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Innovation For Agricultural Climate Risk Insurance

Household Survey Preliminary Report

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The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) delivers research-based solutions that address the global crises of malnutrition, climate change, biodiversity loss, and environmental degradation. The Alliance focuses on the nexus of agriculture, environment, and nutrition. We work with local, national, and multinational partners across Africa, Asia, and Latin America and the Caribbean, and with the public and private sectors and civil society. With novel partnerships, the Alliance generates evidence and mainstreams innovations to transform food systems and landscapes so that they sustain the planet, drive prosperity, and nourish people in a climate crisis. The Alliance is part of CGIAR, the world's largest agricultural research and innovation partnership for a food-secure future dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources.

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1. Introduction

1.1. Project summary

The Innovation for African Climate Risk Insurance (InACRI) project aims to develop an improved crop insurance product that addresses the problem of basis risk inter alia for small scale farmers. The project targets small scale maize farmers in Meru County. The overall goal of the project is to improve the current poor performance and uptake of index-based crop insurance products in Kenya. To achieve this goal, the project is implementing a study to assess farmers needs and willingness to pay for agricultural insurance in three phases.

The first phase entailed a reconnaissance study that aimed to do focus group discussions (FGDs) with maize farmers (men and women) and experts as well. The goal of the reconnaissance was to gather contextual details on our study area. Such detail included identifying the main agricultural (climate) risks to the farmers, approximating awareness about insurance, and identifying barriers to scaling out crop insurance. The second phase entailed a household survey. The reconnaissance and the household survey are described in detail in the following sections. The third phase of the project entails a lab in the field experiment. The goal of this experiment is to elicit farmers' willingness to pay for crop insurance using experimental approaches. Finally, the fourth phase will entail piloting an insurance cover for maize based on the findings from the farmer needs assessment and willingness to pay experiment. This document is a preliminary report of the findings from the reconnaissance exercise and the household survey.

The report is organized as follows. First, we briefly describe the context in Meru County mainly highlighting the findings from the reconnaissance study and production systems. Description of the production systems is a combination of information from the reconnaissance study and a geospatial analysis by the CIAT team. Second, we describe the methodology used in the household survey- sampling and survey tools. Third, we provide preliminary findings from the survey touching on demographics, and farmers' risk and crop insurance preferences. We finally provide some conclusions and recommendations.

1.2. Context in the study area

Reconnaissance study summary

We conducted 8 FGDs in different locations of Meru County. We targeted to have representation in terms of climatic conditions (agro-ecological zones) and gender (men and women). The composition of the participants in the FGDs is summarized in table 1. We also had individual discussions with different county experts from different offices and departments namely metrological services, agriculture finance corporation (AFC), crops department in Imenti Central and Tigania West, the Kanya National Bureau of Statistics (KNBS), and Lands and geoinformation services (GIS) department. The goal of the discussions was to understand the landscape of crop insurance stakeholders in the county, as well as expert opinions on the challenges facing scaling of crop insurance for maize in the county.

Table 1: Summary of FGDs participants

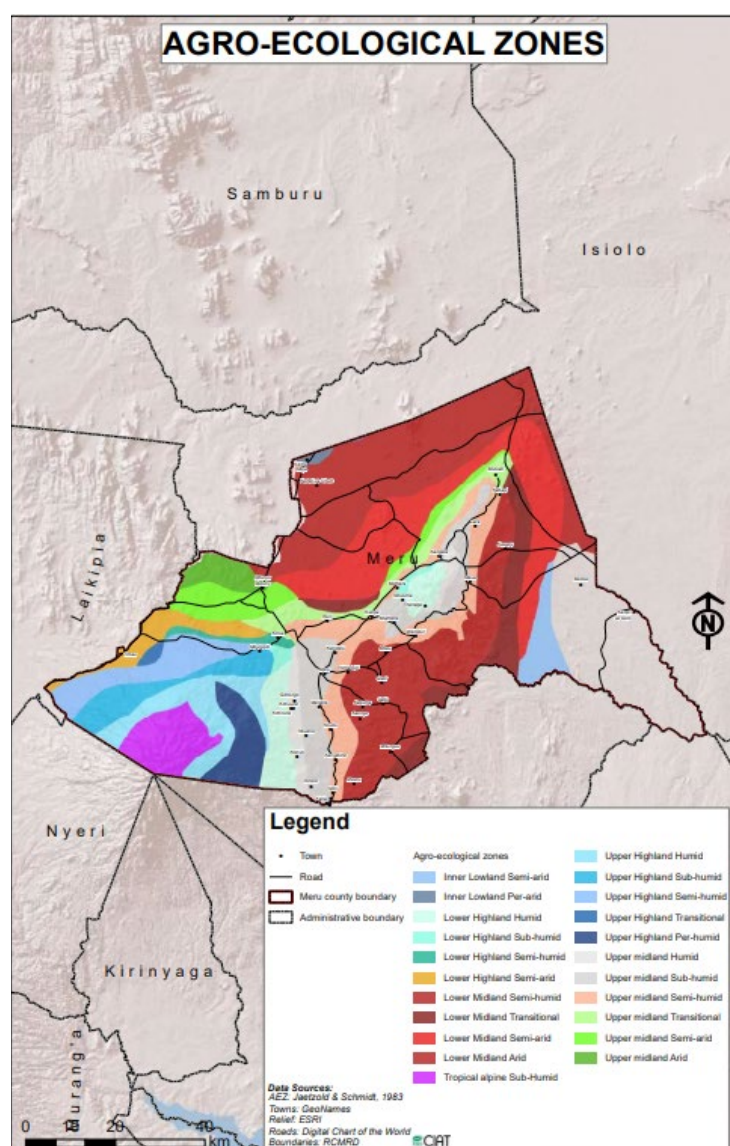
Name of location	Men	Women	Total
Giaki - Kathirune	8	10	18
Giaki - Munanda	11	15	26
Kianjai - Ruiru	10	10	20
Githongo	8	10	18
Kisima	4	8	12
Ngusishi	16	15	31
Mbaria - Kirua	10	10	20
Subuiga - Matunda	15	8	23
Total			172

Findings from the reconnaissance on key indicators show that both farmers and experts agree that farmers grow maize for subsistence, fodder, and for the market in that order. Results also show that pests and diseases, inadequate rainfall, lack of inputs (fertilizers and certified seeds), and low output prices are the main risks faced by farmers.

Regarding awareness about crop insurance, we find that though farmers are aware about other insurances such as health and car insurance, awareness and understanding on how crop insurance works was very low. The understanding was equally low for the experts. We also established that the main challenges to current crop insurance programs in the county include delayed payment of claims, lack of transparency (farmers never know all details in the insurance policy) resulting in lack of trust, basis risk (poor correlation of the index used for the insurance and actual farm losses), insufficient understanding on crop insurance works, and late delivery of the insurance to the farmers.

Production systems

Meru county has 22 agro-ecological zones (Figure 1), which are characterized by different climate conditions. The climate conditions determine the number of planting seasons and production systems for maize. In general, the northern part of the county (comprises Igembe North, Igembe Central, Igembe South, Tigania West, Tigania East, Buuri), has one maize planting season that starts in March/April, while the southern part has two seasons: a short season in March/April and a long season in October/November. For both regions, farmers grow maize for food, income, and fodder (annex figure 1).

**Figure 1:** Meru County agro-ecological zones

The findings from the reconnaissance informed the design of the household survey in prioritizing important variables worth focusing on, sampling, and even logistical planning for the survey. For example, based on the reconnaissance findings, we aimed to gather more information on the barriers to crop insurance, risk perceptions (to facilitate identification of the most important risks to the farmer), and adaptation options used to cope with some of the risks. All these information is crucial in developing a crop insurance product that first, meets the needs of the farmers. Farmers have different needs in terms of risk management based on demographic factors, socio-economic, and geographic factors, which influence the farmers' exposure and vulnerability to various risks. Second it is pertinent to develop a product that addresses the challenges faced by existing crop insurance products.



📷 Antoine

2. Methodology

2.1. Sampling

We used a multi-stage sampling to get to the respondent. We started the sampling by randomly selecting a proportionate number of sub-locations from each of the nine sub counties of Meru. We then randomly selected villages from each of the sub-locations with the help of the local administration (chiefs, sub-chiefs, and area administrators) with a focus on areas that produce maize. Lastly, to identify the farmers, we did a systematic random sampling of the farmers to enhance representation. The starting point was agreed upon with the local administration. The number of farmers we targeted (1320) was informed by power and sample size calculations (power of 0.8, an error of 0.05, and treatment effects of 0.05). The calculations considered the number of treatment arms we need in the next step of the project (lab in the field experiment). We interviewed a total of 1329 farmers.

2.2. Data collection

The data in this report was collected in the month of December 2021, and the first week of January 2022. We used a semi-structured questionnaire to elicit several issues from the farmers including farmer characteristics such as financial and insurance literacy, information access, risk preferences and preferences for insurance (bundling options and loss verification payment). The data was collected using a digital data collection platform (survey CTO) by 16 enumerators who received a week's training on the survey tool. Strict ethical requirements were observed during the data collection. The survey was approved by CIAT's Institutional Review Board (2021-IRB46). Farmers were provided information on the project and the liberty to participate or not in the survey without any consequences in the future as far as the project activities are concerned. We also obtained verbal consent from the farmer before proceeding with the interview. All farmers received a nominal monetary compensation for their time to participate in the survey.

INTERVIEWS



MORE THAN HALF OF THE FARMERS INTERVIEWED WERE WOMEN (TABLE 1)



OF THE FARMERS WERE 36 YEARS AND ABOVE



COULD INDICATE FEWER YOUNG PEOPLE ARE DIRECTLY INVOLVED IN AGRICULTURAL PRODUCTION

EDUCATION



With respect to **education**

OVER 77% farmers have attained secondary school education

14.5% farmers have attained education above technical level

OCCUPATION



68.8%
FARMERS PRACTICE FARMING AS THEIR MAIN OCCUPATION



WHILE 22.3%
RUN SMALL BUSINESSES AS A SECONDARY OCCUPATION



4.2%
FARMERS ARE IN FORMAL EMPLOYMENT

AVERAGE FARM SIZE

3.2 ACRES

1 ACRE DEDICATED TO MAIZE FARMING

FARMING EXPERIENCE

22 YRS
ON AVERAGE

This is plausible given that the average age of the farmer is 36 years.



FOR MAIZE SPECIFICALLY

TRAVEL DISTANCE TO INPUT MARKETS

TRAVEL DISTANCE TO OUTPUT MARKETS

4.9 KM

2.3 KM



USAGE OF ORGANIC MANURE FOR MAIZE

0.76 TONS
per acre

USAGE OF INORGANIC FERTILIZERS ON MAIZE FARMS



51.3 KGS
per acre

3. Main findings

3.0. Farmer characteristics

More than half of the farmers (54%) interviewed were women (table 1). Over 85.3% of the farmers were 36 years and above. Youth (18 - 35 years) were only 14.7%, which could indicate that fewer young people are directly involved in agricultural production. With respect to education, over 77% percent of the farmers have attained secondary school education. Only 14.5% have attained education above technical level. Regarding the main occupation, 68.8% of the farmers practice farming as their main occupation while 22.3% of the farmers run small businesses as a secondary occupation. Only 4.2% of the farmers are in formal employment. The average farm size is about 3.2 acres of which at least 1 acre is dedicated to maize farming. With respect to farming experience, most farmers have an experience of about 22 years on average. This is plausible given that the average age of the farmer is 36 years. The travel distance to input markets is about 4.9 km on average, while the travel distance to output markets for maize specifically is about 2.3 km. Usage of organic manure for maize is about 0.76 tons per acre on average, while that of inorganic fertilizers is about 51.3 Kgs per acre on average.

Table 2: Demographic and farm characteristics of the farmers.

Farmer characteristic	N	%	Min	Avg	Max
Household size (#)	1329		1	5	23
Gender: Male	608	46.0			
: Female	721	54.0			
Age(years): 18-25	22	1.7			
: 26-35	173	13.0			
: 36-45	324	24.4			
: 46-55	318	23.9			
: Above 55	492	37.0			
Education: No formal schooling	102	7.7			
: Primary	688	51.8			
: Secondary	345	26.0			
: Technical	63	4.7			
: College	100	7.5			
: University	31	2.3			
Apart from farming, other main occupation	915	68.8			
: None					
: Self-employed- business	297	22.3			
: Employed - casual labor	54	4.1			
: Employed - formal	56	4.2			
: Other	7	0.5			
Overall Farm size (acres)	1329		0.02	3.2	42
Maize Farm size (acres)	1329		0.01	1.2	17
Farming Experience (years)	1329		0.25	22.5	55
Distance from house to input supplier (KM)	1329		0.01	4.9	60
Distance to the harvested maize market (KM)	1329		0.1	2.3	54
Fertilizer use for maize	1329		30	760 Kgs per acre	64800
: organic - Kgs					
: Inorganic- Kgs	1329		1	51.3 Kgs per acre	2500

3.1. Risk perceptions

Risk (uncertainty) is an important aspect in farming; it shapes farmer's adoption of new technologies and risk management strategies. Farmer perceptions of agricultural risks (a multi-dimensional construct) varies with individual, geographical location, risk attributes, and the domain/type of the risk (financial, production, market, personal, institutional) among

other factors. For this reason, we characterized the main risks faced by the maize farmers focusing on the domains/types mentioned. Overall, the most frequently mentioned risks by the farmers were drought/dry spell (34.4%) and pests and diseases (27.7%) (figure 2). The least mentioned risk was sickness (less than 1% of the farmers).

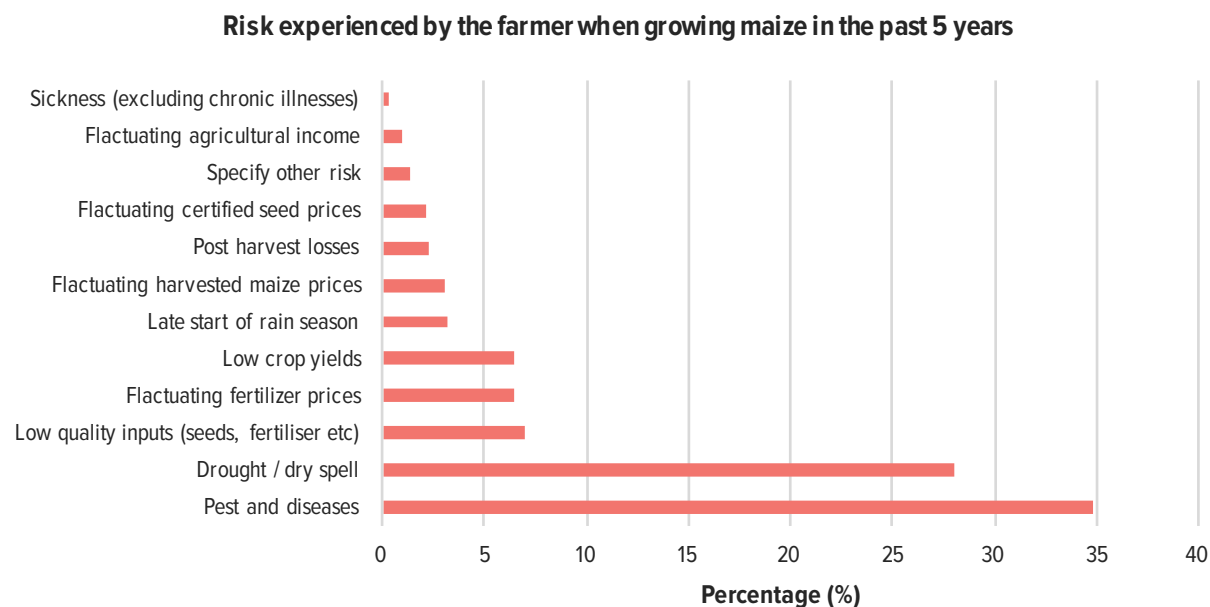


Figure 2: Risks experienced when growing maize in the past 5 years

3.2. Adaptation strategies

Farmers use various adaptation mechanisms (both ex-ante and ex-post) to cope with the risks. The adaptation mechanisms used depend on the type of risk. The common adaptation strategies for drought/dry spell were irrigation, crop rotation and change of crop type, or variety of maize (figure 2). Some farmers also reported to have used drought tolerant maize, and intercropping (diversifying) with beans or potatoes to supplement crop rotation. Change of crop type and maize variety are also the common strategies farmers used to cope with pests and diseases on top of using pesticides. The most common coping strategy to fluctuating certified seed prices was change of variety, mostly to local varieties, while the common coping strategy to fluctuating fertilizer prices was using manure.



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Action taken to reduce the impact of the risk the last time farmers experience it

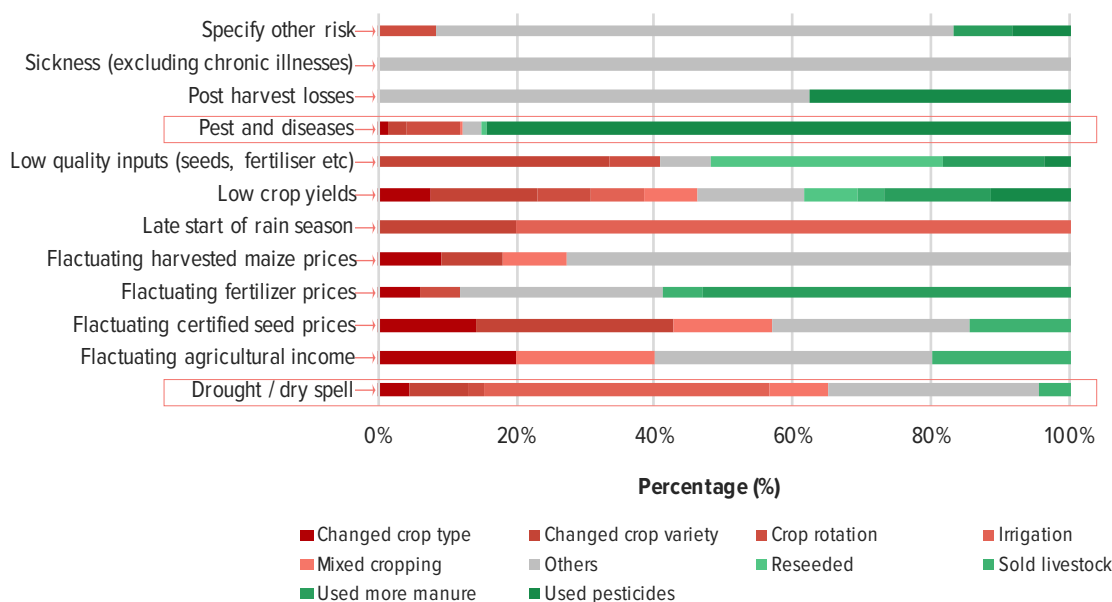


Figure 2: Action taken to mitigate risks

Not all farmers adopted response actions to cope/adapt to the risks. Farmers' response to cope with the risks faced tends to depend on the type of risk. For example, slightly less than half of the farmers did not respond to drought/dry spells (figure 3). The main reason for lack of response actions is farmers' strong belief that drought is an act of God. Most farmers did not adopt responses to cope with pests and diseases and reported limited financial resources as the major reason.

Did the farmer do anything when they experienced the risk in the past 5 years

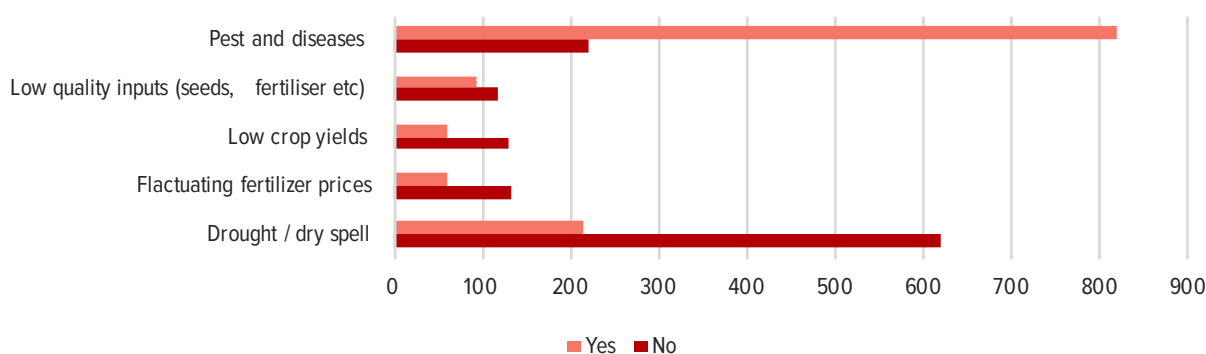


Figure 3: Number of farmers adoption response actions to risk

3.3. Risk preferences and locus of control

Adding to the risk perceptions, we also elicited the farmers' risk preferences. Risk preferences refer to the curvature of an individual's utility function. We follow the approach of Tanaka et al. (2014) to estimate risk aversion under the framework of prospect theory. We find that many farmers are risk loving (risk aversion of less than 0.5) (figure 4). We find no significant difference in risk aversion between men and women. Low risk aversion (risk loving) is associated with high demand for insurance in classical economics. However, there are mixed findings in literature on the implication of risk aversion to actual uptake of insurance. We seek to explore this issue further in the next project phases.

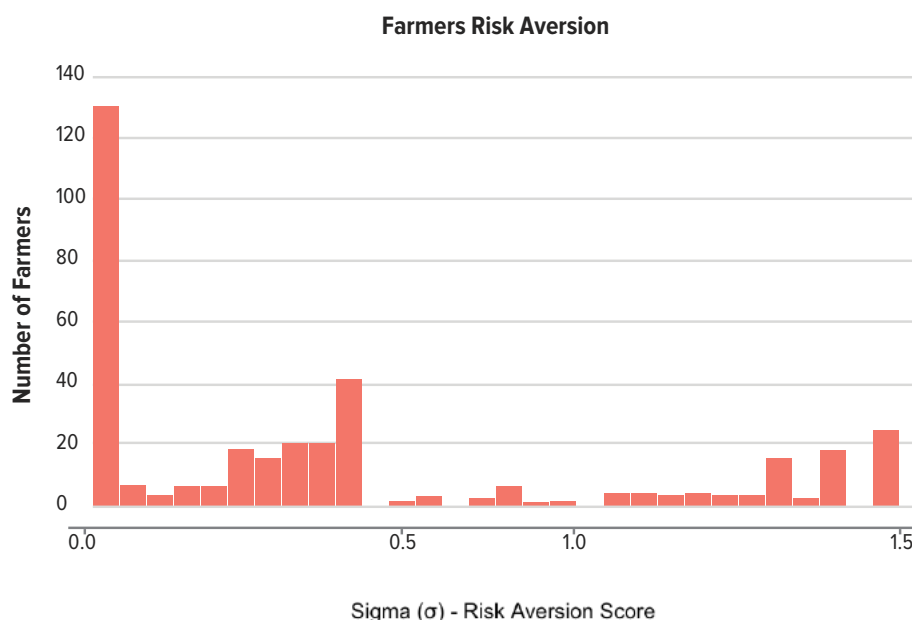


Figure 4: Distribution of risk aversion

We estimate the locus of control following the approach in Osiemo et al. (2021). Locus of control refers to the extent to which an individual believes that circumstances in his/her life are consequences of individual actions. Individuals with an internal locus of control believe that they control the circumstances in their lives, while individuals with an external locus of control believe that circumstances in their lives are controlled by others. We find that many of the farmers have an internal locus of control, which means a likelihood to adopt risk management strategies. Men tend to have a higher score on the locus of control compared to women. However, there is no significant difference between the locus of control scores between men and women.

3.4. Insurance and financial literacy

We estimated insurance and financial literacy levels by asking farmers a series of questions as in Cole et al. (2013). For insurance, we provided the farmers imaginary scenarios, a trigger, and whether the insurance would pay or not. Majority (over 85%) of the farmers answered accurately. Some farmers had challenges with computing the exact compensation they would expect when they incur a loss. Findings from the financial literacy assessment show that farmers tend to understand the link between triggers and payouts. However, this does not translate to farmers understanding of other concepts about crop insurance.

Key to note is that about 80% of the farmers reported to be satisfied if they took out insurance (paying a premium) and the season turned out to be good, hence no payout was triggered. Only 14% of the farmers reported that they would regret taking out insurance and the season turned out to be good. The remaining 5% reported indifference (table 3).

Table 3: Insurance literacy

Imagine you have bought insurance against drought. If it rains less than 50mm by the end of the season, you will receive a payout of Ksh. 50 for every mm of deficient rainfall.		
	No	Yes
It rains 120mm. Will you get an insurance payout?	1136 (85.5%)	193 (14.5%)
It does not rain at all. Will you get an insurance payout?	46 (3.5%)	1283 (96.5%)
It rains 20mm. Will you get an insurance payout?	62 (4.7%)	1267 (95.3%)
Suppose that you purchased an agricultural insurance policy that you pay a premium for, but you experience no loss, and hence no payout. Which of the following words best describes how you would feel?		
	Regret	189 (14.2%)
	Indifferent	71 (5.3%)
	Content/satisfied	1069 (80.4%)

3.5. Financial literacy

Financial literacy is an important indicator of financial decisions. We assessed the financial literacy of the farmers by asking questions about hypothetical loan products. The first question tested whether farmers understood the concept of interest rates and how they are calculated, the second tested the ability to choose less expensive loan products, while the third question tested the concept of interest rates and inflation. Many farmers (80%) demonstrated the ability to choose less expensive loan products, while only slightly over half got the question on interest rate right (table 4). However, about 89% of the farmers tend to understand the link between interest rates and inflation.

Table 4: Financial literacy

Suppose you borrow Ksh. 1000 at an interest rate of 2 percent per annum . After 3 months , if you had made no payment, would you owe more than, less than, or exactly Ksh. 1020 ?	Less than:	256 (19.3%)
	Exactly:	690 (51.9%)
	More than:	383 (28.8%)
Suppose you need to borrow Ksh. 5000 , to be repaid in one month. Which loan would be more attractive to you: Loan 1, which requires a repayment of Ksh. 6000 in one month ; or Loan 2 which requires a repayment of Ksh. 5000 plus 10% interest per month ?	Loan 1:	265 (19.9%)
	Loan 2:	1064 (80.1%)
If you have Ksh. 5000 in a bank account that earns 1% interest per annum , and prices for goods and services rise by 2% over a one-year period , can you buy more, less, or the same amount of goods in one year, as you would today?	Buy less:	1192 (89.7%)
	Same amount of good:	50 (3.8%)
	Buy more:	87 (6.5%)

The average number of questions answered correctly for the insurance literacy was 2.8 while the average number of correct answers for the financial literacy was 2.2 out of the 3 questions (figure 5). The average score for financial literacy is significantly lower than that of insurance ($p=2.2e-16$). There tends to be no significant difference in insurance literacy across men and women, age, and education groups. However, there seems to be a significant difference in financial literacy across education groups. Farmers who had attained a college education tend to have a higher financial literacy compared to farmers with no “formal schooling”.

There is a weak significant positive correlation (0.1) between insurance and financial literacy for the entire sample. The correlation, though weak, shows the complementarity between insurance know-how and financial literacy. Therefore, it may be important to train farmers on financial matters alongside those of insurance.



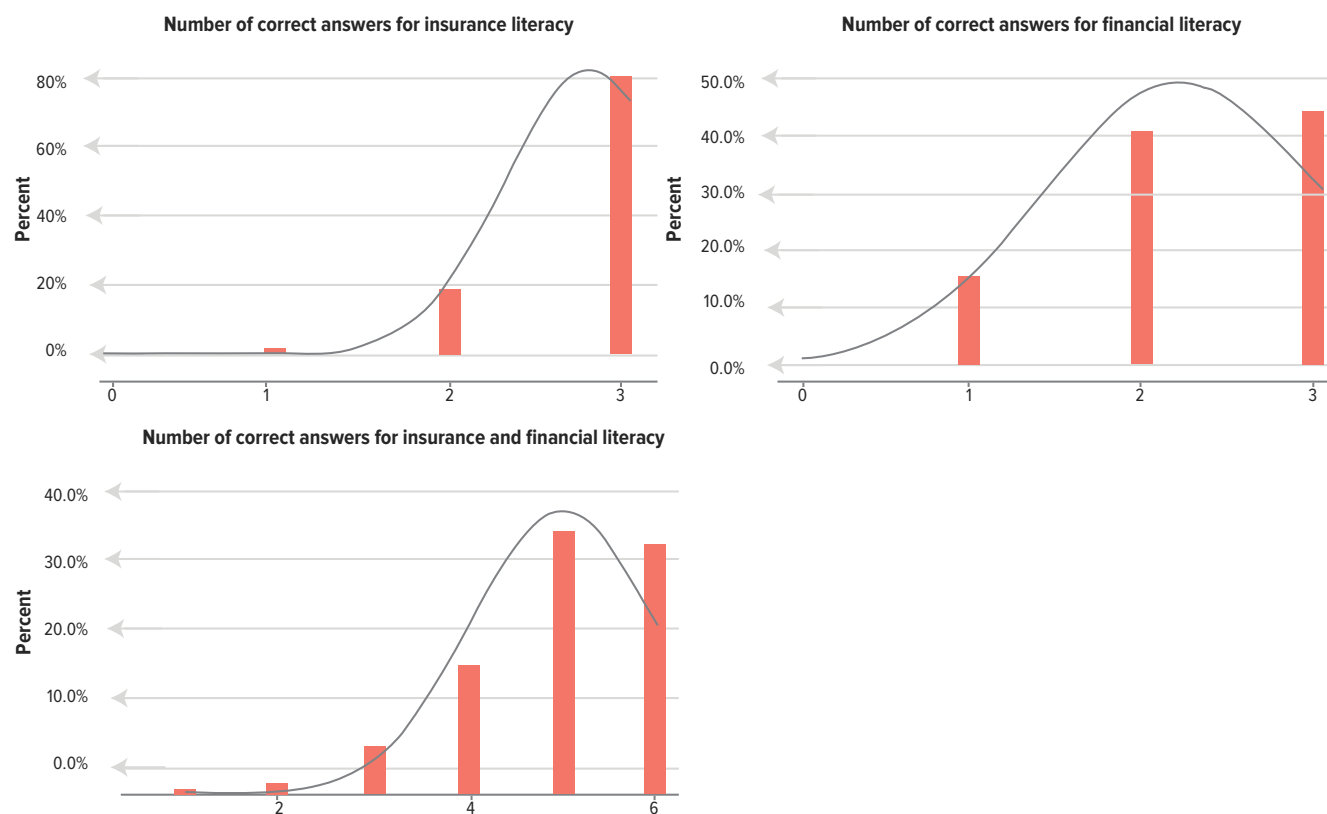


Figure 5: Distribution of number of correct answers for insurance and financial literacy

3.6. Preferences for insurance, barriers, and opportunities for uptake

With respect to farmer preferences for insurance, we first report on farmers' willingness to purchase crop insurance. We also report on the preferred platform for paying insurance claims, preferred insurable interests, preferred level of coverage (micro versus meso) loss verification method, and bundling preferences.

Willingness to purchase maize crop insurance

Though empirical evidence has shown very low uptake of crop insurance, our findings show that more than 80% of the farmers are willing to purchase crop insurance for maize (figure 6). Majority of the farmers who demonstrated a willingness to purchase maize crop insurance also reported that they would purchase insurance in the subsequent cropping season. About 20% reported that they were willing to purchase crop insurance as soon as immediately following this survey. Though this finding is encouraging, it should be applied with caution. Several factors are worth considering. First, farmers may have consented to purchasing insurance to maintain a positive image with the enumerator, and second, though we found that our proxy for insurance literacy was relatively high, there are many aspects of crop insurance that the farmer may not be aware of. Therefore, the high willingness to purchase insurance may be due to insufficient information about insurance.

For the 20% of the farmers who demonstrated no willingness to purchase insurance, a majority (60%) of them highlighted that they were not willing to purchase insurance at all (figure 7). We link this attitude to negative experiences (such as non-payment, long claims processing periods) with previous insurance products.

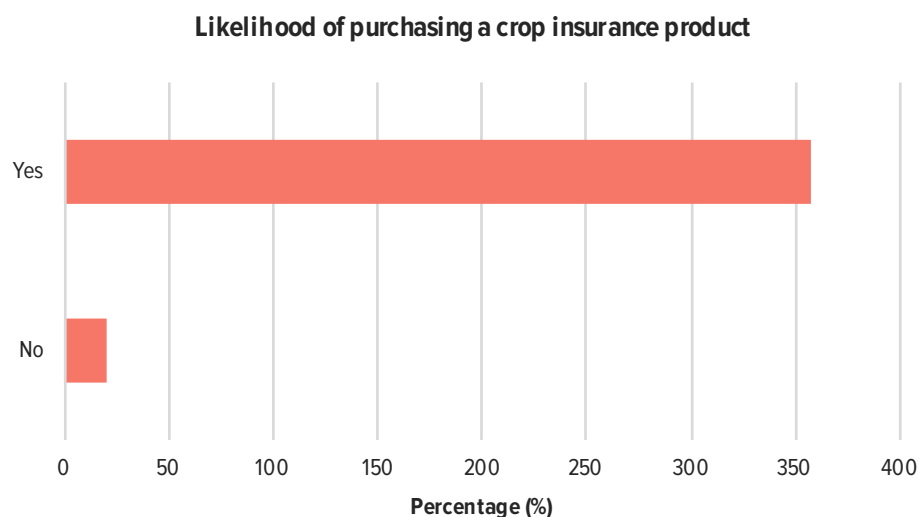


Figure 6: Likelihood of purchasing crop insurance.

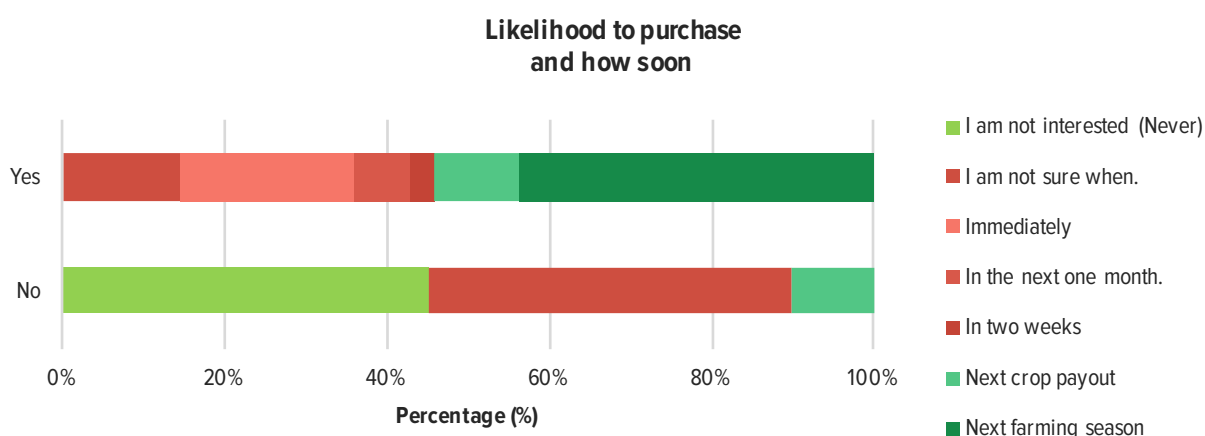


Figure 7: Likelihood of purchasing crop insurance.

Preferred premium and claims payment platforms and channels

Over 70% of the farmers reported that they would prefer to pay premiums and receive claim payments on a mobile platform, while only about 10% reported that they preferred to pay premiums and receive claim payments in cash or through an insurance agent.

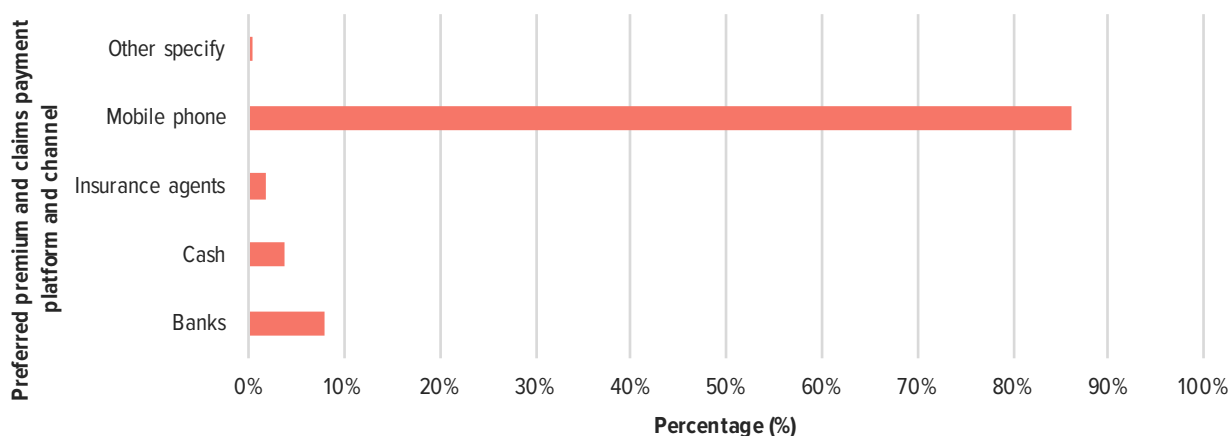


Figure 8: Platforms preferred for paying insurance premiums or receiving claims

Preferred insurable interest

Targeting the “right” insurable interest is important in enhancing relevancy of crop insurance to the farmers. To assess the most preferred insurable interest by the farmers, we asked farmers to select their most preferred insurable interest from a list consisting of yield, inputs (fertilizer and improved seeds), cost of production (inputs and labor), revenue, and output prices. Our analysis shows that about 60% of the farmers prefer coverage for yield, 15.7% prefer coverage for inputs, 12.1% coverage for cost of production, 7.9% revenue from produce, and only 4% coverage for output prices (figure 9).

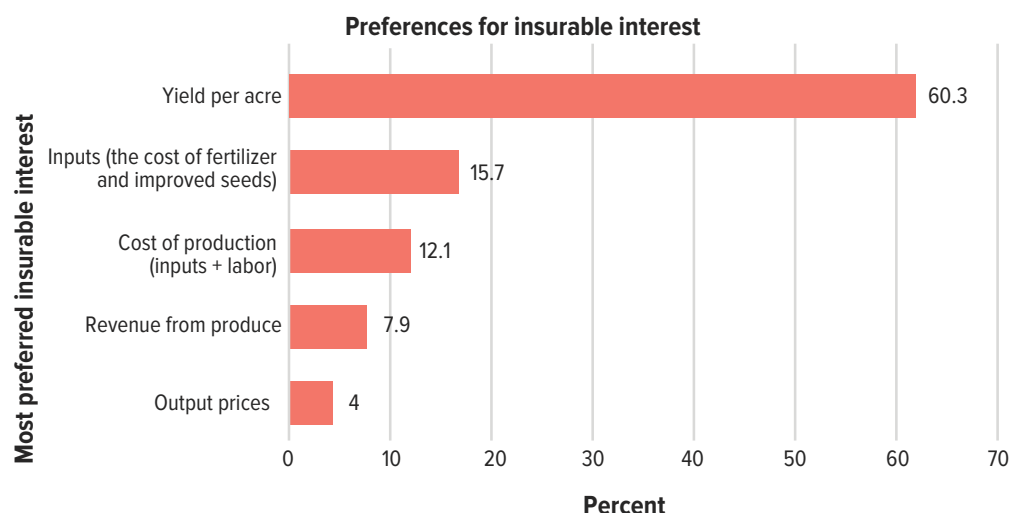


Figure 9: Most preferred insurable interest

The above findings are plausible for three main reasons. First, yield covers provide a wider coverage that encapsulates other interests such as inputs and cost of production. Second, recovery is partial (i.e., just the cost incurred) when farmers insure inputs or cost of production only. Yield covers on the other hand implicitly compensate for unrealized yield (revenue) gains. Third, yield covers (for example indemnity based) cover a wide range of perils. Notwithstanding, whether crop insurance products should target yield as the insurable interest is still an empirical question even though we find that it is the most preferred. Yield insurances are more prone to moral hazard, which is a big challenge from the supply side perspective and are likely to cost more compared to the other covers, which is also a big challenge from the demand side perspective.

Preferred level of insurance coverage

Recent evidence has shown based on the level (individual level – micro, group/community level –meso) of insurance coverage, insurers can overcome challenges in contract enforcement (monitoring and other administrative costs) and moral hazard. Meso level insurance products are likely to overcome moral hazard mostly observed in micro covers. One challenge with the meso covers is that it limits the extent to which products can be customized to the needs of specific farmers. Though contract enforcement and other administration costs are likely to be higher for the micro level products, the products can allow for targeting specific needs of a farmer. Comparison of the preference for the levels of coverage show that many farmers (about 78%) prefer individual policy (figure 10).

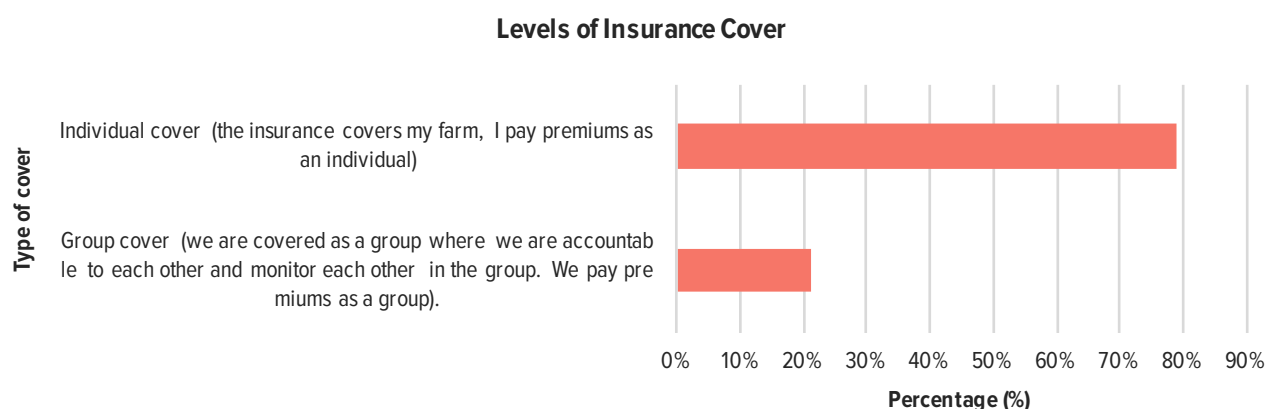


Figure 10: Most preferred level of insurance

Loss verification method

Though loss verification is complex especially for index-based insurance, we assessed farmers' preferences for loss verification methods. Farmers were asked to choose the method they preferred from a list of methods. The methods contained in the list were: rainfall index-based, rainfall index-based supported with pictures, soil moisture-based index, model farmer at village level, and satellite imagery. Rainfall based index supported with pictures and model farmers at village level were the most preferred methods (figure 9 & 10). The preferences varied across age groups; younger farmers (18-25 years) and farmers above 55 years tend to prefer model/champion farmers. However, some farmers noted that model farms are likely to be less representative of the differences in the farms.

Despite the coherence of the results and the questions we asked the farmers, noteworthy is the possibility of farmers failing to properly understand and differentiate the various methods of loss verification.

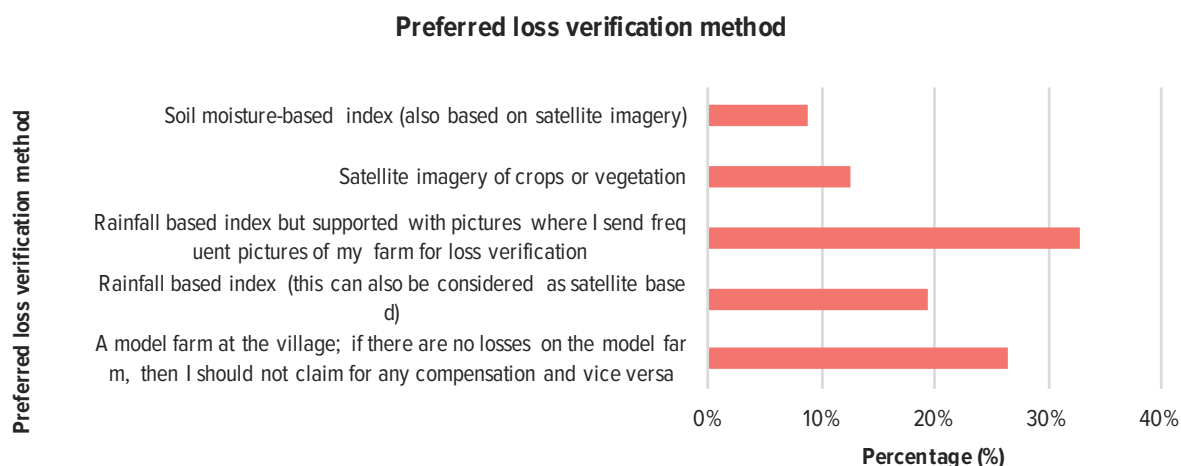


Figure 11: Loss verification method

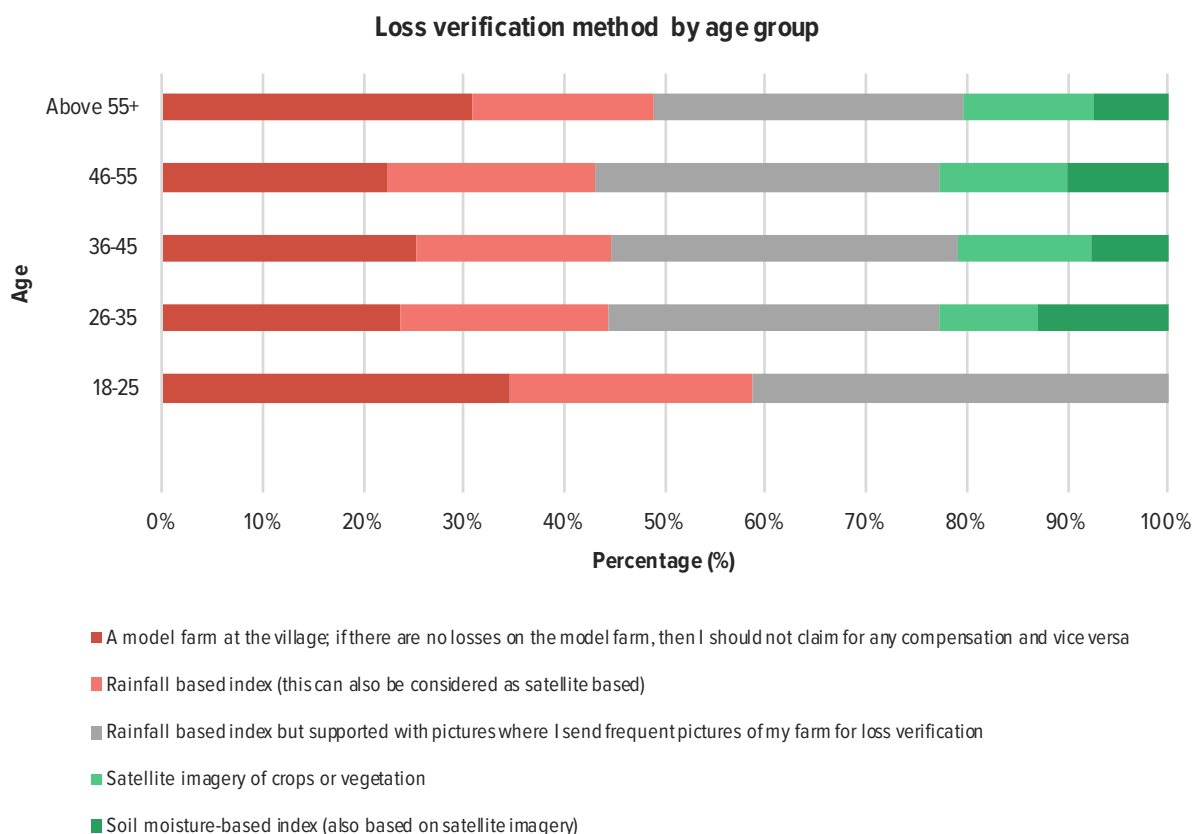


Figure 12: Loss verification method by age group

Preferred insurance bundles

Bundling is a strategy that aims to increase the value of a product and has been suggested as one way through which to make crop insurance attractive and relevant to farmers. Conventionally, crop insurance is bundled with agricultural inputs, cash credits, and non-agricultural insurances such as health insurance. To determine farmers' most preferred bundle, we provided a list of possible bundles from which to choose their most preferred. Our results show that over 60% of the farmers preferred the insurance, fertilizer, improved seeds, and advisories bundle (figure 11). The insurance and fertilizer bundle was the least preferred. Preference for the more comprehensive bundle may be an indicator that farmers understand the complementarity between insurance, improved inputs (fertilizer and improved seeds), and agriculture advisories.

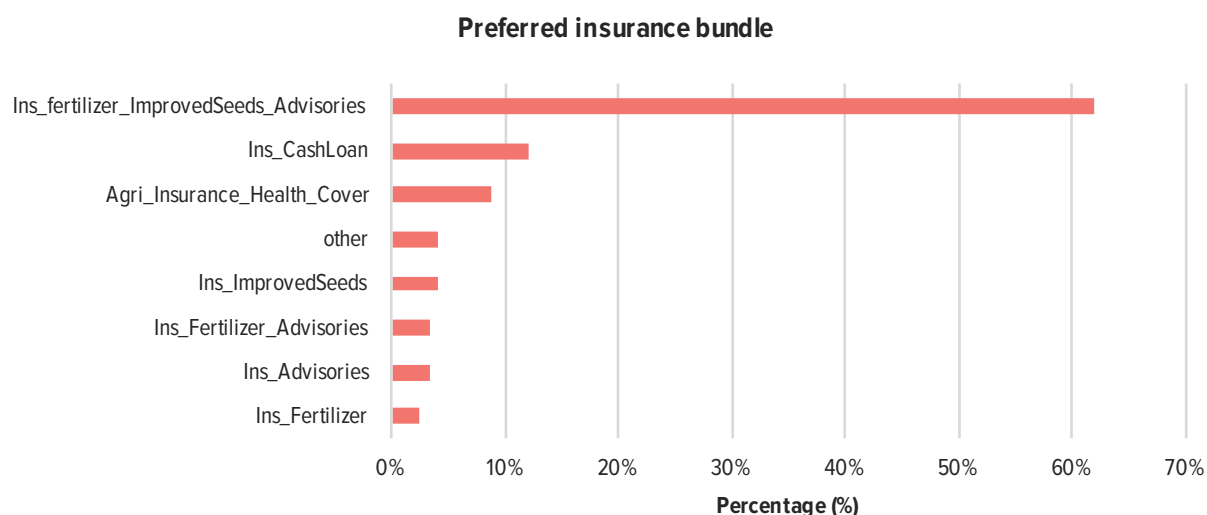


Figure 13: Insurance bundling.



Improved seeds perform better than local varieties. ©StephanieMalyon / 2015CIAT

Noteworthy is that bundle preferences varied across age groups. More younger farmers, 18 - 25 years, and 26 - 35 years tend to prefer the insurance cash credit bundle (figure 12). Older farmers tend to prefer the more complete bundle. These results are plausible given that younger farmers are more likely to be financially constrained (also lack other productive resources) compared to older farmers. The younger farmers are also likely to receive information on agriculture through other channels hence advisories may not be a constraining factor for them. The varying preferences across age groups is evidence for the need to have targeted insurance products for different farmer groups.

Finally, we assessed farmer's preferences of insurance regarding the number of perils covered. Farmers chose from a list containing four products namely, multiple peril complete cover, multiple peril partial cover, single peril complete cover, and single peril partial cover. The multiple complete cover was the most preferred (over 65%) (figure 13), while the single peril partial cover was the least preferred (less than 5% of farmers).

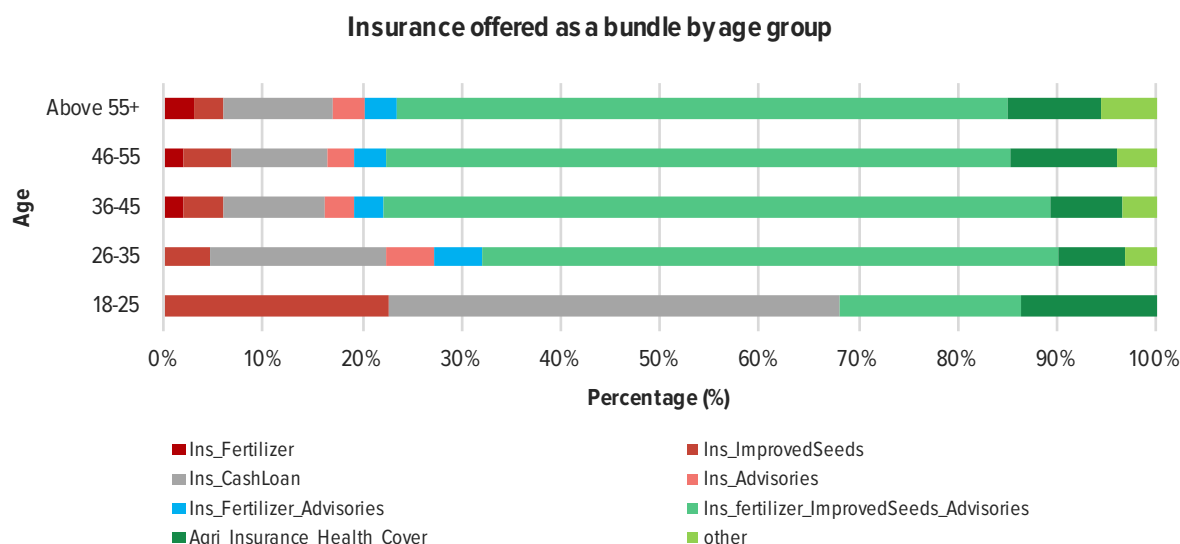


Figure 14: Insurance bundling by age group

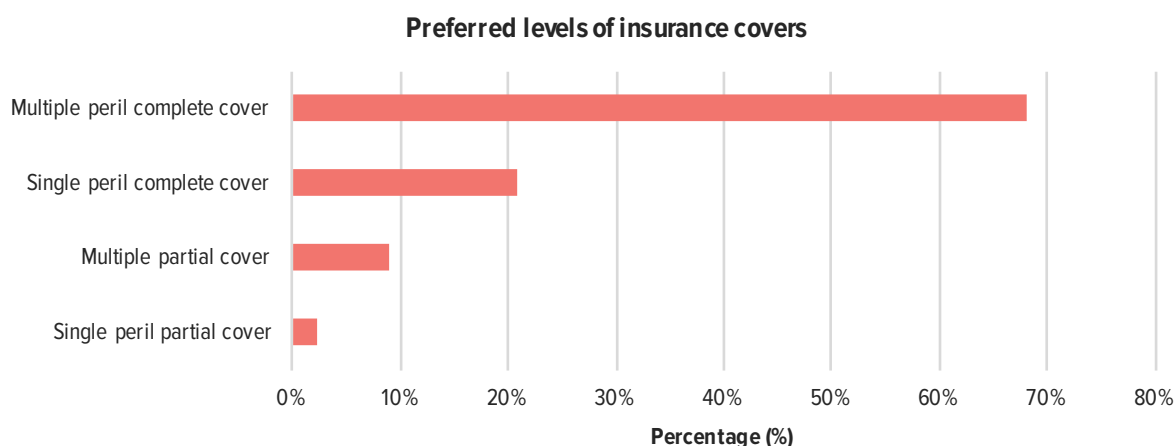


Figure 15: Preferred number of perils covered by insurance

Barriers to insurance uptake

Several factors hindering (barriers) the uptake of crop insurance by farmers have been highlighted in literature Cole & Xiong (2017). Some of these factors include trust, basis risk, affordability, and liquidity constraints. In our sample, the most frequently mentioned barrier to uptake of insurance by farmers is lack of transparency on terms and conditions (more than 95% of the farmers), poor customer service (over 94%), and affordability (over 91% of the farmers) (figure 14). More than 80% of the farmers reported that lack of information on the benefits of taking insurance is an important factor hindering their uptake. The high number points to the need for information dissemination and training farmers training on agricultural insurance. Factors such as limited evidence from other peer farmers (social proof), tedious contract administrative processes, and perception that insurance is for the rich farmers were the least cited barriers.

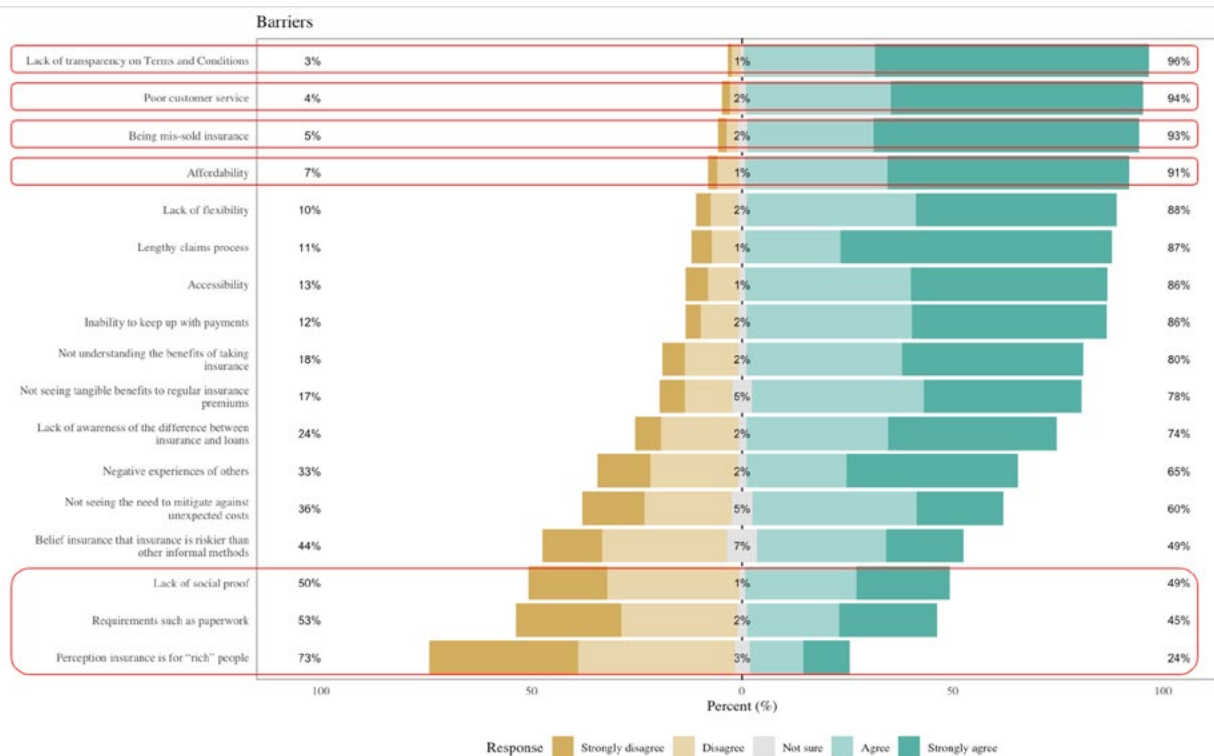


Figure 16: Barriers to likelihood of insurance uptake

3.7. Access to information

Many of the interviewed farmers (90%) receive agricultural information (figure 15). Radio is the most common and most preferred media through which to receive information. Only 20% of the farmers receive information through television, while 19% of the farmers indicated that they would prefer to receive agricultural information through mobile phones.

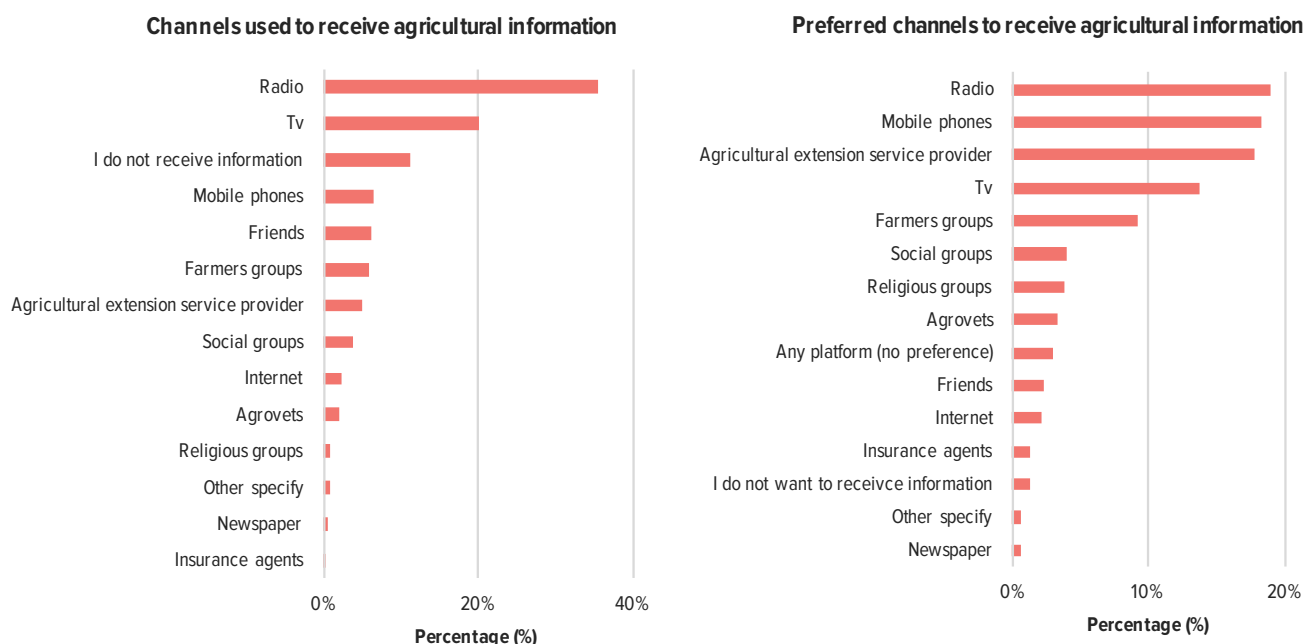


Figure 17: Comparison of channels the farmers receive agricultural information and channels they would prefer to receive agricultural information



📷 NeilPalmer/2010CIAT

4. Conclusions and recommendations

This report is a summary of findings from a farmer household survey of randomly drawn maize growing households of Meru County. The goal of the survey was to assess farmers' needs regarding risk management and the potential role and willingness to take out crop insurance. To achieve this goal, we assessed farmers' risk perceptions, and preferences. We also assessed the farmers' preferences for crop insurance products and their willingness to accept insurance. We find that the willingness to accept crop insurance is relatively high. Evidence from the results indicates that providing information to farmers on insurance and enhanced financial capacity may increase uptake of crop insurance. Information on insurance should include aspects beyond triggers and payouts such as claim processing, policy terms and conditions, as well as loss verification. Radio and phone messaging are the most preferred channels for receiving information.

We also find that farmers prefer multiple peril complete insurance covers over single peril covers. Though this is in line with rational behavior, there are questions on the veracity of stated preferences. For this reason, we will explore this subject further in the lab in the field experiment in February and March 2022. Notwithstanding, actuarially fair multiple peril covers are likely to cost more. Therefore, subsidies may be a plausible approach to address liquidity constraints for the multiple peril covers.

Regarding insurable interests, we find that many farmers prefer yield insurance. We highlight that preference for yield insurance arise from the fact that yield covers render "complete recovery", have a wider coverage in terms of perils covered, and encapsulate other insurable interests such as inputs and cost of production. However, more empirical evidence is needed to show whether insurance products should focus on yield. We also find that farmers prefer individual policies to group/communal policies even though the individual policies are more prone to challenges such as high contract enforcement costs and other administrative costs, and moral hazard. Lastly, we find that farmers prefer to pay premiums and receive payout claims on digital platforms. Though this is attractive in this era of digital solutions to agricultural problems, access to such platforms (for example smartphones, and internet connectivity) may be a challenge to many farmers, particularly women farmers since they are less likely to own for instance a smartphone compared to their men counterparts.

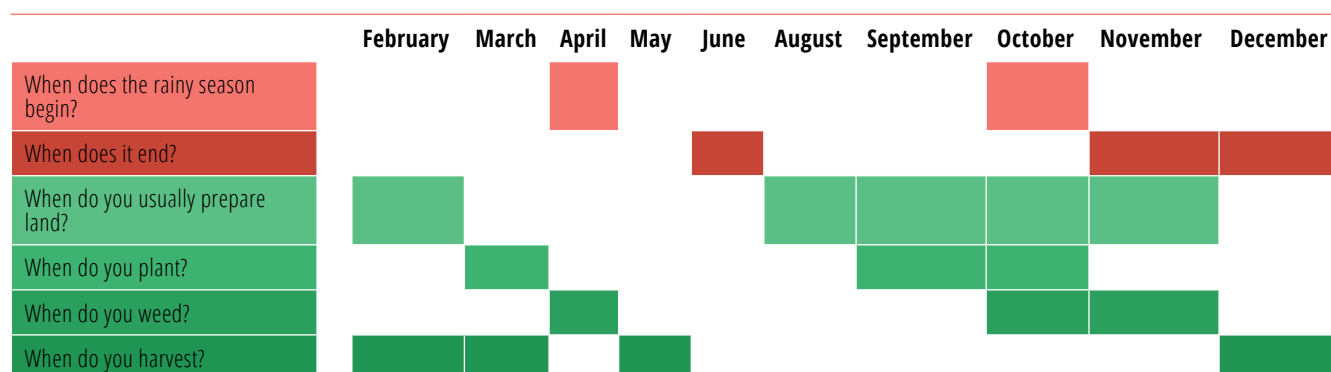
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Annex

Table 1: Overall crop calendar



Main reason why farmers plant maize

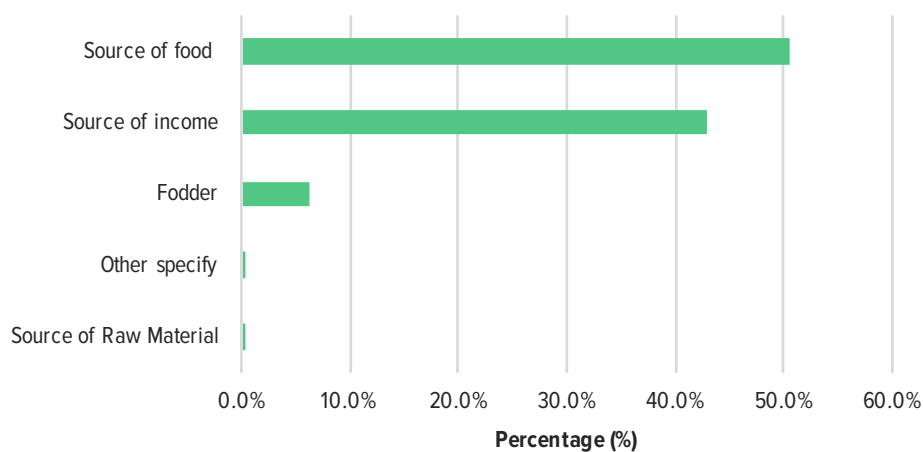


Figure 1: Reasons for planting Maize

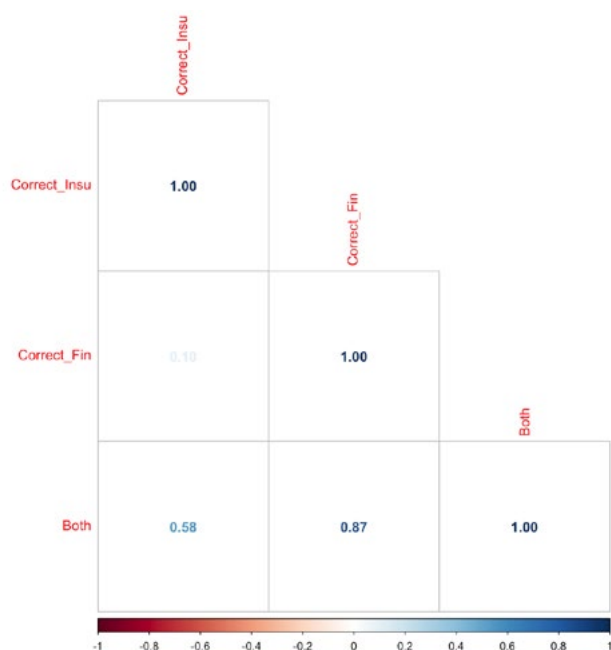


Figure 2: Correlation of correct scores for insurance and financial literacy



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