RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

CGIAR CCAFS

Info Note

Redesigning Delivery: Boosting Adoption of Coffee Management Practices in Uganda

The climate smart investment pathway approach and the farmer segmentation tool

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Key messages

- Coffee farmers are often not adopting climate smart agricultural (CSA) practices due to limited resources and differing levels of entrepreneurship.
- Climate smart investment pathways (CSIPs) break down the trainings on CSA practices into smaller steps, which farmers can implement according to the resources they have available.
- There are various types of farmers, and farmer differentiation in Greater Luweero, Uganda has highlighted six different groups of farmers, each with varying levels of resources and entrepreneurship.
- Farmer differentiation can help target farmers with appropriate practices derived from the CSIP.

Coffee is an important crop for the Ugandan economy, as it earns the country US$415 million in foreign export revenues and supports 1.7 million smallholder farmers (UCDA, 2016). Nevertheless, coffee yields have stagnated for over a decade, despite concerted efforts to improve productivity. Climate change is increasing the pressure on the sector, and the effects are already being felt. Climate smart agricultural (CSA) practices are being promoted as a means to help farmers cope with climate change. The CSA training package focuses on planning good agricultural practices in a way that the changing climate is taken into consideration. The training package for coffee consists of a large number of practices (soil and water conservation, tree management, quality of coffee, among others), and is currently provided all in one go as a complete package. This approach is cumbersome and not aligned to pertinent needs of coffee farmers, as coffee is a perennial crop and needs continuous care throughout the year.

To address the need for better targeting of practices, this Info Note presents two complementary approaches: the climate smart investment pathways (CSIPs) and farmer segmentation. The CSIPs break down the full training package of CSA practices into more manageable subsets of practices. These smaller packages are aimed at being more aligned with the structural (resource endowments) and functional (entrepreneurship) characteristics of different types of farmers. CSIPs build up a sequential and incremental approach to implementing the practices. The farmer segmentation tool differentiates the coffee farmers into different groups, based on their assets and entrepreneurial characteristics. These segmentations will help advise the relevant stakeholders that support farmers on how to best engage with and train farmers in the most relevant practices (based on the CSIP) by taking their capacity and willingness to implement the practices into consideration.

This Info Note will first go through the development process of the CSIPs, based on the results from a study on Robusta coffee systems in Luweero and Nakasongola. Then it will move onto the process and results of the farmer segmentation work done in the Greater Luweero region (which encompasses Luweero and Nakasongola). The implications of this work will be discussed and recommendations will be made for further work and use of these methods.

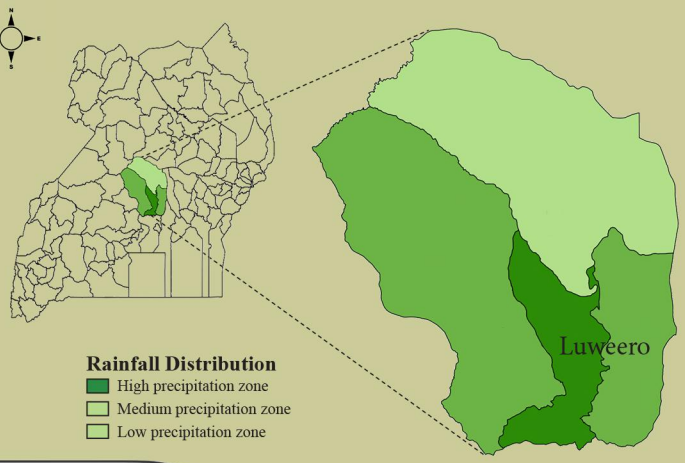
Climate Smart Investment Pathways (CSIPs)

The CSIP approach is a tool to help increase adoption of CSA practices by smallholder coffee farmers in Uganda. The lack of adoption of CSA practices has been ascribed to various factors, one of which is the lack of resources farmers have available to implement the broad basket of practices that are recommended in general trainings.

Climate Smart Investment Pathway (CSIP) for the management of mature Robusta coffee

Results from a case study in Luweero

Constraints in Robusta coffee farming in Luweero are varied. Pests, such as Black Coffee Twig Borer, and diseases, such as Coffee Wilt Disease, are common. Other constraints are plant health, weeds, soil erosion, water scarcity, overshading and lack of proper nutrient management. The practices in the CSIP below address these constraints incrementally.



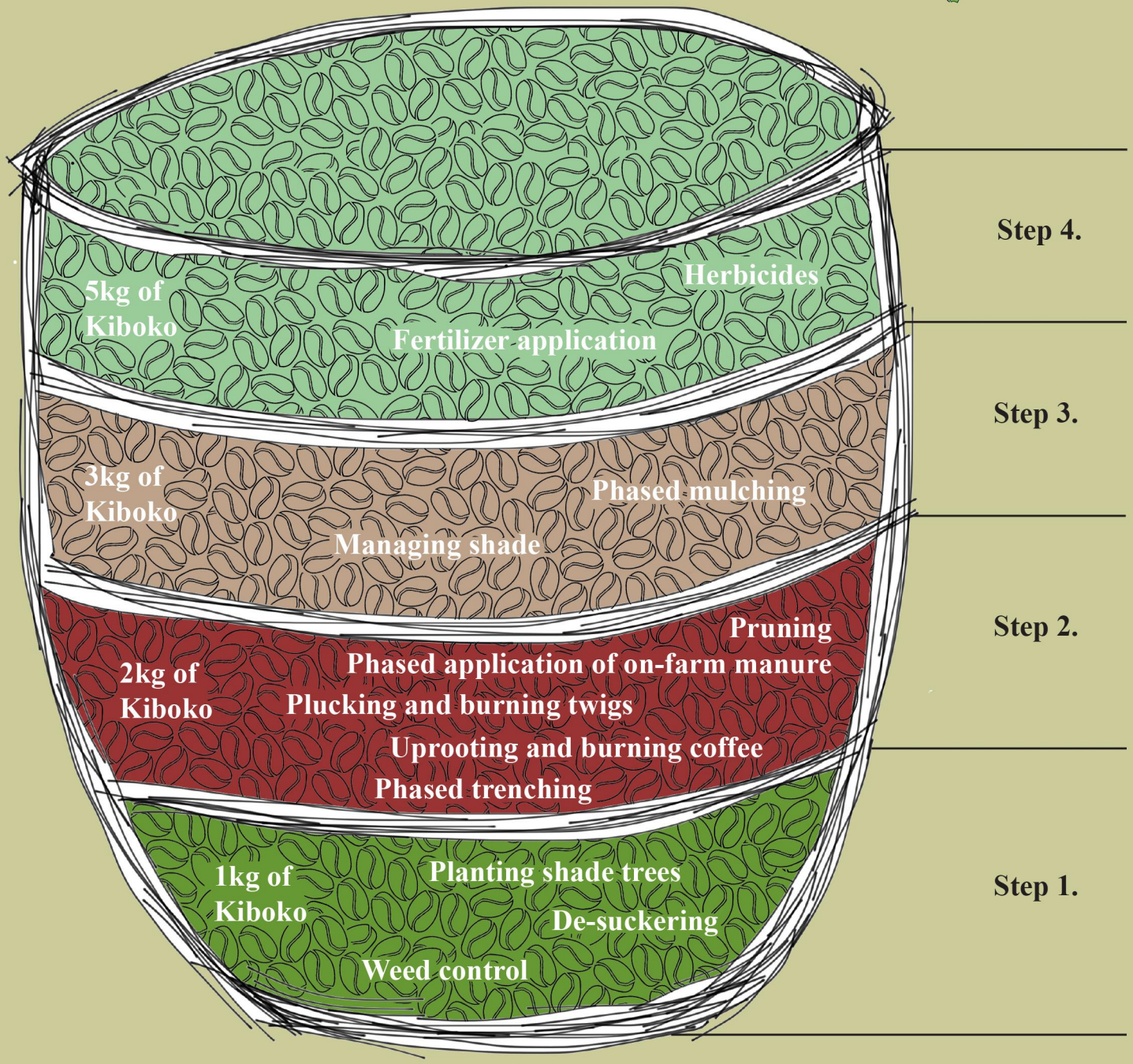


Figure 1. The climate smart investment pathway for the management of mature Robusta coffee in Luweero

By breaking down the basket into smaller, sequential and incremental steps the CSIP tries to make efficient adoption more accessible for farmers.

The first step consists of low cost approaches, and costs increase in the steps that follow. Through building up slowly, the farmer can obtain an incremental increase in yields after each step, with the aim that this yield increase will motivate farmers to re-invest part of the income from the previous harvest. This re-investment is done into the practices in the next step of the CSIP. This approach, however, requires farmers to have premeditated steps (partial packages of farming practices), planned for every passing season and scaled down to fit within a fraction of farmers' seasonal income. The pathway shows how farmers can breakdown a recommended extension package for coffee farming to efficiently increase yield.

To develop the CSIPs, the study used a mixed methodology, with distinct phases followed to refine the tool. The first phase developed the general stepwise investment pathways for Robusta coffee. This was done by interviewing experts in the coffee sub-sector at national level. The experts were asked to list the practices that were necessary to obtain a good yield. They were then asked to breakdown the practices into a logical order of steps, as well as how much yield the farmer is likely to get by implementing each step. The logical order of these steps is based on what the experts feel should be prioritised on before moving on to other practices.

The stepwise investment pathways developed in the first phase were presented to the district coffee steering committees in Nakasongola and Luweero. The priority given to certain practices by the experts at national level was re-evaluated by considering the local context and the specific constraints that farmers face in the region. The stepwise investment pathways thus become climate smart through adaptation to local needs and by helping to address local impacts that arise from climate change. Through this re-prioritisation of the practices at local level, the CSIPs were developed and were then presented to farmers at focus group discussions for validation.

Through this process, two different pathways were developed: one for the rehabilitation of abandoned Robusta coffee and one for the management of mature Robusta coffee. These pathways were refined into unique CSIPs for Luweero and Nakasongola, resulting in four CSIPs, as both districts had a CSIP for rehabilitation of abandoned and management of mature coffee.

In this brief, we have highlighted one of these CSIPs: the CSIP for management of mature coffee in Luweero (Fig. 1). As the farmer incrementally fills up his/her basket of practices, this is reflected in incremental increases in yield (locally referred to as *kiboko*). After the farmer implements new practices, part of the increase in resources from each season is re-invested into the next season to allow for implementation of the practices in the next step. The investment is broken down into sequential, incremental steps that match the farmer's capacity, rather than a large investment that is often unfeasible.

The CSIP tool is aimed at stakeholders who are supporting farmers in developing sustainable and climate resilient farming techniques. These CSIPs can be developed for other coffee growing regions, both for Robusta and Arabica coffee, as well as applied in other crops and farming systems.

Farmer Segmentation

Farmers have shown different levels of adoption of the CSA practices, highlighting a certain level of heterogeneity within coffee farming. The farmer segmentation tool is a way in which this heterogeneity can be highlighted, as a means of understanding the different needs of different types of farmers. Segmenting farmers into different types and designing extension processes that cater to these differences will help improve adoption of CSA practices.

The first case study on farmer segmentation was done in Greater Luweero, where focus group discussions were used to segment farmers into types based on structural (resource endowments) and functional (entrepreneurship) indicators. The types developed with the farmers were cross validated with a quantitative assessment based on the indicators from the group discussions.

Results from farmer segmentation indicated that coffee farmers are diverse (see Figs. 2 and 3). The analysis from quantitative data found four farmer types in the study area, while six farmer types were generated from qualitative analysis. This was because some farmers in the community (the trapped and the entrepreneurs) do not participate in farmer meetings and the quantitative data collection tool could not capture their characteristics.

Exploring opportunities and constraints among the farmer types could determine the approach to training and dissemination. As an example, aiding the dependants who have lots of motivation to grow coffee but must contend with limited assets could be done through inter-generational learning, through which knowledge and some assets are transferred from 'the satisfied' to 'the dependants'. This could also increase the involvement of the younger generation in the coffee sector.

This case study focused on a specific area, and if the farmer segmentation tool was to be applied in a different region, it would be likely to differentiate the farmers in other ways. This approach is also not limited to only coffee farming systems, but could easily be applied in another value chain.

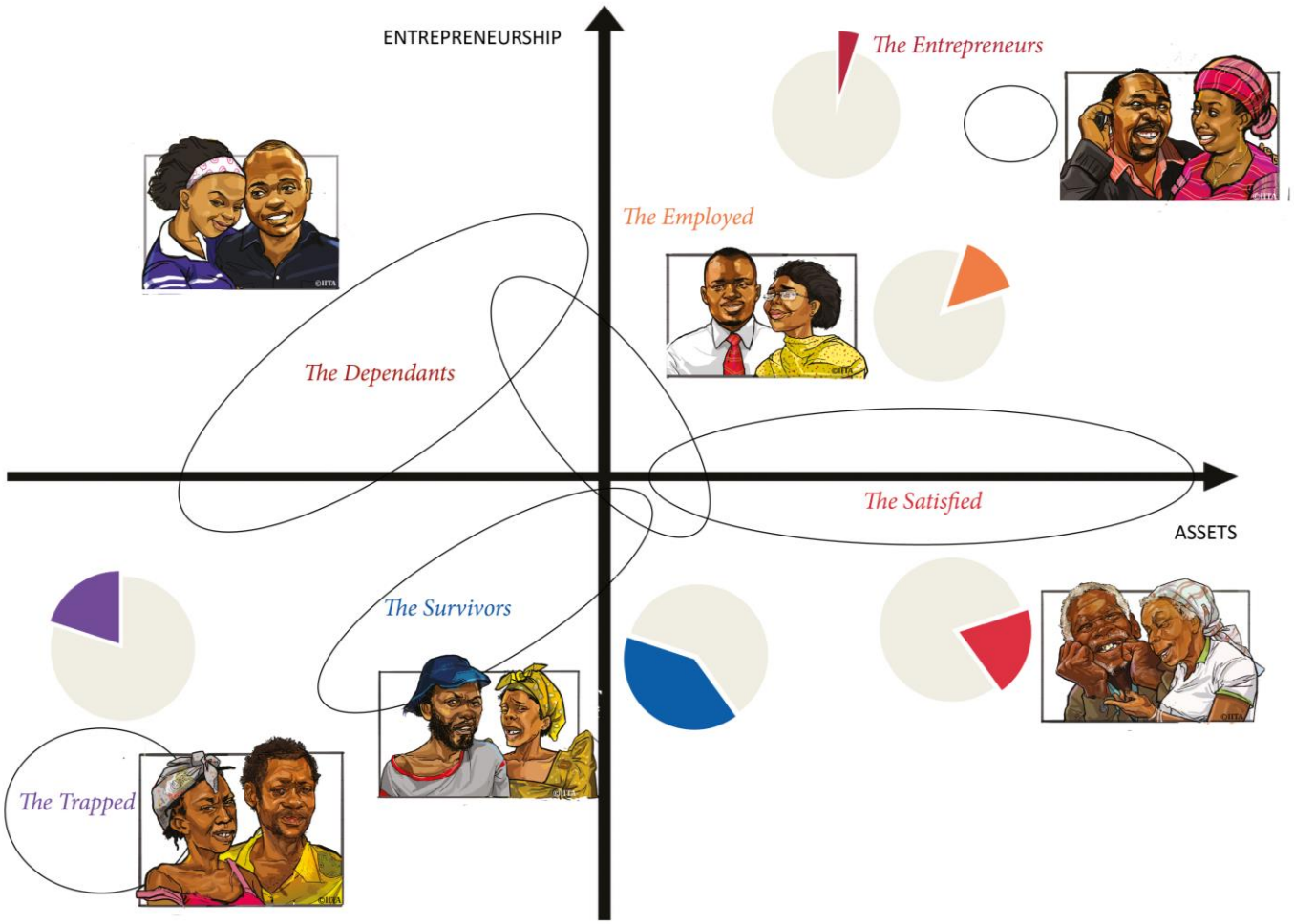


Figure 2. The six farmer segmentations identified in the Greater Luweero area, defined by their assets and levels of entrepreneurship

The Entrepreneurs

- Have specialized to grow coffee (over 30 acres)
- Plan for coffee related activities and budgets
- Dream big with regards to coffee e.g. have a factory
- Don't participate in coffee farming groups
- Hope to motivate their children to grow coffee
- Usually middle aged with a history in coffee

The Satisfied

- Possess a lot of land (most of which is purchased)
- Put more CSAs into practice
- Low coffee production due to diversification of activities
- Mostly sell at FAQ and Kiboko, and belong to groups
- Are food secure
- Majority are leaders; community, church and coffee organizations

The Employed

- Engage in off-farm income activities like teaching and businesses
- Highly market oriented
- Relatively young (between 35-40 years)
- Sell coffee to middle men, do not engage in value addition

The Dependants

- Many of these are still dependent on their parents
- They have small or no families
- Some have inherited land or using their parents' land for farming
- Land under coffee and it has been planted in the past 5 years
- Grow more elite, planting materials are given and sell as Kiboko
- Engage in casual off-farm labour to earn an extra living

The Survivors

- Could be elderly, widowed or single mothers
- Most of their labour comes from their family
- Low market orientation
- Sell coffee as flowers and red cherries
- Practice several ways of diversifying to survive
- Low adoption of CSA practices

The Trapped

- They are poor and food insecure
- Engage in off-farm labor
- No planning or record keeping for coffee related activities
- Usually idlers and addicted to smoking and alcohol
- Constitute both old and young generations in the community

Figure 3. The six farmer segmentations identified in the Greater Luweero area, with the characteristics that define the segmentations explained.

Conclusions

The work on CSIPs and the farmer segmentation tool demonstrates diversity in coffee farming communities and confirms the need to combine both approaches for maximum effectiveness. Understanding the drivers and level of adoption within the different segments can help to streamline interventions. Instead of implementing interventions with a large variety of farmers, individual farmers could be targeted for specific interventions that better fit their needs and capabilities. This can be done through identifying the segment to which the farmer belongs as a means of determining at which step within the CSIP the farmer is starting. Combining the farmer segmentation and the CSIP approaches could ultimately increase technological uptake and efficiency. Farmers can adopt these practices beginning with low cost technologies/practices and eventually move to high cost technologies incrementally as returns from investments increase. Through increasing the adoption of the CSA practices, the aim is to help increase the sustainability and climatic resilience of the coffee farmers and the sector at large.

Recommendations

- Increasing adoption of climate smart agricultural practices by coffee farmers, assisted by these approaches, is a means to increase the farmer's resilience to the increasing pressure of climate change.
- Both the climate smart investment pathway (CSIP) approach and the farmer segmentation tool can be applied in the various coffee regions in Uganda to help refine the farmer training programmes to include contextually specific information.
- The approach and the tool outlined in this Info Note are not necessarily Uganda- or coffee-specific and can in theory be applied to help refine training programmes in other countries and in other farming systems.

Further Reading

- UCDA. 2016. Fact sheet for Uganda. Kampala, Uganda: Uganda Coffee Development Authority.

This Info Note is part of work within the coffee & climate initiative, which encompasses a large consortium of partners and a wide range of projects that focus on the impacts of climate change on the coffee sector. Although this info note focuses on Uganda, it connects to work done across the globe. For further inquiries contact ***Laurence Jassogne*** *(L.Jassogne@cgiar.org).*

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