



# FY 2021

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## SEMI-ANNUAL PERFORMANCE REPORT



### Innovation Lab for Collaborative Research on Sustainable Intensification

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# Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification (SIIL)

*FY 2021 Semi-Annual Report*

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## Cover Photos

Top left: Daughter helping her mother, who is a smallholder farmer, learn to use the GoNative app to sell their produce directly to consumers. Battambang, Cambodia. July 2020. *Photo credit: Sina Nov*

Top center: Transplanter operation in Noakhali, Bangladesh. February 2020. *Photo credit: Md. Humayun Kabir*

Top right: Technician taking dual-purpose chlorophyll content according to the fertilizer rate applied. Bambey, Senegal. August 2020. *Photo credit: Aliou Faye*

Bottom: The SIIL 2021 Annual Meeting held via the Zoom platform with more than 170 participants. January 2021. *Photo credit: Layne Wilson*

**I. Feed the Future Lab for Collaborative Research on Sustainable Intensification (SIIL)**  
**II. Research Progress Summary**

**A. Research progress made during the reporting period**

**I. Management Entity (ME) Operations**

- a. The SIIL Annual Meeting was held January 26-28, 2021 using Zoom and Mural platforms to maximize participation and engagement among the attendees in a virtual setting. The event welcomed over 150 registrants with representation from 10 countries. SIIL subaward and consortia partners presented their research accomplishments and future directions through a video format coupled with live question and answer sessions. Highlights from the SIIL Director, presentations, and videos from SIIL's portfolio are available on the SIIL website and [YouTube](#) channel. Representatives and leadership from USAID, Kansas State University (KSU) and the SIIL's External Advisory Board all provided valuable contributions to the three-day event. In addition, a poster competition was held featuring research projects from past and current graduate students, with awards for first, second and third place, as well as a "People's Choice Award" for the research poster that received the most votes during the viewing session.
- b. The SIIL projects and consortia contracts were all awarded and are fully operational. The projects and consortia are built upon previous research achievements, and designed to address the suitability, scalability, and sustainability of the technologies developed in the first phase of their research. All project activities focus on the resilience of smallholder farmer and are funded for three years (July 2020 to June 2023). Specific projects are listed below along with the lead Principal Investigators and institutions:
  - Led by Drs. Krishna Jagadish and Sudhir Yadav, Pathways of Scaling Agricultural Innovations for Sustainable Intensification in the Polders of Coastal Bangladesh (KSU and International Rice Research Institute)
  - Led by Dr. David Ader, S3-Cambodia: Scaling Suitable Sustainable Technologies (University of Tennessee)
  - Led by Drs. Doohong Min and Aliou Faye, Improving Food and Nutrition Security of Smallholder Agro-pastoral Farming Systems by Integrating Crop-livestock-human Nutrition in Senegal and Niger (KSU and Senegalese Institute for Agricultural Research)
  - Led by Dr. Prasanta Kalita, Appropriate Scale Mechanization Consortium for Sustainable Intensification – Phase II (University of Illinois at Urbana-Champaign)
  - Led by Dr. Ignacio Ciampitti, Digital and Geospatial Tools Consortium—Building a New Era of Predictive Agricultural Innovation to Improve the Livelihood of Smallholder Farmers (KSU)
  - Led by Dr. Carl Pray, Policy Research Consortium (Rutgers University)
- c. The Sustainable Intensification (SI) Assessment Framework web tool was developed in FY 2018 with the purpose of facilitating greater access and usability of the framework for the SI research community. To increase access and usage, Dr. Zachary Stewart created a training video that was uploaded to the SIIL and SI Toolkit websites for public usage. Additionally, a mobile application is being developed for Android Smartphones and will be available to the public in May 2021. The mobile app will also be formatted for Apple Smartphones by the end of the FY2021. Development of these mobile applications is led by SIIL post-doc Dr. Prakash Jha with assistance from computer science graduate student Gauresh Rajawat.
- d. The development and implementation of the iREACH (Innovation, Research, Extension and Advisory Coordination Hub) initiative in West Africa (WA) is well underway. The iREACH initiative focuses on USAID's activities in Feed the Future and Resilience Zones in Senegal, Ghana, Mali, Burkina Faso, and Niger. The objectives are to: a) improve coordination, alignment, and integration of relevant activities; b) create and strengthen technology parks and facilitate effective flow of information and innovations, and c) build human and institutional capacity. SIIL hired LaTrese Taylor as the Program Manager for the iREACH initiative, to serve as a direct liaison between SIIL, USAID, and our West African partners. Highlights and achievements from the iREACH activities are found in section 7 of this report.

- e. SILL continued to monitor, address, and provide support with regards to any implementation issues across their research portfolio related to the global COVID-19 crisis.
- f. Personnel transitions include Dr. Zachary Stewart moving to USAID as a Production Systems Specialist in the Center for Agriculture-Led Growth in the Bureau for Resilience and Food Security. SILL also said goodbye to KSU student assistants Julie Freijat and Lucas Scott and welcomed Sanders Barbee to the team. We thank all of them for their efforts!
- g. *Leveraging Resources:*
  - a. SILL hired two new post-doc researchers, Dr. Prakash Jha and Dr. Hardeep Singh, to support efforts regarding digital modeling, for use in crop production, water safety, access, and usage, and other food security issues among our target regions around the world.
  - b. Gauresh Rajawat, a computer science graduate student, was hired to develop a Sustainable Intensification Assessment Framework mobile app and has since graduated.

## 2. Digital and Geospatial Tools Consortium (DGTC)

- a. All team members under this objective (Ciampitti, Nejadhashemi, Neff) met with consortium partners with each of the target countries (Senegal, Bangladesh, and Cambodia) to identify the common interests and introduce the team and its ability to address the most pressing issues within each country. These included crop modeling, livestock modeling, crop and livestock modeling integration, and land capability classification system.
- b. For the crop modeling work, a post-doctoral student was assigned to this project in early January to start modeling the dual-purpose millet crop in Senegal. Before moving to crop modeling, the field data on dual-purpose millet was analyzed to understand the impact of fertility on crop production across environments (four locations). After completing this step, the team will set up a crop model for the dual-purpose millet. So far, weather, soil, and crop management practices have been retrieved from field studies.
- c. A research associate was hired to start working on the livestock modeling. Among the countries of interest, Senegal was identified as the first country for analysis since the integration of livestock and crop systems is more pronounced. The plan is to begin the process by performing a comprehensive literature review of existing systems within different agroecological zones of the country.
- d. Land Capability classification system: a YouTube video was created outlining the consortium's approach to the creation of Land Capability maps and localized assessment. Field data for the initial target area in Senegal was also located and there are plans to prepare data and create a regional land capability map during FY 2022.
- e. The following data was gathered and downloaded: 12447 daily temperature files from CHIRTS, 480 5-day precipitation files from CHIRPS, 252 8-day NDVI composite files from NASA, 38 files from DHS (Survey dataset and associated GPS dataset), 1 global map of FAO irrigated areas from 2005 at .5-degree resolution, and 2 shapefiles (1 for Africa and 1 for Asia) of hydrologic basins from the USGS available in June 2020.

## 3. Appropriate Scale Mechanization Consortium – Phase II (ASMC 2)

- a. Appropriate Scale Mechanization Innovation Hub – Bangladesh (ASMIH-Bangladesh)
  - i. Training of trainers (ToT) on Scaling Gap Analysis (GAP) and Technology Readiness Assessment (TRA) tools was conducted on March 13, 2021 through online platform where ASMC and ASMIH-Bangladesh project personnel and MS students were present.
  - ii. Drafts of scaling GAP analysis and TRA tools for BAU-STR dryer, combine harvester and planter have already been developed for conducting Focus Group Discussions (FGD) at different areas by May 2021.
  - iii. ASMIH-Bangladesh has given services of rice transplanter, harvester, and seed planter in the farmers' fields at Dumuria, Khulna; Wazirpur, Barishal and Kalapara, Patuakhali. Rice transplanter, harvester and seeder were used in the farmers' field with a coverage of 30.9 ha, 33.65 ha and 5.52 ha land, respectively.

- iv. A conservation agriculture (CA) park was established at Bangladesh Agricultural Research Institute (BARI), Gazipur. A submersible solar pump with 4020 Wp solar panel was installed for green energy irrigation in the CA Park. A 4-wheel tractor operated seed planter has been developed and tested in the CA park for planting of maize, barley, chickpea and mungbean.
- v. A network named Smart Agro-Technology Innovation Youth Network (SAIYN) has already been framed to engage teenagers and youths with agro-technology innovation.
- b. Appropriate Scale Mechanization Innovation Hub – West Africa (ASMIH-West Africa)
  - i. A subaward statement of work was finalized and sent to Nazi Boni University (Burkina Faso) for signature
  - ii. Online training of trainers conducted with faculty and students for scaling gap assessment and technology readiness assessment
  - iii. A structured surveys and focused groups of key stakeholders was conducted for ASMC technology readiness assessment questionnaire and scaling GAP analysis goals
  - iv. Participation in the SILL Virtual Annual Meeting (January 26-28, 2021)
  - v. Four artisans trained by Dr. Timothy Harrigan and Robert Burdick are now operational and have built 6 more biomass choppers for ENSA/University of Thies, Senegal. These are currently being demonstrated to local agro-pastoralist groups for animal fattening trials across six zones in Senegal.
  - vi. BSc student from ISFAR/University of Bambey is working on best placement practices for placing manure into the soil. This will be used to refine a manure applicator design once they have finished writing their thesis and will defend it in May 2021.
- c. Appropriate Scale Mechanization Innovation Hub – Cambodia (ASMIH-Cambodia)
  - i. Completed, signed, and submitted the new sub-award agreement for Phase II.
  - ii. Discussed planning, methodology, and roles of each project partner to achieve the project goal of 2500 ha of land under conservation agriculture (CA) practices among RUA, Swisscontact, and CASC/DALRM/CIRAD partners.
  - iii. Recruited a trainer from CASC/DALRM/CIRAD, as well as 2 of 3 trainees from RUA to join the ToT training on CA/SI during project implementation and to be the future FABE faculty members. Additionally, made a second call for the 3rd CA/SI trainee position.
  - iv. Completed the development of training materials for RUA students.

#### 4. Associate Award - Policy Research Consortium (PRC)

- a. Nearly 20 publications either published or forthcoming in peer-reviewed journals.
- b. Successful pivoting towards more covid related topics, including further refinement of the policy matrix and policy brief on COVID's impact on agricultural innovation system as well one on policy capacity.
- c. *On food prices & diet costs for USAID Global Learning & Evidence Exchange (GLEE)* on Feb. 8<sup>th</sup>, 2021, and Dec 14, 2020 for FAO event on agriculture, food systems & nutrition.
- d. Virtual Event - *Building back better: How can public food and agricultural research institutions be strengthened and rebuilt after the COVID-19 pandemic?* on Feb 2, 2021.
- e. Public outreach on diet cost & affordability, through Nature Outlook article and Tufts profile by Will Masters and colleagues.
- f. Dr. Lori Post continues her work on the expansion of the COVID Surveillance project, which is informing policy around the world. In the global COVID-19 pandemic, leaders are forced to choose between protecting lives vs. protecting livelihood. With the surveillance tool leaders can be informed with razor precision where outbreaks are occurring so that proactive quarantines and shutdowns can be restricted to where COVID-19 transmissions are accelerating while leaving open those regions not affected to make the impact of the pandemic less stressful on overall food production and food security.

#### 5. Research Prioritization and Subawards

- a. Pathways of Scaling Agricultural Innovations for Sustainable Intensification in the Polders



- i. Two women and two young men have joined the pool of “service providers in mechanical harvesting of rice” developed in phase I of the SIIL-Polder project.
  - ii. The project team was able to establish 11 learning hubs spread across four polders despite the prevailing pandemic.
  - iii. Empowering the new partners on polder environment and key determinants in productivity improvement in the coastal polder zone.
- b. S-3 Cambodia: Scaling Suitable Sustainable Technologies
  - i. Continued to support agents to scale suitable and sustainable technologies to reach 10,000 farmers in Cambodia. By employing the gender and ecologically sensitive impact pathways, S3-Cambodia will advance the capacity and roles of scaling agents in technology diffusion through applied research, technical assistance, curricula development and organizational strengthening.
  - ii. Continued to scale three technologies: vegetable grafting, post-rice secondary cropping, and wild gardens.
  - iii. Provided training and inputs for groups to establish nurseries for wild food plants as well as grafted vegetables. Provided hands-on training on wild food plants and vegetable grafting to farmers and students through the National University of Battambang.
  - iv. Worked with youth in the education sector to help improve their capacity to engage in sustainable intensification.
- c. Improving Food and Nutrition Security in Senegal and Niger
  - i. Four Senegalese local artisans, trained by the ASMC Burkina team, built 6 biomass choppers for ENSA, and trained 25 agro-pastoralists and provided demonstrations in 6 regions of Senegal on animal feeding trials.
  - ii. Enriched millet flour processing and marketing has been demonstrated in 6 districts in Senegal, with at least 25 female association leaders being trained at each site. Trained additional women’s organizations in their respective districts. The project is also leveraging resources with local NGOs, such as Enda Tiers Monde, to impact more women organizations across the country.
  - iii. Cattle feeding trials were started in December by providing animals a mixed diet of dual-purpose millet and cowpea at the ENSA-University of Thiès. The trials were completed in late March. Several agro-pastoralists attended the feeding trial site at ENSA to learn about the dual-purpose millet and cowpea benefits.
  - iv. RESOPP provided the youth training on the development of technical capacities of seed production, discussions on seed marketing, and development of business plans on seeds and other agricultural inputs. A total of 16 youth attended these training sessions (13 males and 3 females) in Thies, Senegal.

## **6. Center for Excellence on Sustainable Agricultural Intensification and Nutrition (CE SAIN)**

- a. 19 CE SAIN staff members (8 females, 42%) participated in the trainings/workshops with NGO partners, stakeholders, and other partners to strengthen and improve their capacity for career development and knowledge-sharing.
- b. Forty-four individuals (5 females, 11.36%) visited the CE SAIN ATPs. Visitors included farmers, academics, NGOs, youth groups, USG partners, business owners, and researchers. Visitation numbers were lower due to COVID-19 restrictions.
- c. 15 lecture series were conducted with 447 attendees (218 females, 48.8%). Lectures were conducted virtually due to the COVID-19 pandemic.
- d. CE SAIN hired one project coordinator for the Bighead Catfish Culture (BCC) project and has been in the recruitment process for a Gender and Youth Coordinator as a part of ASMC 2. Two female staff members were promoted to Senior Communication Officer and Communication Officer. Fourteen interns (5 females, 35.7%) were recruited to join the Internship Program at various ATPs to learn hands-on practices and receive mentoring support from Farm Managers and the CE SAIN team on both soft and hard skills. Overall, CE SAIN has 21 staff (9 females, 42.8%).

- e. CE SAIN maintained the relationship with 20 existing partners and stakeholders with increased joint activities as well as establishment of new networks to seek potential collaborations. Two new projects among the 20 were awarded from the Feed the Future Food Safety Innovation Lab, and American Soybean Association (ASA) for swine and poultry feeding trials. CE SAIN has discussed, agreed, and planned to sign a Memorandum of Agreement (MoA) with the Khmer Enterprise and Hilfswerk der Evangelischen Kirchen Schweiz (HEKS) to jointly support the agripreneurship program for the successful winners of the grant competition; and another MoA with National University of Battambang (NUBB) and Swisscontact for strengthening the collaboration of ATP in Battambang. CE SAIN also discussed with RUA and Cleber, LLC regarding the manufacturing possibilities for the Oggun tractor and open system machinery, as well as acquiring the requirements for licensing the GoNative app, all of which will strengthen collaborations and benefit RUA. Meetings were conducted with Cornell University, Purdue University, Impact Hub, iDE, Support Her Enterprise (SHE) Investment, Cambodian Partnership for Sustainable Agriculture (CPSA) and other entities to learn more about their activities and discuss possible collaborations and synergy.

## 7. Additional initiatives:

### a. iREACH Initiative led by CORAF

- i. A team made up of CORAF and KSU/SIIL staff prepared working documents including: the iREACH 4-year (2020-2024) Work Plan; Agriculture Technology Parks (ATP) protocol and placements; Communication protocol and iREACH Flyer, Monitor and Evaluation Learning Plan (MELP). The 7 members of the Advisory Committee were nominated by partner institutions including: USAID regional mission, USAID DC, KSU/SIIL, Senegal and Ghana agricultural research institutions and CORAF scientific and technical committee and Executive secretariat to guide the implementation of iREACH.
- ii. Conducted a training on the use of KSU/SIIL's Sustainable Intensification Assessment Framework (SIAF) on March 18, 2021, attended by 14 scientists from CORAF Centers of Excellence on Dry Cereals (Senegal), Fruit and Vegetables (Burkina Faso), Rice (Mali) and the CORAF executive secretariat. Four scientists from Maize (Benin) and Roots & Tubers (Ghana) could not connect but have received the recorded training video.
- iii. The activity tracker platform was designed with an initial demonstration made with iREACH team including KSU/SIIL and CORAF staff. Conversations were initiated and the team solicited ongoing recommendations for iREACH activity tracker from USAID Missions, Innovation Labs (ILs), USAID Washington and CORAF. Activity data were collected from IL websites, USAID RFS, and the USAID DEC (titles, short titles, Pls/Alt Pls, contact emails) for 11 ILs and 40+ activities, and populated the tracker for Senegal, the kick-off country for iREACH. The iREACH Activity Tracker is due to begin training Innovation Labs for quarterly reporting in May 2021.
- iv. Two hectares (ha) of land with irrigation facilities were allocated to the iREACH initiative by CERAAS, the headquarters of the CORAF Center of Excellence on Dry Cereals and Associated Crops, for the creation of the first Agricultural Technology Park (ATP). An initial list of technologies to showcase in the ATP was created and a few demonstration plots of improved crop varieties and prototypes of processing and post-harvest machinery and crop fertility management were established. Two visits to the demonstration plots were organized for ISRA's Director General and staff, as well as the staff of one Senegal's media organizations (Agence de Presse S n galaise-APS).
- i. The iREACH Advisory Committee held its first meeting on April 7, 2021. The work plan has been approved and the monitoring, evaluation and learning plan is in process of being finalized. The Regional Center of Excellence (RoE) CERAAS (Thi s, Senegal) presented its park layout and technologies, and is hiring an ATP manager in preparation for the opening of the park. The iREACH Activity Tracker trainings with the Innovation Labs and Missions began March 2021 and will continue through May.

### b. Economic impact of improved bean varieties in Central America and the USA

- i. Led by Drs. Mywish Maredia, Michigan State University (MSU), and Byron Reyes, International Center for Tropical Agriculture (CIAT).
- ii. SILL entered in a subaward agreement with MSU (January 1, 2021-December 31, 2022) to study and to estimate the economic impact of investments made by the former Legume Innovation Lab, the CIAT and other organizations and institutions on bean breeding. The evaluation will focus on the USA (i.e., Michigan), Guatemala, Honduras, Nicaragua, and Haiti.
- iii. The proposed methodology will mostly rely on secondary and expert opinion data. The project will also use primary data from Guatemala and Honduras, and conduct field trials to estimate yields farmers obtain under their conditions, which will be used to estimate the ‘k-factor’ (or the productivity gains). The quantitative analysis will be supplemented by qualitative assessments of who benefits and how (including traits that may not be captured in yield—e.g., agronomic traits, nutrition, shorter duration, etc.) from the dissemination and adoption of improved varieties.

#### **B. Issues or concerns encountered during the reporting period**

- a. SILL did not encounter any major issues during this reporting period. However, the COVID-19 pandemic did raise several issues among our partners including projects which have slowed or been postponed, reduced ability to do fieldwork, trainings, and other capacity-building activities due to travel restrictions and curfews. The SILL remains committed to helping our partners navigate their work and responsibilities during this time.

### **III. Human and Institutional Capacity Development**

#### **A. Short-term training - Eighteen total trainings were held during this reporting period**

Country of Training	Brief Purpose of Training	Who was Trained	Number Trained		
			M	F	Total
Bangladesh	TRA and Gap Analysis - Training of Trainers (via Zoom)	Civil Society	11	5	16
Bangladesh	Discussion of benefits and opportunities for the reaper in rice harvesting	Producers, Government, Private Sector, Civil Society	88	35	123
Bangladesh	Discussion of the importance of Sluice gate in-polder water management	Government, Private Sector, Civil Society	103	49	152
Bangladesh	Introduction of the battery-operated sprayer and safe application of pesticides	Producers	19	8	27
Bangladesh	Discuss fertilizers, weed management, and sowing of rabi crops	Producers, Private Sector	59	16	75
Bangladesh	Create awareness and discuss production procedure of maize, sunflower, and rabi crops	Producers, Government, Civil Society	311	108	419
Cambodia	CA practices and connection and big farmer and service provider	Private Sector	22	4	26
Cambodia	Feedback from soil improvement, NT planter, and land leveling users	Producers, Government, Private Sector	21	3	24
Cambodia	Service provider discussion for affordable land leveling	Private Sector	4	1	5
Cambodia	CA practices and connection and big farmer and service provider	Producers, Government, Private Sector	26	15	41
Cambodia	Demonstration of appropriate machinery for CA transition	Producers, Government, Private Sector	30	4	34
Cambodia	Increasing connections between manufacturers, farmers, and service providers	Producers, Government	15	11	26
Cambodia	Training farmers on tomato grafting for the wet season (Session 1)	Producers	7	9	16



Country of Training	Brief Purpose of Training	Who was Trained	Number Trained		
			M	F	Total
Cambodia	Training farmers on tomato grafting for the wet season (Session 2)	Producers, Civil Society,	12	6	18
Cambodia	Training students on use of Readiness Assessments and Scaling Gap Instruments	Government	11	5	16
Senegal	Training on enriched millet flour processing and marketing	Producers	17	193	210
Senegal	Provided youth training on quality seed production and agricultural input sales	Producers	8	6	14
Senegal	Explaining GAP analysis to students to apple TRA and GAP in field	Government	11	5	16
<b>Total</b>	<b><i>Eighteen total trainings were held during this reporting period</i></b>		<b>775</b> (62%)	<b>483</b> (38%)	<b>1258</b>

### B. Long-term training\*

Student #	Sex	University	Degree	Major	Program End Date (month/year)	Degree Granted (Y/N)	Home Country
1	F	Bangladesh Agricultural University	Ph.D.	Agricultural Economics	2021, December	N	Bangladesh
2	M	Bangladesh Agricultural University	M.S.	Agricultural Engineering	2021, December	N	Bangladesh
17	M	Bangladesh Agricultural University	Ph.D.	Agricultural Engineering	2021, December	N	Bangladesh
22	M	Bangladesh Agricultural University	M.S.	Agricultural Engineering	2021, December	N	Bangladesh
32	M	Bangladesh Agricultural University	Ph.D.	Agricultural Engineering	2021, December	N	Bangladesh
36	M	Bangladesh Agricultural University	Ph.D.	Water Governance	2021, December	N	Bangladesh
78	F	Bangladesh Agricultural University	M.S.	Rural Sociology	2021, August	N	Bangladesh
53	M	Bangladesh Agricultural University	Ph.D.	Agricultural Engineering	2021, December	N	Bangladesh
79	M	Bangladesh Agricultural University	Ph.D.	Farm Power and Machinery	2021, August	N	Bangladesh
55	M	Bangladesh Agricultural University	M.S.	Agricultural Engineering	2021, December	N	Bangladesh
80	F	Bangladesh Agricultural University	M.S.	Rural Sociology	2021, August	N	Bangladesh
81	M	Royal University of Agriculture	Ph.D.	Agricultural and Food Science	2021, February	Y	Cambodia
82	F	Royal University of Agriculture	M.S.	Public Administration	2022, January	N	Cambodia
83	F	University of Bambe	B.S.	Animal Science	2021, May	N	Senegal
84	F	University of Thiès	M.S.	Animal Science	2021, July	N	Senegal
85	M	University of Thiès	Ph.D.	Animal Science	2023, September	N	Senegal
30	F	University of Gaston Berger	M.S.	Agricultural Engineering	2021, March	N	Senegal
86	F	University of Bambe	B.S.	Agronomy	2021, April	N	Senegal
87	M	University of Thiès	M.S.	Animal Science	2021, April	N	Senegal

Student #	Sex	University	Degree	Major	Program End Date (month/year)	Degree Granted (Y/N)	Home Country
88	M	University of Bambeý - ISFAR	B.S.	Agricultural Engineering	2021, March	N	Senegal
64	F	Cheikh Anta Diop University of Dakar	Ph.D.	Agronomy	2021, July	N	Senegal
89	F	University of Tennessee	M.S.	Agricultural Leadership and Education	2022, May	N	USA
90	F	Tufts University	Ph.D.	Agriculture, Food, and the Environment	2022, January	N	USA
91	F	Michigan State University	Ph.D.	Agricultural Economics	2023, January	N	Colombia

\* Table includes new or revised long-term trainees since the FY 2020 Annual Report

#### IV. Innovation Transfer and Scaling Partnerships\*\*\*

##### 1. Appropriate Scale Mechanization Consortium - Phase II

The ASMC reported five new and updated technologies for this reporting period:

- i. Land leveler (phase I)
- ii. No-till planter (phase I)
- iii. Two-wheel tractor-based seed planter (phase 3)
- iv. Multi-crop versatile seed broadcaster (moved from phase 2 to phase 3)
- v. Rice reaper: VR-120 (moved from phase 2 to phase 4 due to direct testing in farmer fields which showed that it was suitable to transfer the technology directly into the public/private sectors, as well as assistance from the DAE subsidy program).

##### 2. Improving Food and Nutrition Security in Senegal and Niger

This project has reported work on two new and updated technologies during this reporting period:

- i. Dual-purpose pearl millet grain and fodder biomass production (phase 3)
- ii. Improved dual-purpose millet stover for livestock feed (phase 3)

##### 3. Pathways of scaling agricultural innovations for sustainable intensification in the polders

There were five new reported technology practices being worked on by this project during this reporting period:

- i. Agricultural mechanization in harvesting paddies by women and youth agri-entrepreneurs (phase 2)
- ii. Community-led agricultural water management at catchment level (phase 2)
- iii. Agricultural mechanization in the dry season (phase 2)
- iv. Rice-Maize cropping systems in the polders (phase 3)
- v. Rice-Sunflower cropping systems in the polders (phase 3)

##### 4. S3-Cambodia: Scaling Suitable Sustainable Technologies

This project has reported work on one new technology during this reporting period:

- i. Tomato Grafting (phase 2)

\*\*\* Note: The innovations described above include changes or updates to the technologies reported in the FY 2020 Annual Report.

#### V. Future Work

- A. SIIL will collaborate with our host country partners to identify and document climate-smart agriculture technologies and innovations relevant and appropriate for our focus countries and regions.
- B. SIIL will focus on the successful implementation of iREACH in West Africa.
- C. SIIL will continue to support the institutional and human capacity-building efforts in focus countries and regions, especially with CE SAIN, as they develop and implement activities in two new agricultural technology parks covering additional regions across Cambodia.

- D.** SILL will continue to monitor, address, and provide support with regards to any implementation issues across their research portfolio as related to the global COVID-19 crisis.
- E.** SILL will explore opportunities to support research activities beyond the life of the Policy Research Consortium subaward to maximize impacts and dissemination efforts.