

# Info Note

## Influence of household savings on investments in climate-smart agriculture technologies

*Findings from a climate-smart agriculture (CSA) survey in the Nyando Basin, Kenya*

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### Key messages

- Despite financial constraints, small scale farmers still manage to save mainly through community groups.
- Small scale farmers are investing in climate-smart agriculture (CSA) technologies to enhance resilience to climate change and its adverse effects.
- Farmers prefer internal financing as they fear investing their debt capital on risky farm investments.
- CSA technologies range from simple interventions such as intercropping and cover crops to those that require heavy financial investments whose cost is a major constraint to farmers.
- Household savings have a significant and positive influence on the decision to invest but have no significant effect on levels of investment in CSA technologies.
- Programs aimed at increasing the level of savings as a strategy for scaling CSA technologies should be promoted.

This brief summarizes findings of “Using Climate-Smart Financial Diaries for Scaling in Nyando,” a research project led by the Amsterdam Center for World Food Studies (ACWFS) with participation of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in East Africa, University of Nairobi (School of Economics) and Wageningen Economic Research. It is based on baseline data of an ongoing bigger panel data study involving 122 households located in Climate-Smart Villages (CSVs) and non-CSVs from 44 villages of Nyando Basin in Kisumu

and Kericho Counties. The project’s focus is to assess the financial inflows and outflows of farming households by gathering and analyzing data on income, consumption, saving, lending and investment.

The study site was of interest due to the adverse effects of climate change and variability and the concentration of development agencies who have introduced various CSA technologies aimed at making the local communities climate-resilient. The focus of this brief is on household saving patterns and the initial amount invested in the main CSA technologies in Nyando, namely: improved seeds, improved breeds, agroforestry, beekeeping and water harvesting.

### Overview of household savings and CSA investments in Nyando Basin

Small scale farmers face a number of constraints which may inhibit their savings such as a lack of access to formal financial institutions which they deem very risky. Despite this fact, evidence shows that they still manage to save through informal financial institutions such as community groups.

The increased savings have been fueled by the new realities of climate change where farmers are increasingly becoming vulnerable to shocks such as irregular and unreliable rainfall, extreme flooding, and frequent droughts. This is threatening the livelihoods of rural communities given that agriculture, the main economic activity, is climate sensitive. In addition, these farmers do not have access to insurance due to limited collateral and disinterest of insurance companies to give agricultural insurance. There is therefore a need to develop adaptation strategies for sustainable food production to mitigate these constraints. Among the main adaptation

strategies in the Nyando Basin is the introduction of CSA practices.

CSA is a concept which was developed by the Food and Agriculture Organization of the United Nations (FAO) as an adaptation strategy to climate change with the aim of sustainably increasing agricultural productivity and income; adapting and building resilience to climate change; and reducing or removing greenhouse gas (GHG) emissions where possible (Kenya Climate Smart Agriculture Strategy 2017-2026). The strategy involves assessing the social, economic and environmental conditions of a particular place and developing appropriate agricultural technologies suitable for that area. In Nyando, development agencies such as CCAFS, VI Agroforestry and ILRI have promoted CSA technologies ranging from simple ones like intercropping and crop cover to more sophisticated ones with high cost implications such as improved seeds, use of fertilizers, improved breeds (Galla goats and Red Masai sheep), agroforestry, beekeeping and water harvesting.

As much as these technologies have proven important to the farmers, the cost implication has been a setback for investment levels. In addition, the full benefits of these practices may not be immediate and there is therefore a need to cushion farmers during this period. Credit financing may be a challenge to small scale farmers, but they save and build assets which help them overcome credit constraints and invest in CSA technologies. Saving is a risk management strategy as well as an insurance in case of shock. Abebe et al. (2018) argue that savings promote enterprise development and emphasize the following reasons for saving:

- Helping overcome credit constraints and frequent shocks through buildup of capital;
- Avoiding random and unplanned spending;
- Building credit history and making it easy to access credit in future;
- Reducing the cost of credit as savings is an internal source of credit.

This study examines household saving patterns, factors influencing household savings and the interactions between household saving and investment in CSA technologies.

### Household saving patterns in Nyando Basin

63% of the total 122 sampled households had savings. The average amount saved was Ksh 13,312 (US\$ 133.12) with a maximum saving amount of Ksh 400,000 (US\$ 4,000).

The major saving avenue was community groups (77%), while 18% of the households saved in formal banks. About 5% of the households kept their savings at home (Figure 1).

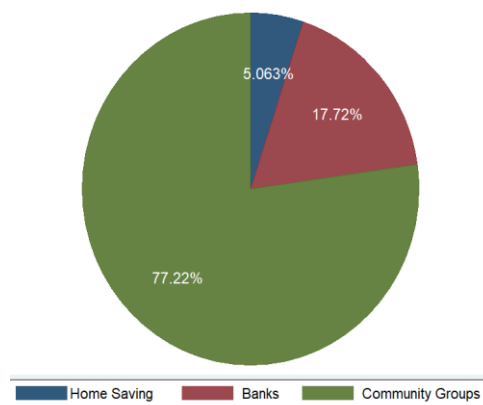


Figure 1. Nyando households saving avenues

Farmers saved for various reasons including buying food (23%), improved seeds (20%), livestock (19%) and fertilizer at 13%. Other reasons for saving included school fees and to access loans (54%) (Figure 2).

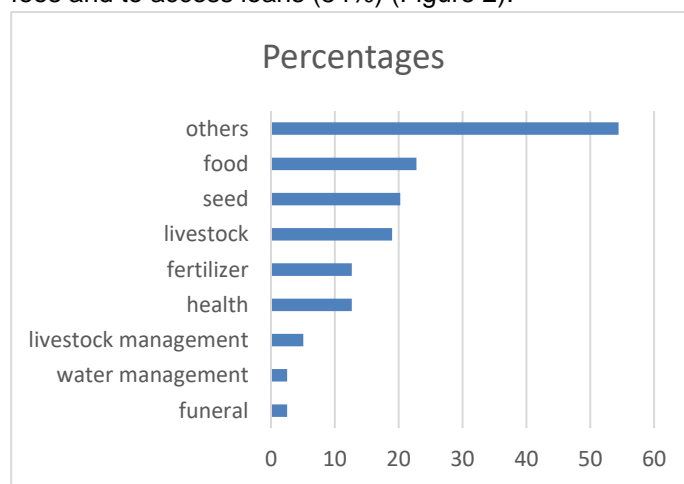


Figure 2. Household reasons for saving

There was no significant difference between savers and non-savers in terms of gender, age, household size, off-farm income, land size and livestock units. However, there was a notable difference between the two groups on a number of other variables. For example, the literacy levels for households with savings were higher compared to households without savings. They also had better access to credit as well as better access to food and cattle markets. In addition, households with savings had more productive family members and reported more productive plots. Further analysis on the factors influencing household savings revealed that an increase in age, higher education level of the household head, an addition to the number of dependents and increased distance to the market had a significant but negative influence on household saving. Group membership, training, ownership of more productive plots and

household wealth endowment had a positive and significant influence on household savings. Gender, off-farm income and credit access did not have any significant influence on household savings.

## Household savings and CSA investment

The level of saving is expected to influence the decision and intensity of adoption of CSA technologies. From our results however, savings had a positive and significant influence on the decision to invest but not on the level of investment in CSA technologies. Households save for various reasons among them school fees, health and non-CSA agricultural investment but the amount allocated for agricultural investment is relatively low.

Credit access had a negative influence on the decision to invest in CSA technologies but did not have any significant influence on the level of investment as well as on household savings. Hertz (2009) had similar results and argued that farmers fear investing their debt capital on risky farm investments for fear of losing collateral. Internal financing is more preferred by farmers especially on new agricultural technologies.

The proxy for market access had a negative and significant influence on both the decision to invest and the level of investment. An increase in age of the household head, bigger land size and having an off-farm income had a negative influence on the level of investment while higher education level of the household head and more livestock units had a positive and significant influence on investment levels.

The number of CSA technologies adopted had a significant and positive influence on the decision to invest meaning that if a farmer invested in one technology there was a high likelihood that they would invest in other technologies. There may be three possible explanations for this:

- After reaping the benefits of the first technology, the farmer is attracted to invest in others;
- The household is able to build up capital from investment returns and invest in other technologies;
- CSA technologies are complimentary and after investing in one technology, the next level is to invest in a complimentary technology.

## Conclusions and policy implications

The importance of household savings on investing in CSA technologies cannot be overemphasized as it significantly influences a farmer's decision to invest. Evidence also shows that farmers prefer internal financing as they fear investing their debt capital on risky farm investments. The major saving avenues are community groups. Therefore, in formulating schemes to motivate household savings

and investment in CSAs, policymakers should target community groups and engage lead farmers as reference points.

Among the drivers of household savings was financial literacy training. Therefore, the government and non-governmental organizations (NGOs) should put emphasis not only on formal schooling but also on farmer training. A new extension approach could be taken where government can complement NGO efforts in training lead farmers in community groups (group extension officers) who would in turn pass the knowledge to the group members. This is a more viable approach as it is less expensive and the group extension officers are more accessible to group members.

Inasmuch as farmers may be saving, the amount of savings allocated for agriculture is relatively low with none to CSA technologies. In order to encourage farmers to increase investment in these areas, development agencies could assist rural farmers in developing higher levels of social capital by transforming groups to cooperative societies. This could greatly increase market access and return on investment leading to accumulation of capital in terms of savings and investments in CSA technologies.

The implementation of CSA technologies should be gradual with farmers encouraged to invest in at least one technology that requires little financial input and a short maturity period. If successful, the initial investment will encourage farmers to gradually invest in other technologies.

## Further reading

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*The Brief summarizes findings of a project under CGIAR Research programme on climate change, agriculture and food security (CCAFS), in collaboration with Wageningen University and the University of Nairobi (School of Economics) . The project aims at identifying viable strategies for scaling out CSA technologies. The study was conducted for a masters thesis focussing on rural household saving patterns and the influence of household saving on investing in CSA technologies.*

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