



## Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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### Trip Report: Nepal

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- Purpose:**
- (1) Collect data through three surveys: (i) technology transfer networks; (ii) gender empowerment and distribution of labor, particularly with respect to agricultural activities, and (iii) cognitive modeling to assess farmer decision-making for adoption of new technologies.
  - (2) Observe on-farm trials and in-country fellows research experiments.
  - (3) Hold coordination meetings with project leaders IAAS and LI-BIRD. And
  - (4) And conduct training to measure and assess water stable aggregates in soil.

**Sites Visited:** LI-BIRD headquarters, Pokhara  
LI-BIRD site office, Majhimtar, Dhading District  
Project implementation villages in Thumka, Gorkha District; Hyakrang,  
Dhading District; and Khola Gaun, Tanahun District  
TU/IAAS University and Fellows field sites, Chitwan  
USAID Nepal headquarters, US Embassy, Kathmandu

### **Description of Activities**

This trip involved monitoring the research activities conducted in Nepal, and collecting data from village farmers, as well as local researchers working at our in-country partners (LI-BIRD and IAAS). Three surveys were conducted: (i) technology transfer networks; (ii) gender empowerment and distribution of labor, particularly with respect to agricultural activities, and (iii) cognitive modeling to assess farmer decision-making for adoption of new technologies. Farmers from the three project villages, Thumka, Hyakrang and Khola Gaun, were surveyed. Furthermore, on-farm trials and in-country fellows' research experiments were observed and discussed. Coordination meetings were also held with project leaders from partners, the Institute of Agriculture and Animal Sciences (IAAS) at Tribuhan University (TU) and the NGO (LI-BIRD) 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, to be collected from the on-farm trials at the end of the crop season. At least 24 students and 6 other professionals were trained on tools for gender study, technology network analysis, and cognitive mapping techniques. Village weather stations were also monitored and data from soil temperature sensors were collected.

A training session was first held with Master's students at IAAS to prepare them to serve as survey enumerators during this trip. As identified from our previous experiences in Nepal, an extensive training session prior to survey implementation was crucial for improving the accuracy and efficiency of the data collection. The students were trained on each of the three surveys: technology transfer networks, gender empowerment and distribution of labor, and cognitive modeling to assess farmer decision-making for adoption of new technologies. Furthermore, the students answered the cognitive modeling surveys from their perspective, so that researcher perceptions of adoption and the farming system could later be compared and contrasted with those of the village farmers. A total of 24 students, including 12 females, and 5 professional belonging to university and LI-BIRD, including 1 female, were trained during this session.

Also during the visit to IAAS, two field experiments of SMARTS project graduate research fellows were visited. The first of these experiments was a trial assessing various maize varieties and intercrop treatments. Three maize varieties (QPM, Manakamana-1, and Arun-2) and four intercrop species (millet, black gram, green gram, and cowpea) were used. The second trial focused on maize production under three tillage treatments (farmer's practice, strip till, and dibble) and various concentrations of farmyard manure (2, 5, 10, and 20 tons/ha). Both trials have been established under conditions similar to those in the participating villages. During the field visit, the experimental design and various data collection methods were discussed to ensure the accuracy and validity of the results to be collected later in the cropping season.

Field visits were made to each of the three project sites, in the villages of Thumka, Hyakrang, and Kholgaun. In each village, the IAAS students conducted each of the three surveys as face-to-face interviews with male and female heads of household.

Technology Transfer Network survey was conducted to explore social capitals among tribal farmers which can be used to examine and promote sustainable farming system technologies in Nepal. We asked pre-structured questionnaires to about 80% of the households in the project villages to identify the major sources through which farmers get new agriculture technologies. Initial observations indicate very strong farmer-to-farmer network of technology transfer in the villages. The development agencies and private entrepreneurs like input suppliers were also identified as major sources of new technology for the farmers. As expected, the technology transfer network of the conservation agriculture was very weak.

For the survey on gender, questions were asked to determine the distribution of labor for both agricultural and non-agricultural activities and in terms of the total time spent per day/month/year between the male and female heads of household. Questions were also asked regarding the level of participation in agricultural and household decision-making between men and women. The results from this study will aid in assessing the household intricacies regarding the adoption of new agricultural practices, such as CAPS, as well as determine the probable shifts in the burden of labor between the genders from introduced CAPS practices.

The cognitive modeling survey was designed as a follow-up to survey work conducted on previous trips. The objective of the survey was to determine the key factors regarding decision-making for the farming system, as well as the strength of relationship of such factors to one another. The results from this survey are expected to help in determining which aspects of CAPS would be most important to village farmers and in identifying the gaps between researcher perspectives and those of the farmers.

Additionally, seasonal calendars were created in each village based on focus group discussions with farmers, specifically looking at: seasonal weather patterns, the timing of various agricultural activities, community and off-farm activities, and identifying the members of the community that participate in each activity. Village weather stations were also checked for proper functioning and data from soil temperature sensors were collected.

At the LI-BIRD headquarters in Pokhara, training was conducted with the project associate and soils expert, B.B. Tamang to teach an adapted method for measuring water-stable aggregates in soil. Measuring water-stable aggregates in soil can reveal the general health, fertility, and stability during rain or irrigation events. This method 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. A video has also been made and made available to everyone (available at <http://www.youtube.com/watch?v=S1GogaMk818>).

Finally, a visit was made to the Nepal USAID office to update them on project activities. The USAID meeting in Kathmandu included both Jacqueline Halbrecht and Bikash Paudel from the University of Hawaii, Dr. Shreeram Prasad Neopane of LI-BIRD, Dr. Narendra Chaudhary from IAAS and met with Navin Hada, Bronwyn Llewellyn (Environment Officer), and Luis E. Guzman (Feed the Future Team Leader) from USAID. The University of Hawaii team explained the recent project activities and achievements to date, as well as mentioned planned activities for the future. LI-BIRD and IAAS presented the features of project sites, project initiation, and recent field visit updates. The team from USAID was eager to know the findings of the study, and possibility of replicating the technology and research tools in other areas.

### **Suggestions/Recommendations:**

- Weak monitoring of the technical aspects of implementing CAPS in farmers' field was observed, which had led to sub-optimal level of conservation benefits to be observed by the farmers. Hence, capacity building of the in-country partners and more frequent monitoring, especially at the time of standing crops in the research plots is suggested.
- Inadequate knowledge and information to the community members on the importance of research trials and recorded data was felt. Hence, strengthening the project on community development and extension activities is necessary.
- Some of the members in the community have complaints about not getting enough benefits from the projects. Although, it did not affect their level of cooperation in this year's research activities, but some clear incentive strategies should be included in the project, so that the level of cooperation from the community is maintained sustainably.

### **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		
workshop	19- June	IAAS Project Associates and Master's students	12	12	University of Hawaii	To train IAAS students as survey enumerators for the technology networks, gender, and cognitive mapping surveys
workshop	27- June	LI-BIRD Soils Specialist	1	0	University of Hawaii	To train the LI-BIRD soils specialist on a new methodology for sampling and measuring water stable aggregates in soils at the on-farm trials

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