Key messages

- Households experience both idiosyncratic (unrelated to neighboring experiences) and covariate (experienced by multiple households) shocks. While the sources of idiosyncratic shocks are varied, covariate shocks largely emanate from changes in weather.

- About 32% of households which encounter death of household members mainly rely on socio-economic safety nets.

- Households rely on socio-economic safety nets (6.45%) and diversification (32.26%) in case of drought.

- One third of households affected by floods do not adopt any coping strategies.

- Death of household members negatively influences diversification of CSA whereas cases of drought, pests and diseases positively influence diversification.

This Info Note summarizes the findings of a baseline survey of 122 smallholder farmers in the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) intervention areas of Nyando, Kenya. This is part of a bigger project entitled “Using Climate-Smart Financial Diaries for Scaling in Nyando,” led by the Amsterdam Center for World Food Studies (ACWFS) with the participation of CCAFS East Africa, University of Nairobi (School of Economics) and Wageningen Economic Research. The study analyzed the shocks that smallholder households experience, and their effect on household behavior. More specifically, we analyzed the effect of these shocks on diversification of CSA.

CCAFS intervention area of Nyando

Smallholder farmers in Nyando are prone to different socio-economic and climatic shocks. The latter arise from droughts, floods and changing weather patterns. Changes in climate have had a negative impact on agricultural practices and have subjected smallholder farmers in Nyando to food insecurity and economic hardships. The farmers practice rain-fed agriculture which is hard hit when climatic conditions turn harsh. This causes shocks to farmers’ livelihoods and calls for diverse coping mechanisms. The households mainly use indigenous techniques to cope with shocks.

Shocks experienced by smallholder farmers in Nyando

Five types of shocks were reported in the study: death of a household member, drought, flooding, pests and diseases affecting either livestock or crops, and sickness of a household member. Sickness of a household member is the most common shock as reported by 63.11% of the households in the past three years. About 59% percent of the households reported having experienced drought-like conditions whereas 58.19% indicated that they had experienced pests and diseases. Floods and death of a household member were least experienced shocks at 26.22% and 10.66%, respectively (Figure 1).
Shock coping strategies

Households employ different coping strategies for different shocks. In the case of death, 61.54% of affected households depended on social safety nets; 23.08% resorted to asset liquidation to cater for the funerals, while another 15.38% took loans to finance funeral expenses and ceremonies.

Figure 1: Shocks experienced in Nyando in order of prevalence.

Most households (64.71%) affected by crop pests and diseases relied on socio-economic safety nets by seeking the assistance of government extension providers and the use of agrochemicals. Another 20.59% of households did not adopt any coping strategy and thus lost their crops to pests. About 11.76% of the households, out of despair, resorted to asset liquidation and dissaving to buy food items from the market when their crops were destroyed. Only 2.94% of affected households took loans to replace deceased animals.

Figure 3. Coping strategies for drought

Households affected by floods coped differently. About 32.26% of households affected by this shock did not adopt any coping strategy and suffered flood-related losses. Another 32.26% coped by diversifying into agroforestry and replanted their crops; 19.35% liquidated their assets and used savings to buy foods that they would have harvested from their farms. Around 3.23% of the households that were severely affected by floods relocated and built new houses.

Figure 4. Coping strategies of crop pests and diseases

Figure 2. Coping strategies after death of a household member

Around 32.26% of households affected by drought coped by diversifying and replanting crops that are drought resistant or divesting by way of reducing the acreage under crops. Another 32.26% did not adopt any coping strategy; 19.35% coped by asset liquidation which involves selling of household assets like animals in order to finance household expenses. About 6.45% relied on political safety nets while another 6.45% took loans to finance household expenses.

Figure 2. Coping strategies after death of a household member
Diversification of farm activities is an effective *ex ante* shock coping strategy and helps reduce the use of desperate coping mechanisms such as sale of household assets after shock. For farmers to manage natural disasters and deal with shocks, they should implement multiple practices in combination. Diversification is also considered as a transition from subsistence agriculture to commercial agriculture, and from low income earnings to asset accumulation and wealth. This is associated with various push and pull factors.

CSA is a diversification option. From the study findings, death shock (death of a household member) has a negative influence on the number of CSA practices adopted by a household. This could be as a result of high expenditure incurred during funerals. Another possibility is that households sell their agricultural resources to finance funerals. Funeral related expenditures are particularly high when a household has to also meet hospital and medical bills of the deceased.

Drought shock has a positive influence on diversification of CSA practices. Farmers diversify in the hope that different crops will thrive under different weather conditions. Diversification here is through adopting climate-smart technologies. New crops such as millet, sorghum, fodder trees and livestock breeds that are drought-resilient have been introduced in Nyando. Livestock breeding was the entry point in sheep and goat upgrading intervention strategies. Through the International Livestock Research Institute (ILRI), CCAFS introduced Galla goats to assist farmers in crossbreeding their native breeds. The Galla breeds mature quicker and reach market weights faster compared to the local breeds. The Red Maasai sheep, which grow quickly and are mostly immune to drought and internal parasites, have also been introduced. Other interventions include construction of greenhouses, water pans to check erosion and provide irrigation water and tree planting for fodder. Where these interventions are strong, related activities such as beekeeping and grass cultivation have sprung up. CCAFS accomplishments have been conducted through community based organizations (CBOs). Vi Agroforestry and other organizations have also been promoting on-farm diversification as a way of enabling the farmers to increase resilience to different shocks.

**Determinants of diversification of CSA practices**

Diversification is the maintenance of a range of income sources by households to minimize variability in income.

CSA interventions in Nyando

Through targeted interventions that prioritize farm activities, substantive change within the lives of the poor in rural areas can be achieved. Therefore, greater efforts should be directed to empowering poor households to manage shocks and adapt to long-term variability in their livelihood situations. CCAFS, Vi Agro forestry and other organizations have been helping smallholder farmers in Nyando to diversify their incomes by adopting CSA practices such as drought tolerant crops and animals. CCAFS and partners have established Climate-Smart Villages (CSVs) that train farmers on how to cope with climate change by adopting climate-smart technologies. New crops such as millet, sorghum, fodder trees and livestock breeds that are drought-resilient have been introduced in Nyando. Livestock breeding was the entry point in sheep and goat upgrading intervention strategies. Through the International Livestock Research Institute (ILRI), CCAFS introduced Galla goats to assist farmers in crossbreeding their native breeds. The Galla breeds mature quicker and reach market weights faster compared to the local breeds. The Red Maasai sheep, which grow quickly and are mostly immune to drought and internal parasites, have also been introduced. Other interventions include construction of greenhouses, water pans to check erosion and provide irrigation water and tree planting for fodder. Where these interventions are strong, related activities such as beekeeping and grass cultivation have sprung up. CCAFS accomplishments have been conducted through community based organizations (CBOs). Vi Agroforestry and other organizations have also been promoting on-farm diversification as a way of enabling the farmers to increase resilience to different shocks.

Conclusions and policy implications

Farmers in Nyando are at different levels of diversifying their farm practices. Information dissemination through farmer groups and provision of extension services...
enhances farmers’ adoption and diversification into more CSA practices. Households cope differently with different shocks. Moreover, different shocks have different effects on diversification of CSA practices. Whereas death of a household member has a negative effect; drought, pests and diseases have a positive effect on diversification. These shocks probably increase the incentive for farmers to use modern farming practices to avert losses. The fact that some households cope with shocks by adopting desperate measures indicates information asymmetries on sustainable coping mechanisms for Nyando. Crop insurance was among the coping strategies, thus the need for farmers to be enlightened on weather index insurance to buffer against climatic shocks.

Further reading


This series of briefs summarizes findings of a baseline survey of the research project “Using Climate-Smart Financial Diaries for Scaling in Nyando,” a project led by the Amsterdam Center for World Food Studies (ACWFS) with the participation of CCAFS East Africa, University of Nairobi’s School of Economics and Wageningen Economic Research. It is part of a bigger analysis of the financial inflows and outflows of poor households by gathering data on their income, consumption, savings, lending, and investment in CSVs and non-CSVs in the Nyando Basin.

Victor K. Rutto (victorrutto1@gmail.com) is an M.A. (Economics) student at the University of Nairobi.

About CCAFS Info Notes

CCAFS Info Notes are brief reports on interim research results. They are not necessarily peer reviewed. Please contact the authors for additional information on their research. Info Notes are licensed under a Creative Commons Attribution – NonCommercial 4.0 International License.

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) brings together some of the world’s best researchers in agricultural science, development research, climate science and Earth system science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. Visit us online at https://ccafs.cgiar.org.

CCAFS is led by the International Center for Tropical Agriculture (CIAT) and supported by: