



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

FY 2022

SEMI-ANNUAL PERFORMANCE REPORT



Innovation Lab for Collaborative Research on Sustainable Intensification

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

FY 2022 Semi-Annual Report

This semi-annual performance report for FY 2022 is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Kansas State University and do not necessarily reflect the views of USAID or the United States Government.

Program activities are funded by the United States Agency for International Development (USAID) under Cooperative Agreement No. AID-OAA-L-14-00006.

Cover Photos

Top left: SIIL-funded student, Gracie, and smallholder farmer, Dani, standing together in a Wild Garden. Battambang, Cambodia. October 2021. *Photo credit: Dave Ader*

Top center: Farmer harvesting beans and proudly showing his black beans in Guatemala. November 2021. *Photo credit: Lorena Gomez*

Top right: Local women in Diokoul Diawrige participated in a training on processing millet grain. Diokoul Diawrige, Senegal. December 2018. *Photo credit: Madame Dieye Bineta*

Bottom: The SIIL Polder project hosted a field day with men and women farmers. October 2021. *Photo credit: SIIL Polder Team*

I. Feed the Future Innovation 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) *Associate Awards*: Secured two associate awards related to institutional and human resource capacity building to strengthen regional and national capacities to address food security and resilience priorities. These initiatives will also establish agricultural technology parks to showcase proven climate smart agriculture technologies that will address food and nutritional security. The 5-year \$12M initiative in Haiti is the Haiti Agricultural University Partnership: Center of Excellence on Mitigation, Adaptation, and Resilience to Climate-Change in Haiti (CE MARCH) and the 5-year \$5M initiative is known as the Innovation, Research, Extension, and Advisory Coordination Hubs (iREACH) in various regions (Asia, West Africa, East Africa, and Latin America the Caribbean).
- b) *Sustainable Intensification Assessment Framework (SIAF)*: The [SAIF web tool](#) was developed with the purpose of facilitating greater access and usability of the framework for the SI research community. To increase access and usage, a mobile application (Android and iOS) was developed for offline users which functions without internet requirements. Development of these mobile applications was led by post-doc Dr. Prakash Jha with computer science graduate students at KSU. The mobile application work was presented at the annual meeting of American Society of Agronomy in Salt Lake City, Utah, in November 2021 and will be presented at the annual meeting of American Society of Agricultural and Biological Engineers in July 2022.
- c) *Personnel*: Andra McGowen departed from her position as Program Administrator. The SIIL soon after welcomed Ramiro Castellón as the new Program Administrator in February. SIIL also added to its team a new post-doctoral researcher, Dr. Kumari Aditi to support efforts in the Sustainable Opportunities for Improving Livelihoods with Soils (SOILS) Consortium.

2. CONSORTIA:

- a) **Appropriate Scale Mechanization Consortium – Phase II (ASMC 2)**: Led by Dr. Prasanta Kalita, University of Illinois at Urbana-Champaign
 - i. The ASMC held an in-person Fall Symposium in October. This meeting provided the opportunity for ASMC leaders and team members to collaborate and to review the status of the ASMC project. This retreat allowed participants to discuss and assess the progress of the project and analyze revised workplans. A hybrid ASMC Science Advisory Committee meeting was also held during this time.
 - ii. The ASMC has hired an hourly employee to lead the development of a mechanization database pilot project. This pilot project is currently in the beta phase. This beta version is a mechanization database for Bangladesh. It will be scaled to include other countries and regions once the platform is reviewed and well-received.
 - iii. The Agricultural Mechanization Status Survey was being implemented in Africa and Asia to identify the status of mechanization and identify the major barriers to mechanizing the agricultural sectors of Africa and Asia. A revised strategy was developed and implemented to acquire more than 1000 responses in Africa and 600+ responses in Asia. The ASMC collaborated with the Soybean Innovation Lab to utilize their mechanization network to disseminate the survey.
- a. *Appropriate Scale Mechanization Innovation Hub – Bangladesh (ASMIH-Bangladesh)*
 - i. ASMIH-Bangladesh provided technical assistance to the Department of Agricultural Extension (DAE) in establishing the synchronized crop cultivation program.

- ii. The rice transplanter was used to transplant 93 hectares of land and as a demonstration showcase during a field day.
 - iii. ASMIH-Bangladesh continues to provide technical assistance to farmers by repairing and maintaining their existing rice transplanters, as well as providing a free transplanter service to farmers who raise their own seedlings for transplanting.
 - iv. The grand finale of the 2021 SAIYN Idea Competition, under the umbrella of ASMIH-Bangladesh, was successfully conducted virtually through the Zoom platform in November. It drew the active participation of 240 participants from around the world.
 - v. One research article was published in an international journal and three abstracts have been submitted to the 2022 ASABE annual meeting.
- b. *Appropriate Scale Mechanization Innovation Hub – Cambodia (ASMIH-Cambodia)*
- i. 372 households practiced conservation agriculture (CA) on 424 hectares. The three technologies used were the no-till planter, land leveler, and cover cropping.
 - ii. ASMIH-Cambodia organized an Advisory Hub committee meeting and visited the project sites in Battambang.
 - iii. Three trainees from Faculty of Agricultural Biosystems Engineering (FABE) and Royal University of Agriculture (RUA) continue surveying farmers and service to collect follow-up information from on-farm demonstrations, provide support services, conduct agronomic and economic assessments, promote cover crop use, and collect data for experimental demonstration plots.
- c. *Appropriate Scale Mechanization Innovation Hub – West Africa (ASMIH-West Africa)*
- i. Drs. Timothy Harrigan and Robert Burdock visited Senegal to evaluate the potential for disseminating the Power Ox machine for use in the Niayes' river valley rice farming system. During this visit, the team also investigated the perceptions of producers on disseminating the ASMC small-scale biomass chopper in 12 regions in Senegal.
 - ii. ASMIH-West Africa finalized the results of the in-field manure placement trial. A scientific report was made and shared with the ASMC 2 leadership for dissemination.
 - iii. Dr. Demba Diakhate has started the digitization of the ISRA-CNRA Bambey agricultural mechanization documents and machineries for future dissemination.
 - iv. A part-time coordinator for gender and youth integration was hired during this reporting period.
- b) Digital Tools, Geospatial and Farming Systems Consortium (DGFSC):** Led by Dr. Ignacio Ciampitti, Kansas State University (KSU)
- i. The consortium PIs and students met for the annual DGFSC meeting in Boulder, Colorado on March 2022. The meeting lasted three days and helped the consortium to establish their new direction, improve integration, and discuss future activities.
 - ii. Team members Ciampitti, Nejadhashemi and Neff met with researchers from the Feed the Future Innovation Lab for Peanut with the goal of synergizing their activities located in Senegal and to identify common interests. Work will lead to an exchange of data, report-writing, and publications, and plans for future collaboration on ground truthing and data collection in Senegal.
 - iii. A post-doctoral student from the DGFSC team is working on modeling dual-purpose millet crop in Senegal. This step builds upon the process of concluding the initial analysis of investigating the main changes of dual-purpose millet and the impact of fertility on crop production across environments (paper under review in the European Journal of Agronomy). Information related to weather, soil, and crop management practices have been retrieved from the field studies.
 - iv. The team completed a comprehensive review of information related to livestock operations in Senegal and used this to identify knowledge and data gaps that need to be addressed before performing any further analyses. They also established working relationships with two groups in-

country to obtain local data which will affect the reliability of the modeling outputs. It is intended to increase the potential for local adaptations of modeling outputs as farmers are more inclined to accept site-specific information than generalized information. The team also has made significant progress in performing a comprehensive literature review of crop and livestock farming in Bangladesh to better understand the local knowledge and data gaps that are vital for future assessments.

- v. Land Capability Classification (LCC) system: A YouTube video was created outlining the approach used in the creation of Land Capability maps and localized assessment and is being prepared for dissemination. The team has located field data for the first target area in Senegal and have created a country-level LCC map for Senegal and shared those results with in-country partners.

c) Feed the Future Policy Impact Study (Policy Research Consortium - PRC): Led by Dr. Carl Pray, Rutgers University – Associate Award #7200AA18LA0003)

- i. November 2021, a no-cost extension was requested and granted due to issues related to COVID-19 delays and the need to successfully complete the dissemination efforts of the subawardees.
- ii. December 2021, Rutgers University's subaward was completed, and SIIL received approval to add a subaward with Northwestern University to support the requested research by USAID for surveillance and modeling of COVID-19 for the Feed the Future countries and zones of influence.
- iii. The PRC produced 26 peer-reviewed publications during this reporting period.
- iv. The PRC held their final conference – *Policy Systems for Transforming Agriculture: Research, Implementation, and Impact* on November 2-3, 2021. Consortium members presented results from their research, important lessons learned, and implications for USAID's policy related work. http://ruftr.rutgers.edu/Final_Conference.htm; <https://www.youtube.com/watch?v=jE4bPGMXGw>.
- v. Dr. Lori Post at Northwestern University has continued to produce biweekly reports for USAID and other stakeholders. The reports responded to special requests from USAID for more information on specific countries and is regularly communicated to the Missions.
- vi. Dr. Sera Young at Northwestern University was asked by UNESCO to develop a manual to be used throughout the Arab states to facilitate the implementation of the WISE Scales. Dr. Young and her research team created the Individual Water Insecurity Experiences (IWISE) Scale in combination with the WISE scale. The IWISE permits greater disaggregation of water insecurity – down to the level of the individual and was published in *BMJ Global Health*, <https://gh.bmj.com/content/6/10/e006460>. Additionally, the USAID's is encouraging Feed the Future Zone of Influence countries use the IWISE scales in their surveys.
- vii. Dr. William Masters and colleagues completed a pre-print that is being reviewed for publication in *Nature Food* analyzing the impact of COVID-19 on food prices in developing countries (Yan et al., 2022). Results indicated a significant increase in prices of the most nutritious foods as the number of COVID-19 cases rise. These data are extremely useful for policy makers and targeted interventions.

3. SIIL RESEARCH SUBAWARDS:

- a) *Pathways of Scaling Agricultural Innovations for Sustainable Intensification in the Polders of Coastal Bangladesh*, [Led by Drs. Krishna Jagadish, (KSU) and Sudhir Yadav, International Rice Research Institute (IRRI)]:

- i. Within the reporting period, a total of 2254 participants attended 14 different trainings. Among these participants, 32% were female, 89% were farmers, 5% from the private sector, 4% from the government, and 2% from civil society organizations.
 - ii. Two training manuals were developed entitled “Terminal Drainage in Aman Season: A Multi Benefit Practice” and “Climate-Resilient Maize and Sunflower Cultivation in the Polder Zone” to properly document the training’s objectives, approach, assessment, and templates. Flyers and standees were also developed and printed in the local language. One thousand copies of the flyers were distributed to farmers while one standee was established on site.
 - iii. A cluster-based farmer field school (CFFS) was established, an approach that brings together two different models of water management groups and farmer field schools. The CFFS was led by Department of Agri Extension with technical backstopping from this project.
 - iv. Three service providers harvested rice from 11.84 hectares. The documented net income from mechanical harvesting is 8250 BDT (\$95.9 USD), 35650 BDT (\$414.4 USD), and 7840 BDT (\$91.2 USD). Their earnings were spent on food, education, medical needs, their clothing business, repairs of machines and ponds, and household and personal items.
 - v. The SIIL-Polder Scholarship was awarded to two MS students from Bangladesh, Yeasmin Akhter, and Shadia Afrin Joty. Ms. Akhter will study gender dimensions in water governance, while Ms. Afrin will study the agricultural value chain in the polder zone.
- b) S-3 Cambodia: Scaling Suitable Sustainable Technologies:** (Led by Dr. David Ader, University of Tennessee)
- i. Dr. Dave Ader traveled to Cambodia in December to meet with S3 partners and tour research sites in Battambang, Phnom Penh, and Siem Reap. This was the first in-person meeting since the onset of the pandemic and helped advance activities initiated by the Cambodia-based partners.
 - ii. S3 partners scaled up the capacity to produce wild food plants (WFP) and grafted tomatoes by expanding nursery facilities at the National University of Battambang (NUBB), training horticultural students in plant propagation, and partnering with plant nurseries in Battambang and Siem Reap.
 - iii. Enrolled four farmers in a new business development program for plant nurseries, which will specialize in WFP and grafted vegetables.
 - iv. Three graduate students from RUA and NUBB have been onboarded to support S3-Cambodia research on agricultural extension, cover cropping, and knowledge pathways on secondary education.
 - v. 178 surveys were completed in Cambodia to inform research on scaling agricultural technologies.
 - vi. A 3-month internship program was launched in partnership with Swisscontact and NUBB to provide students with hands-on entrepreneurship training.
- c) Improving Food and Nutrition Security of Smallholder Agro-pastoral Farming Systems by Integrating Crop-Livestock-Human Nutrition in Senegal and Niger,** [Led by Drs. Doohong Min, KSU, and Aliou Faye, Senegalese Institute for Agricultural Research (ISRA)]
- i. Dual-purpose pearl millet varieties were evaluated in Maradi, Niger and the farmers ranked varieties SL 28, SL 169, and SL 423 in the top three among 7 dual-purpose varieties of interest.
 - ii. The Institute of Food Technology confirmed the nutritional interest of varieties SL 169 and SL 423. The extruded flour of both varieties, when compared to a standard of “Plumpy Nut,” improved the weight, brachial perimeter, and hemoglobin levels of malnourished Diaoulé children in the Fatick region. These varieties also received the highest taste (acceptability) and satiety potential scores of the dual-purpose pearl millet varieties.

- iii. Senegal and Niger Co-PIs presented their work at an ISRA-CERAAS leadership conference held in January at Thies, Senegal.
- iv. Millet G x E x M trials with planting density and fertilizer rates were conducted in Bambey, Niore du rip, Sinthiou Maleme, and Boulel. Higher planting densities and fertilizer rates yielded higher grain and fodder than low seeding density without any fertilizer inputs.
- v. 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 fourteen young seed farmers (11 boys and 3 girls) were trained in Thies, Senegal.

4. ASSOCIATE AWARDS:

- a) *Haiti Agricultural University Partnership: Center for Mitigation, Adaptation, and Resilience to Climate-Change in Haiti (CEMARCH) (Led by Project Director, Dr. Beth Guertal, KSU)*
 - i. Memorandum of Understanding (MOU) agreements between Kansas State University and the six partner Haiti Agricultural Universities have been signed by both parties.
 - ii. Initial meetings (via Zoom) have been held with all partner universities. Two universities will host and provide MS degrees. Those universities are: Quisqueya University (the anchor university for the entire project) and Faculté D'agronomie et De Médecine Veterinaire (FAMV).
 - iii. The other four partner universities with CEMARCH: Universite Chretienne du Nord (Cap Haitian), American University of the Caribbean (AUC, Les Cayes), University Notre Dame (Les Cayes), and Campus Henry Christophe de Limonade (Cap Haitian) will be a part of the CEMARCH curriculum in other ways of their choosing, as they select what best fits their programs, course offerings and future educational desires.
 - iv. Scope of Works and subaward agreements are being prepared for all universities, with the intent that first scholarships and student activities will begin in the Fall semester of 2022.
 - v. A press release titled 'K-State lands \$12M grant to lead agricultural growth in Haiti' was released by Kansas State University.
- b) *Innovation RESEARCH, EXTENSION AND ADVISORY COORDINATION HUBs (iREACH) – (Led by Project Manager, LaTrese Taylor, KSU)*
 - i. September 29, 2021, SILL secured a 5-year Associate Award for \$5M to further expand and strengthen the Innovation, Research, Extension, and Advisory Coordination Hubs (iREACH) initiative concept. This initiative will co-develop various regional hubs in Asia, West Africa, East Africa, and Latin America the Caribbean.
 - ii. The iREACH activity tracker platform launched in October 2021. Over 150 personnel from 15 Innovation Labs, USAID-Washington, and five USAID Missions joined informational and training sessions to strengthen and improve collaborative efforts and encourage knowledge-sharing across agencies. 123 activity updates were shared to over 180 quarterly subscribers from the 15 Innovation Labs.
 - iii. iREACH opened its first Agriculture Technology Park (ATP) at Bambey, Senegal. Due to COVID, the field visits were limited. The ATP hosted one Open Day where ninety-three visitors attended, which included 14 women from 7 countries (Benin, Burkina Faso, Chad, Ghana, Mali, Niger, and Senegal). Participants included farmers, seed company representatives, artisans/fabricators, extension staff, scientists, media representatives and key political decision makers.

- iv. Eighteen technologies were demonstrated in Senegal's ATP and were toured by 218 visitors. There was a total of twenty-eight knowledge products generated and widely disseminated. These products included flyers, videos, and fact sheets.
- v. A press release titled "First West African Agriculture Technology Park Opens Doors to Public," was produced in English and French and was made public with the help of 15 media organizations. The press release scored 456 views on the webpage and reached more than 26,300 people on Facebook.
- vi. Letters of Agreement were signed between IFDC, Africa Rising, and CORAF to set the ATPs in Ghana, Mali, and Niger. IFDC and Africa Rising allocated \$50,000 USD for each country. To complete the funding, KSU made an addendum to CORAF-KSU sub-award to allocate \$50,000 USD for the ATP in Burkina Faso with CORAF support of \$100,000 USD for each country via its Swiss Cooperation project
- vii. Planning and logistics began on ATP sites for Burkina Faso, Mali, Niger, and Ghana. CORAF and the Regional Centers of Specialization/Excellence (RoS/E) began preparing subcontracts, designated ATP sites, reviewed layouts, and infrastructure, and identified ATP coordinators. The iREACH Manager visited and assessed three of the four sites in November and December. Security reasons prevented a site visit in Mali.

5. INITIATIVES:

- a) *Center for Excellence on Sustainable Agricultural Intensification and Nutrition (CE SAIN) (Led by Dr. Lyda Hok, RUA)*
 - i. Two new Agricultural Technology Parks in Preah Vhear and Mondulkiri provinces started
 - ii. Hosted and co-organized SEARCA/UPLB School plus Home Garden cum Biodiversity Enhancement Enterprise (SHGBEE) training in five high schools and one vocational school in Cambodia, four of the six are campus sites of CE SAIN's mini-Agricultural Parks.
 - iii. CE SAIN staff has grown to thirty-six, seventeen of which are females, and seven are new agricultural extension officers for the seven agricultural technology parks and together with the seven provincial officers are engaging with ten interns (seven females) who are in the ATP's.
 - iv. Coordinated seven US government funded projects
 - v. Partnered with two US government private companies, Cleber LLC and GoNative International.
 - vi. Has been organizing the third International Sustainable Agricultural Intensification and Nutrition Conference with ninety-one abstracts submitted, 35 from Cambodia, and with seven of the 11 Southeast Asian countries submitting abstracts.
 - vii. Completed and launch the Agricultural Internship Curriculum
- b) *Economic impact of improved bean varieties in Central America and the USA [Led by Drs. Mywish Maredia, Michigan State University, and Byron Reyes, Alliance Bioversity-CIAT]*
 - i. The research team in partnership with national agricultural research institutions [Ciencia y Tecnologia Agropecuaria (DICTA) and Instituto de Ciencias y Tecnologia Aplicada (ICTA)] in Honduras and Guatemala established the bean nurseries to gather data and assess yield.
 - ii. Focus groups have been implemented in the villages. The discussions from the focus groups will inform the study on bean yield gains and adoption parameters.
 - iii. The research team has also begun data collection and evaluations of varietal performance.

A. 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 continued to create difficulties implementing in-person aspects of certain projects and placed layers of travel restrictions for our team and collaborators. Other challenges have included variable weather events, data availability constraints, and challenges with event coordination. The SILL remains committed to helping our partners navigate their work and responsibilities.

III. Human and Institutional Capacity Development

A. Short-term training - 50 total trainings were held during this reporting period

Country of Training	Brief Purpose of Training	Who was Trained	Number Trained		
			M	F	Total
Bangladesh	Field day on transplanting at Baratia, Dumuria, Khulna	Producers, Government	10	2	12
Bangladesh	Field day on transplanting at Batiaghata, Khulna	Producers, Government	20	0	20
Bangladesh	Hands-on training on transplanting at Batiaghata, Khulna	Producers	12	0	12
Bangladesh	Field day on transplanting at Paikgasa, Khulna	Producers, Government	28	7	35
Bangladesh	Field day on transplanting at Phulpur, Mymensingh	Producers, Government	40	0	40
Bangladesh	Hands-on training on transplanting at Phulpur, Mymensingh	Producers, Government	20	0	20
Bangladesh	Hands-on training on growing seedlings at Purbadhala, Netrokona	Producers	12	0	12
Bangladesh	Hands-on training on mechanical transplanting in Khulna	Producers, Government, Private Sector, Civil Society	19	1	20
Bangladesh	Field day on paddy harvesting, Amirabad, Kalapara, Patuakhali	Producers	35	2	37
Bangladesh	Field day on paddy harvesting, sadarpur, Kalapara, Patuakhali	Producers	21	10	31
Bangladesh	Field day on paddy harvesting, Phulpur, Mymensingh	Producers	39	0	39
Bangladesh	Hands-on training on transplanting at Batiaghata, Khulna	Producers	15	6	21
Bangladesh	Hands-on training on harvesting at Batiaghata, Khulna	Producers	15	6	21
Bangladesh	Hands on training on entrepreneurship development at Batiaghata, Khulna	Producers	15	6	21
Bangladesh	ASMIH-Annual Symposium on “Appropriate Scale Mechanization for Sustainable Intensification in Agricultural Production Systems”	Producers, Government, Private Sector, Civil Society	140	33	173
Bangladesh	Cluster Farmer Field School for Rabi Crops (CFFS)	Producers, Government	70	30	100
Bangladesh	Training on early planting of rabi crops and management	Government	21	2	23
Bangladesh	Fertilizer management (Mini Power Tiller training)	Producers	30	1	31
Bangladesh	Mechanical harvesting: use of reaper for harvesting rice	Producers, Private Sector, Civil Society	24	13	37
Bangladesh	Polder water management and sluice gate operation	Producers, Government, Private Sector, Civil Society	115	5	120
Bangladesh	Nutritional awareness for mothers and schoolteachers	Producers, Government, Private Sector, Civil Society	0	159	159
Bangladesh	Refresher course on trouble-shooting agricultural machineries	Government	18	6	24
Bangladesh	Safe pesticide application in HYV Rice	Producers, Government, Private Sector, Civil Society	97	0	97

Country of Training	Brief Purpose of Training	Who was Trained	Number Trained		
			M	F	Total
Bangladesh	Safe pesticide application in rabi crops	Producers, Private Sector, Civil Society	34	6	40
Bangladesh	Sunflower and Maize production by dibbling method	Producers, Private Sector, Civil Society	95	13	108
Bangladesh	Sunflower and Maize production procedure and nutritional awareness	Producers, Private Sector, Civil Society	104	34	138
Bangladesh	Terminal drainage and control rat attack	Producers, Government, Private Sector, Civil Society	172	18	190
Bangladesh	Knowledge sharing seminar on improved, climate-resilient and nutritious HYV rice, sunflower, and maize production in the polder zone	Producers, Government, Private Sector, Civil Society	703	432	1135
Bangladesh	Best management practices for urea topdressing in HYV Rice	Producers, Government, Private Sector, Civil Society	44	8	52
Cambodia	Field day of CA practices to service providers and farmers in the upland region of Battambang	Producers, Private Sector, Civil Society	22	13	35
Cambodia	Field day meant to showcase green sowing rice	Producers, Government, Private Sector, Civil Society	21	7	28
Cambodia	The 7th Hub Advisory Committee meeting and Field visit	Producers, Government, Private Sector, Civil Society	17	3	20
Cambodia	Field visit of seniors and delegates from MAFF in Battambang	Producers, Government	45	9	54
Cambodia	Demand creation meeting with farmers and service providers in Battambang	Producers, Private Sector, Civil Society	19	7	26
Cambodia	Demand creation for farmers and service providers in Battambang	Producers, Private Sector, Civil Society	22	10	32
Cambodia	Training students on softs skills and entrepreneurship in Battambang	Private Sector, Civil Society	3	2	5
Cambodia	Cover crop training and demonstrations in Kampov, Samnanh, Kdong and Krapeu villages, Banan district, Battambang	Producers, Government	36	16	52
Cambodia	Participatory assessment biomass of sun hemp in Krapeau village, Banan district, Battambang	Producers	6	0	6
Cambodia	Foundational agricultural training for youth, Samdach EUV & ME schools, Battambang	Private Sector, Civil Society	16	24	40
Cambodia	Conservation Agriculture Training, Phare Ponleu Silpak vocational school, Battambang	Private Sector, Civil Society	20	15	35
Cambodia	Tomato grafting training, NUBB & Anlongvil secondary school, Battambang	Private Sector, Civil Society	21	16	37
Niger	Demonstration trials on dual-purpose millet varieties in Niger	Producers, Government	50	8	58
Senegal	Community workshop sensitizing at Malicounda and Diokoul villages	Producers, Government, Private Sector, Civil Society	16	60	76
Senegal	Scaling up and training of dual-purpose millet flour making	Producers, Government	3	114	117
Senegal	dual-purpose millet enriching flour training at Sandiara and Nguekhokh	Producers, Government	3	253	256
Senegal	Training on financial and organization management at Ndamo Lo, Bayakh, Keur Moussa and Pout	Producers, Government	3	55	58

Country of Training	Brief Purpose of Training	Who was Trained	Number Trained		
			M	F	Total
Senegal	On-farm trials of dual-purpose pearl millet in Djolor and Passy villages	Producers, Government	110	15	125
Senegal	Capacity building for producers using dual-purpose millet	Producers, Government	36	1	37
Senegal	Training farmers on dual-purpose millet exudation	Producers, Government	1	24	25
Senegal	Capacity building for Peace Corps Master Farmers	Producers, Government	4	0	4
Total	50 total trainings were held during this reporting period		2442 63%	1452 37%	3894

B. Long-term training – 6 new students were added during this reporting period

ID #	Sex	University	Degree	Major	Program End Date (month/year)	Degree Granted (Y/N)	Home Country
92	F	Bangladesh Agricultural University	M.S.	Gender Research	March-2023	N	Bangladesh
93	F	Bangladesh Agricultural University	M.S.	Agricultural Economics	March-2023	N	Bangladesh
94	M	Bangladesh Agricultural University	M.S.	Agricultural Engineering	August-2022	N	Bangladesh
95	M	National University of Battambang	M.S.	Sustainable Agriculture	May-2024	N	Cambodia
96	F	National University of Battambang	M.S.	Sustainable Agriculture	May-2023	N	Cambodia
97	F	Royal University of Agriculture	M.S.	Agricultural and Food Science	December-2023	N	Cambodia

IV. Innovation Transfer and Scaling Partnerships***

I. Appropriate Scale Mechanization Consortium - Phase II

The ASMC reported two updated technologies for this reporting period:

1. Combine Harvester (phase 4)
2. Cover Cropping (phase 3)
3. Four-wheel tractor Operated Seeder (phase I)
4. Land leveler (phase 3)
5. No-till planter (moved from phase 3 to phase 4)
6. Rice Reaper (phase 4)
7. Rice Transplanter (phase 4)
8. Seed broadcaster (moved from phase 3 to phase 4)
9. Two-Wheel Tractor Based Seed Planter (phase 4)

2. Improving Food and Nutrition Security in Senegal and Niger

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

1. Dual-purpose pearl millet grain and fodder biomass production (phase 4)
2. Improved dual-purpose millet stover for livestock feed (phase 4)

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

There were five technology practices reported during this reporting period:

1. Agricultural mechanization in harvesting paddies by women and youth agri-entrepreneurs (phase 2)
2. Agricultural mechanization in the dry season cropping (phase 2)
3. Agricultural water management at catchment level (phase 2)
4. Rice-Maize cropping systems in the polders (phase 3)
5. Rice-Sunflower cropping systems in the polders (phase 3)

4. S3-Cambodia: Scaling Suitable Sustainable Technologies

This project has reported work on five technologies during this reporting period:

1. Combining STEM-based instruction and field-based training to teach agricultural technologies: vegetable grafting module (phase 1)
2. Grafting tomatoes scions on eggplant rootstock for wet season tomato production (phase 2)
3. Roselle as a long cycle relay crop for post-rice production in lowland Cambodia (phase 2)
4. Sun hemp as a short cycle cover crop for post-rice production in lowland Cambodia (phase 1)
5. Wild Food Garden arrangements of underutilized perennial plants in rural production (phase 2)

V. Future Work

- A. SIIL will continue to collaborate with our host country partners and subawardees to focus on engaging with multiple stakeholders around novel technologies, increasing group collaboration efforts, and develop and share reports. Our researchers have discussed plans of collaborating with farmers and producers to collect data, leverage new technologies, build human capacity, and continue to develop impactful programs, as well as focus more intentionally on gender inclusivity in their future work.
- B. SIIL will host a face-to-face annual meeting in Phnom Penh, Cambodia in June 2022 to share knowledge and successes related to CE SAIN. Delegates from iREACH – West Africa and HAUP-CEMARCH are invited to the meeting for cross-collaboration with all of our focus countries and regions.
- C. SIIL will continue to focus on the successful implementation of the iREACH initiatives in West Africa, Latin American and the Caribbean, and potentially, East Africa.
- D. SIIL will continue to support the institutional and human capacity-building efforts in focus countries and regions, especially with CEMARCH, as they develop and implement institutional changes with the hope of increasing agricultural training and capacity building in higher education.
- E. Policy Research Consortium (PRC): SIIL will complete the dissemination efforts with the consortium members and execute the subaward with Northwestern University to finish their COVID Dashboard activities. This subaward will be completed May 30, 2022 and the Policy Research Consortium will conclude June 30, 2022.
- F. SIIL 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.