

Report for Mali Agribusiness Center  
Institut d'Economie Rurale (IER)  
Institut Polytechnique Rural de Formation et de Recherche Appliquée (IPR/IFRA)

**PRELIMINARY ASSESSMENT OF THE BORKO SEED POTATO PILOT PROJECT**  
Mali, West Africa

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HIGHER EDUCATION CHALLENGE GRANT

***USDA CSREES - HIGHER EDUCATION CHALLENGE GRANTS PROGRAM -***  
**New Paradigm for Application of Discovery-Based Learning:**  
**IMPLEMENTING BOTTOM-UP DEVELOPMENT**

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## EXECUTIVE SUMMARY AND RECOMMENDATIONS

The farmers, leaders, and women of Borko continue to support the development of a seed potato enterprise and are committed to the success of the project. Based on interviews with the six farmers who are producing seed potatoes in the pilot phase, as well as interviews with a small sample of other farmers and with the village leaders, it is clear that most of the people in Borko do not understand the nature of seed potato production process or the seed potato storage issues. Farmers recognize that they need more training on almost every facet of seed potato production. Additionally, some intervention is needed for seed potato storage for this first season. If the necessary training and storage assistance is provided this season, the project has a very good chance of developing into a sustainable enterprise. Without these two inputs, the seed potato enterprise is not likely to succeed.

The social impacts of the seed potato enterprise on the village could be assessed in only the most preliminary fashion since the seed potatoes were only planted a month ago and the people in the village had not yet experienced a complete growing cycle.

## INTRODUCTION

In 2009, the Sociology Team was asked to assess the social suitability of Borko as a site to pilot the development of the Malian seed potato enterprise. Madame Aissata Thera had previously assessed the essential physical and biological characteristics of the site as suitable for this pilot project, but needed to know whether the social characteristics of the village were such that the protocols for the seed potato project could be followed, thus ensuring the sustainability of the enterprise. At that time, the Sociology Team reported that the village leaders and farmers reported strong support for the project and that the farmers appeared to have the necessary motivation, skill as farmers and skill as business people to successfully sustain the new potato enterprise. In 2010, the Sociology Team was planning to visit Borko in order to assess the progress of the enterprise to date. Our questionnaires were designed to assess:

- whether there were any impacts of the new seed potato project that might jeopardize project sustainability;
- whether the farmers perceived a need for additional training (and, if so, in what areas);
- whether to disease identification procedures and diseased plant destruction were proceeding according to plan;
- and to see how the village was planning for some of the next steps in the seed potato production process.

This report includes an overview of the findings from the seed producing and non-seed producing farmer interviews, the village leader group interviews, the interviews with the women and the single interview with the person in commerce. The findings from the other interviews, other UST Team's work, and observations are incorporated in some of the analyses. The complete transcripts of the interviews are included in Appendices C, D, E, F and G.

## SEED PRODUCER FARMER INTERVIEWS-OVERVIEW

The six farmers who had been selected to be seed producers were interviewed first. Madame Thera asked us to do these interviews right away in case any relevant information came up that needed to be addressed in the training that was to occur later that day. We began by collecting some general information. We then asked questions pertaining specifically to: the production process, possible disease identification, the training that they had received prior to being given the seed potatoes, and questions about growing the seed potatoes. We concluded with final thoughts, comments, and questions from the seed producing farmers.

From the basic questions we found that besides growing seed potatoes the farmers were continuing to grow the same crops that they grow during the cold season including: garlic, onion, sweet potatoes, and tobacco. When asked how many seed potatoes they planted only half could give us the exact amount of 500 seeds. The others either did not know or gave us rough estimates. The answers again varied when we asked about the portion of their land that was used for the seed potatoes. Most were vague with either a small part or a part of the field. Two of the farmers offered specific answers. One had planted three lines of potatoes. The other informed us that six farmers were using a common plot of land. [Part of the difficulty of answering this question is that there were two common plots of land that were used] The majority of the farmers

were not using fertilizer. Two, however, admitted to using a compost variety of fertilizer. After learning the basic information on how much they planted and where they planted it we then moved on to their knowledge, thoughts and recommendations for the selection process. Three of the farmers believed they were chosen to be seed producers based upon merit. Three of the producers also believed that they had been selected by the elders of the village including the chief. Of the farmers that were asked if they wanted to be a part of the project all said yes. All of the respondents were satisfied with the allocation process of the seed potatoes. The recommendations we received from them included: wanting more seed potatoes to plant and giving more farmers seed potatoes.

At the request of Madame Thera we added a small section to the questionnaire entitled the seed production process. These questions addressed the farmers understanding of the processes involved in growing and storing seed potato plants. When asked what the next step after harvest was to be, only half of the seed producers knew that the potatoes needed to be stored or conserved. Two of the farmers were unsure and would like more training on the subject. One farmer was not asked this question. Only two of the seed producing farmers knew that it was necessary to plant the seeds for several generations before they could sell them to other farmers. Most of them did not know and again would like more training on the reasoning for the planting of several generations.

We then moved on to questions concerned with disease detection. Only one of the six seed producers said that he inspected his seed potatoes for disease. He did this visually once a week. The others either reported that they had no problems or did not inspect the plants. Again only one of the six farmers reported that anyone else had inspected the seed potato plants. He said that the chief had inspected his as well as everyone else's plants. All six of the seed producers reported that they had not found any diseases yet this season. However, many of them expressed the desire to have more training on disease identification.

Five of the six producing farmers received training from Madame Thera prior to receiving the seed potatoes. We asked the farmers for their general comments on the training that they received. We found that they now measure whereas before they did not. Most reported that they learned a lot about how to plant but not enough about the process that occurs afterwards. When asked what specifically they would like more training on a few mentioned: fertilizer and asked why it is necessary to measure the space between the seed potatoes. Most of the farmers informed us that they would not only like more training in general but put a strong emphasis on training for diseases and storage. When we assessed the satisfaction level of the training they received one did not attend the training so did not answer, one was not satisfied, two were satisfied and two were very satisfied.

Our final set of questions dealt with the general growing of seed potatoes and comparison to other cold season crops. We asked two basic growing questions to begin with. The first was asking about the water source. All of them reported the water came from a natural source and they put it on the seed potatoes from a trench or canal. The second question was regarding the proximity of tobacco plants. Due to a questionnaire error one farmer responded to the proximity of tomato plants and informed us no tomato plants were in the area. Most of the others reported that the seed potatoes were either surrounded by garlic or the tobacco plants were "far away."

Far away ranged from 20 meters to 100 meters away. Only one producer reported tobacco being in the vicinity of the seed potatoes and he estimated 10 to 30 centimeters away. After answering the couple of basic questions we moved on to questions comparing seed potatoes to other cold season crops. We found that compared to their other crops seed potatoes take the same or less amount of time in the field split evenly between the six farmers. As far as physical difficulty four of them felt it was easier while two felt it was the same as other crops. Many of the farmers compared the seed potatoes to sweet potato growth. A couple of differences that the seed producers mentioned are that seed potatoes require more distance between themselves than do their other crops. They also mentioned that seed potatoes can be harvested much earlier than the other cold season crops. Overall, three felt that growing seed potatoes changed their daily routine. They felt that because the seed potatoes are easier they are more efficient and make better use of their time. The remaining three reported no change in their daily routines. Most of the producers required no assistance from family or friends. Two reported minimal help from people of the village. All of the seed potato producers like growing the plants but could not mention any aspect in particular that they enjoyed. Only one farmer reported disliking an aspect of the seed potato production and that was the soil preparation. All six of the producers said that they will choose to grow the seed potatoes again next year. The reasons they gave were mainly profit, but also finishing a project you start. In finishing up this section we asked the producers if they would be interested in visiting other seed potato farmers. All of them said they would be interested in doing this. We also asked if they would be interested in having other seed potato farmers come to Borko to visit. Again all of them showed interest in this idea as well. We then asked if they had a preference. Three said they would rather have others visit, two had no preference, and one would rather go visit.

In concluding our interview we asked the seed potato producer if they had another other questions, concerns, or comments. All of them expressed their gratitude to all that were involved in the project. They are all happy to be a part of it and hope as we do for its success. The concerns that were brought to our attention include the following:

- This is the first time they are growing potatoes and would like help to increase their production.
- Interest was expressed to look into other crops that can generate profit and improve their condition.
- They would like the seed potatoes earlier next year.
- The measuring is very difficult.
- The farmers would like more training on this aspect.
- They would also like more information about storage.
- They would like to know effects, if any; fertilizer has on the seed potatoes.
- When the harvest is done, what do they do until next season? [Said will relay the question to Madam Thera.]

\*\* These were the interviews conducted by six different people. Some of whom had not been trained on use of the questionnaire\*\*

## NON-SEED PRODUCER FARMER INTERVIEWS-OVERVIEW

This interview was designed to give non-seed potato producers an opportunity to share their thoughts on growing seed potatoes. Six non seed potato producers were interviewed in order to have equal sample sizes (six potato producers were interviewed) but because one of the interviewees turned out to be a business man, only five interviews counted. The chief of the village gathered these persons and the three sociology team members interviewed two non seed potato producers each, one after the other. While the farmers producing seed potatoes responses are key to this project, giving farmer's not selected for the pilot the chance to share their knowledge about the project and give feedback in order to enhance the program was the reasoning for writing this questionnaire. This Questionnaire was divided into four main sections and it also provided a conclusion area where non seed potato producers could ask questions and give any comments they had.

The first section Basic Questions, served as way to get info on what crops they were producing, if they were using any fertilizers, whether or not they wanted to farm seed potatoes, their satisfaction with the process of allocating the seed potatoes to different farmers in the village and any recommendations they might have for the future. After all of the non-seed potato producers responded, it was evident that all farmers were planting the most common crops such as onion, garlic. Spud, cassava, and sweet potato were also some of the crops being planted by these farmers. One farmer had garlic and onion plus lettuce, tomatoes, eggplant, hot pepper, bananas, and herb. All wanted to be in the seed potato pilot this season and expressed an interest to do so in the future. They all were satisfied with the allocation process. When it came to recommendations, some said that they wanted more people to have the opportunity to produce seed potatoes while others had no recommendations.

The next section in the non-seed producer questionnaire dealt with Observations about Growing Seed Potatoes. In this section the goal was to find out if any of the farmers had the opportunity to watch any of the farmers growing seed potatoes and to see what their thoughts were about this. The questionnaire also contained a question that asked if non seed potato producers had helped the farmers with the seed potatoes in any way and whether or not they would get profit. The sociology team was instructed to remove the question about getting profits by one of the project leaders, so this question was not asked. Some of the farmers did see others planting seed potatoes and became interested in the project this way. Others had not seen other seed producers working. Two of the non seed potato producers helped others by preparing the parcel of the land, helping to plant the seed potatoes, or just everyday assistance of tending to the crops. Two did not help other seed producers in any way.

The third section was Training Questions. As the quality of training is vital to the success of the project, it was important to know whether non seed potato producers were interested in receiving training in the future, the best way to receive it (options were group training, one-on-one instruction, or a video), and who they preferred to conduct the training (options were another farmer from Borko, Madame Thera, or another Malian seed potato producer). While one farmer said that the method was unimportant to him, the others preferred group training. One man even told us that in his culture, there is no such thing as the individual so he would not choose one-on-one instruction. Two wanted Madame Thera to conduct training, two preferred another farmer

from Borko, and one reported that he just wants someone knowledgeable enough about seed potatoes to train him thoroughly.

The fourth section was Questions on the Effects of Growing Seed Potatoes on the Village. This section was intended to give non-seed potato producers an opportunity to share any effects the introduction of seed potatoes had on the village community. Originally, there were questions about whether or not they thought seed potatoes affected the village at all and if so, in what ways; if there had been any changes in relations in the village, and also wanted their opinion on whether seed potatoes would affect the village in the future. However, these questions were completely eliminated from the survey and were not asked. In their place, some other questions were added on behalf of the business team. The economics team was interested in how much farmers got for their crops at the markets, how many kilos of crops they would plant and later harvest in a certain sized area of three main crops: garlic, onion, and tobacco. One farmer sold garlic at the price of 1000 CFA/kg and his onion for 150 CFA/sack. He did not plant tobacco. Another farmer said that he sold garlic for 1100 CFA/kg and onion for 150cfa. The rest of the farmers had very similar responses. In terms of how much of these crops they would actually harvest at the end of the season, Two farmers said that he would get about 20-30 kg of garlic if he planted 5-8 kg. Another farmer said he could harvest about 30 kg of onion if he planted 4 kg. It was surprising to hear from another farmer that if he planted 5 kg of onion he could get in return 75-150 kg. These responses were extremely different.

Also added was a question that asked which of the three crops required the most fertilizer, the most water, and the most labor. For two farmers, onion required the most in each area while another said that garlic required the most labor, fertilizer, and water. Yet another farmer said that in terms of fertilizer there was no difference amongst the crops but said that garlic requires the most water and labor. As one can see, answers to this question varied from farmer to farmer.

Lastly, a question about other costs and problems associated with growing or selling any of these three crops. The responses to this question also varied greatly from farmer to farmer. Onions were reported to be difficult because they require cutting of the shoots and it was also reported that transporting compost are difficult if the farmer doesn't have a donkey. Another farmer said that prices tend to fluctuate and as a result so do profits. Two farmers experienced no problems with onions at all, and one of these farmers said that garlic becomes a hassle when it is time to be stored. All in all it appears that most of the farmers experience more problems with garlic than they do with onion. Most of the farmers did not grow tobacco. However one farmer did say that tobacco required the most water. The business team wanted to know if farmers were inclined to grow certain crops over others due to difficulties they may experience with them. For example, the farmers that experience difficulty with garlic may eventually stop planting and harvesting it completely.

At the end of the interview, the chance for participants to tell interviewers anything about growing seed potatoes in Borko was given and they were also able to ask any questions they had or that they wanted to be passed on to Madame Thera and the Mali agribusiness center. The farmers did not have any major comments but thanked the members of the project. Two farmers reiterated his hope that more potatoes be given to the village of Borko and that more people in the village have the opportunity to farm potatoes if they wish to do so.

At the end of the interview thanks were exchanged and the farmers left. After conducting the interviews it was clear that the people of Borko are eager to have seed potatoes to plant and harvest for food and profit in their village. The men who had not had the chance to be a part of the pilot program were even more sure that they wanted to be seed potato producers next cold season, should they get the opportunity. Although it seems that the majority of the men are successful with the crops they already produce (such as the usual garlic and onion), it would be beneficial to promote a crop that they believe will only have positive benefits for the village. It is important to note that even though they are unsure about various aspects of seed potato farming they are willing to go through training so that they can learn. As some of the non seed potato producers had the chance to see those who are producing seed potatoes at work and also had some experience in the fields themselves when helping, it seems that the non seed potato farmers would be good candidates for next season. Having had these experiences they know some things to expect and anticipate and have an advantage that pilot farmers this season did not.

#### VILLAGE LEADER GROUP INTERVIEW-OVERVIEW

Nine village leaders were assembled by the Chief of the village for the group interview. The group included several men from the mayor's office, including the mayor, the second mayor, the secretary general, the financial officer and an advisor. The Chief himself was present, as was the director of the school, the director of the medical post, and an animateur from an NGO who was in the village.

The leaders described the process of selecting the farmers for the pilot project. They said Aissata Thera and Adama Berthe told the mayor's office to select six farmers to be seed potato producers. The mayor went to the chief, who consulted with his advisors and together they selected the six farmers. The selection was based on merit; they selected farmers they thought would contribute to the success of the project.

Each of the six farmers was given 500 seed potatoes. The farmers actually worked together in groups of three, with 1,500 seed potatoes of a single variety planted in each of two parcels of land. The leaders said this was done to protect the seed potatoes from thieves. With only two plots to watch, they were able to guard the plots around the clock (two shifts) until the plants were established. The leaders and farmers thought this needed to be done to ensure the success of the project.

The leaders were asked several questions about plans for the next steps in the process. These questions proved difficult to answer. When asked whether they would follow the same procedures for selecting the seed potato producers the next time, when there would be many more seed potatoes, they said that they had only learned yesterday that these seed potatoes would be producing more seed potatoes. They said that they had not thought about this yet. They believed they would use a similar process, based on merit.

Likewise, the leaders had not yet planned for someone to systematically inspect the plants for disease. They preferred to have a technician perform this task. They thought the technician assigned to Borko might be able to help with this, but the Mayor noted that he had not yet met this person because the technician has been getting training in Bandiagara for many months. They also said they would prefer to have one farmer from Borko work with the technician solely

on the seed potatoes and be trained more fully. Since the technician will be working on all areas of agriculture in the village, they thought it would be best if at least one person focused only on the seed potatoes. The leaders also said they would be willing to select someone to monitor the distance between the tobacco plants and the seed potatoes.

The leaders had clearly given some thought to the question of ensuring a clean water supply for the potatoes. Rather than digging a well, which they said would be difficult in the sandy soil; they thought it would be best if water could be piped directly from a source (one of the springs in the area) to the seed potatoes. They noted that this would keep the water supply separated from anything that could contaminate the potatoes with disease and would make it easier to test and analyze the water being used.

In terms of training, the leaders said it would be very useful to have more training before the next planting time. They said that it is difficult to remember everything after Madame Thera leaves. The directeur of the school noted that one day of training is not sufficient for people who are not very well educated.

The leaders said they are planning to continue with the seed potato project.

When asked if they had other questions or concerns for Madame Thera and the Mali Agribusiness Center, there were several responses. The animateur asked what the minimum distance between the seed potatoes and tobacco/tomatoes/peppers should be. [Adama later provided the answer – twenty meters – to this gentleman.] Someone asked that since the seed potatoes had been brought from the lab, did that mean that they will go back to the lab after the harvest? They said that they would prefer to keep the potatoes in Borko if they can find possible storage.

Belco talked about the competition that has been developed between Niono and Borko in terms of seed potatoes. Most people in IPR think the seed potatoes should go to Niono, because it is closer to Bamako. But the Mali Agribusiness Center believes Borko is the better site for this. If Borko produces the better potatoes, IPR will be convinced that this is where the project should be developed, not Niono.

The Mayor asked if there were any other ways the ABC could help Borko, such as with honey or shea butter production. They still produce honey; they used to produce shea butter, but they do not any longer. Belco noted that these are two other areas focus for the ABC. The mayor then asked if there was any way to help with the mango, such as helping them with processing or storage. The problem he identified was that the mangoes all ripen at the same time. They produce enough, but they cannot consume or sell them fast enough. Sue said that perhaps whatever technology they decided to use for the seed potatoes could be used for storing mangoes as well. She also noted that a mechanism for drying fruit had been developed by a previous UST engineering team using simple materials that can be found locally and perhaps these plans could be used here. That was the last of the questions and concerns raised by the village leaders.

## WOMEN INTERVIEWS-OVERVIEW

Village women were assembled by the Mayor's Office for the group interview. We spoke to women in Borko because we know sometimes a change in the village, such as growing seed potatoes, can have an effect on women even if they are not growing seed potatoes themselves. We first asked basic questions about their ties to seed potato producers. We then moved on to questions that pertained to their observations about growing seed potatoes. The next section involved the effects the women had felt personally as well as the effects they'd seen on the village. In concluding the interview we asked them if they had any other concerns, comments, or questions.

We found that two of the women's husbands were seed producers. There were also two additional women whose family member was a part of the seed producing group.

Next we moved on to any observations the women may have had about growing seed potatoes. All of the women reported having had the opportunity to watch seed potato farmers. When asked whether or not they have helped the farmers with seed potatoes, some women said no, while others said yes, in that they brought lunch to the field. As we did with the producing and non-producing farmers, we asked if the women were satisfied with the allocation process of the seed potatoes and again asked for any recommendations they may have. Some had no comments on the allocation process, because they were not informed enough. Others were satisfied because they "knew" that more seed potatoes would come next season. These same women that were satisfied also recommend that more people be added next time. One group of women felt like it would be unlikely for an individual woman to produce seed potatoes. But, as a group they would be interested. Another group said they would be interested if they could get the seeds and the land. All of the women expressed an interest in growing seed potatoes in the future. However, they were unsure if getting a parcel of land would be possible.

Following the observations, we then questioned the women on effects both personally and communally. Thus far the women reported no personal effects. They hoped to be effected positively in the future by the income and food that would be provided by the seed potatoes. Looking at the effects on the village as a whole, minimal changes have occurred to date. All the women again felt that the seed potatoes had the potential to affect the whole village. Some were willing to give up their land and not grow garlic just seed potatoes and onions. Others felt that if you buy you have a food source if you sell you have an income. They do not believe the relations have changed among the people. Because, although only a few were selected the whole village is to reap the benefits.

Finally, we gave the women the opportunity to share any comments or concerns, and ask us any questions. The following were brought to our attention during this portion of the interview:

- The women would like seed potatoes;
- If they receive seed potatoes they would like instruction and training;
- The women would like a plot of their own. They would like their plot to be distinguished from that of the men;
- They also had a comment about the maternity house: it does not currently have solar

power and would like help with that.

Thanks were exchanged and the interview concluded.

#### COMMERCE INTERVIEW

We interviewed one gentleman who was involved in buying and selling onion and garlic in Borko and asked him numerous questions about the procedures and prices. What follows is a summary of his responses.

The trader works collaboratively with about ten other traders who live in Borko. They rent space in a small truck that comes to Borko. They travel with the truck to Mopti where the produce is weighed and transferred to a larger truck. They then travel with that larger truck to Bamako, where they sell the produce.

It costs 2000 CFA to transfer one large bag to Mopti and 20.5 CFA per kilo to truck the produce to Bamako.

He buys the onions in Borko for between 150-200 to 500 CFA per kilo. He buys garlic in Borko from 300-400 CFA to 1000 CFA or more. He was less forthcoming about the prices at which he sells in Bamako, noting that they fluctuate dramatically. He says that if he buys something for 500 CFA per kilo in Borko, he sells it for 550-700 CFA per kilo in Bamako. [Note: Belco noted these prices seem to be too low].

He said that there are no transport problems. They transport produce to Bamako up to ten times per year (he said five times per year at first). He has never used a refrigerator truck to transfer produce nor has he ever seen one being used.

When asked if he would be willing to transport and sell seed potatoes, he said that if he received a benefit he would do it.

When asked whether he thinks the seed potato enterprise will succeed in Borko, he replied it is too soon to tell. He said it depends on the people, but he can not affect the project. He noted that currently potatoes are not used for commercial purposes, only for consumptions.

The conversation turned to stealing and he said that it began in the village about ten years ago. For the most part, it seems to be young men in Borko who take garlic or onions after they are harvested from the field. When the culprits are caught, they must provide compensation to the farmer. If one bag is stolen, the culprit must pay back two bags. If the young man can not pay himself, his family must pay.

## STRATEGIC PLANNING – SWOT ANALYSIS: STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

While much of the information in this SWOT analysis can be found in other portions of this report, it can sometimes be helpful to see this information summarized in this useful strategic planning format. We are using the SWOT formula to highlight the information that needs to be addressed in order to ensure the sustainability of this project. We have expanded on the threats section because these are issues that need to be addressed immediately.

### Strengths:

- Enthusiasm, Motivation and Proven Commitment
- Farming Expertise
- Suitable environment [pathogen free soil and plentiful non-surface water]
- Business expertise and existing transportation practices for directly marketing and selling in Mopti and Bamako

### Weaknesses:

- No definitive plan for immediate seed potato storage after upcoming harvest
- Lack of training on disease identification
- Lack of training on harvest and post harvest storage
- Water Contamination

### Opportunities:

- Women would like a plot of land [another group committed to the success of the project]
- ABC could explore developing a collaborative relationship with the World Bank project coming to an end.
- Development of storage technology could be used for other crops that then could be stored more easily and sold

### Threats:

- Two of the farmers out of the 11 interviewed reported that they are currently growing a black potato they call spud
- Interest has peaked and it is possible more individual farmers will purchase and grow potatoes from other sources
- Another NGO delivered seed potatoes to the village. This poses a physical threat in terms of disease and depending on the relationship with this organization it could jeopardize the relationship with the Mali agribusiness center
- Proximity of tobacco. One farmer reported that tobacco plants were 10 to 30 centimeters away from the seed potatoes

## RECOMMENDATIONS

We offer the following recommendations based on our data and assessments.

- Clearly more training is necessary if this project is to be sustainable. Without this training the probability of failure is much more likely;
- That the training be as “hands-on” and concrete as possible; this is something that was noted by the director of the school, by the animateur of the village, and Filiba Bissan who is a student at IPR and also a teacher;
- Small group training is preferred;
- Training is needed in all of the following areas: how to plant the seed potatoes, watering practices, fertilizing, disease inspection and testing, removing and disposing diseased plants, harvesting, and preparing seeds for storage;
- Provide seed producers with a more comprehensive understanding of the seed potato production process. We recommend that you consult with an educator on how to best transmit the abstract information to this population;
- A decision needs to be made about the seed potato storage before the upcoming harvest;
- We recommend that for this first season the Mali Agribusiness center take at least half of the seed that is harvested and store it at IPR in the cooler that would provide the appropriate storage conditions;
  - Our rationale for this is that if traditional storage methods are used and all of the crop is lost, this could seriously undermine the project. If half of the potatoes are guaranteed to be available for next planting the momentum of the project will continue.
- The village needs to be provided with instruction on how to store the remaining potatoes;
  - The Mali Agribusiness center needs to meet with leaders of the village and consider the information provided by the engineering team. At this meeting they need to discuss the costs and benefits of each storage alternative and make a decision on what alternative they will use for the upcoming harvest.
- There needs to be someone in Borko who can be a technical point person for this project;
- The village would like this person to be a technician. It’s possible that the technician that has been assigned to Borko, but has not yet arrived in Borko, could fulfill this role;
  - We agree with the leaders’ assessment that someone is needed who will only focus on the seed potato project. The leaders suggested one farmer could be fully trained by this technician on seed potatoes. This is our recommendation as well.
- Clearly these are expert farmers and once they are fully trained they will be able to perform all training and monitoring functions themselves.

## CONCLUSION

Madam Thera has done an excellent job of convincing leaders and farmers in Borko that the seed potato venture will be a way to increase the income of people in the village. The people we talked to are happy to be growing seed potatoes and look forward to the continuation of this enterprise. The next steps are to ensure that the farmers are adequately prepared conceptually and practically to produce and store seed potatoes. Hopefully the data, assessments, the SWOT Analysis, and recommendations included in this report will contribute to the success of this endeavor.

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This project was made possible by a USDA Higher Education Challenge Grant and we are very grateful for their support. Special thanks go to Professor Florence Dunkel, the Principal Investigator for the grant, and to Dr. Kadiatou Gamby Toure, the Malian coordinator for all the projects associated with the grant.

Finally, we thank all of our colleagues in the Mali Agribusiness Centre: Belco Tamboura, Sidy Ba, Aissata Thera, Abdoulaye Camara, Keriba Coulibaly and Adama Berthe, with special thanks to Aissata for making this opportunity possible. We hope our project contributes in some small way to their important work.

## **Appendix A - Procedures**

### **The Questionnaires**

The sociology team initially prepared four questionnaires: one for farmers who were participating in the seed potato pilot project (Seed Producer Farmers); one for farmers who were not participating in the seed potato project (Non Seed Producer Farmers); one for the group interview with the village leaders; and one for the women in the village. The questionnaire for the farmers was sent to Mali Agribusiness members in November for review. All of the questionnaires were sent for review in early January. The French team prepared the translations. Madame Thera provided feedback on the questionnaires on the journey to Borko and a few questions or parts of questions were eliminated and a few questions were added. These changes were added by hand to the questionnaire copies. Additional questions were added to the Non Seed Producer Farmer Questionnaire to secure some information needed by the Business Team. The final versions of the questionnaires are in Appendix B.

### **Borko Site Visit**

The Sociology, Engineering, Business and French Teams were in Borko for 4 days and 4 nights. The teams arrived in the afternoon of January 14, accompanied by Belco Tamboura, Adama Berthe, Aissata Thera, Amadou Tamboura and two students from IPR, Illiassou Mahamane and Filiba Bissan. Madame Thera made the arrangements for our stay but had to depart early on January 16. All other team members stayed until early on the 18<sup>th</sup>. During this time the Sociology Team, with the assistance of others, interviewed 6 seed producer farmers (male) and 5 non-seed potato farmers, conducted one group interview with village leaders (male), two group interviews with women, one interview with a Borko business person who bought crops from Borko and transported them to Mopti, and spent three hours walking through the fields and village.

### **Potential Sample Bias**

All individuals interviewed in Borko were selected by Souleymane Kassambara and Issa Kassambara, or the village Chief, Ali Kassambara. Thus we are not able to assess whether our findings are representative of people in the village in general. Additionally, the deputy mayor was present -- and serving as one of the translators -- for many of the interviews. It is thus very likely that our findings disproportionately reflect the views of members of the mayor's office.

### **Translation and Other Methodological Issues**

It must be noted that the sometimes six way translation -- English to French to Dogon or Bambaran and then Dogon or Bambaran to French and then English -- no doubt meant that information was lost or changed slightly in the process. Not all interviews were conducted by the Sociology Team, nor were all interview notes recorded by the Sociology Team. Some interviews were conducted by individuals who had never seen the interviews before and were not trained in the social science methodology of interviewing. Additionally, some note takers were used who had not been given preparatory training on what to record in the interviews. While the nuances of communication were surely missed, the core of each person's responses was hopefully captured.

## **Appendix B – Questionnaires**

### **Pilot Farmer Questionnaire**

#### **Farmer Questions – for those in the Seed Potato Pilot (Seed Producers)**

Date\_\_\_\_\_ Time start \_\_\_\_\_Time end \_\_\_\_\_ Name \_\_\_\_\_

#### **Introduction**

Thank you very much for speaking with us today. We are very grateful to you. We'd like to introduce ourselves..... We are working on a seed potato project with the Mali Agribusiness Center in Bamako, of which Madame Thera is a member. The project is part of the Institut d'Economie Rurale (IER) in Sotuba and the Institut Polytechnique Rural de Formation et de Recherche Appliquée (IPR/IFRA) in Katibougou. We are from the University of St. Thomas in the United States. Some of us were here last January and we are happy see you again.

We are here in Borko because the village is beginning to grow seed potatoes and we want to see if this is a crop people want to continue to grow. We would like to ask you some questions about how you planted the potatoes, your thoughts on the training for this, and your opinions about growing seed potatoes so far. We will be giving this information to Madame Thera.

#### **Basic Questions:**

1. How many seed potatoes did you plant?  
  
Or [What was the size of the area in which you planted seed potatoes?  
  
Or [How many kilos of seed potatoes did you plant?
2. What other crops are you growing this cold season?
3. Are these the usual crops that you grow during the cold season?
4. What portion of your farming land was used for growing seed potatoes?
5. Did you fertilize any of your seed potato plants?  
  
If yes, what type of fertilizer did you use?
6. How was it decided that you would be one of the farmers to participate in the first phase of the seed potato project?
7. Were you satisfied with this process of allocating the first seed potatoes?
8. What do you recommend for the process of allocating the seed potatoes next season?

### **Production Process (PP) Questions:**

We would like to ask you a few questions about your understanding of the steps involved in growing seed potatoes.

PP 1. After you harvest the potatoes, can you tell us what the next step is?

[prompt] What is the next step?

PP 2. Can you tell us why it is necessary to plant the seed potatoes for several generations or seasons before selling them to other farmers?

### **Diseased Plants Questions:**

9. During the growing season, did you inspect your seed potato plants for disease?

If yes, ask: How often?

10. Did anyone else inspect your seed potatoes plants for disease?

If yes, ask: Who?

Did this person inspect everyone's seed potato plants?

How often did they inspect your plants?

11. Did you find any diseased potato plants during the growing season?

If yes, ask: About how many plants did you identify as diseased?

Did you or someone else test the plants with the test kits that Mme. Thera provided?

If yes, ask: Did the tests confirm that disease was present?

If no, ask: Did you find any plants that you thought might possibly be diseased ?

If yes, ask: Did you or someone else test the plants with the test kits that Mme. Thera provided

If yes, ask Did the tests confirm that disease was present?

**[If diseased plants were identified, ask questions below. Otherwise proceed to Training Section.]**

12. Did you remove the diseased plants?

If no, ask: Did you remove any of the diseased-looking stems or leaves?

13. Did you remove any other plants surrounding the diseased plants?

If yes, ask: About how many plants did you remove or about how large an area around the diseased plant did you remove?

What did you do with the diseased or diseased-looking plants or leaves that you removed?

14. What did you do with the potatoes that came from those diseased or diseased-looking plants?

**Training Questions:**

15. Did you receive training before planting the seed potatoes?

16. Can you offer comments on the training?

17. Did you find that you received enough training on the various aspects of farming seed potatoes?

- [prompts] ...how to prepare the soil before planting the seed potatoes?
- how to plant the seed potatoes?
- how to water the seed potato plants during the growing season?
- how to fertilize the seed potato plants?
- how to inspect the seed potato plants for possible diseases?
- how to test the seed potato plants for possible diseases?
- how to remove and dispose of the diseased seed potato plants?
- how to harvest the seed potatoes?
- how to prepare the seed potatoes for storage?

18. Would you like additional training on these or any other areas of growing seed potatoes?

If yes, ask:

Please explain.

19. Overall, how satisfied were you with the training for the seed potato pilot program?

Very satisfied ..... Satisfied ..... Not satisfied

**Questions on Growing Seed Potatoes:**

20. Where did you get the water you used to water the seed potatoes – was it from a well, from the irrigation canals, or somewhere else?
21. How far away were the closest tomato plants to where you planted the seed potatoes?
- Please compare growing the seed potatoes to growing the other crops you plant during the cold season.
22. Overall , would you say that growing seed potatoes:
- Takes more time in the field? ... takes less time in the field? ... takes about the same amount of time?
- [If takes more time, please explain.]
23. Overall, would you say that growing seed potatoes:
- Is physically harder work? ... is physically easier work? .. is about the same?
- [If physically harder work, please explain.]
24. Was there anything else that was different about growing seed potatoes (compared to your usual cold season crops)?
25. Did you ever require more assistance from family members or friends (in growing seed potatoes compared to your usual cold season crops)?
- If yes, ask]: Please describe this assistance – how many people, who, how often, for what tasks?
26. Did growing seed potatoes change your daily routine (compared to growing your usual cold season crops)?
- If yes, ask]: How? Please describe.
27. Were there any aspects of growing seed potatoes that you particularly liked?
28. Were there any aspects of growing seed potatoes that you did not like?
29. Will you choose to grow seed potatoes again next year?
- If yes, ask: Why?
- If no, ask: Why not?

- 30. Would you be interested in visiting other seed potato farmers?
- 31. Would you be interested in having other seed potato farmers come to Borko to visit?
- 32. If you had a choice, would you rather go visit farmers or have other farmers come to Borko?

**In conclusion, then:**

- 33. Is there anything else you would like to tell us about your experience growing the seed potatoes?
- 34. Do you have any questions for us?

## **Non-Pilot Farmer Questionnaire**

### **Non-Pilot Farmer Questions – for those not in the Seed Potato Pilot (non-seed producers)**

Date \_\_\_\_\_ Time start \_\_\_\_\_ Time end \_\_\_\_\_ Name \_\_\_\_\_

#### **Introduction**

Thank you very much for speaking with us today. We are very grateful to you. We'd like to introduce ourselves..... We are working on a seed potato project with the Mali Agribusiness Center in Bamako, of which Madame Thera is a member. The project is part of the Institut d'Economie Rurale (IER) in Sotuba and the Institut Polytechnique Rural de Formation et de Recherche Appliquée (IPR/IFRA) in Katibougou. We are from the University of St. Thomas in the United States. Some of us were here last January and we are happy to see you again.

We are here in Borko because the village is beginning to grow seed potatoes and we want to see if this is a crop people want to continue to grow. As a farmer who did not grow seed potatoes yourself this season, we would like to ask you some questions about your thoughts on growing seed potatoes and your ideas. We will be giving this information to Madame Thera.

#### **Basic Questions:**

1. What crops are you growing this cold season?
2. Are these the usual crops that you grow during the cold season?
3. Did you fertilize any of your crops?

#### **If yes, ask:**

On which crops?

What type of fertilizer did you use?

4. Would you be interested in growing seed potatoes in the future?

#### **If yes, ask:**

What portion of your farming land would you like to use for growing seed potatoes?

Do you think you will have the opportunity to grow seed potatoes in the next cold season?

Why? (or why not?)

#### **If no, ask:**

If the seed potatoes turn out to be more profitable than what you are growing now, will you consider growing seed potatoes in the future?

If the seed potatoes turn out to be more work to grow than what you are growing now, will you consider growing seed potatoes in the future?

5. Were you satisfied with the process of allocating the first seed potatoes to farmers?

6. What do you recommend for the process of allocating the seed potatoes next cold season?

**Observations about Growing Seed Potatoes:**

7. Have you had an opportunity to watch any of the farmers who are growing seed potatoes this season?

**If yes, ask:**

What are your thoughts about this?

8. Have you helped the farmers with the seed potatoes at all?

**If yes, ask:**

In what ways?

Will you get some of the profit from the seed potatoes?

**Training Questions:**

9. If you grow seed potatoes in the future, would you want to have training on growing the seed potatoes?

**If yes, ask:** What aspects would you like training on?

[prompts]

- how to prepare the soil before planting the seed potatoes?
- how to plant the seed potatoes?
- how to water the seed potato plants during the growing season?
- how to fertilize the seed potato plants?
- how to inspect the seed potato plants for possible diseases?
- how to test the seed potato plants for possible diseases?
- how to remove and dispose of the diseased seed potato plants?
- how to harvest the seed potatoes?
- how to prepare the seed potatoes for storage?

In your opinion, what would be the best way to have this training?

**[Prompts]** ... a group workshop? ... one-on-one instruction? ...a video?

10 Who would you like to conduct the training?

**[Prompts]**....Another farmer from Borko? ...Madame Thera?... another Malian seed potato farmer?

**Questions on the Effects of Growing Seed Potatoes on the Village:**

11. In your opinion, has the growing of seed potatoes affected the village at all so far?

If yes, ask: How?

12. Have there been any changes in relations among people within the village?

If yes, ask: What specifically?

13. In your opinion, do you think growing seed potatoes will affect the village in the future?

If yes, ask: How?

14. About how many CFA do you receive for 1 kilo of:

-Garlic

-Onion

-Tobacco

15. In a field this size (patio area) how many kilos would you expect to plant of:

-Garlic

-Onion

-Tobacco

16. In a field this size (show patio area) how many kilos would you expect to harvest of:

-Garlic

-Onion

-Tobacco

17. Of the three crops onion, garlic, tobacco—which requires the most:
- Fertilizer
  - Water
  - Labor
18. Are there any other costs or problems associated with growing or selling
- Garlic
  - Onion
  - Tobacco

**In conclusion, then:**

- 19.. Is there anything else you would like to tell us about growing the seed potatoes in Borko?
20. Do you have any questions for us?

## **Village Leaders Questionnaire**

### **Village Leaders Questionnaire – to be asked in a group (focus group)**

Date \_\_\_\_\_ Time start \_\_\_\_\_ Time end \_\_\_\_\_ Names \_\_\_\_\_

#### **Introduction**

Thank you very much for speaking with us today. We are very grateful to you. We'd like to introduce ourselves..... We are working on a seed potato project with the Mali Agribusiness Center in Bamako, of which Madame Thera is a member. The project is part of the Institut d'Economie Rurale (IER) in Sotuba and the Institut Polytechnique Rural de Formation et de Recherche Appliquée (IPR/IFRA) in Katibougou. We are from the University of St. Thomas in the United States. Some of us were here last January and we are happy see you again.

We are here in Borko because the village is beginning to grow seed potatoes and we want to see if this is a crop people want to continue to grow. We would like to ask you some questions about how the process of growing seed potatoes is going. We will be giving this information to Madame Thera.

#### **Basic Questions:**

1. We understand that 3 000 seed potatoes arrived in Borko in early December . Is that correct?
2. When did farmers begin planting the potatoes?

#### **Distributing the Seed Potatoes:**

3. How was it decided which farmers would receive the seed potatoes to plant in this first phase of the seed potato project?
4. Last year, you had said that you hoped the elders would be involved in deciding on the distribution of the seed potatoes to the farmers. Were the elders involved in this process?
5. How many different farmers received the seed potatoes?
6. Did every farmer receive about the same amount of seed potatoes or did different farmers receive different amounts?

**If different amounts, ask:** How was it decided what amount farmers would receive? What was this based on?

7. Did people in the village seem satisfied with this process of allocating the first seed potatoes?

8. When the seed potatoes are harvested and stored at the end of this growing season, there will hopefully be many more seed potatoes than the original 3000 seed potatoes (even if many do not survive the storage process). What are your recommendations for allocating the seed potatoes next season?
9. Will the same farmers receive all the seed potatoes again or will other farmers receive some of the seed potatoes?

**If other farmers will receive some of the seed potatoes, ask:** Will the other farmers have to purchase the seed potatoes from the farmers who grew the seed potatoes this year or will they receive them at no cost?

**If the same farmers will receive all of the seed potatoes again, ask:** How will other farmers be able to become involved in growing seed potatoes?

### **Training Questions:**

10. Do you think that the farmers received enough training on the various aspects of farming seed potatoes?
  - [prompts]
  - how to prepare the soil before planting the seed potatoes?
  - how to plant the seed potatoes?
  - how to water the seed potato plants during the growing season?
  - how to fertilize the seed potato plants?
  - how to inspect the seed potato plants for possible diseases?
  - how to test the seed potato plants for possible diseases?
  - how to remove and dispose of the diseased seed potato plants?
  - how to harvest the seed potatoes?
  - how to prepare the seed potatoes for storage?
11. Would you like additional training on these or any other areas of growing seed potatoes? If yes, ask: Please explain.

### **Questions on Growing Seed Potatoes:**

12. If the water from the canals turns out to not be good for the seed potatoes, will the village as a whole dig wells for the seed potatoes or will each farmer be responsible for digging his own well?
13. Is there a farmer or person in the village who will take the lead in monitoring the seed potato plants for disease?

**If yes, ask:** Who will that be?

**If no, ask:** How will the monitoring for disease take place?

14. Is there a farmer or person in the village who will take the lead to make sure that tomato plants are not planted too close to where you planted the seed potatoes?

**If yes, ask:** Who will that be?

**If no, ask:** How will you make sure that tomato plants are not planted too close to potato plants?

15. If a farmer sees that a seed potato plant appears to be diseased and removes the plant and the surrounding plants, will he be able to keep and eat the potatoes or will they be divided up among other villagers?

**If they will be divided up, ask:** How will they be divided up?

16. In your opinion, at this point in time, do you think it is a good idea for the village to continue with the project and grow seed potatoes again next year?

**If yes, ask:** Why?

**If no, ask:** Why not?

**In conclusion, then:**

We would like to ask you what you see as the positives and negatives about the seed potato project so far, in terms of its effect on the village and villagers. [**Interviewer note:** if the response to Question 16 and other questions above has been thorough, Questions 17 and 18 below may not be needed]

17. First, what do you see as the positive aspects?
18. What do you see as the negative aspect?
19. Is there anything else you would like to tell us about the village's experience growing the seed potatoes so far?
20. Do you have any questions for us?

## **Women Questionnaire**

### **Women Questions – for women in the village**

Date \_\_\_\_\_ Time start \_\_\_\_\_ Time end \_\_\_\_\_ Names:

#### **Introduction**

Thank you very much for speaking with us today. We are very grateful to you. We'd like to introduce ourselves..... We are working on a seed potato project with the Mali Agribusiness Center in Bamako, of which Madame Thera is a member. The project is part of the Institut d'Economie Rurale (IER) in Sotuba and the Institut Polytechnique Rural de Formation et de Recherche Appliquée (IPR/IFRA) in Katibougou. We are from the University of St. Thomas in the United States. Some of us were here last January and we are happy see you again.

We are here in Borko because the village is beginning to grow seed potatoes and we want to see if this is a crop people want to continue to grow. We are speaking to women in Borko because we know sometimes a change in the village, such as growing seed potatoes, can have an effect on women even if they are not growing seed potatoes themselves. We would like to ask you some questions about this as well as your thoughts on growing seed potatoes. We will be giving this information to Madame Thera.

#### **Basic Questions:**

1. Is your husband growing seed potatoes?
2. Is anyone else in your family growing seed potatoes?

#### **Observations about Growing Seed Potatoes:**

3. Have you had an opportunity to watch any of the farmers who are growing seed potatoes this season?

**If yes, ask:** What are your thoughts about this?

4. Have you helped the farmers with the seed potatoes at all?

**If yes, ask:** In what ways?

Will you get some of the profit from the seed potatoes?

5. Were you satisfied with the process of allocating the first seed potatoes to farmers?
6. What do you recommend for the process of allocating the seed potatoes for the next cold season?

7. Last year some women we spoke to said that they would be interested in growing seed potatoes. Do you know if any women asked for land on which they could grow potatoes or other vegetables?

8. Would you be interested in growing seed potatoes in the future?

**If yes, ask:** Would you be able to use any of your family's farming land for growing seed potatoes?

Do you think you will have the opportunity to grow seed potatoes in the next cold season?

**Effects of Growing Seed Potatoes on You Personally:**

9. So far, has the seed potato project had any effect on your life?

10. Do you have any new responsibilities?

11. Do you have less time for your old responsibilities?

12. Has the project lightened your work load at all?

13. Has the project affected your children in any way?

14. Looking ahead, do you expect the seed potato project to have any effect on your life in the future?

**Effects of Growing Seed Potatoes on the Village:**

15. In your opinion, has the growing of seed potatoes affected the village at all so far?

If yes, ask: How?

16. Have there been any changes in relations among people within the village?

If yes, ask: What specifically?

17. In your opinion, do you think growing seed potatoes will affect the village in the future?

If yes, ask: How?

**In conclusion, then:**

18. Is there anything else you would like to tell us about growing the seed potatoes in Borko?

19. Do you have any concerns?

20. Do you have any questions for us?

**Appendices C through G** The completed questionnaires are not available in the public version of this report (human subjects protection).