



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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Trip report: India

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Purpose: (1) Conduct two surveys to assess farmer decision-making for adoption of new technologies: technology transfer networks and cognitive mapping. (2) Observe on-farm trials and in-country fellows' research experiments (i.e. on-station trials). (3) Hold coordination meetings with project leaders from OUAT. (4) Conduct training on the measurement and assessment of water stable aggregates in soil.

Sites Visited: OUAT University, Bhubaneswar; Regional Research and Technology Transfer station (RRTTS), Keonjhar; Project implementation villages: Tentuli and Talachampe; USAID headquarters, US Embassy, New Delhi; United States-India Educational Foundation (USIEF), New Delhi.

Description of Activities

The primary purpose of this trip was to collect survey data from village farmers. Two surveys were conducted to assess farmer decision-making for adoption of new technologies: technology transfer networks and cognitive mapping. Farmers from the Tentuli village were surveyed. In addition, on-farm trials and in-country fellows' research experiments (i.e. on-station trials) were observed and results were discussed. Coordination meetings were also held with project leaders from the partnering university OUAT to discuss observations from the field visits and to plan for data collection during the current crop season. Training was conducted to measure and assess water stable aggregates in soil, the results of which will be collected from the on-farm trials at the end of the crop season.

Aliza Pradhan and Mariko Panzella arrived in Bhubaneswar, India on 17 June. Catherine Chan-Halbrendt arrived the evening of the 18th after meeting with USAID in New Delhi and Brinton Reed arrived on the morning of the 18th from Shanghai, China where Dr. Chan-Halbrendt, Bikash Paudel, Jacqueline Halbrendt and Brinton Reed presented SMARTS project research at the 22nd Annual IFAMA World Forum and Symposium.

At the OUAT Soil Science Department in Bhubaneswar, training was conducted with the project Co-PIs, university professors and soil science and agronomy master's students (a total of 21 participants) to teach an adapted method for measuring water-stable aggregates in soil. Measuring the concentration water-stable aggregates in soil can reveal the general health, fertility, and stability of soil during rain or irrigation events. This portable tool kit was developed in Hawaii by Dr. Susan Crow and Mariko Panzella using cheap and easily found materials and is suitable for collecting samples under village conditions.

An extensive training session prior to survey implementation was conducted with OUAT students. This training was crucial for improving the accuracy and efficiency of the data collection in villages. A total of 11 students participated in the training program. In addition to training, cognitive mapping and technology network surveys were conducted with the students to discover the students' perception regarding different farming practices and the elements of farming.

The objective of the cognitive mapping survey activities was to gain primary data from farmers and students on their perceptions of farming elements and the interplay among them in an effort to 'map' their decision-making processes as they relate to crop selection and other farming decisions. This data can help scientists and extension agents understand the perspective of farmers in order to facilitate adoption of CAPS. Elements included market price for crops, input costs, household income, cultural/social effects, labor availability, soil quality, yields, minimum tillage, cover cropping, household consumption, and food security. A total of 36 surveys were completed from which half of the respondents were female and half were male.

The overall objective of the technology network study was to explore the social networks of tribal farmers for the purpose of examining and promoting sustainable farming system technologies in India. The results of these surveys will be analyzed and a social network as it pertains to diffusion of farming technologies will be developed. This will enable policy makers to identify individuals and organizations that may prove critical in the successful long-term adoption of CAPS. Pre-structured questionnaires were conducted with about 80% of the households in the project villages to identify the major sources through which farmers get new agriculture technologies. A total of 96 farmer knowledge surveys were taken, including both male and female. For effective implementation of the survey, 11 enumerators were trained including the host country PI(s), project coordinator, research fellows and associates.

The focus group meeting in Tentuli village was very well organized. Dr. Pravat Kumar Roul, host country P.I., gave an introduction speech and two male and two female farmers shared their experience about practicing CAPS in their fields. They were very happy about the maize yield and additional gains from the cultivation of cowpea. They also showed willingness to adopt the practice on a sustained basis and were very much interested in cultivating cowpea in a larger area due to its N fixation capacity and high market return (the per kg market price of cowpea was almost double than that of maize).

During the visit to on-farm trials in Tentuli village, the sowing of maize was taking place. From this season onwards, seven new farmers in addition to the original 20 participants agreed to practice CAPS in their fields. Similarly, nine farmers from the new village, Talachampe, were preparing their fields for implementation of CAPS treatments. The field conditions were comparable to those in Tentuli. All the pre-planting activities such as field preparation, soil sampling and sowing were completed for the on-station trial plots.

After the site visits, meetings were held at the Regional Research and Technology Transfer Station (RRTTS) at Kendujhar with host country partners and research associates to discuss the trip, administrative topics, and the plan for the next season of research. Frequent monitoring and accurate measurement of crop data was also discussed with the field assistants.

A visit was made to the India USAID office to update them on project advancement and create a potential network in India for sharing of resources. The USAID meeting in New Delhi included Dr. Catherine Chan-Halbrecht from the University of Hawaii, Dr. Pravat Kumar Roul from OUAT, Cereals Systems Initiative for South Asia (CSISA) representative Anand Kumar and USAID representatives A.S. Dasgupta, Suzanne Ross and Gary Robbins. The SMARTS PIs presented recent project activities and achievements to date and discussed planned activities for the future. Dr. Roul gave a power point presentation featuring the project sites, project initiation, results and updates from recent field visits. Among the topics discussed were ways in which SANREM CRSP and CSISA in Odisha might be able to collaborate – specifically:

- Inclusion of SANREM CRSP in CSISA stakeholder consultation to be held on the 10th of July in Bhubaneswar in Odisha
- Support in converting CA material – CSISA fact sheets, brochures, etc. into Oriya language for dissemination to all organizations in Odisha
- Video documentation (through Digital Green) and sharing of practices that are being developed with the 40 farmers in Kendujhar, sharing of the videos with Digital Green Odisha partners Pragati and VARRAT, and potential visits for farmers from these organizations
- Continuous cooperation between these two projects once CSISA starts its activities
- Inclusion of SANREM CRSP into the CSISA newsletter e-mail list.

On June 18, 2012, Dr. Catherine Chan-Halbrecht and Dr. Pravat Kumar Roul met with Ms. Vibha Sharma, Director of US-India Higher Ed Cooperation at USIEF (US India Education Foundation), with whom they discussed institutional collaborative project activities and also about an unsuccessful project submission. We were encouraged to hear that there will be another call for proposals soon. After Dr. Roul presented the project activities, Ms. Vibha Sharma requested a write up of 300-500 words describing the SMARTS project educational component (faculty/student exchanges, research, capacity building, etc.) which will be featured on the USIEF website, making SMARTS project institutional collaboration visible to a wide audience.

Suggestions and Recommendations

During the water stable aggregate training it was felt that a complete video of the procedure would have been better for the students and faculty understanding. So immediately after coming back, project members completed a video and posted to the website (available at

<http://www.youtube.com/watch?v=S1GogaMk8l8>). By providing a step-by-step audio and video reference tool, this video will help improve the accuracy and timeliness of data reporting.

During the focus group, the farmers complained about the damage of cowpea plants from the leaf litter of maize due to close spacing between the plants. As a solution, one project fellow is going to do his master's project on spacing related issues in maize and cowpea intercropped systems to determine optimum spacing.

Training Activities Conducted:

Program type (workshop, seminar, field day, short course, etc.)	Date	Audience	Number of Participants		Training Provider (US university, host country institution, etc.)	Training Objective
			Men	Women		
Water stable aggregate training	18- June	OUAT professors and master students	10	11	University of Hawaii	Teach students and professors how to use the soil aggregate testing kit so that they may be able to use it correctly for this project in the future.
Survey Training	18- June	Master Students	6	5	University of Hawaii	To train the enumerators about cognitive mapping and technology network surveys and also determine and record their perceptions.
Survey training	19- June	Host country P.I. and Co-P.I (s), Project Coordinator, Research Associates, and project fellows	10	2	University of Hawaii	To train the enumerators about cognitive mapping and technology network surveys.

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Focus group meeting in Tentuli



On-Farm trial visit in Tentuli



On-farm trial visit in Talachampe



On Station trials at RRTTS, Keonjhar