Progress Narrative Brief, Year 1 (2014/2015)

The cowpea IPM project achieved steady progress in the first period, from July 2014-June 2015, with regard to accomplishing key milestones. Specifically, the following summarizes progress attained in Year One with reference to the three broad project objectives:

(1) Objective/Pillar One: The project has successfully completed the design phase of the Expert System (ES) platform for modeling pest attack. Similarly, prototype for the joint Farmer Interface Application (FIA) has been designed as planned. These initial achievements are fundamental to developing the entire ES in the subsequent project periods.

(2) Objective/Pillar Two: After securing regulatory approval and following both national and FAO regulations for classical biological control programs, we have successfully carried out laboratory examination of the imported pod-borer parasitoids. This involved experimental releases of the imported parasitoids on the target cowpea pest (Maruca vitrata) under screenhouse conditions, a critical step before actual field releases occur in period two.

(3) Objective/Pillar Three: Implementation of the economics component of the project started in the second-half of period one owing to unanticipated delays in the hiring of a research associate who would have primary responsibility for the economics component. In spite of this delay in schedule, some key milestones were met. Baseline survey and farmer choice experiment surveys were designed. Implementation of the baseline survey and farmer choice experiments (to estimate impact of biological pest control interventions) was on-going as at June 30, 2015. Thus, for the present objective, over 50% of the set target was achieved in period one. To facilitate attainment of Objective Three for the remainder of the project period, we have taken the following additional steps: one important adjustment is the inclusion of Dr. Frank Lupi to the economics team. Dr. Lupi's expertise and extensive experience in experimental economics is contributing to the design of farmer choice experiment, implementation, and analysis. Also, we brought on a graduate student to assist with the economics survey implementation in Benin. This graduate student is partially supported with funds from the University of Illinois at Urbana-Champaign (UIUC).

A more detailed report on Year One's milestone accomplishments is provided in the table below.

Appendix. Report on Key Milestone Achievements in Period One

Objective #	Key Milestones	Baseline *(if relevant and available)*	Period One 7/1/2014 – 6/30/2015	Period One 7/1/2014 – 6/30/2015	Narrative on milestone accomplishments/challenges	Period Two 7/1/2015 – 6/30/2016	Period Three 7/1/2016 – 6/30/2017	Grant End 6/30.2017
			Target at period end	**Reported at end of period**	**End of Period 1**	**Target at period end**	**Target at period end**	**Cumulative target at grant end**
1	Meeting for defining database needs for ES (UIUC)		completed	100% completed	A partnership meeting was held April 1-3 in Champaign Illinois, including partners from UIUC, MSU, aWhere and Phtosync.			completed
1	Meeting for defining FIA needs (Benin)		completed	100% completed	A partneship stakeholder meeting was organized at IITA-Benin in Cotonou, Benin, April 12-17, including participants from MSU, UIUC, IITA, INRAB and several other partners from Benin, as well as participants from Ghana, Niger and Burkina Faso			completed
1	Developing prototype FIA data capture (UIUC and IITA)		completed	100% completed	The prototype FIA interface was created - this involves the designs that are to be used in the App development.			completed
1	Development and field testing of data collection protocols to advise the development of the prototype FIA (IITA)		completed	80% completed	Data collection protocols have been developed together with UIUC, field testing is on-going at selected sites in Benin, to be completed by July 31.			completed
1	Prototype data collection component of FIA for cowpea podborers in Benin		in process	in process	Data collection protocols have been developed together with IITA, field testing is on-going at selected sites in Benin	in process	completed	completed
1	Developing the prototype ES (UIUC)		in process	in process	We have been able to define how the ES will fit into the development of the overall system and how this will interface with the FIA.	in process	prototype available	prototype availabe
1	Farmer validating the feedback from ES through FIA for cowpea podborers in Benin (IITA)					validated		validated
1	Development of podborer population genetic data for ES (IITA and UIUC)		in process	in process	A total of over 1000 Maruca vitrata larvae have been collected and shipped - individually packed - to UIUC for genetic analysis, from 84 different locations x host plants combinations. Molecular marker analyses are in progress.	incorporated into ES	updated	updated
1	Prototype ES for cowpea podborers in Benin		in process		We have been able to define how the ES will fit into the development of the overall system and how this will interface with the FIA. We have the "simplest case model" as the starting point to build the next steps in the ES. Our primary focus in period one has been on the FIA and we will focus more heavily on the ES while the FIA is being coded in period two.	in process	completed	completed
1	Preliminary farmer pest control strategies for Benin incorporating biological controls						completed	completed
2	Experimental releases of novel parasitoids (particularly targeting the podborer) in Benin		completed	100% completed	First experimental releases of the pod borer parasitoid Therophilus javanus were sucessfully carried out on Sesbania cannabina in the screenhouse on April 16, and were followed by subsequent releases on cowpea, also in the screenhouse. This work is being continued in more details as an MSc study with funds from the Legume Innovation Lab			completed
2	Regulatory documentation for larger-scale release of biocontrol agents for Benin					completed		completed
2	Preliminary assessment of efficacy of the releases of natural enemies to pod borers in Benin		designed	designed	Protocols for the assessment of the efficacy of the releases of Therophilus javanus and Phanerotoma syleptae have been designed, taking into account areas of prevalence of alternative host plant during the long dry season. A total of 6 release/recapture sites have been identified for operational inoculative releases taking place starting Sept 2015.			completed
2	Refined strategy for large scale releases of cowpea pod borer biological control agents					in process	completed	completed
2	Spatial baseline survey of the costs and benefits of cowpea pest damage and current pest management practices		implemented	66% implemented	Baseline survey of current pest management practices among cowpea producers across Benin is in process. Survey data on more than 300 farm households located in Northern and Central Benin had been collected as at June 30, 2015.	analysis completed		completed
2	Report/paper on the efficacy of pod borer parasitoids in Benin					analysis	completed	completed
3	Choice experiments designed to capture farmer thresholds on pest control investments in Benin		completed	completed	Choice experiment survey instruments have been designed to elicit farmers' pest control strategies based on harvest losses, labor input, cost, and health considerations.			completed
3	Implementation of choice experiments in Benin on pod borer control agents					completed		completed
3	Analysis of choice experiments and baseline surveys to estimate cost/benefit of the biological controls					completed		completed
3	Survey report on farmer behavior and perceptions of cowpea pest control as well as current expenditures on pest control					completed		completed
3	Focus group and key informant interviews to determine the technical needs, costs, and returns to cottage industry production of pod borer specific virus		completed	pending	A preliminary key informant interview has been carried out during a visit to a small-scale neem oil processing facility in Glazoue, Benin. However, work remains to be done to fully understand technical needs, costs and revenue profiles for viable small-scale biopesticide production enterprises.			completed
3	Report that on cost and benefit projections for pod borer specific biological control agents						completed	completed
3	Report on the initial financial analysis of the feasibility and competitiveness of cottage industry production of pod borer-specific virus by women's groups					completed		completed