BEYOND COCOA

AGROCHEMICAL MANAGEMENT PROJECT
BASELINE REPORT

COACHING AND FOLLOW UP OF FARMERS ON GOOD AGRICULTURAL PRACTICES, AGROFORESTERY AND PESTICIDE MANAGEMENT

November 2024

CONTENTS

ILLUSTRATION TABLE

1 CONTEXT

FILDISI COCOA INDUSTRY is implementing its sustainability policy through **Ülker**'s **"Beyond Cocoa"** program, which is primarily based on three pillars: improving people's living conditions, protecting natural resources, and ensuring product integrity. This sustainability program is being implemented with the support of the **Earthworm Foundation**, which assists in coordinating various actions.

FILDISI COCOA INDUSTRY, as ÜLKER's **sister company** under **Yıldız Holding**, collaborates closely to align their efforts in achieving sustainable cocoa production. Together, they are committed to addressing the critical challenges faced by the cocoa industry, including deforestation, farmer livelihoods, and responsible pesticide use.

As part of the partnership, **ÜLKER**, **FILDISI COCOA INDUSTRY**, and the Earthworm Foundation have established a pilot project to coach and monitor farmers in **good agricultural practices**, **agroforestry**, and **pesticide management**. This project aims to sustainably improve farm productivity and incomes while safeguarding the environment and protecting producers' health.

The integration of agroforestry within this project is vital due to the pressing need to mitigate deforestation and soil degradation caused by traditional cocoa farming methods. Agroforestry enhances biodiversity, promotes carbon sequestration, and creates climate-resilient landscapes while offering farmers diversified income streams. The project aims to adopt such practices, and addresses the interconnected challenges of environmental conservation and socio-economic development, ensuring a more sustainable cocoa supply chain.

As a first step, ÜLKER and FILDISI COCOA INDUSTRY with the support of the Earthworm Foundation, hired a field agent to oversee the implementation of the project and to support farmers. The experienced agent received two specific training sessions aligning with the aims of the project, carried out by Earthworm, covering the three following topics:

i. Good agricultural practices to improve farm productivity and reduce the risk of pests and diseases;

ii. Implementation of agroforestry.

iii. Safety in the use of chemicals and biological alternatives to limit the use of chemicals to the strict minimum.

SCOOPS COODIG cooperative, based in Guibéroua, has been selected to implement that pilot project. The project, which kicked off in July 2024, involves 150 producers selected from 4 sections of the cooperative (Tchoco, Lebre, Zia and Niaprahio).

This pilot project is also being carried out in collaboration with SCOOPS COODIG cooperative, which is supporting FILDISI COCOA INDUSTRY field agent and providing the needed documentation.

2 METHODOLOGY

2.1 Identification and selection of farmers

Farmers are identified using the comprehensive database provided by the **SCOOPS COODIG cooperative**, which includes essential details such as farmer codes, names, sections, villages, and GPS coordinates. This robust database enables precise targeting and tailored project engagement.

The process begins with an **awareness session** organized in each section, facilitated by the section's farmer lead (delegate). These sessions bring together local farmers and their representatives to introduce the project. During these gatherings, we emphasize the project's focus on supporting farmers in **cocoa sustainability** through **agroforestry**, **good agricultural practices**, and **pesticide management**—practices designed to enhance productivity and maximize income.

Following the sensitization sessions, field visits are conducted to assess the state of plantations firsthand. The selection process prioritizes farmers who demonstrate willingness, availability, and plantations suitable for agroforestry. Farmers with plots smaller than one hectare are excluded to ensure meaningful project impact.

For selected farmers, a detailed **mapping process** is carried out to accurately determine the size of their plantations, laying the groundwork for tailored interventions and effective implementation. This structured approach ensures the project's resources are optimized, fostering sustainable cocoa farming practices at scale.

2.2 Diagnosis of cocoa plots

The primary objective of the diagnosis is to assess the baseline condition of cocoa farms, identifying factors contributing to yield reduction and those supporting productivity and sustainability.

This diagnosis is conducted using a **questionnaire integrated into a mobile device**, powered by **Farmforce software**. The questionnaire covers the following key areas:

- **Farmer identification**: Name, code, locality, etc.
- **Plot identification**: Size, GPS coordinates, etc.
- **Plot condition**: Presence of diseases, if any.
- **Agricultural practices**: Frequency of chemical treatments, pruning, and other operations performed by the farmer.
- **Agroforestry**: Number of trees in the plot, farmers' perceptions of agroforestry, etc.
- **Pesticides**: Names of chemical and biological products used, frequency of application, etc.

The diagnosis evaluates **good agricultural practices**, **agroforestry adoption**, and **pesticide usage**. During the process, field agents also conduct on-site visits to observe the farm conditions firsthand.

At the conclusion of the diagnosis and field visit, the agent provides personalized observations and **recommendations** to the farmer, offering practical guidance to promote the farm’s sustainable development. This hands-on approach ensures actionable insights tailored to each farm's unique context.

2.3 Training of Farmers

The training of farmers is conducted in two distinct stages, each designed to address specific needs identified during the diagnostic process and to ensure sustainable improvements in farming practices.

2.3.1 Step 1: Immediate Training Following Diagnosis

This initial phase occurs directly after the diagnosis and is centered around the key findings and observations made during the assessment. At this stage, the agent works closely with the farmers, explaining the practices and corrective measures required to address the identified challenges. Key activities include:

- **Pruning Demonstrations**: Farmers are trained to prune cocoa trees effectively to regulate shade within the plantation, enhancing light penetration and overall plant health.
- **Weeding and Cleaning Awareness**: The importance of maintaining clean plantations through regular weeding is emphasized, reducing competition for nutrients and deterring pests.
- **Application of Organic Manure**: Practical guidance is provided on the proper use and benefits of organic manure to enrich soil fertility and boost yields sustainably.

2.3.2 Step 2: Scheduled Training Sessions

After the initial diagnosis-based training, a second phase is organized to provide more specialized and comprehensive training sessions tailored to the local context. These sessions focus on specific topics such as agroforestry practices, advanced farming techniques, or pesticide management.

- **Topic Customization**: Training content is determined based on the unique challenges and needs identified during the diagnostic phase.
- **In-Depth Learning**: Farmers are provided with detailed explanations, interactive demonstrations, and opportunities to share experiences and ask questions. This collaborative approach reinforces understanding and practical application.

The second phase is typically scheduled after the diagnostic period to ensure that farmers have the time and context to implement the initial recommendations. This two-step training process ensures a clear connection between diagnosis and practical solutions, equipping farmers with both immediate tools and long-term strategies for sustainable cocoa production.

3 RESULTS

3.1 General Results

3.1.1 Identification and Selection of Farmers

To date, 150 farmers have been identified, sensitized, and selected to participate in the project, including 3 women. These farmers were chosen following a thorough awareness-raising process that highlighted the objectives and benefits of the program. The selection criteria focused on farmers who demonstrated both willingness and the capacity to adopt sustainable cocoa farming practices, with particular attention to agroforestry, good agricultural practices, and pesticide management.

3.1.2 Diagnosis of Cocoa Farms

As part of the project's implementation, plantation diagnosis and awareness-raising sessions have been completed with 63 of the 150 selected farmers, representing a progress rate of 42%. The diagnosis phase involved detailed evaluations of the farms using digital tools such as Farmforce software. These evaluations provided insights into the farms' baseline conditions, including issues such as pest infestations, inadequate pruning practices, or insufficient agroforestry coverage. During these sessions, farmers were also sensitized to sustainable practices that could improve productivity and mitigate environmental impact.

3.1.3 Training of Farmers

The first phase of the training program was successfully conducted immediately after the plantation diagnosis for the 63 farmers whose farms had been assessed. This stage focused on addressing the specific observations identified during the diagnosis, including practical demonstrations on pruning, cleaning (weeding), and the proper application of organic manure.
The second phase of the training, which aims to provide more comprehensive knowledge on topics like advanced agroforestry techniques and responsible pesticide management, is scheduled for January 2025. This phase will be tailored to address the collective needs of the farmers and build on the foundational knowledge imparted during the initial training, ensuring a progressive learning curve for all participants.

3.1 Quantitative Results

3.1.1 Good agricultural practices and agroforestry

3.1.1.1 Agricultural practices

The vegetative material used in 100% of the farms visited is all-comers[1] (mixture). The average age of plantations is between 20 and 30 years. Densities are generally high on farms (cf. figure 1).

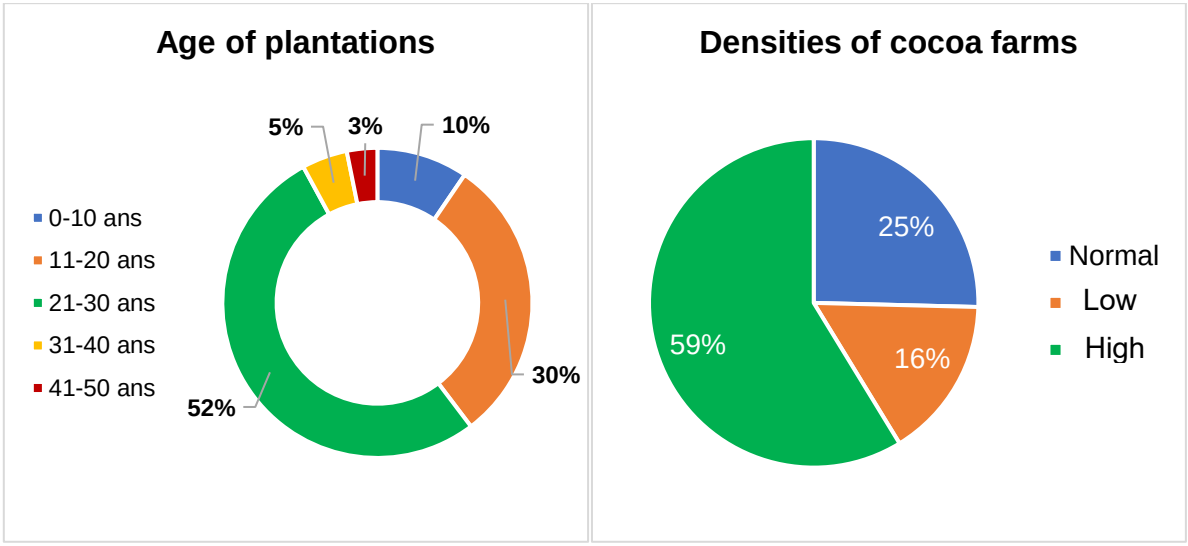

Figure 1: Ages and densities of cocoa farms

However, a proportion 25% of farmers have applied the correct density as recommended by the agricultural council.

Visits of the farms and discussions with farmers revealed the presence of disease in some of these farms. These observations are shown in figure 2.

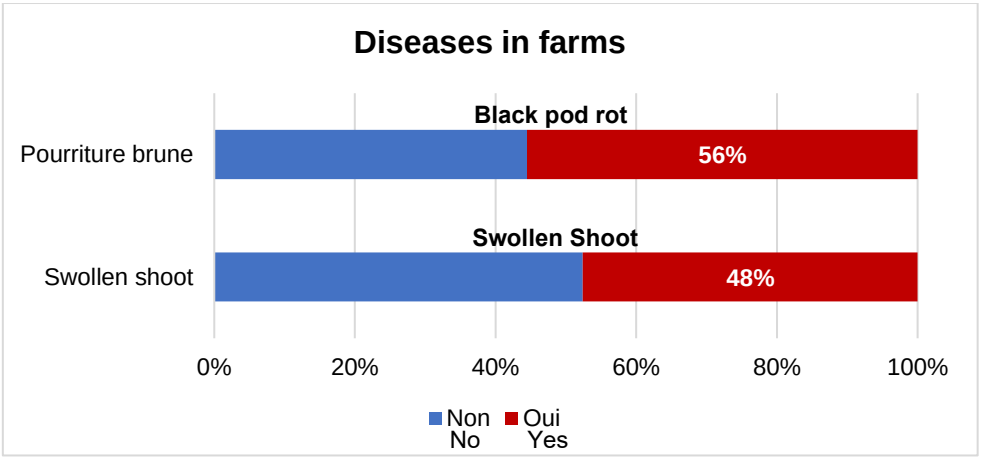

Figure 2: Diseases in farms

Analysis of this figure reveals a high proportion (48%) of plantations affected by Swollen shoot, a dreaded disease of the cocoa tree for which a chemical control strategy has not been developed yet.

[1] This indicates that the plant material consists of a variety of different types or sources

There is also a strong presence of Black pod[2] rot in 56% of farms (occurring mainly during humidity and the high presence of plant cover).

Figure 3 shows an analysis of operations carried out in farms, including clearing the farm of weeds, sanitary harvesting[3] and pruning.

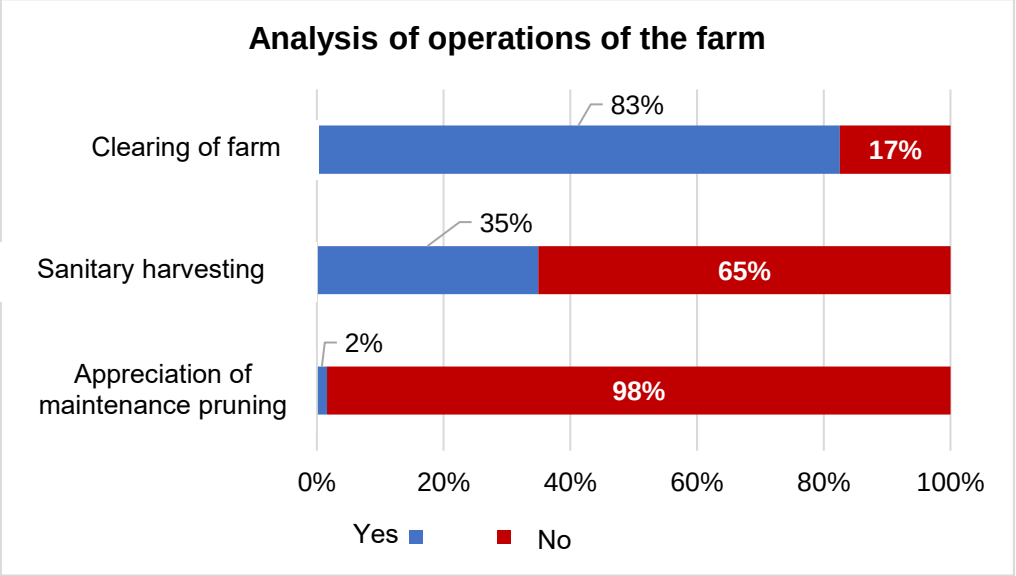

Figure 3: Analysis of operations of the farm

An assessment of farm maintenance reveals a good level of weeding on the farms. However, sanitary harvesting and, above all, plant pruning are not carried out correctly on the farms. That could explain the high incidence of black pod.

However, the field visits carried out thanks to this project have helped raise awareness and demonstration to farmers on the importance of pruning and sanitary harvesting.

[2] Black Pod disease is caused by a fungus, *Phytophthora palmivora*. It infects pods, flower cushions, young vegetative shoots, stems and roots of cocoa trees.

[3] This term is used to describe practices that ensure the cleanliness and hygiene of harvested crops, reducing the risk of contamination and spoilage

3.1.1.2 Agroforestry

Discussions with farmers and farm visits revealed the beginnings of agroforestry adoption on farms. According to the diagnosis, 83% of farms have trees inside. A variety of tree species were observed on the farms. The main ones are shown in figure 4.

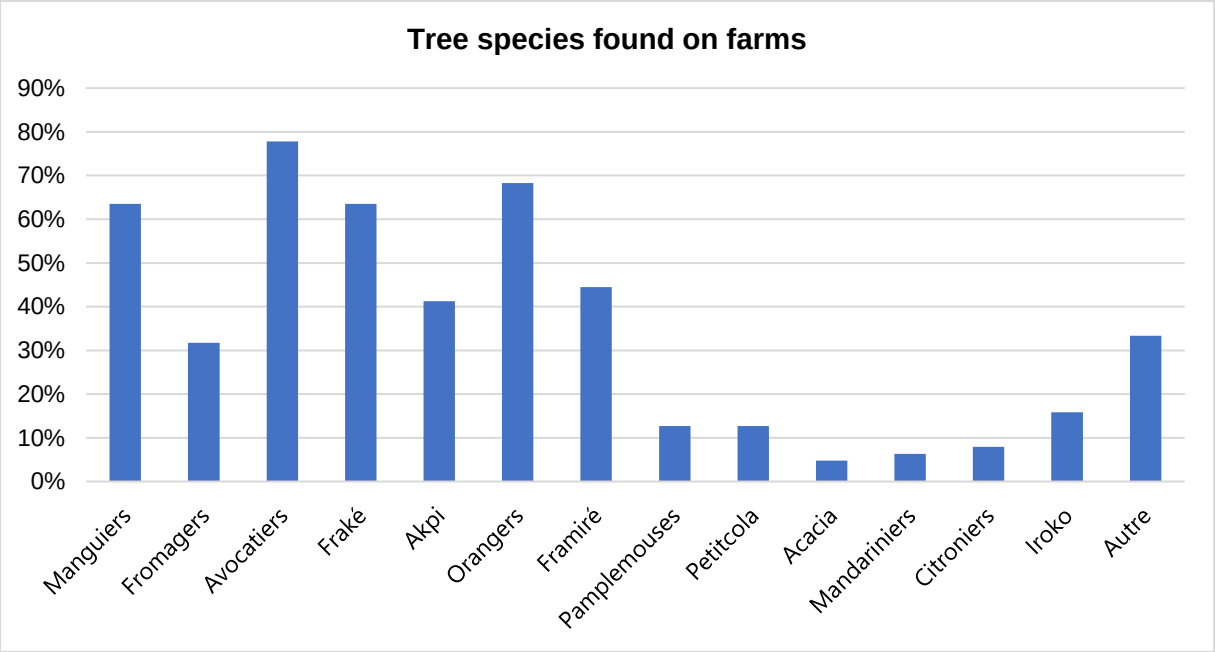

Figure 4: Tree species found on farms

Fruit species are the most common on farms. Avocado, orange and mango trees are present on respectively 78%, 68% and 63% of farms.

Several farmers made personal commitment to plant trees. Fig. 5 shows the percentages of farmers who have planted trees.

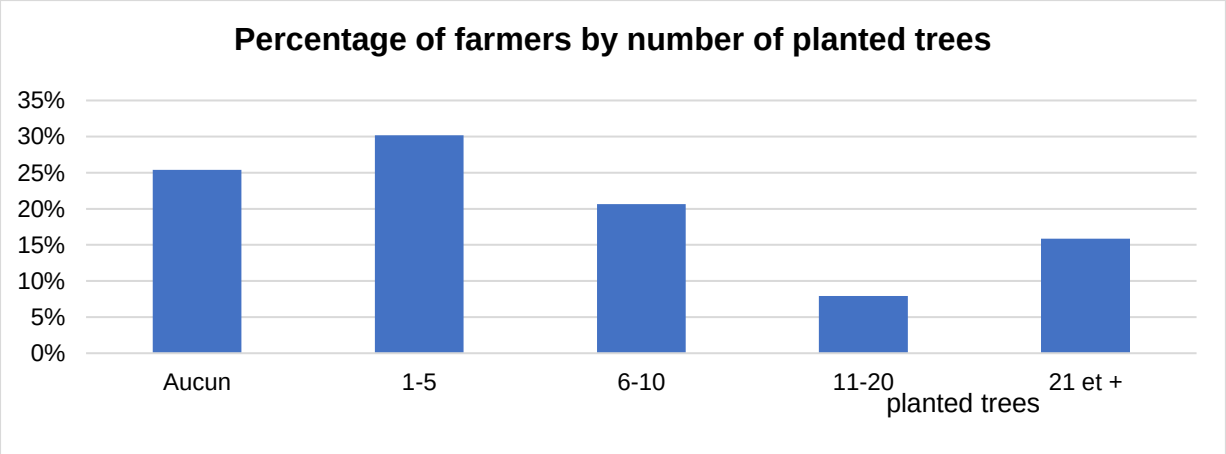

Figure 5: Percentage of farmers by number of planted trees

Note: The planted trees shown in figure 5 were not planted under the pilot project.

This figure highlights the willingness and interest of farmers in agroforestry. It shows that over 44% of growers have personally planted more than 6 trees on their farms, indicating a willingness to practice agroforestry.

Interviews with farmers revealed some of their expectations of tree species. The main expectations are shown in figure 6.

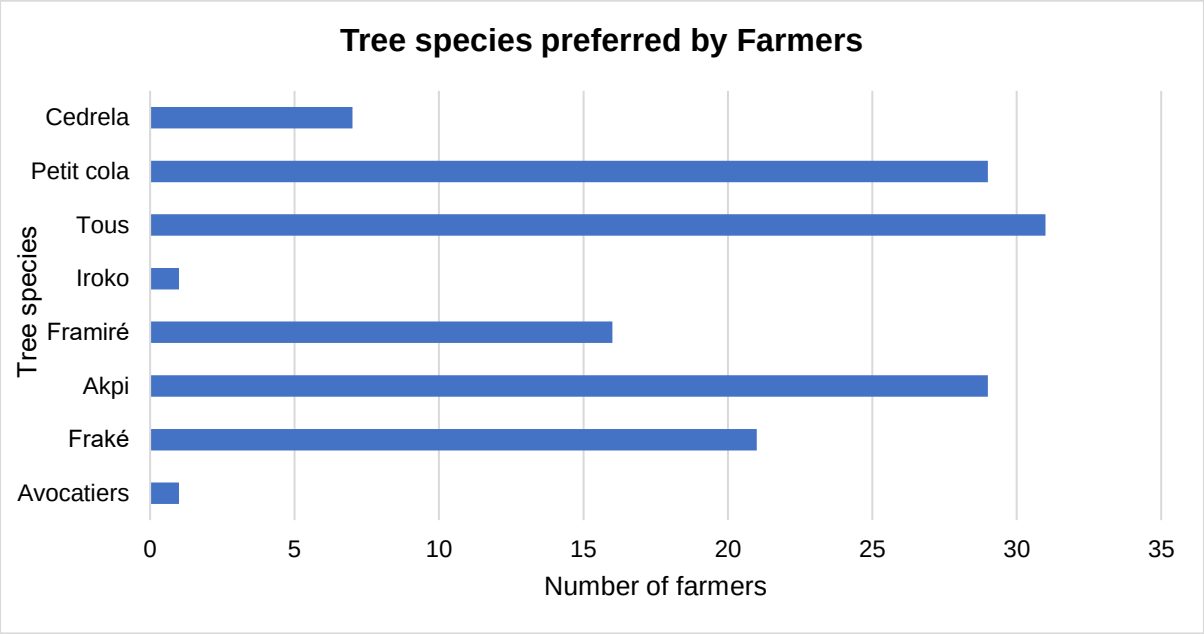

Figure 6: Tree species preferred by Farmers

The two forest species most requested by farmers are Petit cola (*Garcinia kola*) and Akpi (*Ricinodendron heudelotii*). Petit cola and Akpi were requested by 29 growers.

3.1.2 Pesticide management

The data collection on pesticide management allowed us to identify farmer behavior towards the use of chemicals at various levels. These behaviors are described in figure 7.

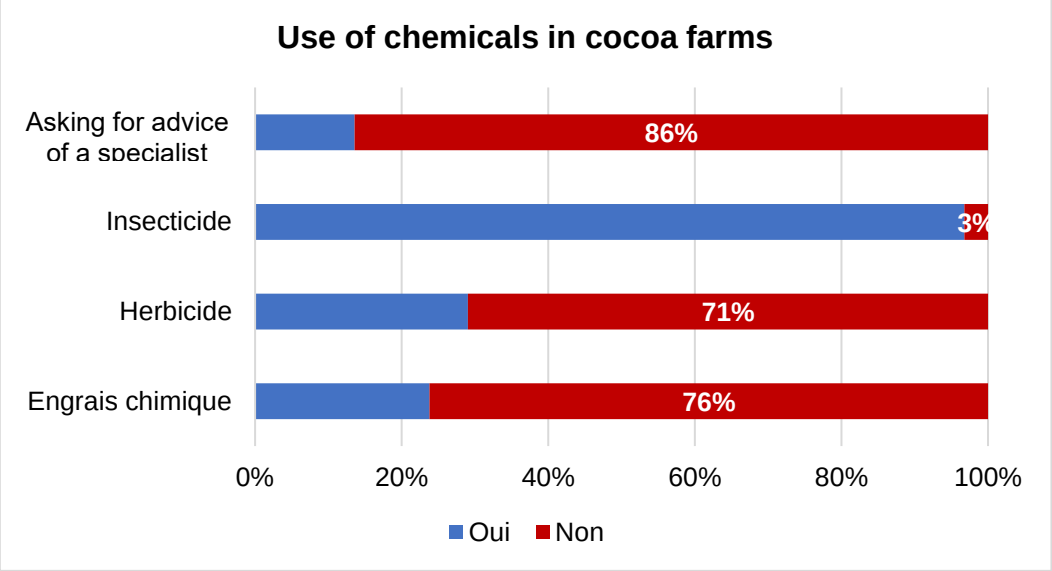

Figure 7: Use of chemicals in cocoa farms

This figure shows that only 14% of farmers ask the advice of a specialized technician before applying chemicals on their farms.

Insecticides are the chemicals most used by farmers (in 97% of cases). They are used to protect cocoa trees and pods from insect attack.

The commercial name of the most widely used insecticide is "Grosudine Super 50". It is a binary insecticide, *imidacloprid 30g/l + bifenthrin 50 g/l*, used to destroy pests of cocoa and coffee. The products most frequently used are shown in figure 8.

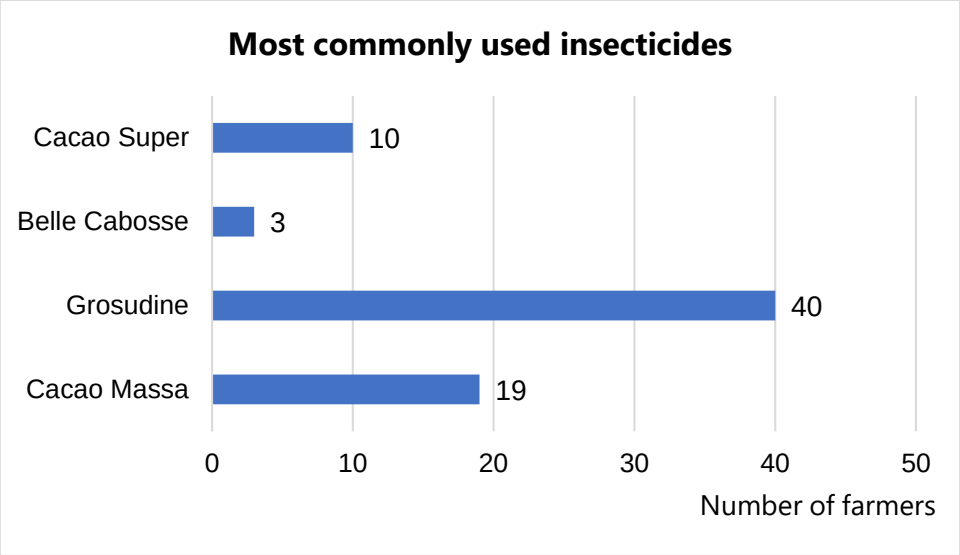

Figure 8: Most commonly used insecticides

Grosudine, the most commonly used product, is followed by Cacao_Massa_50_EC (*imidacloprid 30g/l + bifenthrin 20 g/l*), Cacao_Surper_40_EC (*acetamiprid 20g/l + bifenthrin 20g/l*) and Belle_Cabosse_50_EC (*acetamiprid 30g/l + bifenthrin 20g/l*).

Products other than insecticides are also used on farms, as shown in figure 7: herbicides and fertilizers. The most commonly used are shown in figure 9.

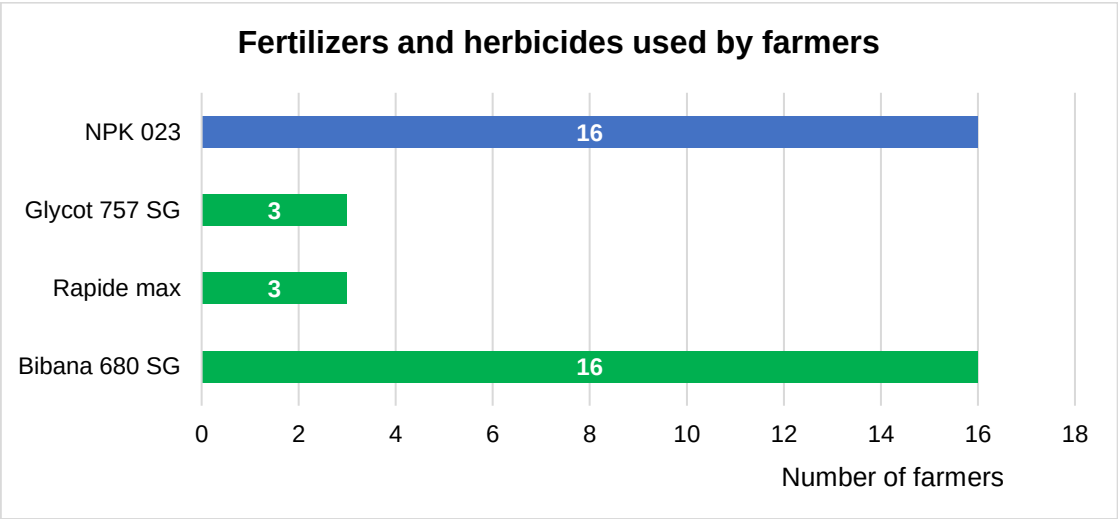

Figure 9: Fertilizers and herbicides used by farmers

Figure 9 shows that NPK 023 fertilizer and 3 herbicide products (green band) are used by farmers. The commercial names of these herbicides are as follows: Bibana 680 SG (*glyphosate*) Glycot_757_SG (*glyphosate*), Rapid Max 480 SL (*glyphosate*).

These products are applied on farms by different types of operators, as shown in figure 10. These are: farmers themselves, trained applicators, workers or relatives of farmers.

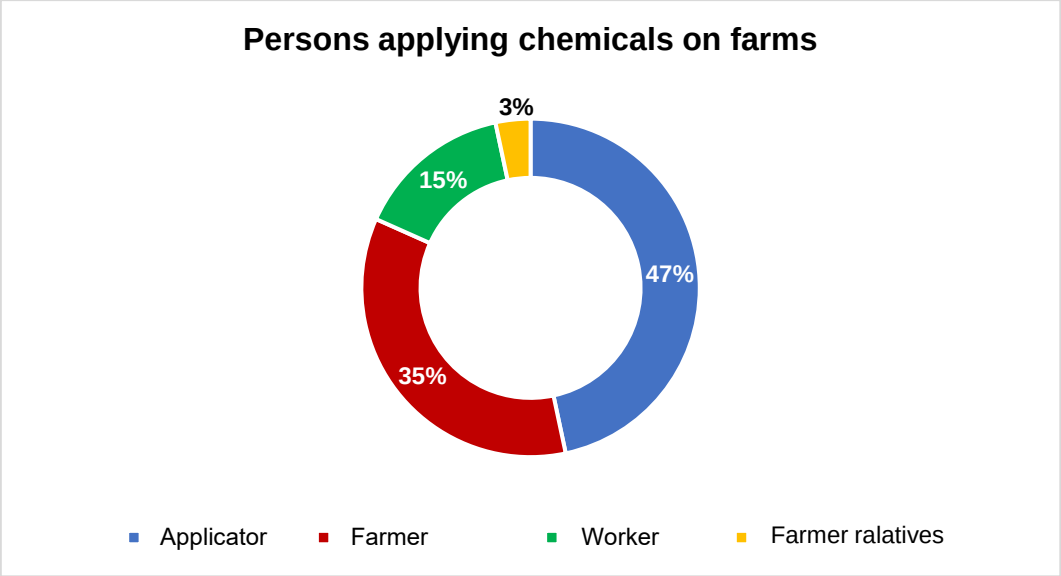

Figure 10: Persons applying chemicals on farms

This figure shows that more than half of all farmers use untrained persons for chemical treatments on their farms, despite the cooperative-trained applicators made available to the sections of the cooperative.

The products used by farmers are obtained through three ways: donation, cash purchase and credit purchase (Figure 11).

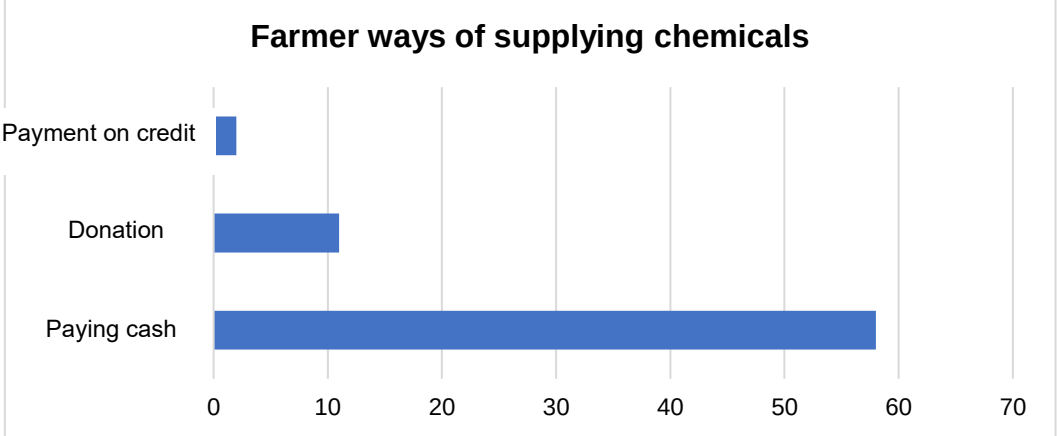

Figure 11: Farmers ways of supplying chemicals

According to this figure, farmers most often obtain their pesticide by paying cash. However, some farmers also receive chemical donations from the cooperative to help them take care of their farms.

Regarding the use of organic products, we note that 4.8% of farmers use organic products. These organic products are **compost** and an organic product called PARACAO[4].

4. Next Steps

The upcoming stages of the project will focus on expanding and reinforcing the activities that have already commenced. These steps include:

1. **Continuing Farm Diagnoses**
   The remaining farms will undergo detailed diagnostic evaluations to establish their baseline conditions. This step is crucial for identifying specific challenges and tailoring solutions to improve productivity and sustainability.
2. **Farmer Training and Demonstrations**
   Training sessions and practical demonstrations will be extended to all selected farmers. These will address critical topics such as advanced agroforestry techniques, proper pesticide management, and good agricultural practices. By enhancing the farmers' technical knowledge, the project aims to support long-term improvements in cocoa production.
3. **Introducing Supportive Incentives**
   To strengthen farmers' engagement and ensure their sustained participation, the project plans to implement an incentive system. These incentives aim to make farmers feel valued and supported while also equipping them with tools and resources essential for effective farm management. Proposed measures include:
   - **Providing Safety Gear**: Distributing pairs of boots to project members to ensure safe and comfortable working conditions.
   - **Distributing Essential Farming Tools**: Supplying machetes and files to help farmers maintain their plantations effectively.
   - **Establishing Pesticide Storage Facilities**: Building secure pesticide storage warehouses within farming sections to promote safe and proper handling of chemical products.
   - **Distributing Critical Inputs**: Providing insecticides, such as Grosudine, to assist farmers in managing pests effectively.

These next steps aim to deepen the project's impact by addressing both the practical and motivational needs of participating farmers, ensuring they have the tools, knowledge, and support required to implement sustainable cocoa farming practices effectively.

[4] an “organic” fertilizer marketed by a firm

4 CONCLUSION

The pilot project for coaching and monitoring farmers in the SCOOPS COODIG cooperative has laid a solid foundation for advancing sustainable cocoa farming practices. Through awareness-raising sessions, plantation diagnoses, and farmer training, the project has already demonstrated its potential to address key challenges and foster long-term agricultural resilience. Despite external pressures from competing initiatives offering financial incentives, the project remains steadfast in its mission to create a holistic, sustainable model that benefits both farmers and the environment.

FILDISI Cocoa Industry and ÜLKER share a unified vision: to **empower farming communities, preserve natural ecosystems,** and **ensure the sustainability** and **integrity of cocoa production.** This project embodies their commitment to creating lasting value for producers and their families, while advancing the global goal of responsible sourcing and sustainable supply chains. By investing in agroforestry, good agricultural practices, and responsible pesticide management, the project addresses the critical need for productivity enhancements without compromising environmental health or farmer well-being.

Moving forward, the proposed incentives—such as the provision of essential tools, safety equipment, and pesticide storage facilities—will further strengthen farmer engagement. These measures not only provide tangible benefits but also symbolize the project's commitment to supporting farmers as valued partners in sustainability.

The vision of this initiative extends beyond immediate outputs. It seeks to establish a replicable model for sustainable cocoa production that benefits farmers, cooperatives, and consumers alike. By equipping farmers with knowledge, resources, and a shared purpose, the project contributes to a broader legacy: one where cocoa farming is a driver of economic prosperity, environmental stewardship, and social empowerment.

5 APPENDICES

PHOTOS

Photo of cocoa farm diagnosis

Observed chemical product containers

Raising awareness of farmers

Awareness-raising and demonstration on farms

Raising farmers' awareness in cooperative sections