

Using native cacao varieties to reduce poverty and conserve globally important biodiversity in Northern Ecuador

Project proposal submitted to the CGIAR-CSO Program:

“Enhancing the Impact of Research for Development:
A Pilot Competitive Grants Program to support innovative partnerships and projects”



July 2007

Submitted by Conservación y Desarrollo
in partnership with Bioversity International, Instituto Nacional Autónomo de Investigaciones Agropecuarias, Corporación Esmeraldeña para la Formación y Desarrollo Integral, Rainforest Alliance, Universidad Técnica de Esmeraldas



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Date established:	1992

II. Project Details

Title of Proposal:	Enhancing the Impact of Research for Development: A Pilot Competitive Grants Program to support innovative partnerships and projects
Project Duration	24 months
Country	Ecuador

III. Primary CGIAR Center Partner

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V. Project Description

1. Project Title

Using native cacao varieties to reduce poverty and conserve globally important biodiversity in Northern Ecuador

2. Problem Definition

Don Carlos and Doña Emelda, a couple of poor farmers in their late 50s live in Colón Eloy, a remote Afro-Ecuadorean community in the coastal lowland province of Esmeraldas, Ecuador, bordering Colombia. Amidst secondary rain forest and encroaching industrial oil palm and teak plantations, the couple farms four hectares of land they own. The tropical climate is perfectly suited to growing cocoa and other staples such as plantains and fruit trees.

The couple's two surviving children Pedro and Zuleima have long left the farm. For lack of opportunities in Colón Eloy, Pedro moved to Quito, where he works as a poorly paid construction worker. He dislikes this chilly highland city, and the harassment he is subjected to but he feels there is little economic potential in his father's land with an annual harvest of 20-30 quintales¹ of dry cocoa beans, which hardly justify the hard year-round work.

Zuleima works as a maid in the town of Esmeraldas, the provincial capital. She manages to send modest remittances to her aging parents, but even so, at a disposable monthly household income of US\$ 40, Carlos and Emelda have not enough to make ends meet. The purchase of clothes, medicines, and basic food items that they cannot produce, such as rice and cooking oil, leave little money to afford "luxuries" like seeing a doctor or buying meat for a Sunday meal.

This couple's plight, the inability of deriving a reasonable income from commodity production, and the resulting out-migration of younger people, fit the profile of most of the rural households in Esmeraldas. This proposal suggests a pathway to help them get out of poverty and move towards a more sustainable future as cocoa producers.

Carlos likes cocoa. The crop requires no capital at all and only limited external inputs. Hardly more than a machete is needed to manage the trees. He delivers the freshly extracted seeds to a roadside collection point where they are picked up by buyers for further processing. When Carlos wants to expand he holding he places three seeds from the pod of a productive tree in the ground. At least one will be permitted to grow into a tree, and eventually fill the gap in his plantation.

Most of Carlos' trees were planted by his grandfather, and are 60-80 years old (Fig. 1). They are up to 10 m tall. Ravaged by fungal diseases that spoil many cocoa pods, the trees are a source for continuous disease inoculum, especially those with pods out of reach for removal and sanitation. Many of these trees bear only few pods, while some are outstandingly productive, despite the disease pressure, and account for much of the harvest (Fig. 2).

¹ One quintal is about 44.5 kg or 100 pounds



Figure 1. Plantation of relic cocoa trees in Esmeraldas, June 2007.

Two years ago, researchers from the University of Esmeraldas and the INIAP cacao program visited Carlos' farm. They asked him to identify the most productive cocoa trees in his orchard, and to name neighbors with similarly old trees. They came back to mark five elite trees by spraying the trunk with numbers; they weighed and counted the pods and beans from these trees, and took photographs. They took unusual interest in the trees with white or pale-seeded pods,

referring to them as 'criollos', and their enthusiastic demeanor suggested that these trees were indeed special.

Since then, nothing has changed and Carlos continues to gather his cocoa indiscriminately for sale at a standard price to passing traders or the nearby cooperative. He considered renewing his plantation from seeds in response to the external interest in his criollo trees, but from which trees should he take the seeds? Also, from decades of observation, he understands that new trees grown from seeds may be quite different from the mother trees. He is aware of grafting cocoa as a possibility to maintain desirable maternal characteristics, but he is not sure how to do it because of weak technical assistance in the area.

Two of his younger neighbors have chopped down most of their old cocoa trees in recent years to replace them with grafted trees known as CCN51. Trees from this new cocoa variety are expensive and require fertilizer and full sun. But Carlos has seen for himself the dramatic improvement in yield and he is toying with the idea of renewing his orchard with CCN51 as well. His contacts at the cooperative that buys his cocoa and the visitors to his farm claim that cocoa from CCN51 has bad quality, but his neighbors have no problem at all selling it. Why should he trust those encouraging him to preserve his old trees, when he doesn't get a cent more for his cocoa?

Carlos has also considered re-planting his land to oil palms, a crop not seen in Esmeraldas in his youth. Some of his neighbors have done so, and seem to be doing



Figure 2: Productive relic cocoa tree representing a *Nacional x Criollo* hybrid, Esmeraldas, Ecuador, June 2007.

well. A nearby processing facility provides purchase guarantees for all the oil palm fruits produced. Again, Carlos can't afford the initial investment and to disrupt the, albeit minimal, income stream from his current plantation. If it was not for these reasons he might already have done away with his old cocoa orchard.

3. Project Rationale and Objectives

Overall project rationale:

Carlos' dilemma is typical for millions of poor farmers in the developing world who can't make a decent living despite the fact that they are growing a potentially high value crop because they lack knowledge in good techniques and also about the interest of the market in special varieties. Low farm-gate prices for undifferentiated produce hardly justify efforts to conserve aromatic varieties. In a perfectly legitimate and economically sound decision, poor farmers abandon native crop diversity in favor of higher-yielding and more uniform varieties or more competitive crops altogether. This project addresses this issue and will help farmers conserve and expand the use of native cocoa germplasm that is highly valued by the market and receive a premium price for their efforts.

The focus on quantity over quality among local cocoa intermediaries is leading to the steady disappearance of traditional *Criollo*, *Trinitario* and *Nacional* varieties that are noted for their fine aroma. These are often poor yielders and more susceptible to fungal diseases, but they have acquired a reputation for quality and are increasingly coveted by external gourmet specialty markets. The continued cultivation of these varieties only makes economic sense to farmers if price premiums compensate them for reduced yields.

Yet, opportunities for poor farmers to derive greater income through a transition into high-value, high-quality markets do exist, particularly so for Esmeraldan cocoa. In response to the rapidly growing demand for high-end chocolate by international consumers, chocolate manufacturers develop differentiated products that set them apart from their competitors' products and that justify higher prices. Gourmet chocolate contains more than twice as many cocoa solids (>65%) as mass market chocolate products, and the quality of cocoa, particularly for specific varietal flavor characteristics, is becoming increasingly important. There is a strong market trend toward highly valued 'varietal' or 'single-estate chocolates'. This trend is providing economic incentives for farmers to continue growing their old indigenous materials.

Ecuador produces 50% of the world's supply of flavor cocoa². One of the current challenges to have a transparent and more direct supply chain between cocoa growers and fine chocolate buyers so that crucial quality information can be transmitted among the key actors.

Similar to the growth of the specialty coffee market in the 1980s and 1990s, international consumers are increasingly demanding higher quality cocoa products and differentiated origins. The fine chocolate market in Europe has grown 21% from 1995 to 2005³. As a crop that is grown exclusively in developing countries by predominantly small holder poor farmers, there is an increasing level of consumer awareness and concern over ethical issues in trade in cocoa and interest to know that farmers are receiving a price that relates to the price the consumer pays. Those

² Asociación Nacional de Exportación de Cacao (Anecacao), 2007, Ecuador
www.anecacao.com

³ International Cocoa Organization (ICCO) (2007). Assessment of the Movements of Global Supply and Demand. Market Committee Ninth Meeting March 2007.
<http://www.icco.org/documents/documents.aspx>

two factors of growing demand and limited world supply place Ecuador in a unique position to build a high value, market based on its traditional varieties.

Ecuador's reputation as a supplier of fine-flavored cocoa varieties, such as *Nacional*, *Criollo* and *Trinitario* has come under threat as Ecuadorean growers, traders and exporters blend traditional cocoa varieties with higher yielding, but less interesting cocoa hybrids (such as the CCN51 clone). Importers of Ecuadorean cocoa have alerted Ecuador that its reputation could be permanently damaged by the blending of varieties and the increasing adulteration of fine-flavored cocoa with hybrid varieties⁴. Identifying and segregating the production and handling of fine-flavored cocoa varieties will be of critical importance to the Ecuadorean cocoa industry.

The ***purpose of this project*** is to ***enable small-scale producer families of commodity cocoa in Esmeraldas to make a transition from their current production of low-value cocoa to the production and marketing of differentiated high-value cocoa for which the enhanced use of threatened and under-valued cocoa biodiversity is the most critical factor.*** Higher farm-gate revenues from high-value cocoa will not only contribute to the ***goal of improved farmer incomes***, but will also provide incentives for market and demand-driven ***on-farm conservation of cocoa biodiversity*** as well as native shade trees that indirectly will contribute to the preservation of habitats and environmental services such as carbon sequestration and protection of soil and water resources.

To achieve the purpose of the project, the partners of the project have designed ***research and development actions*** with the following specific objectives:

- Identify and evaluate high-yielding farmer *Criollo* and *Nacional* type trees in the Cayapas reserve (see map in Annex 1) as well as promising varieties in UTE's *ex situ* collection;
- Determine the quality potential of already identified high-yielding native clones through sensorial analysis;
- With farmer participation, reproduce elite farmer varieties⁵ and capacitate farmers in grafting and propagation techniques;
- Establish nurseries with elite farmer varieties and rehabilitate farmer orchards;
- Facilitate contractual relationships between smallholder cocoa growers and high end chocolate makers that recognize and reward differentiated high value cocoa.

Relevance of project partnership in achieving objectives:

The initiative for this proposal came directly from field experience and recognition for a need to preserve and expand the native cacao germplasm in Esmeraldas. This project will only last two years but its impacts will be felt long after its completion. Specifically, the trees that will be planted at the end of the project will come to fruition in 4-5 years and will last for decades as trees and a source of continual regeneration of the native stock. Thus it is important to have local partners who are committed to working with cocoa farmers over the long term. CEFODI is a local association based in Esmeraldas that represents over 300 farmer families and has been helping them to grow and market environmentally and socially responsible cacao since 2003. The farmers they work with have been Rainforest Alliance certified since 2006 and has been working with CyD since 2004. CEFODI was established in 1993 as an

⁴ 2007 field report by the International Cocoa Organization

⁵ Elite farmer varieties refers to varieties that have been identified by farmers on their land that have outstanding productivity and yield stability.

organization dedicated to social development in the Esmeraldas province. The participation of CEFODI and CyD is essential to ensure that the scientific advances realized during the project serve to benefit small scale farmers through building the skills, understanding and market reach that will enable continued replication of selected varieties and preferential pricing for differentiated product.

INIAP and University of Esmeraldas have been working together for over three years to collect promising material and establish clonal gardens of high yielding native varieties. These essential research activities will be reinforced and expanded in this project. INIAP has already been working on genetic and sensorial analysis of Ecuadorian cocoa varieties and UTE represents an important local research presence.

Rainforest Alliance Certification encompasses environmental and social standards as well as best practices in agronomic techniques to ensure the proper classification, fermentation and drying of cocoa. Certification requires that groups of producers have an Internal Control System to ensure traceability and transparency so that buyers have absolute quality assurance and can be sure that farmers are properly rewarded. This system will be essential in assuring that the selected varieties are properly processed and separated in the future to reach their full market potential. CyD in conjunction with RA have already facilitated one direct market relationship between CEFODI and the international cocoa buyer, Kraft. The eventual market impact of the selected varieties will be realized through the experience of RA and CyD in the national and international cocoa markets.

The complexity of the challenges of this project require a holistic approach that draws on multiple skills, ranging from agronomic and genetic characterization, farmer capacity building, supply chain management and business acumen (described in detail in section 6). The partners of this proposal represent a broad range of public and private sector entities, with unique research and development experience as well as a long-standing commitment to the intervention area. This unique alliance is united through a strong conviction that agricultural biodiversity can only be conserved if smallholders are provided with a livelihood rationale, of which income is an important component. The alliance has also been able to engage external actors to commit research resources to the project such as USDA's Beltsville molecular biology laboratory, which has assumed the responsibility to support the project with molecular fingerprints and cocoa genetic diversity analysis.⁶

Relevance of the project's intervention area:

Esmeraldas is a high priority for development and conservation action in Latin America. The province is home to 80% of Ecuador's Afro-Ecuadorean population as well as other indigenous people such as the Chasquis. Within Ecuador, Esmeraldas has the highest rates of infant and mother mortality and the lowest GNP at \$670 per capita. According to the last agricultural census, there are 54,987 hectares of cocoa in the province and 16,000 cocoa farms with an annual production of 13,715 metric tons (SICA, 2002.) Esmeraldas comprises an area of globally important biodiversity, forming part of the Chocó-Manabí conservation corridor.⁷ In recent years, large tracts of land have been converted into extensive mono-crop plantations such as *Eucalyptus*, teak and African oil palm, threatening the region's biodiversity.

The intervention area was also chosen because of the strength of the local partners' work in the province. Specifically, UTE and INIAP have already identified many promising farmer varieties and have two evaluation gardens of 18 high performing

⁶ The USDA labs at Beltsville and Miami are already providing these services to INIAP

⁷ Identified by Conservation International as part of the Tropical Andes hotspot:
www.biodiversityhotspots.org

local varieties in the north and south of the province. UTE also has another 140 identified varieties in their research plot. CyD has been working in the Esmeraldas province since 1996 in conservation, cocoa and indigenous tourism projects. It has been a pioneer in bringing the methodology of Farmer Field Schools to improve production and post harvest techniques in Ecuador in general and with 4 large growers' associations in Esmeraldas. CyD has also worked with two growers' organizations to become Rainforest Alliance certified, emphasizing agricultural "best practices" such as planting native shade trees, pruning and removal of pods to prevent diseases and soil and water conservation. Another focus of CyD has been training in the proper post harvest treatment of cocoa and development of market relationships for farmer organizations and empowerment of locals groups in managing their quality and sales. CEFODI is one of the principal growing associations in Esmeraldas as described in the previous section. The rationale of choosing Esmeraldas province to work in came from the depth and history of the partner organizations' long time work in the area and the high social and environmental importance of the province.

INIAP and UTE also have a long history of working collaboratively with farmers in the area through FEPP (Fondo Ecuatoriano Populorum Progresum) and growers' association.

4. Project Implementation with timeline

Activities	Roles of partners	Methodology	Timeline (Months)
Output 1: Promising farmer varieties from UTE and INIAP ex-situ collection characterized, selected and documented.			
A1: Characterize in-situ and ex-situ field gene bank morphologically and agronomically	UTE, INIAP	Use of standard cocoa descriptors	1-3
A2: Collect threatened cocoa germplasm from Cayapas Reserve	UTE, INIAP	Standard collection methods using GPS and tree marking	1-12
A3: Molecular characterization of promising subset	Bioversity, UTE (USDA)	SSR	3-6
A4: Publish and disseminate characterization data	INIAP, UTE, Bioversity	Peer reviewed journal, project website, catalogue	6-24
Output 2: Fine flavor potential of selected varieties determined			
A1: Prepare samples for sensory analysis	INIAP, UTE	Micro fermentation, processing into cocoa liquor	1-12
A2: Conduct sensory analysis by experts in INIAP lab	INIAP	Tasting of liquors	6-18
A3: Conduct sensory analysis by international experts	Bioversity, INIAP	Tasting of liquors	6-18
A4: Disseminate results of fine flavor internationally and locally to increase interest in buyers and knowledge of farmers	All	publications and workshops with local stakeholders	24
Output 3: Clonal gardens and nurseries with elite farmer varieties established in communities			
Act. 3.1: Farmer field school on propagation	CyD, CEFODI, UTE, INIAP	Participative methodology	6-20
Act. 3.1: Establish community clonal gardens in North and South Esmeraldas	CEFODI, CyD, UTE, INIAP	Grafting from parent material	6-24

Act. 3.2: Establish community nurseries in North and South Esmeraldas	CEFODI, CyD, UTE, INIAP	Grafting from clonal garden material, stakeholder participation in selection of site and in-kind labor	12-24
Output 4: Farmer orchards rehabilitated with high value cocoa plants.			
Act.4.1: Farmer field schools on orchard rejuvenation	CyD, CEFODI, UTE	Participative methodology	18-20
Act. 4.2: Distribute plants to farmers based on participation in project	CEFODI, CyD, UTE	Participation measure based on collaboration with project	20-24
Output 5: Linkages between farmers and high end cocoa buyers facilitated			
Act. 5.1: Farmer field school on cocoa quality management to increase market value and Rainforest Alliance sustainable agriculture standards	CEFODI, CyD, INIAP	Participative methodology	1-24
Act. 5.2: Rainforest Alliance Certification offered to farmers	CyD	Certification audit	12-24
Act. 5.3: Implement and enforce system of separation of distinct cocoa varieties	CEFODI, CyD	Internal control systems and storage arrangements	12-24
Act. 5.4: Engage potential cocoa buyers to facilitate transparent market linkages with national and international markets	RA, Bioversity, CyD	Outreach to targeted buyers, samples	1-24

5. Project Results and Impact

5.1 Description of Intended Impact Pathway

This project, by rescuing, characterizing and conserving high quality native cocoa varieties, will aid Esmeraldas' farmers in sustaining a specialty cocoa market that will withstand boom and bust commodity cycles and provide superior and steady income for growers of selected varieties.

Livelihood impact. Improved market linkages of farmers associated with CEFODI have already resulted in an increase in price to farmers, and further cocoa quality improvements will generate more farm-gate revenue. This effect can be expected to be even more important in the project's intervention area, where options for subsistence cropping are limited. Finally, enhanced income and successful participation of the poor in formal economic activities, particularly in high-value agriculture, is increasingly recognized to enhance the self-esteem and the assertiveness of rural people. Cocoa producers will be empowered through the strengthening of their association.

Owing to the participatory research orientation of the project and the farmer field schools, this project will significantly enhance skills for improving livelihoods. Farmers' groups will strengthen their local business capacity to negotiate better with buyers.

Impact on the environment. Cocoa makes a particular contribution to biodiversity conservation since it offers farmers an alternative to more destructive practices such as raising cattle, or growing mono-crops. Moreover, cocoa is a perennial tree that grows well under a canopy of shade trees, providing habitat for wild flora and fauna.

Furthermore, native cacao varieties, in contrast to high input production systems, do not need agrochemical inputs or full sun. Therefore, promoting sustainable practices that retains the structure of the forest while producing high quality cocoa can provide increased income for farmers as well as protect the biodiversity of the ecosystem. Many of CEFODI's farms are already certified Rainforest Alliance which has standards to protect forests, water sources, soil and wildlife.

Impact on cocoa biodiversity: By highlighting native varieties that have relatively high levels of disease resistance and production, this project provides an economically viable alternative to the common practices of planting new trees from seed that are usually highly vulnerable to disease, or planting the high-yielding CCN51 hybrid as a full sun mono-crop that doesn't have the same flavor potential as *Nacional*, *Criollo* and *Trinitario* varieties. Moreover, by focusing on separation and the sensorial qualities of these varieties, a direct market incentive to value specific cocoa diversity is established. This project will not only benefit the area of influence but would create elements such as rescuing native germplasm from the Cayapas river basins that will benefit the entire cocoa sector.

Impact on Knowledge sharing: The results of the molecular, physical and sensorial qualities of native Esmeraldan cocoa varieties will be distributed in a variety of formats to ensure their use as a public good. Specifically, hands on workshops will be held with farmers to share findings on cocoa varieties, including a tasting of chocolate liquor that is processed from the beans. A catalogue will also be produced for distribution in the area and internationally. Articles for academic and popular media will be produced to share the findings on an international level. Findings will also be distributed among the networks of the partnering organizations.

Input	Output	Outcome	Impact
UTE thesis students, Bioersivity genetic analysis	Characterization and selection of promising farmer varieties from UTE ex-situ collection (month 24)	Improved documentation of native cocoa diversity	Creation of opportunities to breed or select for new varieties more productive and disease resistant in the long term
Flavor analysis of INIAP varieties by INIAP and external taster	Fine flavor potential of selected varieties determined (month 16)	Knowledge of flavor profile of select varieties.	Improved ability to market varieties to buyers based on flavor profile
Establishment of 2 clonal gardens and 4 nurseries	Community Clonal gardens and nurseries with elite farmer varieties established (month 12)	Increased local availability of elite plant material	Long term capacitation in how to reproduce proven high quality germplasm
Farmer field schools on orchard rehabilitation techniques	Farmer orchards rehabilitated with high value cocoa plants. (Month 24)	Potential to access sustainable and lucrative markets augmented.	Increase in high quality germplasm in the province
Sending of micro-fermented samples to cocoa buyers; meeting between buyers and CEFODI	Farmer association links to specialty cocoa buyers facilitated/established (Month 24)	Farmer association empowered to act as commercial partner to specialty cocoa buyers	Long term stable income through profitable linkages with fine flavor chocolate makers

5.2 Project Results Framework

SPECIFIC OBJECTIVES

1. Identify and evaluate high-yielding farmer Criollo and Nacional type trees in the Cayapas reserve (see map in Annex 1) as well as promising varieties in UTE's *ex situ* collection;
2. Determine the quality potential of already identified high-yielding native clones through sensorial analysis;
3. With farmer participation, reproduce elite farmer varieties⁸ and capacitate farmers in grafting and propagation techniques;
4. Establish nurseries with elite farmer varieties and rehabilitate farmer orchards;
5. Facilitate contractual relationships between smallholder cocoa growers and high end chocolate makers that recognize and reward differentiated high value cocoa.

Output	Outcome	Outcome indicator	Baseline	Target
Characterization and selection of promising farmer varieties from UTE <i>ex-situ</i> collection	Improved documentation of native cocoa diversity	Characterization of <i>ex-situ</i> collection	partial characterization of 140 varieties; no cocoa characterization in Cayapas reserve; 16 varieties selected,	full characterization of 140 varieties; initial identification of 100 accessions in Cayapas Reserve; 30 varieties selected
Fine flavor potential of selected varieties determined	Knowledge of flavor profile of select varieties.	Determination of flavor profiles for selected varieties	Limited knowledge of flavor profiles for individual varieties	Flavor profiles for 30 varieties determined
Community clonal gardens and nurseries with elite farmer varieties established	Increased local availability of elite plant material	Number of high value fine flavor plants available to farmers	No availability of planting material combining specific flavor and agronomic attributes	At least 40,000 high value plants available to poor farmers
Farmer orchards rehabilitated with clones from the mother plants of specialty cocoa trees that have been characterized in the clonal garden and selected through sensory analysis.	Potential to access sustainable and lucrative markets augmented.	Number of farms impacted and proportion of farm with high value cocoa	Participating farms have a low number of high yielding trees	Participating farms have an average of an additional 200 new high value trees
Farmer association	Farmer	Number of	1 contract with	3 additional

⁸ Elite farmer varieties refers to varieties that have been identified by farmers on their land that have outstanding productivity and yield stability.

links to high end cocoa buyers facilitated/established	association empowered to act as commercial partner to high end cocoa buyers	interested buyers	chocolate buyer for \$400/Metric Ton over market price (T)	potential buyers for with a premium of \$800/Metric Ton over market price(T)
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6. Project Partnership: Innovation, Roles, Responsibilities and overall organizational sustainability

i) CyD has worked with small scale cocoa growers in Ecuador for over five years. Presently CyD builds the capacity of over 3,000 farmers organized into six large cooperative in sustainable production practices, market development and certification systems. CyD works with the successful Farmer Field School participative methodology. CyD represents the link to cocoa farmers' organizations in Esmeraldas.

Bioversity International is a partner in global efforts to strengthen the conservation and use of agricultural biodiversity for the benefit of the rural poor. Bioversity's mission is to produce international public goods for a range of different research and development partners. Bioversity has a long track record in cocoa research and development activities in partnership with the Common Fund for Commodities (CFC), the International Cocoa Organization (ICCO) and other organizations, ranging from the establishment of cocoa standard descriptors, best practices for the disease-free movement of planting material and networking to strengthen cocoa improvement programs to international cocoa trials and research on cocoa quality. Among the CGIAR Centers, Bioversity has the crop mandate for cocoa.

INIAP experimental station in Pichilingue is the home of the National Cocoa and Café Research Program and is dedicated to researching, collecting conserving, characterizing and using the cocoa germplasm and studying cocoa cultivation systems. Their participation is necessary to provide technical information and training on the cocoa germplasm.

(CEFODI described above.)

UTE is a research and agriculture university in the province of Ecuador that works with students on the agricultural issues of the region. It has been a long time collaborator with INIAP in collecting and characterizing promising native cocoa varieties in Esmeraldas. It is important to include local actors and make sure that the research benefits local institutions.

Rainforest Alliance has been an international leader for over 15 years in forming partnerships between agricultural producers and the private sector. It has developed a range of innovative and durable partnerships, including Chiquita (bananas), Kraft (coffee and cocoa) and McDonald's (coffee). It has a global standard for sustainable agriculture that is distinguished by a focus on both social and environmental criteria and a certification scheme to enable companies to seal their products in the market. In partnership with CyD it has been promoting cocoa in Ecuador for two and a half years. RA's role is to provide the certification and facilitate the links between CEFODI and the international market.

While all of the participating organizations have long histories working with cocoa in Ecuador, this project would be an innovative partnership to bring together unique areas of expertise to address current problems and opportunities for small-scale growers in the Esmeraldas province. Specifically, this project would address the lack of scientific information on cocoa diversity in the province and create the framework for a sustainable market based on that diversity. Moreover, this partnership allows scientific findings to reach farmers and improve their livelihoods in a tangible manner.

INIAP and Bioversity International have extensive experience working with cocoa varieties in Ecuador. CyD and Rainforest Alliance have been working on Public Private Partnerships that connect chocolate makers with over 3,000 farmers in Ecuador for three years. The aim of this project is to unite the scientific expertise and local knowledge of INIAP and Bioversity with the implementation and development work carried out by CyD and the development of private sector relationships by RA. Research results on the geographic, management and agrobiodiversity drivers of the quality of high-end cocoa will be instrumental in helping poor farmers to increase cocoa quality and markets linkages.

ii.) Decisions will be made collaboratively and through triennial meetings. CyD and INIAP are the two lead organizations that are based in Ecuador and will meet more frequently. UTE will be represented by the participation of two thesis students and their advisor. Bioversity and RA will provide international consultation. Each partner has its area of unique expertise and the collaboration will be one of sharing information and finding solutions through the intersection of scientific, local and market knowledge. Moreover, it is important for the farmers and cooperative to have an active participation in each step of the project. Representatives from farmer associations and cooperative will have ample opportunity for decision making during research planning and implementation, farmer field schools as well as through their presence at the triennial meetings.

iii.) CyD and CEFODI have a long-term commitment to cocoa growers in Esmeraldas that extends past the duration of this project and will ensure the presence of outside expertise to see the growers through the processes of harvesting, post-harvesting and selling their cocoa. Furthermore, one of the principal objectives of this project is to forge private sector relationships with companies that are willing to make a long-term commitment to farmers that are growing desirable varieties. It is expected that after two years, a significant increase in the amount of new cocoa trees will be planted and CyD will continue to provide support to the farmers for another three years until the trees are fully producing and direct relationships between cocoa buyers and the farmer-cooperatives are firmly in place. The capacity building in cocoa variety selection, reproduction and production among local farmers and the local university, as well as, the amplification of the cocoa germplasm at UTE will provide long term sustainability and autonomy for the region.

7. Proposed Budget (US\$)

Item	Grant request	Co-Financing/ funding
Personnel	\$56,200	\$65,000
Research supplies and services	\$48,200	\$14,500
Equipment	\$18,000	\$10,000
Training and other knowledge-sharing activities	\$42,000	\$2,000
Travel	\$23,000	\$10,000
Communication	\$6,000	0
General Administrative Expenses	\$18,830	0
TOTAL Project Cost	\$206,140	\$101,500

Please provide details on other co-financing and funding sources

CyD: \$28,000
 RA: \$27,000
 INIAP: \$20,000
 Bioversity: \$16,500
 UTE: \$2,000

Claire Nicklin
 Conservación y Desarrollo

Judith Thompson
 Bioversity International

Freddy Amores
 INIAP

Daisy Rodríguez
 CEFODI

Milton Bolanos
 Universidad Técnica de Esmeraldas

Edward Miller
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