Methodologies for Strengthening Informal Indigenous Vegetable Seed Systems in Northern Thailand and Cambodia

A. Bicksler[1], R. Bates[2], R. Burnette[3], T. Gill[4], L. Meitzner Yoder[1], Y. Srigiofun[5]

[1]International Sustainable Development Studies Institute, Chiang Mai, Thailand
[2]Department of Horticulture, The Pennsylvania State University, USA
[3]ECHO Asia Regional Office, Chiang Mai, Thailand
[4]Office of International Programs, The Pennsylvania State University, USA
[5]Faculty of Agricultural Production, Maejo University, Chiang Mai, Thailand

1. Background and Introduction

- Informal seed systems provide access to locally-adapted indigenous crops
- These systems constitute an important component of sustainable vegetable production for resource-poor farmers in Southeast Asia
- A rich diversity of indigenous germplasm exists in Southeast Asia and represents a valuable resource for the development and improvement of crop species locally, regionally and globally
- Little information is known about the seed-pathways, storage methodologies, and germplasm diversity comprising annual and perennial vegetable seed systems in Thailand and Cambodia

2. Purpose

•The goal of this project is to increase the impact and reach of these informal seed systems locally and regionally. We plan to build linkages between under-represented Southeast Asia farmers, a local innovative seed bank, and extension training systems.

3. Methodology

- The project uses mixed quantitative and qualitative methods, to optimize data triangulation on multiple complex topics (Table 1).
- Research was conducted in three village clusters (2 in Northern Thailand and 1 in Cambodia); with four villages sampled in each cluster
- A common baseline vegetable vocabulary was created using half-page picture cards of 77 regionally important annual and perennial vegetable species
- Group card sorts were complemented by semi-structured interviews and observations of vegetable seed storage and farmer-innovated seed preservation and storage methods at the household level
- At the end of research in each cluster, seed swaps are held so that villagers can exchange their best seed with each other across ethnicities and socioeconomic classes

Methodologies	Expected Results	Expected Impacts
• Village mapping	• Seed species	• Linkages/partnerships created and strengthened
• Village surveys	• Seed pathways	• Local people empowered
• Household interviews	• Germplasm gatekeepers	• Knowledge and seed transfer
• Photo card sorts	• Seed system best practices	• Preservation of biodiversity
• Seed tests	• Seed viability	• Baseline data of local vegetable seed systems
	• Germplasm distribution through ECHO Asia Seed Bank	• Extension of seed system best practices

Table 1: Methodologies, expected results, and expected impacts of this research

4. Seed Viability and Vigor Experiments

- Seed lots donated during the interviews were accessioned to link the seeds with the demographics of the donators and their storage methodologies
- Seeds were sorted and damaged seeds were discarded; the remaining healthy seeds were divided and set aside for various uses (Figure 1)
- An RCBD using a petri dish method for seed viability determination was used in conjunction with a solar-powered seed germination chamber that we constructed
- Seed viability as percent germination and mean time to 50% germination were calculated for each treatment; viability will be regressed with farmer demographics and farmer-innovated seed saving technologies to deduce best practices

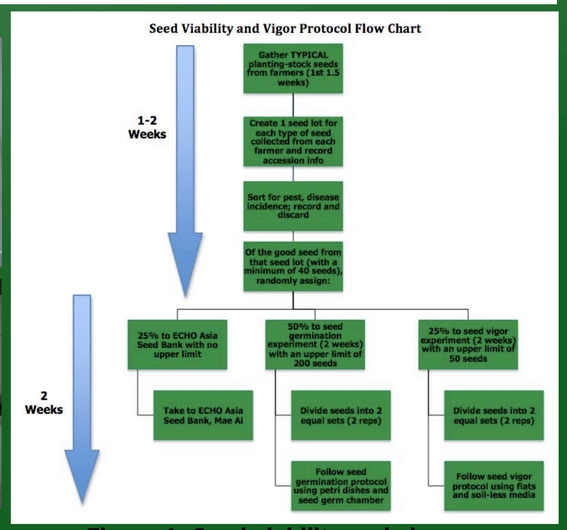

Figure 1: Seed viability and vigor experiments flow chart

5. Results and Expected Outcomes

•In the first month, 36 accessions were procured from one village cluster and subjected to the seed viability experiment
  - •Mean germination of 42.5% for farmer-saved seeds
  - •Mean time to 50% germination of 4.9 days
  - •Comprised of 7 storage methods and 4 storage locations

•Research in additional village clusters will bolster data and help corroborate viability of donated seeds to species, varieties, and particular seed preservation and storage methods, which will be extended to farmers, helping them better save their seeds

•Baseline data of local seed systems and storage methodologies will be created that will strengthen farmer seed systems; noteworthy germplasm will be distributed free-of-charge to farmers, researchers, and NGO workers via the ECHO Asia Seed Bank; and this research will strengthen linkages between diverse academic and NGO actors