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

GLOBAL SUPPORTING SEED SYSTEMS FOR DEVELOPMENT ACTIVITY

FY19 ANNUAL Report

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Acronyms and Abbreviations

AE	Agri Experience
AGRA	Alliance for a Green Revolution in Africa
AVISA	Accelerated Varietal Improvement and Seed delivery of legumes and cereals in Africa
BMGF	Bill and Melinda Gates Foundation
CBO	Community Based Organization
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture
COMESA	Common Market for Eastern and Southern Africa
CORAF	Conference of African Agricultural Research Officers
CRS	Catholic Relief Services
DiNER	Diversity for Nutrition and Enhanced Resilience
ECR	Emergency, Chronic stress and Resilience
EGS	Early Generation Seed
FSPs	Financial Service Providers
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFDC	International Fertilizer Development Center
ISSD	Integrated Seed Sector Development
J2SR	Journey to Self-Reliance
KALRO	Kenya Agricultural & Livestock Research Organization
KEPHIS	Kenya Plant Health Inspectorate Services
MoA	Ministry of Agriculture
NARC	National Agricultural Research Center
NARS	National Agricultural Research System
NML	New Markets Lab
OI	Opportunity International
PABRA	Pan-Africa Bean Research Alliance
PIATA	Partnership for Inclusive Agricultural Transformation in Africa
PICS	Purdue Improved Crops Storage bags
PoS	Point of Sales
QA	Quality Assurance
QBS	Quality Basic Seed
QDS	Quality Declared Seed
RIMI	Ripoti Mbegu Isiyo bora
RTB	Roots, Tubers and Bananas
S34D	Feed the Future Global Supporting Seed Systems for Development activity
SHF	Smallholder Farmer
SMEs	Small and Medium Enterprises
SMS	Short Message Service (text message)
SSSA	Seed System Security Assessment
STAK	Seed Trade Association of Kenya
STAM	Seed Trade Association of Malawi
TASAI	The African Seed Access Index
TASTA	Tanzania Seed Trade Association
VBAs	Village-based Agents

1. Executive Summary

Activity introduction

The Feed the Future Global Supporting Seed Systems for Development activity (S34D) is a five-year Leader with Associates Award, funded by Feed the Future initiative through the Bureau of Food Security (BFS) and by USAID through the Office of U.S. Foreign Disaster Assistance (OFDA). Catholic Relief Services (CRS) is leading this consortium with support from partners that include: Agri Experience, CIAT-PABRA, IFDC, Opportunity International (OI) and Purdue University. S34D's Life of Activity (LOA) runs from August 2018 through August 2023. The overarching goal of S34D is to improve the functioning of national seed sectors in focus countries in an *inclusive* manner—this 'inclusive' approach aims to support all farmers, including women farmers and youth. S34D aims to meet the activity goals by increasing the capacity of the formal and informal seed systems and humanitarian and relief programming to sustainably offer quality, affordable seeds of a range of crops (***Objective 1***), and increasing collaboration and coordination among all seed systems actors and actions (***Objective 2***).

This activity is unique in that the overall strategy proposes to generate a broader view and integration of the seed systems, with **Objective 1** working across formal, informal and emergency seed sectors; and, **Objective 2** placing emphasis on the interactions and synergies among the three systems. This integrated approach is further strengthened by cross-cutting IRs that seek to improve policies and practices that support pluralistic seed systems, rather than focusing on individual parts of each system. An important aspect of the activity is to gain a better understanding about how seed systems interact and where there may be positive or negative market interactions. In the case of detrimental actions, S34D intends to develop interventions to address market distortions.

FY19 achievements

Over the course of FY19, S34D implemented activities in Kenya, Uganda, Tanzania and Malawi. For each country, seed consultation reports were written based on meetings with USAID, Implementing Partners and other seed actors. Based on these reports, S34D produced concept notes for each country with interventions that could be implemented in these countries with Mission funding.

Studies on existing agri-input models for last mile delivery systems, seed programs landscape across various geographies, Point of Sales for the niche market, financial inventory scans, seed system metrics and yellow bean input and output markets were initiated. Drawing on these studies and scans, S34D carried out the bulk of the preparatory tasks needed to implement activities on the ground beginning FY20.

In collaboration with TARI, S34D conducted a field study on yellow bean in Tanzania to characterize input and output markets. The study was conducted in Northern Zone, the Lake Zone, Western Zone, the Southern Highlands Zone, and Coastal Zone (Dar es Salaam).

S34D piloted the deployment of a niche variety of biofortified high-iron beans in western Kenya. This business model with the Point-of-Sale (PoS) application has gathered a rich evidence-base of farmers' preferences and the application will measure new varietal adoption at farm-level in FY20.

S34D obtained permission from TOSCI for the 'stop-bad seed' program RIMI (Ripoti Mbegu Isiyo bora) in Tanzania. Enthusiasm from the highest government officials is encouraging to continue implementing this important initiative on the ground.

S34D facilitated the process to develop and share a common understanding of the Standard Seed protocol in Kenya with KEPHIS and other stakeholders. It was a key step in facilitating the development of the protocol. The protocol will be written in FY20.

S34D reviewed the existing indices on seed systems (TASAI, ASI and EBA) and identified, compiled, and shared gaps and recommendations in seed system metrics with a range of stakeholders. Going forward, S34D will continue to compile evidence-based information on informal and ECR seed systems for the global seed community.

At the end of FY19, S34D had discussions with Missions in Senegal, Niger, Ethiopia and Zambia to start the engagement process with USAID Mission's staff, go over proposed activities and prepare for implementation of centrally funded activities in those countries in FY20.

2. Accomplishments versus targets

S34D collected baseline data for high iron bean variety dissemination in Western Kenya for indicator G1, G2, Res 2 and Res 3. The IPTT in annex 1 has all the indicators and more detailed information. The below table shows the indicators, targets and achievements for FY19.

S34D Indicator	Indicator Name	Baseline	Target FY2019	Achieved	% Target Met	Reason for deviation
OUT-2	Number of individuals participating in S34D [IM-level], (Output) FtF EG.3.2	N/A	N/A	198		
OUT-4	Number of models	N/A	1	1	100%	The niche market model was piloted.
OUT-5	Number of studies that have fulfilled all criteria	N/A	14	2	14%	14 studies that were initiated in FY19. 2 are done and initially disseminated to immediate stakeholders. 6 are in draft or final forms, but dissemination is planned for FY20. 6 studies are neither completed, not disseminated yet.
OUT-6	Number of tool-kits developed	N/A	3	2	67%	e-course and seed systems.org maintenance were completed, but minimum standards not
OUT-7	Number of stakeholders linked	N/A		17		1 farmers organization and 1 seed company were linked to 15 agrodealers.
OUT-11	Number of inclusive seed policy specific dialogues facilitated		4	4	100%	Standard Seed; Stop Bad Seed; Seed Distribution; Seed policy and Metrics
OUT-12	Number of evidence-based seed policy briefings developed.	N/A	5	1	20%	Due to delayed start, crop season in Kenya was missed. Late rains in the second ag season led to delays in data collection. Only the niche market model was completed, but not disseminated. The Yellow Bean study was done with TARI, and data analyses and report writing had taken longer than expected. First draft of the global seed policy review is received, but not yet socialized, not disseminated. Free seed position paper was not developed. The seed metrics review was completed.
OUT-13	Number of information sets digitized and shared in public domain.		4	2	50%	Storage survey and DNA reference library were not completed. PoS and seed policy actors landscape database were completed.
OUT-14	Number of tools and technologies generated and/or augmented on seed supply and quality.		2	2	100%	Stop bad seed (Tanzania); PoS (Kenya).

3. Summary of Accomplishments by Sub IR

IR 1.1 Constraints in formal seed systems Identified and mitigated

Sub IR 1.1.1 Operational efficiency of seed companies increased.

Achievements:

Four inventory scans of financial services in Uganda, Kenya, Tanzania and Malawi were completed (OI, 2019). These financial service provider (FSP) scans will inform the design of access to finance activities for seed companies, agro-dealers, and smallholder farmers in FY20. A list of S34D partners' products can be found in Annex 2.

Learning:

- Kenya was the largest market for mobilizing deposit, whilst Malawi was the smallest.
- Due to recent regulatory re-structuring, Malawi and Uganda have the greatest potential for growth for seed sector financing.
- Ugandan institutions carried the highest capital adequacy ratios[1] and demonstrate the most stable financial sector across the region.
- Seed actor awareness of FSP products is very limited and needs strengthening.
- FSP products in this corridor tend to be very narrow in scope and specified to particular purposes—these tended to be dedicated product lines connected with either specific private sector companies (e.g. tobacco, tea or coffee companies) or NGO partnerships (with the NGOs delivering BDS or extension services).

Sub IR 1.1.2 Seed availability of climate – smart crops increased, through enhancing EGS capacities of firms and producers.

No activities were planned in FY19 under this Sub IR.

Sub IR 1.1.3 Capacity of local seed actors to extend customer base and support last mile strengthened.

Achievements:

IFDC completed a desktop review on existing models for last mile delivery systems of agri-inputs, and on seed related models across Sub-Saharan Africa (SSA) countries that involve crops beyond maize. The range of crops of importance included were grain legumes, roots and tuber crops, other non-maize cereals, and fodder crops. The review identified models that have been serving last mile clientele through different channels.

IFDC completed a desktop review of the existing training materials available for capacity building of agro-dealers and documented for further adaptation (IFDC, 2019). Gaps in training were identified that existed in capacity building material for agro-dealers for re-tooling, with a major focus on seed delivery mechanisms, strategies, technical knowledge, and management associated with last mile delivery options.

A list of agro-dealers who have been trained and participated in different development programs across Kenya, Uganda, and Tanzania since the mid-2000s was generated.

[1] Capital Adequacy Ratio (CAR) is a measure of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures. The Capital Adequacy Ratio, also known as capital-to-risk weighted assets ratio (CRAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world

Learning:
A literature review showed the different seed delivery models and strategies that support value chain actors at the last mile borne out of the need for these actors to innovate for better service delivery and reach to smallholder farmers (IFDC, 2019b). These include bundling and "piggybacking" strategies of farmer essential products services within the models, mobile phone advancements in certified seed verification, crop insurance, ICT support for seed systems and digital finance for agricultural inputs.

Sub IR 1.1.4 Sustainable models with private sector players to supply quality EGS and QDS to a range of suppliers piloted and scaled using innovative financing.

Achievements:
Produced a report (IFDC, 2019b) on key last mile delivery models in operation for seed and agri-inputs delivery and described key potential models that can be replicated or proto-typed with adaptations for S34D related activities on last mile delivery systems. 36 stakeholders, including seed companies, financial institutions, NGOs involved in seed and agriculture development projects in the region, innovative ICT solution providers, agro-dealers and farmers were interviewed to conduct this review.

Learning:
No single entity can satisfy all the needs identified in delivering quality seed at the last mile, but rather, successful delivery requires a series of formal and informal working relationships between various actors in the seed value chain, each with different roles and responsibilities in the entire process.

IR 1.2 Strengthened capacity of informal seed systems to offer a broader range of affordable, improved quality seeds

Sub IR 1.2.1 Informal trader capacity and local seed networks assessed.

Achievements:
In collaboration with TARI, PABRA (with CRS) conducted a study on yellow bean in Tanzania (CIAT, 2019). Input and output (seed and grain) market for yellow bean was characterized. The field study was conducted in Northern Zone (Manyara, Arusha and Kilimanjaro regions), the Lake zone (Kagera region), Western Zone (Kigoma region), the Southern Highlands zone (Mbeya, Rukwa) and Coastal Zone (Dar es Salaam). These regions are major production hubs for yellow beans (and beans in general), as well as major consumption and distribution hubs. Secondary data from PABRA's database was used to identify bean seed producers (QDS, companies and public seed enterprises) in Uganda and Tanzania. Bean seed production capacities were also evaluated.

In collaboration with CIAT, Purdue conducted a field survey to assess storage and postharvest constraints and capacities in northern Tanzania (Purdue, 2019). 464 farmers, 42 agro-dealers, and 7 seed producers in 5 districts in Manyara, Kilimanjaro and Arusha regions were interviewed. Data was collected on maize and common beans. To build awareness, a "PICS Seed Storage poster" was adapted, translated to Swahili, and 500 copies were printed and distributed to all participants in the survey.

Learning:

- Preliminary results of the survey implemented by Purdue on seed storage in Northern Tanzania suggest that most farmers do not store maize seed (hybrid maize seed), but store saved bean seed for subsequent seasons.
- Among those who grow beans (n=419), 85% grow local varieties. Among those who grow maize (n=450), 90% grow hybrid maize.
- Maize seed is primarily stored by seed producers. Subjective (biting, sound, etc.) methods are used to assess maize and bean seed moisture content before storage.
- Among farmers and seed producers, insects are the major sources of seed loss during storage. Farmers rely on traditional methods for seed storage such as ash and botanicals, while seed producers use insecticides for protection.
- In Tanzania, for yellow beans, both grain and 'potential seed' traders tend to deal in both (with the latter devoting up to 50% of their sales to seed). Clear management practices show 'potential seed' trade.

Sub IR 1.2.2 Capacity of local seed entrepreneurs and non-traditional seed actors strengthened.

No activities were planned in FY19 under this Sub IR.

Sub IR 1.2.3. Business models to leverage integrated operations validated.

Achievements:

S34D piloted the niche business model with biofortified high-iron bean variety – *Nyota*, in three counties of western Kenya. This was conducted in collaboration with the seed company Bubayi Products Ltd, its agro-dealers, and KALRO. The validation of the model will be completed after the harvest period in December -January (CIAT, 2019b). Customer preferences and adoption figures will be assessed after the harvest season, and information generated during that time will be used to validate the business model for the niche market.

Learning:

Bubayi planted 18 acres of *Nyota* seed, which were harvested in late July and early August 2019. Each acre produced 8-10 bags of *Nyota* seed. While Bubayi has been trying to promote the new certified seeds, discussions with PABRA revealed many challenges.

- Many farmers in the area still lacked information on the advantages of certified seeds; many farmers still use saved seeds or would buy uncertified seeds from the informal markets. Additionally, some government supported subsidy programs have distorted the market.
- Bubayi has tried to increase awareness of certified seeds through CGA (Cereal Growers Association) supported demo plots and field days. The events presented opportunities for Bubayi to disseminate certified seed information, answer farmer's questions, and make direct seed sales.

Some farmers expressed a desire to have a credit arrangement similar to a model offered by One Acre Fund (OAF) to access seeds[2]. Farmers wanted information on complementary technologies to *Nyota* including pest control products, fertilizer, etc.

[2] One Acre Fund provides asset-based financing, farm inputs and agriculture training services in a bundled package to smallholder farmers in organized in groups in several East African countries. This package includes credit for farm inputs, distribution of seed and fertilizer, training on agricultural practices, and market facilitation.

Sub IR 1.2.4 Last mile delivery solutions through non-traditional partners and ICT strengthened.

Achievements:

CRS and Dimagi developed ICT applications using CommCare platform to register agro-dealers and smallholder farmers (SHFs) selling and buying the newly released biofortified bean variety *Nyota*. CIAT/PABRA led the coordination and collaboration between the stakeholders on the ground to facilitate deployment of the tool. Approximately 300 farmers purchasing bean varieties (both biofortified and others) have been registered, in addition to 14 agro-dealers across three counties - Bungoma, Trans-Nzoia, West Pokot. ICT-based application enables data collection and compilation across multiple agricultural seasons because to validate ag-related business, S34D needs data from multiple seasons. This application will be used to also collect feedback from registered customers (farmers, in this case) during the forthcoming harvest period.

Learning:

This first round of data collection was synchronized with the availability of *Nyota* seed at the agro-dealer shops, which happened to be after the start of the rainy season and after several farmers had planted other beans. Subsequent timing should be at the start of the season to capture the full spectrum of the demand of the HIB seeds.

A few agro-dealers use motor bikers (boda boda) to distribute agricultural inputs. This is a very important aspect of delivery to reach last mile farmers with quality seeds of improved varieties.

IR 1.3 Strengthened capacity of emergency and humanitarian aid programs to respond effectively to acute and chronic stresses

Sub IR 1.3.1 Select emergency and humanitarian past actions assessed: focus on farmer evaluation, new varieties, and markets (local and formal).

Achievements:

The full review of Cash and Seed Security Response was completed (CIAT, 2019c). Cases were drawn globally and a high-level Thinking Group helped to guide the review. The Thinking Group members were staff from USAID/OFDA, FAO, Mercy Corps, CaLP, WoldVision, CRS). A clear strategy for assessing risks and opportunities when using cash and seed was developed and a detailed planning guide of enabling features for such an intervention was included.

This comprehensive DiNER learning work is about 80% done. Extensive background work was formalized and completed (including detailed tables on DiNER dates, number of M/F beneficiaries, available reports, crops, cost etc.). Fieldwork, individual household interviews and focus groups were conducted in Zimbabwe, Malawi and Madagascar and feedback of initial findings has been presented in each country and via an internal CRS webinar. This webinar was attended by staff particularly from the southern Africa region. Findings and major messages were also outlined in the Webinar presentation. The report (CRS, 2019) will be completed in November 2019.

Learning:

There is a growing interest and practice in cash delivery to deal with seed security issues. Now that the risks and opportunities have been firmly stated and the enabling features detailed, it should be possible to utilize and further test this practice.

Response models involving fairs, such as DiNERS, are much more effective when explicit attention is given to shaping the supply side. Important efforts need to be made in meeting with sellers,

explaining the objectives of the fair (diversity, nutrition), being clear and efficient on payment mechanisms, and emphasizing that this 'assistance' is not a one-off event, but part of a larger strategy to link vulnerable farmers to ongoing supply channels—with or without aid.

There were no activities planned under the following three Sub IRs.

Sub IR 1.3.2 Emergency and humanitarian responses that promote climate resilience, including food, income, cover and fodder crops are catalyzed.

Sub IR 1.3.3 Tools and Information Systems to frame Shock Responsive Models developed.

Sub IR 1.3.4 Last mile delivery solutions especially for chronic stress areas (small packs, boutiques, WhatsApp seller linkages) developed.

IR 2.1 Strengthened interface and collaboration between formal and informal seed systems

There were no activities planned under the following two Sub IRs.

Sub IR 2.1.1 Local seed network strategies (to interface, collaborate, and leverage) and local capacities are assessed.

Sub IR 2.1.2 Crop and seed platforms that link formal and informal seed systems are catalyzed and supported.

Sub IR 2.1.3 Formal sector suppliers and NARs/breeders leveraged and linked.

Achievements:

CRS with Dimagi developed tools to assess seed sales and clientele. 14 agro-dealers and approximately 300 smallholders were registered during the process. Preferences and constraints for both agro-dealers and smallholders were captured to inform subsequent agricultural seasons' activities by Bubayi seed company and PABRA.

Learning:

- For many smallholder farmers the 2kg pack is too big and they would prefer a 1 kg option, and possibly a 0.5kg option
- Farmers are requesting samples. Bubayi Seed Company notes that this is not possible because in their experience, samples have not impacted sales.
- Farmers and agro-dealers are asking for flyers which were not available: Bubayi only had about 15 flyers and posters.
- Many farmers came from very remote areas and will simply purchase their seeds from vendors that are closer.

Sub IR 2.1.4 Effects of market-based interventions on seed market operations and last mile delivery systems are assessed.

There were no activities planned in FY19 under this Sub IR.

IR 2.2 Strengthened interface and collaboration between development and relief to resilient and market-based seed systems

Sub IR 2.2.1 Seed System Security Assessments in Feed the Future Crisis Hotspot areas (focus on formal, semi-formal and informal seed systems) are adapted and scaled.

Achievements:

Three products for the SSSA e-learning course were completed: a) trailer for the course (2 minutes); b) a 2-page 'publicity grabber'— formatted to be printed and to be distributed electronically; and, c) the design of a website page hosting the e-learning course on SeedSystem.org.

The SeedSystem.org website was maintained. Since the website launch on August 20, 2019, the site visits have been recorded from 178 countries. Blogging themes for FY19 focused on: ICT and seed, an introduction; challenges in expanding ICT in the seed sector; experience of farmers in adopting production and use of quality declared seed; QDS seed, a vigorous conversation among experts; Institutionalizing QDS systems in Uganda; and a new e-learning course: Seed System Security Assessment and Response. The SSSA e-learning course is hosted here.[3]

The development of joint Humanitarian Standards for an SSSA has proceeded well between OFDA and UN-FAO with S34D helping develop the basic Technical Standards. The Minimum set drafts have gone through 10+ revisions and key elements will be presented at the UN global Food Security Cluster Meeting in November 2019.

Learning:

The development of the seed standards is a sensitive topic among the donors.

Sub IR 2.2.2 Emergency and humanitarian responses that link relief to development, especially links to private sector, formal, and biodiverse suppliers are developed and promoted.

Achievements:

An original literature bibliography from 2006 has been updated with 70+ references; an Excel sheet of cases has been developed with full descriptions of 70 cases and the basic roles for the private sector and for the formal research sector have been developed in full including formal sector seed and formal sector Plant Genetic Resources (PGR).

Cases have been gathered and drafted with both written materials and key informant interviews contributing to the analysis. A draft report has been issued, but 'enabling features' and recommendations for action need to be elaborated further. The final report is expected in October 2019.

Learning:

Once the reports are finalized, the learning will be identified.

Sub IR 2.2.3 Emergency and development seed programs to capture market opportunities from supply side to support vulnerable farmers in less prime market areas are leveraged.

Achievements:

[3] https://seedsystem.org/assessments-and-e-learning-course/sssa-e-course/

An initial position paper of free seed was developed in April 2019, distinguishing between free seed given in emergency contexts and free seed distributed under more developmental interventions (CIAT, 2019d). This initial position paper was presented to USAID/BFS and USAID/OFDA and the US policy group in May 2019. Feedback was incorporated in the draft position paper. A second round of the position paper was finished just at the end of FY19.

Learning:
There are currently multiple rationales for providing free seed. The review identified practices and ways seed is handed out in the emergency as well as in the development sector. Four seed hand-out practices identified in the emergency context were**:**

1. Under stressed conditions (e.g. moderate drought) seed is either not available or is too expensive for poorer farmers.
2. Implementers give seed, known as DSD (Direct Seed Distribution), as it is the logistically easiest model during stressed conditions such as after a disaster (e.g. earthquake or flood).
3. Implementers want to quickly disseminate new varieties which have stress-tolerant or value addition features, like drought-tolerance or added micro-nutrients, to farmers.
4. Governments or authorities want to demonstrate they are assisting in stressed situations.

In the development context, the following three practices were identified:

1. Free seed to stimulate use of lesser known inputs, like legumes bundled with Rhizobium as per the N2Africa model.
2. Free seed given to stimulate buying of accompanying inputs, e.g. less profitable seed varieties to drive up sales of a more profitable input such as fertilizer.
3. Free seeds for demonstrations and field days by the seed industry or implementers.

Sub IR 2.2.4 Shock-responsive and resilience-based models--by crisis type, crop profile, and broad agro-ecological system are developed and tested.

There were no activities planned in FY19 under this Sub IR.

CCIR 1.1 Country specific seed policy road maps developed

Achievements:
S34D developed a seed road map template (annex 3). The template was also shared with the donor partners (USAID and OFDA). These road maps are very different from regulatory seed system mapping that New Markets Lab (NML) produces. S34D is confident that the road maps will complement NML's work.

In partnership with NML, CRS has developed a landscape to serve as a living database (annex 4) of the seed programs across various geographies with identified funders and focus areas. S34D also captured the commodities that these programs focus on. This report is shared with the S34D partners. The information generated through this landscape (CRS, 2019b) and report (forthcoming, CRS, 2019c) will be used to:

- Inform who is doing what in seed policy arena
- Inform the rapid surveys that S34D intends to conduct in FY20
- Identify nodes for collaboration and coordination

Learning:
Aspects of the road map template can be covered during rapid surveys that S34D plans as an activity under FY2020. Landscape of seed programs provides information on nodes of coordination and collaboration efforts for S34D partners.

CCIR 1.2 Practices to expand and liberalize seed quality possibilities developed and implemented; market outlets and venue expanded; counterfeit seed issues addressed; free seed distribution restricted.

Achievements:
S34D facilitated meetings with KEPHIS and other stakeholders including public breeders (from the Kenya Agricultural Livestock and Research Organisation (KALRO) and public universities) of the orphan crops, relevant CG centers, KEPHIS regional centers, Alliance for a Green Revolution in Africa (AGRA), the Seed Trade Association of Kenya (STAK) and private seed companies on Standard Seed protocol in Kenya. A shared understanding of the definition of Standard Seed was reached. The ways in which Standard Seed protocol could change seed production of non-maize crops was discussed and stakeholders were made aware of the potential growth using different adoption scenarios. A set of criteria were used to arrive at the list of crops prioritized for Standard Seed protocol.

Yellow Bean study was conducted in several regions in Tanzania – led by PABRA in close collaboration with TARI, and CRS. More than 300 grain and potential seed traders were interviewed across multiple regions in Tanzania. The team comprised of staff from PABRA, TARI institutes, and CRS. Duration of field data collection was three weeks.

An initial typology of seed was developed in April 2019, distinguishing between free seed given in emergency contexts and free seed distributed under more developmental interventions. This initial typology was presented to BFS/OFDA and the US policy group in May 2019, with immediate comments asking further revision. A second-round typology was finished just at the end of FY19/beginning FY20.

In close collaboration with CIAT/PABRA and Dimagi, CRS led the Point of Sales (PoS) study for the niche market in Kenya. S34D designed and developed an evidence-base with the registered farmers and agro-dealers for the biofortified high-iron bean variety *Nyota* for the Sep-Oct (2019) agricultural season in Kenya.

Learning:
- Despite KEPHIS' initial enthusiasm around launching Standard Seed, it became clear at the stakeholder meeting that additional KEPHIS internal syndication, and clarification, of the Standard Seed initiative would have been helpful. The lesson learned here is that the senior leadership at a regulator needs to build internal consensus around an upcoming change before involving stakeholders.
- Implementation of Standard Seed would be negatively impacted by seasonality of seed production and sales season, which competed for stakeholders' and KEPHIS' time to work on Standard Seed.
- Tanzania is a major production hub for yellow beans, has large consumption points within and in the region in neighboring countries such as such as Kenya, Uganda, Rwanda, Burundi, Zambia and the DRC. Demand for *Njano gololi* (Katb-1) exceeds supply in the major markets, the variety is considered a premium product.

- Most of the yellow bean seed source was from the informal sector. Traders (retailers and wholesalers) sell both grains and 'potential seed'. Traders use management practices such as sorting and proper storage for 'potential seed'. Initial review of price data collected during the field visit suggests a price wedge between grains and 'potential seed' during sowing period.
- Women play a pivotal role in yellow beans, and thus any actions taken would be gender inclusive, relative to other bean varieties.

CCIR 1.3 Linkages and coordination of seed development efforts through consolidation of data and evidence are strengthened

Achievements:

After conducting extensive research on the three indices, the (World Bank EBA, ASI, and TASAI) results of the findings along with recommendations were presented in a workshop in the OFDA office on June 20th, 2019. Multiple stakeholders were present: USAID- BFS, OFDA, the Bill and Melinda Gates Foundation, World Bank, IFPRI, and Development Gateway.

The workshop presentation was shared with all stakeholders. And, the suggestions are incorporated into the review paper (CRS, 2019d) for the conference proceeding. This work was completed in collaboration with Prof. Melinda Smale (MSU).

Many stakeholders were unclear what each of the three seed indices captured and what they do not capture. The workshop established a shared understanding of what each of these indices are doing. The participation of the implementers who develop those indices at the workshop as well as the funders who fund the work enabled reaching this shared perspective.

The following shortcomings among the indices were recognized:

- Smallholder farmers are the stated object but not the stated subject of any of the indicators in any of the three indices.
- Smallholder heterogeneity and inclusion challenges are not recognized.
- Linkages between formal and informal systems are absent.
- ECR information is absent.
- Lack of differentiation of companies by volume of sales, size of employees etc.
- No data on the production of different qualities of seed (QDS, TFL), and crop portfolios.
- No attempt made to correct for market distortions (e.g. emergency and free seed).

Going forward, S34D activities will explore information and data elements on informal markets, grain traders (where they are, what types of seeds they move, and institutional buyers of seeds—who, how much, where) for the seed sector development community.

Learning:

The most noteworthy gap is that smallholder farmers are the stated object but not the stated subject of any of the indicators in any of the three indices. The formal, supply-side definition of seed access falls short of the challenge of generating demand among heterogeneous smallholders, or any developmental goal of seed system inclusion. Including the needs of marginalized groups, for example, in addition to women and young farmers, is fundamental for the attainment of both seed and food. With respect to demand creation, there is no recognition among these indices of the need to strengthen the linkages or "interstitial conduits" among formal and informal channels in local markets.

CCIR 2.1 Institutional and public policy information is better digitized.

There were no activities planned under this Sub IR in FY19.

CCIR 2.2 Tools and technologies to capture quality information about seed supply in a geo-referenced manner are developed.

Achievements:

Five hundred and sixty-three (563) yellow bean samples were collected from major markets in Tanzania. They were then delivered to CIAT Uganda research facility. In addition, seed of yellow bean varieties released in Tanzania and neighboring countries as well as yellow seeded popular landraces in neighboring countries (Burundi, DRC, Uganda and Kenya) were assembled at CIAT Uganda. Lab codes have been assigned to the different seed samples and contact established with the genotyping lab, Intertek, to set up the analysis in FY20 Q1.

CCIR 2.3 Last mile markets for new and quality-assured seed varieties are enabled by developing, piloting, adapting, and scaling feed-forward and feedback mechanisms that loop farmers' preferences, as well as provide information on new varieties and quality assured seed

Achievements:

S34D facilitated discussions with TOSCI and obtained permission from TOSCI to pilot the stop bad seed campaign - RIMI (Ripoti Mbegu Isiyo Bora) - with S34D (led by AE). The TOSCI Director-General approved launching the RIMI initiative in Tanzania and requested Agri Experience to formalize the process through writing an official letter. TOSCI will send out official letters and emails to inform all seed stakeholders, agro-dealers, Ministry of Agriculture, seed companies, and seed experts of the upcoming RIMI campaign and its impact on the seed sector. TOSCI nominated 3 of its staff – 1 ICT and 2 seed inspectors to work with S34D on this project.

TOSCI and Agri Experience completed the SMS question design. The short code has been mapped to two of the three telecom companies to be used for the SMS.

For the radio promotion campaign, to date TOSCI and Agri Experience have collaboratively:

- developed the draft radio promotion script (derived from the successful script used in Kenya), which is pending TOSCI approval;
- investigated which radio stations have high listenership among both young and older farmers in the pilot areas, and optimal times for target listenership;
- developed a draft of the ideal promotion campaign; and
- obtained three competitive bids from Tanzanian marketing companies to carry out the campaign.

Also under this Sub IR, an MEL application was developed and deployed in three counties in Western Kenya (Bungoma, Trans-Nzoia, West Pokot) using CommCare platform to register agro-dealers and farmers purchasing newly released biofortified high-iron bean variety. 14 agro-dealers and approximately 300 farmers were registered of which 123 farmers bought the biofortified *Nyota* variety. This was the first time *Nyota* was available in the market, so the PoS data serves a dual purpose: to monitor the niche variety and collect baseline data for the niche market intervention in Kenya.

Learning:

In Tanzania to obtain a short code, it takes up to four weeks versus two weeks in Kenya. S34D underestimated the degree of enthusiasm for RIMI in Tanzania – there is enthusiasm and buy-in for this activity beyond what was initially anticipated. The long period in acquiring the short code was a challenge. To mitigate this issue, TOSCI selected pilot regions that have two rainy seasons, so that the campaign could be carried out in the subsequent season if the previous season was missed. Due to the timing of the short code acquisition, S34D is planning to carry out the campaigns during the long rains of 2020.

Initial review of the PoS data shows customers (farmers) prefer *Nyota* variety due to its short maturity period. Agro-dealers and farmers have mentioned that oftentimes seeds in high demand (such as KK8) are unavailable at markets. Seed supply of desired varieties falls short of market demand.

4. Monitoring, Evaluation and Learning

The purpose of this section is to depict key achievements and learnings that are strategically important for S34D, progress against S34D performance indicators (as reflected in the IPTT), and a few anecdotal stories.

Facilitate implementation of the Standard Seed protocol in Kenya with KEPHIS

S34D facilitated two discussions with KEPHIS and 31 stakeholders in July 2019. Key outputs of this event include:

- A shared understanding of the definition of Standard Seed was reached.
- Low volume of certified seed for non-maize crops was assessed and discussed.
- How Standard Seed protocol could change seed production of non-maize crops was discussed and stakeholders were made aware of the potential growth using different adoption scenarios.
- Criteria were developed to prioritize crops for Standard Seed protocol (see crops in table 1).

Figure 1. Maize and non-maize seed

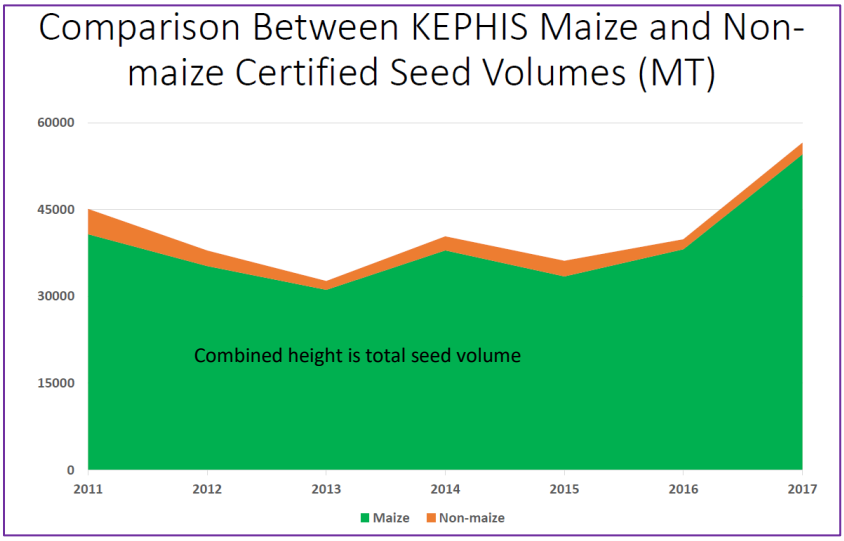


Table 1. Prioritized Crops

1	Beans
2	Sorghum
3	Cowpeas
4	Pigeon peas
5	Cassava
6	Pasture Legumes
7	Pasture Grasses
8	Pearl Millet
9	Finger Millet
10	Sesame
11	Soybeans
12	Bambara Nut
13	Groundnut
14	Lablab
15	Sweet potato
16	Chickpea
17	Green grams
18	Rice
19	Garden pea
20	Indigenous vegetables[4]
21	other crops that meets the criteria

Photo (Agri Experience) S34D facilitating discussion with KEPHIS.

[4] Examples include Amaranth, African nightshade, spider plant, cowpea leaves.

S34D and KEPHIS acknowledged the positive role Standard Seed certification could play in increasing volumes of high quality improved seed of orphan crops in Kenya. However, KEPHIS stressed that the approach needs to be judiciously designed, so as not to compromise seed quality standards, and consider the practicability of proposed approaches.

'Stop Bad Seed' Campaign in Tanzania: RIMI (Ripoti Mbegu Isiyo bora)

A significant achievement was to receive buy-in from the government in Tanzania and regulators to pilot the 'Stop Bad Seed' campaign with S34D. In addition to meetings with TOSCI, S34D facilitated two discussions with stakeholders.

Table 2. Regions in Tanzania that were selected to pilot the campaign.

Region	# of seasons	Ranking with seed issues (5 high and 1 low)	# in food productivity
Songwe	2	5	2
Rukwa	2	4	6
Ruvuma	2	3	1
Manyara	2	2	3

The methodology for short code acquisition was developed, shared with stakeholders, and finalized after discussions.

The TOSCI Director-General provided approval for launching the RIMI initiative in Tanzania and requested Agri Experience to formalize the process through writing an official letter. TOSCI will send out official letters and emails to inform all seed stakeholders: agro-dealers, Ministry of Agriculture, seed companies, and seed experts of the upcoming RIMI campaign and its impact on the seed sector.

TOSCI nominated 3 of its staff (2 seed inspectors and I ICT) to collaborate with S34D on 'Stop Bad Seed.'

Box 1. Bundling of inputs through SMS tracking to avoid counterfeits – Nairobi, Kenya

While meeting with the country representative Mr. Timothy Maina of M-Pedigree—a global leader in the use of mobile and web technologies in securing products against counterfeiting—part of IFDC's discussions were centered around the issue of counterfeiting seed and how it affects many industries in the region.

The simple anti-counterfeit solution that M-Pedigree provides has been a game changer in the certified seed sector. M-Pedigree teamed up with the Common Market for Eastern and Southern Africa (COMESA) to expand traceability technology for agro-inputs. It is currently mandatory for any seed package below 5kg to carry the M-pedigree sticker. This guarantees the certified seed free movement within COMESA countries without the need for further in-country inspections. Launched in 2017, the technology has helped curtail distribution of fake seed, leading to a dramatic drop in fake seed numbers and unscrupulous seed dealers.

Mr. Maina's final remarks were, "if only other agriculture sectors like fertilizers and agro-chemicals would take the bold step that the seed industry has taken in tackling this menace, farmers would get real value for their money and efforts and produce like never before."

Anti-counterfeiting measures will significantly affect productivity at the farm level if all stakeholders agree to implement these policies. The solutions are very affordable to seed sector stakeholders, with farmers being the biggest beneficiaries. The goal is to protect hardworking farmers from greedy entrepreneurs supplying substandard inputs.

Photo (IFDC): Anti-counterfeit stickers, product verification done via SMS.

Yellow bean – seed and grain – market study in Tanzania

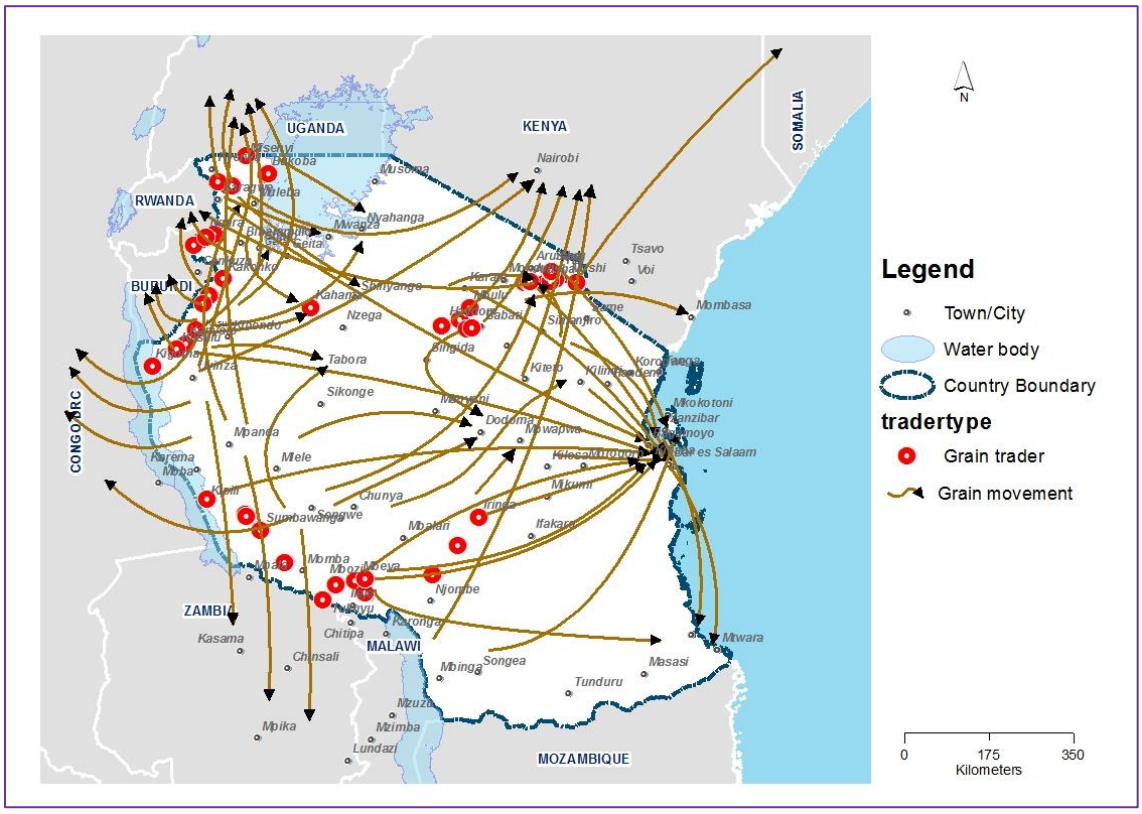
The yellow bean field study in Tanzania was conducted in the Northern Zone (Manyara, Arusha and Kilimanjaro regions), the Lake zone (Kagera region), Western Zone (Kigoma region), the Southern Highlands zone (Mbeya, Rukwa and coastal zones, NE (Arusha area), NW (Kagera), Southern highlands (Iringa, Mbeya, Njombe, Rukwa and Songwe regions) and Coastal Zone (Dar es Salaam). These regions are major production hubs for yellow beans (and bean in general), as well as major consumption and distribution hubs.

Five hundred and sixty-three (563) yellow bean samples were collected from major markets in Tanzania. Lab codes have been assigned to the different seed samples and contact established with a genotyping lab to set up the analysis.

Photo (Noel Templer/CIAT): yellow bean seed

Many traders were women—therefore, interventions designed to strengthen linkages for yellow bean potential seed and grain markets would directly impact women's business.

Map 1. Grain Movement – Yellow Bean Field Study, Tanzania (July-August 2019)



Map 2. 'Potential Seed' Movement – Yellow Bean Field Study, Tanzania (July-August 2019)

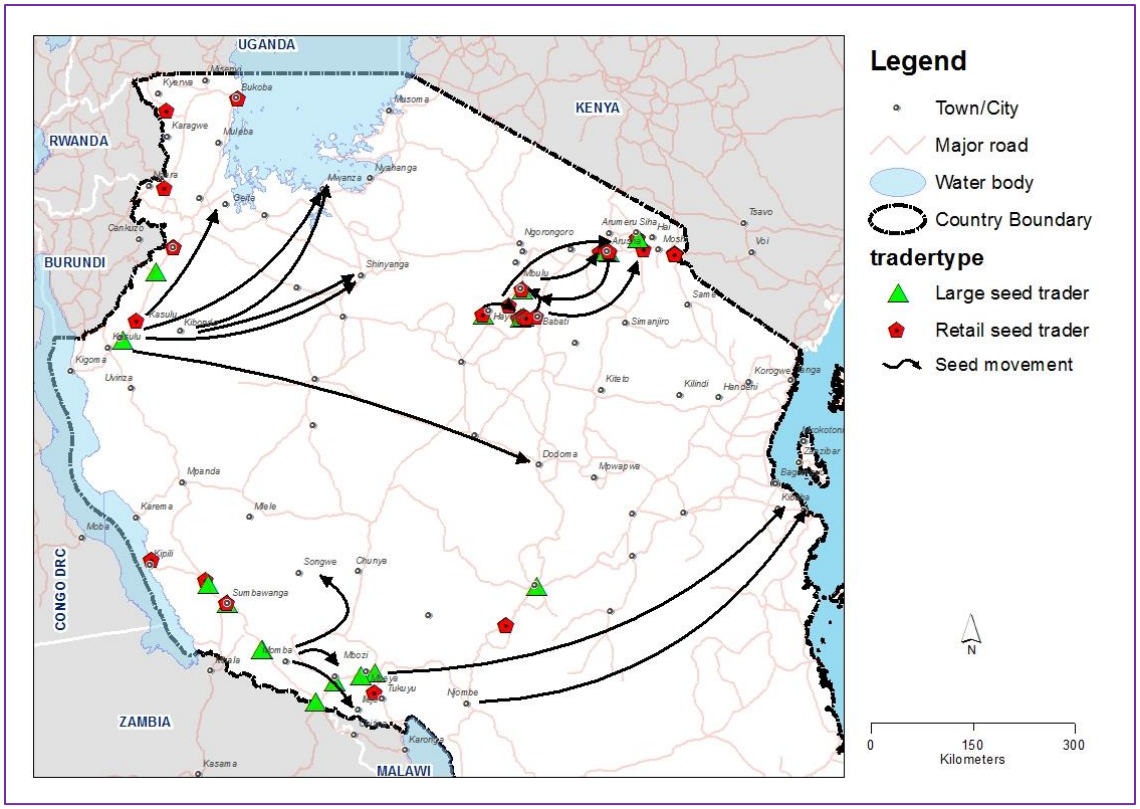
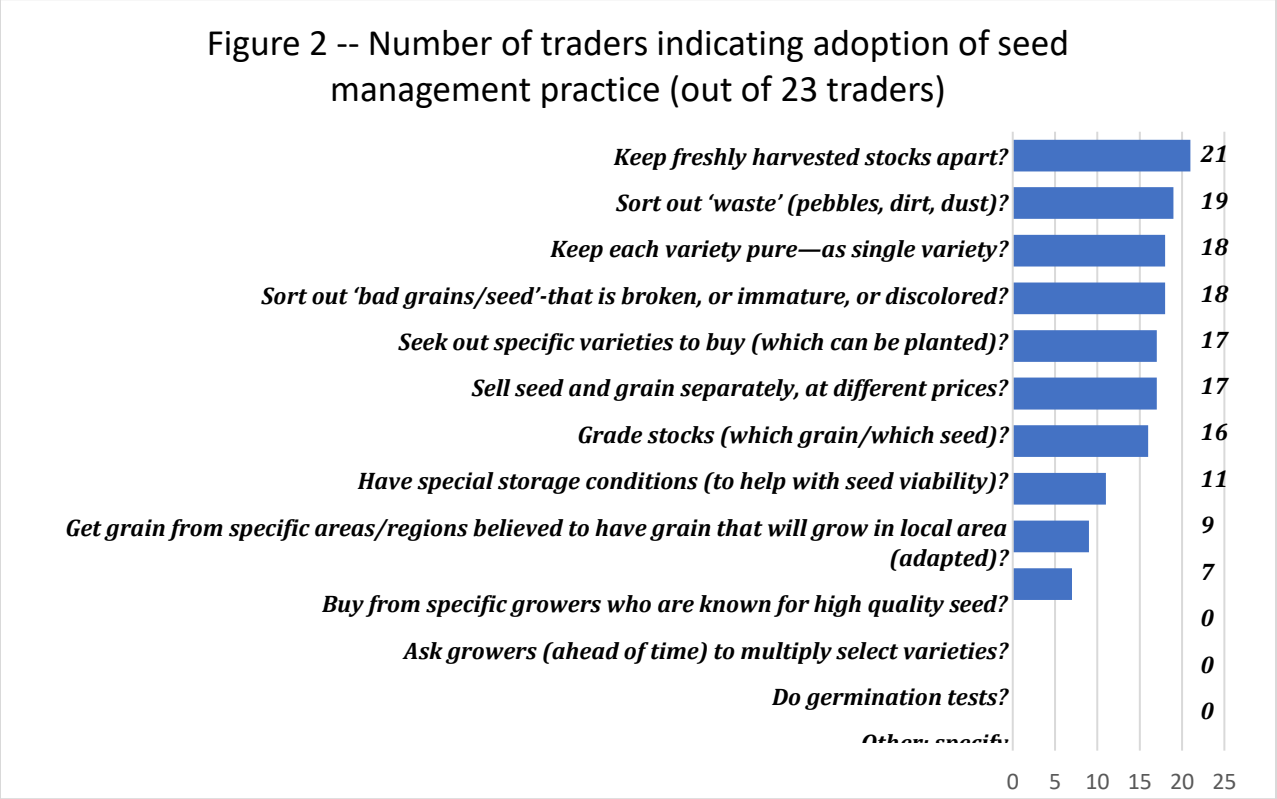


Table 3 below shows:

- A summary analysis from 23 large traders trading 46 varieties of yellow bean grain and seed (July 2018 – July 2019) shows the degree to which traders actively managed informal sector seed.
- Out of 12 possible seed-related practices traders use, those in the sample used on average 6.7, with many using nearly all. Totals are reported below and show which practices are more commonly used – like sorting out bad grain/seed.
- Preliminary analyses of the study in Tanzania on yellow bean seed (potential seed) and grain flow presents a case in point for strategic focus, especially on the informal sector, as 100% of yellow bean seed within the sample was sourced here.

Table 3. Seed management practices employed by yellow bean seed traders.



Minimum # practices used (out of 13)	**3**
Maximum # practices used (out of 13)	**9**
Range	**6**
Average practices used (out of 13)	**6.7**
Most common number of practices employed	**7**

Box 2. Yellow Bean Case Study – Arusha, Tanzania

The Yellow Bean field study was undertaken by lead partner CIAT/ PABRA in close collaboration with Tanzania Agricultural Research Institute (TARI). CRS co-funded the activity to discern policy implications and support the study with strategic input and analytical partnership. The location of the study was in five administrative zones in Tanzania: northern, lake, western, southern highland and coastal zones.

The retail grain market in Arusha is dominated by women who sell both grains and 'potential seeds.' One trader mentioned that she sources her grains from the local market and sorts them with proper storage conditions to sell as 'potential seeds' when customers come to buy potential planting materials.

The price varies between 1800 – 2000 TSh per Kg (USD 0.78-0.86 per kg) depending on whether the seed is sold as grain or potential planting material.

Interestingly, customers buy potential seeds during harvest instead of the sowing period because Njano Gololi (Katb-1) has very high demand—it often becomes unavailable during the sowing period.

Moreover, large-scale grain traders that also have their own production farms reserve their own production for sale as potential seeds during sowing time and for their own planting. Before then, they focus on trading in grains from other sources.

Below are some initial reflections on policy implications:

- Many of the varieties traded in the markets were not officially released
- Informal seed system actors play a great role in yellow bean diffusion and distribution
- Tanzania is a major production hub for yellow beans and has large consumption points within and in the region in neighboring countries such as Kenya, Uganda, Rwanda, Burundi, Zambia and the DRC
- Demand for *Njano gololi* (Katb-1) exceeds supply in the major markets—the variety is considered a premium product
- Strengthening informal sector to boost production to meet demand needs (both domestically and regionally) could be S34D's role to play, especially complementing ongoing corridor work in PABRA. This has regional implications on corridor growth.
- Women play a pivotal role in yellow bean trade, and thus any actions taken would be gender inclusive, relative to other bean varieties.
- How can traders be supported so they can sell and market grains of new varieties?
- How can the formal sector be strengthened to link up with the informal sector so the pluralistic seed sector can meet demand for yellow beans?

Niche market business model and point-of-sale application – Kenya

PABRA, in collaboration with KALRO, KEPHIS, and Bubayi seed company, conceptualized and deployed the niche market business model where the *Nyota* variety of biofortified bean was released in agro-dealer shops for the first time in Kenya.

CRS partnered with PABRA to develop and deploy the MLE tool point-of-sale application to register agro-dealers and farmers purchasing bean varieties.

Initial analyses of the recently collected PoS data in October 2019 show that both male and female farmers prefer the new *Nyota* variety for its maturity duration and other traits (figure 3 & 4). This is important for farmers as *Nyota*'s growing season is two months making it ideal for short growing seasons.

For non-biofortified beans, male and female farmers have mentioned their variety choice is KK8, due to its high-yield.

Figure 2. Marketing feedback for *Nyota*

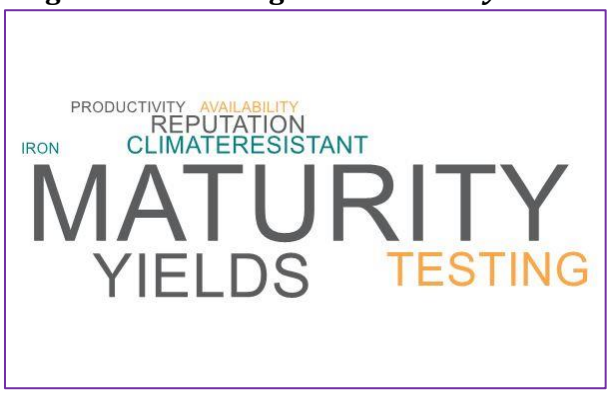


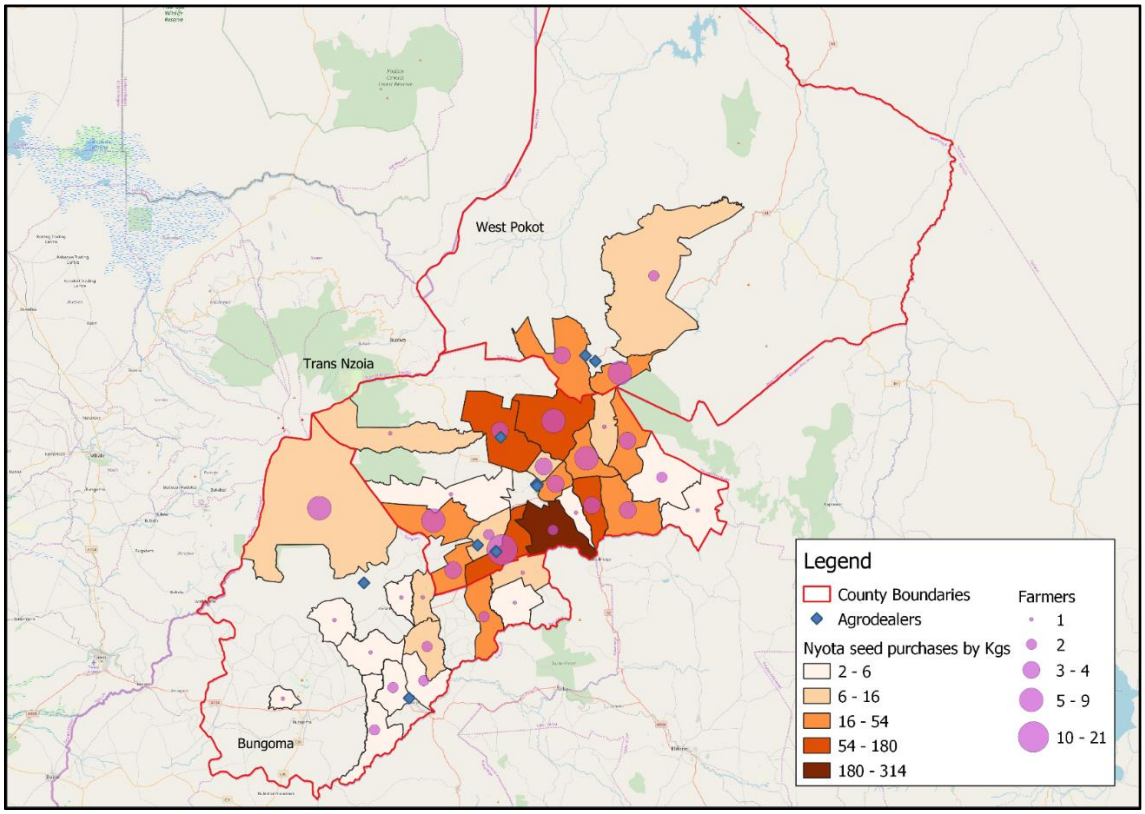
Figure 3. Marketing feedback for non-HIB

Table 4. Diffusion of Varieties (*Nyota* vs non-biofortified)

Counties	Total # of wards per county	Total # of wards / county where *Nyota* was purchased	Total # of wards / county where other varieties were purchased
Bungoma	71	14	13
Trans-Nzoia	25	19	23
West Pokot	20	3	7

As expected, the existing varieties were purchased from farmers across many more wards than the newly released *Nyota*. This provides a benchmark on the extent of market reach that *Nyota* can cover in the forthcoming agricultural seasons. Maps 3 and 4 below spatially show the diffusion of the varieties (*Nyota* and non-biofortified) in the three counties of Western Kenya as captured in the PoS database.

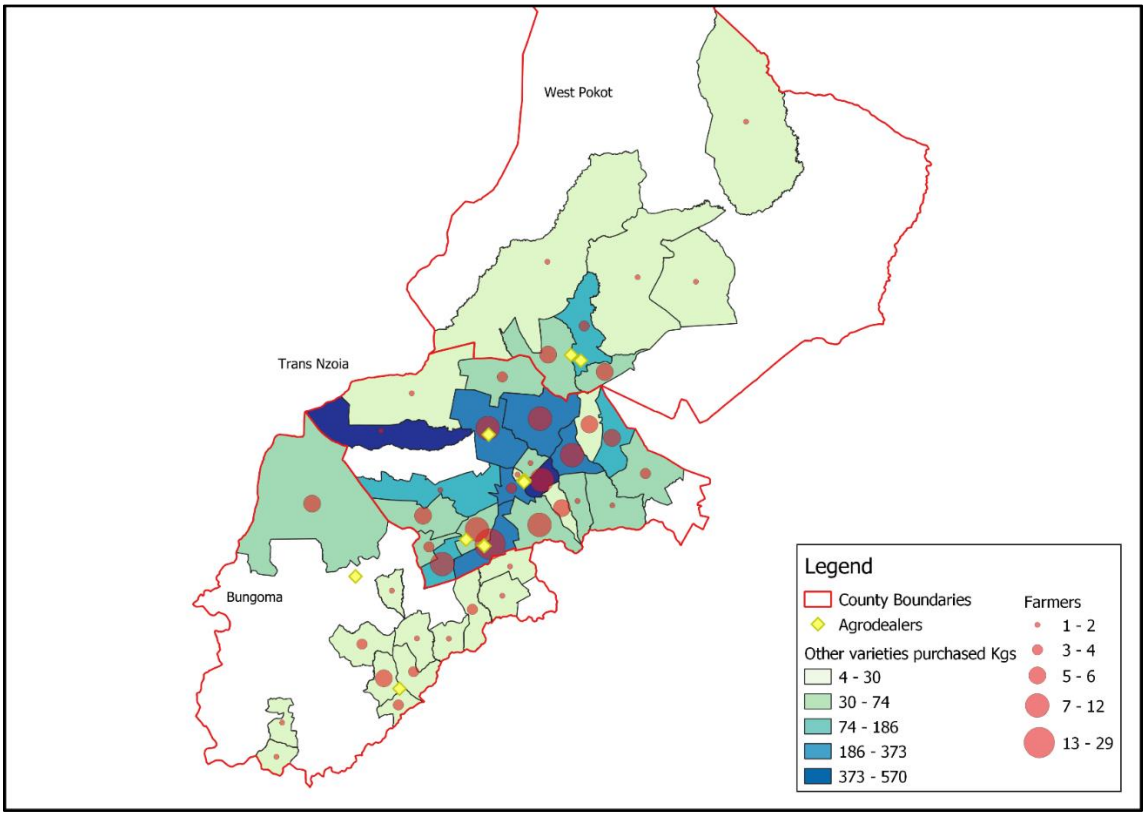
Map 3. Dissemination of *Nyota* high-iron bean (HIB) variety captured through Point of Sale - Western Kenya

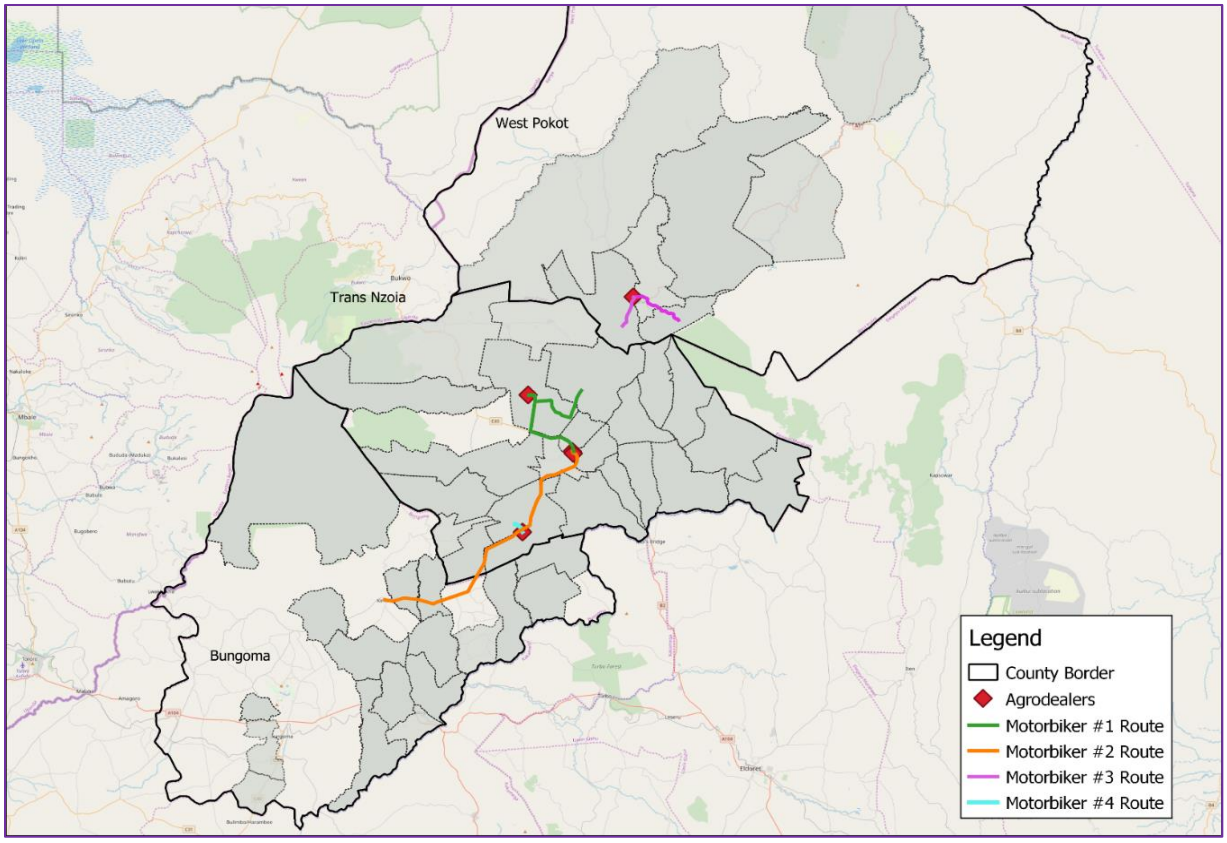


Map 4. Purchase of other non-iron bean varieties captured through "Point of Sale" - Western Kenya

4 out of 14 agro-dealers have used motorbikes (boda boda) to distribute agricultural inputs, including seeds. Map 5 below depicts their spatial routes of delivery. These analyses and information will be used with all relevant stakeholders on the ground to assess and plan how to increase market penetration to last mile users through non-traditional delivery mechanisms, such as boda-boda.

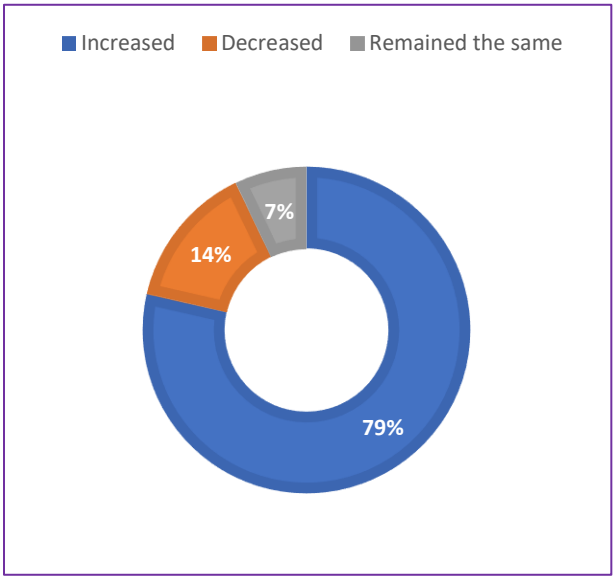
Map 5. Routes of four motorbike riders delivering services to farmers - Western Kenya





Of the 14 agro-dealers interviewed, the majority experienced an increase in their business growth compared to previous year's operations, meaning farmers seek out agricultural inputs, such as new varieties of seeds. However, farmers and agro-dealers have mentioned the inadequate supply of certified seeds in peak seasons for high-demand varieties, such as KK8.

This raises policy questions: how can S34D increase the supply of quality seeds in markets? How can S34D increase market penetration? How can S34D track diffusion and adoption of modern varieties over multiple agricultural seasons using PoS application?



Box 3. Non-traditional Delivery Channels — Western Kenya

Joseph is a boda boda motorbike driver in Kitale. At 27 years old he has been driving for around 5 years as a source of income. He says he has been making deliveries for the Mazop agro-dealer for one year. Joseph stated he makes about two deliveries per day and is paid per delivery, and he described challenges such as dangerous roads and long delivery distances. Joseph explained he has enough knowledge to provide basic information and directions on some of the agricultural products he delivers, and if there is a question that needs further expertise, Joseph will call his agro-dealer shop and ask for more information. By making deliveries for Mazop year-round, Joseph has been able to make being a boda boda driver a profitable profession.

Photo (CRS): Joseph drives a boda boda to deliver agri-inputs around Kitale.

DiNERs: Supply-side changes

S34D conducted an assessment on DiNER fairs to determine effects on beneficiaries and suppliers in three African countries (Malawi, Zimbabwe and Madagascar). These countries, often repeat recipients from these types of fairs, have faced climate change stresses (repeated droughts, erratic rains, etc.); and, in the case of Malawi and Zimbabwe, a seed market dominated by maize.

The intensive DiNER fair follow-up on the supplier side was particularly unusual, both because of the explicit supplier focus and because fieldwork assessed post-fair changes in supplier practice. The case highlights great opportunities for improved linkages between SHFs to input suppliers,

beginning with the aid phase, but transitioning to the development period. The learning agenda revealed that it is important to develop both the supplier side and demand side (beneficiaries).

Attention to suppliers had real payoffs such as supply-side changes, which may endure even in the medium term. Below is the list of modified practices gleaned from the follow-up work on the DiNER approach:

- Availability/ Geographic reach:
  a. Suppliers opened outlets closer to farmers
  b. Suppliers extended reach through use of bikes, motorbikes, satellite vans
  c. Suppliers brought their sale trucks to markets on local market days

- Access:
  a. Suppliers packed smaller (extending social reach)
  b. Suppliers increased use of mobile money to better link with clients after fair

- Quality:
  a. Suppliers expanded crops/varieties on offer

Prior to the fairs, considerable effort was spent sensitizing suppliers to farmer needs: greater diversity, nutritional impacts and less expensive, and products brought closer to rural homes. Therefore, the fairs which were intended to support farmers facing chronic stress seem to have had some sustaining effects. The overall changes noted by the full sample of suppliers offers insights that can inform future DiNER fairs, though these need further development.

Seed Policy Metrics: World Bank EBA, ASI, and TASAI

There are three key indices that provide information on seed sector metrics. Therefore, it was often questioned if there was any overlap or redundancies between them, what gaps existed when all metrics are combined, and what could the global community undertake to fill in those gaps.

S34D reviewed all indices and using Tanzania as a case study outlines the gaps and needs for metrics to inform status of seed sector – particularly for the informal and ECR seed systems, where bulk of the seed and 'potential seed' exchanges take place.

Furthermore, S34D conducted a workshop with stakeholders including Gates Foundation, Development Gateway, the World Bank, TASAI, USAID, and IFPRI to disseminate the findings. These consultations helped TASAI in its ongoing work with BMGF and also provided BMGF information to better design their project with TASAI. Many of the gaps outlined were under assessment by both TASAI and World Bank independently.

The group reached consensus on the following:

- The three indices are unique and do not conflict with each other
- There is much to TASAI in its country reports, which when combined with EBA metrics provide information at country levels that may not be known to many in-country stakeholders
- Efforts from both TASAI and EBA are underway to fill in some of the gaps that S34D's research independently identified – which means many aspects of gaps identified here are naturally validated with use-cases

- S34D will continue to work with EBA and TASAI to provide detailed comments on indicators and methods
- S34D activities will bring out information and data elements on informal markets, grain traders (where they are, what types of "potential seeds they move", and institutional buyers of seeds (who, how much, where)

Key gaps identified:

- Very little information is available downstream as we move across the seed value chain.
- No information on adoption
- Smallholder farmers are the stated object but not the stated subject of any of the indicators in any of the three indexes
- Smallholder heterogeneity and inclusion challenges not recognized
- Linkages among formal and informal systems absent
- ECR information is absent
- Production of different qualities of seed (QDS, TFL), and crop portfolios is absent
- Emergency, free seed and other distortions are not captured in any metrics

Photo (CRS): Seed metrics workshop participants from the Gates Foundation, Development Gateway, the World Bank, TASAI, USAID, IFPRI and S34D.

This activity is an example of ***collaboratively learning and adapting***. Both TASAI and World Bank have initiated work to incorporate some of the issues that were discussed. S34D is in contact with these organizations as we write this report.

5. Summary by country

Kenya

A seed consultation report was written based on meetings with USAID, Implementing Partners and other seed actors. Based on this report, S34D produced a concept note with interventions for potential Mission buyins that were presented to the Mission for feedback. S34D revised the concept note and ensured it was aligned with the Journey to Self-Reliance (J2SR) and the mission's objectives. The following activities were implemented with core funding.

Opportunity International developed an inventory of financial services in Kenya which is captured in the report, '***FSP Inventory Scan'*** (OI, 2019). The report elaborates on Financial Service Providers (FSPs) capacities and constraints specific to financing seed companies and FSP product reviews.

IFDC conducted a desktop review of the existing training materials available for capacity building of agro-dealers and documented for further adaptation. The review also identified the number of trained, formal agro-dealers operating across Kenya as well as a list of agro-dealers who have been trained and participated in different development programs across Kenya since the mid-2000s. In a report titled '***Agro-dealers and training materials***' (IFDC, 2019), coaching materials i.e., existing training materials available from development partners such as AGMARK, CNFA, IFDC, COMESA-ACTESA and country level associations, were gathered for further adaptation.

IFDC conducted interviews with selected stakeholders who were identified through desktop research and referrals from other development and implementing partners (within and outside S34D). 36 stakeholders, including seed companies, financial institutions, NGOs involved in seed and agriculture development projects in the region, innovative ICT solution providers, agro-dealers and farmers were interviewed. Built on insights developed from the review of existing models of seed delivery systems available in SSA that serves mostly smallholder farmers and based on the interviews, the report '***Existing and Potential Business Models on Last Mile Delivery of Seeds***' (IFDC, 2019b) describes key last mile delivery models in operation for seed and agri-inputs delivery as well as a few key potential models that can be replicated or proto-typed with adaptations for S34D related activities on last mile delivery systems.

Agri Experience organized a meeting with senior KEPHIS officials responsible for quality control and seed certification and AE and Kephis are in the process of developing protocols for Standard Seed production and seed complementarity with county government efforts to supply seed of orphan crops, especially in the dryland counties, through farmer group seed multiplication. A stakeholder brainstorming meeting took place on July 30, 2019. It was attended by 31 stakeholders including public breeders (from KALRO and public universities) of the orphan crops, relevant CGIAR centers, KEPHIS regional centers, Alliance for a Green Revolution in Africa (AGRA), the Seed Trade Association of Kenya (STAK) and private seed companies. The agenda included presentation of data on the current state of low volumes of certified seed of non-maize crops, potential growth of seed of non-maize crops under different adoption scenarios, the new definition of Standard Seed as per the Seeds Regulations (2016), and a guided discussion on how to unlock the commercial potential of the selected crops under Standard Seed. S34D agreed with KEPHIS that improved communication about Standard Seed within KEPHIS would be critical.

In close collaboration with CIAT/PABRA and Dimagi, CRS led the Point of Sales study for the niche market in Kenya. S34D has now a database with the registered farmers and agro-dealers for the biofortified bean variety *Nyota*. S34D also collected anecdotal summaries through ongoing activities

(as reported under the MEL section). The datasets and evidence-base compilation for PoS will be completed in October 2019.

Uganda

A seed consultation report was written based on meetings with USAID, Implementing Partners and other seed actors. Based on this report, S34D produced a concept note with interventions for potential Mission buyins that were presented to the Mission for feedback. S34D will continue to work with the mission to design interventions for Mission buyins. The following activities were implemented with core funding.

Opportunity International developed an inventory of financial services in Uganda which is captured in the report, '***FSP Inventory Scan**.'* The report elaborates on Financial Service Providers (FSPs) capacities and constraints specific to financing seed companies and FSP product reviews.

IFDC conducted a desktop review of the existing training materials available for capacity building of agro-dealers and documented for further adaptation. The review was to generate existing materials on capacity building of agro-dealers for further adaptation and to identify the number of formal, trained agro-dealers operating across Uganda. In a report titled **'A*gro-dealers and training materials*'**, coaching materials i.e., existing training materials available from development partners, such as AGMARK, CNFA, IFDC, COMESA-ACTESA and country level associations were gathered for further adaptation.

As a part of the above activity IFDC generated a list of agro-dealers who have been trained and participated in different development programs across Uganda since the mid-2000s. The output of this activity is a report titled, '***Agro-dealers and training materials'*.** This activity involved contacting various organizations involved in agro-dealer development in Kenya, Uganda and Tanzania, and compiling the information on agro-dealers into a single file.

IFDC conducted interviews with selected stakeholders who were identified through desktop research and referrals from other development and implementing partners (within and outside S34D). 36 stakeholders, including seed companies, financial institutions, NGOs involved in seed and agriculture development projects in the region, innovative ICT solution providers, agro-dealers and farmers were interviewed. Built on insights developed from the review of existing models of seed delivery systems available in SSA that serves mostly smallholder farmers and based on the interviews, the report ('***Existing and Potential Business Models on Last Mile Delivery of Seeds***') describes key last mile delivery models in operation for seed and agri-inputs delivery, and the description of few key potential models that can be replicated or proto-typed with adaptations for S34D related activities on last mile delivery systems.

Tanzania

Opportunity International developed an inventory of financial services in Tanzania which is captured in the report, '***FSP Inventory Scan**.'* The report elaborates on Financial Service Providers (FSPs) capacities and constraints specific to financing seed companies and FSP product reviews.

IFDC conducted a desktop review of the existing training materials available for capacity building of agro-dealers and documented for further adaptation. The review was to generate existing materials on capacity building of agro-dealers for further adaptation and to identify the number of formal, trained agro-dealers operating across Tanzania. In a report titled **'A*gro-dealers and training materials*'**, coaching materials i.e., existing training materials available from development partners, such as AGMARK, CNFA, IFDC, COMESA-ACTESA and country level associations were gathered for further adaptation.

As a part of the above activity IFDC generated a list of agro-dealers who have been trained and participated in different development programs across Tanzania since the mid-2000s. The output of this activity is a report titled, '***Agro-dealers and training materials'*.** This activity involved contacting various organizations involved in agro-dealer development in these three countries, and compiling the information on agro-dealers into a single file.

In collaboration with TARI, PABRA (with CRS) conducted a study on yellow bean in Tanzania. Input and output (seed and grain) market for yellow bean was characterized. The field study was conducted in Northern Zone (Manyara, Arusha and Kilimanjaro regions), the Lake zone (Kagera region), Western Zone (Kigoma region), the Southern Highlands zone (Mbeya, Rukwa) and Coastal Zone (Dar es Salaam). These regions are major production hubs for yellow beans (and beans in general), as well as major consumption and distribution hubs. Secondary data from PABRA's database was used to identify bean seed producers (QDS, companies and public seed enterprises) in Uganda and Tanzania. Bean seed production capacities was also evaluated.

In collaboration with CIAT, Purdue University conducted a field survey to assess storage and postharvest constraints and capacities in northern Tanzania. 464 farmers, 42 agro-dealers, and 7 seed producers in 5 districts in Manyara, Kilimanjaro and Arusha regions were interviewed. Data was collected on maize and common beans. To build awareness, a "PICS Seed Storage poster" was adapted, translated to Swahili, and 500 copies were printed and distributed to all participants in the survey.

S34D, led by AE, facilitated discussions with TOSCI, and secured permission from TOSCI to pilot the stop bad seed campaign - RIMI (Ripoti Mbegu Isiyo bora*)*. The TOSCI Director-General approved launching the RIMI initiative in Tanzania and requested Agri Experience to formalize the process through writing an official letter. TOSCI will send out official letters and emails to inform all seed stakeholders; agro-dealers, Ministry of Agriculture, seed companies, and seed experts of the upcoming RIMI campaign and its impact on the seed sector. TOSCI nominated 3 of its staff – 1 ICT and 2 seed inspectors to work with S34D on this project. TOSCI and Agri Experience have completed the SMS question design. The short code has been mapped to two of the three telecom companies to be used for the SMS.

Malawi

A seed consultation report was written based on meetings with USAID, Implementing Partners and other seed actors. Based on this report, S34D produced a concept note with interventions for Mission buyins that were presented to the Mission for feedback. S34D is working on revising the concept note.

Opportunity International developed an inventory of financial services in Malawi which is captured in the report, '***FSP Inventory Scan***'(OI, 2019). The report elaborates on Financial Service Providers (FSPs) capacities and constraints specific to financing seed companies and FSP product reviews.

S34D conducted a comprehensive DiNER learning study. Fieldwork, individual household interviews and focus groups, was conducted in Malawi and feedback of initial findings has been presented via an internal CRS webinar. This webinar was particularly attended by staff from the southern Africa region. Findings and major messages have also been outlined in a webinar presentation. The report will be completed in November 2019.

6. Lessons Learned

Sub IR 1.1.3 Capacity of local seed actors to extend customer base and support last mile strengthened

Besides capacity building efforts for agro-dealers on seed related aspects, S34D should also facilitate group discussions between seed value chain players as a way of interacting with farmers on an informal basis and simultaneously receiving feedback. Such discussions can be organized at a local level prior to the selling season to support the dealer network and should involve representatives from the various sales outlets together with a technical specialist using visual aids and other digital tools. Some other observations while reviewing the existing training materials that requires further strengthening are in the following lines:

1. Importance of branding for small business. The modules train on sales and marketing but completely ignore the very important aspect of brands that is a well-recognized concept in many businesses.
2. Merchandizing for promoting sales. This is a well-developed concept in the fast-moving consumer goods (FMCG) industry, but hardly used in vast majority of agro-dealers operating in the region. Business owners need to shift their mindset to recognize that the products they deal in need to be handled professionally but with a drive for increasing their turnover.
3. ICT is a powerful tool for small business that can help them remain competitive in the market and improve their effectiveness and efficiency in operations both large and small. This does not feature in any significant level in any of the training manuals.
4. Human resource management is a critical success factor in all businesses. A major problem for many agro-dealers is the huge staff turnover that they experience which is detrimental to their businesses. The training manuals were lacking on aspects of HR management at the SME level.
5. Other business models like franchising, micro franchising and agencies do exist and can work in agriculture sector to help transform small business operating in rural areas through partnerships and mutually beneficial agreements. Training agro-dealers is important to expose them to how other business models can help them grow to meet the full potential through other business partnerships as opposed to stand-alone operations.

Sub IR 1.1.4 *Sustainable models with private sector players to supply quality EGS and QDS to a range of suppliers piloted and scaled using innovative financing*.

In analyzing all the existing business models about last mile, it was evident that seed delivery at the last mile requires much more forged partnerships with seed related services to be effective in last mile delivery. Scaling strategies to reach last mile vary across crops and it should be adapted considering the agro-ecologies, type of farmers, crops and varieties offered. In Africa, women's decision-making is crucial, especially in technology adoption, and is very central to scaling or extending the last mile options. The current agro-dealer programs in the formal setting are not as gender inclusive as one would expect, so any efforts through S34D prototype should consider women as a part of service provider and find ways to reach the women farmers in these communities.

Sub IR 2.2.1 *Seed System Security Assessments in Feed the Future Crisis Hotspot areas (focus on formal, semi-formal and informal seed systems) are adapted and scaled.*

Sub IR 2.2.2 *Emergency and humanitarian responses that link relief to development, especially links to private sector and formal and biodiverse suppliers are developed and promoted.*

Private and research sector roles are much more diverse than one may suggest. Directly supplying seed is among the least important tasks they do. Providing key and strategic information on crop and variety adaptation, even in stress, continues to be a paramount role.

Sub IR 2.2.3 ***Emergency and development seed programs to capture market opportunities from supply side to support vulnerable farmers in less prime market areas are leveraged.***
Market-based approaches currently revolve around supply-side availability interventions, especially those linked to the formal sector. There is room for developing approaches that catalyze links with the informal sector, which offer support in terms of financial services to all types of suppliers, especially those farmers who lack access. The practice is just too diverse and broad and with such different goals that the term 'free seed' captures almost nothing of consequence.

7. Problems and Solutions

Tanzania has specific limitations on data availability due to the current enabling environment. As a result, desktop scans were limited and required a higher level of in-country engagement (OI).

Most seed dealers in rural areas are seasonal and partners were not able to find them during the study. S34D (Purdue) ended up interviewing more agro-dealers in town.

Standard Seed in Kenya (AE): there was little or no understanding of the provision of the law on Standard Seed among key stakeholders, including KEPHIS staff and regional officers. There was confusion and misunderstanding of Standard Seed relative to Quality Declared Seed (QDS), which is not recognized as a seed class in the Kenyan Seed Act. And lastly, seed company representatives were cautious in response, due to the lack of specificity thus far about how Standard Seed could potentially improve their cost structure. In order to mitigate the problems, the following actions will be carried out:

- create more understanding among KEPHIS HQ and regional staff on the role that Standard Seed will play in assisting smallholder farmers access to certified seed of selected non-maize crops;
- carry out a cost-benefit analysis for seed companies to see business opportunity; and
- continuously share information and data with stakeholders (breeders, seed companies, KEPHIS and NGOs) to demonstrate gaps in seed demand versus supply, and how standard seed would contribute to bridging the deficits.

8. Best Practices in General, and for Dissemination

Most farmers are still using and recycling local bean varieties. Building awareness on proper seed handling (selection, sorting, drying and moisture assessment) and storage would help maintain seed quality. For example, promoting the use of hermetic storage (PICS, jerricans, water bottle, etc.) to maintain seed quality during storage; awareness and capacity building; and, expanding the distribution of improved seed beyond traditional supply networks would improve the availability of better genetic planting materials among farmers (Purdue).

Moreover, it is important to disseminate in non-institutional or unbiased manner -- meaning that all partners receive recognition -- and use state of the art communication specialists in the SSSA work linked to Make It Move. Budgets are important for dissemination. Active practices need to explicitly support informal systems like traders if this work is to have the impact it claims. Informal partners need to be courted and technically engaged with the same seriousness as formal actors, such as seed companies (CIAT/PABRA).

9. Collaboration

- S34D has worked closely together with TARI on the yellow bean study in Tanzania. TARI staff even participated in the field work;
- S34D has worked closely together with KEPHIS on the Standard Seed protocol development in Kenya.
- In Kenya, CRS country program staff have been invited by USAID to participate in the Chief of Party meetings and a S34D staff member from AE is attending the policy working group meetings organized by USAID.
- In Malawi, the USAID Mission initiated a Seed Working Group, currently chaired by the AgDiv Activity, and S34D is participating in the SWG meetings.
- On June 17, the S34D MEL advisor participated in a planning workshop at the Bill and Melinda Gate Foundation (BMGF) in Seattle.
- On June 20, S34D organized a seed metrics review consultation workshop in DC where USAID, BFS and OFDA as well as BMGF, TASAI and Development Gateway participated.
- In May, a BMGF senior staff member visited CRS HQ in Baltimore and met with the COP, Agriculture Technical Director and the MEL advisor and discussed S34D and the foundation's seed work.
- In May, the S34D COP and CRS Agriculture Livelihoods Technical Director visited the Missions in Kenya, Uganda, Tanzania and Malawi, and during the seed consultation work in June and July they met with all Feed the Future IPs in those countries plus AGRA and other seed actors.
- In September, the S34D COP participated in the annual Innovation Lab meeting in DC and was introduced to the Legume Systems, Peanut and Soybean Innovation Labs directors as well as the Executive Director of CORAF.
- S34D has built a good working relationship with New Markets Lab, Kuza, ISSD and IPs in Kenya, Uganda, Tanzania and Malawi.

10. Associate Awards

There were no Associate Awards in FY19.

11. Next Steps

In Q1, S34D will implement the following activities:

- Coaching materials for adaptation and 're-tooling' will be produced for agro -dealers to extend their reach to new last mile customers will be completed.
- Field study and desk reviews - scoping studies will be conducted to identify financial bottlenecks for seed and post harvest technology providers will be completed.
- Yellow bean study report and database will be completed
- Develop country profiles and framework for engagement in Kenya and Uganda.
- Interview private and research sector actors on their role in emergency and humanitarian seed programming in Kenya, Uganda and Malawi.
- Finalize the global seed policy review.

In Q2, S34D will implement the following activities:

- Develop country profiles and framework for engagement in Niger, Senegal and Ethiopia.
- Document firm level needs assessment in Uganda.
- Gather, select and develop seed systems materials for coaching from partner organizations that meet client needs (technical, managerial and territorial marketing strategies) through engagement with internal and external partners in Uganda.
- Develop a fee-based training model for deployment by Seed Trade Associations or similar stakeholder organizations in Uganda.
- Improve certification efficiency of non-maize seed to promote sales volumes of non-maize certified seed, particularly for legumes in Zambia.
- Develop an inventory of financial services to expand financing for seed sales from seed companies in Niger.
- Niche Market business model: explore non-seed distribution and sale niches with seed varieties (linked to PoS ICT application with seed companies) and monitor sales/adoption in Kenya.
- Disseminate results from FY19 studies on DiNERs, cash and markets using mixed modes of delivery.
- Develop template that systematically gathers information on delivery and use of modern varieties in emergency response.
- Develop actionable plan based on analysis of distinct private and research sector roles linked to emergency and that includes seed storage components.
- Facilitate implementation of standard seed in Kenya.

IEE/EMMP and CRM

- S34D will update the EMMP based on the FY20 activities and include climate risk mitigation measures.
- Activities implemented in FY19 and activities planned in the next six months fall under the categorical exclusions 22cfr216 2(c)(2)(i)(iii)(v).

12. Annexes

Annex 1. IPTT

Annex 2. Outputs by activity

Annex 3. FY19 reports by activity and status

Partner	Report title	Activity reference	Status
IFDC, 2019	Review of Existing Last Mile Seed Delivery Models and Approaches	1.1.3.1	Submitted to USAID for comments in Dec 2019
IFDC, 2019b	Potential Business Models on Last mile seed delivery for Prototyping	1.1.4.1	COP reviewed and sent back to IFDC in Jan 2020
OI, 2019	FSP Inventory Scan	1.1.1.5	Submitted to USAID for comments in Dec 2019
CIAT, 2019	Yellow bean study in Tanzania	1.2.1.1	In draft form, waiting for results from DNA analysis. Expected in FY20 Q2
Purdue, 2019	Field survey to assess storage and postharvest constraints and capacities in northern Tanzania	1.2.1.3	COP reviewed and sent back to Purdue in Dec 2019. Received revision. COP to review and send to USAID
CIAT, 2019b	Niche business model with biofortified high-iron bean variety – *Nyota*	2.1.4.1; CCIR 1.2.6 and CCIR 2.3.4	In draft form, waiting for results from farmer feedback survey
CIAT, 2019c	Study on cash transfers for seed security in humanitarian settings	1.3.1.2	Received comments from USAID in Dec 2019. COP to review and finalize
CIAT, 2019d	Position paper of free seed	2.2.3.2; CCIR 1.2.4 and 1.2.5	Draft from April 2019
CRS, 2019	DiNER and Seed Fair Evaluation Research & Learning	1.3.1.4	In draft form. Report expected in March
CIAT, 2019e	Roles of Formal Sector Research and Seed Companies in Seed Related Assistance	2.2.2.1 and 2.2.2.2	COP to review final draft and submit to USAID for review.
CRS, 2019b	Policy Landscape (database)	CCIR 1.1.2	Final (annex 5)
CRS, 2019c	Global policy report	CCIR 1.1.3	Draft
CRS, 2019d	Seed indices workshop proceedings	CCIR 1.3.1	Draft

Annex 4. Seed policy road map example

Tanzania Seed Policy Road Map

Contractor: TBD
Duration of the short-term Consultancy: TBD
Location: Tanzania
CRS contact – Dr. Bhramar Dey, CRS
DSPN: 8538.917.0438

I. Background:

The Supporting Seed Systems for Development (S34D) is a five-year Leader with Associates Award, issued to Catholic Relief Services and its Implementing Partners (IP's) through USAID's Bureau of Food Security (BFS), with support from the U.S. Office of Foreign Disaster Assistance (OFDA). The S34D Activity will run from August 2018 through August 2023.

Our overarching goal is to improve the functioning of the national and regional seed sectors in an inclusive manner in our focus countries. We define "inclusive" to mean all types of farmers, including women farmers and youth, and will implement interventions and engage range of seed actors in ways that will enable those farmers to cultivate a wider portfolio of crops within multiple agro-ecologies.

The S34D activity will implement a set of purposefully designed activities that will : 1) facilitate and leverage on increasing private sector supply of early generation seed (EGS) to a broader and more inclusive range of farmers 2) forge stronger links between formal and informal seed actors to expand the crops offered and accelerate varietal turnover, and 3) extend the market frontier for climate-smart crop combinations and varieties, including through emergency response programming that addresses food and nutrition security and resilience needs of returnees and IDP's.

Besides maize, the S34D Leader Award will support at least five legume and stress tolerant crops that will integrate with cereal systems to improve production, nutrition, and income, and offer enhanced soil fertility, water management and livestock feed, using rotations, intercropping and cover crops. The S34D consortium is making a choice to operate at scale from the outset – working on maize-legume systems along trade corridors in East and West Africa that link several countries.

Within this context, the S34D activities would focus on policies and practices aim to address specific policy constraints surrounding the seed systems in a more integrated way. First, we would seek to understand and help implement policies that liberalize seed quality policies and processes to increase the supply of quality enhanced seeds for a wide range of crops. Within S34D countries of operation, we will look for appropriate standards in practice such as Quality Declared Seeds (QDS), Truthfully-labelled (TFL), Standard seed that can be liberalized and guarantee seed quality. Second, we would need to understand (in collaboration with players and actors) the extent/scale of seed counterfeiting. Third, we would review free seed

distribution policies that distort markets. We will particularly focus on measures and best practices affecting large institutional buyers (gov't, UN, NGOs, etc.) and private seed firms to forge pathways that link development to emergency systems in a more systematic manner so we limit free seed only to the critical needs. Finally, to reach last mile we will open-up practical approaches that extend the market frontier in the S34D geographies so that a wide range of actors can sell both new varieties and quality enhanced seeds across a range of venues. This will primarily be done through S34D programmatic implementation efforts.

We will conduct this through gathering and presenting an evidence-base with the help of our consortium partners. With the help of sector-wide partners and actors, we will leverage our advocacy agenda to make the evidence heard by policymakers and in-country decision makers. That is why, S34D policy and practice loci is within the countries of operation. We are partnering with in-country "movers and shakers" who could not only help push our strategic agenda, but also, work systematically to enhance target countries ownership and make the program sustainable over time.

II. Scope of Work:

- Provide a quick desktop review of current national and ag sectoral plans for Tanzania (Agricultural Sector Development Plan – Phase II) ASDP-II, and the relevant regional seed policies to understand the role of seed sector within the broader framework.
- Provide a review of current legal and legislative status for –
    - *liberalizing seed quality options*
    - *expanding market frontier for seed sales (by actors and venues)*
    - *free seed distribution policies, and*
    - *extent of seed counterfeiting*

    1. For each of the four policy areas cited above -
        - provide an assessment of the costs, risks, benefits for each of the options. Collect any evidence available on numbers.
        - Collect evidence from published literature, grey literature, and anecdotes
        - Provide a desk review using existing literature – on the institutional architecture for seed system policy in Tanzania. Meaning --- who are the national, regional, and systemic players? (Examples include TOSCI, ASA, MALF, TARI in Tanzania). What roles and responsibilities do these players have?
        - Expalin the legal framework within which each of the aforementioned areas of work. Specifically, what is is legally allowed, not allowed, and how the laws are implemented. For example, the legal guidelines may be vague and leave much room for interpretation for implementation purposes.
- Using in-country and partner consultations, identify and provide a quick summary of the current ongoing seed policy programs active in Tanzania – what is the implication on

coordination, collaboration, and co-location for S34D activities in Tanzania? This summary should focus on each of the three seed systems and the interface of the systems where the policies could potentially have an impact or consequences. Provide some kind of networks mapping for formal/informal/resilient seed system integrated actors.

1) Examples of illustrative questions to understand liberalizing seed policy options.

A. What are the current costs of seed certification in Tanzania (by crops) and actors across the seed value chain?
B. Provide cost comparison estimates for major cereals and legume crops axross different forms of certification – formal vs QDS systems, and compare them with farmer saved seeds and seed available in local markets.
C. What share of those costs is borne by seed producers and public certification systems?
D. How does the public system recover their costs?
E. What are the "hidden" costs?
F. What are the transaction costs? Transport costs?
G. "The FAO guidelines are rather general and leave the exact interpretation of QDS to governments and regulatory bodies". How are the QDS guidelines interpreted in Tanzania ?
    a. Estimate trend (from the last ten years) of number of farmers producing QDS and their production capacity per target crops in Tanzania
    b. Role of central/district/local government officials
    c. What are the source of parental materials to produce QDS
    d. Which crops/varieties allowed
    e. Packaging and labelling rules for QDS
    f. Training requirements (who provides, with what frequency, how is it attended, who pays etc.)
    g. Registration requirements for seed producers
    h. Sampling and testing requirements
    i. Inspection frequency and mandates
    j. Rules of trading QDS seeds --- what are the legal geographic boundaries etc? For example, in Tanzania, sellers can only sell within their wards. Although I think, very recently this changed where sellers can see to their districts --- meaning outside of wards.
    k. Who can label QDS? What are the costs, mechanisms?
    l. Where doe QDS producers access their EGS? What are the constraints? How do they vary by crops?
    m. What can we say about scaling up QDS? For example, in Tanzania, farmers are not paying for seed inspection and certification. What is the funding mechanism – is it sustainable?

n. Are QDS producers contracted by private sector companies as outgrowers for their certified seeds?
o. How many hectares of land can be cultivated by a QDS producer for one particular variety? In Tanzania, for example, it is five hectares.
p. Current seed subsidy programs in place.
q. Any seed assurance program – we need to understand: costs, risks, benefits, constraints.
r. What happens to seed lots rejected during inspection? Can those be sold as grains?
s. Can QDS producers source EGS from private sectors? For which crops? (In Tanzania, can they do that from Quali-Basic for example?).
t. What are the packet sizes in which QDS could be sold?

2) **Counterfeit seeds - cite any legal cases undertaken to stop bad practices; using literature, anecdotal evidence, and consultation with key in-country stakeholders provide quantitative and qualitative assessment of counterfeit seeds**

3) **Policy landscape – implications of private sector participation in production of the EGS**

4) **Role of associations – seed traders / and input based organizations in policy advocacy**

5) **Using existing legal framework and policies, what constraints do grain traders face to move grains across the country and across the border?**

III. Deliverables and Milestones

i. Use existing literature to first determine the literature database. CRS already has initiated the task and has identified the starting documents. **See Annex A**.
ii. Then in consultation with S34D technical leads develop a seed road map template using guidance provided in this contract (*see above*). CRS will liaise with USAID to solicit feedback and comments on the template.
iii. Conduct desk studies to populate the seed road map as much as possible
iv. Identify stakeholders – both in-country and international -- to solicit input to populate the road map for Tanzania.
v. Produce a first draft of the road map for review by CRS and S34D technical leads
vi. Upon receipt of feedback and comments, refine the road map
vii. Once the road map is final, lead in-country stakeholder workshop to socialize and collect feedback and comments on the road map.

viii. Produce a stakeholder convening report
ix. Soon after, produce a final road map for deployment for S34D
x. The road map will be determined complete with accompanied evidence base, bibliography, and list of institutional partners, and stakeholders' contact lists.

Required Qualifications:

- The Contractor must have demonstrated experience working in agricultural policy in Tanzania
- Minimum 8+ years international research design and implementation experience.
- Proven experience in technically supporting seed system investments, and in seed policy reforms / legal and regulatory framework analyses
- Strong communication skills, especially in public presentations and in writing
- Fluency in written and spoken English and Kisawihili
- Excellent stakeholder facilitation skills is a must

PROPOSAL REQUIREMENTS

Interested parties should submit a proposal of not more than 10 pages with the following information:

1. Contact information:
    i) Name of the agency
    ii) Postal Address
    iii) Telephone/Fax/Email/web site address
    iv) Contact person details
2. Relevant past experience including names and contact information for previous clients (you may reference information already provided in the Expression of Interest, but include any additional, recent, relevant experience in this proposal)
3. Detailed work plan, including time line for completion of all deliverables. The plan sould clearly explain the approach that the Contractor shall undertake to deliver all outputs.
4. Budget and explanatory notes, in BWP and USD.
5. Quality control plan
6. Staffing plan, including for all known positions, name, and CV/resume
7. Detailed job descriptions and minimum qualifications for interviewers, supervisors, and other staff not named above.

Proposals should be sent by email to S34D@crs.org not later than 08:00 AM Washington DC time on Monday, May 8th , 2019.

S34D will award one successful applicant, through the prime organization, Catholic Relief Services (CRS). S34D and CRS reserve the right not to make an award if no applicants offer an acceptable proposal, at the sole discretion of S34D. S34D and CRS reserve the right to negotiate the agreed price to be included in the award for carrying out this work.

Payment Modality:

The consultant will be paid on a quarterly basis against the submission of invoices for time worked and approval of quarterly progress reports (see Deliverables section above).

Annex A: Initial Literature Database for Tanzania seed policy road map

Effective seed quality assurance:
http://www.issdseed.org/sites/default/files/case/issd_africa_twg1_sp2_seed_quality_assurance_170412.pdf

The support for farmer-led seed systems in African seed laws:
http://www.issdseed.org/sites/default/files/case/synthesis_paper_the_support_for_farmer-led_seed_systems_in_african_seed_laws_issd_africa_twg3.pdf

http://www.fao.org/3/CA1483EN/ca1483en.pdf

Development of anti-counterfeiting program in East Africa:
https://www.agriknowledge.org/concern/generics/f4752g81k?locale=en

Legume market analysis—Tanzania:
https://www.agriknowledge.org/concern/generics/nk322d50f?locale=en

A Legal Guide to Strengthen Tanzania's Seed and Input Markets:
https://docs.wixstatic.com/ugd/095963_3a4f751a4c83488982341082f530aa32.pdf

Fostering a dynamic seed system in Tanzania:
https://docs.wixstatic.com/ugd/095963_54f31e030cf946519c2c974f7e11afa1.pdf

https://www.newmarketslab.org/transfarm-africa

AGRICULTURAL SECTOR DEVELOPMENT PROGRAMME PHASE TWO (ASDP II):
http://www.tzdpg.or.tz/fileadmin/documents/external/national_development_frameworks/ASDP2_Final_Document_20_May._2016__after_edit__1_.pdf

http://eatproject.org/docs/tanzania_seedCLIR.pdf

https://www.tanzaniacsaalliance.or.tz/project/vuna/

http://africasoilhealth.cabi.org/wpcms/wp-content/uploads/2016/10/Synthesis-Report-Landscaping-for-ISSD-Tanzania.pdf

https://tasai.org/wp-content/themes/tasai2016/img/tasai_brief_2017_tanzania_final_lr.pdf

Tanzania Early Generation Seed Study: https://pdf.usaid.gov/pdf_docs/PA00MR49.pdf

https://www.tanzaniainvest.com/agriculture/seed-sector-international-accreditation

National Agricultural Input Voucher Scheme (NAIVS 2009–2012), Tanzania: Opportunities for Improvement: http://www.repoa.or.tz/documents/REPOA%20BRIEF%2040.pdf

Annex 5. Seed Policy Initiatives and Programs – Landscape (Database)

Program	Description	Geographies	Crops	Organizations/Donors
Access to Seeds Index[5]	The Access to Seeds Index evaluates and compares seed companies according to their efforts to improve access to quality seeds of improved varieties for smallholder farmers. The Index seeks primarily to identify leadership and good practices, providing an evidence base for the discussion on where and how the seed industry can step up its efforts. In 2019, the Index presented four rankings and in-depth studies that evaluate the performance of global seed companies as well as the regional industry in South and Southeast Asia and sub-Saharan Africa. The index methodology is based on input from farmers, companies, and policymakers, which is then reviewed by dozens of experts from each region. The Index measures four categories of indicators (commitment, performance, transparency, and leadership) in each of the areas studied (governance & strategy, genetic resources, IP, R&D, Seed Production, Marketing & Sales, and Capacity Building). It aligns with the S34D Program in the market expansion & Counterfeited Seed dimensions.	Access to Seeds Index covers over 65 countries in Latin America, Africa, and South and Southeast Asia.	The Access to Seeds Index includes a wide range of crop varieties.	Published by the Access to Seeds Foundation, an independent, non-profit organization, and affiliate of the World Benchmarking Alliance.
Accelerated Varietal Improvement and Seed Delivery of Legumes in Africa (AVISA)	Project focused on boosting availability of early generation seed (EGS) and facilitating handover of research from public to private sectors. Main partner include CGIAR (ICRISAT and CIAT), NARS, and Syngenta Foundation for Sustainable Agriculture (SFSA), with New Markets Lab as policy partner. Policy interventions focused on facilitating entry of public varieties in regional seed catalogues, particularly in Eastern and Southern Africa, and licensing agreements between public research institutions and private sector.	Nigeria and Tanzania (primary focus countries) ; Burkina Faso, Ghana,	Dryland cereals (sorghum and pearl millet) and legume crops (groundn	BMGF

[5] https://www.accesstoseeds.org/.

		Mali, and Uganda (secondary focus countries)	ut, common bean, and cowpea)	
Adaptation for Smallholder Agricultural Programme (ASAP)[6]	Worldwide project launched in 2012 and ongoing until 2023. The project's objective is to provide knowledge and best practices to help over 6 million smallholder farmers in up to 43 countries adapt to climate change. Grants include: building small scale water-harvesting, water storage and irrigation systems for farmers; providing farmers with improved seeds that are drought tolerant; helping farmers access markets to sell their crops; planting trees on farms and introduce soil and water conservation practices; and enabling farmers to access daily and seasonal weather forecasts (e.g. using text messages) so they know when best to plant and harvest crops.	ASAP works worldwide.	ASAP includes a wide range of crop varieties.	Department for International Development of the United Kingdom (DFID). Implementing partners: International Fund for Agricultural Development (IFAD); Harewelle International Limited; Department for International Development; DAI Europe; and International Fund for Agricultural Development.
African Agricultural Technology Foundation (AATF)	AATF has a number of seed-related programs, including a program on the policy environment for agricultural innovation and technology. The Open Forum for Agricultural Biotechnology in Africa (OFBA) focuses on the exchange of biotech information between the scientific community and policymakers in Kenya, Uganda, Tanzania, Ghana, Nigeria, Burkina Faso, and Ethiopia. AATF's productivity and stress management program also aligns with the S34D Program through Market Expansion and Seed Quality Dimension.	Sub-Saharan Africa	Productivity and stress management program focused on maize, rice, cassava, cowpeas, bananas, and potatoes.	AATF's donors include the Bill and Melinda Gates Foundation (BMGF), the Rockefeller Foundation, UDAID, UKAID, and the Howard G. Buffett Foundation.
AfricaYam[7]	The project involves a network of research organizations, the National Root Crops Research Institute (NRCRI), and the Ebonyi State University (EBSU) in Nigeria, the Crops Research Institute and the Savanna Agricultural Research Institute in Ghana, the Centre National de Recherche Agronomique	Nigeria, Ghana, Côte d'Ivoire	Yam	International Institute of Tropical Agriculture (IITA). Partners include Boyce Thompson Institute for Plant Research, CIRAD, CNRA, Council for Scientific and

[6] https://www.ifad.org/en/asap.
[7] https://www.iita.org/iita-project/africayam-enhancing-yam-breeding-for-increased-productivity-and-improved-quality-in-west-africa/; https://africayam.org/.

	(CNRA) in Côte d'Ivoire, and the Université d'Abomey-Calavi (UAC) in Benin. Research organizations from outside the region such as the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Guadeloupe, France; the Iwate Biotechnology Research Center (IBRC), Japan; the James Hutton Institute (JHI), UK; Japan International Research Center for Agricultural Sciences (JIRCAS), Japan; and the Boyce Thompson Institute for Plant Research (BTI), Cornell University, USA also play a significant role. The objective of the project is to develop yam breeding programs that increase yams' productivity while reducing production costs in the four countries of focus. The project seeks to develop and deploy end-user preferred varieties with higher yield, greater resistance to pests and diseases and improved quality.	and Benin.		Industrial Research of Ghana, Ebonyi State University, IBRC, JHI, JIRCAS, NRCRI, Université d'Abomey-Calavi.
Agricultural Investment and Market Development Project (AIMDP)[8]	The AIMDP is a partnership for cooperation between IITA and the Agricultural Investment and Markets Development Project (AIMDP) to support the cassava value chain and the introduction and evaluation of new maize varieties for Cameroon. The goal of the project is to render cassava, maize and sorghum value chains competitive, accessible to farmers, sustainable and resilient to climate in Cameroon,	Cameroon	Cassava, maize, and sorghum.	IITA with the support of the World Bank.
Agricultural Technology Adoption Initiative (ATAI)[9]	The Agricultural Technology Adoption Initiative (ATAI) works through a network of researchers and staff to generate and disseminate rigorous evidence to increase farmer welfare through the broader use of productive technologies in South Asia and Sub-Saharan Africa. ATAI funds randomized evaluations and shares results to illuminate what helps and what hinders farmers' adoption of technologies and access to markets. ATAI produces policy outputs to synthesize and share results, and individual ATAI projects and their partners publish findings publicly. ATAI has developed specific projects related to the seed value chain. In Ethiopia, ATAI is carrying out an evaluation of the wheat certification process to improve crop quality.[10] In India, ATAI has evaluated the	Focus countries for seed include Ethiopia and India.	ATAI's seeds projects focus on wheat and rice.	The ATAI is a collaboration between MIT's Abdul Latif Jameel Poverty Action Lab (J-PAL) and UC Berkeley's Center for Effective Global Action (CEGA), launched in 2009 with support from the BMGF, UK aid from the UK government, and an anonymous donor. ATAI's project in Ethiopia is conducted in partnership with Digital Green, and the project in India was developed in

[8] https://www.iita.org/iita-project/agricultural-investment-and-market-development-project-aimdp-iita/; http://projects.worldbank.org/P143417?lang=en.
[9] https://www.atai-research.org/.
[10] https://www.atai-research.org/project/quality-graded-wheat-value-chain-development-and-agricultural-transformation-in-ethiopia/.

	rice value chain in flood-prone villages to improve market access.[11]			partnership with the International Rice Research Institute (IRRI), Balasore Social Services Society (BSSS).
Agricultural Transformation Agency (ATA)[12]	The ATA is a strategy and delivery-oriented government agency created to help accelerate the growth and transformation of Ethiopia's agriculture sector. ATA's mandate is focused solely on improving the livelihoods of smallholder farmers across the country. ATA implements programs focused on agribusiness and markets, production, and productivity.	Ethiopia	ATA includes a wide range of crop varieties.	ATA is an initiative of the Federal Government of Ethiopia.
Agriculture Policy Research in Africa (APRA): Economic Development, Women's Empowerment and Poverty Reduction[13]	The project launched in 2015 and is ongoing until 2021. The objective is to build an evidence base on what approaches and policies on agriculture commercialization in Africa have the greatest impact on poverty and reduction, woman's empowerment and improving food security and nutrition.	Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Tanzania, and Zimbabwe.	APRA includes a wide range of crop varieties.	Department for International Development of the United Kingdom (DFID)
AMAFINE[14]	AMAFINE has a wide variety of projects focused on different crops. Currently, there is an ongoing project with CORAF aimed at improving access to funding to node actors along the maize value chain in Benin, Burkina Faso and Cote d'Ivoire. AMAFINE also developed a Seed Program in Senegal, from 2014-2016. That project was focused on seeds in general and on specific crops.[15]	Benin, Burkina Faso and Cote d'Ivoire.	Maize	CORAF funders include the World Bank, USAID, UE, Foreign Affairs, Trade and Development Canada, Australian Aid, Direction du Développement et de la Coopération DDC (Switzerland), Ministère des Affaires Etrangères et du Développement International (France), Department for International Development, IFAD, Swedish

[11] https://www.atai-research.org/project/coordinating-seed-exchange-to-overcome-network-failures-and-encourage-adoption-of-agricultural-technologies/.
[12] http://www.ata.gov.et/.
[13] https://www.future-agricultures.org/apra/.
[14] http://www.coraf.org/projects/.
[15] http://coraf.org/wp-content/uploads/2018/04/List%20of%20CORAF%20Ongoing%20Projects.pdf

				International Development Cooperation Agency (Sida), African Development Bank, IFS, ISD, IDRC.
Amhara Seed Enterprise (ASE)[16]	ASE is a public seed enterprise that produces and supplies seeds to growers and promotes a farmer-based seed multiplication scheme.	Ethiopia	Maize, wheat, teff, barely, pea, and beans.	Alliance for a Green Revolution in Africa (AGRA)
Building an Economically Sustainable, Integrated Seed System for Cassava in Nigeria (BASICS)[17]	BASICS is a four-year project (2016-2019) the objective of which is to strengthen the cassava seed value chain. BASICS is structured along four components: breeder seed, processor-led model, quality seed, and village seed entrepreneurs' model, all designed to raise cassava productivity in Nigeria.	Nigeria	Cassava	BASICS is funded by the BMGF, coordinated by the CGIAR Research Program on Roots, Tubers, and Bananas (RTB) and implemented by partners including National Agricultural Seed Council (NASC), National Root Crops Research Institute (NRCRI), CRS, Context Global Development, Fera Science Ltd., IITA, and CIP.
Building an Economically Sustainable Seed System in Tanzania for Cassava (BEST Cassava)[18]	BEST Cassava is a five-year project (2017-2021), implemented by the Mennonite Economic Development Associates (MEDA) in partnership with the Tanzanian Ministry of Agriculture, Livestock and Fisheries (MALF) and IITA. The objective of BEST Cassava is to establish a commercialized cassava seed system that is institutionalized and has the capacity for the continued development and expansion of the cassava seed system.	Tanzania	Cassava	BMGF
Cassava Agribusiness Seed Systems (CASS)[19]	CASS is a four-year project (2019-2022) operating in Rwanda and Burundi, to enable agribusiness development for scaling quality cassava seed systems for control of major viral diseases in cassava. Through this project, the Rwanda	Rwanda and Burundi.	Cassava	IITA in partnership with RAB and Wageningen University and SPARK. The project builds on the CBSD Control Project funded by

[16] https://issdbdu.wordpress.com/seed-producers/public-seed-enterprises/..
[17] https://www.iita.org/iita-project/building-an-economically-sustainable-integrated-seed-system-cassava/; http://www.rtb.cgiar.org/basics/.
[18] https://www.iita.org/iita-project/building-an-economically-sustainable-seed-system-tanzania-cassava/; https://www.meda.org/market-systems-projects/576-tanzania-building-an-economically-sustainable-seed-system-for-cassava-in-tanzania-best-cassava.
[19] https://www.iita.org/iita-project/cassava-agribusiness-seed-systems-cass/; https://knowledge4food.net/research-project/scaling-quality-cassava-seed-systems-rwanda-burundi/.

	Agriculture and Animal Resources Development Board (RAB), Institut des Sciences Agronomiques du Burundi (ISABU), SPARK, and Wageningen University focus on developing, testing and identifying viable agribusiness models to deliver quality cassava seeds of improved varieties with preferred end- users in Burundi and Rwanda. RAB provides technical training to seed multipliers at different stages of the seed value chain on best production and disease management practices and facilitates interactions with the national cassava programs. In the course of the project, RAB and IITA will also ensure availability of clean pre-basic cassava seeds as the first category for the functional commercialized seeds system in Rwanda.			International Fund for Agricultural Development (IFAD).
CGIAR Excellence in Breeding Platform[20]	Through the Excellence in Breeding Platform, the CGIAR intends to modernize breeding programs targeting the developing world for greater impact on food and nutrition security, climate change adaptation, and development. Drawing from innovations in the public and private sector, the Platform provides access to cutting-edge tools, services and best practices, application-oriented training, and practical advice.	The Platform targets developing countries.	The Platform applies to a wide range of crop varieties.	Funded by CGIAR and the BMGF. Contributors include CGIAR System Centers, Biosciences Eastern and Central Africa - International Livestock Research Institute Hub, Cornell University, Diversity Arrays Technology, Corteva, Integrated Breeding Platform, Bayer, and Queensland University.
CGIAR Research Program on Roots, Tubers and Bananas (RTB)[21]	RTB is a partnership collaboration of five research centers, led by the International Potato Center (CIP). Through the research centers, RTB mobilizes complementary expertise and resources, avoids duplication of efforts, and creates synergies to increase the benefits of research for smallholder farmers, consumers, and other stakeholders. RTB aims to promote greater cooperation among an array of national and international institutions, NGOs, and stakeholder groups, while strengthening their capacities. RTB organizes its research around five linked and interactive flagship projects.	Dominican Republic, Colombia, Ecuador, Peru, Bolivia, Brazil, South Africa, Mozambique,	Banana, cassava, potato, sweet potato, yam, Andean root, and tuber crops.	CGIAR Trust Fund (contributors include ULAID, USAID, BMGF, among others).[22] CGIAR research centers Biodiversity International, the International Center for Tropical Agriculture (CIAT), IITA, CIP, and the French Agricultural Research Centre for International Development (CIRAD).

[20] https://excellenceinbreeding.org/.
[21] https://www.cgiar.org/research/program-platform/roots-tubers-and-bananas/; http://www.rtb.cgiar.org/.
[22] https://www.cgiar.org/funders/.

		Malawi, Tanzania, DRC Congo, Burundi, Kenya, Uganda, Ethiopia, Nigeria, Burkina Faso, Côte d'Ivoire, Ghana, Niger, Israel, India, Sri Lanka, China, Japan, Philippines, Vietnam, Laos, Cambodia, Malaysia, and Indonesia.		
Cornell International Institute for Food, Agriculture and Development (CIIFAD)[23]	The program houses several seed projects. It enables Cornell University's faculty, students and staff to engage in formulating solutions to hunger, poverty, environmental degradation, and lack of human and institutional capacities to deal with these issues.	Central America, Dominican Republic, Ghana, Indonesia, Madagascar, Philippine	The program applies to a wide range of crop varieties.	Cornell University

[23] https://ip.cals.cornell.edu/about/history-international-programs/ciifad/.

		s, and Madagascar.		
DAI - Africa Lead II[24]	Feed the Future's primary capacity building program in sub-Saharan Africa from 2013-19 implemented by DAI. The program's objective is to achieve Feed the Future (FtF) and Comprehensive Africa Agriculture Development Program (CAADP) goals of reduced hunger and poverty by building the capacity of champions, institutions, and stakeholders to develop, lead, and manage the structures needed for African-led agricultural transformation. The program facilitated training of more than 540 policymakers and stakeholders in Tanzania, provided ICT training to 35 new agricultural extension agents in Kenya, and developed a suite of customizable tools, known as the Institutional Architecture Assessment, Prioritization, and Planning (IA-APP) toolkit.	Sub-Saharan Africa	Africa Lead applies to a wide range of crop varieties.	USAID[25]
DAI - Mozambique Feed the Future Agricultural Innovations (INOVA)[26]	FtF project in Mozambique started in 2017 and is ongoing until 2022. The government of Mozambique has launched an ambitious plan to grow its agricultural sector in an inclusive manner to reduce poverty and alleviate hunger throughout the country. In partnership with USAID, it launched the Feed the Future Agricultural Innovations (INOVA) project to partner with farmers, businesses, and policymakers to explore ways to improve production and increase sales of key cash crops vital to Mozambique's economy. Project activities include: conducting comprehensive, gender-responsive value chain analyses for key crops, such as sesame, soybeans, and cowpeas, to better understand market inefficiencies and address root causes of underperformance; promoting the adoption of improved seed varieties and fertilizers to increase crop yields through use of demonstration plots, agricultural extension trainings, and radio and text messaging campaigns; and collaborating with financial institutions and village	Mozambique	INOVA Mozambique applies to a wide range of crop varieties.	USAID[27]

[24] https://www.dai.com/our-work/projects/africa-africa-lead-ii.
[25] https://www.accesstoseeds.org/coordination-index-critical-new-usaid-20m-program-seed-system-support/.
[26] https://www.dai.com/our-work/projects/mozambique-feed-the-future-agricultural-innovations-inova-project-description.
[27] https://www.accesstoseeds.org/coordination-index-critical-new-usaid-20m-program-seed-system-support/.

	savings and loan associations to provide credit lines targeted at enabling smallholder farmers to invest in improved seeds, fertilizer, and other agricultural inputs.			
DAI - Mozambique Innovation for Agribusiness (InovAgro I, II, III)[28]	The project launched in 2012 and is ongoing until 2020. InovAgro promotes the development of inclusive and sustainable market systems, also known as Making Markets Work for the Poor. InovAgro III builds on the program's previous phases by further strengthening the capacity of seed companies and input suppliers to provide extension services to small farmers across five target value chains. The results of the project at phase III include assisting 5,000 new farmers to increase their incomes, bringing the program's total to 20,000 farmers helped; helping local traders further improve efficiency of transactions, leading to a 100 percent increase in purchases from farmers compared to phase II levels, valued at $3.8 million, and; adding 8,000 new members to village saving groups and promoted a 500 percent increase in total savings for seeds and inputs from 2017 to 2018.	Mozambique	InovAgro I, II, III apply to a wide range of crop varieties.	Swiss Agency for Economic Development
Equator Seeds Limited (ESL)[29]	Start-up seed company that transfers seed technologies developed through public or private research into the hands of farmers and is engaged in seed production, processing, and marketing of seed varieties.	Uganda	ESL includes a wide range of crop varieties.	AGRA
Feed the Future Mozambique Improved Seeds for Better Agriculture (SEMEAR)[30]	SEMEAR is a consortium led by IITA in partnership with CIAT, ICRISAT, and IIAM. SEMEAR is a five-year project (2015-2020) with the objective of building a private-public partnership to disseminate improved legume seeds and complementary crop management practices already developed in Mozambique through the Platform for Agricultural Research and Technology Innovation project (PARTI). Overall, the project seeks to increase the adoption of improved technologies, incomes, and food security of smallholder farmers in different regions of Mozambique.	Mozambique	Common beans, cowpea, groundnut, pigeon pea, sesame, and soybean.	USAID under the Feed the Future program.

[28] https://www.dai.com/our-work/projects/mozambique-innovation-agribusiness-inovagro.
[29] https://www.equatorseeds.com/.
[30] https://www.iita.org/iita-project/feed-future-mozambique-improve-seeds-better-agriculture/; https://ciat.cgiar.org/ciat-projects/feed-the-future-mozambique-improved-seeds-for-better-agriculture-semear/; https://www.agrilinks.org/users/ftf-mz-semear.

Ghana CORAF[31]	Through this project, CORAF's objective is to strengthen agricultural research, extension, and advisory services and stakeholder capacities, as well as establish and coordinate communities of practice in agricultural research and development.	Ghana	New cassava and sweet potato.	CORAF in coordination with regional and national actors. CORAF funders include the World Bank, USAID, UE, Foreign Affairs, Trade and Development Canada, Australian Aid, Direction du Développement et de la Coopération DDC (Switzerland), Ministère des Affaires Etrangères et du Développement International (France), Department for International Development, IFAD, Sida, African Development Bank, IFS, ISD, IDRC.
Integrated Seed Sector Development (ISSD Africa)[32]	ISSD Africa aims to establish an African-embedded structure and network of experts, seed programs, and associated organizations in the public and private sectors to support the development of a market-oriented, pluralistic, vibrant, and dynamic seed sector in Africa for providing both female and male smallholder farmers access to quality seed of superior varieties (both improved and local varieties most preferred by farmers). The priority themes of the project include common challenges to promoting entrepreneurship in seed value chain and access to varieties in the public domain. Among other goals, ISSA Africa aims to address diverse needs and realities of farmers in seed sector development strategies and programs, create an enabling structure and favorable environment for experimenting, documenting, learning, and enhancing collaboration; and creating an Africa-wide learning and innovation network.	Africa	ISSD Africa applies to a wide range of crop varieties.	Multi-donor collaboration coordinated by the Centre for Development Innovation (CDI), Wageningen UR and at Royal Tropical Institute (KIT)
International Fund for Agricultural Development (IFAD)[33]	IFAD has a number of agricultural development projects, primarily focused on food production. IFAD finances programs and projects specifically designed to introduce, expand or improve food production systems and to	Worldwide	IFAD projects include a wide	IFAD projects are funded by various companies, foundations, governments, multilateral organizations, NGOs, producer

[31] http://www.coraf.org/wp-content/uploads/2019/03/StrategicPlan.pdf.
[32] https://issd.org/.
[33] https://www.ifad.org/en/web/operations/projects-and-programmes?mode=search.

	strengthen related policies and institutions. Has approved programs to start in Rwanda, Sierra Leone, Liberia, Benin, Egypt, and Dominican Republic on various subjects including agricultural value chain development, rural productive family's inclusion into the market, and resiliency.		range of crop varieties.	organizations, research and academic institutions, and UN Agencies.
International Seed Federation (ISF)[34]	Numerous projects to represent member interests at a global level (OECD, UPOV, IPPC, FAO, CBD, WIPO); facilitate the free movement of seed within a framework of fair and science-based regulations while serving the interests of farmers, growers, industry and consumers; promote the establishment and protection of intellectual property rights for seeds, plant varieties and associated technologies; publish rules for trading seed and licensing technology to clarify and standardize contractual relations between buyers and sellers at an international level; provide for the settlement of disputes through mediation, conciliation and/or arbitration; foster cooperation and collaboration through its calendar of events, enabling seed industry stakeholders to identify issues, stimulate strategic thinking and accelerate the adoption of common positions; and work in partnership with organizations responsible for international treaties, conventions and agreements and those that shape the policies affecting the global seed industry.	Worldwide	ISF projects include a wide range of crop varieties.	ISF Members
International Seed Testing Association (ISTA)[35]	Numerous projects focused on internationally-agreed rules for seed sampling and testing, accreditation of laboratories, promotion of research, international seed analysis certificates and training, and dissemination of knowledge in seed science and technology. Diverse collaboration of seed scientists and analysts from universities, research centers, and seed testing laboratories around the world that facilitates seed trading nationally and internationally and contributes to food security.	Worldwide	ISTA's work includes a wide range of crop varieties.	Independent organization supported by the non-profit cooperation of experienced seed scientists and analysts.
Kenya Potato Value Chain[36]	The project introduced innovative technology developed by CIP and the Vietnamese Research Center for Experimental Biology to ramp up production of high-quality seed.	Kenya	Potato	CGIAR System donors through the CGIAR Research Program on Roots, Tubers and Bananas;

[34] https://www.worldseed.org/.
[35] https://www.seedtest.org/en/about-ista-_content---1--1011.html.
[36] https://cipotato.org/, CIP Annual Report 2018. Towards food system transformation available at https://cgspace.cgiar.org/handle/10568/103463.

(Associated CGIAR Research Program/Platform: Roots, Tubers and Bananas; Excellence in Breeding Platform)				Deutcshe Gesellschaft fur Internationale Zusammenarbeit; Federal Ministry for Economic Cooperation and Development, Germany; Syngenta Foundation for Sustainable Agriculture; and USAID.
MAIZE[37]	MAIZE is an international collaboration between more than 300 partners that seeks to mobilize global resources in maize research and development to achieve a greater strategic impact on maize-based farming systems in Africa, South Asia and Latin America. The research program was launched by CGIAR in 2012. MAIZE focuses on the needs of the poor and disadvantaged in the maize agri-food systems in low- and middle-income countries, especially in sub-Saharan Africa, Latin America and Asia. MAIZE combines the strength of farming communities, international and local public and private sector partners, policy makers and development organizations to ensure that CGIAR's maize research-related contribution effectively contributes to meeting food demands, building sustainable farming systems, increasing sustainable production, reducing poverty and malnutrition, building competitiveness, granting farmers access to cutting-edge technologies, enhancing efficiency and impact of the system.	Flagship Projects are implemented in Asia and Central and West Asia, Latin America and the Caribbean, East and Southern Africa, and West and Central Africa.	Maize	Led by the International Maize and Wheat Improvement Center (CIMMYT), with IITA as its main CGIAR partner, along with CIAT, ICRISAT, IFPRI, IITA, ILRI, IRRI, and World Agroforestry Center. Global partners are USAID, BMGF, Syngenta Foundation for Sustainable Agriculture, Secretariat of Agriculture and Rural Development of Mexico, Australian Center for International Agricultural Research, AATF, Canadian International Development Agency, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).
MasAgro[38]	The project promotes the sustainable intensification of maize and wheat production in Mexico. MasAgro develops capacities and research activities aimed at raising maize and wheat yields stability and profitability in Mexico. The program, through different components, also seeks to increase farmer income and production systems sustainability by implementing collaborative research initiatives, developing and promoting the use of improved seed, sustainable technologies and farming practices.	Mexico	Wheat and maize.	Mexico's Secretariat of Agriculture and Rural Development (SADER) and Inter-American Development Bank (IDB) in partnership with CIMMYT.

[37] https://maize.org/; https://www.cgiar.org/research/program-platform/maize/; https://www.iita.org/iita-project/cgiar-research-program-crp-3-2-maize-global-alliance-for-improving-food-security-and-the-livelihoods-of-the-resource-poor-in-the-developing-world/; https://cgspace.cgiar.org/bitstream/handle/10568/89825/MAIZE-Web.pdf?sequence=4&isAllowed=y.

[38] https://www.cimmyt.org/projects/masagro/; https://masagro.mx/en/.

	MasAgro Farmer, a component of CIMMYT's MasAgro project, develops a sustainable intensification strategy for maize, wheat and similar grains by building hubs based on research platforms, demonstration modules, and extension areas where sustainable farming practices and technologies are tested, improved, and adapted. [39] MasAgro Wheat, another component of MasAgro, conducts research on wheat genetics and physiology to improve plant structure, increase the resilience and disease resistance of wheat, and improve its yield potential in Mexico and abroad.[40] Its goal is to raise wheat yields.			
Maslaha Seeds Limited[41]	Collaborates with research institutes to provide clean seeds and training to various seed companies promote seed entrepreneurship.	Nigeria	Maize, rice, millet, sorghum, soybean, and cowpea.	AGRA
Micro Reforms for African Agribusinesses (MIRA) [42]	AGRA's MIRA Program provides governments with local and international technical assistance for identifying, prioritizing, and reforming agricultural regulations that deter or limit investment in agribusinesses operating in smallholder value chains. Reform of seed law and regulation have been a priority of the MIRA program.	Ghana, Tanzania, Ethiopia, Burkina Faso, and Nigeria.	Local staple food value chains.	BMGF
Mozambique Agro Dealer Development Program[43]	The program was developed by AgriMerc ODS, a local Organization, through a grant from AGRA for a period of 3 years (2013 to 2016) to implement the program in Manica, Tete, Sofala, and Zambezia – (MADD II). The three-year project contributed to the intensification of agriculture in 16 districts in the Beira Corridor in central Mozambique by	Mozambique	The program applies to a wide range of	AGRA

[39] https://www.cimmyt.org/projects/masagro-farmer/, https://masagro.mx/en/.
[40] https://www.cimmyt.org/projects/masagro-wheat/; https://masagro.mx/en/.
[41] https://agra.org/program-development-and-innovation/seeds/.
[42] http://www.ghana.gov.gh/index.php/media-center/news/1136-micro-reforms-for-african-agribusiness-project-launched; https://agra.org/program-development-and-innovation/micro-reforms-for-african-agribusiness/.
[43] https://www.afap-partnership.org/hub-agro-dealer-model-implemented-mozambique/.

	increasing the number and value of agribusiness transactions and increasing smallholder crop production and income from sale of surplus production.		crop varieties.	
Nepal Seed and Fertilizer Project (NSAF)[44]	NSAF project facilitates sustainable increases in Nepal's national crop productivity, income and household-level food and nutrition security, across 20 districts. NSAF promotes the use of improved seeds and integrated soil fertility management technologies along with effective and efficient extension, including the use of digital and information and communications technologies. The project aims at increasing availability of technologies to improve productivity in cauliflower, lentils, maize, onions, rice and tomatoes. It also aims at building competitive seed and fertilizer systems that significantly expand seed production, marketing and distribution by enhancing the capacity of public and private sectors in seed and fertilizer value chains.	Nepal	Cauliflower, lentils, maize, onions, rice, and tomatoes.	Center for Environmental and Agricultural Policy Research, Extension and Development (CEAPRED), International Fertilizer Development Center (IFDC), Nepal Agricultural Research Council (NARC), Nepal's Ministry of Agriculture and Livestock Development, Quantitative Engineering Design (QED), USAID.
OECD Schemes for the Varietal Certification of Seed[45]	The OECD Schemes for the Varietal Certification of Seed promote the use of certified agriculture seed that is of consistently high quality. These seeds are produced – and officially controlled – according to a set of harmonized procedures put in place in the 61 participating countries. With membership open to OECD, UN, and WTO countries, the aim is to stimulate the production and use of high-quality seeds. There are eight schemes, each defined according to a group of species of cultivated plants – more than 200 agricultural and vegetable species in all. By ensuring consistently high standards, the OECD Seed Schemes contribute to its members' evolving agriculture and trade policies. The OECD Schemes for the Varietal Certification or the Control of Seed Moving in International Trade include Rules and Regulations applicable to eight groups of species that define the technical standards developed by seed certification specialists in participating countries in close co-operation with other international seed-related organizations, such as FAO, ISF, ISTA and UPOV. Many	OECD Members (61 participating countries).	OECD Schemes apply to a wide range of crop varieties.	OECD

[44] https://www.cimmyt.org/projects/nepal-seed-and-fertilizer-project-nsaf/.
[45] http://www.oecd.org/agriculture/seeds/.

	regional seed organizations also participate in the development of technical standards.			
Oromia Seed Enterprise[46]	Autonomous parastatal organization that provides quality seeds of maize, wheat and chickpea. Oromia Seed Enterprise is the base of ISSD Oromia South and West Unit, responsible for the implementation of programs in south and western Oromia.[47]	Ethiopia	Maize, wheat, and chickpea.	AGRA
Partnership for Inclusive Agricultural Transformation in Africa (PIATA)[48]	Through AGRA's PIATA program, partners support African countries to deliver on the Malabo Declaration commitments and the Sustainable Development Goals (SDGs) agreed to by African heads of state and governments. Under PIATA, the partners commit to a shared results framework aligned to CAADP and with country operations aligned to the country's own overall vision and national agriculture planning. FtF brings together partners from across various sectors and the U.S. Government to use each of PIATA's skills and insights in a targeted, coordinated way to help countries that are ripe for transformation change the way their food systems work. The partnership actively seeks to align efforts with development partners at country and regional level.	Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Nigeria, Rwanda, Tanzania, and Uganda.	PIATA applies to a wide range of crop varieties.	PIATA's foundation members include the BMGF, the Rockefeller Foundation and USAID with AGRA as the implementing partner. The UK Department for International Development (DFID) recently joined the partnership and brings greater focus on regional food markets and food trade.
Program for Africa's Seed Systems (PASS)[49]	PASS was AGRA's flagship seeds program and aimed to give African farmers a wider range of seed choices—including access to seed of highly productive crop varieties known as hybrids, which have revolutionized food production elsewhere in the world. It had four sub-programs: Education for African Crop Improvement (EACI); Fund for the Improvement and Adoption of African Crops (FIAAC); Seed Production for Africa (SEPA), and the Agro-dealer Development Program (ADP). PASS aligned with the S34D Program through Market Expansion and Seed Quality Dimension. PASS ran from 2006 to 2017, and the final implementation of the Scaling Seeds and Technologies Partnership (SSTP) was completed in 2018.[50]	Grants were awarded in Tanzania (13 grants), Ghana (10), Kenya (10), Uganda (9),	Maize was the main focus crop under the grants, but grants were also awarded to programs	AGRA, with the support of BMGF and the Rockefeller Foundation.

[46] https://issdethiopia.org/category/oromia-south-west/.
[47] http://www.oromiaseedenterprise.com/projects.html
[48] https://agra.org/piata/.
[49] https://agra.org/program-development-and-innovation/developing-africas-seed-systems/.
[50] https://agra.org/terms-of-reference-for-the-end-of-program-evaluation-for-agra-africas-seed-systems-program/

		United States (8), Ethiopia (7), Mozambique (7), Zimbabwe (7), Malawi (6), Nigeria (6), Zambia (5), Mali (4), Rwanda (4), Niger (3), Bangladesh (2), Burkina Faso (2), Sierra Leone (2), South Africa (2) and one grant each to organizations in India, Liberia, Mauritius, and the United Kingdom.	focused on Cassava (8 grants), Groundnut (6), Beans (4), Rice (3), Millet (2), Soybean (2), Banana (1), Cowpea (1), Pigeon Pea (1), Sesame (1), Sorghum (1), and Sweet potato (1).

Programme of Support to Agriculture in Rwanda[51]	The programme launched in 2014 and is ongoing until 2019 with the objective of sustainably increasing the agricultural productivity of poor farmers by transforming Rwandan agriculture from a subsistence-based to a more commercial-based sector that accelerates agricultural growth. The programme is mean to result in increased agricultural productivity, food security, and income improvement among poor households and contribute to eradicating extreme poverty and hunger while promoting gender equality and empowering women.	Rwanda	The program applies to a wide range of crop varieties.	Department for International Development of the United Kingdom (DFID) through UK aid. Implementing partners: World Food Programme (WFP); Department for International Development; Coffey International Development; Oxford Policy Management; Adam Smith International; DAI Europe; International Development Association; International Bank for Reconstruction and Development (IBRD); and International Development Association.
RICE[52]	RICE is a CGIAR research program on rice agri-food systems (RICE, 2017-2022) and is the second phase of Global Rice Science Partnership 2011-2016. RICE's objective is to facilitate the transition of smallholder rice farmers to modern business entrepreneurship by exploiting opportunities offered by market diversification and the emergence of a stronger consumer demand for quality and nutritious rice products. It also aims at assisting poor farmers in hinterlands and less-endowed environments to cope with extreme stresses and the effects of climate change and other shocks. RICE pursues its goals through five flagship projects: accelerating impact and equity, upgrading rice value chains, sustainable farming systems, Global Rice Array, and new rice varieties.	Flagship Projects are implemented worldwide.	Rice	RICE is led by CGIAR—the International Rice Research Institute, Africa Rice Center (AfricaRice), CIAT, Centre de Coopération Internationale en Recherche Agronomique pour le Développement (Cirad), L'Institut de Recherche pour le Développement (IRD), and JIRCAS. Projects are funded by different donors, including the Department of Agriculture in the Philippines, the BMGF and UK Aid among others.
Second Global Plan of Action for Plant Genetic Resources for	The Second GPA reaffirms the commitment of governments to the promotion of plant genetic resources as an essential component for food security through sustainable agriculture in the face of climate change. It aims to (1) promote cost	Worldwide	GPA applies to a wide range of	FAO Tropical Agricultural Research and Higher Education Center[54] - UN Agency.

[51] https://devtracker.dfid.gov.uk/projects/GB-1-204456.
[52] http://ricecrp.org/.
[54] http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/gpa/en/.

Food and Agriculture (GPA)[53]	efficient and effective global efforts to conserve and sustainably use of Plant Genetic Resources for Agriculture (PGRFA), (2) link conservation with use for a greater use of plant germplasm, (3) strengthen crop improvement and seed systems to foster economic development, (4) create capacities, strengthen national programmes and widen partnerships for PGRFA management and (5) strengthen implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture.		crop varieties.	
SeeD[55]	SeeD initiative works to unlock and utilize novel genetic diversity held in genebanks to accelerate the development of maize and wheat varieties to meet the demands of a growing population in a changing climate. By characterizing the genetic makeup of maize and wheat collections, SeeD has generated "fingerprints" describing the diversity of two of humankind's major food crops. To multiply the impacts of these results, SeeD has created a "genetic resources utilization platform" for breeders and researchers, made up of publicly available data and software tools.	Mexico	Maize and wheat.	UK's Biotechnology and Biological Sciences Research Council (BBSRC) supports the computation infrastructure and data analysis. MasAgro Biodiversidad, a joint initiative of CIMMYT and the Mexican Ministry of Agriculture (SAGARPA) through the MasAgro (Sustainable Modernization of Traditional Agriculture) project; the CGIAR Research Programs on Maize (MAIZE CRP) and Wheat (WHEAT CRP) jointly work in the initiative.
Seed Programs International (SPI)[56]	Multiple projects to provide quality seed, expertise, and training to humanitarian organizations working around the world to alleviate hunger and poverty. SPI has partnered with over 200 organizations among 75 countries around the world, including Peace Corps, NGOs, Rotary International, Rise Against Hunger, Watson Children's Foundation, and others.[57] SPI maintains a relationship with seed companies, receives and stores donated seeds (unmarketable seeds or voluntary donations) and distributes the packed seeds through its partners to alleviate hunger and malnutrition. To guarantee	Worldwide	SPI catalogue has a wide range of crop varieties.	SPI receives donations from seed companies.

[53] http://www.fao.org/agriculture/crops/thematic-sitemap/theme/seeds-pgr/gpa/en/.
[55] https://www.cimmyt.org/projects/seeds-of-discovery-seed/; https://seedsofdiscovery.org/.
[56] https://seedprograms.org/..
[57] https://seedprograms.org/how-we-work/partner-organizations.

	good quality and proper distribution of the seeds, SPI uses a six-step approach, which includes (1) acquisition of the seeds from leading seed companies, (2) selection of the seeds according to the destination country to ensure its suitability, (3) seed testing through private accredited laboratories, (4) packaging in multiple languages, with instructions, and in small batches to facilitate transportation and preservation, (5) shipping to SPI partners, and handling of import and testing documentation, (6) oversight and ongoing support to organizations and farmers. Successful cases of SPI seed distribution include Madagascar, Guatemala, and Haiti.			
Seed System[58]	Seed System is a collaboration among diverse national and international organizations aiming to improve seed security in high stress and vulnerable areas across the world and improve intervention practices, assessment, and strategic systems around seed system response and seed system development. In particular, Seed System offers practical 'how-to' advice to guide immediate humanitarian response, starting step-by-step with the assessment—the seed system security assessment (SSSA)—and then moving to key responses—bolstering markets, promoting resilience and putting farmers in the decision-making chair. It also focuses on interventions for chronic stress regions, areas that are environmentally harsh and/or lacking development institutions and innovations. To this end, it provides practice briefs, system assessment tools, diagnostic manuals, background reviews, and policy guides. Its field assessments around the world include Burundi, Ethiopia, Kenya, South Sudan, Zambia, and Zimbabwe, among others.	Burkina Faso, Burundi, DR Congo, Ethiopia, Haiti, Kenya, Madagascar, Malawi, Mali, Sierra Leone, South Sudan, Syria, Timor-Leste, Zambia, and Zimbabwe	Seed System applies to a wide range of crop varieties.	CRS, CIAT, PABRA, and USAID
Seed System Group[59]	Seed System Group (SSG) is an Africa-based nonprofit organization led by experts in crop breeding. Its main purpose is to extend the recent advances in seeds systems	Angola, Benin, Burundi,	Wide range of	AGRA and the Rockefeller Foundation.

[58] https://seedsystem.org/.
[59] https://seedsystemsgroup.org/company-overview/

	development to farmers. SSG is partnering with target countries to introduce and test crop varieties, provide training in seed production and business management to local companies, and connect seed producers to local agrodealers.	Cameroon, Chad, Côte d'Ivoire, DRC, Eritrea, Guinea, Madagascar, Niger, Senegal, Sierra Leone, Togo, and Republic of Congo.	crop varieties.	
Seeds2B[60]	Seeds2B is a demand-led match-making initiative for technology transfer, and ultimately capacity building, for local seed production led by the Syngenta Foundation for Sustainable Agriculture (SFSA). The initiative aims to provide a wider choice of quality seeds to farmers. In partnership with AATF under the USAID Partnership for Seed Technology Transfer in Africa (PASTTA) program (see below), Seeds2B is being scaled to include more countries and crops. Seeds2B's scope of services include finding varieties that meet market needs, carrying out seeds trials to assess performance and market acceptance, assisting organizations with seeds registration, B2B assistance, building partnerships for licensing agreements and IPR management, advising on reduction of risks and portfolio expansion, helping to acquire additional capital, and M&E. Through Seeds2B Connect, the initiative facilitates the introduction of quality seeds to African businesses in emerging markets. Seeds2B also includes a legal and regulatory component, led by SFSA's partner organization the New Markets Lab (NML), which includes regulatory capacity building, comparative case studies, and "test cases" to track the process of regional	Africa	Seeds2B applies to a wide range of local crop varieties.	Syngenta Foundation for Sustainable Agriculture (SFSA), funded by USAID.[61]

[60] https://www.syngentafoundation.org/seeds2b.
[61] https://www.syngentafoundation.org/seeds2b; www.seeds2b.org.

	variety registration. Seeds2B has conducted trials in Mali, Senegal, Kenya, Malawi, and Zimbabwe for variety performance. Through Seeds2B Build, the initiative can also facilitate the local production of seeds.			
Senegal CORAF[62]	Through this project, the Senegalese National Agricultural Research Center with the support of the West Africa Agriculture Productivity Program has generated resilient groundnut varieties that can adapt to the current climate. CORAF's objectives are for Senegal to adopt policies and strategies to drive increased investments in agriculture and build functional partnerships to accelerate economic growth, reduce poverty, and improve food and nutrition security	Senegal	The project focuses on a wide range of crop varieties.	CORAF in partnership with ECOWAS, ECCAS and CADDP. CORAF funders include the World Bank, USAID, UE, Foreign Affairs, Trade and Development Canada, Australian Aid, Direction du Développement et de la Coopération DDC (Switzerland), Ministère des Affaires Etrangères et du Développement International (France), Department for International Development, IFAD, Sida, African Development Bank, IFS, ISD, IDRC.[63]
Sustainable Intensification of Maize-Legume Systems for Food Security in Eastern and Southern Africa (SIMLESA)[64]	SIMLESA program was launched in 2010 and aims to improve maize and legume productivity by 30 percent and to reduce the expected downside yield risk by 30 percent on approximately 650,000 farm households by 2023. The program has also laid the foundation for developing conservation agriculture based sustainable intensification options, including integration of improved maize and legume varieties identified for their compatibility with CA-based practices; promoting technology adoption by both female and male farmers; capacity building for national agricultural research systems of partner countries; creating enhanced partnerships and collaboration with established innovation platforms for coordinated scaling-out of SIMLESA-generated options and practices.	Ethiopia, Kenya, Malawi, Mozambique, and Tanzania.	Maize and Legume.	Australian Centre for International Agricultural Research (ACIAR) in partnership with CIMMYT.

[62] http://www.coraf.org/wp-content/uploads/2019/03/StrategicPlan.pdf.
[63] http://www.coraf.org/our-funding/.
[64] https://www.cimmyt.org/projects/sustainable-intensification-of-maize-legume-systems-for-food-security-in-eastern-and-southern-africa-simlesa/; https://simlesa.cimmyt.org/.

Sweet potato Agri-food Systems Program[65]	Through this program, CIP and its partners developed and disseminated dozens of biofortified, vitamin A-rich varieties of sweet potato in Africa and Asia, helping to raise the nutritional status and, to a lesser extent, the incomes of more than five million households. CIP also works with large food processors and fresh root traders in Africa, facilitating the development of new value chains for sweet potato and creating income-generating opportunities including for women and young people.	Africa and Asia.	Sweet potato	CGIAR Trust Fund contributors.[66]
Technologies for African Agricultural Transformation (TAAT)	Part of African Development Bank's "Feed Africa" strategy to transform agriculture and scale up agribusiness opportunity throughout 18 key value chains. TAAT includes a number of projects focused on knowledge and innovation in support of Feed Africa's strategic goals of increasing crop and animal productivity, value addition, infrastructure investment, enabling agribusiness environment, and catalyzation of capital. Includes CGIAR Centres, NARS, Forum for Agricultural Research in Africa (FARA), AATF, and sub-regional organizations.	Sub-Saharan Africa.	Range of crop varieties.	African Development Bank.
The African Seed Access Index (TASAI)[67]	TASAI's objective is to promote the creation and maintenance of enabling environments for competitive seed systems serving smallholder farmers. TASAI has developed a set of indicators to measure, track, and compare factors affecting the enabling environment for seed markets across African countries. The intended outcome of this index is improved access to locally adapted, affordable, and high-quality seed of improved varieties by smallholder farmers in Sub-Saharan Africa.	Sub-Saharan Africa	TASAI focuses on a wide range of local varieties.	Collaborative initiative between Cornell International Institute for Food, Agriculture, and Development (CIIFAD) and Market Matters Inc. with support from various donors.
The Feed the Future Southern Africa Seed Trade Project (Seed Trade Project)[68]	The FtF Seed Trade Project is designed to increase the availability of high-quality seed of improved varieties to farmers in the Southern Africa Development Community (SADC) to improve yields and increase food security and nutrition. The Seed Trade Project, administered by DAI,	Malawi, Mozambique, and Zambia; also active	The project focuses on a wide range of	USAID[69]

[65] https://cipotato.org/programs/sweetpotato-agri-food-systems-program/.
[66] https://cipotato.org/about/finances/.
[67] https://tasai.org.
[68] https://www.dai.com/our-work/projects/southern-africa-feed-future-southern-africa-seed-trade-project.
[69] https://www.accesstoseeds.org/coordination-index-critical-new-usaid-20m-program-seed-system-support/.

	provides diverse assistance to implement the SADC Harmonized Seed Regulations (HSR) to foster seed trade across the region and integrate smaller and isolated national seed markets into a larger, more efficient SADC-wide seed market. The Seed Trade Project also helps policymakers put in place the mechanisms needed to improve access to high-quality, affordable seed—allowing smallholder farmers and large private sector producers to grow more food at cheaper prices for consumers across the region. The Seed Trade Project is located in Gaborone, Botswana, Pretoria, South Africa, and Lusaka, Zambia, the Seed Trade Project supports activities in three Feed the Future focus countries: Malawi, Mozambique, and Zambia; and is also active in Zimbabwe, an aligned Feed the Future country. The Seed Trade Project provides targeted technical assistance to facilitate implementation of SADC's Harmonized Seed Regulations (HSR).	in Zimbabwe.	crop varieties.	
The Future of Agriculture in Rwanda (FAiR)[70]	The program launched in 2019 and is ongoing until 2021. Its objective is to sustainably increase agricultural productivity and benefit poor farming households, through greater commercialization of Rwandan agriculture. This will lead to an enhanced contribution of agriculture to economic growth, food security and poverty reduction. Implementing partners: Oxford Policy Management and International Bank for Reconstruction and Development (IBRD).	Rwanda	The program focuses on a wide range of crop varieties.	Department for International Development of the United Kingdom (DFID)
The World Seed Partnership (WSP)[71]	The WSP promotes access to new varieties and high-quality seed that supports sustainable agricultural development. The WSP provides countries with guidance and expertise to put in place the relevant systems thereby enabling farmers to have access to high quality seed and new plant varieties.	Worldwide	WSP focuses on a wide range of local crop varieties.	The initiative was established by ISF, ISTA, OECD and UPOV.
USAID Partnership for Seed Technology	PASTTA aims to enable the transfer of best-bet seed-based technologies. It addresses some of the main bottlenecks in the market to improve: (i) the promotion and dissemination of new varieties, in particular those selected by the public	Kenya, Malawi, Mali, Senegal,	PASTA focuses on a range of	USAID-funded partnership among SFSA Seeds2B, AATF, and NML.[73]

[70] https://www.gov.uk/world/organisations/dfid-rwanda.
[71] http://www.worldseedpartnership.org/.
[73] https://www.accesstoseeds.org/coordination-index-critical-new-usaid-20m-program-seed-system-support/.

Transfer in Africa (PASTTA)[72]	sector, (ii) the involvement of the seed private sector in multiplication, commercial development, and dissemination of seed varieties, (iii) the demand for new varieties, and (iv) the harmonization of seed regulations.	and Uganda.	crop varieties, including beans, maize, soybean, pearl millet, groundnut, sorghum, cowpea, pigeon pea, vegetables, and potato.	
Wagenigen Seed Centre[74] (WSC)	WSC contributes to capacity-building in the seed sector of several countries in the world through education, research and project execution. It partners with other universities, national and international research institutes, NGOs, and other public and private stakeholders through a range of projects.	Worldwide	WSC on a wide range of local crop varieties.	Wagenigen University and Research
WHEAT[75]	WHEAT is a CGIAR Research Program launched in 2012 and led by CIMMYT. CIMMYT's Global Wheat Program is one of the most important public sources of high yielding, nutritious, disease- and climate-resilient wheat varieties for Africa, Asia, and Latin America. WHEAT offers productivity-enhancing options, helping smallholders to improve farming practices and make the best use of their land in ever more challenging conditions constrained by virulent diseases, less water, fewer agricultural inputs, rising temperatures and more erratic rainfall. WHEAT addresses such challenges through two strategic research pillars, germplasm improvement and sustainable intensification. Associated work takes place under	Africa, Asia, and Latin America.	Wheat	CGIAR Centers: ICARDA, BBSRC (UK), ICAR (India), ACIAR (AU), INIA (Bolivia), INIAF (Uruguay), INRA (Morocco), IRESA (Tunisia), BARI (Bangladesh), G-20 Wheat Initiative, International Wheat Yield Partnership. Australia (ACIAR), UK (DFID) and USA (USAID) supported the CGIAR Agri-food Systems

[72] https://www.syngentafoundation.org/news/seeds2b-news/our-foundation-signs-gda-usaid.
[74] https://www.wur.nl/en/Research-Results/Projects-and-programmes/Wageningen-Seed-Centre/Objectives.htm.
[75] https://wheat.org/; https://www.cimmyt.org/work/wheat-research/.

	thematic areas known as flagship projects that tackle current and coming constraints to food security, improved farm livelihoods, and sustainable development.			Research Program on Wheat (WHEAT) with Window 2 funding and 14 funders supported with Window 1 funds through the CGIAR Fund.[76] Bilateral funders support programs and projects matched to WHEAT Flagship Projects (FPs) and Clusters of Activity (CoAs).
Wild potato collection in Peru[77] (Associated CGIAR Research Program/Platform: Roots, Tubers and Bananas, Genebank Platform)	The objective of the program is to safeguard Peru's agrobiodiversity for future generations. Under the program, CIP and Peru's Instituto Nacional de Innovación Agraria (INIA) undertook a series of collection trips in 2017-18 to fill genetic gaps in the CIP Genebank collection. Researchers evaluated the disease resistance of wild species and hybrids produced by earlier crosses. They also began working with Peruvian farmers to select the best of those potatoes in terms of production and flavor, for possible release as varieties in Peru and sharing with breeding programs in Africa and Asia. The goal is to evaluate and harness the genetic diversity of these species to eventually release a climate-smart potato varieties in the coming years.	Peru	Potato	Norwegian Agency for Development Cooperation (via the Global Crop Diversity Trust); Organization of the Petroleum Exporting Countries Fund for International Development. In partnership with INIA; Global Crop Diversity Trust; Royal Botanical Gardens Kew.

[76] https://wheat.org/partner-map-where-we-work/.
[77] https://cipotato.org/; CIP Annual Report 2018. Towards food system transformation available at https://cgspace.cgiar.org/handle/10568/103463.

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