

## SUSTAINABLE INTENSIFICATION INNOVATION LAB: APPROPRIATE SCALE MECHANIZATION CONSORTIUM Proposal for Phase II Project

### Duration

April 2020 – March 2023

### Appropriate Scale Mechanization Consortium (ASMC)

- University of Illinois at Urbana-Champaign (UIUC)
- Michigan State University
- Kansas State University
- North Carolina A&T State University

### Director

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### Regional Partners

- Asia: Cambodia and Bangladesh
- West Africa: Senegal and Burkina Faso

### Additional Partners

- Local Universities
- ADM Institute for the Prevention of Postharvest Loss
- Conservation Agricultural Service Center
- CIRAD
- CE SAIN
- Tillers International
- SwissContact
- ISRA

### Phase II Program Goal

ASMC will facilitate the evaluation and scaling up of transformational technologies for smallholder farmers. We will also emphasize sustainable intensification of selected agricultural value chains in Asian and West African regions with the aid of Innovation Hubs and regional stakeholders. Resilience of smallholder farmers through suitability, scalability, and sustainability will be addressed through appropriate technologies using the four-pillar approach of Technology Innovations, Entrepreneurship, Capacity Building, and Policy Infrastructure. Capacity building, youth engagement, gender integration, and women empowerment will be intensified.

### Objectives for Phase II

For Phase II, the ASMC approach includes the following:

- Assess readiness of technologies identified in Phase I with the aid of regional stakeholder networks
- Scale up adoption of key transformational technologies by smallholder farmers on a regional basis facilitated by engagement of private sector partners to promote resiliency
- Intensify gender empowerment and youth engagement activities; continue building capacity in the regional workforces to ensure sustainability and economic prosper

### Expected Impacts

This work will build human capital by establishing a culture of innovation and experimentation in sustainable mechanization for the food production value chain. Capacity building efforts span training and mechanization-specific educational programs and curricula within the Hubs and associated institutions to Extension activities targeting smallholder farmers, women, and youth with the aid of trained Extension specialists. We aim to enhance the lives and livelihood of smallholder farmers in Asia and West Africa with increased food production, youth engagement and women empowerment, entrepreneurship and better economy, and influencing policies for sustainable development.



## SUSTAINABLE INTENSIFICATION INNOVATION LAB: ASMC Proposal for Phase II

### Executive Summary

In Phase I, the Appropriate Scale Mechanization Consortium (ASMC) created an effective network of partners, collaborators, and stakeholders in the four countries of focus for the past four years: Bangladesh, Cambodia, Ethiopia and Burkina Faso. The Phase I effort resulted in the identification of key transformational technologies that increase crop and labor productivity and timeliness while enabling sustainable cropping systems, reducing drudgery especially for women, and targeting value chain development with private sector involvement for scaling. For Phase II, the ASMC will build on the Phase I activities targeting a regional approach with the overall goal of facilitating the evaluation and scaling up of selected transformational technologies for 10,000 smallholder farmers and/or 10,000 hectares (ha) of land. We will emphasize sustainable intensification of selected agricultural value chains in Asian and West African regions with the aid of Innovation Hubs and Field Hubs and their interactions with regional stakeholders. Resilience of smallholder farmers through suitability, scalability, and sustainability will be addressed through appropriate technologies using the four-pillar approach of Technology Innovations, Entrepreneurship, Capacity Building, and Policy Infrastructure. Also included in our approach are youth engagement, gender integration, and women empowerment. Specific countries targeted include Bangladesh and Cambodia in Asia through existing Hubs, and Burkina Faso (existing Hub) and Senegal (new regional Hub) in West Africa. The role of these Hubs will be expanded to include entrepreneurship and business development, public policy, and workforce development in addition to technology and innovation. Partners in the United States (US) will include University of Illinois at Urbana-Champaign, Michigan State University, Kansas State University, and North Carolina A&T State University.

In Phase II, in the Asia Hub, Cambodia will expand its activities to scale up conservation agricultural (CA) machineries via appropriate technologies and cropping systems that were actively pursued during Phase I. The Bangladesh team along with ACI will share its expertise of rice harvesting systems, with particular emphasis on the mini-combine harvester, with other regions including the Polder areas. Technologies for preventing postharvest losses that were developed in Bangladesh will also be expanded. Swisscontact will provide private sector engagement expertise for promoting scale up of technologies in the Asia region. For the West Africa region, we will pursue five transformational technologies that address mechanical draft power, CA crop establishment and integrated crop systems, dry crop production with the aid of irrigation, integrated cropping systems, and postharvest loss prevention. To build capacity, we will continue efforts to expand outreach to smallholder farmers to provide them with access to technologies and to promote business development opportunities (e.g. custom-hire farm services). At the tertiary level, we will expand on the ongoing efforts to create new curricula emphasizing education of students in agricultural technology and business, which is an area lacking in Africa and Asia, but exists in the United States. Such degree programs will help local expertise facilitate scale up of technologies and integrate business and entrepreneurship for a sustainable food production system.

The ASMC will build upon recommendations from gender technology assessments conducted in Phase I. For Phase II, the two overarching objectives will be to identify and implement best approaches to integrate gender in appropriate agricultural mechanization, and to build capacity of in-country and regional staff and relevant stakeholders to adopt a gender lens in technology design, dissemination, adoption, and use. The ASMC will also work with Illinois 4-H and use the "Positive Youth Development" approach to guide its youth integration efforts. We will also address the potential for youth to become early adopters and participate in entrepreneurial activities. We will pursue collaboration with other SIIL consortia to leverage expertise in information technologies, in-country policy development, and soil health via CA promotion and sustainable intensification existing gender and youth engagement efforts.