of Moraspungo, and a final experiment in the E.Pichilingue in the zone of Quevedo. Data registration is also going on in these sites.	On schedule	Some accessions have incomplete number of plants per accession. Budsticks from the plants available are taken to graft rootstocks already set up in empty spaces. In this way we are completing accession rows showing vacancies.
1.3.3	Study of the genetic diversity of accessions collected in farmers fields using SSR markers		Delayed	Leaf samples have been sent to the USDA molecular biology lab at Miami, during the first two years of the project. Results have not been received yet.
1.4.2	Organization of "National stakeholders planning workshop" to work on criteria and recommendations for participatory selection of new varieties.	The workshop "Progress on participative research on cacao with the inclusion of producers from three traditional cocoa growing zones of Ecuador" took place in the Estación Pichilingue on 26-27 November. This was organized by the Programme of cacao of INIAP. The objectives of the event were: 1) To explain the concepts, importance and advances of the participative research approach to increase the efficiency of cocoa selection processes, and 2) To demonstrate the practical use of technologies to identify "superior trees" of cocoa in traditional cocoa fields and for rehabilitation and recovering of the productivity of low yielding cocoa huertas. Some 36 farmers as well as other operators of the local cocoa chain attended the event, particularly from the zones of Esmeraldas, Echeandia and Las Naves, where participative clonal trials are being conducted.	On schedule	The information disseminated in this event is being compiled and systematized to produce a technical document for easy distribution and reference.

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		On the other hand, an international Seminar on "Cocoa variety improvement in the Americas: Collaborative and farmers participatory approaches" was organized jointly by INIAP and Bioversity international and took place on August 20-25 in Hotel Oro Verde, Guayaquil. This congregated local farmers and other operators of the Ecuadorian cocoa chain, as well as scientists, technicians and other operators of different producing and consuming countries (Venezuela, Colombia, Trinidad, Peru, Mexico, Costa Rica, República Dominicana, Mexico, Brasil, Estados Unidos, Alemania, Italia y Francia). A total of 174 people attended the event which as the main objective: To share and disseminate information on the current status of research about the genetic improvement of cocoa as a factor of sustainability of the cocoa supply provided by America. The event received substantial press coverage		
2.1.1	Evaluation of the international clone trial (ICT) established in the CFC/ICCO/IPGRI project on "Cocoa germplasm utilization and conservation for productivity and field resistance"	Requested numbers of fermented and dried bean samples were produced for most tested clones in the ICT trial, particularly for those bearing enough pods. So far four rounds of samples were completed. These samples were sent to CIRAD for quality analysis (chemical and sensorial) and redistributed to other labs	On schedule	A decision was taken to discontinue the recording of data since January 2008. Corresponding data base is being systematized to produce a research paper. However, an additional research activity to evaluate resistance to the "mal del machete" disease will continue on a few trees of one replication.

Code	Description of activity and of sub-activities (as in Year 4 work plan)	Quantifiable Outputs for Year 3 (numbers of accessions planted, number of farms visited, etc)	Degree of advancement (On schedule, Delayed, Postponed)	Comments (justification for any changes)
		The trial "Evaluation of local clones I" was discontinued on late 2006. The evaluation period has been large enough to reach a precise conclusion on the behavior and comparison of the clones tested. Instead the plots were used to set up a new trial on "Study on the phenological, sanitary and yield response of several cacao clones when pruned at different intensity levels" . So far the data recorded shows that vegetative growth, fructification and yield are strongly influenced by pruning intensity being this effect depressive with the highest intensity. Two groups of farmers have already visited these plots (September and November 2007) to practice how pruning is done and which the results could be José Montoya, a research student, is working since June 2007 on the evaluation of a group of Nacional type clones on a trial established during the first CFC/ICCO/IPGRI project. He will try to confirm some early data on the performance of at least one clone with a yield that apparently approaches that of CCN-51.		
2.1.3	Validation of varieties in Regional Variety Trials (RVT) in South America (20 clones) and in Africa (15 hybrids). Reception of seeds and budwood, nursery and field establishment. Other hybrid trials.	Main result produced by the RVT is that the hybrids GU-154L x ICS-43 (Costa Rica), CCN-51 x CC-137 (Costa Rica) y CCN-51 x TAP 12 (Ecuador) out yielded all other germplasm being tested. On the other hand, recording of data in the trial known as "QTL trial" continues. Silvia Baño and Luis Quinaluisa, both working as research students, started a study to characterize the flavor profile in fresh beans from cocoa trees selected in the hybrid trials set up in the first CFC/ICCO/IPGRI project: they also are characterizing the degrees of compatibility of these selections. This research is progressing normally and one of its components is to correlate the flavor profile of fresh beans and roasted beans to see if it is possible to predict flavour chocolate quality just by tasting the fresh cocoa beans.		

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		Databases from four hybrid trials funded by the first INIAP/IPGRI project were sent to CIRAD for statistical analysis. Results were received and used as inputs to plan the work of Silvia Baño and Luis Quinaluisa. These results were also used to advance the selection of the trees aimed at further clonal multiplication. Similarly these results were also used as inputs to design a new crossing scheme to generate additional segregating progenies. It should be noted that also as e result of the hybrid trials funded by the first CFC/ICCO/IPGRI project, a validation trial with a group of selected hybrid trees (CCN-51 x Nacional cocoa) was set up in 19 February 2008 in a State named as Rio Lindo. The new experiment is made up of seven treatments (including the controls EET-103 y CCN-51) and 2 replications. Similarly, another validation trial with clones from selected hybrid trees was established on 19 March 2007 in Pichilingue. It is made up of 30 treatments and two replications. The controls are EET-103 and CCN-51.		
2.3.2	Selected germplasm received from intermediate quarantine centers and established in nurseries and field collections in user countries.			No additional material received

Code	Description of activity and of sub-activities (as in Year 4 work plan)	Quantifiable Outputs for Year 3 (numbers of accessions planted, number of farms visited, etc)	Degree of advancement (On schedule. Delayed, Postponed)	Comments (justification for any changes)
2.4.1	Improvement of early disease resistance screening methods and related studies	Otton Lopez, a research student, completed the following piece of research to identified new sources of Moniliasis resistance in cocoa pods as a contribution to future breeding schemes aiming at reducing this disease's incidence. The genotypes 2076 and 2078 showed levels of Moniliasis resistance substantially higher than the resistant control (EET-387) The behavior of these trees seems to have a strong genetic base rather that being the result of unfavorable weather conditions for the disease. So this a relevant product of the project.		
2.5.3	New segregation progenies produced and shipped to participating countries			No activity to report
2.6.1	Visits of project scientist to countries participating in the project			No activity to report
2.6.2	Support training for students	The students Silvia Baño, Luis Quinaluisa y Wilson Montoya, Otton Lopez and Jorge Vera were supported by the project to conduct individual pieces of research. Otton Lopez and Jorge Vera completed their research and left. The others continue their studies during 2008 and possibly in the first semester 2009.		Technical Bulletins of the work done by O. Lopez and J. Vera will be produced for dissemination within Ecuador.

SUMMARY STATEMENT OF EXPENSES FOR THE CFC/ICCO/IPGRI COCOA "PRODUCTIVITY" PROJECT (CFC/ICCO/26)

1. Collaborating Institute: INIAP

2. Period of reporting: **Diciembre 01-2007 a Mayo 31-2008**

3. Date submision: **Junio 12/2008**

4. No of financial report: 1

5. Exchange rate for period: *(Ecuador official currency is the USA. dollar)*

6. Balance of CFC Funds Received, Spent and Carried Forward to the next reporting period

Period	CFC funds sent by IPGRI (US$ in payment authorisation)	CFC funds effectively credited into		Expenditures claimed (CFC funds)	
		US$ Bank account*	Local currency account* (by IPGRI or by transfer from US$ account)	Local currency	US$ equivalent
Opening balance	141.313,42	141.306,42			133.813,86
Reporting period	19.850,26	19.850,26			11.757,21
New balance**	161.163,86 (1)	161.156,68	(2)	(3)	145.571,07 (4)
Funds carried forward					15.586,61
Interests received (if applicable)*					

* Bank statements covering the reporting period to be attached

** To be reported as opening balances in the next Summary Statement

7. Signatures (and dates): *Institue director* and/or *Chief Accountant* | *Adm. Coordinator* (mandatory) | *Techn. Coordinator* (mandatory)

(3 minimum)

Local Travel Expenses SOE (Project CFC/ICCO/26) IPGRI Use more than one sheet if space not sufficient

Institute (abbr.) INIAP **Period of reporting: Dic-01/2007 a Mayo-31/2008** **date: Junio 12 del 2008**

Name off staff member	Type of Staff*	Destination	Dates (From/to)	subsistance paid	ticket**	Other cost**	total (local currency)	total (in US$)
JUAN AGAMA P.	Scientist.	PROV. ESMERALDAS, ESMERALDAS	Dic-12-14-2007	225.00			225.00	**225,00**
ALFONSO VASCO	Scientist.	PROV. BOLIVAR, LAS NAVES	Feb-09-2008	11,25			11,25	**11,25**
JUAN AGAMA P.	Scientist.	PROV. BOLIVAR, LAS NAVES	Feb-09-2008	11,25			11,25	**11,25**
MILTON TERAN M.	Tecnical Asistants	PROV. ESMERALDAS, ESMERALDAS	Mzo-04-2008	11,25			11,25	**11,25**
HILTON GUERRERO C	Tecnical Asistants	PROV. EL GUAYAS, MILAGRO	Abr-25-2008	77,50			77,50	**77,50**
JUAN AGAMA P.	Scientist.	PROV. COTOPAXI, LAS JUNTAS	May-23-2008	11,25			11,25	**11,25**
GRISNEL QUIJANO R.	Tecnical Asistants	PROV. COTOPAXI, LAS JUNTAS	May-23-2008	11,25			11,25	**11,25**
							-	-
							-	-
							-	-
							-	-
							-	-
Total Cost (or Sub-total to be placed on top of next page if one page not sufficient)								**358,75**

*S = Scientific (academic staff) T = Technical assistants. D = Driver L = Labourers. ** Only Legitimate costs not covered by the subsistence.

Institute director and/or	Chief Accountant	Adm. Coordinator (mandatory)	Techn. Coordinator (mandatory)

Personnel Costs SOE (Project CFC/ICCO/IPGRI:26)

Institute (abbr): INIAP/IF Period of reporting: **DIC-01-07 a MAY-31-08** **Date : JUNIO-12/2008** Exchange rate:

Type of Staff	Names (or numbers for manual labour)	Monthly cost (local currency)	No. Of months	Total cost (local currency)	Total cost (in US$ eq.)	Document number
Technical assistants (add copies of payroll slip for monthly salaries above 500 USD):						
Laboratory						
Field	Juan Emilio Agama Parreño	154,26	5		771,28	
Manual labour (individuals paid by the institute):						
Fixed		634,31	6		3.805,88	
Casual		194,38	3		583,14	
Contract labour service (add receipts above 500 USD)						
Total cost (local and US$):					5.160,30	

EN EL PRESENTE INFORME SE CONSIDERARON LOS GASTOS QUE CORRESPONDEN AL SEMESTRE(JUNIO A NOVIEMBRE-2007)
EN ESTE PERIODO NO SE REALIZARON CIERTOS PAGOS DE OCTUBRE Y NOVIEMBRE 2007, SE LO HICIERON CON FECHA POSTERIOR.

Signatures:	*Institute director and/or*	*Chief Accountant*	*Adm. Coordinator* (mandatory)	*Techn. Coordinator* (mandatory)
(3 minimum)				

SOE for funds (continue)

Periodo : Dic. 01 del 2007 al 31 de Mayo-2008 | INIAP - IPGRI | Date: Junio 12-2008

Category Code*	Item	Dates (month/ year)	Purchase < 500 US$ eq. ***	Purchase above 500 US$ equivalent****		Total value in US $
			Local currency	Local currency	Document no.	
I			0,00			0,00
TOTAL I	**Equipment**		**0,00**			**0,00**
II	Bienes Muebles					
TOTAL II	**Infrastructure**					
III	Fertilizers	Marzo 10 del 2005		1.637,60	C/E 972,975	1.637,60
III	Herramientas	Feb-25-2008	80,36			80,36
TOTAL III	**Consumables**		**80,36**			**1.717,96**
V	**Personnel****					
IV	*Mano de Obra Fijo*	DIC-10/2007 A ABR-4/2008		3.805,88	C/E 982 977 970 957 943 934	3.805,88
IV	*Mano de Obra Eventuales*	ABR-22-2008 A MAYO-22-2008		583,14	C/E 937 986,881	583,14
IV	*Profesionales(1 Persona)*	DIC-28-2007 A ABR-04-2008		771,28	C/E 9 (3.980,94)	771,28
Total IV	***Personnel****			**5.160,30**		**5.160,30**
V	***Local Travel***					
V	*Viáticos y Subsistencias*	DIC-10-2007 A MAYO 23-2008	358,75			358,75
Total V	***Travel***		**358,75**			**358,75**
VI	Tickets aereos					
Total VI	Trave. International (Air Plane tickets)					
VII	**Operational**					
VII	Materiales oficina	Dic 13/2007, Enero 1, 17,31, Feb.1, 25, 27, Marzo 3, Ab. 4/08	1.038,96			1.038,96
VII	Repuestos y accesorios	Dic 19/07, En 10, 31, Marzo 19, Ab. 22, Mayo 7 y 22/08	1.337,35			1.337,35
VII	Teléfono	DIC-13-2007 A MAYO-22-2008	94,70			94,70
VII	Servicios bancarios	DIC-02-2007 A MAYO 02-2008	6,00			6,00
VII	Servicios DE ALIMENTACION ASIST	DIC-06-2007 A MAYO 29-2008	676,00			676,00
VII	Servicios DE XEROX Y EMPASTADA	ENE-10-2008 A ENE-11-2008	125,20			125,20
VII	Servicio DE ANALISIS DE SUELOS	MAYO 29-2008	95,92			95,92
VII	Mantenimiento vehiculo	ENE-31-2008	77,00			77,00
VII	Mantenimiento vehiculo	MARZO-19-2008	530,00			530,00
VII	Mantenimiento de Computador	FEB-06-2008 A MAYO 22-2008	230,00			230,00
VII	Combustibles y lubricantes	DIC-10-2007 A MAYO 23-2008	309,07	-		309,07
VII	Otros Materiales					0,00
Total VII	***Operational***		**4.520,20**	-		**4.520,20**
TOTAL (all categories)			**4.959,31**	6.797,90		**11.757,21**

* Sub-totals to be presented for each Category of Expenses (local currency and US$)

** Details to be presented on separate SOE sheets

*** Grouping of items with total group value not exceeding 500 US$ is allowed

**** Invoices and SS3 forms to be attached separately for purchases with individual value > 500 US$

Signatures (and dates):

Accountant (mandatory)

Asm. Coordinator (mandatory)

Techn. Coordinator (mandatory)