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Transforming Africa's Agriculture through Enhancing Commercialization of Agricultural Research Products

The case of High Iron Beans Technology

By : *FARA TAAT Capacity Development and Technology Outreach (CTDO) and High Iron Beans (HIB) Compact*

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About FARA

The Forum for Agricultural Research in Africa (FARA) is the apex continental organisation responsible for coordinating and advocating for agricultural research-for-development. (AR4D). It serves as the entry point for agricultural research initiatives designed to have a continental reach or a sub-continental reach spanning more than one sub-region.
FARA serves as the technical arm of the African Union Commission (AUC) on matters concerning agricultural science, technology and innovation. FARA has provided a continental forum for stakeholders in AR4D to shape the vision and agenda for the sub-sector and to mobilise themselves to respond to key continent-wide development frameworks, notably the Comprehensive Africa Agriculture Development Programme (CAADP).
FARA's vision is to "Reduced poverty in Africa as a result of sustainable broad-based agricultural growth and improved livelihoods, particularly of smallholder and pastoral enterprises" its mission is the "Creation of broad-based improvements in agricultural productivity, competitiveness and markets by strengthening the capacity for agricultural innovation at the continental-level"; its Value Proposition is the "Strengthening Africa's capacity for innovation and transformation by visioning its strategic direction, integrating its capacities for change and creating an enabling policy environment for implementation". FARA's strategic direction is derived from and aligned to the Science Agenda for Agriculture in Africa (S3A), which is in turn designed to support the realization of the CAADP vision.

Disclaimer

Background

The Forum for Agricultural Research in Africa (FARA), the African Forum for Agricultural Advisory Services (AFAAS), IITA, and the Alliance of Bioversity International and International Center for Tropical Agriculture (Alliance) organized a technical webinar on August 19, 2020, as part of the Technologies for African Agricultural Transformation (TAAT) Program of the Feed Africa initiative funded by the African Development Bank (AfDB). .

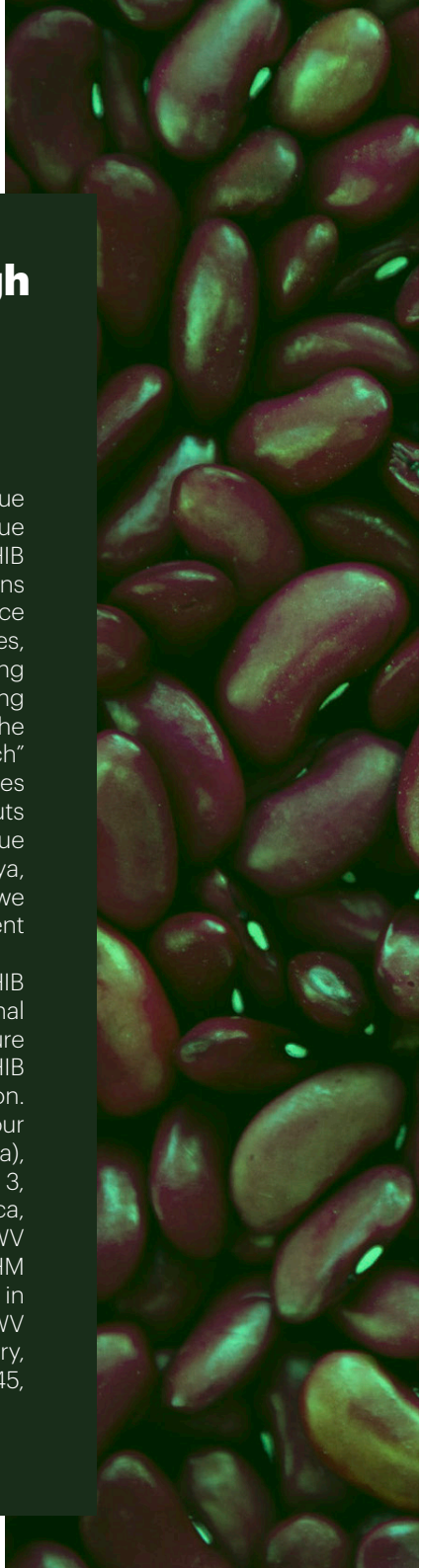
FARA is leading the Enabler Compact for Capacity Development and Technology Outreach (CDTO) complementing the commodity compacts, such as the High Iron Bean (HIB) led by Alliance through the Pan Africa Bean Research Alliance (PABRA). PABRA acts as a process facilitator in the delivery of the proven bean technologies at scale.

FARA has so far supported the commodity compacts through training of trainers (TOT) for Innovation Platforms (IPs) facilitators to help establish IPs as the main model for operationalizing TAAT interventions on the ground. In addition, the CDTO Enabler Compact is supporting the compacts develop modular outreach materials for scaling of technologies within these local innovation platforms. Instruments have also been developed to assist the IPs identify their capacity development needs.

Brief overview of the High Iron Beans (HIB) Value chain under TAAT

High Iron Beans is one of the commodity value chains supported under TAAT. The HIB Value Chain compact aims at increasing the HIB productivity from 0.8 to 1.2 MT/ha for bush beans and 1.5 to 2.5 MT/ha for climbing beans, produce additional 800,000 MT of HIB in target countries, create access to seed, growing and consuming HIB for 2 million households. Besides increasing productivity and creating access to seeds, the project using the "Commodity Corridor Approach" works at enhancing business opportunities and investments for the youth through inputs distribution and access to markets and value addition for grain. Burundi, DR Congo, Kenya, Malawi, Rwanda, Tanzania, Uganda and Zimbabwe are the target countries for large scale deployment of the HIB technologies.

Across the eight countries, 31 bio-fortified HIB varieties have been released by the National Agricultural Research System (NARS) to ensure that smallholder farmers have access to these HIB technologies, for scaling up and commercialization. The technologies released include: Kenya, four varieties (Angaza, Nyota, Faida, Metameta), Uganda, 5 (Narobean 1, Narobean 2, Narobean 3, Narobean 4c, Narobean 5C), in Tanzania, 3 (Jesca, Selian 14, Selian 15), in Burundi, 3 (MAC 44, RWV 1129, Moore88002), in DR Congo, 5 (MAC 44, HM 21-7, RWR 2154, Namulenga, RWV 1129, MAC 44), in Rwanda, 5 (RWV 2269, RWV 2887, RWV 2361, RWV 3316, MAC44), in Zimbabwe, 3 (NUA45, Cherry, Sweet Violet) and in Malawi, 3 (NUA 35, NUA 45, NUA 59).



The good agricultural practices (GAPS) promoted by the intervention include, seed dressing, Climate Smart Agriculture (CSA) practices, mechanization, use of organic and inorganic fertilizer application, pest and disease management, use of herbicides as well as post-harvest management.
The target countries have continued to successfully achieve wide adoption of the technologies by following different implementation mechanisms including, leveraging existing PABRA partnerships in two bean research networks in eastern and southern Africa (East & Central Africa Research Network (ECABREN), and Southern Africa Bean Research Network (SABRN).

The Bean Corridor approach is widely adopted in the eight countries in implementation of market-driven transformation of rural agriculture. It focuses on "bean flow" business activities along the value chain, and establishment of HIB technology delivery platforms which implement specific country work plans.

Business Opportunities Identified in the High Iron Bean Value Chain

The Bean Corridor approach is stimulating a number of business opportunities along the bean value chain including access to better seed by farmers, and creation of investment and job opportunities along the bean value chain. The "bean corridors" are characterized by three major hubs: production, distribution and consumption hubs (Figure 1).

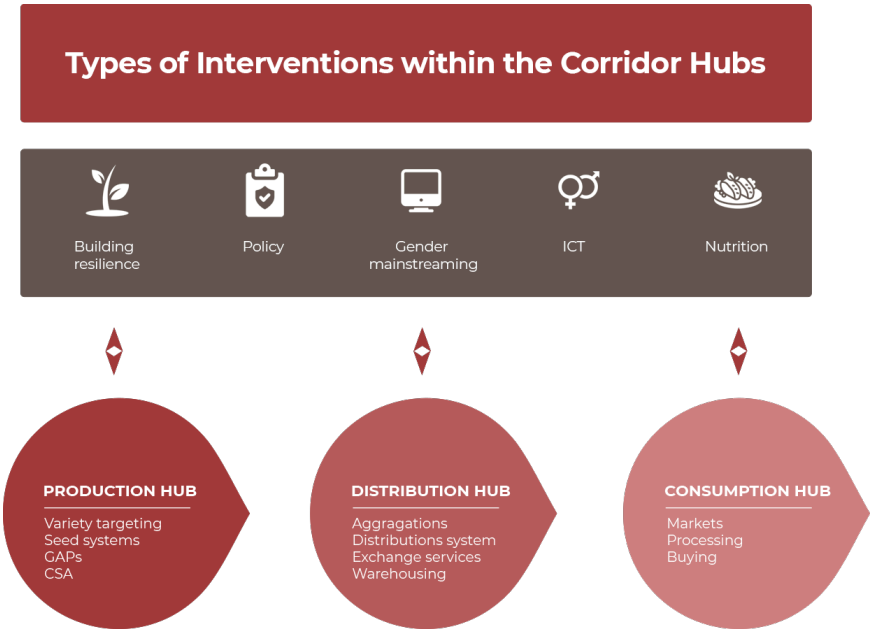


Figure 1: Business Opportunities in the HIB production, distribution and consumption hubs

In the production hubs large volumes of beans are produced and supplied to distribution hubs, which include product distribution centers, aggregation centers, warehouses, storage points, exchanges services in order to distribute beans to consumers; and finally from distribution hub the products are distributed to consumption hubs. Throughout this path are business opportunities identified especially for youth and women including input provision, processing, packaging, distribution, retailing, transportation, warehousing, bean grain dealings etc.

The technology with a potential for commercialization

The intended goal for commercialization of HIB is to reduce malnutrition levels through addressing the nutritional well-being of consumers. Among the technologies released, Nyota HIB is one of the varieties with high potential for commercialization. Some of the key attributes of the variety (Figure 2) include maturity within 60-70 days (less than three months), production of 1.4 to 2.2 MT/ha and suitability in the arid and semi-arid lands (ASALs) and cold dry highlands. From nutritional perspective Nyota grain has high iron content (>95 ppm) and high zinc content (>39ppm) and has low phytic acid (meaning low flatulency upon consumption). Further, Nyota grain is fast cooking compared to most beans and good for making bean flour.

Figure 2: The Nyota HIB crop and grain

The key factors contributing to the successful adoption and commercialization of the HIB technology include: supportive county governments, organized farmers groups and cooperatives, experience in production and marketing of beans, active development organizations for awareness creation, seed distribution and grain marketing and strong private sector partnership for seed production and distribution, agro-inputs distribution and grain offtaking.

The Business path-ways towards commercialization of High Iron Bean

The Bean Corridor Approach is a platform which aims at eliminating bottlenecks in the bean value chain, helps improve the business environment, and links all the stakeholders (public and private) in an enhanced bean business ecosystem for improved incomes and livelihoods. The Bean Corridor Approach provides multiple opportunities for business (Figure 3) particularly for youth and women towards realizing this objective.

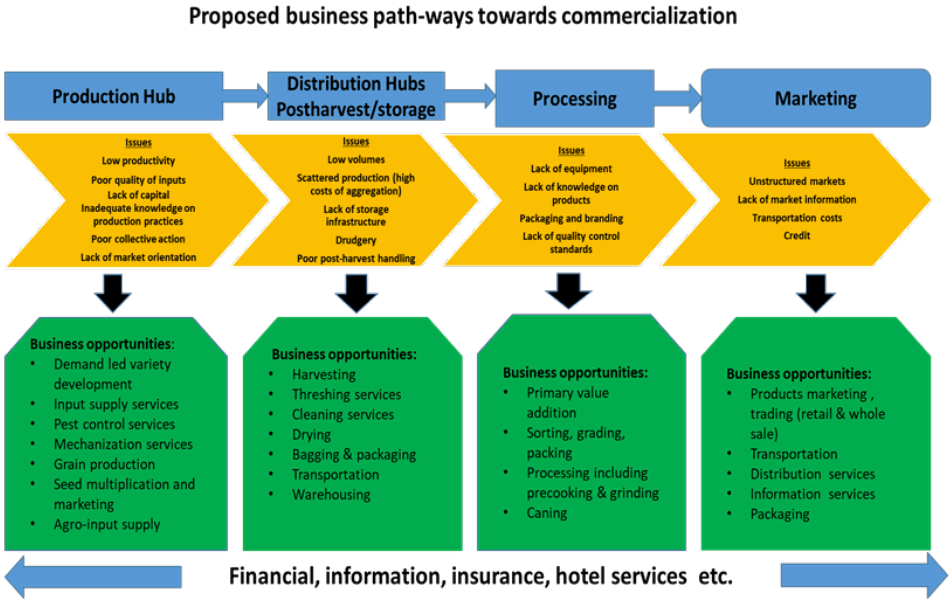


Figure 3: The business path way towards commercialization in the HIB value chain

The different value chain nodes/hubs (production, distribution and consumption) have business opportunities in collaboration with different actors including private sector. It also supports particularly, women and youth (including young women) to tap into the business opportunities at the stages of production, distribution, processing and marketing of HIB beans as they address the unique issues within each node. Linking them with the right markets such as processors, restaurants and organized consumer groups and financial, insurance and information sources could revamp business benefits for the agro-entrepreneurs.

Experience from the field

Kaplomboi Rotu Farmers' Cooperative Society from Bomet County, Kenya with a total number of 306 members (201 women and 105 male), planted approximately 130 acres of Nyota bean variety during the off season period of June to September 2020. From that acreage the Cooperative expected to harvest 100 MT of grain for sale to a major grain offtaker and in the local market within the County. Some of the harvest would be cleaned, dried and reserved for use as seed by the members in the subsequent season.

Figure 4: Nyota HIB variety in the field

Contact address:

If you are interested in growing High Iron Bean, please contact the following institutions and people: Mr. Justin Mabeya (CIAT) via J.Machini@cgiar.org

If you want to learn more about High Iron Beans production please visit the following sites: http://www.pabra-africa.org/ and https://ciat.cgiar.org/

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