PLANT RESEARCH INTERNATIONAL
WAGENINGEN UR

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GEMA
Gestión Medioambiental para la Agricultura

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Plant Research International, part of Wageningen UR
Business Unit Agrosystems Research
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Plant Research International, part of Wageningen UR
Business Unit Agrosystems Research

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Acronyms

ACPC	Asociación Central de Productores Cafetaleros (Central Association of Coffee Producers)
CAC	Cooperativa Agraria Cafetalera (Coffee Producers' Agrarian Cooperative)
CACSVU	Cooperativa Agraria Cafetalera Sostenible Valle Ubiriki (Sustainable Coffee Agricultural Cooperative Valley Ubiriki)
CEPICAFE	Central Piurana de Cafetaleros (Piurana Centre for Coffee Producers)
CEPROAP	Central de Productores Agroecológicos Pichanaki (Pichanaki Centre for Agroecological Producers)
CETPRO	Centro de Educación Técnico Productivo (Technical Production Education Centre)
COOPAC	Cooperativa de Ahorro y Crédito (Savings & Loans Cooperative)
DE	Douwe Egberts
DEF	Douwe Egberts Foundation
FAO	Food and Agriculture Organization
FFS	Farmer Field School
FLO	Fair-trade Labeling Organizations International
FNC	Federación Nacional de Cafeteros (National Federation of Coffee Producers)
FRC	Farmers Research Committee
GAP	Good Agricultural Practices
Gema - Perú	Gestión Medio Ambiental para la Agricultura – Perú (Environmental Management of Agriculture, Peru)
ha	hectare
ICI	Instituto Cooperativo Interamericano (American Cooperative Institute)
ICS	Internal Control System
ILO	International Labour Organization
INCAGRO	Innovación y Competitividad para el Agro Peruano (Innovation and Competitiveness for Peruvian Agriculture)
INFONET	Instituto Superior de Informática (Computer Science Institute)
INIA	Instituto Nacional de Innovación Agraria' del Perú (National Institute for Agriculture Innovation in Peru)
INRENA	Instituto Nacional de Recursos Naturales (National Institute of Natural Resources)
IPC	Income Per Capita
IPEBA	Instituto Peruano de Evaluación, Acreditación y Certificación de la Calidad de la Educación Básica (Peruvian Institute of Evaluation, Accreditation and Quality Assurance for Primary Education)
IPM	Integrated Pest Management
LCCV	Liderazgo cooperativo competitivo con valor (Competitive Cooperative Leadership with Courage)
LTT	Local Technical Team
masl	Meters above sea level
MINAG	Ministerio de Agricultura (Ministry of Agriculture)
MINEDU	Ministerio de Educación (Ministry of Education)
MINSA	Ministerio de Salud del Perú (Ministry of Health, Peru)
Mt	Metric tons
NGO	Non-Governmental Organization
NOP-USA	National Organic Program, USA
NYC	Nueva York Contrato C
PI	Parcela de Investigacion (trial plot)
PCC	Programa de Compensaciones para la Competitividad (Compensation Program for Competitiveness)
PRI	Plant Research International Wageningen University and Research

PRP	Participatory Research Plot
RP	Research Plot
SENASA	Servicio Nacional de Sanidad Agraria del Perú (National Agrarian Health Service of Peru)
SL/DE	Sara Lee/Douwe Egberts
SOS FAIM	Acción para el Desarrollo (Development Action)
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAI	Instituto Agropecuario Tecnológico (Agricultural Institute of Technology)
UGEL	Unidad de Gestión Educativa Local (Local Education Management Unit)

Executive Summary

This is the final project report which aims to summarize the main activities and results as well as to provide a quantitative assessment of the Douwe Egberts Foundation (DEF) project impact. It is further aimed to provide a critical assessment on project implementation as well as to provide recommendations for future project interventions.

In 2003 the Douwe Egberts Foundation (DEF) started the project "Sustainable Coffee Project Peru". The objectives of the support provided by DEF (and advised by Plant Research International, Wageningen UR) were to strengthen the actors of the coffee value chain in the Chanchamayo Province, in order to contribute to the sustainability of the coffee sector and add value to the product.

Chanchamayo is a Province along the river Perené in the Selva Central of Peru. In the West it borders the Andes in the east it borders the Amazonian jungle. The Chanchamayo Province averages 1.250-1.500 m and the climatic conditions are good for coffee production through the relatively cool weather and average rainfall. Throughout the Province approximately 62.500 ha of coffee plantations are presently cultivated by about 20.000 farmers. It is one of Peru's poorest economic areas. BNP is about 180 usd (BNP Peru is 300 usd, 2003). In this region coffee production started recently about 25-30 years ago by immigrants without coffee production tradition. 10 % of the local population are native Amazonian indians, Ashaninka's.

Objectives of the project were:

- Enable project farmers to improve coffee quality;
- Disseminate Good Agricultural Practices and Good Processing Practices;
- Enable project farmers' compliance with Utz Certified;
- and facilitate a farmers' association to ensure improved market access.

The project started in Ubiriki and Chimaki with 100 smallholder growers and has now been expended in 48 communities in a much larger area (Perené, Pichanaki, Rio Negro), with 800 smallholder families directly involved in 14 farmer field schools.
The key activities of the project have been:

Training and Extension

The foundation of a Training and Extension Centre (CETPRO, Centro de Educacion Técnico Productivo) which is an educational institution accepted by the official authorities. This CETPRO provides training on technical matters and modern methods of extension to work interactively with farmers (Farmer Field Schools); this latter aims to replace the 'top-down' approach to extension common in Peru so the Organization of Farmer Field Schools (FFS) are the focal points of training and extension.

The use of field books

This activity stimulates farmers to learn from their own experiences by registering field activities such as labour, inputs used and yields.

Field trials

Testing alternative crop management practices in their own fields to check possibilities to improve crop activities (e.g. pruning and fertilization).

Cooperative development and support

Establishment of the cooperative CACSVU, Cooperativa Agraria Cafetalera Sostenible Valle Ubiriki, with training in production, processing and certification and training of cooperative board members in managerial skills. By 2011 the cooperative had exported 746 Tm of gold coffee.

The project has promoted and strengthened at local level the cooperation between public and private institutions. The project has catalysed the participatory learning process (FFS) at the regional- and sub national level in particular, through participation of policymakers, teachers, extensionists from other cooperatives, research institutes in the CETPRO training. For further up scaling in sustainable coffee production this public-private cooperation is needed at the national level.

The socio economic impact study shows an increase in human capital (through knowledge and education, which enabled farmers to strategically use their other livelihoods) and increased social capital through increasing membership and participation in the cooperative and community. Between 2005 and 2010 income of smallholder coffee farmers tripled.

Key factors in the success of the DE "Sustainable Coffee Project Peru". were:
The FFS-approach enhancing cooperation and trust among farmers which enabled the formation of a farmers' cooperative;
A combination of transparency, structured process and sharing of information which enhanced trust among all regional stakeholders.

The project has resulted in improvement of the social, economic and environmental conditions of smallholder coffee farmers in the Chanchamayo region in Peru.

1. The project

1.1 Introduction

The project to improve the Quality and Sustainability of Coffee Production began in March 2003, in the Ubiriki valley, in the Province of Chanchamayo, Peru. The project was initiated by the Douwe Egberts Foundation (DEF) in collaboration with the advisor (Eefje den Belder) of Plant Research International from Wageningen University (Agrosystems Research, PRI-WUR), The Netherlands.

The project objective was to improve the coffee cup quality from Chanchamayo coffee through technical assistance and good agricultural and processing practices.

The project aimed to assist the Central Association of Coffee Producers in the Ubiriki valley to further develop their production activities, resulting in increased profits and a better quality of life.

The project goals were to:

- Empower farmers to improve the quality of coffee
- Promote good agricultural and processing practices
- Implement Utz Certified certification (known as Utz Kapeh prior to 2007)
- Organize a strong farmer's organization, guaranteeing access to markets.

The Perené river connects four central Peruvian jungle districts: Perené and Pichanaki (Chanchamayo province), and Río Negro and Río Tambo (Satipo province) (Figure 1A). Coffee production in these districts represents 20% of national production.

The Chanchamayo province lies an average of 1,250-1,500 meters above sea level and is well suited to coffee cultivation. The cool weather and average rainfall provide ideal conditions for coffee production.

Many smallholder coffee plantations can be found in this major coffee growing districts of Perené and Pichanaki. The Junin region contains approximately 62,500 hectares of coffee plantations, cultivated by close to 20,000 farmers (Figure 1B).

The project began in the rural community of Puerto San Juan de Ubiriki, situated to the right of the Perené River. The road conditions are poor, which greatly affects the transportation of any agricultural products. It is Peru's 26th poorest economic corridor, with an income per capita of $180 (the 2003 national average was $300).

Coffee production in this region began as recently as 15-20 years ago. Production was initiated by immigrants from the south, who came from Huancavelica and Andahuaylas, with a history of production of Andean products, such as maize and potatoes. Ten percent of the local population is native Ashaninka, whose livelihood comes from small-scale fishing.

For many years coffee production in this region suffered, a result of Peru's civil war, led by the Shining Path. Coffee plantations were destroyed, and with them much of the knowledge and experience was also lost.

In 2003 the typical coffee farm averaged at around 3 ha. The plantations were young—between 5-7 years-old—typically growing the Typica (40%) and Red Caturra (50%) coffee varieties. Producers use wet processing with natural fermentation, which yielded an average of 7.6 bags/ha (0.36 MT/ha), far below Peru's national average of 11 bags/ha (0.71 MT/ha) (Table 1).

In the Ubiriki valley, like in much of the rest of Peru, the farmers own their land; however, many do not possess titles. As a result, 30% have no access to loans or government funding. Farming practices are threatened by the climate, particularly the heavy rains which cause soil erosion.

As a result of a low quality product, lack of market knowledge, and sub-standard storage and transport facilities, farmers often sold their products at low prices to local middlemen.

This report summarizes the main activities and results, provides a critical assessment of the DEF project, lessons learned, and recommendations for future projects.

Table 1. Project information.

Project scope	Junín Department - Peru, Chanchamayo and Satipo provinces
Project duration	March 1, 2003 through December 31, 2011
Coffee type	Certified coffee
Farm location (altitude)	1,250 to 1,600 masl
Number of farms	800
Number of families directly benefited	800
Number of families indirectly benefited	4,000
Number of persons indirectly benefited	20,000
Average size of farms	3 ha
Stakeholders	Central Association of Coffee Producers, CACSVU Cooperative, MINEDU, MINAG, SENASA, INIA, INRENA, DECOTRADE, INFONET, PRODELSUR, Agricultural Institute, Pichanaki, Central University of Peru, Satipo

Figure 1A. Important coffee producing regions in Peru: the project area. Chanchamayo & Satipo provinces. Red dot is Pichanaki.

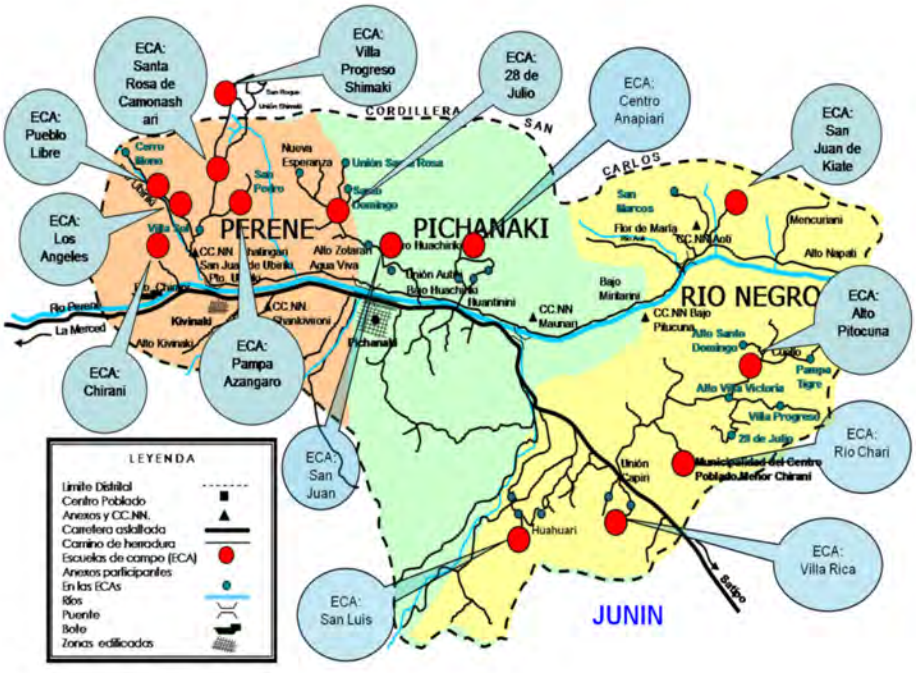


Figure 1B. 48 rural communities that participated in the DE project 'Sustainable coffee project Peru'.

1.2 The Project Approach

The project's objective was to improve sustainable coffee production and processing for small landowners in the Ubiriki and Pichanaki valleys. This was accomplished by establishing an apprenticeship program based on the Farmer Field School (FFS) methodology. This was further reinforced by establishing an organization to produce and commercialize quality coffee in a sustainable way.

The project was designed and implemented following a philosophy of social cohesion, regional characteristics and informed participation. The project directly benefited close to 800 families. To achieve its desired results, the project employed the innovative approach of discovery-based learning.

1.3 The Project Plan

During **Phase One the** main activities were:

- A **baseline study** to identify key challenges in coffee production and to understand the farmers' interests.
- Introduction of the Farmer Field School (FFS) methodology
- **Training of the local technical team (LTT), facilitators,** and producers for the introduction of a certification system
- and the establisment of a **transparent** farmer's organization.

When Sara Lee/ Douwe Egberts Foundation (SL/DE) began the project in the Ubiriki valley there had been very few cooperative organizations, a result of negative experiences from the lack of transparency of e.g. the 'La Central' Organization, initiated by Volcafé.

During Phase Two main activities were:

- Introduction of **good agricultural practices (GAP)** and FFS methodology in other communities: The CETPRO Training Center was founded within the CACSVU to provide training on GAP and modern interactive methods of extension to replace the top-down extension systems common in Peru.
- Increase of **on-farm trials:** Testing **alternative crop** management practices in their own fields to find ways to improve crop cultivation (e.g. pruning and fertilization).
- Improvement of entrepreneurial skills (including record-keeping) at the farm and organization level. Increase **the use of field books:** This activity stimulated farmers to learn from their own experiences by registering agricultural activities such as tasks, input and output.
- Development of a transparent organization to facilitate access to international markets.

During Phase Three main activities were:

- **Development of cooperative business enterprise** (a business plan, the diversification of services: Café de Origen, channeling micro loans to farmers, development of a COOPAC), leveraging financial professionals, strengthening commercial relationships, collaboration and 'café mujer'.
- **Workshops for board members, includi**ng: **business plan development** to qualify for formal loans, finance, the structure and principles of a cooperative, governance, and human resources.
- **Outreach**: the project promoted and strengthened cooperation between various institutions, advocated apprenticeships at the regional and subnational level, and garnered the support of policymakers, teachers, extensionists from other private and public partners is the region as cooperatives, local technical and research institutes and training centres.

Each year Plant Research International WUR and the LTT jointly designed an operational plan.

1.4 Technology Transfer and Commercial Support

In summary training and technology transfer activities included:

1. FFS methodology training for LTT, promoters and extensionists from public and private sectors.
2. Training and extension in GAP for facilitators (extensionists) and farmers based on the results of the baseline study, demonstration plots and plots for participatory research.
3. Training of promoters and farmers in Utz Certified and other certifications.
4. Training and guidance in the use of field books.
5. Strengthening the various levels of producers—directors, managers and workers—in topics such as procedures, finance, human resources, and production services administration management, e.g. marketing, and communications with internal and external clients.

2. Project activities

2.1 Baseline Study

The Local Technical Team conducted a baseline study at the onset of the project (guided by PRI-WUR, Eefje den Belder). The study consisted of interviews with families of the smallholder coffee farmers within the project scope. Information was collected to quantify the technical, socio-economic and environmental condition. The information collected included aspects relating to production quality from the perspective of coffee certification.

168 coffee farmers were interviewed in the Ubiriki valley, and later farmers from the 48 rural communities who participated in the FFS were interviewed as well. Those interviews founded a long lasting relationship of trust between the farmers and the project LTT.

With the baseline study we discovered:

- Technical problems in coffee cultivation not previously identified (90% had root problems 'pig tail', 70% did not prune, 98% did not fertilize, 75% of plantations did not manage shaded areas, 95% did not employ good soil management, etc.).
- The level of interest by families to solve the core issues of coffee production, training, frequency of meetings, and bulletins (81% of the farmers indicated they had never received training; 87% expressed interest in receiving training).
- The needs for to create a curriculum for the FFS, which would further inspire active participation by the farmers.
- Information about the quality levels of the production systems in the coffee plantations, which facilitated the implementation of the Utz Certified and other certification programs.

2.2 Training the Trainers in Sustainable Coffee Production

2.2.1 Training of FFS Trainers

From the beginning, the project objective was to impart the FFS methodology to the coffee producers and local technicians of Peru's central Selva. In 2003, in Pinchanaki, the project organized a methodology workshop where six LTT members were trained by instructors from the IPM-FAO (Huancayo) project.

The project's Local Technical Team established connections with 23 stakeholder representatives, most notably agrarian extension organizations such as: MINAG, INIA, SENASA, MINSA, IAT, Perené Agricultural College, among others.

The project later organized eight 'Train the Trainers' methodology workshops covering the implementation of FFS, which trained 42 promoters. There were 15 participants from Río Negro district (Satipo), six from Pichanaki district, and 21 from Perené district (Chanchamayo).

Twenty-one promoters from CACSVU who participated in these workshops went on to receive further training in FFS methodology and received official state certification.

Likewise, in 2007 the project organized two FFS methodology workshops: one for 24 students and four professors from IAT Pinchanaki; another, in collaboration with SENASA-Junín, for technical agricultural organizations and representatives from state entities.

Table 2 shows the number of participants from public institutions and organizations that participated in the SENASA sponsored workshops.

Table 2. Public Institutions and agricultural organizations that participated in 'Train the Trainer' workshops.

Organization/cooperative	Participants
INIA	13
SENASA	13
CACSVU	8
ETL	16
ACPC	12
CAC Perené	13
CEPROAP	13
CAC Sangareni	12

2.2.2 CETPRO 'Valle Ubiriki'

The interest of promoters to obtain official certification resulted in the creation of a Technical Production Training Centre (CETPRO), which was officially recognized by the Peruvian Ministry of Education (MINEDU) in 2007.

CETPRO began by offering the occupational program, Technician of Organic Coffee Agriculture, which included courses in FFS facilitation, organic coffee production, and organic coffee certification.

In 2009 an additional occupational program was added: Technician of Agroforestry, which curriculum included the production of agroforestry seedlings and forest preservation management.

Fifty technicians from Peru's central Selva received training at the CETPRO: 21 from CACSVU, three from CAC Perené, one from CAC Sangareni, one from CAC Alto San Carlos, three from ACPC, one from CEPROAP, four from the municipality of Pichanaki, and 16 independent students with links to coffee production in the region (Figure 2).

Figure 2. Facilitators/Trainers and students from CETPRO Valle Ubiriki Group of 2007: promotion 'Eefje den Belder'.

2.2.3 Farmer Field Schools Trainer's Handbook

The project documented the methodology process utilized in the 14 FFSs implemented between 2003 and 2009. The final handbook/manual will serve as a powerful tool for trainers engaged in a FFS for sustainable coffee production. The 26 topics covered in the handbook were used as didactic support in training sessions (see Figure 3A and 3B, waste water management and composting, pruning).

The coffee FFS Trainer's Handbook utilizes simple and practical language for Peruvian promoters and technicians. Topics selected for the guide are chosen from the baseline study and the farmers' training needs. The final version of the training handbook will be published in December 2012.

Figure 3. Examples of the FFS training: waste water treatment and composting (A) and pruning (B).

2.3 Training Farmers on Sustainable Coffee Production

2.3.1 Training farmers in GAP

Between October 2004 and December 2009 the project trained an average of 42 promoters each year in GAP, through 5-day workshops, and utilizing FFS methodology.
Good agricultural practices were identified in the most stringent coffee production standards: Utz Certified, Rainforest Alliance, Organic Production, Coffee Practices and Fair Trade.
As a result of this training, during the seven years of the organization's operation, 270 plantations belonging to CACSVU farmers were certified.
From 2003 to 2009 the project gave comprehensive training on diverse topics of coffee production, where farmers from 14 FFSs of the CACSVU gathered monthly, implementing the FFS methodology (see Figure 4).

Topics addressed in these sessions were: problems analyzed in the baseline study, the physiological cycle of coffee, implementation of GAP according to certification requirements, and observations during field visits. Training topics are displayed in Table 3.

Table 3. GAP topics for training promoters and farmers.

Year	Topics	Frequency	No. Participants
CACSVU Promoters			
2003	Agricultural practices planning	6	42
	Certification programs	5	24
	Internal control system	5	42
	Field visits	4	24
	Using of formats and analysis	10	42
	Certification committee	5	24
	Ecologic production standards/criteria	2	25
	Planning of activities	3	24
2004	Utz Certified standard	2	25
	How to performe during a field visit	3	24
	How to be an internal inspector	3	24
2005	Child nutrition, first aid and family planning	2	42
	Field books results	3	40
	Farmer field school promoters	9	42
	Field book analysis	3	12
2006	Legal structure of cooperatives	6	42
2007	Values and self-esteem	3	41
	Cup quality control	3	25
2008	Agroforestry	3	38
	Stock value (NYSE)	5	15
	Cup quality control	4	12
CACSVU Coffee producers			
2003	Integrated management of fungal diseases	6	378
	Physiology of coffee	8	252
	Coffee pulp management	9	350
	Shade management	7	266
	Integrated disease management	6	406
	Coffee nursery	8	322
	Coffee berry borer control and trap setting	8	364
	Integrated weeds management	6	224
	Integrated pest management	8	420
	Soil conservation and management	6	385
	Pruning	9	385
	Compost	8	392
	Germination	8	336
	Seed selection	6	280
	Waste water treatment	6	420
	How to set up a coffee nursery	5	308
2004	Fertilization	6	385
	Agroecological analysis	2	385
	The wet processing	7	280
	Selective handpicking of coffee	6	224
2005	Child nutrition, first aid and family planning	2	252
	Soil analysis	5	378
	Construction of dryer (sun)	2	378
	Guinea Pig breeding and diet	3	266
	Preparation and use of foliar nutrients	10	406
	Preparation and use of compost	5	322

	Field book results	3	350
2006	Soil sampling	9	406
	Foundation principles of cooperatives	2	406
	Worm culture system	2	238
	Sustainability of coffee production	2	308
2007	Values and self-esteem	3	224
	Pulp machine maintenance	4	392
	Coffee fermentation, washing and drying	7	210
2008	Agroforestry	3	308
	Farm assessment	3	406

Figure 4. Workshop about selective coffee harvesting in the Shimaki Farmer Field School.

2.3.2 Training of farmers with Participatory Research Plots (PRP)

The baseline study and the FFS workshops helped to identify three critical problems in coffee production:

- Low average productivity: 0.36 Tm/ha
- High incidence of the fungus 'ojo de gallo' (*Mycena citricolor*)
- High incidence of the coffee berry borer (*Hypotenemus hampei*)

The LTT and PRI-WUR found that the common cause was, among other problems, the lack of pruning in coffee plantations. After analyses and discussion with the farmers it was decided to experiment with selective pruning and fertilization.

Nine trials were conducted in participatory trial plots (PRP) with the help of twenty-seven farmers from the Farmer Research Committee (FRC), each belonging to a FFS. The PRPs were instrumental in motivating the farmers to learn through experimentation and awakened the spirit of improvement. Figure 5 shows FRC farmers observing incidence of coffee berry borer in their fields.

Figure 5. Coffee producers quantifying the incidence of the coffee berry borer.

The PRP utilized treatments both with and without pruning.
Figures 6 and 7 show the results of the trials in the FFSs from Alto Pitocuna and Pampa Azángaro respectively. The blue line represents treatment with pruning and the red line represents treatment without pruning. The green arrows indicate the application of fertilizers.

The charts show that coffee production doubled in plots with pruning, and quadrupled when fertilized. The results of these experiments in their own plantations were determining factors in the adoption of the technologies and investment in these agricultural practices.

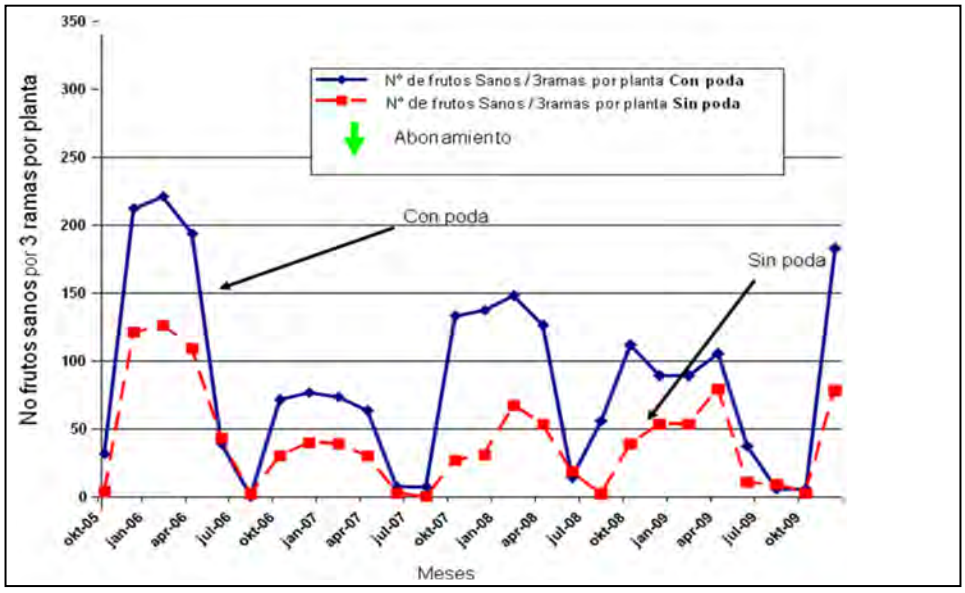


Figure 6. Comparison of the harvest of the participatory trial plots in the Pitocuna FFS 1,359 masl, blue line = with pruning; red line = without pruning.

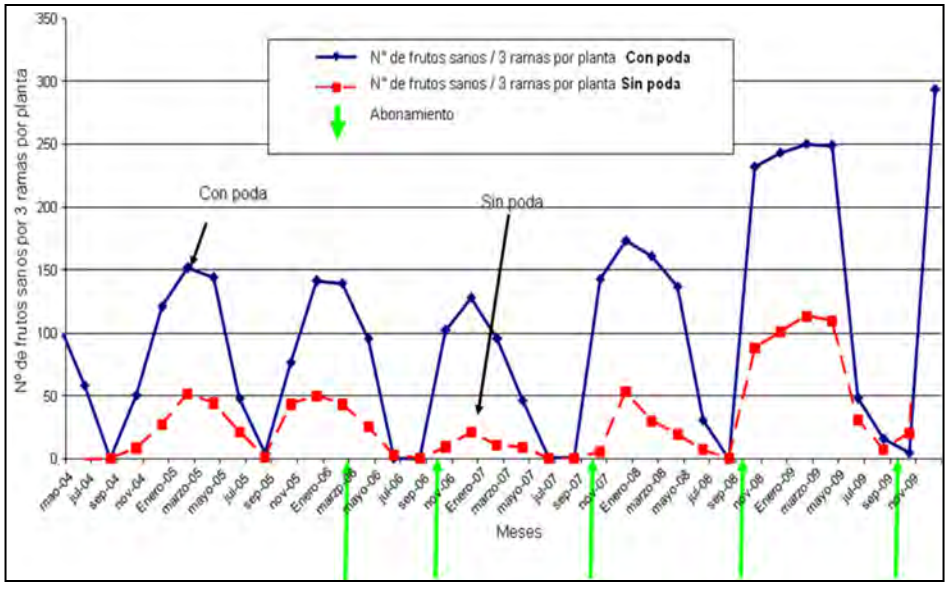


Figure 7. Participatory research results in the Pampa Azángaro FFS, harvest is tripled after a combination of pruning and fertilization 1,450 masl, blue line = with pruning; red line = without pruning; green arrow = ferlilization.

2.3.3 Training Farmers in the Use of the Field Book

The field book consisted of keeping a daily record of activities and cultivation procedures performed by the farmers in their plantations.
The field book was a valuable tool for the Local Tchnical Team and farmers, because it helped to illustrate and determine the most efficient coffee production methods.
Using the field book helped to measure the efficiency of work, understand the hours worked, income and expenditures, gains and losses, identify the good experiences, and document the farmers' decisions.

Sharing the field book results provided a rich exchange of experiences, and commended the more efficient farmers for their labors.

- 100 farmers volunteered to use the field book
- The LTT trained coffee farmers in the use of the field book, emphasizing its importance in plantation procedures
- The farmers carefully recorded the activities and time spent working on the plot chosen for this project
- The LTT and promoters collected the field book contents, and with the assistance of IT students at INFONET, the information was entered into a database
- Results of the field books were analyzed and discussed among the Local Technical Team, promoters and the farmers of the 14 FFSs.

To improve the analysis of 100 field books, special software was developed locally and four technicians and 12 promoters from the cooperative were trained in its use.

The socioeconomic study (van Rijn *et al.*, 2012) conducted in 2008 showed huge changes between 2003-2008 in most of the field activities (e.g. weeding from 5 to 85%; shade management increased from 6 to 85% in those same years, soil management from 6 to 80%).

Figure 8 illustrates core activities registered by the farmers, including the order of priority of implementation in the fields. Between 2005 and 2010 pruning, zuckering, and shade management increased another 20%, phytosanitary control 30%, and fertilization 70%. The latter was finally due to work capital and micro loans (financed by AGROBANCO).
It should be noted that between 2003 and 2010 pruning increased from 5% to 100%.

Figure 8. Changes in agricultural activities implemented by the coffee farmers recorded in the field books between 2005 and 2010.

Using the field book the Local Technical Team was able to analyze the farmers' monthly earnings (see section 4.1). Figures 9A and 9B show FFS farmers discussing the results of the field books with each other.

Figure 9A. Coffee producers from the Pitocuna FFS analyzing the results of the field books.

Figure 9B. Coffee farmers from the Pampa Azángaro FFS analyzing the results of the field books.

2.3.4 Procedure Manual for FFS Coffee Farmers

Information reaped through the FFS workshop discussion was collected and organized to create 26 technical bulletins. The farmers' experiences proved a valuable source of information for the creation of a guide for promoters, technicians, farmers and those interested in the coffee industry.

Twenty-one bulletins were designed to discuss the phenology of coffee cultivation, with the remaining five bulletins covering general topics useful to the farmers (e.g. NY Stock Exchange, guinea pig breeding).
The technical bulletins were a source of content for the practical guide for coffee farmers, and were also used as reference material for the CACSVU certification program (Table 4).

Table 4. Technical bulletin topics.

Phenologic Phase	**Bulletin: Topic**
Flowering phase	1. Coffee manure 2. Weed control 3. Coffee Berry Borer 4. Fungal disease ojo de gallo 5. Integrated management of the fungus 'Arañero del café' (*Pellicularia koleroga*)
Grain-filling phase	6. Soil conservation and management 7. Soil sampling
Harvesting phase	8. Selective harvesting 9. Coffee fermentation, washing and drying 10. Handling and maintenance of the pulping machine 11. Sun dryer 12. Coffee pulp management 13. Compost management 14. Worm culture 15. Preparation of organic fertilizer
Recovery phase	16. Seed selection 17. Coffee pruning 18. Shade management 19. Quantification of shade percentage 20. Coffee nursery management 21. Physiology of coffee
Other related topics	22. Stock value (NY) 23. Agro ecosystem management 24. Cooperatives: basic principles 25. First aid and general topics 26. Guinea pig breeding

Figures 10 and 11 show the title page of the bulletins distributed to farmer in the FFSs.

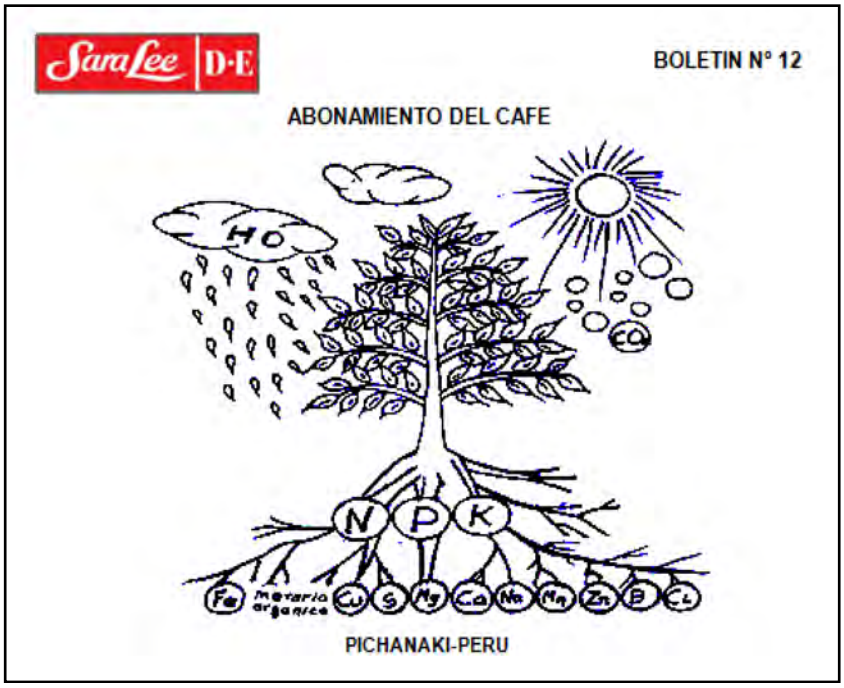


Figure 10. Farmer Field School Bulletin: Fertilization of the production area.

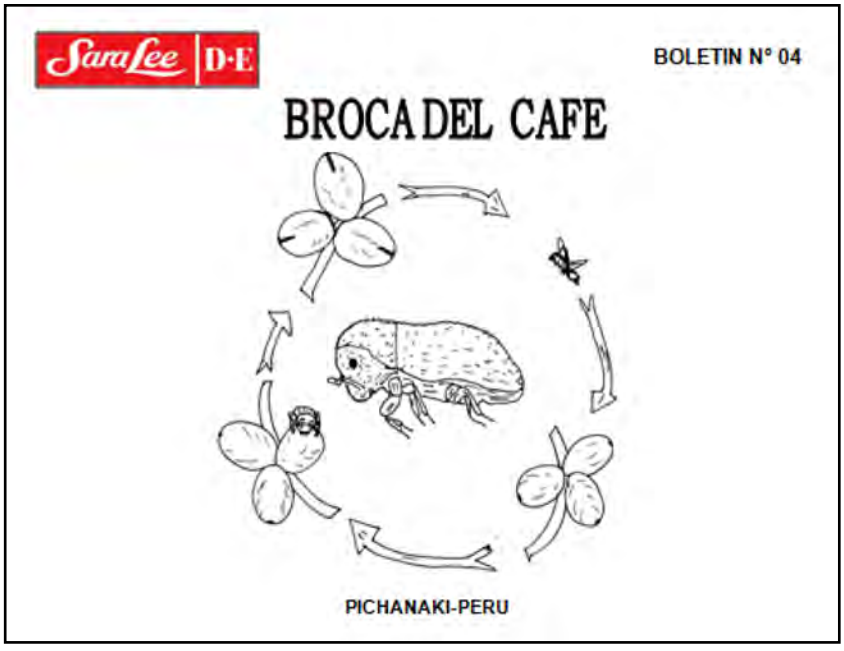


Figure 11. Farmer Field School Bulletin: How to control the Coffee Berry Borer.

2.4 Training in Entrepreneurial Skills

As a direct response to improvements needed in the commercialization and the trust within the first Farmer Field Schools, 70 farmers started the Cooperative, Cooperativa Agraria Cafetalera Sostenible Valle Ubiriki, CACSVU in 2004. Aside from this initiative, there were also various individual and organized development projects undertaken by the farmers

2.4.1 Certification

The CACSVU was created on the structural basis of the 14 FFSs, and the certification process for production began in January 2005. In May of the same year the efforts of the local technical team and the promoters resulted in the Utz certification of 99 farmers. 284 Tm of certified gold coffee was exported directly to the Swiss company DECOTRADE AG.
In 2007 the CACSVU implemented additional certifications with private organizations, such as Naturland, CEE, Starbucks Coffee Trading, Sustainable Agriculture of Rainforest Alliance, Fair Trade and the NOP USA.
As a result of the certifier organization requirements the CACSVU improved the quality of coffee, increasing both its international market and export year after year.

With the implementation of GAP, the famers engaged in the project increased productivity from 0.36 TM/ha in 2003 to 0.74 TM in 2011 (Table 5). Coffee threshing output also increased from 70% in 2003 to 81% in 2011.

Table 5. Statistics from the CACSVU cooperative.

Item	Years								
	2003	2004	2005	2006	2007	2008	2009	2010	2011
No. of Utz Certified producers			99	215	271	217	245	260	227
No. of organic producers, EEC/NOP/Naturland					65	130	177	188	173
No. of Flo-Certified producers					184	217	245	260	227
No. of RFA producers					70	70	100	107	107
No. of CAFÉ Practices producers					131	181	181	181	181
Total coffee production (Mt)			283	798	694	936	1,093	1,171	1,049
Production per ha (Mt)	0,36	0,36	0,56	0,67	0,45	0,70	0,71	0,68	0,74
Total expanse (ha)			1,762	3,143	3,864	3,197	3,580	3,830	3,189
Total coffee expanse (ha)			505	1,188	1,557	1,332	1,539	1,714	1,408
Yield threshing (%)	70	70	76	77	78	79	79	80	81

2.4.2 Launching the Cooperative

From the beginning the cooperative, with project support, provided continuous training to the members of the Board of Directors and Security, as well as to employees (administrators, warehouse managers, quality control employees).
The LTT tailored the training to the level of education of its audience, using simple and clear language to ensure comprehension of the subject matter.

Using the slogan 'Demonstrating Transparency' the CACSVU implemented an audit system to guarantee the validity of economic transactions.

To strengthen the internal quality control system, twelve CETPRO promoters from Ubiriki valley were certified. In addition, five administrative employees received management training.
Table 6 lists the training topics offered to board members, administrative employees and promoters.

Table 6. Topics for training the Board of Directors, Administrators,M and Specialists of the cooperative CACSVU.

Year	Topics	Frequency	No. participants
CACSVU Board of Directors			
2004	Internal audit of the cooperative	18	5
	MS Word and MS Excel	60	12
2005	Wholesale coffee and planning of shipping	5	20
	Coffee commercialization	12	15
2006	Petty cash/cash fund management	12	6
	Coffee processing	6	5
	Coffee exportation	12	5
2007	Values and self-esteem	3	15
	Cash flow preparation	18	5
	Investments and coffee commercialization	6	5
	Managing check books	12	5
	Formulation of estimates	6	10
2008	Stock value (NYSE)	5	15
	Price setting strategies	6	6
	Accounting	12	6
2009	Communication and presentations	2	10
2010	Enterprise and organizational management	5	15
CACSVU Administration			
2004	Internal Audit at cooperative level	18	4
2005	Coffee gathering and shipping plans	5	3
2006	Petty cash/small funds management	12	4
	Coffee processing	6	3
2007	Cash flow preparation	18	2
	Insurances and coffee commercialization	6	4
	Check book management	12	4
	Human resources	90	1
2008	Price-setting strategies	6	3
	Accountability documents	12	4
2009	Communication and presentation	2	2
2010	Enterprise and organizational management	5	3
CACSVU Promoters			
2003	Agricultural practice planning	6	42
	Certification programs	5	24
	Internal control system	5	42
	Field visits	4	24
	Diagnosis schedule design	10	42
	Certification committee assessment	5	24
	Organic production standards	2	25
	Coffee crops reconversion programs	3	24
2004	Utz Certified standard	2	25
	How to conduct a field visit	3	24

	How to be an inspector	3	24
2005	Child nutrition, first aid, family planning	2	42
	Field book analysis	3	40
	Cultivating promoters in FFS	9	42
	Field book analysis	3	12
2006	Cooperative legal structures	6	42
2007	Values and self-esteem	3	41
	Coffee cup quality control	3	25
2008	Agroforestry	3	38
	Coffee Price NY	5	15
	Tasting and cuality control	4	12
CACSVU Specialists			
2003	Internal control systems UTZ Kapeh/Certified standard	2	5
	Agricultural practices planning	6	5
	Planning activities for Certification program	5	5
	Internal control System	5	5
	Field visits	4	5
2004	How to conduct a field visit	3	5
	How to be an inspector	3	5
2005	Child nutrition, first aid, family planning	2	6
2007	Values and self-esteem	3	3
	Coffee cup quality control	3	3
2008	New York coffee Exchange	5	3
	Agroforestry	3	4
	Quality control and tasting	4	6
2009	Warehouse management	9	3

Figure 12 illustrates the title page of the FFS bulletin, 'Basic Principles of a Cooperative' created for the training and certification of cooperative personnel and associates. The bulletin describes the goals of the organization, stressing the social, cultural and economic needs of the members.

Figure 12. Farmer Field School Bulletin: On Basic Principles of a Cooperative.

2.4.3 Inter-Institutional Cooperation

The project promoted the strengthening of connections between the FFS's and private and public institutions, the result being a current network which includes a number of organizations.(See Figure 13).

This collaboration between the players represents a best practice in rural development projects. Targeted alliances and partnerships between the participants at the planning stage is the basis of good project development, the lack of which often causes the projects in this environment to fail.

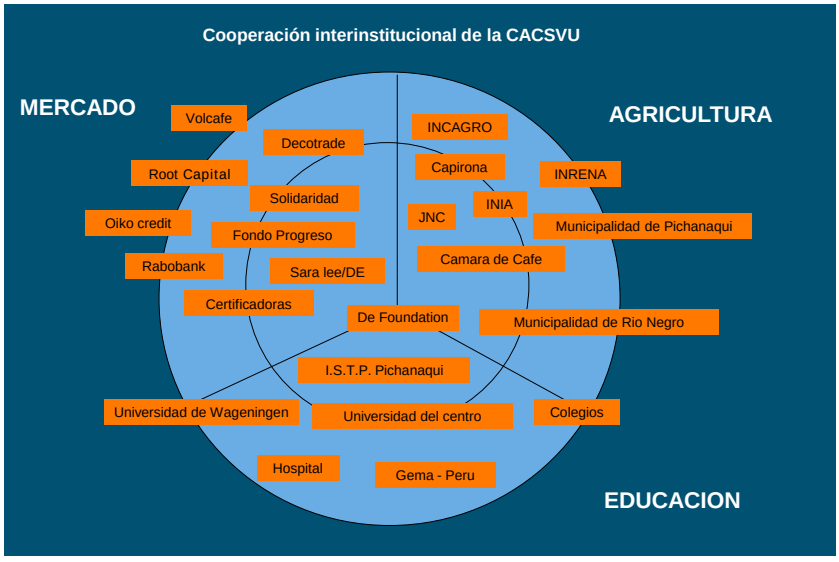


Figure 13. CACSVU interrelations with the market (mercado), education (educacion) and agriculture (agricultura).

The cooperative received membership to the Junta Nacional de Café, which comprises the top 53 coffee organizations in Peru, and includes 40% of Peru's farmers.

At the end of December 2010 the political ambitions of the president of the CACSVU board of directors, who dismissed the local project manager of the cooperative without justification, paralyzed the cooperative as well as the project activities, such as shipping, credit access, diversification, and more.

Unable to manage the cooperative, in January 12, 2011, the president resigned his position. Thanks to the support of the project Local Technical Team and other institutions (Rabo Foundation, FLO, WUR and many more agencies), the CACSVU successfully re-established good relationships with the financial institutions and related entities.

2.4.4 Finances and the International market

In 2005 and 2006 the NGO 'Solidaridad' awarded a $43,000 USD & $100,000 USD loan respectively to the CASCU for coffee gathering, the acopio. This positive experience served as precedent in which the programme 'Progreso' provided financing of $200,000 USD yearly between 2007 and 2010 for coffee gathering.

In 2008 Root Capital financed coffee gathering with a loan of $200,000 USD, and the cooperative received a $1.25 million USD loan from the same activity. Between 2009 and 2011 Rural Fund provided a loan of $300,000 USD and $400,000 USD respectively. Figure 14 illustrates the CACSVU credit source and the loans awarded for coffee purchases between 2005 and 2011.

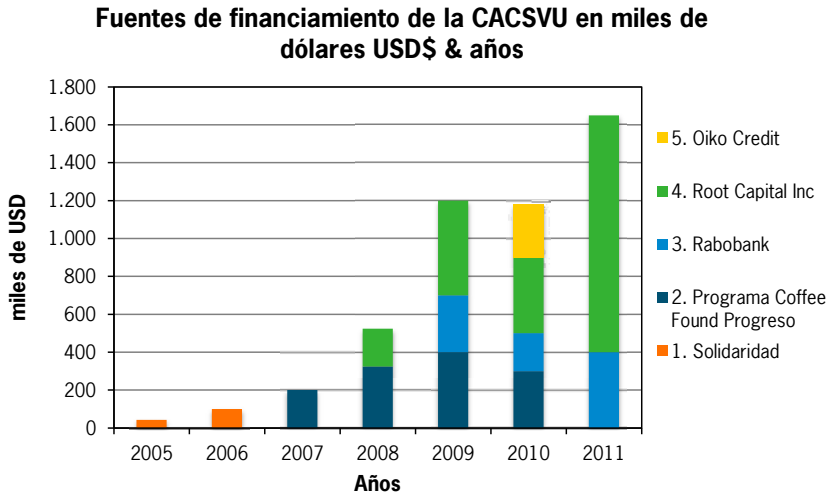


Figure 14. Financial sources in loans (thousands of dollars) received by the CACSVU between 2005 and 2011.

Thanks to the existing network of clients connected to Fair Trade producers (and the efforts of the Local Technical Team) the CACSVU entered the international market. For the first three years the CACSVU sold 332 Tm of gold certified coffee directly to DECOTRADE AG.

The cooperative established solid commercial relationships with nine international coffee buyers. By 2011 the cooperative had exported 746 Tm of gold coffee. Figure 15 illustrates the CACSVU clients and the amount of gold coffee exported between 2005 and 2011.

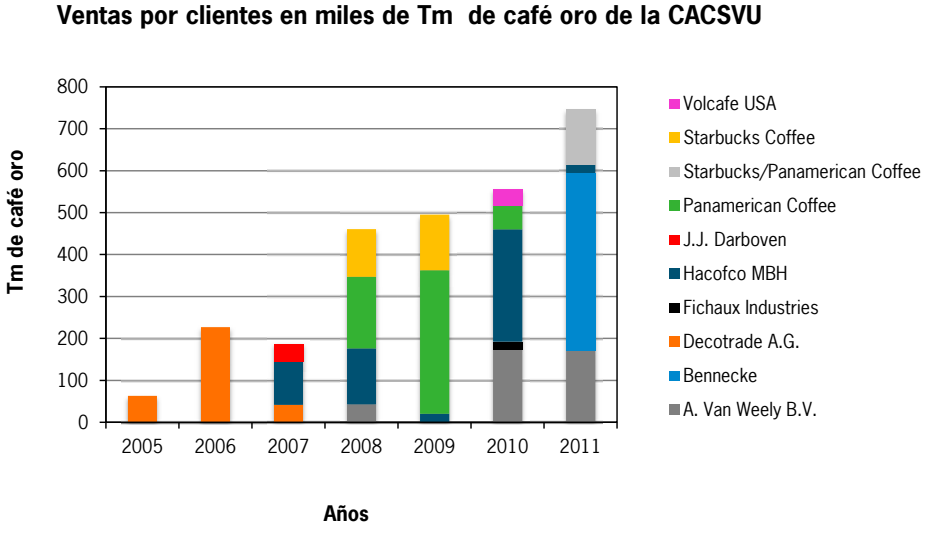


Figure 15. Clients of the cooperative CACSVU and volumes (in metricTons) of gold coffee exported by the CACSVU between 2005 and 2011.

2.4.5 Diversification

In order to strengthen the CACSVU and gain a competitive advantage in the managerial level of the region's cooperatives, in 2008 the project identified various innovative lines of work/activities.

Specialty Coffee (Origin)

The coffee district of Pichanaki has the ability to produce a high quality coffee; however, the requirements for reaching this level of quality are: adequate control of fermentation time, and discarding unripe, damaged and over-fermented beans.

The project contracted the services of a coffee quality expert Q Grader (from the Coffee Quality Institute) who identified that the coffee had the organoleptic characteristics comparable to the best coffees from Ethiopia.

Based on their experience, the quality of the coffees tasted, it is possible to develop a specialty coffee, the cooperative could gain access to the highly specialized market. In chapter 3.2 we present the improvement of coffee quality as one of the topics that needs more attention.

Microcredit Management

Between 2008 and 2011 the Local Technical Team helped to channel loans from AGROBANCO (Peruvian state financial institution) for 270 CACSVU farmers, totaling $185,000 USD annually.
Through these loans the CACSVU farmers were able to implement systematic pruning and composting as well as fertilization (see Figure 8), and as such, increased production.

Microcredits

Five farmer organizations (CACS Ubiriki Valley, CAC Satipo, CAC Selva Alta, ACPC, and CEPROAP) participated in the promotion of the Savings & Credit Cooperative, Progresa (COOPAC-Progresa). With over 200 members, the cooperative opened its doors in October 2009 by hiring a manager.

Despite its best efforts and good intentions, COOPAC was never consolidated. The cooperatives showed weaknesses in their cooperation. Between 2009 & 2010 they faced severe financial problems and four cooperatives defaulted on their financial commitments, after which they remained inactive.

Café mujer (women entrepeneur) and Other Products

Social and cultural barriers have significantly affected the participation of women in the CACSVU, also limiting the improvement of gender relations. As mentioned in previous reports, the project always sought to provide equal opportunities. To achieve this objective, the project encouraged the involvement of the entire family in activities.

The CACSVU currently has a women's committee (24 women). with an action plan created in 2009 based on a SWOT analysis (strengths, weaknesses, opportunities and threats). The committee also completed a market study which identified a number of potential activities to be developed by this committee. However, the study notes significant constraints on business development that they may undertake.

Three women committee members visited facilities in Piura (CEPICAFE) in order to learn from success stories and identify potential activities for the CACSVU women's committee.

GEMA-Peru currently manages a rotating fund of $4,000 USD allocated for women entrepreneurs to start-up businesses (animal breeding, gardens, warehouses, pharmacies, etc.) and thus contribute to the household income.

Our socio-economic impact study (Fedes *et al.*, 2008) showed that in 2008 skill development was approximately 10% higher in the project group than those neighbors who did not participate in the project. However, this was not statistically significant.

2.5 Making the DE project known

Deliberate alliances and partnerships can overcome a variety of problems, suspicion, and controversy. From the beginning, the DE Foundation project Peru encouraged the forging of alliances and partnerships. In Annex 1 we list some local, national and international activities.

2.6 GEMA-Peru

The local technical team of the DE Foundation project has been transformed in a NGO (Environmental-Sustainable Management for Agriculture Peru, GEMA-Peru) which is dedicated to helping newly formed organizations who show an interest in entrepreneurial business. Formed by the LTT it was created as an exit strategy of the DE Foundation project to give continuity to CACSVU activities that need more time to consolidate, while supporting the search for funding and international cooperation.

In 2007, GEMA-Peru received $80,000 USD in funding from the World Bank for three years. This funding provided Rainforest Alliance certification to 70 CASCVU farmers, and currently offers commercial support and certification to six cooperatives of central Selva, Peru, as well as collaboration in two local municipality projects.

In 2010 GEMA-Peru achieved accreditation from IPEBA (MINEDU institution) as a certified entity for coffee plantations and forest species. This was part of an initiative promoted by the JNC and the MINAG to renovate coffee plantations.

GEMA-Peru is exploring the expansion of its business to other promising crops in Peru (cocoa, annatto, ginger, etc.). It is also interested in engaging in national and international corporation bids in order to support rural development activities.

3. Key results

3.1 Successes

1. Farmers, producer organizations, local authorities, brokers and exporters have recognized the importance of sustainable coffee production in Peru. Neighboring cooperatives and local authorities are lobbying for more funds to bring the FFS approach to districts in Junín Province other than Perené, Pichanaki and Río Negro. Through the project, eight cooperatives and local authorities (four municipalities, the Ministry of Education, and the Ministry of Agriculture) have allocated local budgets for FFS training in sustainable coffee production.
2. Through the project six extensionists, 24 farmer leaders, 42 promoters, eight researchers, and eight teachers, were successfully trained to become professional trainers (50 were officially recognized) on Participatory Agricultural Extension Methods, the FFS methodology, GAP, Good Processing Practices, certification, entrepreneurial skills, and forest management.
3. A local training center (CETPRO) was established, initially connected with the CACSVU cooperative and currently linked to the recently established NGO, GEMA-Peru (former project LTT). The training curriculum can be replicated for other farmer organizations, and the local extension staff of the Ministry of Agriculture is lobbying for funds to expand the networks. In addition to its training objectives, the CETPRO helps the cooperative promote inter-institutional networking. One success story is the partnership with the ACPC and the Pichanaki Centre for Agro ecological Producers (CEPROAP) which stresses learning from rich and varied experiences.
4. The project successfully introduced the Participatory Research Approach as a tool and a method of learning through experimentation in the field. This enabled the farmers to test and compare new agricultural practices to help them make informed decisions about their farm conditions, leading to improvements in coffee production and processing.
5. The DE project successfully raised awareness of the importance of record-keeping. While documentation in Western society may be highly valued and rewarded, Peruvian smallholder farmers are much less geared to writing down experiences. The field book proved valuable in helping farmers and facilitators to visualize and assess existing and potential scenarios at the plantation level with changing farming practices. The strength of this approach lay in simple, well-organized record-keeping, accurate observations, and visual presentation to farmer groups. An important factor which influences the farmers' willingness to participate is the relevance of the record-keeping output to their farm management. Product traceability and the traceability of field activities recorded in the field book have contributed significantly to the coffee quality control and improvement programs. These tools have turned the quality programs into verifiable processes.
6. Through the field book the Local Technical Team and farmers understand: annual earnings of farmers and if the farmer did not have working capital. Due to lack of funds, until 2008 prioritization of the activities was based on activities that required less investment and skills acquired in the FFS. In 2003 average yield was 36 Mt/ha and income for the majority of the farmers was below Peru's minimum wage (monthly minimum wage is 550 soles). By 2011 the average productivity had doubled to 0.74 Mt/ha.
7. Practical and clear language was used in training materials and bulletins (which were based on local knowledge and coffee producer experience). This allowed the promoters, farmers, teachers, and engineers to introduce GAP to even the small coffee farms.
8. Utz Certified certification and later additional certifications became a synergistic element to achieve both the GAP requirements, as well as to gain access to the specialty coffee market. In 2011 the CACSVU generated a net profit of $350,000 USD. The CACSVU proved that it was prepared for the changes and instability in the international coffee market over the past two years.
9. The project effectively created new market opportunities for producers through supporting access to certification programmes, such as Utz Certified. The farmer's organization aimed to position itself as a solid organization before the international market. Having access to the market of voluntary certifications was a significant step toward that goal. The certification market ensured the cooperative a place in the market, as well as long term relationships with the buyers. Had coffee prices remained stable from 2003, household income would have increased by 100%, due to increase in productivity.

10. The project stimulated the development of a transparent producer's organization (CACSVU) which in 2011 exported 746 Tm of coffee to Europe and the USA. As of 2004 all cooperative members are Utz Certified and have been exporting to the international market. They currently have nine clients in Europe and the USA. Certification: 100% Utz Certified; 30% Rainforest Alliance; 70% FLO-Organic. The average premium in the New York Stock Exchange Agreement 'C' per pound of coffee is $ +50 cents USD.
11. The CACSVU shows high levels of accountability in fulfilling coffee contracts. The cohesion and professionalism developed in the CACSVU was made possible by the FFS platform and methodology. The 'demonstrated transparency' which FFS promoted allowed access to funding and provided credibility in a market with stringent coffee quality and compliance demands. In 2011 the CACSVU received $1.65 million USD in loans from various financial institutions, such as Rabobank ($400,000 USD) and Root Capital ($1.25 million USD).

3.2 Issues Requiring Further Attention from the Coffee Producing Sector in Peru

Quality Improvement

The project identified that the coffee from the CACSVU farms has unknown potential quality that can be used for specialty/origin coffee. Some important actions to take are:

- Improve the production infrastructure for the wet and dry process. For instance, the utilization of siphons with water recycling and filters. These are simple innovations that require more thought and investment
- Promote and encourage the farmers in the cup test
- Work with phytosanitary authorities (INIA) in disease and pest control

Peruvian coffee can be distinguished as an origin coffee of superior quality.

Increased Productivity

The average productivity reached in this region in 2011 was 0.74 Mt/ha; however, aside from the current world market prices, this is not sustainable production. Production costs have now doubled.

If coffee prices drop on the short term it will be a difficult crisis for the farmer's to face. To offset the low prices of a potential crisis, farmers must increase productivity to 1.5 Mt/ha.

A microcredit system to purchase fertilizer may help address this potential crisis.

Competitive Cooperative Leadership with Courage (LCCV)

In the coffee marketing and commercialization process the CACSVU requires constant communication with different cultures and information technologies. This requires leaders who are adaptable to the often changing needs and challenges of the cooperative.

Despite the current leadership training, leaders and employees of the CACSVU are not prepared to lead an organization with competitive cooperative leadership with enough confidence. This has the potential to destabilize the organization.

The CACSVU must identify and implement management practices according the profile of a competitive cooperative. In other words, it's necessary to create cooperative business studies, including decision-making, good communication at all levels, time management, conflict resolution, etc.
It is also important to take these actions up with the National Coffee Board, or with GEMA-Peru.

Climate Change and the Future of Coffee

Climate change in Peru has affected coffee production. Unpredictable rainfall patterns and rising temperature make coffee farmers along Andean hillsides more vulnerable.Under normal conditions the harvest lasted five months; now the same harvest lasts only three months.

This problem, caused by climate change, requires the farmer to invest in infrastructure, as well as hire additional staff for the harvest period.

Climate changes also affect the rainfall in these regions between May and August. Furthermore:

- Heavy and unexpected rain cause up to 20% of coffee cherries to fall
- The rain causes difficulty with sun-drying of the coffee
- The rains deteriorate the roads, preventing the transportation of coffee to the cooperative
- There is an increase in coffee beans contaminated with fungus and mold due to prolonged storage and lack of drying.

All of the above required greater infrastructure investments: mechanical dryers, pulping machines, larger warehouses, etc.
These changing conditions have potentially severe consequences, not only for farmers and other players in the coffee production industry, but they will also heavily impact production costs. To explore possible changes, a variety of experts plan to contribute with their expertise. GEMA-Peru, in collaboration with PRI-WUR, may partner in the development of practical adaptation and mitigation measures being implemented to cope with climate change.

Multi-sectoral Approach

In Peru, only 25% of farmers are organized in cooperatives and associations and they are represented by the Junta National de Cafe. Through the organization the farmers can obtain micro loans, they receive better prices, and are better equipped to cope with future coffee crises.

The remaining 75% of farmers are independent. In other words, they are not represented, have no access to micro loans, are objected to low prices and have no means of improving productivity.

The cooperation between the JNC and the Peruvian Chamber of Coffee and Cacao (exporters and manufacturers) was and is limited. Moving to a multi-sectoral approach, while very appealing to Peru, was/is not yet possible due to the lack of a policy framework and good public-private partnership.

At the local level (three provinces), GEMA-Peru could improve other cooperatives by helping them develop their technical and innovative skills.

4. Socioeconomic and Environmental Impact

4.1 Socioeconomic impact

Income Changes

Between 2005 and 2010 there were significant changes in the monthly income of coffee farmers who participated in the DE Foundation project. In 2005, 65% of farmers earned less than 300 soles per month, while in 2010, 71% of farmers earned more than 900 soles per month. (See Figure 16 for income in 2005 and 2010).
The socioeconomic impact study showed an increase in human capital through knowledge and education, which enabled farmers to strategically use their other livelihoods. As it is well known, human capital is a source of productive capital in the family unit; once it's achieved it remains on the farm, creating sustainability.

The project also increased social capital through increasing membership in the organization for production.

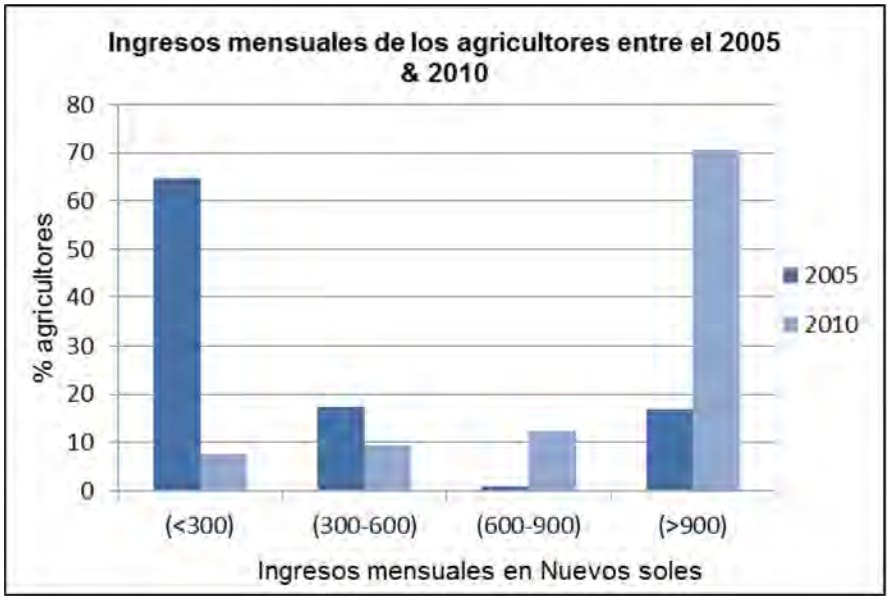


Figure 16. Monthly income of farmers (soles) participating in the DE Foundation Project, comparison 2005 and 2010.

4.2 Certification and the Environment

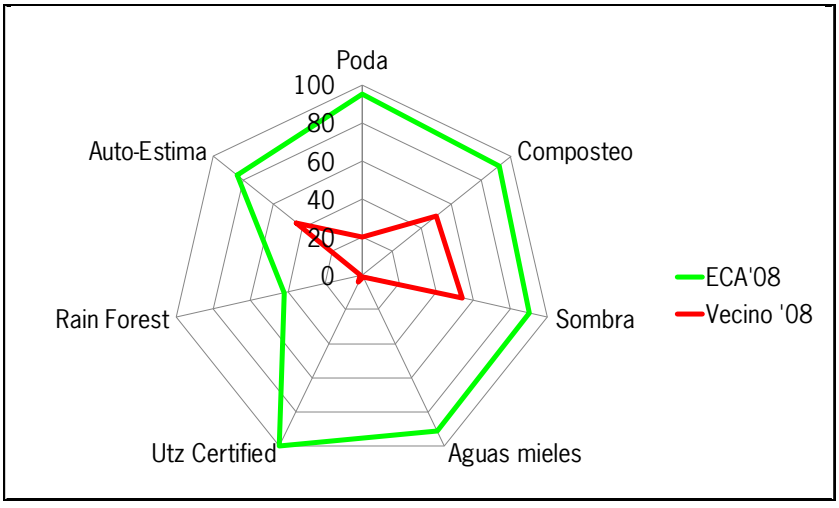
Through the project, coffee producers gained access to certified international markets, not only the Utz Certified programme but also other programmes as the Rainforest Alliance and Starbucks programmes.

These programmes include an internationally recognized set of criteria for professional coffee growing, which includes social, environmental, and efficient agronomic management of the farm (following, for example, the OIT standards).

Independent third-party auditors conducted annual inspections of coffee farmers to determine whether they complied with the code of conduct and required chain of custody (traceability).

In Figure 17 A and B major changes in agricultural activities are presented activities such as fertilization, shade management, waste water treatment, soil management, composting, training in coffee production, certification and pruning increased from 5% - 80-100%.

Phytosanitary control, fertilization and shade management increased from 5% to 70%.



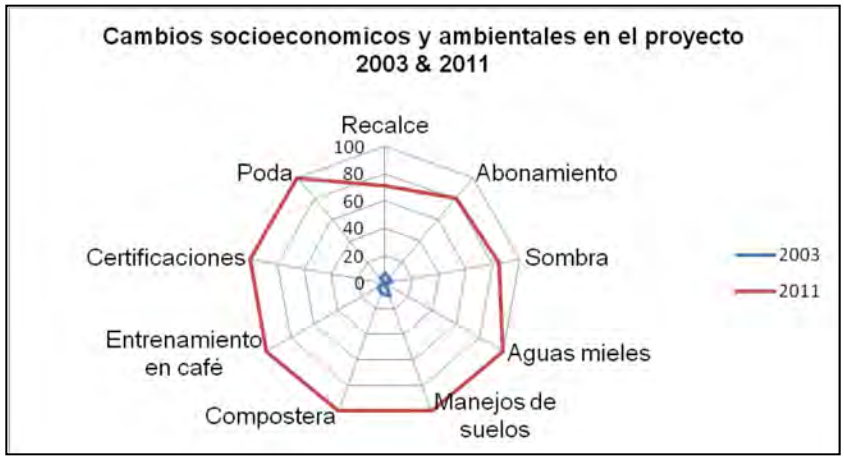


Figure 17. Technical change with socioeconomic and environmental consequences for farmers; Comparison between project farmers and their neighbours in 2008 (A). Comparison between project farmers 2003 and 2011 (B).

Abonamiento = fertilization; Sombra = shade management; Aguas mieles = waste water management; manejo de suelos = soil management; compostera = composting; participacion en entrenamiento = participation in training; % certificacion = % certified farms; poda = pruning; recalce = liming; Auto-estima = self-esteem.

5. Lessons learned

At the FFS Level

- A key factor for strengthening the innovation capacity in a sustainable coffee project is not only based in technology but also in building the social processes that support education. Training the trainers in the FFS methodology is crucial to disseminating technical development (GAP), certification and entrepreneurship.
- Sharing the FFS methodology at the micro and meso levels with those involved in the development (ministries, public and private institutions, training centers and farmers), served in the spreading and acceptance of FFS.
- Despite the scattered distribution of the farms and the low education level of the farmers, a FFS network can develop to share and exchange knowledge within communities.
- The FFS and Participatory Research Plots are tools which facilitate the technology transfer, and which help the farmers to more quickly and enthusiastically adopt their newly-learned innovations.

At the Project Level

- Maintaining a stable Local Technical Team with a high level of performance and values was critical to providing an example to the farmers.
- Official certification of expertise ensures the status and value of FFS facilitators in the coffee sector.
- It's critical to develop a multi-sectoral approach to provide timely and relevant technological development. Develop an outreach agenda to continue to provide, short, mid and long-term solutions. Cooperation with the State/public sector in the implementation of formal training options for coffee producing areas is important.
- Farmers need working capital to implement GAP innovations learned in the FFS. The absence of a microcredit system hindered the implementation of innovations learned on their own plantations.

At the Cooperative Level

- The cost of training and knowledge is not assumed voluntarily by the farmers; therefore the organization levied an internal tax, charged as an administrative expense.
- In a young organization it is difficult to maintain trust with clients because the managers and farmers are not prepared to assume leadership of the cooperative due to their low level of education and multiculturalism. Guiding the management required continuous post-project monitoring for more than three years.
- It is important to establish a fund-raising strategy within the cooperative to seek funding from national and international corporations that will fund this type of coffee project.

6. Recommendations

1. When the DE Foundation began the project in the Ubiriki valley, there were next to no community organizations due to bad experiences with the Central Association, which did not operate transparently. Training, outreach, and strengthening of the cooperative were critical. Producers lived in distant farms. Low levels of education of the partners in the recently formed cooperatives (50% completed primary school and 7% were illiterate) were poorly managed due to lack of leadership ability. Eight years was estimated as an appropriate length for such a project.
2. The identification of farmers with leadership skills trained to be FFS facilitators gives the farmers organization a large Human Resource pool, as such the farmers organization is not dependent on just a few. This creates a more solid base.
3. With small farms it is possible to improve both the quality and productivity of coffee using the FFS methodology. It is a good tool for apprenticeship experiences for coffee farmers.
4. The FFS encourages active participation in the social structures that form outside of the FFS, as they improve communication between participants, even though they are geographically dispersed.
5. The market approach to certification allows incorporation and fast access to coffee markets.
6. Trust and transparency at all levels is one of the tenets of our project, and serves as an example to promote the values, which encourages the farmers to adopt these values in their own lives.

Appendix I.

Outreach: Workshops, Conferences and Publications DE Foundation Project Peru

1. In 2005 the DE Foundation organized a meeting in Utrecht, The Netherlands, with project leaders from the SL/DEF projects. Martín García, Gino Marín, (LTT member) and E. den Belder (PRI-WUR) represented the Peru project. Other participants were project leaders from Uganda, Brazil, and Vietnam projects. This event was organized by Stefanie Miltenburg, Director of the DE Foundation and Don Jansen from PRI-WUR, DECOTRADE A.G., Coffee Support Network, Solidaridad and Utz Certified. In this meeting DE projectleaders were able to exchange valuable experiences and share common points.
2. In 2006 the paper 'Documentation: an effective tool in Farmer Field Schools'. LEISA, 22: 7-9. E. den Belder *et al.*, 2006. (English, Spanish, Portuguese) was published.
3. In 2006 the project designed a web page for the CACSVU to share information about activities and goals.
   URL: www.Ubiriki.com.pe
   Email: cooperativa@Ubiriki.com.pe, administracion@Ubiriki.com.pe
4. Pineros, R. E. (2006). The Most Significant Change Approach in Organizational Learning. Communication Science, MSc Wageningen University pp. 100.
5. In August 20, 2007 the Local Technical Team, CACSVU and the Peruvian Chamber of Coffee organized a coffee quality competition at Pichanaki, Peru. They also manned a stand that provided information about DE projects being developed for sustainable coffee production.
6. SAI Platform Third Coffee Meeting, Uganda November 28 through December 1, 2007. Presentation by den Belder: 'The Sustainable Coffee Project Peru: Learning by Doing.'
7. In 2008, at the InterAmerican Cooperative Institute (ICI), Panama, LTT members G. Curiñaupa and A. Gómez participated in the workshops, 'Leadership Analysis of Reality, Organizational Strengthening,' and 'Building Capacity for Comprehensive Organizational Communication.'
8. Fedes Van Rijn, Kees Burger and Eefje Den Belder.—A Socioeconomic Impact study of the DE Foundation Coffee Project, Peru, M.Sc. Thesis, Wageningen University, 2008.
9. García Aranda, Martín, 2008. 'Sustainable Development Plan for Pichanaki's Coffee-producing Regions.' MBA, Technical University of Madrid, Madrid, Spain.
10. Presentation of the CACSVU and GEMA project at the Embassy of the Netherlands, Lima, May 2009. E. den Belder, M. García y G. Curiñaupa: 'The Field Book and the Participatory Research Plots: A Tool for Empowerment and Change.'
11. Project presentation to financial institutions, such as SOS FAIM, Lima, 2009, by M. Garcia. 'Finding Common Interests for Future Collaborations.'
12. In May 19, 2010 the project organized a regional workshop in Pinchanaki discussing 'Participatory Research Results.' Thirty public and private organizations participated: MINEDU, INIA, MINAG, Pinchanaki Agricultural Institute, SENASA, CEPROAP Association, Mountain Coffee Association, ACPC, CAC Perené, San Carlos Cooperative, the National Coffee Board, Chanchamayo's Chamber of Commerce, Municipality of Pichanaki, and Río Negro Township. A noteworthy idea that came from the meeting was to build a network of local facilitators.
13. Van Rijn, F. Burger, K. E. den Belder, 2010. 'Impact Assessment in the Sustainable Livelihood Framework: A Case of the DE Foundation Coffee Support Project.' Impact Evaluation Conference, October 2010.
14. International Forum on Sustainable Coffee Production, Lima, Peru, August 31, 2011. The forum was organized by the Local Technical Team and E. den Belder, and included 22 participants: 2 representatives from the Coffee Growers Federation of Columbia (FNC), NGO representatives, the National Coffee Board, two from MINAG, PCC, one from Coex International, three from the project, two CACSVU representatives and 16 individuals representing the coffee sector stakeholders.
    Presentations: Donatus Jansen: 'Framework for Developing the Coffee Sector—The Strength of Unity'; Andrés Valencia, FNC: 'Working for the Sustainability of Colombian Coffee'; Martin García: 'Results of the Sustainable Coffee Project, Peru'; Eefje den Belder: 'Participatory Research and Innovation Development'; Jesús Ramos: 'Trust—the Foundation of the Organization, CACSVU'.