

IPM Innovation Lab Joint Meeting of the Technical Advising Committee and Program Coordinating Committee Notes

**July 10, 2017**

**9am:** Meeting starts. Muniappan begins by welcoming everyone and talking about Addis Ababa. This is the fourth technical advisory committee. The first two took place in 2015: one in Pasadena where only two members showed up. One in Minneapolis where only one showed up. The complete committee met last year in July. We now have all the members of the TAC except Shoki Al Dobai from FAO. We have representatives from USAID, our AOR John Bowman and the other Faith Bartz Tarr from the Ethiopian Mission. Then we have 5 TAC members, 8 PIs from the PCC, and 5 from the ME.

Introductions by everyone present at the meeting.

Muniappan begins presentation on IPM IL achievements and highlights since last year's meeting on July 7, 2016.

Starts with *Tuta absoluta absoluta*. Showed up in Senegal in 2013, which was one of our project countries at the time. IPM IL got involved forecasting the spread of *Tuta absoluta absoluta*. Since then, we have conducted 16 workshops in the tropical world. We have conducted two in Cambodia for awareness since we believe it will spread there. In Bangladesh we conducted two for management because it reached Bangladesh in 2016. At the International Congress of Entomology we hosted a symposium for dissemination to take the information beyond our host countries. We also conducted one at the Biodiversity and Climate Change conference in Nepal.

At the International Congress of Entomology we conducted two symposia, IPM packages for Tropical Crops and *Tuta absoluta absoluta*, and had a booth for the over 7000 participants to visit, and had a poster presentation.

The IPM IL published a book of 20 years of IPM research, which had 14 chapters written by 42 researchers, 30 from developing countries.

Muniappan elaborated on our publications – beyond the book, undergraduate ME Vollmer compiled a book of 20 years of IPM IL publications. IPM IL also had a chapter in tomato book, and Short Heinrichs wrote chapters in a rice insect pests book.

Muniappan then discussed the invitations the IPM IL received for consultations and invited presentations in Saudi Arabia, Malaysia, Rome, Algiers.

PERSUAPS: We have prepared PERSUAPs for pesticides that are used in our projects using USAID funds. The *Tuta absoluta absoluta* PERSUAP was approved last year. FAW just got approved. We submitted one for Vietnam that is being reviewed, and we will submit Cambodia and East Africa soon.

News releases: In the last year we have released 13 through the Virginia Tech news and 9 releases outside of Virginia Tech. We have also released 3 IPM Innovation Lab newsletters and are working on an upcoming newsletter.

Collaborations: IPM Regional Directors Meeting, Hokie Bugfest, and the March for Science. IPM IL also gave lectures in Virginia Tech's Departments of Entomology, Plant Pathology, and Agronomy. We also attended Global Roundtable Meetings, the Innovation Lab Council Meeting in Senegal, and the "speed

dating” event in Washington D.C. Muniappan conducted a Webinar on our insect collection with Smithsonian and at meeting in D.C. The Management Entity has participated in all the project planning meetings and have reviewed all the projects either with calls or meetings. And IPM IL recently recruited Daniel Sumner as gender specialist with M.E.

Future meetings: an IPM symposium will take place in November at the ESA meeting in Denver which Amer and Jaspreet Sidhu will attend. Jaspreet will also present a poster. Muniappan will participate in Arab Society for Plant Protection Congress in Egypt in November and will lead a *Tuta absoluta absoluta* workshop.

The IPM IL may receive a buy-in from Egypt Mission for FAW. And the APLU recently informed us that BIFAD will conduct its spring 2018 meeting at Virginia Tech.

IPM IL and SOFRI find that witches’ broom is caused by eriophyid mite. Invasive species: Papaya mealybug in 2008, *Tuta absoluta absoluta* 2013, Fall armyworm 2017. We will conduct a FAW workshop this Friday and Saturday.

Muniappan thanks the IPM IL Management Entity and organizers Tadele Tefera and Nebiyu Solomon, and Guru Ghosh for taking the time to attend.

**Questions:** John Cardina asked about PERSUAPs being by pesticide or by country or by pest. Muniappan explained that for *Tuta absoluta absoluta*, it was written for Nepal but can be adapted by other countries.

John Bowman asked about the omission of Parthenium from the list of invasive species and Muniappan admitted he forgot but that there are many invasive species the IPM IL has helped identified.

Dely Gapasin mentioned the importance of publications and sharing information with the public and farmers.

Glen Hartman asked if Muniappan is involved with CABI’s invasive species compendium. Muniappan said that we are not directly involved but that we provide information if asked. Muniappan discussed other invasive species groups at different universities and countries.

Bowman mentioned our impressive publication record: the scientific articles along with the books. When evaluated at the end of the 5 years, Bowman says that IPM IL’s output on that is very good compared to other labs. Suggested that the IPM IL focus more on associate awards and buy-ins. And that we need to get the word out to the bureau of food security. Recommends doing more webinars and events. Not as good on the map with USAID central.

Gapasin follows up on the importance of translating the scientific information to language understood by farmers.

**9:34:** John Bowman gives his welcoming AOR remarks. Thanks the organizers and talks about his excitement for upcoming field trip. Talks about upcoming meetings: FAW and ICIPE grains meeting. Wants to thank USAID mission in Ethiopia. Talks about having a friend in Faith Bartz Tarr and what great work she has done for the office in D.C. and now the great work she does for the field mission here. And there will be more mission presence at the FAW workshop later this week. Ethiopia is one of the top 3 countries where USAID has a centrally-funded presence. Ethiopia has been a focal key deep dive country

in the last few years and will continue to be so. Poverty reduction has been one of the main objectives and Ethiopia has been one of the top performers in the last 6 year period. In 2013-2015 USAID's investments helped decrease poverty by 12%. A lot of this is due to the technical assistance programming that comes out of the mission. But the Washington based office is also highly committed to the food security situation here. In addition to IPM IL projects, there are 20 major investment projects here. Presence of Washington based projects are well-intentioned, they also must be managed with local projects and projects with other donors here. So we need to watch out for donor fatigue and duplication. Discusses importance of collaboration and working together to work on FAW. Wants to thank IPM IL for organizing upcoming workshops and thanks to the mission and thanks to the PI and TAC for being here.

**9:51am:** Faith Bartz Tarr's remarks. She manages 35 research activities. The goal is to ensure alignment with country development strategy and sharing lessons learned among research partners. She has background as a plant pathologist. Shares 4 reasons she thinks the IPM IL is valuable: 1. The IPM IL makes her job easy. Makes connections with relevant stakeholders on the ground in Ethiopia. One example is that the project serves on the group advising the ministry of agriculture here on responding to FAW outbreak. Will help coordinate with extension to farmers on the ground. While the Mission was scrambling to figure out how to respond, IPM IL had already organized workshop. In February, Dr. Tadele heard at a meeting about another research on corn borer, and he was able to make connections. 2. The technical assistance is effectively enhancing human and institutional capacity within the Ethiopia of people who can respond to pests and diseases. Mentioned professionalism and level of credibility of IPM IL. 3. Ability to pivot and immediately respond to pests and diseases. Quick answers to questions about management. 4. IPM IL does a very good job of communicating with printed materials and meetings. She's here to help us so please let her know how she can help us.

**Question:** John Cardina asks what is the best way to interface with the mission.

Tarr says the best way to interact depends on goal of interaction. There are many ongoing activities so it can be difficult to manage communications if they're frequent. One-pagers are helpful because they can share the activities. Quarterly summaries of planned travel and workshops in the country.

Datnoff asked how large the mission in Ethiopia is. How many entities are they engaged with?

The embassy as a whole has about 1000 staff including consular and state department. USAID is roughly half. Tarr is in economic growth and transformation office – food security, nutrition, and Power Africa. Roughly 20 staff in that office. Local partners: ministry of agriculture and natural resources. USDA equivalent. Also works with extension system. There are 20 ILs active in Ethiopia.

**10:03am:** Guru Ghosh remarks. If 70% of the world is covered by water, we want Virginia Tech to cover the other 30%. It's a lofty goal but we are working on making Virginia Tech a global land grant university. Discussed visit to White House Development meeting last year to represent Virginia Tech. He discussed engaging local and global communities to increase income diversification and the nexus between USAID and land grant universities. Reminded of momentum that IPM IL provides to a land grant like Virginia Tech. When we talk about global land grant and research projects, we see agronomists, entomologists, gender specialist, etc., to confront the problems vexing humanity. Three essential elements of IPM IL projects. The IPM IL has graduated over 500 students in the last 20 years. Currently, there are 60 students across U.S. In addition, the IPM IL has provided short-term training to over 2000 farmers

around the world. At Hokie Bugfest, there were over 7000 area community members. So IPM IL has impact in community and broader university area. The IPM IL also works on technology transfer and information dissemination: promotion of biopesticide trade between Nepal, India, and Bangladesh. The IPM IL also conducts symposia regionally and internationally and promotes its technologies beyond host countries. IPM IL has reached national and international media. It's the convergence of culture and institutions with different and distinct missions coming together to create convergent solutions, such as the use of trichoderma, use of coconut pith, pheromones, biopesticides. Ghosh said that it's very important that universities understand their role in terms of fulfilling the mission of our diplomatic and development goals. U.S. universities are one of the treasures of our global educational system. American higher education is the fourth largest service sector export of the U.S. Foreign students and immigrants make tremendous contributions to the U.S. society. Thanks USAID for supporting universities and thanks to the faculty who dedicate their lives to research and education.

Bowman asks all land grant university faculty/employees to raise hands and lists the different universities represented: Virginia Tech, VSU, OSU, Illinois, Louisiana. He talks about reality of upcoming budget constraints and issues and asks how much the different land grant university people are talking to one another.

### **Coffee break**

10:57am: Daniel Sumner presents on The Role of Gender in IPM. Introduces himself and mentions that gender isn't just about women, it's the relations between the genders. Starts with goals of the IPM Innovation Lab. So what does it mean to integrate gender with IPM? Gender is a construct that discusses relationships between men and women and differs across place and time. Gender is changeable – gender roles and relationships are not fixed. Sometimes these roles marginalize women, and men in contexts.

So why are we interested in this component? From Feed the Future: Increased recognition of women's contribution to agriculture is critical to achieving global food security. There is a disproportionate representation of men in the agricultural scientists. Women's empowerment is a moral imperative.

Beyond moral and contractual obligations, women can support or resist projects, sometimes determining success or failure. Women might control the budget, and we need knowledge of women's role. Women can benefit project and project should benefit women.

Gender equity: increasing participation of and benefits to women and men. Document our "reach" – a powerful way to increase women's access to information, form new networks, and strengthen confidence. Move beyond sex-disaggregated "counting." Find how gender intersects with other variables like race, ethnicity, class. Identify barriers and opportunities to women's and men's ability to participate. Institutional capacity: train young scientists and researchers to drive research dedicated to gender issues. Identify pipeline barriers from benefitting from long-term training opportunities. Empower team of gender researchers to utilize qualitative and quantitative tools and methods. Identify gender-based constraints and opportunities to the dissemination of IPM. Move from collecting data to capturing knowledge. Incorporate gender variables into IPM adoption analysis and impact assessments. What's working? Are we able to engage both men and women? What about women-only led households?

Moving forward, continue to track gender data but also analyze this data to be adapted into reporting and decision-making. And share best practices and lessons learned and research results.

Questions to consider: What else must be done to ensure implementation of IPM IL's gender responsive research approach? What additional opportunities are there to further the IPM IL knowledge base on gender, IPM, sustainable development, and livelihoods?

**Question:** Cardina mentioned the distinction between gender parity and gender equity and if we need to move beyond this construct to gender fairness because men and women probably don't want to be doing the same thing.

Sumner answers that equality is not having men and women doing the same thing, but using this equity to increase fairness and decrease the gender gap. Engaging women in the training process. Within this framework, it can be imposing. We're not trying to do everything. Sumner wants to help projects figure out the important research questions to find ways to treat women fairly. Also important that men are not gender insensitive and must be engaged in the conversation and approach. Women's empowerment does not equal men's disempowerment and should instead benefit the whole household.

Muniappan mentions that IPM IL has worked with gender for 15 years. Mentions impact assessment studies on gender. Studies are qualitative, not quantitative. Does Sumner see any technologies within IPM IL activities that we can concentrate on quantitative data.

Sumner says within projects we can come up with specific quantitative data. Level of income compared to level of project establishment. Quantifying number for women who are able to spend money on certain things. Difficult to assess number of hours saved in an activity. Can count women reporting that they see certain benefits coupled with qualitative reporting on the benefits. Important to integrate qualitative and quantitative research.

Gapasin says that Sumner can bring new perspective and PIs can work more closely with him. IPM IL has been documenting number of women on different aspects, but the quantitative assessment of that data is not there yet. But based on Sumner's presentation, there are lots of opportunities. And many households are headed by women, so they must be included.

Muniappan notes that until 2009, we had a separate gender project, and that didn't work because the project PIs wanted that project to do all the work and there was not collaboration. In 2009, 60% stayed with gender project and 40% was distributed. In some countries it worked, in some not. Now we just have all the PIs of the 8 projects to include a gender specialist in each project. Bowman asks for some highlights of technologies that we introduced that had a good impact in terms of gender.

Sumner mentions Kaitlyn Spangler's research on IPM technologies impact on women farmers in Nepal. Also discusses tricho-compost, grafting, coconut pith, Ecuador, coffee in Kenya. Muniappan mentions potential of FAW, and Bowman mentions pesticides in Vietnam and benefit to women.

**11:30am:** Amer Fayad introduces Muniappan to present administrative information. First he mentions the budget. We had a budget cut of about 40%. FY 2017 started October 2016 but we did not get funding until January 2017. Then we got 60% funding and distributed all those funds. Bowman discusses pipelines and says if in September you have a lot of money on your books and will only get the

remainder. So the subs should get their reporting in ASAP to make the pipeline look low. We assume everyone will suffer cuts.

PIs need to turn in invoices as quickly as possible. In some cases, they spend the money but the invoices can't go through quickly because of OSP or other reasons. Krakauer mentions if they had spent all their money by the FY, then we don't get money until January, then the projects have to stop. And when the projects are given out at year one, it takes 1.5 years to get started.

Muniappan mentions that BFS is putting out new ILs for bid, so there must be money. If there is money for new labs, why would they cut money for the ongoing projects.

Norton mentions that you can't have a zero pipeline because then you would have to shut down. You need to have a few months' pipeline as a cushion until new money comes and USAID should recognize that.

Question about semi-annual vs. annual report. John Bowman will check on that. Working on POPs manual. IPM IL portal working better – we have taken PI comments to the developers for improvements. Indicators are being changed next year. Workplan and travel matrix to be submitted by July 17. We need to submit it to AOR by end of July. Getting new website template and getting a website on *Tuta absoluta absoluta* and on Fall Armyworm. If PIs have websites and need help, let us know, and we will link your project site to the IPM Innovation Lab website. If you have success stories or news releases, please send us manuscript and we will help you to release that. Newsletter to be released soon, please send Stephanie things you want in the newsletter.

IPM IL in third year and October will start 4<sup>th</sup> year. Will we have a review/renewal or rebid? Muniappan asks Bowman. Bowman can't say definitively. New administration is looking to make it more difficult for any kind of renewal above \$5 million.

## **Lunch**

**1:19pm** : Wondi Mersie begins his presentation on his project on the invasive weed parthenium. The weed impacts many crops but the main impact is on livestock. It displaces pasture species, taints milk and meat which lowers price of milk and meat, and causes harm to animals. Ethiopia has tenth largest livestock number in the world and first in Africa.

Goal: to abate the spread and impact of parthenium in East Africa using natural enemies. Using bioagents such as *Zygogramma* and *Listronotus*. After bioagent released, weed incidence declines until they reach stasis and coexist. At Haramaya University where there was a lot of *Zygogramma* released, after just one year a lot of grass grows in place of parthenium. Objective is to scale up rearing and release of *Zygogramma* and *Listronotus* in Ethiopia and Tanzania where we have permission. Then also evaluate establishment and evaluate new bioagents under quarantine. Then obtain permits and release the two bioagents in Uganda. Three rearing sites in Ethiopia – one in Haramaya, one in Wollenchiti, one in Ambo. Mass rearing has a lot of challenges – staff turnover, frost, pests and predators at rearing sites, providing quality stock, policy issues in Kenya and Uganda. Have released *Zygogramma* in several places and it is establishing. Planning to release some in the Addis Ababa area which is heavily infested with Parthenium. Last year 10,500 released. This year 15,800. And *Listronotus* this year 2300. *Listronotus* harder to release but needs fewer to release. *Zygogramma* is heavily predated. Tanzania they started

rearing in March. Project has three graduate students in Ethiopia, three in Tanzania. Future: mass rearing, release and evaluation.

**Questions:** Lawrence Datnoff asked if they can quantify the impact of reducing the invasive weed. Mersie says not yet because the releases are still in secure places in hopes their numbers will multiply in hopes it will spread to the field. Srinivasan asked if competition studies have been carried out between *Zygogramma* and *Listronatus*. *Listronatus* does not move much but *Zygogramma* moves a lot. Targeting *Listronatus* in drier areas so they do not release the agents in the same places. Srinivasan then asked about what the policy issues in Uganda and Kenya are and how the project is addressing them. The problem is lack of policy on granting permits for release. Parthenium is becoming an economic issue not just in pasturelands but in game parks and it could affect tourism. Muniappan asked about CABI subaward. Mersie says they are more on policy than control. Mersie recommends working directly with the country.

**1:40:** Tadele Tefera starts presentation on rice, chickpea, and maize IPM project. Discussed screening and using different biopesticides and botanicals on different diseases and pests. After screening different *B. Bassiana* strains found three virulent ones they will use in the field this season. For chickpea, they are testing *Trichoderma* against wilt. Tested raised beds to get rid of moisture. For maize, demonstrating push-pull. 120 demonstrations in Hawassa area. Push-pull has multiple benefits. Working on developing diagnostic capacity because this is a problem among farmers. Developing mobile apps in collaboration with University of Minnesota. Also using animations to teach farmers. They are working on communications and capacity building with training and field days. They have trained close to 200 extension service providers in the three countries and 500 stakeholders have taken part in trainings. They have 9 students: 5 PhD, 4 MSC.

For gender, they have a specialist working to consider gender in all aspects: awareness creation, demonstration of technologies, capacity building. Also focusing on decision making in the household in growing areas. Challenges: drought in Kenya, FAW invasion, and general election in Kenya.

**Questions:** Datnoff asks about how *Trichoderma* is delivered to the rice field. Tefera answers that after the lab, they are going to test applications in the greenhouse. Srinivasan asked how successful biopesticides will be commercialized and available in Ethiopia? Tefera said there are problems to import into Ethiopia. So they want to use locally available indigenous pesticides. They are screening locally available agents. Srinivasan follows up asking once locally available strains found, who will develop and produce them so they're available. Tefera says they're not there yet but they're partnering with universities and agricultural institutions. There is need for private sector. Gapsin asked if they have been in contact with the chickpea innovation lab. Tefera contacted Fayad who connected him to Doug Cook. They are in initial stages of contact. The project will send a student to present at their annual meeting. Buyung Hadi followed up on commercialization: how is regulatory environment in Ethiopia for registration and selling of biocontrol products? Tefera says that there is policy on paper for local products. The challenge is importation. Srinivasan asked what they are screening in Tanzania. Muniappan asked about natural enemies. Tefera says they are testing.

**2:05pm:** John Cardina presents on East Africa vegetable project. Successes so far: bio/social baseline studies completed in three countries. Field trials and demonstration in all 3 countries. 2 workshops focusing on healthy seedling production. Two graduate students at OSU and 4 in the region. Two gender experts. High participation from women and men. Established linkages with value chain partners and

private sector. Strengthened inter-country linkages. Established diagnostic network on Whatsapp and expanding it. Gender of Whatsapp senders: 64% female, 36% male. Can look at keywords used. *Tuta absoluta* 8%, tomato 17%. Challenges: needs more regular, frequent and clear communications. Can take a long time to get responses. Budget. Put integrated back into IPM. Sometimes focus is on one pest or one technology which isn't really integrated. Language challenges. The word for pesticide is the same for herbicide and medicine in Swahili. Lots of gender participation percentages and details. Women in project leadership roles. Farmer groups led by women. Specifically ask women to participate in trainings.

**2:30pm:** Abhijin Adiga presents on the modeling project of *Tuta absoluta*. Achievements: monitoring and tracing spread of *Tuta absoluta* in Nepal. Economic impact assessment with help of Norton. Wrote report that will lay foundation for future studies. Created PREMpT: Pest Risk and Establishment Mapping Tool and submitted it for USAID Digital Development Award. Made model and data analytics usable for policy makers. Abhijin then listed publications and technical reports. Research in progress: assessing *Tuta absoluta* threat to USA. Adapting data sets from different sources: USDA, Food Certification and transportation. Working on possible spread of *Tuta absoluta* in Southeast Asia. Looking at group of countries. Looking at both trade between countries and within countries. Physiology-based demographic models. Looking at thermal requirements, alternative hosts and diapause experiments. Working on groundnut leafminer to determine species with NCSU subcontract. Technology transfer initial phase of model development. Gender: female participants. 1 MSC, 2 scientists. Capacity building: 2 postdocs, 4 PhDS, 3 Masters, 2 undergraduates. Challenges: data and methodology. Not much data on commodity flow. Other challenge is pest distribution: lack of geographic or temporal resolution. Challenge of integrating models and data sets. No precedence even in the literature.

**Question:** Srinivasan asks question about why Bangladesh isn't included. Adiga says they started working with Bangladesh but logistics were very difficult. Ghosh comments that this project is what an innovation lab should be about – taking risks and doing new work.

**2:55pm:** Nir Krakauer presents on his project modeling climate and biodiversity in Nepal. Weather stations. Work areas. Taking butterfly surveys at different elevations. 5 PhD students and 14 MS students at Tribhuvan University and Agriculture and Forestry University. In January International Conference on Biodiversity, Climate Change Assessment, and Impacts on Livelihood. Working with farmers near field sites with trainings. 70% of 300 beneficiaries are female. Challenges: Climate change and biodiversity is a broad topic, so they need to focus on niches where it makes sense to work. International and cultural differences. Year 2 funding delays. Revised workplan based on new funding.

**Question:** Datnoff asked about elaboration for defining niches. Krakauer mentions focusing on butterfly genomics. Muniappan said that the project has not done enough in the last two years and needs to refocus. Gapasin asked about the benefits of the publications from the conference, what kinds of results there were.

**3:36pm:** George Norton presents on vegetable and mango IPM in Asia. Working in Nepal, Bangladesh, and Cambodia. Discussed partnerships, priority crops, and prioritizing within priority crops. They're working a lot on *Tuta absoluta* which is taking a lot of resources. Accomplishments: experiments and field activities. Monitoring *Tuta absoluta*. Pest monitoring. Testing lures. Baseline surveys. Gender: Kaitlyn Spangler's work in Nepal: 7 group discussions at 4 research sites, 52 farmers interviewed, gender balanced field team. In Cambodia, field site coordinator female, working with women's cooperative in on-farm trials, gender balance with RUA students and scientists. Bangladesh: Gender balance in grad

students and active efforts for gender balance in field days and workshops. Short-term training: workshops on Trichoderma, virus diagnostics, *Tuta absoluta*, vegetable virus, farmer field days. Long term training: PhD student from Bangladesh, sandwich student from Nepal, two sandwich students from Bangladesh, PhD student from Nepal at Penn State, MS. Student in geography for Nepal, RUA undergrad in Cambodia. Challenges: budget, coordinating with many programs, addressing *Tuta absoluta*, especially in Nepal. Future plans: IPM component and package trials; entomology PhD student at Penn State; Ag Econ PhD student and sandwich student graduating; new MS student will begin if there are funds. Gender MS student for Nepal. Plant pathology Nepal PhD student at Ohio student and sandwich student from Bangladesh; possible MS students in Cambodia depending on funds. Regulatory assessments for biopesticides. IPM Technology transfer working with government, NGOs, value chain projects, private sector. Impact assessments.

**Questions:** Srinivasan asked about plans to make technologies available for farmers. In Bangladesh, there is private sector availability – what is the plan for Cambodia and Nepal? Norton mentions that Nepal has more private sector but there can be quality problems. Issue they're aware of and working on but no big solution yet. Bowman says he's worried about *Tuta absoluta*. Cardina didn't mention it much and Norton only mentioned in Nepal. People will be searching for real practical solutions. He's positioned IPM IL as the cutting edge of *Tuta absoluta* control. It can't just be Muni who runs workshops and does awareness, we need more people to do control work. Discussion of what the IPM IL can do for *Tuta absoluta* given resources.

**4:09:** Buyung Hadi presents on EPIC rice project. Highlights: data to validate IPM components, 90% reduction in rat damage, yield increase. Over 500 individuals went through short term capacity building. Over 30 farmers involved in testing IPM components. Over 100 farmers visited adaptive research plots. 5 students (4MSC, 1PHD). Rice pests book chapter. Policy for registration of biocontrol products. Rice health survey in 2016. Lots of weeds. Lots of disease incidence and insect damage. Experiments in research stations and farmers' fields. Experiments on trichoderma and resistant varieties to manage blast. Treatment to manage rats led to 90% reduction in damage. Field testing and field days. CARDI took over to do some trainings. Gender: women involved in training but to limited extent but only 25%. Involving women through the Learning Alliance. Challenges: quality with biopesticides. Rice doctor. Recruiting a graduate student in social science. Fund reduction.

**4:34:** Nguyen Van Hoa presents on exportable fruit project in Vietnam. Overview and collaborators. Showed fruits and production area. Mango, lychee, longan, dragonfruit. Export value of the fruits. Challenges: Pests and diseases, planting materials, weather, labor. Successes: following GAP standards, resistant variety, bio-control agents, intercropping. Causative agent of witches' broom on longan due to eriophyid mite. Evaluating effectiveness of plant extract on the mite. Dragon fruit bagging. Making future activity plan.

**4:52:** John Bowman presents makes AOR presentation. Structure of Feed the Future. Staff structure. Sister projects in our area. Challenges for the research division for 2017: funding uncertainty. Mission engagement and relevance. New ILs under development. CGIAR shake up. Participants training, future of scaling programming. New FTF research strategy in progress.

**5:30:** End of day one

**Day 2 – July 11**

**8:37am:** Group splits into two meetings for Technical Advisory Committee and Program Coordinating Committee:

Technical Advisory Committee Meeting:

Review of informal meeting from previous night – began by discussing Nir’s project. Project seems off target. Hartman says the project should be terminated and the money given to another project. Discussion of whether or not Krakauer’s project should submit a workplan. Muniappan does not want to terminate the students who are being funded by the project. So IPM IL will not totally kick out the project but run it on a reduced basis. So Krakauer will submit a workplan. Srinivasan asks about the two U.S. students because they do not seem to really be a part of the project and instead are preexisting students who were put into this project.

Next project: Invasive Species Modeling for *Tuta absoluta*. Datnoff says it seems like Adiga is making progress. Srinivasan asks for clarification about the groundnut leafminer part and what the project will do for it in the next two years. Srinivasan mentions a project he is working on. Muniappan explains some background on the groundnut leafminer and the confusion over species and how many introductions to Africa there were. Problems of finding labs for molecular analysis. Then they found NC State so then IPM IL had to change all the contracts so that is in progress. Discusses challenges of modeling *Tuta absoluta*. Discussion of the purpose of this modeling and what the final impact will be. Datnoff asks Muniappan if he thinks the project is on track even given the difficulty of getting data. Muniappan says that he thinks it is going well and is on track. Hartman asks about the impact of the project and if it will help in predicting and forecasting because it hasn’t helped yet. Muniappan explains that it is a project that will take longer but that it will have good impact. Bowman says we need to have better coordination and understand what similar activities are going on in this field. Datnoff says maybe the project could team up with AVRDC. Muniappan says that we have to give them time. Srinivasan asks that when we carry out workshops if we bring other major organizations in, like CABI etc. Muniappan says for our regional workshops we can’t pay for anyone but they can come. We had symposia at ICE and lots of people came, but when we have workshops we can’t go around to see everyone that wants to come. We advertise and if people can join that is well and good.

Biocontrol of Parthenium: Muniappan says there is one problem which is the subaward with CABI. They are supposed to extend the project to Uganda, Kenya, and Tanzania. That project is not working well. Arne Witt did not attend last week’s planning meeting. The project is not progressing as well outside of Ethiopia as we had hoped, but other than that it is going very well. Mersie needs to make a decision on to go on with the subaward or dropping it. So the Kenya portion is essentially dropped. Datnoff summarizes that the project is going well and that they may want to reconsider the subaward with CABI. Srinivasan asked about follow up on 2014 releases and Muniappan says yes.

Rice Maize Chickpea IPM: Srinivasan says that in Ethiopia it is screening lots of local strains but need to consider how to make it available for production and sale. Project should consider collaboration with private sector to produce the biocontrol agent strains. Datnoff mentions that is the same issue with Norton’s project. Datnoff says that the project so far has all been in the lab and he doesn’t really see it getting to the field. But overall good progress. Bowman mentions that the push-pull work is going well.

IPM for Vegetables in East Africa: Srinivasan says that Cardina did not present enough details on IPM packages being validated and only presented on survey results. And he is not sure if they are making

sufficient efforts to address the *Tuta absoluta* problem. Bowman asked about field trials. Datnoff mentions the challenges Cardina noted, communication issues and not enough farmer training. Muniappan says Cardina needs to do more work over there. Bowman asks about trials in the field and how much progress has been made but Muniappan hasn't been given sufficient information. The TAC is not clear about how field trials are progressing and how the IPM packages are progressing. And there is not a good sense of how the OSU scientists are interacting with the host countries. Presentations need to be more focused – keep us up to date, don't give us all the background.

Bowman summarizes that we've identified two weak projects: Krakauer's and Cardina's. Krakauer's needs to go but Cardina's should be salvageable. USAID is very aware of vegetables in East Africa so it makes us look bad if it is not going well. Bowman and Muniappan will brainstorm on how to breathe life into the project. Bowman discusses that given the likely prospects for budget cuts and that their workplans are due soon, we will ask them to do hypotheticals of how they would implement their projects if their budgets were cut 25% year 4 and 50% year 5. Bowman says that Fayad said that if we talk about a 50% budget cut people might panic and leave.

**9:40:** The TAC group returns to the larger group. Datnoff gives summary of the TAC meeting. Says presentations need to be shorter and more direct about challenges. Started with Vietnam fruits. Exciting about eriophyid mite. Drop partnerships with CABI and Florida if they're not working. For Norton everything looks good. For Krakauer, they're off target. We like the part with the students in Nepal

**9:48:** Norton summarizes the Program Coordinating Committee meeting. Budget and pipeline discussion and making a workplan with a 25% cut along with regular workplan. Decisions will be different for each project and site depending on how they're structured. M.E. would like to have a quarterly conference call with all the PIs. Discussion of communications and webinars, who would the audience be, who would do them, etc. Success stories getting them out. Sharing information among the PIs. Meeting time too short, having a two-day meeting and presenting on day one about where you are and then presenting day two on next year plan. It would be nice to hear more of what's positive about the program. Hadi discussed having a special journal issue to put information on our projects.

Meeting ends. Group gets in vans to take field trip to Wollenchiti to see rearing site for *Zygogramma*.

### **Day 3, July 12:**

**7:00am:** Group leaves for Hawassa. Has lunch on the way.

**1:00pm:** Group visits field sites for Grains IPM in East Africa project. Hears from some of the farmers about the success of the push-pull trials.

### **Day 4, July 13:**

**8:30am:** Group visits Hawassa University to hear progress on the Vegetable IPM in East Africa project.

**2:00pm:** Group drives back to Addis Ababa; stops on the way to visit field site for Vegetable IPM in East Africa project.