Feed the Future: Innovation Lab for Integrated Pest Management Trip Report

Country(s) Visited: Cambodia

Dates of Travel: April 26-29, 2016 (vary among travelers)

Travelers’ Names and Affiliations:

<table>
<thead>
<tr>
<th>Participant</th>
<th>Affiliation</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam Sparks</td>
<td>University of Southern Queensland, Australia</td>
<td><a href="mailto:Adam.Sparks@usq.edu.au">Adam.Sparks@usq.edu.au</a></td>
</tr>
<tr>
<td>Thomas Erich Jäkel</td>
<td>GIZ, Thailand</td>
<td><a href="mailto:thomas.jaekel@cimonline.de">thomas.jaekel@cimonline.de</a></td>
</tr>
<tr>
<td>Akira Yamauchi</td>
<td>Nagoya University, Japan</td>
<td><a href="mailto:ayama@agr.nagoya-u.ac.jp">ayama@agr.nagoya-u.ac.jp</a></td>
</tr>
<tr>
<td>Annamalai Sivapragasam</td>
<td>CABI Southeast and East Asia, Malaysia</td>
<td><a href="mailto:a.siva@cabi.org">a.siva@cabi.org</a></td>
</tr>
<tr>
<td>Jan Willem Ketelaar</td>
<td>FAO Regional Office for Asia and the Pacific, Thailand</td>
<td><a href="mailto:johannes.ketelaar@fao.org">johannes.ketelaar@fao.org</a></td>
</tr>
<tr>
<td>William Harvey Reissig</td>
<td>Cornell University</td>
<td><a href="mailto:whr1@cornell.edu">whr1@cornell.edu</a></td>
</tr>
<tr>
<td>Lu Zhong Xian</td>
<td>Zhejiang Academy of Agricultural Sciences, China</td>
<td><a href="mailto:luzxmh@sina.com">luzxmh@sina.com</a></td>
</tr>
<tr>
<td>Nguyen Duc Cuong</td>
<td>CuLoong Rice Research Institute, Vietnam</td>
<td><a href="mailto:cuongmon@yahoo.com">cuongmon@yahoo.com</a></td>
</tr>
<tr>
<td>Chanya Maneechote</td>
<td>Weed Science Society of Thailand</td>
<td><a href="mailto:chanyaku36@gmail.com">chanyaku36@gmail.com</a></td>
</tr>
<tr>
<td>Buyung Hadi</td>
<td>CESD, IRRI</td>
<td><a href="mailto:b.hadi@irri.org">b.hadi@irri.org</a></td>
</tr>
<tr>
<td>Ricardo Oliva</td>
<td>GB, IRRI</td>
<td><a href="mailto:r.oliva@irri.org">r.oliva@irri.org</a></td>
</tr>
<tr>
<td>Virender Kumar</td>
<td>CESD, IRRI</td>
<td><a href="mailto:v.kumar@irri.org">v.kumar@irri.org</a></td>
</tr>
<tr>
<td>Nancy Castilla</td>
<td>CESD, IRRI</td>
<td><a href="mailto:n.castilla@irri.org">n.castilla@irri.org</a></td>
</tr>
<tr>
<td>Alexander Stuart</td>
<td>CESD, IRRI</td>
<td><a href="mailto:a.stuart@irri.org">a.stuart@irri.org</a></td>
</tr>
<tr>
<td>Grant Singleton</td>
<td>CESD, IRRI</td>
<td><a href="mailto:g.singleton@irri.org">g.singleton@irri.org</a></td>
</tr>
<tr>
<td>Il Ryong Choi</td>
<td>GB, IRRI</td>
<td><a href="mailto:i.choi@irri.org">i.choi@irri.org</a></td>
</tr>
<tr>
<td>Elena Genil</td>
<td>CESD, IRRI</td>
<td><a href="mailto:e.genil@irri.org">e.genil@irri.org</a></td>
</tr>
</tbody>
</table>

Purpose of Trip: Regional learning forum on rice IPM and inception meeting of EPIC project

Sites Visited: CARDI (Cambodian Agricultural Research and Development Institute), Phnom Penh, Cambodia

Description of Activities/Observations:
The main activities are to conduct regional learning forum on rice IPM (April 28) and inception meeting for EPIC (April 29). The schedule and participant list for the two fora are attached. The full presentations of the fora will be archived at the project website currently being developed at IRRI (will be a part of IRRI website). The notes for the two fora are as follow:
Regional learning forum workshop (April 28 2016)

What are the dominant/important rice biotic stressors in Cambodia, how are they currently managed and what are the research gaps?

**Invertebrate/Vertebrate pests**

1. Rats
   Currently managed by community tail collection, electric fence, trap barrier system and rat poison (zinc phosphate). Recommendation for research gaps include how to optimize bounty system (tail collection), community TBS, alternative to zinc phosphate and usage of bait attractants.

2. Stemborer
   Currently managed by stubble removal (burning straw) and insecticide. Research gaps include usage of Trichogramma parasitoid in an inundative program, ecological engineering by incorporating vetiver grasses, pheromone traps (to monitor? May be even to control?) and working out economic threshold and optimum timing for insecticide application.

3. Golden apple snail
   Currently managed by manual collection of eggs and adults (at individual field level), usage of molluscicide and baits (palm sugar), water level management and community-based bounty collection. Research gaps include exploration of alternative molluscicide (e.g. saponin) and rice-duck integration to manage golden apple snail.

**Weeds**

<table>
<thead>
<tr>
<th>Important weeds</th>
<th>Current management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grasses and Sedges</strong></td>
<td>Land preparation (ploughing + harrowing)</td>
</tr>
<tr>
<td></td>
<td>Pretilachlor (2-3 DAS) in standing water</td>
</tr>
<tr>
<td></td>
<td>Butachlor (2-3 DAS) without standing water</td>
</tr>
<tr>
<td><strong>Echinochloa spp., Leptochloa</strong></td>
<td>Bispyribac (8-11 DAS)</td>
</tr>
<tr>
<td></td>
<td>2,4-D (18-25 DAS)</td>
</tr>
<tr>
<td><strong>Fimbristylis milicea</strong></td>
<td>2-3 herbicide application</td>
</tr>
<tr>
<td><strong>Weedy rice</strong></td>
<td>Seed sourcing (certified seeds) → challenge: ~80% are own seeds</td>
</tr>
</tbody>
</table>

Research gaps:
- Knowledge on application technology and product selection
- There is a shortage of weed scientists in the country
- There is a general lack of knowledge on weed management among practitioners

**Diseases**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Likelihood</th>
<th>Yield impact</th>
<th>Current management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf blast</td>
<td>++++</td>
<td>---</td>
<td>Resistant varieties</td>
</tr>
<tr>
<td>Neck blast</td>
<td>+++</td>
<td>-----</td>
<td>Chemical fungicide</td>
</tr>
<tr>
<td>Brown spot</td>
<td>++++</td>
<td>-</td>
<td>Nutrient management</td>
</tr>
<tr>
<td>Bacterial leaf blight</td>
<td>++</td>
<td>---</td>
<td>Copper-based fungicide</td>
</tr>
<tr>
<td>Sheath blight</td>
<td>++++</td>
<td>--</td>
<td>Fungicide/cultural practices</td>
</tr>
<tr>
<td>Sheath rot</td>
<td>++</td>
<td>---</td>
<td>None listed</td>
</tr>
</tbody>
</table>

**Research gaps:**
- Identification of effective biological control agents and market incorporation of these agents
- Usage of fungicides as a preventative agents and whether over-application of fungicides have a negative impact
- Usage of certified seeds/ treated seeds to manage some of the seed-borne diseases.

What are the current scaling out/extension models in Cambodian rice sector? What are the status of these models and how can they be strengthened?

**Current scaling out models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Status</th>
<th>How to strengthen                                                                horia ecstatica</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cambodian national IPM program</strong></td>
<td>Approximately 250,000 farmers are covered by this training program (~3% of the nation's farmers)</td>
<td>Improving training curriculum by introducing topics such as:</td>
</tr>
<tr>
<td>FFS</td>
<td></td>
<td>- Pesticide alternatives</td>
</tr>
<tr>
<td>Farmer competition</td>
<td></td>
<td>- Clearer guidance on decision-</td>
</tr>
<tr>
<td>Farmer exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Participatory field research
- Climate resilience
- Identify ways for extension to respond to farmers faster
- Development of communication tools and materials in local language
- Educational capacity enhancement for staff both in extension communication and in R&D to generate new knowledge and solutions
- Development of policy environment that allows for higher levels of government funding will reduce dependency to external funding

<table>
<thead>
<tr>
<th>NGO programs (e.g. CEDAC)</th>
<th>Advanced in development but small scale</th>
<th>EPIC validated technologies may be incorporated to CEDAC farmers' guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Organic rice cultivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Organic pesticides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pesticide use and safety awareness campaign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The common methods include farmer's training, exchange visits, demonstrations and broadcast of communication materials</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>University capacity building project</th>
<th>Research-based graduate student training at Royal University of Phnom Penh focusing on natural biocontrol function provided by wildlife community</th>
<th>Research support</th>
</tr>
</thead>
</table>
Pest point mobile application to collect data on pest, diseases and other disorders is an output of an ACIR funded project in Cambodia, Lao PDR and Thailand. Linkages may be formed with the project to improve the usage of the app and provide a real-time monitoring of rice pests and diseases in Cambodia.

What are the policy/strategic gaps to improve rice IPM adoption in the Cambodia?

Policy gaps to improve IPM adoption in the country:

- There is a need to improve the regulatory and enforcement framework for registration, commercialization and scaling out of environmentally friendly IPM technologies.
- There are numerous extension modes/models in the country conducted by different organizations. There is a need to either integrate or build bridges between the different projects/extension models.
- IPM extension is usually communicated as stand-alone piece of information. This is taking IPM out of the broader context of rice cultivation. There is a need to embed IPM extension information into a broader crop management context during its communication to farmers.

EPIC inception meeting (April 29 2016)

Brainstorming session on impact assessment and M&E

- There is a need to realign the questionnaires and sampling strategy for impact assessment, rice health survey, particularly for production situation, and KAP survey. The sampling sizes for all three assessments are different. The impact assessment will have the largest sampling size followed by KAP survey and rice health survey. Thus the samples of the rice health survey can be a subset of the KAP survey and the samples of the KAP survey can be a subset of the impact assessment. There is a need to coordinate the questionnaire development for all three activities to avoid duplication and facilitate brevity. Coordination will be conducted via emails in the month of May and June. George Norton is leading the questionnaire development with input from EPIC participants.
- A postdoctoral fellow is being hired to be stationed at Phnom Penh. The fellow will oversee the implementation of impact assessment for EPIC and the synchronization of questionnaire development with KAP survey and rice health assessment survey.
- A website for repository of project documents is being developed at IRRI.

Brainstorming session on adaptive and innovative research platforms
Experimental design and technologies for adaptive research should be well planned. The preferred layout appears to be that a replication is superimposed on a farmer’s field so that all the treatments or IPM packages are located in one farmer’s field.

There is a need to develop IPM packages after conducting needs assessment to tailor them to the needs of farmers.

Selecting champion or advanced farmers as a subset of adaptive research participants will improve the likelihood of research success. This will also increase the likelihood of sustained adoption after the research phase. GDA through its national IPM program will be proactive in selecting champion farmers.

There is a need to consider the use of resistant and popular varieties as part of IPM packages. Market demand of varieties should be considered to ensure adoption by farmers. Dule Zhao mentioned that suitable varieties were identified under the USAID ASTV project.

Nagoya University gave a presentation on their innovative transnational PhD program. The agricultural program will be able to provide scholarship support for 1 student per year (research costs and co-supervision from EPIC/IRRI scientists). There is a possibility to involve a Master program in biodiversity conservation at RUPP and Master programs at RUA in the project.

There is a significant concern on starting the adaptive research platform in the first year of the project. Since this will be conducted before the rice health survey is done, the target pests/diseases will be based on consultation with GDA. The plan is to start field experiments at a planned research center at RUA (funded and initiated by a consortium of Innovation Labs and USAID mission in Cambodia) the wet season of 2016. The protocol for the experiment will be developed by IRRI in consultation with GDA and RUA. The implementation of the experiment will mainly be done by the planned center at RUA with data collection by GDA in consultation with IRRI.

Brainstorming session on providing information and capacity building for policy reform

Registration of *Trichoderma* as a biological control agent in Cambodia has been delayed and reasons for the delay are not clear. There seems to be a need for a targeted information campaign on the safety of biocontrol options toward the policy makers.

*Trichoderma* can be cultured and mass produced by farmers but efficacy is usually lower than the efficacy of commercially available product. There is also a significant risk of contamination in farmer-produced *Trichoderma*.

*Trichoderma* is registered as an organic fertilizer in Cambodia and will be used as a part of the intervention technology in EPIC.

Brainstorming session on mapping rice pest and disease risks

Assessment of nematodes should be considered particularly in drought-prone areas.

Rice health survey should generate information on the relationship between the intensity of pests and diseases on yield and on the relationship between production situation on pest profile.
### Training Activities Conducted:

<table>
<thead>
<tr>
<th>Program type (workshop, seminar, field day, short course, etc.)</th>
<th>Date</th>
<th>Audience</th>
<th>Number of Participants</th>
<th>Training Provider (US university, host country institution, etc.)</th>
<th>Training Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional learning forum on rice IPM</td>
<td>April 28 2016</td>
<td>Regional IPM experts; other international organizations with ongoing rice related projects in Cambodia; CARDI, GDA, PDA, CEDAC, RUA, RUPP staffers; representatives from Nagoya University, Cornell University; IRRI scientists; Management entity</td>
<td>36 10</td>
<td>Regional IPM experts from Cu Long Delta Rice Research Institute (Vietnam), Zheijiang academy of agricultural sciences (China) and Thai Department of Agriculture (Thailand), international organizations (IFAD, CABI, IRRI, FAO), GDA and CARDI</td>
<td>Providing a learning platform on IPM research and practices across the region, discussing IPM challenges (target pests/weeds/diseases, research gaps), and gaps in outscaling modes and policy for successful rice IPM implementation in the country.</td>
</tr>
<tr>
<td>EPIC Inception meeting</td>
<td>April 29 2016</td>
<td>CARDI, GDA, PDA, CEDAC, RUA, RUPP staffers; representatives from Nagoya University, Cornell University, GIZ; IRRI scientists; Management entity</td>
<td>28 9</td>
<td>IRRI, Virginia Tech, Cornell University, CEDAC, GIZ</td>
<td>Presenting the plan for the first year activities of EPIC and brainstorming for the details of each activity</td>
</tr>
</tbody>
</table>

### Suggestions, Recommendations, and/or Follow-up Items:

- Questionnaire development for the impact assessment and pesticide KAP survey will be conducted as an online exchange of ideas between George Norton and EPIC participants (Buyung Hadi, Postdoctoral fellow, Harvey Reissig, Keam Makarady) and will take place in May-June 2016. The impact assessment is planned for July 2016 (assuming a normal onstart of wet season).
- The training for rice health survey surveyors and enumerators is planned at CARDI in June 2016.
• Sampling strategy and site selection for the impact assessment, pesticide KAP survey and rice health survey will be synchronized via a number of visits and online discussions between George Norton, Harvey Reissig, Keam Makarady, CARDI, GDA and PDA.

• To jumpstart field activity in the first year, a field experiment is planned at the new research center at RUA (funded and initiated by a consortium of Innovation Labs and USAID mission in Cambodia) the wet season of 2016. The protocol for the experiment will be developed by IRRI in consultation with GDA and RUA (to be sent out in May 2016). The implementation of the experiment will mainly be done by the planned center at RUA with data collection by GDA in consultation with IRRI (to start by the onstart of wet season 2016). The management entity (Virginia Tech) will coordinate and facilitate collaboration/relations with the new center at RUA.

**List of Contacts Made:**

Same as the participant list (appendix 2)

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Organization</th>
<th>Contact Info (address, phone, email)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1. Schedule of regional learning forum on rice IPM and EPIC inception meeting

**Thursday, 28 April 2016 – Regional learning forum on rice IPM**

**Section 1 – Overview**

*Chair: Khay Sathya and Dule Zhao*

0830-0900  Welcome messages  Vang Seng, CARDI
           Sang Lee, USAID Mission
           Grant Singleton, IRRI

0900-0920  IPM IL – An Overview  Rangaswamy Muniappan
           IPM Innovation Lab-Virginia Tech

0920-0935  EPIC: Project overview  Buyung Hadi

0935-1000  Group photo

1000-1020  Coffee/tea break

**Section 2 – Rice IPM in East and Southeast Asia – Lessons Learned**

*Chair: Chou Cheythyrith and Buyung Hadi*

1000-1020  Cambodia – Rice IPM experience  Nginn Chhay, GDA

1020-1040  Vietnam – Rice IPM experience  Nguyen Duc Cuong, CLRRI

1040-1100  China – Rice IPM experience  Lu Zhong Xian,
           Zhejiang Academy of Agricultural Sciences

1100-1120  Thailand – Rice IPM experience  Chanya Maneechote
           President, Weed Science Society of Thailand

1120-1135  Q & A

**Section 3 – Sustainable Rice Production in Southeast Asia – National and Regional Programs/Projects**

*Chair: Keam Makarady and Ill Ryong Choi*

1135-1155  FAO policy advise and initiatives  Jan Willem Ketelaar, FAO
           in support of up-scaling Rice IPM in Asia

1155-1215  IFAD Portfolio in Cambodia  Sakphouseth Meng, IFAD

1215-1225  Q & A

1225-1330  Lunch

1330-1350  Plantwise  Annamalai Sivapragasam, CABI SE Asia

1350-1410  ASTV  Dule Zhao, IRRI

1410-1420  Q & A

1420-1435  Coffee/tea break
Section 4 – Workshop on policy, extension and research needs for Cambodian Rice IPM

Chair: Ricardo Oliva (Disease), Virender Kumar (Weed), Alex Stuart (Pests)

1435-1630  Research, outscaling and policy needs for rice IPM in Cambodia
1630-1700  Workgroup reports
1700-1715  Closing remarks  Ngin Chhay, GDA

Friday, 29 April 2016 – EPIC inception meeting

Section 1 – Impact Assessment

0830-0840  Workshop overview  Khay Sathya, CARDI
0840-0900  M&E and Communication Strategy  Buyung Hadi, IRRI
0900-0920  Impact assessment and indicators  George Norton, Virginia Tech
0920-1000  Brainstorming on impact assessment and M&E strategy

1000-1015  Coffee/tea break

Section 2 – Adaptive and Innovative Research Platforms

1015-1035  Adaptive research cycle  Alexander Stuart, IRRI
1035-1055  Innovative graduate training  Akira Yamauchi, Nagoya University
1055-1105  Developing the national collection for rice pathogen strains in Cambodia – A capacity building exercise

1105-1145  Brainstorming on adaptive and innovative research platforms  A Stuart, A Yamauchi, R Oliva

Section 3 – Providing Information and Capacity Building for Policy Reform

1300-1320  Validation, promotion and registration of biocontrol products in SE Asia  Thomas Jäkel, GIZ
1320-1340  Pesticide KAP survey among rice farmers  Keam Makarady
            Survey objectives and strategy  CEDAC
1340-1420  Brainstorming on KAP survey and pathways to policy reform  T Jäkel, H Reissig, K Makarady
1420-1435  Coffee/tea break

Section 4 – Mapping Rice Pest and Disease Risks

1435-1455  Rice health survey portfolio  Nancy Castilla IRRI
Pulling everything together: Analysis of rice health survey data

Brainstorming on risk mapping, training, implementation and needed data

Closing remarks
Appendix 2. Participant list

List of Participants - EPIC Workshop, CARDI, Phnom Penh, Cambodia
28-29 April 2016

<table>
<thead>
<tr>
<th>No.</th>
<th>NAME</th>
<th>INSTITUTION</th>
<th>GENDER</th>
<th>E-MAIL ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Annamalai Sivapragasam</td>
<td>CABI, SEA, Malaysia</td>
<td>M</td>
<td><a href="mailto:a.siva@cabi.org">a.siva@cabi.org</a></td>
</tr>
<tr>
<td>2</td>
<td>Khay Sathya</td>
<td>CARDI, Cambodia</td>
<td>M</td>
<td><a href="mailto:khamcardi@yahoo.com">khamcardi@yahoo.com</a></td>
</tr>
<tr>
<td>3</td>
<td>Oeurn Samoul</td>
<td>CARDI, Cambodia</td>
<td>M</td>
<td><a href="mailto:oeurn.samoul@gmail.com">oeurn.samoul@gmail.com</a></td>
</tr>
<tr>
<td>4</td>
<td>Heng Sovanroth</td>
<td>CARDI, Cambodia</td>
<td>M</td>
<td><a href="mailto:hengsovanroth87@gmail.com">hengsovanroth87@gmail.com</a></td>
</tr>
<tr>
<td>5</td>
<td>Kong Parameas</td>
<td>CARDI, Cambodia</td>
<td>M</td>
<td><a href="mailto:parameaskong@gmail.com">parameaskong@gmail.com</a></td>
</tr>
<tr>
<td>6</td>
<td>Pream Rady</td>
<td>CARDI, Cambodia</td>
<td>F</td>
<td><a href="mailto:radypream1@gmail.com">radypream1@gmail.com</a></td>
</tr>
<tr>
<td>7</td>
<td>Kong Sokvisal</td>
<td>CARDI, Cambodia</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Keam Makarady</td>
<td>CEDAC, Cambodia</td>
<td>M</td>
<td><a href="mailto:makarady@cedac.org.kh">makarady@cedac.org.kh</a></td>
</tr>
<tr>
<td>9</td>
<td>Vim Sopha</td>
<td>CEDAC, Cambodia</td>
<td>M</td>
<td><a href="mailto:sopha@cedac.org.kh">sopha@cedac.org.kh</a></td>
</tr>
<tr>
<td>10</td>
<td>Nguyen Duc Cuong</td>
<td>CLRRI, Vietnam</td>
<td>M</td>
<td><a href="mailto:cuongmon@yahoo.com">cuongmon@yahoo.com</a></td>
</tr>
<tr>
<td>11</td>
<td>Harvey Reissig</td>
<td>Cornell University, USA</td>
<td>M</td>
<td><a href="mailto:whr1@cornell.edu">whr1@cornell.edu</a></td>
</tr>
<tr>
<td>12</td>
<td>Chanya Maneechote</td>
<td>DOA, Thailand</td>
<td>F</td>
<td><a href="mailto:chanyaku36@gmail.com">chanyaku36@gmail.com</a></td>
</tr>
<tr>
<td>13</td>
<td>Johannes Ketelaar</td>
<td>FAO-RAP, Thailand</td>
<td>M</td>
<td><a href="mailto:johannes.ketelaar@fao.org">johannes.ketelaar@fao.org</a></td>
</tr>
<tr>
<td>14</td>
<td>Ngin Chhaya</td>
<td>GDA, Cambodia</td>
<td>M</td>
<td><a href="mailto:chhay.ipm@online.com.kh">chhay.ipm@online.com.kh</a></td>
</tr>
<tr>
<td>15</td>
<td>Chhay-Kry</td>
<td>GDA, Cambodia</td>
<td>F</td>
<td><a href="mailto:kaychhay@yahoo.com">kaychhay@yahoo.com</a></td>
</tr>
<tr>
<td>16</td>
<td>Chou Chethyrrith</td>
<td>GDA, Cambodia</td>
<td>M</td>
<td><a href="mailto:thyrit72@gmail.com">thyrit72@gmail.com</a></td>
</tr>
<tr>
<td>17</td>
<td>Samoru Channa</td>
<td>GIZ, Cambodia</td>
<td>M</td>
<td><a href="mailto:chhansamorn@giz.de">chhansamorn@giz.de</a></td>
</tr>
<tr>
<td>18</td>
<td>Thomas Jëkel</td>
<td>GIZ, Thailand</td>
<td>M</td>
<td><a href="mailto:thomas.jaekel@cimonline.de">thomas.jaekel@cimonline.de</a></td>
</tr>
<tr>
<td>19</td>
<td>Meng Sakphouseth</td>
<td>IFAD, Cambodia</td>
<td>M</td>
<td><a href="mailto:m.sakphouseth@ifad.org">m.sakphouseth@ifad.org</a></td>
</tr>
<tr>
<td>20</td>
<td>Dule Zhao</td>
<td>IRRI, Cambodia</td>
<td>M</td>
<td><a href="mailto:d.zhao@irri.org">d.zhao@irri.org</a></td>
</tr>
<tr>
<td>21</td>
<td>Ricardo Oliva</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:r.oliva@irri.org">r.oliva@irri.org</a></td>
</tr>
<tr>
<td>22</td>
<td>Virender Kumar</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:virender.kumar@irri.org">virender.kumar@irri.org</a></td>
</tr>
<tr>
<td>23</td>
<td>Nancy P. Castilla</td>
<td>IRRI, Philippines</td>
<td>F</td>
<td><a href="mailto:n.castilla@irri.org">n.castilla@irri.org</a></td>
</tr>
<tr>
<td>24</td>
<td>Grant Singleton</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:g.singleton@irri.org">g.singleton@irri.org</a></td>
</tr>
<tr>
<td>25</td>
<td>Alexander Stuart</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:a.stuart@irri.org">a.stuart@irri.org</a></td>
</tr>
<tr>
<td>26</td>
<td>Il-Ryong Choi</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:i.choi@irri.org">i.choi@irri.org</a></td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Institution</td>
<td>Gender</td>
<td>Email</td>
</tr>
<tr>
<td>---</td>
<td>---------------</td>
<td>--------------------------------------</td>
<td>--------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>27</td>
<td>Buyung Hadi</td>
<td>IRRI, Philippines</td>
<td>M</td>
<td><a href="mailto:b.hadi@irri.org">b.hadi@irri.org</a></td>
</tr>
<tr>
<td>28</td>
<td>Elena Genil</td>
<td>IRRI, Philippines</td>
<td>F</td>
<td><a href="mailto:e.genil@irri.org">e.genil@irri.org</a></td>
</tr>
<tr>
<td>29</td>
<td>Akira Yamauchi</td>
<td>Nagoya University, Japan</td>
<td>M</td>
<td><a href="mailto:ayama@agr.nagoya-u.ac.jp">ayama@agr.nagoya-u.ac.jp</a></td>
</tr>
<tr>
<td>30</td>
<td>Pheng Vutha</td>
<td>PDA Kampong Thom, Cambodia</td>
<td>M</td>
<td><a href="mailto:vutha1@yahoo.com">vutha1@yahoo.com</a></td>
</tr>
<tr>
<td>31</td>
<td>Voeun Soma</td>
<td>PDA, Battambang, Cambodia</td>
<td>M</td>
<td><a href="mailto:soma_vouen@yahoo.com">soma_vouen@yahoo.com</a></td>
</tr>
<tr>
<td>32</td>
<td>Ngetsofakdey</td>
<td>PDA, Prey Veng, Cambodia</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Pin Channa</td>
<td>RUA, Cambodia</td>
<td>M</td>
<td><a href="mailto:pinchannapv@gmail.com">pinchannapv@gmail.com</a></td>
</tr>
<tr>
<td>34</td>
<td>Mel Channtevy</td>
<td>RUA, Cambodia</td>
<td>F</td>
<td><a href="mailto:melchanntevy@yahoo.com">melchanntevy@yahoo.com</a></td>
</tr>
<tr>
<td>35</td>
<td>Yem Sokol</td>
<td>RUA, Cambodia</td>
<td>F</td>
<td><a href="mailto:yem.sokol@yahoo.com">yem.sokol@yahoo.com</a></td>
</tr>
<tr>
<td>36</td>
<td>Ong Socheath</td>
<td>RUA, Cambodia</td>
<td>F</td>
<td><a href="mailto:ongscocheath@yahoo.com">ongscocheath@yahoo.com</a></td>
</tr>
<tr>
<td>37</td>
<td>Phea Veng</td>
<td>RUPP, Cambodia</td>
<td>M</td>
<td><a href="mailto:pheaveng@gmail.com">pheaveng@gmail.com</a></td>
</tr>
<tr>
<td>38</td>
<td>Neil Furey</td>
<td>RUPP, Cambodia</td>
<td>M</td>
<td><a href="mailto:n.furey.ffi@gmail.com">n.furey.ffi@gmail.com</a></td>
</tr>
<tr>
<td>39</td>
<td>Adam H. Sparks</td>
<td>Univ. of So. Queensland, Australia</td>
<td>M</td>
<td><a href="mailto:adam.sparks@usq.edu.au">adam.sparks@usq.edu.au</a></td>
</tr>
<tr>
<td>40</td>
<td>Ly Sophea</td>
<td>USAID</td>
<td>M</td>
<td><a href="mailto:soley@usaid.gov">soley@usaid.gov</a></td>
</tr>
<tr>
<td>41</td>
<td>Seng Vang</td>
<td>USAID, Thailand</td>
<td>M</td>
<td><a href="mailto:sengvangkh@gmail.com">sengvangkh@gmail.com</a></td>
</tr>
<tr>
<td>42</td>
<td>Sang Lee</td>
<td>USAID, Thailand</td>
<td>F</td>
<td><a href="mailto:salee@usaid.gov">salee@usaid.gov</a></td>
</tr>
<tr>
<td>43</td>
<td>George Norton</td>
<td>Virginia Tech, USA</td>
<td>M</td>
<td><a href="mailto:g.norton@vt.edu">g.norton@vt.edu</a></td>
</tr>
<tr>
<td>44</td>
<td>Elvis &quot;Short&quot;</td>
<td>Virginia Tech, USA</td>
<td>M</td>
<td><a href="mailto:eheinrichs2@unl.edu">eheinrichs2@unl.edu</a></td>
</tr>
<tr>
<td>45</td>
<td>Ramasamy Muniappan</td>
<td>Virginia Tech, USA</td>
<td>M</td>
<td><a href="mailto:r.muni@vt.edu">r.muni@vt.edu</a></td>
</tr>
<tr>
<td>46</td>
<td>Lu Zhong Xian</td>
<td>ZAAS, China</td>
<td>M</td>
<td><a href="mailto:luzxmh@163.com">luzxmh@163.com</a></td>
</tr>
</tbody>
</table>