

**Notes on Focus Group Meetings with Farmers, February 10 and 11, 2012**  
**Eastern Province, Zambia**  
**IAPRI/Michigan State University, February 12, 2012**  
**USAID Funded Project: “Improved Modeling of Household Food Security Decision Making**  
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**February 10: Chipata, Chiparamba Camp**

The IAPRI/MSU team (Eric Crawford, Jeffrey Andresen, Jennifer Olson, Brian Mulenga (Research Associate at IAPRI), and Hambulo Ngoma (Masters student at UNIMA /Banda College)) first went to the Msekera Research Station of the Zambia Agricultural Research Institute (ZARI), arriving about 2:30. We met with Mr. Kennedy Kanenga, Programs Officer. Accompanied by his colleague and soil scientist Josephine Matibini, we then went to Chiparamba camp where we met ZARI officer David Likukela, along with Zone Leader Jackson Zulu and Camp Leader John Sakala. After introductions, the farmers were divided into groups of 10 men and 8 women. The meetings followed the guide developed by Jennifer and discussed with University of Zambia researchers Lydia Chabala and Rebecca Lubinda.. The discussion started about 3:30 p.m. (1530 hrs) and finished about 5p.m. A list of the farmers attending was compiled at the end of the meeting.

**Men, Chiparamba**

Interviewers Eric Crawford, Jeffrey Andresen, Brian Mulenga (facilitator of meeting), and David Likukila

**1. Impact of climate change on yields and crop mix**

Yields have increased as a result of several factors:

- Introduction of improved varieties that are suitable to the local area (e.g., early-maturing varieties)
- Provision of advice by extension officers, e.g., on correct spacing (1-2 seeds per pocket or “station” versus 4 previously). Conservation farming has also helped, across all crops. Regarding the yield gain of hybrid vs local varieties, one farmer stated that local varieties gave a yield of one ox cart (8 bags), while hybrid could give 8 carts (64 bags).
- Introduction of fertilizer and improved access to inputs through formation of farmer groups and government provision of input subsidies.
- When asked whether there have been yield declines recently, farmers said no, since improved management has helped them avoid production problems (e.g., pests).

The typical cropping calendar for maize is planting in late November, maturation (to green maize stage) in March, and harvest of dry grain in May. Rains typically occur in November to March.

Problems encountered include:

- Elimination of low-interest loans for input purchase
- Marketing: the area is distant from markets. When questioned about this, farmers said they were not actually far from Chipata, but traders who came to their area offered low prices, and the time and other costs associated with transporting their own crop output to market were too high.
- Now they can't grow crops without fertilizer, since the soil has gotten used to it.



## **2. Rainfall patterns**

Farmer responses included the following:

- Yes, rainfall patterns have changed. Rains used to start on Oct. 24 (a joke, this being a reference to Independence Day) and last until April/May. Recently, while rains may start in October, they may not be substantial until Nov or Dec. This season, rains came in October and some farmers planted, but then there was little rain until December.
- They started to observe these changes in the 1980s, with rainfall being especially unpredictable since 1991 (jokingly related to the advent of multi-party government, though the group in general mentioned 1991 because it was a major drought year).
- Other characteristics are more localized rainfall (some fields may receive rain and neighboring fields not) and long dry spells. For example, they used to have consistent rain in February (a crucial period for maize), but now can have damaging dry spells during that month.
- Regarding water levels, they said that levels were going down.

## **3. Temperature trends**

Farmers said temperatures are rising. Jeff asked about the pattern observed elsewhere—little change in daytime temps but higher nighttime temps—but farmers said they hadn't observed that.

## **4. Labor requirements and constraints**

In response to a question about which aspects of the farming system were most labor-intensive, farmers universally cited weeding. They said planting was easy, but weeding difficult, especially for families with a man, wife, and three small children. They grow a number of crops (maize, cotton, groundnuts) and weeds come to all of them at the same time. Hired labor is available, but there are no loans to support hiring of labor.

When asked about what new varieties or methods recommended by extension are potentially beneficial but difficult to adopt because of labor constraints, farmers cited potholing as an example. Potholing was

said to be very good but labor intensive and necessary to implement prior to the rainy season. If they try to do potholing on one hectare, they can manage to get only about half-done before the rains come. It was noted that families cannot focus only on agriculture; they have social obligations and other calls upon their time. Another example cited were careful measurement of fertilizer doses per plant, and recommendations regarding seed planting and thinning of plants per “station.”

When asked whether fertilizer is applied twice (basal plus top dressing), they said farmers usually apply fertilizer only after the seeds germinate, and then do top dressing when maize is knee high.

#### **5. Land availability**

Reference was made by the debate about whether Zambia’s many small farmers cultivating only about 1 hectare can effectively improve productivity and escape from poverty. The group was asked how much land a typical family would need for this to be possible. The majority said 2-3 hectares, but one individual said 5 hectares. They indicated that farmers could get more land, the problem was now to use it effectively. They noted that the focus of programs on large farmers is killing small farmers. They said that the government should take care of small farmers like they used to do.

#### **6. Access to markets**

A recurring theme was lack of available markets, with the dilemma being low prices offered by traders coming to their area, yet high costs and problems associated with doing their own marketing. For example, it would be hard for an individual farmer to find transport to take 10 bags of maize to the market, and not easy to group together several farmers to market together. Other problems are that transporters overcharge them when they perceive farmers as desperate to market their output, and buyers in Chipata offer low prices and do not weigh their produce honestly. The FRA depot is 10 km away and if a small farmer goes there, he/she may have to wait more than a day to have delivery taken—incurring costs of staying in town, paying someone to carry in the maize bags, and paying someone to watch the maize fields at home. They also mentioned the problem of “middlemen,” i.e., agents for traders in town, who are authorized to buy at a given price but offer less. Hence, lack of information about prevailing prices was cited as a problem. [Not clear why this would be true given the current prevalence of cell phones.]

#### **7. Adaptation to future climate change**

In response to a question about this, farmers said that they acknowledged that climate change posed a threat to them. They said they would adapt by planting suitable varieties at the right time. They hope research will supply extension with good technology and information, including weather forecasts. They noted that weather info is not well shared, and suggested that farmer groups should make this one of their objectives. They also mentioned the role of irrigation and increased planting of trees. They noted that rich farmers will be able to adapt much more easily than poor farmers. Rich farmers will be able to hire labor and do timely planting.

#### **Women, Chiparamba.**

Interviewers Jennifer Olson, Hambulo Ngoma (facilitator) and Josephine Matibini (from the Agricultural Research Station; she promoted some techniques during the talk).

#### **1. Crops, Farming System**

A. Changing farming system

- a. Because of declining rainfall, they have switched from local maize varieties to shorter season, hybrid maize, and to a new shorter season hybrid groundnut variety. The rains are coming later. Before, rains started in October/November, now they start December 25th. The local varieties require more water and a longer rainy season.
- b. Yields have declined because rains are starting late. The change in rainfall timing affects maize especially during silking, when maize needs regular rainfall. The rainy season ends a bit earlier now, as well.
- c. This is the usual time to harvest tobacco, but it is still too small.
- d. Plant spacing (plant population density) has changed. Plants are more closely spaced now following agricultural extension recommendations. This is more efficient, yields are higher.
- e. Conservation agriculture (planting in holes) is new, is coming in. It uses the maximum amount of water, and plants can grow even if there is not enough water. It is used mostly for maize (note below limitations due to labour requirements)
- f. Generally, yields, especially for maize, have declined. The big reason is the late start of rains, and dry spells during the rainy season. Now during silking, if they don't get rain, it could be a big problem.
- g. Yields are also declining because of soil degradation. The same crops are grown over and over again on the same field, and the soil gets poorer. They can't put on the full recommended dose of fertilizer. Manure is used some, especially in conservation agriculture.
- h. What is the most important cause of declining yields? Firstly, climate change. Second, low soil fertility; if you don't add fertilizer, you don't harvest anything. Third, you need to plant a shorter season maize variety or you risk a poor harvest.

B. Adaptation of farming to climate change

- a. Change to hybrid maize and groundnut varieties
- b. Late or early planting
- c. Conservation agriculture (pot holing) is good against heat but you can't put much land under conservation agriculture—it is too labour intensive. The alternative conservation agriculture technique mentioned is ripping. If you have a ripper (pulled by oxen), then it's ok. But, sometimes those people with oxen don't have a ripper, and those with a ripper don't have oxen. So they share—do one's fields and then the other's fields.
- d. An agroforestry project started here in 2010-11 and planted trees. But, there was no rainfall and the trees died.
- e. One lady went on a study tour to Swaziland and saw that they had constructed big dams used for electricity and for irrigation (even electric pumps for irrigation). If we had those, it would help allot against climate change.
- f. Projects introduce new techniques like cowpeas but just as we are starting to appreciate the techniques the project ends and they leave.
- g. We may end up switching from maize to cassava. We do need sweet potatoes that mature earlier. A few people got a new variety, but only a few people.
- h. Crops that are less vulnerable to climate change are sunflower, cassava, soybean and (newly introduced) upland rice. They don't need as much water.
- i. We could be forced to start irrigating.

C. Differences between rich and poor in impacts and adaptation



- a. Rich are as not as affected by climate and other changes. They can pay for fertilizers early in the season so get a better yield, and the crop is not as affected..
- b. Rich can use animal draught power and plant more land than the rest who use hand hoes. It is less risky for them.
- c. The rich can purchase new maize hybrid seeds every year, so their yields are higher.

## 2. Water

- A. Changes in water availability: last year, a well went dry for the first time. We notice that streams are much drier now in October/ November. Since the rainy seasons are shorter, there is less water in the streams.
- B. The government put in a new borehole paid by the government and by donors in a neighboring village. Also, a water company came and installed piped water into some people's houses, but others would come to their houses and ask for (free) water—it led to confusion.

## 3. Climate Change

### A. Trends

1. Rains are starting later, and ending sooner. We have breaks in the rains, for example now in February.
2. Temperatures have gotten hotter, this winter we didn't even sleep under a blanket. The past winter was hot. The heat can affect crops, it reduces yield.
3. February used to be cool with frequent rain. Now it is hot and it doesn't rain too much.

### B. When did the climate change?

1. Starting in 1991-92, when we switched to multi-partyism and democracy. That year, the rains stopped in February. Famine resulted, and maize was distributed.
2. There was another drought in 1998-99, and again in 2001.

### C. Other climate change impacts:

1. Pests and diseases have increased with climate change. For example, an insect that sucks sap from groundnut leaves is new here—it didn't used to be here. We use traditional chemicals to control them, and some natural pesticides from GANT.
2. There is out-migration from this area due to climate change. Also, in-migrants (returning migrants) leave.

### D. Other (Non-farm) Adaptation

Women's groups are helping against climate change. If you get a loan for a business (e.g., a shop, to make braids), you are not as reliant on crops. Women's groups can get

loans but only in very small amounts per person. We submitted a request over a year ago for an agroforestry project, but haven't received a response yet.

"We don't have any control over climate change. All we can do is diversify into other businesses."

#### D. Gender Differences

There aren't really any differences between men and women in impacts of climate change. For example, if you have to buy fuelwood (an oxcart of wood for ZMK 25-30,000), they both pay. Also, heavy downpours affect both men and women—heavy rains wash out soil and seeds of both men's and women's fields.

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### February 11, Mumbi

For the second focus group, the team traveled the next morning from Chipata to Petauke, then turned left off the main road at the sign to Kazala Basic School, going a distance of 21 km to reach Mumbi camp, part of Ongolwe block. We met the Block Officer, Enson Ng'ambi, and Richard Luunda, Camp Officer. Several of the farmers are members of the local ICRISAT farmers' group. After introductions, the farmers were divided in two groups, men and women. The group of male farmers was somewhat less articulate and engaged than the group at Chipata. The focus groups started about 10:15 and finished about 11:30.



### Men, Mumbi

Interviewers Hambulo Ngoma (Faciliator), Andresen, Crawford, and Luunda (Camp Officer)

#### 1. General background

Many of the households keep livestock, including cattle. The major cattle disease is East Coast Fever. It is expensive for farmers to spray animals against ticks. The cost is about ZMK 15,000 per animal. Three-quarters use animal draft power. There has been little adoption of conservation agriculture. Few families send their children to school, which Luunda indicated was a factor contributing to persistent poverty in the area. ICRISAT is doing on-farm demonstrations on improved groundnuts with farmers in the area, two of which were in the focus group.

#### 2. Yields

Local maize yields have been declining, since local varieties are late-maturing and hence affected by the shorter rainy season. Soil degradation was noted, including the effects of soil erosion and lack of crop

rotation. These problems were said to affect groundnuts as well as maize. The common variety of groundnuts (Chalimbana) is a long-season variety.

Some farmers use hybrid maize varieties, but “recycling” of hybrid seed is common. Hybrid seed is available but expensive, costing about ZMK 160,000 per 10-kg bag. New varieties of groundnuts are available (MGV4 and 5); they are short-season varieties that do well even if planted late. Sunflower has historically done well in the area, though yields have declined as soil fertility has declined. Luunda attributed the yield decline in sunflower partly to late planting.

Asked when these yield declines started, farmers said 1991, the year of a major drought. Pest attacks have also occurred in groundnuts.

### **3. Rainfall trends**

Farmers confirmed the same rainfall pattern as in Chipata. A government rain gage is located 15 km from the village. This year, rain started in October but stopped in Nov and Dec, until resuming in January. In general, the onset of rains has become more variable, and the variation in both amount and intensity of rainfall has become more extreme. February used to be a month of reliable rainfall, but less so recently. The area does not experience floods, but droughts are a problem. It was noted that fertilizer applied when it is dry can burn the crop.

### **4. Temperature**

Temperature extremes have increased. It used to be relatively cool during the rainy season, but now there are more hot dry periods. They have noted that the traditionally cool period of the year (June/July) has gotten warmer and shorter. They started noticing this in 2005.

### **5. Labor**

Weeding was also cited by this group of farmers as the most labor-intensive part of farming. Herbicide is used by very few farmers who are rich enough to afford it. Hired labor is available. The cost, e.g., for weeding, is ZMK 1,000 per “line” of 50 meters.

### **6. Land**

Average land holdings were said to be about 2 hectares. Asked the same question about how much land a typical family should have, farmers said 5 ha.

### **7. Adaptation**

Farmers mentioned that they are diversifying from crops to livestock, including pigs. Regarding leguminous crops to improve soil fertility, Luunda mentioned improved groundnuts and promotion of the Musangu tree.

## **Women, Mumbi**

Interviewers Brian (Faciliator), Jennifer, and Block Officer Enson Ng’ambi

## 1. Farming System

### A. Changes in farming system

1. Crops have changed: groundnuts yields have declined, while cotton, maize and sunflower have increased. Hybrid maize is now planted because it gets better yields.
2. Generally, yields have declined due to soil degradation, but also due to weather. The timing of the rains has changed. Rains used to start in October, but now they start around mid to late December. The rains used to end in April, but now they end in March. The rains changed since 2000. They are now unpredictable.



3. But, soil degradation is the worst problem that is affecting yields. Farmers who apply sufficient amounts of chemical fertilizer obtain better yields than those who do not apply sufficient fertilizer or do not apply any at all. When asked when they noticed soil degradation, the farmers indicated that they noticed the degradation in the 1980s. Manure is used if you can't get fertilizer, but it isn't used enough to reverse the degradation.
4. Asked which crop was most affected by the change in climate, farmers responded that groundnuts are hardest hit by climate change, whilst sunflower is the least affected.

### B. Adaptation

1. Those who plant early may get something, and those who plant later probably will get less. Now we plant early, in November, and use early maturing varieties for maize (Pannar 53, MG4) and for groundnuts.
2. Also, some people are using pot holing (conservation agriculture) because even if there is only a bit of rain it goes to the plant.

### C. Wealth Differences and Impact, Adaptation

Yes, there is a difference between rich and other families in the impact of climate change. Because of the shorter farming season, those with means can hire labour to

finish weeding and get higher yields. Those who can't hire labour, can't finish the weeding and their yields are lower.

Weeding is the biggest problem. We weed maize and sunflower twice, but weeding cotton is endless—it has to be clean. Even if you spray (herbicide), the weeds come back in 2 days (actually only one lady in the group has used spray, the rest can't afford it).

### **3. Water**

#### **A. Changes in water quantify**

1. Before, we would get water from the well using a simple pot, just reach down and get water. Now, the water is very deep! The rope is the length from the door to the door (of the church, around 20 metres long). We are using the same wells, those dug by the government. We can't dig new ones; it is now too deep to dig a well by hand.
2. Streams: some are dry completely. Others are still there but they dry up during the dry season.
3. The water declined starting in 2000, the same as for the rains.

#### **B. Impact of water decline**

We used to have gardens by the stream throughout the year, but now some streams dried up and those that have water tend to dry up quickly, so we no longer do gardening throughout the year. As a result, we have less food now. In January, February and part of March we don't have any more food. We used to have food saved through to the next harvest. The months we don't have food (Jan-March), we hire ourselves out as labourers and get a plate of maize meal. It is a dilemma—we need to work on our own field to get a harvest, but we have the immediate need for food.

### **3. Other Climate Changes**

1. The temperature is variable. Before, October was hot; now that month can be hot or it could be other months, too.
2. Before we had more rain storms, but now we have fewer storms. In January and February, it used to rain regularly, with small but frequent rainfalls. Now we get dry spells in January and February.
3. There was a severe drought in 1994. In 2009 there was a big flood, a dam was washed away.

### **4. Gender Differentiated Impacts**

The biggest impact of climate change on women is on their time. Now, we need to walk far to get water—even as far as to the other village—and stand in a long queue. You return with only one bucket of water but you are too tired to return to get another.

Also, fuelwood is scarce. Now all the trees are gone, we are resorting to cutting mango trees. One lady said that she noticed that she can't find mushrooms, caterpillars or wild vegetables in the forest as before—but that is due to deforestation not climate change.

### **5. Wealth Differential Impacts**

(Long discussion!). Yes, there is a difference between rich and poor in the impact of climate change, in how they can respond to climate change. They both use conservation agriculture to conserve the little water that there is. The better off can get a ripper (animal draught pulled) and cultivate a larger field. The rest use pot holing and a hand hoe, and so cultivate a small field.

Also, those that are better off can purchase fertilizer, and even if they don't have a clean field, they can get a harvest. Those without the ability to purchase fertilizer—even if they have a clean field—get little to harvest.

The Block Officer said that the weather forecasting information that he gets is often wrong. He gets the information frequently (daily?) but doesn't disseminate it because it can mislead farmers. For example, a drought was forecast in 2008 but it was a year of floods.