

ATSAF - CGIAR++ Junior Scientists Program

Final Report

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Title: An analysis of the agricultural innovation system adopted by farmers to achieve a deforestation-free cocoa value chain: evidence from the Ucayali region of Peru

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This research was conducted in the districts of Neshuya and Curimana, province of Padre Abad in the Ucayali region of Peru. The Ucayali region is important because it is the third largest cocoa producing region in Peru. It has 29,688 hectares planted and the province of Padre Abad represents 70.4% of these.

This study analyzed the response of cocoa farmers from two producer organizations: the Curimaná producers' association and the Colpa de Loros cooperative in Neshuya to practices promoted within deforestation-free and low GHG emission cocoa value chains under the SAB project, such as: the promotion of cocoa planting in new areas on already deforested land, the introduction of agroforestry systems in cocoa systems, the use of organic fertilizers, and the use of cover crops. The SAB project, which runs from 2018 to 2021, is part of the International Climate Initiative (IKI), which is supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Starting in September 2021, a second project "Agroecological Transitions: Private Sector Incentives and Investments" will continue to strengthen these innovations and technologies, and promote further transitions, including aspects of the circular economy and the bioeconomy.

Using the Q methodology and other Participatory Rural Appraisal (PRA) tools, as well as in-depth interviews, information was collected on how farmers respond to these innovations and technologies and what their expectations are in the transition to deforestation-free cocoa production. In this study, the analysis takes place partly within group discussions, the Q methodology will be used to identify perceptions on all promoted technologies and innovations and the innovation timelines for the selected innovations and technologies will be analyzed.

The study began by identifying the key actors in the cocoa value chain in Ucayali. For this, the participation of CIAT's SAB project managers based in Lima and Pucallpa was of significant help.

The interviews were conducted during the first fifteen days of November. Among those interviewed were different actors in the cocoa production chain such as those responsible for the SAB project; representatives of public agencies such as the Ministry of Agriculture; representatives of the Regional Government and its agencies such as the Regional Directorate of Agriculture; those responsible for the Cocoa Technical Roundtable, a multi-stakeholder platform formed and managed by the Regional Directorate of Agriculture; those responsible for various NGOs working in the area such as: Cocoa Alliance, USAID, UNDP; and also those responsible for the producers' organizations.

Subsequently, the interviews were transcribed and analyzed. As a result of this work, the statements for the development of the Q methodology were generated. The Q statements are sentences that will help us to understand the farmers' perspective. These statements can be found in the following table.

S1	El abonamiento y poda de mis plantas de cacao son necesarios para incrementar la productividad y los rendimientos por hectárea Fertilization and pruning of my cocoa plants are necessary to increase productivity and yields per hectare.
S2	Es importante incrementar los rendimientos por hectárea de cacao para evitar la deforestación It is important to increase yields per hectare of cocoa to avoid deforestation.
S3	Recolecto los frutos de cacao enfermos y los entierro para evitar la propagación de las plagas y enfermedades. De esta manera no aplico pesticidas I collect infected cocoa fruits and bury them to prevent the spread of pests and diseases. In this way I do not apply pesticides
S4	La calidad del grano de cacao es importante para acceder a mejores mercados y generar mayores ingresos Cocoa bean quality is important for accessing better markets and generating higher incomes
S5	Pertenecer a una organización de productores trae mejores beneficios para mi economía Belonging to a producer organization brings better benefits for my economy.
S6	La siembra de árboles forestales dentro de mi parcela de cacao ayuda a mitigar el cambio climático Planting forest trees in my cocoa plot helps mitigate climate change.
S7	El uso de coberturas vegetales como el 'kudzu' ayuda a prevenir la erosión del suelo y trae beneficios al cultivo The use of cover crops such as 'kudzu' helps prevent soil erosion and brings benefits to the crop.
S8	Las ONG nos brinda asistencia técnica para prever la deforestación y mitigar los gases de efecto invernadero en nuestra producción de cacao NGOs provide us with technical assistance to prevent deforestation and mitigate greenhouse gases in our cocoa production.
S9	Recibimos asistencia técnica por parte del estado para mejorar nuestra producción de cacao y para acceder a mejores mercados We receive technical assistance from the state to improve our cocoa production and to access better markets.
S10	Los gobiernos regionales y locales ofrecen estrategias de promoción del cacao y accesos a mejores mercados Regional and local governments offer cocoa promotion strategies and access to better markets
S11	La mesa técnica del cacao nos ayuda a resolver los problemas en la producción de cacao The cocoa technical table helps us to solve problems in cocoa production
S12	El estado peruano protege sus bosques y fiscalizan la deforestación Peruvian government protects its forests and controls deforestation
S13	El cacao no se siembra en bosques. Se siembra en terrenos agrícolas Cocoa is not planted in forests. It is planted on agricultural land
S14	El cultivo de cacao ha mejorado la calidad de vida de las familias de agricultores en Ucayali Cocoa cultivation has improved the quality of life of farming families in Ucayali.
S15	El bosque provee de alimentos y de madera para mi y mi familia. ¡Debemos cuidarlo! The forest provides food and wood for me and my family. We must take care of it!
S16	Si el estado nos apoya con incentivos la siembra de cacao sería mas sostenible If the state supports us with incentives, cocoa cultivation would be more sustainable.
S17	Para generar mayores rendimientos de cacao debo sembrar mas hectáreas con cacao To generate higher cocoa yields, I must plant more hectares with cocoa.
S18	Sembrar mas hectáreas de cacao asegura mayores ingresos para mi economía Planting more hectares of cocoa ensures higher income for my economy.
S19	No tenemos tecnología ni dinero para invertir y mejorar nuestra producción de cacao We have neither the technology nor the money to invest to improve our cocoa production.
S20	Sin títulos de propiedad de mis tierras no puedo acceder a créditos para mejorar la productividad de mis plantas de cacao Without title to my land, I cannot access credit to improve the productivity of my cocoa plants.
S21	La siembra de cacao reduce los bosques Cacao planting reduces forests

S22	La tumba y quema es una practica común en la siembra de cacao Slash and burn is a common practice in cocoa planting.
S23	El estado promueve la siembra de cacao en bosques como incentivo para la reducción del cultivo de coca The state promotes the planting of cocoa in forests as an incentive to reduce coca cultivation.
S24	La siembra de arboles forestales generan mayor trabajo y no mejores rendimientos de cacao The planting of forest trees generates more work and not better cocoa yields.
S25	La deforestación ha reducido el numero de animales silvestres y de frutos nativos Deforestation has reduced the number of wild animals and native fruits.
S26	El cambio climático es producto de la deforestación, trae mas calor y lluvias mas fuertes Climate change is a product of deforestation, bringing more heat and heavier rains.

These statements were analyzed and developed with the help of my supervisors; and written in simple language so that producers can understand them, and the second part of the Q methodology can be carried out.

The first Q-sample was developed in the last week of November and the second in the last week of January where participants expressed their views on the statements generated. For this, a set of statements, known as Q-sample, is presented to the participants, who are asked to rank the statements according to given instructions. Most commonly, participants are asked to rank the statements on a scale from disagreement to agreement. The rating in this case was from -4 to +4. And they are asked to place the statements in the spaces of the Q-matrix (Figure 1).

-4	-3	-2	-1	0	1	2	3	4
1	2	3	4	5	6	7	8	9
	10	11	12	13	14	15	16	
		17	18	19	20	21		
			22	23	24			
				25				
				26				

Q sampling was carried out on different days and in different months due to the limited availability of farmers. In November, a request was made through the managers of the producer organizations that the event be held at the facilities with a capacity of no less than 15 producers per organization. Unfortunately, participation was very low, so a new Q show was planned for January. Corrective measures were taken in January and the sessions were held in a decentralized manner to ensure greater producer participation. In the annex some photos of the Q sessions are included.

The Q-analysis will be conducted in Germany with the help of my advisors. The expected results are a detailed understanding of the adoption by cocoa farmers of the different agricultural innovations and technologies proposed and applied for the transitions to deforestation-free agriculture, as well as the challenges they and their associations still face. Another expected outcome of the proposed research is a joint publication of the Biodiversity



Alliance - CIAT and the Chair of Social and Institutional Change in Agricultural Development of the University of Hohenheim.

The following are some of the findings of the field work.

Curimana Producers Association.

General information: It is a cooperative formed by producers who own between 1 to 10 hectares of cocoa. They generate an average yield between 800 to 1000 kilos per hectare of cocoa variety CCN51. They have certifications of fair trade, organic production and UTZ.

Some challenges found: The organization lost its organic certification in 2021 so they had to sell their product as conventional at a lower price. Producers are not committed to the association, many of them do not apply fertilizers or pruning, so their yields are low, others apply pesticides even though they are prohibited. The lack of financing from banks is a limiting factor for improving production, and if we add to this the lack of commercial purchases or the limited access to the market, many producers decide to abandon the crop. There was very little government involvement.

Agricultural Cooperative "Colpa de Loros".

General information: The cooperative was founded by producers who own between 1 to 10 hectares of cocoa with an average yield between 700 and 800 kilos per hectare of a variety of Aromatic cocoa. They have certifications of fair trade, organic production and UTZ. The cooperative has as a partner the French company Kaoka, which buys one hundred percent of its production and assists the cooperative in technical aspects of cultivation and management of the cooperative. Copa de Loros is an example of a cooperative in the region for its economic, social, and environmental sustainability.

Some challenges that were found are the low productivity of their crops, producers do not apply agricultural technologies despite having the knowledge and the lack of commitment of some producers.

Possible synthesis/knowledge.

- Divergence between multi-actor platforms in literature and in the field.
 - Weakness of multi-actor platforms.
 - Buyers influence the success of cocoa organizations.
 - Lack of commitment from various actors in the cocoa chain.
 - Farmers do not apply agricultural technologies due to lack of economic resources.
 - Farmers trained in good agricultural practices fertilize their fields and prune their trees.
 - Low cocoa yields and poor market access influence the expansion of agricultural land by farmers. However, this is mostly in secondary forests (previously deforested forests or agricultural land with other crops). Very little occurs in virgin or primary forests.
 - Other drivers of deforestation include the production of coca crops, oil palm and the sale of illegal timber.
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- The producers are aware of the problem of deforestation on biodiversity and climate change.

Limitations

- Difficult access to the village of Curimaná and farmers' lands due to bad roads.
- Lack of mobility for data collection.
- Lack of participation of cocoa producers due to the overload of workshops in November and December.
- Little knowledge of the technical roundtable by regional government representatives.
- Poor communication between actors in the cocoa value chain.
- Absence of cocoa buyers in the Ucayali area. It was not possible to interview these actors.

Annex

Photo 1 and 2: Q session with Curimana producers.



Photo 3 and 4: Q session with Colpa de Loros producers.



Photos 5, 6 and 7: de-centralized Q sessions held in January 2022.



