



Feed the Future Innovation Lab for Legume Systems Research

Leveraging Technology for Effective Systematic Change

Strategy Whitepaper Update

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The Feed the Future Innovation Lab for Legume Systems Research met in Saly, Senegal, in February 2020, with over 50 legume systems researchers and stakeholders to develop a global strategy for the Lab. The meetings had constructive discovery and dialogue, the results of which are captured here in this paper. This strategy whitepaper will inform the work of the Lab going forward. The strength of the Legume Systems Innovation Lab's design lies in its innovative and vibrant research to scaling strategy using a systems approach. Supported projects are diverse in research focus and address both the development and placement of innovative technologies with a thorough understanding of the system they will impact thus leading to successful handoff to scaling partners. Projects are focused on three areas of inquiry (AOI):

- AOI-1 Integration of legumes into sustainable smallholder farming systems and agricultural landscapes
- AOI-2 Integration of legumes within local and regional market systems, including trade
- AOI-3 Analysis of motivators or barriers to legume utilization within social and economic systems

Casting a Common Vision

The Legume Systems Innovation Lab focuses on the development of innovative and transformative legumes research for scaling using a systems approach through the placement of innovative technologies and key information at optimal insertion points for system wide impact. The Convening identified three key impact areas that define the Lab's success:



Networking & collaboration: integration across stakeholders; communication and collaboration at multiple levels; and partnerships for scaling.



Measurable impact: communication around lessons learned; well represented and showcased in conferences, publications, seminars, etc.; improved productivity, leading to workforce development.



Capacity building: long- and short-term knowledge and skills development sustainably adapted to national contexts.

Setting Short-Term Goals and Long-Term Strategic Directions

For each of the three Areas of Inquiry, the Convening set long-term (20 years) strategic directions and short-term (three years) strategic goals. The three-year goals will become the basis for strategy directions for the Lab over the next three years seeking high level outcomes and impacts.

AOI 1

Present Status

- Traditional extension approaches, low use of improved varieties
- Low production/little coverage by legumes compared to cereals
- Small margin to produce improved seed, poor quality grower seed
- Smallholder farmers do not buy (quality) seed
- Indiscriminate use of pesticides

Intermediary Strategies

- Farmers using improved seed systems growing new legume varieties 5-10 years old
- Self-regulation systems for pest control and enhanced IPM.
- Strong Farmer-led extension approaches
- Community-based seed production systems
- Consumer-preferred trait selection

Future Goal

- Strong public/private seed industry with farmer access to high quality seed.
- Multiple resistant varieties based on end user demand
- Sustainable biological production, pest suppression by biocontrol as part of IPM.
- Agro-ecological approaches to production systems

AOI 2

Present Status

- Low access to quality seeds, research not oriented to markets
- Limited value-added products
- Poorly integrated markets with low market participation, low access to market by farmers and low volume of legumes in markets
- Information asymmetry, lack of and/or transparency of and access to prices
- Absence of and/or weak regulatory and policy framework for variety development and seed systems at country and regional levels.

Intermediary Strategies

- Improved market varieties that respond to consumer preference
- Better information systems and information flows in legume systems

Future Goal

- Improved legume trade
- Availability in markets of improved varieties and yield for better nutrition and income for farmers
- Information for farmers and consumers
- Better integrated value chain (locally and regionally)

AOI 3

Present Status

- Input subsidies on starchy staples vs legumes
- Consumers unaware of new opportunities for legume benefits, use, and consumption
- Low private sector involvement in seed production, mostly researchers in some countries (low participation of private sector also applies to value added products as well)
- Low adoption of new technologies by producers

Intermediary Strategies

- Cowpea and bean producers including women and youth are empowered to meet consumer demand and contribute to resilient livelihoods
- Better information about legume consumption (benefits, preparation skills)
- Legume systems are integrated (policy, production, research)

Future Goal

- Improved processing and value-added
- Adapted to climate change
- Malnutrition is drastically reduced
- Legume systems are integrated (policy, production, research,)

Seeking Synergies Between Projects and Innovation Labs

In addition to these strategic directions, much can be accomplished in existing projects and Innovation Lab collaboration through system-level synergies in the following areas: agro-pastoral systems, crop-livestock tradeoffs, legume systems product diversification (links to livestock feed and fodder industry), agronomy, sustainability of production / legume cropping, technology dissemination, post-harvest loss, soil nutrient management, legume processing, women and youth, empowering partners, policy environment.

Strategies by Area of inquiry

Future funding through the Lab will be guided by the following strategies under each of the Areas of Inquiry. While not all strategies can be accomplished with available time and funding, the Lab will prioritize these strategies so that in each case the strategies with greatest system impact will be given first priority.

AOI 1

1. We aim to improve sustainable production intensification of cereal/legume farming systems by improving soil fertility, agronomy, crop-livestock integration, and integrated pest management.

➤ This will be achieved through activities in:

- Agroforestry: utilizing varieties, screening and pilot testing
- Bio agents: community-based production of biopesticides and use of biocontrol agents as part of IPM
- Dual purpose cowpea: feeding trials, evaluating quality of cowpeas
- Conservation Agriculture; promoting crop diversity and suppressing pest damage

This strategy would address gaps in linkages between different cross-cutting themes under consideration by individual projects, entrepreneurship opportunities for youth organizations, gender considerations as impacted by our innovations, and innovation fair/demonstration farms for technology transfer.

2. We aim to improve varieties by international germplasm sharing, improving market knowledge, reducing trade barriers

➤ This will be achieved through activities such as:

- Expanding breeding program data exchanges
- Reducing import transaction time/cost
- Surveys of production / farmers/ local markets
- Survey consumer preferences (cooking time, color & taste)
- Providing content/composition of nutrition information
- Providing timely consumer information for products and traders
- Improve seed quality and information
- Create regional information platform for supply and demand
- Reduce barriers in policy and practice
- Engage RECs to facilitate implementation of Harmonized Regulatory Seed Systems

This strategy would address knowledge gaps in varieties, quality seed, supply and demand, publicly available consumer/product data, private sector participation, consumer awareness of varieties' nutritional value, and access to credit.

3. We aim to develop and deliver improved bean and cowpea varieties by developing breeding pipelines and increasing the scale of farmer adoption by 50%

➤ This will be achieved through activities in:

- Optimization of breeding pipelines
- Improving seed systems
- Learning from successful seed production by smallholders with focus on community based seed enterprises

This strategy would address would produce sustainable platforms for addressing knowledge gaps in varieties, quality seed, supply and demand, publicly available consumer/product data, private sector participation, consumer awareness of varieties' nutritional value, and access to credit.

AOI 2

1. We aim to improve information systems for legume value chains by providing more information to actors in the value chain, linking the actors to the source of information

- This will be achieved through activities by:
 - Developing tailored information products for stakeholders
 - Delivering information through information and communication technologies
 - Enhancing market information systems
 - Enhancing capacity for the use of information delivery methods
 - Strengthening linkages and dialogue with the RECs relevant technical committees.

This strategy would address gaps in policy, networking infrastructure, youth and gender participation in the value chains, coordination between actors and the value chain, economic value for farmers & others in the value chain, language barriers, and intra- & inter- regional trade.

2. We aim to empower legume cowpea and bean producers, including women and youth, to meet consumer demand and contribute to resilient livelihoods through increased productivity and inclusive commercialization, infrastructure investments, including virtual legume information systems, and an enabling policy environment for legume systems throughout the value chain.

- This will be achieved through activities such as:
 - Design and disseminate a public awareness campaign on nutritional benefits of cowpea and bean
 - Assisting breeders to identify consumer-preferred nutritious legume varieties to achieve our goals
 - Identify inclusive market opportunities for nutritious legume-based processed products
 - Promote farming systems that double production and regenerates land
 - Identify value chain stakeholders

This strategy would address gaps in demand and supply constraints, production sustainability, and public awareness on the importance of the legume sector, including government and civil society.

AOI 3

We aim to improve the integration of legume systems stakeholders in policy, production, research, and the like by encouraging government to create policies and facilitate the development of legume products, promoting public private partnerships, breaking down silos between institutions (NARS, extension), and facilitating strong communication between subsystems and components

This will be achieved through activities such as:

- The development of an information hub for stakeholders, including low-literacy groups
- Community engaged scholarship that shares information through the training of trainers
- Product research, development and diversification
- Drawing lessons from private sector involvement in soybean VC in Southern Africa

The strategy will address gaps in connectivity/communication, knowledge in policy, production, and research resources, and engagement of key actors.

Strategies by Region

The LSRIL is focused on two geographical regions: West Africa and Southern Africa. In West Africa, we host projects in Senegal, Ghana, Benin, Burkina Faso, Mali, Niger, and Nigeria. In Southern Africa we are working in Mozambique, Malawi, and Zambia. Each of these regions has their own sub-strategies that are regions specific and are detailed here.

West Africa

In addition to the areas of inquiry, the West Africa strategy focuses on the following:

- Provide platforms for information sharing that will help integrate the cowpea value chain in West Africa.
- Map major actors in the value chain network for cowpea, pigeon pea, and common bean.
- Support the work of CIAT/PABRA to collect information on common bean for the Bean Atlas.
- Develop the capacity of NARS in the target countries of Benin, Nigeria, Niger and Senegal, to develop data collections methods and mechanisms.

Southern Africa

In addition to the areas of inquiry, the Southern African strategy focuses on the following:

- Coordinate activities more closely with regional agencies CCARDESA, SABReN, and CIAT/PABRA
- Analyze existing varieties of common bean, cowpea and pigeon pea for their inter-cropping potential, especially with maize (with the International Center for the Improvement of Maize and Wheat, CIMMYT).
- Improve seed systems and make them more responsive to producer and consumer demand.
- Strengthen national breeding programs through closer collaboration with the NARS.
- Introduce and promote gender responsive variety breeding through the Gender Responsive Researchers Equipped for Agricultural Transformation (GREAT) program.
- Explore possible new processed legume products for cowpea, pigeon pea, and common bean.

Conclusions

- There is a strong desire among sponsored projects for joint learning and greater joint impact.
- Although time is limited, there should be a continued focus on the development, testing, and the identification of pathways for uptake of new varieties that respond to producer and consumer needs as a core activity of the lab.
- Improving the flow of information throughout the bean and cowpea value chains is essential for improved efficiency and effectiveness.
- The lab should support the move away from indiscriminate use of high-risk pesticides to judicious use including alternatives such as biocontrol agents, biorational pesticides and cultural controls.
- The goal (direct or indirect) of all lab activities should be to improve food security and nutrition through legumes and support for legume systems and to make legumes part of a nutritional response to food security. (Indicators for this goal will be at impact level and should have direct relationship to specific SDGs and should be reflected in all impact assessments of the Lab. Other lower level indicators should ultimately contribute to this goal.
- There must be a continued focus on policies that support the growth of the legume sector and facilitate regional legume trade integration. (This to be achieved will require pro-active involvement of the RECs who are key in facilitating trade and reducing barriers between countries and sub-regions. In this regard, the relevant AU technical officers overseeing the Africa Continental Free Trade Area process will also be key actors to collaborate with.)
- All research activities should seek to be aligned with NARS priorities and resilience frameworks of USAID Missions, where applicable, and all cross-cutting issues should be addressed in support of resilience.

Next Steps

- Second round of Resilience Awards to existing projects (Ongoing)
- Circulation of updated whitepaper to the TMAC, PIs, Project and Convening Participants (April)
- Review of awarded projects by Resilience Resource Team (May)
- FY2022 Annual Plans Due from projects (July)
- Lab publishes FY2022 Annual Plan (October)

These strategies will be pursued by the Management Entity of the Lab with the support, advice, and consent of the Technical Management Advisory Committee. In all cases, as circumstances change, the Lab will adjust its strategies to meet the demands of the moment. The current COVID-19 crisis, for example, may severely impact the way in which we implement our strategies as a Lab, but in all cases, we will seek to implement strategies that address the strategic directions articulated here.

Sincerely,



Dr. Barry Pittendrigh, Director