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**Climate Change,
Agriculture and
Food Security**



Workshop report: Capacity building on agricultural insurance for aggregators in Northern Ghana

May 2016

**Helen Greatrex
Stephen Narh
Abigail Tettey
Angelina Yeboah
Aswad Mahama**



**GHANA
AGRICULTURAL INSURANCE
PROGRAMME**

Capacity building on agricultural insurance for aggregators in Northern Ghana

Workshop Report

CGIAR Research Program on Climate Change,
Agriculture and Food Security (CCAFS)

Helen Greatrex
Stephen Narh
Abigail Tettey
Angelina Yeboah
Aswad Mahama

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Contact:

CCAFS Coordinating Unit - Faculty of Science, Department of Plant and Environmental Sciences, University of Copenhagen, Rolighedsvej 21, DK-1958 Frederiksberg C, Denmark. Tel: +45 35331046; Email: ccaafs@cgiar.org

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Abstract

Farming is a risky business. Shocks such as drought, flood, pests or disease can make it difficult for farmers to invest in new productive options, such as seeds or fertilizer. These shocks are often regional, reverberating past the level of the individual smallholder. This makes it equally difficult for aggregators such as seed companies, input providers, agri-shops, seed growers and for commercial farmers, all of whom rely on the yields of a large number of smallholders or out-growers. Agricultural insurance is one way to mitigate this risk, unlocking new markets and making existing markets more profitable

Most training on insurance is either designed for poor smallholder farmers, or for very large aggregators (e.g. a country-wide fertilizer company). Less attention has been paid to small and medium level aggregators, who might have tens or hundreds of acres, or have a relationship with a smaller number of out growers (tens to thousands). However, connecting with these stakeholders is one method of scaling insurance in a sustainable fashion. The local nature of many of the aggregators allows insurance to reach smallholders without personally visiting every village. The aggregators are also typically from the local communities and can act as champions for new initiatives. These same incentives for connecting with aggregators also hold true for other CCAFS and rural development initiatives.

The aim of this workshop was to reach a group of local aggregators in rural Ghana with tailored insurance capacity building material, detailed in this report. A secondary aim was to gather their feedback about their experiences with agricultural insurance, along with jointly designed ideas about how insurance could more easily fit in with their practices.

Keywords

Agricultural Insurance; Index insurance; aggregators; meso-scale; scaling

About the authors

Dr Helen Greatrex is an Associate Research Scientist at the International Research Institute for Climate and Society, Columbia University. She is an agrometeorologist with expertise in agricultural insurance design and assessment. Contact: greatrex@iri.columbia.edu

Dr Stephen Narh is the director of the Soil and Irrigation Research Centre, University of Ghana, Kpong. He has expertise in Ghanaian agricultural systems and the impact of climate change on agriculture.

Ms Abigail Tettey is a junior research scientist within the Soil and Irrigation Research Centre, University of Ghana, Kpong. She has supported and led many of the CASCAID field campaigns.

Ms Angelina Yeboah was the national underwriter of the Ghanaian Agricultural Insurance Programme at the time of the workshop.

Mr Aswad Mahama is the Northern Region marketing manager of the Ghanaian Agricultural Insurance Programme.

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Acronyms

ARC	Africa Risk Capacity organisation
CASCAID	Capacitating African Smallholders with Climate Advisories and Insurance Development – A CCAFS flagship project
CSA	Climate Smart Agriculture
GAIP	Ghana Agricultural Insurance Pool
IRI	International Research Institute for Climate & Society, Columbia University
MFI	Microfinance institution
NGO	Non-Governmental Organisation
NHMS	National Hydrological and Meteorological Services
PICSA	Participatory Integrated Climate Services for Agriculture

Introduction

CASCAID and insurance

The **Capacitating African Smallholders with Climate Advisories & Insurance**

Development project (CASCAID) is a flagship project funded by CCAFS. The overall aim of the project is to capacitate African smallholders and their boundary partners (NHMS, NGOs, private sector) with actionable climate advisories, index insurance and integrated climate services that reduce the impact of seasonal climate risk from farm to country levels. The project covers Ghana, Senegal, Mali and Burkina Faso and is scheduled to last from 2015 until December 31st 2018.

The aim of the CASCAID insurance activity is to better enable West African farmers to benefit from holistic, gender and culturally sensitive agricultural insurance, through supporting the scaling of existing initiatives and identifying new opportunities. It has two main goals:

1. To support the sustainable scale up of the Ghanaian index insurance industry and show how CGIAR expertise can interact with this process
2. To investigate the impact of index insurance on gender dynamics and develop tools to support gender sensitive index design

These aims are not exclusive or independent and many of the project activities address both goals. We are also working closely with our industrial stakeholders, the Ghanaian Agricultural Insurance Pool (GAIP).

Background

Farming is a risky business. Shocks such as drought, flood, pests or disease can make it difficult for farmers to invest in new productive options, such as seeds or fertilizer. These shocks are often regional, reverberating past the level of the individual smallholder. These spatially correlated nature of the shocks often make it difficult to extend credit to farmers; a bank cannot afford for all their customers to default in a single year. It makes it equally difficult for aggregators such as seed companies, input providers, agri-shops, seed growers and for commercial farmers, all of whom rely on the yields of a large number of smallholders or out-growers.

Agricultural insurance is one way to mitigate this risk, unlocking new markets and making existing markets more profitable. Its value is that it unlocks productivity in a normal, “non-payout” year. If insurance can reduce the risk just enough that more farmers can buy new inputs or be offered credit, then the increased profit in a good year can more than out way the cost of the premium. The same story holds at a farmer level. If the insurance unlocks new productivity in a normal year, then they are more able to invest and better able to protect themselves in a bad year. To achieve this however, care must be taken to fully incorporate insurance with these productive options.

Most training on insurance is either designed directly for poor smallholder farmers (Norton et al., 2014, Greatrex et al., 2015), or for very large aggregators (e.g. a country-wide fertilizer company). Less attention has been paid to small and medium level aggregators, who might have tens or hundreds of acres, or have a relationship with a smaller number of out growers (tens to thousands) (Hazel et al 2010). For example, these might be some rural banks, seed growers or Village Chiefs. However, this group of people presents a significant business opportunity for scaling index insurance. The local nature of many of the aggregators allows insurance to reach poor smallholders without personally visiting every village. The aggregators are also typically from the local communities and can act as champions for new initiatives. These same incentives for interaction with aggregators hold true for other CCAFS and rural development initiatives.

The aim of this workshop was to reach a group of local aggregators in rural Ghana with tailored insurance capacity building material. A secondary aim was to gather their feedback about their experiences with agricultural insurance, along with jointly designed ideas about how insurance could more easily fit in with their practices.

A new approach

Capacity building on insurance has typically been conducted at two scales:

1. Directly with smallholder farmers, typically those with very little financial literacy training. This has been achieved through radio campaigns (GSMA, 2015) and participatory games (Madajewicz et al., 2013).
2. With national or international stakeholders with a high level of financial literacy. For example, the ACRE insurance programme works with large-scale seed companies to

assess how insurance might add value to their product chains (GSMA, 2015). In another example, Africa Risk Capacity work build the capacity government stakeholders to insure against disasters (ARC 2016).

There has been little attention to the middle scale in African agriculture – that of smaller aggregators. These include smaller rural banks and MFIs, the heads of farmer cooperatives, seed providers for seed companies and Village Chiefs. These aggregators have a typical reach of between a few tens of smallholder farmers to several thousand.

At the smaller end of the scale, these aggregators typically have basic financial literacy skills, keeping business budgets, records and have access to smart phones. At the larger end of this scale, these aggregators might have detailed records. Despite the growing evidence that insurance helps support the uptake of inputs such as seed and fertilizer (R4 Rural Resilience Initiative, 2016; Bertram-Huemmer & Kraehnert, 2016), there is little guidance on the logistics of how such an aggregator can use index insurance as part of their risk management strategies. For example, whether the aggregator holds the insurance contract, or simply coordinates, what basis risk means for reputation and whether protection from climate would allow them to expand or protect their businesses.

Our aim was to tailor some of the existing smallholder participatory tools for this audience and to gather their feedback on their experiences of insurance and on how it could be more effective for them. We did this within the context of the Ghanaian insurance industry, so we also planned capacity building on that particular approach.

Tools summary

Farmer budget exercise

A key participatory design activity within the R4 Resilience Initiative is called the “Educational Game” (Appendix 3). This takes two scenarios, say ‘traditional seeds’ vs ‘hybrid seeds & fertilizer’ and imagines how much profit or loss is made in a normal year and a drought year. The game has proven extremely popular across several countries and is credited both with encouraging farmers to think of their farm as a business and in helping them examine the different aspects of index insurance (for example basis risk). However, the game must be recalibrated for each local scenario and as it is tailored to a group, it makes some basic assumptions about the productive opportunities open to farmers. The Participatory Integrated Climate Services for Agriculture (PICSA) project takes a similar approach for individual farmers, asking them to make a basic farm budget (Dorward et al. 2015). This has been widely requested by farmers and useful in understanding how different climate risks affect their farm output.

Many of the aggregators targeted in this training do not keep formal records of crop yield, production or profit, however they are much better aware of their annual costs and constraints than individual smallholders. The first exercise we developed was to extend the game into farm budgets for a variety of crops, looking at the impact of drought (or other climate hazards) on profits. The exercise is included in Appendix 3. It was aimed to strike a middle ground between those with full detailed records and the participatory approaches discussed above.

Farmer business risk mapping exercise

A major reported constraint to index insurance take up is the perception and reality of basis risk, which is where index insurance pay-outs (say from drought), don’t match observed damage (USAID, 2015). This is particularly important in cases where there are multiple risks affecting a customer (say drought, flood and prices).

This exercise (Appendix 4) was based on the commonly used business mapping tool (Curtis & Carey 2012), where the probability of different events happening is mapped against their impact. There are three aims to this exercise:

1. For insurance design. Weather index insurance is mainly suitable for scenarios with one overriding risk with massive consequence. It is less suitable for scenarios with multiple competing risks. This exercise allows insurance designers to see which risks are being covered by the insurance product and where sources of basis risk might occur.
2. For customer capacity building. This exercise leads neatly onto a discussion about basis risk and allows for a chance to check comprehension about the insurance design.
3. To understand the differing impact of different events. For example, the impact of low rainfall at the beginning of the season might be mitigated if a backup plan is in place for replanting.

Workshop participants

Workshop participants were selected either from existing/previous GAIP customers, or from those who had previously suggested interest but had not purchased any products. Aggregators were invited if they represented over 50 farmers or out-growers. The numbers represented by participants varied between 50 and 2000 farmers. Participants were also evenly selected from the three regions of Northern Ghana (Upper West, Upper East and Northern).

Comments on gender

GAIP could not find any female aggregators to invite; all of the aggregators on their books were men. This is indicative of the general gender bias within Ghanaian farming systems and challenges facing woman farmers. Contrary to the experience of several other operational programmes (Madajewicz et al 2015; Goslinga R. Personal Communication, Dec 2016; Baegant and Barrett 2016), GAIP have observed low demand for insurance by women in Ghana. However, they do not take gender-disaggregated statistics, so this evidence is anecdotal. At several points during the workshop, the trainers deliberately brought up the stories and experiences of women farmers. This caused a significant amount of discussion because they ran contrary to many of the participants' own experiences.

The comments above show the importance of the parallel gender and insurance work being conducted in CASCAID, to explore why women are or aren't purchasing insurance, to

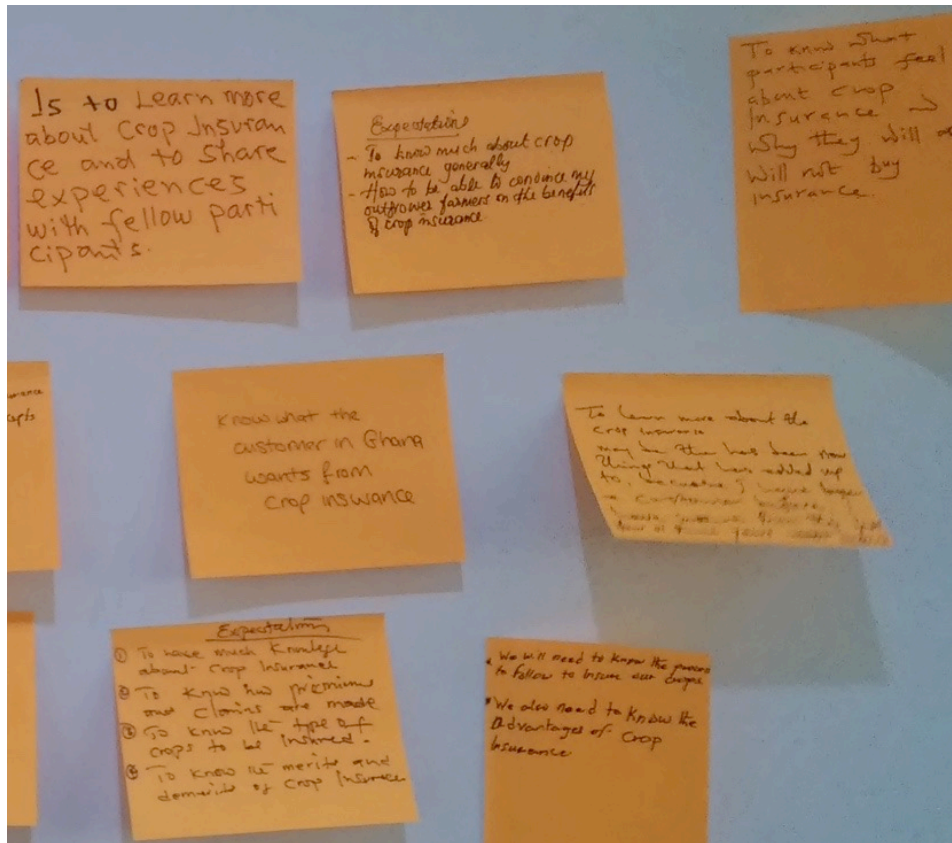


Figure 3. More requests from the aggregators for the training. Photo by H. Greatrex.

The workshop started with introductions between all parties, where participants' hopes for the workshop were captured on post-it notes (Fig. 2 and 3). These include:

- To learn about the different forms of crop insurance.
- To learn about the experiences of other farmers.
- On why farmers should insure their crops.
- To be more informed about GAIP.
- To understand the package and terms and conditions around GAIP contracts.
- On how weather and climate info is collected on farms.
- The consequences of climate change and how it can be mitigated on farm.
- To understand the conditions for a pay-out.
- To work out ways to share this knowledge with out-growers.

This was followed by a presentation by GAIP's underwriter, Angelina Yeboah about GAIP and agricultural insurance. It covered topics such as the history of crop insurance, the different products held by GAIP (drought and multi-peril), claims procedures, the benefits and

costs of insurance. Helen Greatrex then presented on the different types of insurance available across the world and how other agri-businesses are investing in insurance.

The two presentations were followed by a detailed question and answer session, where the participants were able to share their questions and viewpoints. Some of the aggregators had previously purchased insurance from GAIP and were able to share their experiences. These highlighted some common issues about insurance, for example, whether there should have been compensation or not in a given year. In other cases, crops were planted later than had expected, which misaligned them with purchased insurance coverage. This led to discussion on whether insurance should also cover bad practice (e.g. planting too late), and on the use of mobile technologies that could register and start a potential index on the farmer's actual planting date.

In the afternoon, the participants took part in the budgeting exercise (Appendix 3). It was explained that premise of the exercise was to examine which cases the insurance would make more money for the farmer. Figure 4 shows a similar example for a Mrs. Grace Alo, a pastor, head teacher and farmer in West Mamprusi, Ghana, which was used as an example. This example elicited some discussion because the aggregators in this training felt that groundnut was not a cash crop. It was decided that this difference could stem from either the difference in location (no participant was from West Mamprusi, but this area was considered to have very poor soil that needed a lot of fertilizer), the fact that groundnut is grown more by women in some areas (all the participants were men), or the fact that Mrs. Alo is a farmer as a side business, so has a different perception of a 'cash crop' to the commercial farmers present. This discussion highlighted the heterogeneous nature of farming in Ghana and that there will not be one "perfect" product covering everybody.

The budget template that the farmers were asked to individually complete is shown in Fig. 4. The results are not recorded in this report because the expenses were individual and private to each participant. The participants then worked together to make a similar table with general costs which could be used by CASCAID. This is shown in Figure 5. In general insurance was considered profitable for soy bean and rice. This was an interesting result because the main crop covered by GAIP is maize, as it's commonly described as the "main crop".

There was positive feedback for this exercise because few of the farmers had thought to examine the impact of climate on their businesses. There had been no prior formal

quantification on how much they were risking on climate sensitive activities. The younger participants in particular were surprised that some of their crops were not profitable due to drought. The tool was considered to be useful in understanding which crops would be best protected by drought insurance. Several of the participants stated that they would continue to build on their budgets outside the workshop environment.

Expense	Millet	Maize	Groundnut
Ploughing (cost grace charges for tractor rental)	50	50	50
Seed	0	36	120
Spraying (pre emergence and post emergence) - 30 each	0	60	0
Weeding labor	100	100	100
Fertilizer (3 bags, 2 Nitrate and 1 sulphate) at 100 per bag	0	300	0
Harvesting labor costs	30	30	3 in 10 bags
Effort/personal pref	Difficult and they don't want to eat millet	Easier and you eat & sell maize, so much more preferable	Seen as a cash crop, so profitable but risky. Need a loan
Use	To sell	to eat and to sell	to sell
Amount sold per bag (2015)	80	100	150
Bags in a good year	5	10	10
Bags in a bad year	4	4	3
Total cost of inputs in good year	210 (50+30+30+100)	570 (100+300+30+30+50+60)	720 (50+120+100+450) (150*3))
Total money made in good year	400 (80*5)	1000	1500
Total profit in a good year IF ALL IS SOLD	290	430	770
Total cost of inputs in bad year	210 (50+30+30+100)	570 (100+300+30+30+50+60)	720 (50+120+100+150) (150*1))
Total cost of outputs in bad year	320 (80*4)	200	450
Total profit in a bad year	110	-270	-270
Risk period	Late season	Early season	June
Coping mechanism now	Intercrop maize and millet	Intercrop maize and millet	You lose money or default. People have stopped growing groundnut

Figure 4. An example budgeting exercise for Mrs. Grace Alo in West Mamprusi. All money is recorded in Ghanaian Cedis. The exercise recorded by farmers in this training also included insurance payouts.

(-) = 2015

	Maize	Soya	Millet	Rice	Ghnut
Ploughing	50 (2000/1000)	50	50	100	50
Seed	48 (30)	80 (60)	0	140	0 (cheaply a sold)
Spraying	30	30	30	30	30
Weeding (Same ploughing)	50 (1000)	50	50	50 (50)	50
Fertilizer	136 (Nitrate) 220 N 100 P 320	140 (150)	MANURE 0 (150/1000 bags)	320 (same as Maize)	0
Harvesting	10% (1000) 10% (1000) 10% (1000)	10% (1000)	10% (1000)	10% (1000)	10% (1000)
Feeding stalks	10%	10%	10%	10%	10%
shelling	10%	10%	10%	10%	10%

Figure 5. Costs in Cedis for Maize, Soy bean, Millet, Rice and Groundnut in 2016 and 2015 (in brackets). Photo by H. Greatrex.

When the risk mapping exercise was presented to the participants, they decided that they would instead prefer to continue discussions around insurance logistics and design. This is indicative that in Ghana, customers are still unsure about the logistics and procedures surrounding insurance purchases.

The start of the second day was spent completing the insurance budgeting exercise, then on request, Helen Greatrex presented on satellite rainfall estimates within answering questions such as where they come from, how they are measured and how accurate they are. Most of the participants were aware that GAIP's rainfall insurance product was based around satellite rainfall data, but had not been given further details.

This was followed by a final discussion about insurance and how it might be useful to the participants. Several topics were discussed:

1. There was a debate about the merits of “invisible insurance” for out-growers, vs. visibly holding contracts for them.
 - “Invisible” insurance is essentially a meso level product, where the aggregator is insuring their own portfolio. It was argued by participants that the compensation in a drought year means that the aggregator does not need to chase out-growers to repay loans in drought years and allows them the confidence to expand their business. However, there were also concerns that out growers would not be officially contributing to the premium.
 - For “visible” insurance, the aggregator is holding the policy on behalf of the out-growers, who know they are covered. Advantages were stated that encourages out-growers to work with the aggregator and builds trust, but disadvantages were posed that it could increase moral hazard unless the out-growers fully understand the product. There were also concerns about the reputational risk of basis risk. Many of the participants felt uncomfortable taking all responsibility for explaining index insurance to out-growers.
2. The topic of liquidity was discussed, especially whether smallholder farmers (out-growers) could afford insurance and whether it was suitable for them. One aggregator suggested that his out-growers could pay him for the insurance premium in-kind, then he would purchase it in cash from GAIP. This technique could act as an informal (and

sustainable) version of the World Food Programme's Food for Insurance project (within the R4-Rural Resilience Initiative), where farmers can pay for their insurance premium in labor.

3. The participants stated that the GAIP index was considered to be very complicated and the aggregators would be interested in a simpler index that they could plan their activities around. There was interest in a coordinated approach with their supply chains, rather than them having to organize the insurance, credit and inputs individually.
4. Participants were unsure about the logistical challenges of insuring their out-growers. For example, the current policy is that GAIP staff would not be able to record the locations of thousands of out-growers, expecting this information to be provided by the out-grower. In another example, a farmer had experienced a basis risk event because their location had been wrongly recorded. It was suggested that there needs to be investment in better computing systems to prevent this type of error from happening in the future.
5. There was a further discussion around basis risk. In most of North Ghana, drought is not the sole and overriding threat that affects farmers; they are also vulnerable to floods and pests. Area yield and multi-peril indices were seen to be much more attractive by the aggregators.

Interesting facets of insurance language were uncovered. By the end of the workshop, about 80% of the aggregators were considering purchasing insurance in 2016, with some still unsure. However, every participant was interested in a bundled "replanting guarantee" with a new seed or fertilizer (product currently not offered). It appears that the bundling and the change in language made the insurance much more attractive. This effect has also been seen in other initiatives around the world, for example in ACRE Africa (GSMA, 2015).

The workshop finished with two presentations. Ms. Abigail Tettey presented the first on the 2015 CASCAID-352 research on farmer interviews and crop modeling. The final presentation was selected by the participants to be on the impact of climate change in Northern Ghana. There was a great deal of interest in this topic and a desire to learn more.

In the workshop conclusion, all participants stated that they were glad to have attended the workshop and that they would like similar trainings in the future. Most stated that they were better equipped to understand index insurance and several stated that they were more likely to consider it for their farmers and out-growers. There was a consistent request from all the participants to intensify education around insurance, for example to hold similar future workshops. However, to be sustainable past CASCAID time-lines, any training or marketing needs to be slotted within GAIP's existing practices and budget lines, or additional funding found. GAIP stated that they would assess the impact of themselves funding capacity building based on whether the participants showed further interest in insurance.

Summary

In summary, the workshop proved to be an effective method for reaching aggregators in Ghana. It allowed the participants to learn more about insurance and spend time with GAIP. It also allowed a feedback channel for them to air their compliments and concerns about their experiences with index insurance – this was the first opportunity the farmers had to provide feedback. Finally, the workshop produced interesting ideas and useful data for research, for example in the budgets or from the suggestion that aggregators could collect insurance premiums from out growers in-kind, then purchase insurance on their behalf.

Some of the tools of the workshop also proved effective. This was especially the case for the budgeting tool, which helped many of the aggregators quantify how climate sensitive their activities were and to see the role insurance could play. Other tools developed for the workshop were dropped at the request of the participants, who preferred open discussion on the topics that most worried them. As participants reported that they would discuss insurance with their out-growers, the workshop proved an effective way of reaching many thousands of smallholder farmers by proxy. However, for the activities in this workshop to be sustainable, a method must be found of utilizing the workshop discussions and tools in a more cost effective manner. A method must also be found of providing aggregators a way to explain insurance to their out-growers, which could link well into a “training of trainers” approach being promoted in other participatory programmes (R4, PICSA).

Appendix 1: List of attendees

Date: 5-6 May 2016

Location: Nim Hotel, Tamale, Ghana

Trainers:

Helen Greatrex (IRI),

Stephen Narh (UG-SIREC)

Abigail Tettey (UG)

Angelina Yeboah (GAIP, national underwriter)

Mr Aswad Mahama (GAIP, Northern Region marketing manager)

Attendees:

Mr Issifu Zibrila Kataomai Farms (Northern Region)

Mr Musah Athassan Gundaa Produce Comp. (Northern Region)

Mr Imora A'Tijani Green Belt Farms (Northern Region)

Chief P.T. Aluah Dido village (Upper East)

Mr Anaba Joseph Ariku's Com. Ltd. (Upper East)

Mr Atongo Philip Bongo Rural Bank (Upper East)

Mr Solomon Akampisi Akudugu Farms (Bazua- Binduri, Upper East)

Mr Rahim Bawa James Farms (Tumu, Upper West)

Mr Mahama Dramani Gbentu Farms (Bole, Upper West)

Mr John Mulnye E-nye Farms (Upper West)

Mr Atreque MubarakYahn Iddri Ent. (Upper West)

Mr Iddrisu Mac-Adams Maclog Ent. (Upper West)

Most of the attendees were representing between 50-1000 out-growers or customers, so a significant amount of farmers were reached through this group.

Appendix 2: Workshop Agenda

The agenda for the workshop was deliberately flexible in order to allow discussion and involvement by the participants. Much of the training comprised of discussions between all parties, for example to clarify examples or to discuss issues around insurance provision.

DAY 1

Introductions

Training on multi-peril and index insurance.

A presentation on the services offered by GAIP.

A presentation of other insurance initiatives around the world

Insurance Q&A

Discussions on the risks affecting your business with farmers – Budgeting exercise

DAY 2

Discussions on practically how the aggregators could work with GAIP

Presentation on other CASCAID activities

Presentation on climate change in Ghana

Appendix 3: Exercise - Budgeting for insurance

Instructions

1. Use the attached sheet to list all the costs associated with each crop in your business. Make sure to add everything you spent in the entire year.e.g. inputs, bank interest, electricity costs, petrol, labour etc. If you don't know the exact amount, then make an educated guess.
2. Now, for each crop, list all of your revenue for a different type of year. What is the total amount of money you received in a good year, a bad year and a catastrophe?
3. Subtract the costs to give your total profit in a good year, a bad year or a catastrophe
4. What do you mean by a bad year? Or by a catastrophe? Write a list, mark the most important risks for you. Examples: Low rain at planting? Rain break at flowering? Water logging? Low rainfall throughout? Fire? Flooding from a river? Heat stress? Hail? Other?
 - a. What are the consequences of a bad year? What are the consequences of a catastrophe?
 - b. Look back over the years you were in business. How often did each risk occur? Use the final sheet with the years marked, to note down your major loss years.
5. Insurance
 - a. Check with the insurer or workshop organiser how much the insurance premium will cost every year.
 - b. Look at what risks insurance will protect you against.
 - c. How often will the insurance compensate you? How much will it compensate you?
 - d. How does this compare to your bad years? Is it worth investing in the insurance?

Name of farm:					
COSTS IN 2015 FOR YOUR FARM OR PER ACRE					
	Maize	Groundnut	Soybean	Rice	Millet
Ploughing					
Seed					
Spraying (Weedicide)					
Fertilizer					
Weeding					
Insecticide					
Tractor fuel					
Other tractor costs?					
Loan - interest					
Harvesting itself					
Shelling/processing					
Other harvesting costs					
Other cost					
Other cost					
Other cost					
Other cost					
Other cost					


Name of farm:					
BUDGET IN 2015 FOR YOUR FARM OR PER ACRE					
	Maize	Groundnut	Soybean	Rice	Millet
Add up the GHS amounts in the costs sheet. What is the total cost you spent?					
How much do you sell each bag of grain for?					
How many bags did you harvest in a good year?					
LOOK AT THE COSTS SHEET: Calculate the amount of bags you used for costs in a good year					
How many bags are left for sale?					
Multiply the amount per bag by the number of bags for sale. This gives the total money from selling the seed					
Subtract the total GHS cost to give your profit in a good year					
How many bags did you harvest in an average year?					
LOOK AT THE COSTS SHEET: Calculate the amount of bags you used for costs in an average year					
How many bags are left for sale?					
Multiply the amount per bag by the number of bags for sale. This gives the total money from selling the seed					
Subtract the total GHS cost to give your profit in an average year					

Name of farm:					
BUDGET IN 2015 FOR YOUR FARM OR PER ACRE					
	Maize	Groundnut	Soybean	Rice	Millet
How many bags did you harvest in a bad year?					
<i>LOOK AT THE COSTS SHEET:</i> Calculate the amount of bags you used for costs in a bad year					
How many bags are left for sale?					
Multiply the amount per bag by the number of bags for sale. This gives the total money from selling the seed					
Subtract the total GHS cost to give your profit in a bad year					
How many bags did you harvest in a catastrophe?					
<i>LOOK AT THE COSTS SHEET:</i> Calculate the amount of bags you used for costs in a catastrophe					
How many bags are left for sale?					
Multiply the amount per bag by the number of bags for sale. This gives the total money from selling the seed					
Subtract the total GHS cost to give your profit in a catastrophe					
How often do you have a good year					
How often do you have a bad year?					
How often do you have a catastrophe?					


Year	Maize	Rice	G'nut	Soya	Other?
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					
2007					
2008					
2009					
2010					
2011					
2012					
2013					
2014					
2015					

Sheet 4/4

Appendix 4: Exercise - Risk mapping for insurance




RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security




CGIAR


Business Risk mapping

5-6 May 2016, Tamale

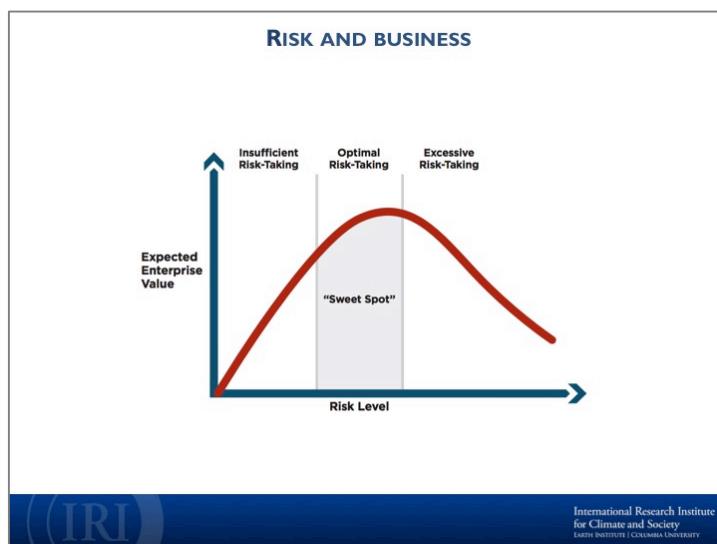




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THE ISSUE

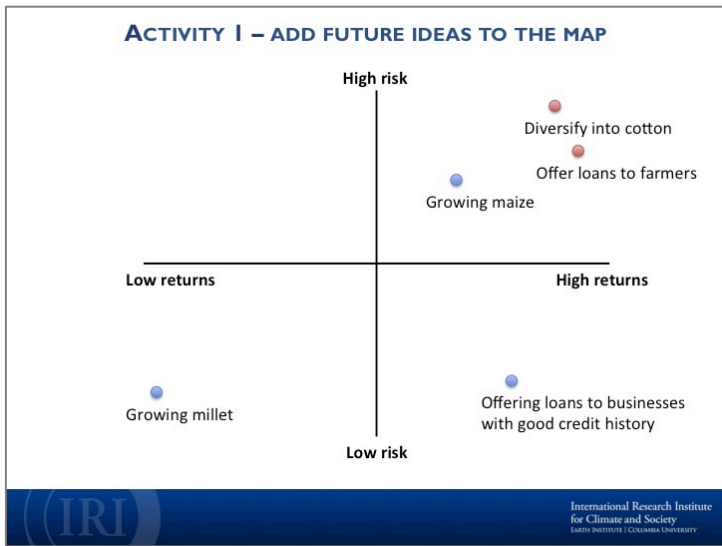
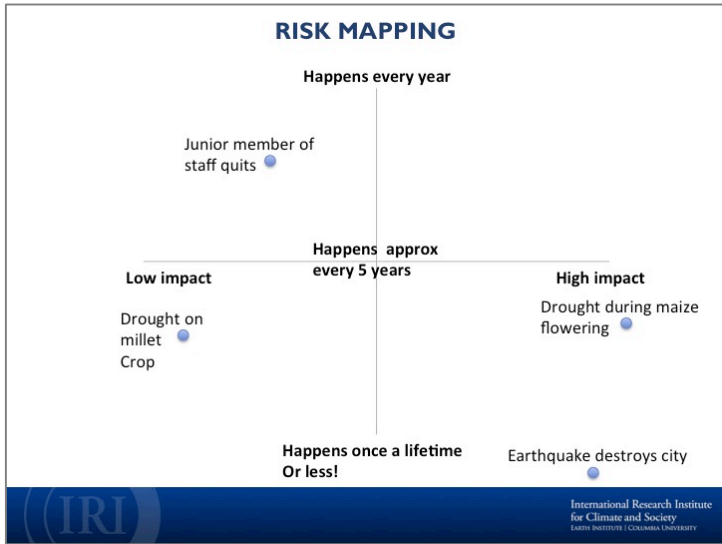
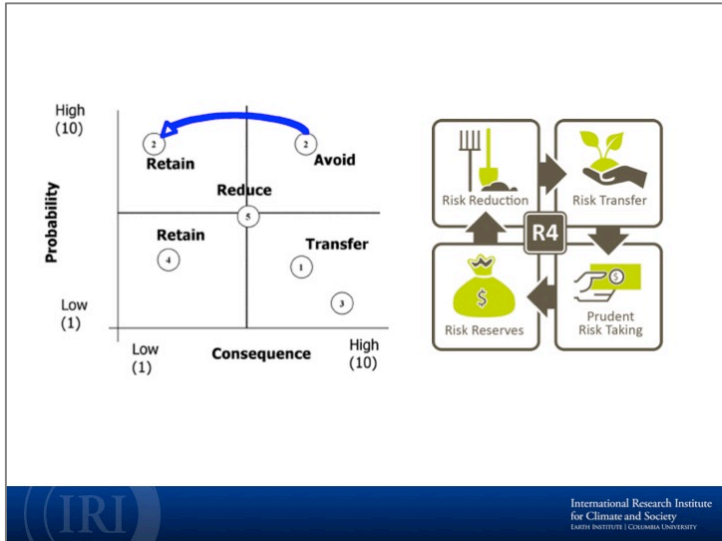


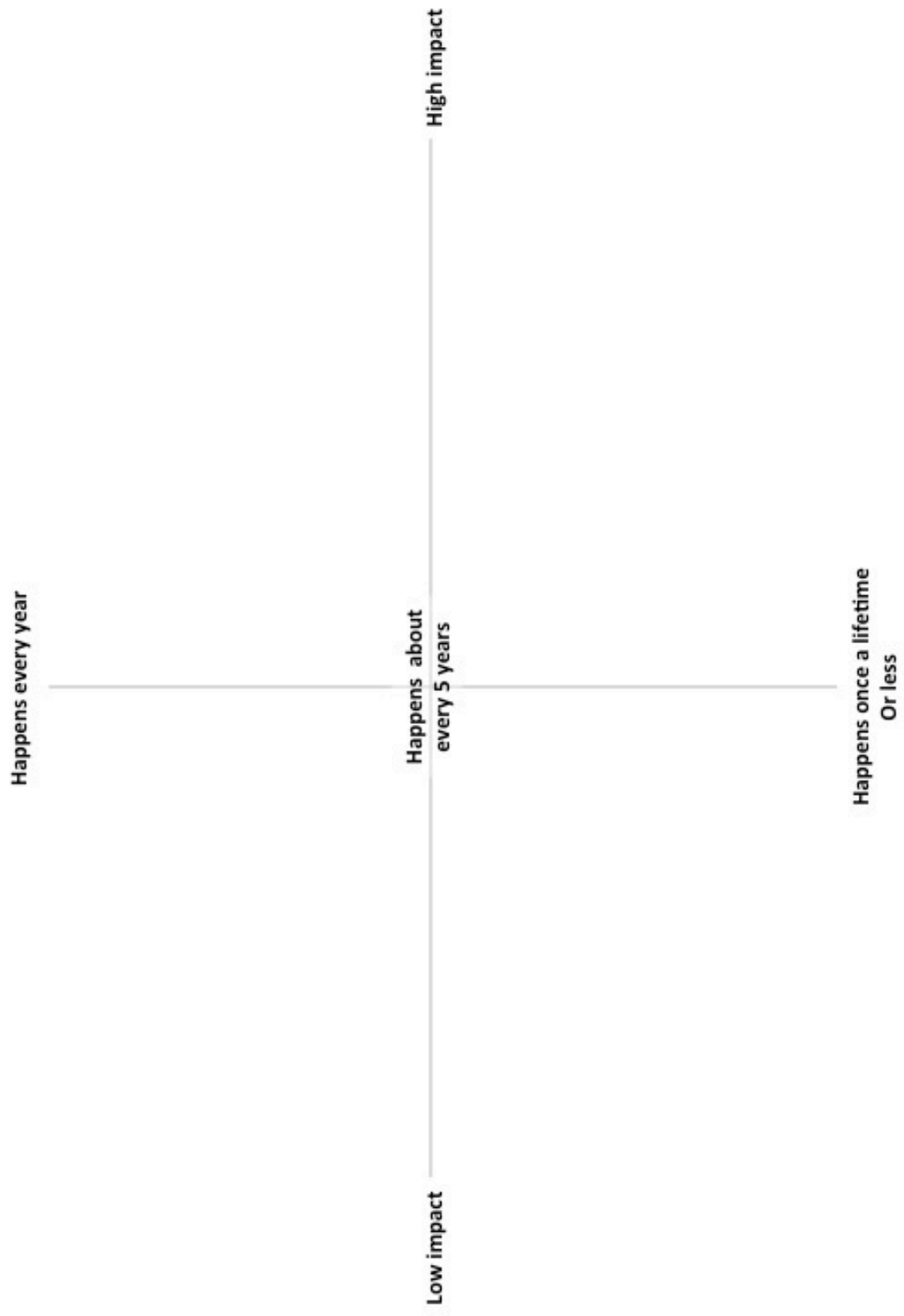
*"The problem is, that before the rainy season,
you have to make a choice.
If you make the wrong choice,
you risk losing everything."*

Oumar Sakho, Senegalese farmer



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