

**Trip Report on Implementation of the Economics Baseline Survey under the Gates
Foundation Cowpea IPM Project in Benin; May 30, 2015 to July 14, 2015**

By Michael Agyekum

Highlights

- Implementation of the economics baseline survey and choice experiments across Benin was successful, focusing on extant cowpea pest control methods and farmers' preferences for biological versus chemical pest control strategies.
- The field surveys were executed with ODK electronic data collection software using Tablets. With this technology, survey data become available for analysis in a timely fashion compared to using conventional paper-based questionnaires for surveys. The technology and software were effective and will be used in the future by the team and INRAB.
- The survey yielded 504 face-to-face interviews with small-holder cowpea-producing households located in 24 farming communities across Benin.
- U.S. researchers (from MSU and UIUC) joined a team of dedicated local project collaborators in Benin (from IITA-Benin and INRAB) to conduct the field surveys. Invaluable efforts from the local collaborators were pivotal to the success of the survey.
- Field observations indicate that growing pest resistance to chemical pesticides is a major problem common across the important cowpea-producing communities in Benin. As a result, a number of farmers resort to highly toxic chemical pesticides originally developed for non-food crops such as cotton and not food crops like cowpea.
- The urgent need for effective and safe biological pest control strategies to replace chemical methods cannot be overemphasized. Farmers' reaction to the Gates-funded cowpea IPM project is positive and this has promising implications for efforts to achieve food safety, household food security, and improved public health in the West African sub-region and beyond.

1. Introduction

Over the period May 30, 2015, to July 14, 2015, Dr. Michael Agyekum (research associate at Michigan State University (MSU)) and Ms. Loredana Horezeanu (graduate student at the University of Illinois at Urbana-Champaign (UIUC)) traveled from the United States to Benin, West Africa. The purpose of the trip was to work with local project collaborators to implement the baseline and farmer choice experiment surveys under the economics component of the Gates-funded Cowpea IPM Project (see Appendix 1 for definition of acronyms used in this report). Originally scheduled in Year 1 of the project, this activity overlaps Years 1-2.

The choice experiment part of the survey involved a set of questions eliciting farmers' pest control decisions based on various plausible scenarios on pest attacks and alternative pest control strategies. Scenarios that were designed in the experiments entailed different mix of costs, labor input, harvest losses, and health problems associated with each pest control strategy. The methods of pest control presented to farmers were broadly biological control strategy (i.e. combined use of wasps and neem oil biopesticides) versus the status quo approach (i.e. conventional application of chemical pesticides). We believe that data from the choice experiment will help us to predict whether farmers will adopt the biocontrol IPM strategy; as we will be able to understand important factors that underpin farmers' decision to adopt new pest control measures.

In addition, the baseline survey focused on documenting the existing cowpea production characteristics in Benin. This part of the survey gathered data on cowpea pest control methods, production levels (grain harvest), household demographics, household assets, household vulnerability to food insecurity, among other important indicators of household food security and welfare. These ex-ante socio-economic data provide the necessary reference information that will be used in developing the financial and economic analysis of the potential impact of the biocontrol IPM program after its roll out in September/October, 2015.

Prior to travel, researchers developed drafts of the baseline survey and choice experiments, with the assistance of Dr. Frank Lupi at MSU, using electronic communication to interface with the Benin-based team. This enabled the team to arrive and immediately begin testing and adapting both the survey instrument and the choice experiments. Use of ODK survey-data technology enabled rapid and efficient editing of both during interactive sessions.

The field survey was preceded by meetings with local collaborators at INRAB and IITA (see Appendices 2 and 3 for the team) to discuss the following project activities: interviewer training, pretesting of questionnaires uploaded onto Tablets using the ODK electronic data collection application, as well as logistical needs of the field survey implementation.

Owing to frequent rains in Southern Benin during the survey implementation period, the field team decided to begin the survey from the study areas located in the North; working toward the South. By the end of the field survey, 504 farm households were interviewed, comprising 21

households per village, 2 villages per study area, and 12 study areas distributed across 3 zones in Benin, namely North, Center, and South. Thus, 24 cowpea-producing villages across Benin were covered. Also, all project related expenditures were within budget.

In what follows, a narrative of the field survey implementation in Benin is presented.

2. Trip Activities in Benin

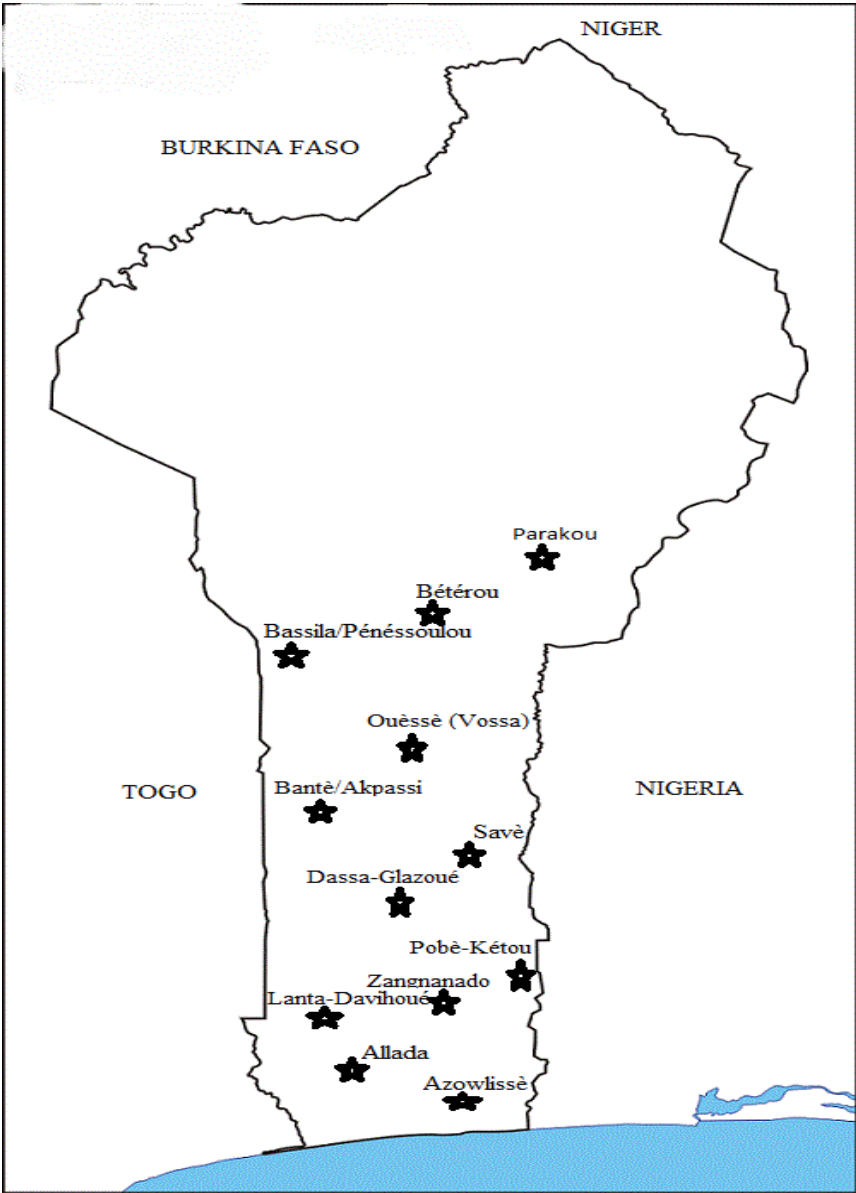
This section is an overview of the core activities we accomplished during the trip to Benin. See Appendix 4 for a more detailed account of events on this trip.

Preparatory work (before the actual field survey) occurred in the first two weeks (June 1-14, 2015) upon arrival of the visiting researchers from the United States. Logistics arrangements, interviewer training, and pretesting of the ODK electronic data collection technology were carried out in this period. In the first week, intensive interviewer-training sessions were organized for the enumerators at IITA conference rooms. Pretesting of the questionnaire using ODK electronic data collection on tablets occurred in Week 2 at two selected villages in Southern Benin. Tablets were new for data collection for this team, and the technology was quickly adopted by the team members. The final pretest happened in a village located in the Parakou study area in Northern Benin.

The actual field survey began in the North zone of Benin through the South zone, between June 14, 2015, and July 12, 2015; from Weeks 3-6. Each of the 3 zones was comprised of 4 study areas (i.e. 12 study areas across Benin; see Figure 1).

In all the study areas, we contacted local CARDER offices for lists of 3-5 prominent cowpea-producing villages located within a radius of 25 km (i.e. 15.5 miles) of the study area. From these lists, we randomly selected 2 major cowpea-producing villages to participate in the survey (see Table 1), and 21 households in each village were interviewed. Thus, a total of 504 households from 24 farming communities participated in the survey. In order to avoid possible sample selection bias due to unavailability of exhaustive/inclusive lists of households in the villages, we selected the sample of cowpea-producing households by employing a systematic sampling technique. The farm households were cooperative and provided useful data on their cowpea farming experiences.

Figure 1. Map of Benin Showing Study Areas Selected for the Baseline Survey, 2015



Source: Biocontrol Unit, IITA-Benin, 2015

Table 1. Study Areas and Villages Selected for the Baseline Survey in Benin, 2015

No.	Study Areas	GPS Coordinates	Zone	Villages
1	Azowlissè	6° 39.991'N; 2° 29.702'E	South	Azowlissè centre Gbékandji
2	Allada	6° 49.791'N; 2° 2.289'E	South	Toffo Houéglé Lissegazoun
3	Lanta-Davihoué	7° 6.676'N; 1° 52.703'E	South	Lanta Davihoué
4	Zangnanado	7° 12.765'N; 2° 17.054'E	South	Dovi-zounon Sowe
5	Pobè-Kétou	7° 27.499'N; 2° 34.882'E	Center	Atanka Igana
6	Dassa-Glazoué	7° 54.624'N; 2° 8.514'E	Center	Goho Gbowele
7	Savè	8° 2.093'N; 2° 34.121'E	Center	Oké-Owo Dani
8	Bantè/Akpassi	8° 22.557'N; 1° 49.337'E	Center	Banon Djagbalo
9	Ouèssè (Vossa)	8° 28.688'N; 2° 17.821'E	North	Vossa Djegbé
10	Bassila/Pénéssoulou	9° 6.081'N; 1° 41.754'E	North	Salmanga Kikélé lokpa
11	Bétérou	9° 13.436'N; 2° 14.944'E	North	Terou-kpara Yebessi
12	Parakou	9° 17.096'N; 2° 52.105'E	North	Monnon Kokoma

Source: Biocontrol Unit, IITA-Benin, 2015

Just prior to the survey implementation, poor internet connectivity was identified as a possible constraint. Without connectivity, filled electronic questionnaires could not be uploaded directly into ODK's cloud server/storage (i.e. ODK Aggregate). As indicated in Appendix 4, researchers resorted to ODK Briefcase, which works offline to store data from completed surveys. Also, we established a Google Drive account where the raw data were uploaded whenever internet connectivity became stable enough, thus ensuring that survey data were not lost due to connectivity problems.

Reviewing the notes and comments obtained during the field work, researchers have preliminary observations. Farmers believe that cowpea pests are becoming increasingly resistant to chemical pesticides. They informed the field team that pest problems are getting more difficult to control because pest presence and damage to crops have become commonplace even though farmers

continue to apply chemical pesticides. Also, a number of the farmers in the North and Center zones apply highly toxic chemical pesticides on their cowpea crops although such pesticides are recommended for cotton plantations (i.e. non-food crops) and not appropriate for edible crops due to the risk of dietary exposure to harmful chemical residue. Photos can be seen in Appendix 5, Figures 5-7, showing some of the chemical pesticides being used for cowpea crops in Benin. We observed that farmers' heavy reliance on chemical pesticides is because of limited pest control options available to them and the devastating effects of the pests if left untreated. Therefore, the farmers appear willing to adopt alternative pest control methods that would be less dangerous and yet effective against farm pests destroying their crops.

3. Contribution of Research Collaborators

It is worth emphasizing that all research collaborators in-country and in the United States contributed immensely to the successful implementation of the baseline and choice experiment surveys.

The survey implementation benefited from the rich local knowledge and commitment of our in-country project collaborators and partners. Particularly, our local research collaborator from INRAB put together a solid team of hardworking enumerators for the survey data collection. Also, the INRAB collaborator was instrumental in making contacts with extension personnel, community leaders and key informants across the study areas we visited in Benin. The use of new technology (tablets) and software (ODK) was a valuable experience for the team, and they enthusiastically accepted the challenge.

On a similar note, our in-country collaborators at IITA-Benin supported the survey implementation by providing conference rooms for the interviewer-training sessions, office space and on-station internet access for the visiting researchers, helping to arrange lodging in Cotonou, dedicating an IITA vehicle to transport visiting researchers while in Benin, and assisting with various administrative issues.

4. Conclusion

In spite of poor internet connectivity issues (mostly in the North and Center zones in Benin) and frequent rains, the survey implementation progressed quite smoothly. Hence, we were able to complete the field work on schedule. Also, the cowpea producers who participated in the surveys were cooperative and provided useful data to the enumerators. Therefore, the field team is positive about the quality of data collected and the promising implications for the cowpea sector in Benin. After adaptation, the choice experiments went well and researchers look forward to generating the results of the experiments, along with the survey analysis.

In addition to the structured survey data, we asked the enumerators to keep notes of any additional data that may be relevant for the purposes of the research, particularly qualitative data gathered through observations and informal conversations with farmers. Eustache Biaou will compile all the qualitative data in a report to be submitted to the research associate (Dr. Michael Agyekum) at MSU. Subsequently, the qualitative report from Eustache will be forwarded to Drs. Benjamin Datinon and Elie Dannon at IITA-Benin to assist in translating the document from French to English. Analyzing the qualitative survey data in conjunction with the quantitative survey data will be important to tell a more complete story about the cowpea sector in Benin in terms of existing pest control strategies, farmers' preference for alternative pest control methods, and implications for the biological pest control program aimed at achieving food security for farm households in Benin and the West African sub-region.

The next steps are the following:

- 1) Organization and documentation of datasets
- 2) Analysis of choice experiments
- 3) Analysis of baseline survey data
- 4) Compilations of information from interviews, comments from farmers

APPENDICES

Appendix 1. List of Acronyms

Acronym	Definition
MSU	Michigan State University
UIUC	University of Illinois at Urbana–Champaign
IPM	Integrated Pest Management
INRAB	Institut National des Recherches Agricoles du Bénin (National Agricultural Research Institute)
IITA	International Institute of Tropical Agriculture
ODK	Open Data Kit
CARDER	Centre d'Action Régional pour le Développement Rural

Appendix 2. List of Enumerators for the Baseline Survey in Benin, 2015

Name		Assigned ID#	Contact Information		
First	Last		Telephone	Email Address	Affiliated Institution
Mohamed	AKADIRI	1	+229 97284877	oladocoun@yahoo.fr	IITA-Benin
Prisciron	ZINSOU	2	+229 96667902	prisciron@gmail.com	INRAB-
Henock	OKANLAWON	3	+229 97148331	Okanlahen@yahoo.fr	INRAB
Eunice	HOUMENOU	4	+229 66460831	edeunice2@gmail.com	INRAB
Rosemonde	SOHANTODE	5	+229 97427919	winoumi.ro@gmail.com	INRAB
Dieu-donné	AMOUSSOUGA	6	+229 66737288	amoussdonn@yahoo.fr	INRAB
Hugues	YEHOUME	7	+229 66006832	yahemax@yahoo.fr	INRAB

Appendix 3. List of Supervisors for the Baseline Survey in Benin, 2015

Name		Assigned ID#	Contact Information		
First	Last		Telephone	Email Address	Affiliated Institution
Eustache	BIAOU	1	+229 66424195	biaou20@yahoo.fr	INRAB
Loredana	HOREZEANU	2	+1 2179795219	horezea2@illinois.edu	UIUC
Michael	AGYEKUM	3	+1 5178847418	agyekum@anr.msu.edu	MSU

Appendix 4. Survey in Benin: Weekly Activities from May 30, 2015, to July 14, 2015

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
Week 0; May 30-31	Research associate at MSU (Dr. Michael Agyekum) and Research assistant at UIUC (Ms. Loredana Horezeanu) traveled from United States on Saturday, May 30, and arrived in Cotonou, Benin, the next day (Sunday night, May 31, 2015).	Loredana traveled from Champaign, Illinois, while Michael traveled from East Lansing, Michigan. We (the two visiting researchers; Michael and Loredana) arrived in Cotonou on Sunday, May 31, around 11:45 pm. Dr Manu Tamo was already at the airport to welcome us after which he asked an IITA driver to take us to the pre-arranged lodging place (Residence Kafu Hotel).	Michael Agyekum, Loredana Horezeanu, Manu Tamo, IITA driver (Marius)
Week 1; June 1-5	<p>1). Loredana and I met with local research collaborators at IITA and INRAB to discuss interviewer training for the week, pretesting of questionnaires and practice with the ODK electronic data collection software on Tablets, as well as the actual field survey in the subsequent weeks, including associated logistical arrangements.</p> <p>2). We asked the Biocontrol team at IITA (comprising of Dr Manu Tamo, Dr Benjamin Datinon, and Dr Elie Dannon) to review and provide comments on the biocontrol/biopesticide choice experiment component of the survey questionnaire. Review comments were discussed and incorporated into the questionnaire.</p> <p>3). Drs Benjamin Datinon and Elie Dannon translated the choice experiment component from English to French. Also, Mr Eustache Biaou, Ms Loredana Horezeanu, and the enumerators provided helpful edits on the French version of the questionnaire, particularly on the other sections.</p> <p>4). I worked with Dr Frank Lupi to finalize design of the choice experiment survey. On June 3, 2015, Frank generated 9 choice situations for the survey (using Ngene software).</p> <p>5). Training sessions for interviewers was held at IITA conference and computer rooms.</p> <p>6). Loredana and I did a couple of trips from the IITA station in Cotonou to the central business district to buy supplies for the field survey (such as rain coats for enumerators, adapters for charging Tablets and laptops, backpacks for enumerators, field books and pens, among</p>	<p>1). Eustache Biaou (research collaborator at INRAB) had already assembled a team of experienced and motivated enumerators. In addition, Dr Tamo asked an IITA worker (Mohamed Akadiri) to join the team of enumerators. In all, we worked with 7 enumerators.</p> <p>2). We brought 8 pieces of Google Nexus 7 Tablets with us to Benin (i.e. all 8 devices were bought in the United States, and we received Export Control clearance from MSU).</p> <p>3). Four days were used to train the enumerators prior to pretesting on the field. The first part of the training focused on content of the questionnaire on paper versions. Next, the enumerators were taken through the Tablets and how to navigate the ODK electronic data collection software. As part of the training, the enumerators were asked to conduct mock interviews (role playing) in random pairs among themselves, where in each pair one person plays the role of a respondent while the other conducts the face-to-face interview. Roles were switched after each mock interview, and emerging issues were discussed.</p> <p>4). The training was successful due to the interest of the enumerators in the exercise. Also, the training provided opportunities to edit the questionnaires to improve clarity, especially the French version.</p>	Michael Agyekum, Loredana Horezeanu, Manu Tamo, Elie Dannon, Benjamin Datinon, Eustache Biaou, Andre Hessouh, enumerators, IITA driver (Marius), Frank Lupi.

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
	<p>other essentials). Throughout our stay in Benin, Dr Manu Tamo dedicated one of IITA's vehicles (and a driver – Marius) to transport us wherever we (the visiting researchers—Loredana and I) needed to go in Cotonou.</p>		
<p>Week 2; June 8-14</p>	<ol style="list-style-type: none"> 1). Two villages, Adja-Zounmé and Dodji-Gamgban, in the Southern zone of Benin were selected for pretesting purposes from June 8-9. 2). Additional two days were set aside, after the pretests, to discuss issues that emerged out of the pretesting exercise. 3). On Wednesday, June 10, 2015, Loredana and I had a conference call with Dr Cynthia Donovan at 6 pm local time (12:00 pm CST). The purpose was to update Cynthia on the progress of work in-country and to discuss any issues from the pretest. Due to poor internet connectivity, our Skype call failed so Cynthia called in via phone using paid service. 4). Eustache concluded arrangements for a commercial mini bus to be used for the actual field work in the subsequent weeks. 5). Logistics in terms of securing cash advance from IITA, making part-payments to enumerators, and renting commercial bus (and driver) were finalized on Friday June 12, 2015. It must be noted that to avoid Michael carrying large amounts of money on him from the United States to Benin for the field survey, MSU arranged with IITA-Benin to issue cash advance to the visiting researchers covering all field survey expenses in Benin. IITA will then submit a reimbursement request to MSU to defray all applicable survey expenditure borne by IITA through the foregoing cash advance. 6). The field team traveled to Parakou on June 12-13, 2015, to start the actual field survey in the North zone. 	<ol style="list-style-type: none"> 1). The pretests went well in that incompatible functions and other hidden 'bugs' in the ODK electronic questionnaire were exposed. Subsequently, we were able to fix all identified issues with the questionnaire and ODK coding. 2). Also, the enumerators grew increasingly comfortable with the operation of the Tablets. During the post pretest discussions, the enumerators made useful contributions that improved the electronic questionnaire in terms of clarity. 3). After pretesting in two villages located in Southern Benin, we observed that the use of pesticides (both synthetic and biopesticides) was little to zero among the cowpea farmers we interviewed. This is because farmers in this zone predominantly grow crops such as cassava, corn, vegetables and pineapples, hence the share of cowpea production is small. Not surprisingly, almost all the farmers complained about huge cowpea harvest losses (sometimes total crop failure) due to pest attacks. As a result of the over-representation of respondents who did not use pesticides (i.e. in the pretest sample), we decided to conduct one more pretest focusing on cowpea farmers that use pesticides. Specifically, the final phase of the pretest exercise was conducted at a village in the North of Benin; in the Parakou study area. 4). On June 12, 2015, the field team traveled from Cotonou around 4:00 pm local time to Parakou to begin the actual field survey in the North zone. The team arrived in Parakou at approximately 1:00 am on June 13, 2015. IITA provided a backup vehicle for the long-distance travels (i.e. between cities and zones). To ensure that farmers are not unduly influenced in their responses to the survey, the IITA vehicle was never sent to the selected villages where actual interviews were carried out. 5). On Sunday, June 14, 2015, the final pretest was conducted at a village (Camp pionier) located in the Parakou study area. 6). At the end of the pretests, it was observed that poor internet connectivity would make it difficult to upload filled electronic questionnaires into 	<p>Michael Agyekum, Loredana Horezeanu, Manu Tamo, Elie Dannon, Benjamin Datinon, Eustache Biaoou, Andre Hessouh, enumerators, IITA driver (Marius), bus driver, and Cynthia Donovan.</p>

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
		<p>ODK's cloud server/storage (i.e. ODK Aggregate). Therefore, we resorted to ODK Briefcase and Google Drive as the most practical alternatives to securing collected field data. ODK Briefcase works offline (i.e. does not require internet connectivity) by extracting data from filled electronic questionnaires and storing them locally as CSV files. To secure the extracted data set, we took additional measures by creating a Google Drive account where the raw data were uploaded whenever internet connectivity became stable enough.</p>	
<p>Week 3; June 15-19</p>	<p>1). Actual field interviews began in the Parakou study area from June 15-16.</p> <p>2). Email correspondence with Cynthia Donovan and Frank Lupi on June 16, 2015, to update them about commencement of the actual field survey.</p> <p>2). Field interviews continued in the Bétérou study area from June 17-18.</p> <p>3). On June 19, the field team traveled to the Bassila/Pénéssoulou (Saramanga) study area.</p>	<p>1). Prior to the field team's visit to a particular village in a given study area, Eustache Biaou always contacted extension personnel at local CARDER offices for names of important cowpea-producing villages within 25 km radius of a given study area. We then select two villages based on ease of accessibility by road. Subsequently, Eustache visited the chosen villages in advance to meet with community leaders to seek their consent before the field team arrives for the interviews.</p> <p>2). The two villages selected in the Parakou study area are Kokoma and Monnon.</p> <p>3). One important observation is that the sampling frame provided by the community leaders appeared limited. Therefore, to avoid Sample Selection bias, we decided to use the systematic sampling approach to select households for the interviews.</p> <p>4). After interviews in the Parakou and Bétérou study areas, we observed that most of the cowpea farmers relied heavily on synthetic pesticides. Also, the farmers appeared to be aware of the potential adverse health effects of synthetic pesticide exposure. According to the enumerators, their interactions with the farmers indicated that synthetic pesticides are used predominantly (in spite of the health risks) because farmers stated that they have no effective alternative pest control strategies. Hence, synthetic pesticides are used out of necessity.</p> <p>4). The two villages selected in the Bétérou study area are Terou-kpara and Yebessi.</p>	<p>Michael Agyekum, Loredana Horezeanu, Eustache Biaou, enumerators, IITA driver (Marius), bus driver, Cynthia Donovan, Frank Lupi.</p>
<p>Week 4; June 20-28</p>	<p>1). Field interviews continued in the Bassila/Pénéssoulou (Saramanga) study area from June 20-21.</p> <p>2). Field interviews continued in the</p>	<p>1). The two villages selected in the Bassila/Pénéssoulou (Saramanga) study area are Salmanga and Kikélé lokpa.</p> <p>2). Also, the two villages selected in the Bantè/Akpassi study area are Banon and</p>	<p>Michael Agyekum, Loredana Horezeanu, Eustache Biaou, enumerators, IITA driver (Marius), bus</p>

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
	<p>Bantè/Akpassi study area from June 22-23.</p> <p>3). Field interviews continued in the Dassa-Glazoué (Goho) study area from June 24-25.</p> <p>4). On June 25, 2015, I initiated a phone conversation with Frank concerning farmers' responses to the choice experiment surveys. After the phone discussion (later that day), I extracted the choice experiment data we had gathered then (i.e. Parakou through Dassa-Glazoué, making 5 study areas) and emailed them to Frank to conduct preliminary analysis that helped to assess the experimental design.</p> <p>5). Field interviews continued in the Savè study area from June 26-27.</p>	<p>Djagbalo.</p> <p>3). The two villages selected in the Dassa-Glazoué (Goho) study area are Gbowele and Goho.</p> <p>4). The two villages selected in the Savè study area are Oké-Owo and Dani.</p> <p>5). Cowpea production and use of synthetic pesticides are more pronounced in the North zone of Benin. The importance of cowpea in terms of its share of total food crop production in Benin diminishes as one moves from the North toward the South. The aforementioned trend is true as well for pesticide use in cowpea production.</p> <p>6). Apart from vegetables production in and around urban centers, cowpea and cotton plantations are the only crops that receive pest control attention through pesticides application.</p> <p>7). There appears to be growing pest resistance problem among cowpea producers in Benin. Farmers indicated that the synthetic pesticides they have been using over the years are becoming ineffective against cowpea pests. Therefore, some of the farmers who are also cotton producers decide to divert some of the designated cotton pesticides to their cowpea farms. Cotton pesticides are highly toxic so farmers who apply such pesticides on their cowpea fields achieve satisfactory results. The problem here is that cowpea consumers would be exposed to toxic pesticide residue because cotton pesticides are not designed for edible crops.</p> <p>8). The services of local interpreters were sought owing to the multiple indigenous languages in Benin particularly in the study areas located in the North and Center zones.</p> <p>9). Sunday June 28, 2015, was Commune (local) elections day in Benin, so the field team took this day off to allow farmers to cast their votes.</p>	<p>driver, Frank Lupi.</p>
<p>Week 5; June 29 – July 7</p>	<p>1). Field interviews continued in the Ouèssè (Vossa) study area from June 29-30.</p> <p>2). On July 1, 2015, we updated the design of the choice experiment survey based on results of the preliminary analysis. Frank and I had further discussions on phone later that day</p>	<p>1). The two villages selected in the Ouèssè (Vossa) study area are Vossa and Djegbé.</p> <p>2). The two villages selected in the Lanta-Davihoué study area are Davihoué and Lanta.</p> <p>3). The two villages selected in the Zangnanado study area are Sowe and Dovi-zounon.</p> <p>4). The two villages selected in the Pobè-Kétou (Ewe) study area are Atanka and Igana.</p>	<p>Michael Agyekum, Loredana Horezeanu, Eustache Biauou, enumerators, IITA driver (Marius), bus driver, Frank Lupi.</p>

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
	<p>regarding the preliminary results and the need for design updates when necessary.</p> <p>3). From July 1, 2015, I extracted and emailed raw data updates to Frank almost on a daily basis till the end of the survey.</p> <p>4). Field interviews continued in the Lanta-Davihoué study area from July 1-2.</p> <p>5). Field interviews continued in the Zangnanado study area from July 3-4.</p> <p>6). Field interviews continued in the Pobè-Kétou (Ewe) study area from July 5-7.</p>	<p>5). MSU funding for Loredana Horezeanu (through Gates Foundation) in Benin ended on June 30, 2015. Therefore, Loredana was expected to depart Benin on July 1, 2015. However, Dr Kathy Baylis at UIUC provided additional funds specifically to support Loredana to extend her stay in Benin for 12 more days (i.e. for the remainder of the survey period).</p>	
<p>Week 6; July 8-12</p>	<p>1). On Wednesday July 8, 2015, Michael Agyekum and Cynthia Donovan had phone conversation about progress of the field work. Cynthia called in at approximately 3:00 pm CST (9:00 pm local time). Eustache Biaou participated in the phone call.</p> <p>2). Field interviews continued in the Azowlissè study area from July 8-9.</p> <p>3). Field interviews continued in the Allada study area from July 10-11.</p> <p>4). The field team traveled back to Cotonou on June 12, 2015.</p> <p>5). Upon conclusion of the survey implementation, I had a final email correspondence with Cynthia Donovan on July 12, 2015, to inform her about the successful completion of the surveys. Also, we decided that I bring one of the Tablets with me to the United States, leaving behind the remaining seven Tablets in the care of IITA for subsequent in-country project activities.</p>	<p>1). The two villages selected in the Azowlissè study area are Azowlissè centre and Gbékandji.</p> <p>2). The two villages selected in the Allada study area are Lissegazoun and Toffo Houéglé.</p> <p>2). On July 11, just after completing the final round of interviews in the last village (Toffo Houéglé), the field bus developed a mechanical issue and broke down in transit. Therefore, the field team traveled back to Cotonou with IITA vehicle.</p>	<p>Michael Agyekum, Loredana Horezeanu, Eustache Biaou, enumerators, IITA driver (Marius), bus driver, Cynthia Donovan.</p>

WEEK	ACTIVITIES	NOTES/OBSERVATIONS	PERSONNEL INVOLVED
Week 7; July 13-14	<p>On Monday July 13, 2015, the following activities took place:</p> <p>1). Michael worked with the administrator at IITA-Benin (Mr. Andre Hessouh) and Mr Eustache Biaou to withdraw monies to complete payments to the enumerators, and the hired bus for the field work.</p> <p>2). Also, IITA-Benin requested for a compilation of all field expense items and associated receipts from Michael for onward submission to the IITA accounts office to justify the cash advanced to Michael for the field work. Therefore, Michael worked with Andre to reconcile all cash outlays with the cash advance received.</p> <p>3). I handed over seven Tablets to Andre Hessouh at IITA (the 7th device was with Eustache Biaou, so I notified Andre about it). In addition, I gave the raincoats and backpacks to Andre (i.e. supplies we bought for the field work).</p> <p>4). Finally, at approximately 10:40 pm, Loredana Horezeanu and Michael Agyekum departed Cotonou, Benin, back to the United States.</p>	<p>1). Dr Manu Tamo arranged for an IITA vehicle to transport Loredana and Michael from the IITA station to the Cotonou International Airport. The IITA driver, Marius, was very helpful.</p> <p>2). All the IITA workers we (Loredana and I) interacted with were very supportive and professional in their dealings with us, the visiting researchers. Thus, the support and cooperation of Dr Manu Tamo and his team at IITA, as well as Mr Eustache Biaou at INRAB-Benin were pivotal to the successful implementation of the baseline economics survey in Benin.</p>	<p>Michael Agyekum, Loredana Horezeanu, Manu Tamo, Eustache Biaou, Andre Hessouh, IITA driver (Marius).</p>

Appendix 5: Photographs of Interviewer Training and Samples of Chemical Pesticides

Figure 2. Survey team in Benin with members from MSU, UIUC, IITA, and INRAB



Figure 3. Enumerator training and survey adaptation at IITA-Benin/Cotonou



Figure 4. Challenges of field research



Figure 5. “Pacha” lambda-cyhalothrine and acetamipride insecticide used by farmers



Figure 6. "Perfect Killer" Chlorpyrifos Insecticide used by farmers



Figure 7. Cypeforce Cypermethrin insecticide used by farmers

