



SEED VALUE CHAINS to Support Sustainable Intensification in Tanzania

Synopsis

This brief is based on a value chain survey carried out on the maize and legume seed sectors in Tanzania. The results showed that the majority of maize farmers in the surveyed districts are still using recycled seed. An important development is that the seed sector has opened up in recent years and there is growing private sector participation. Nevertheless, inefficient supply chains and low purchasing power were the two main challenges of seed markets in Tanzania. In the long-term, increasing the supply of these key inputs through greater participation of the private sector players is important. Second, strengthening the role of the public sector by focusing on the issues of sector governance, training, and research and foundation seed production will be crucial for success. On farmers' weak purchasing power, a strong credit system is inevitable. Innovations to deliver such credit to smallholder farmers are needed.



Maize and legume sector in Tanzania: An overview

The smallholder sector remains largely a low technology and subsistence affair. To increase production, incomes, and employment opportunities, Tanzania's smallholder farmers need to address these issues to move from subsistence to more commercially oriented farming. Noteworthy is that smallholder sector is the backbone of maize production and constituted 95 percent of maize producers on 3 million hectares (ha). Yet yields are generally low at 1.2 tons/ha on an average farm size of 0.7 ha. Comparatively, on the larger farms, yields (estimated at 5.5 tons/ha) are nearly five times those on smallholder farms. Legumes are an important category of crops in Tanzania. Pigeonpea in particular is growing in importance and predominates in the northern zone (Babati district), central zone

(Kondoa district) and southern zone (Mtwara and Lindi districts). Common beans (*Phaseolus vulgaris*) constitute the most important pulse crop in terms of supply of plant proteins, calories and farm income. Consumption of common beans has steadily increased without a corresponding increase in production. Common beans is largely grown and marketed by smallholder farmers, mostly women. Therefore, maize and legumes are an important group of staple crops that are central to food, nutrition and economic security of many people in the country. Access to high quality seeds of good varieties is important as part of the intensification of maize-legume intensification farming in Tanzania.

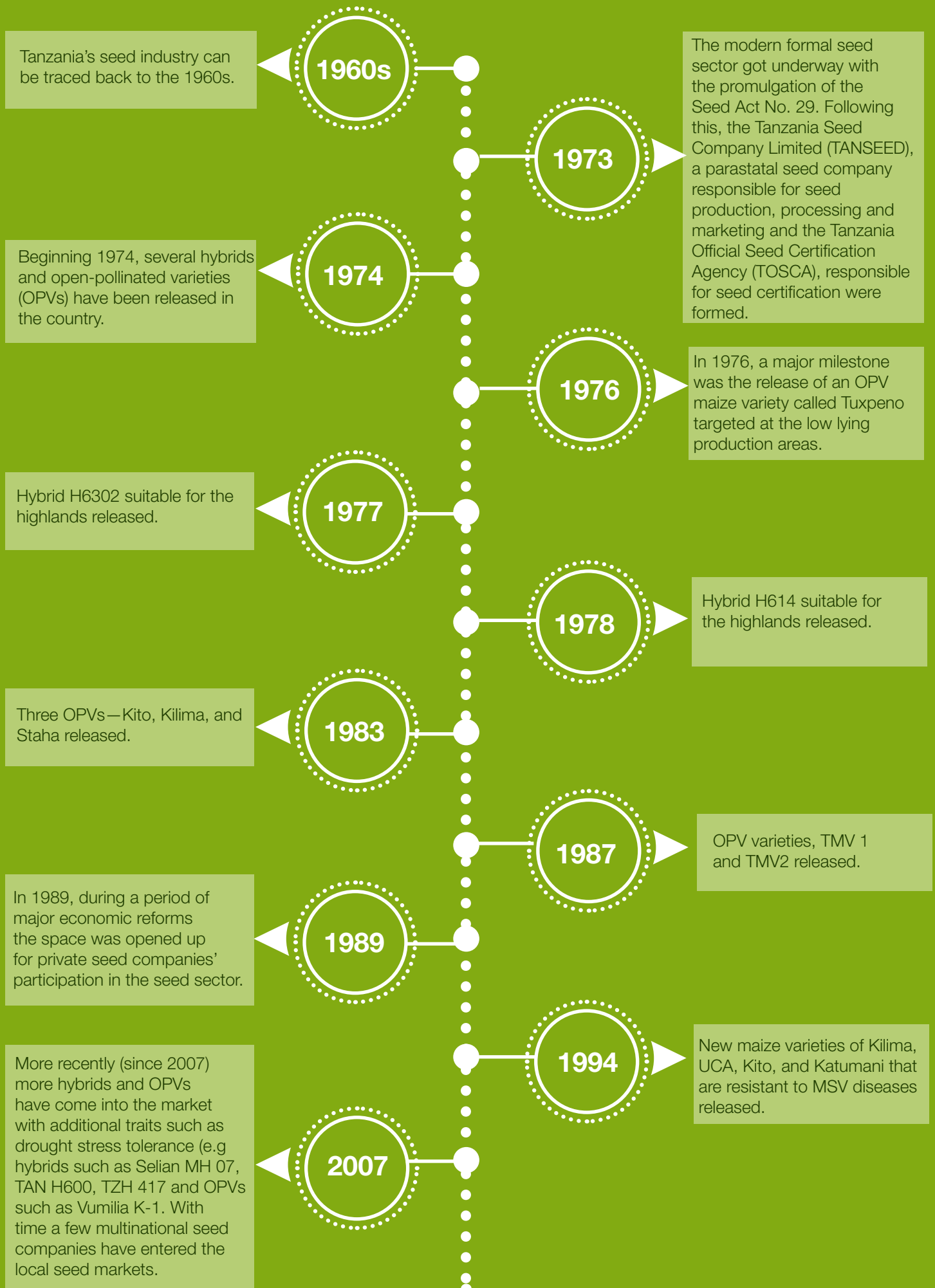
For More information contact:

Ruth Madulu: Mikocheni Agricultural Research Institute (MARI), Dar es Salaam, Tanzania. ruthmadulu@yahoo.com.

Contributors

Theresia Gregory: Selian Agricultural Research Institute (SARI), Arusha, Tanzania. theresiagregory@yahoo.com; **Shadrack Mbatia:** Selian Agricultural Research Institute (SARI), Arusha, Tanzania. mbatias@yahoo.co.uk; **Paswel Marenya:** International Maize and Wheat Improvement Center (CIMMYT), Addis Ababa, Ethiopia. p.marenya@cgiar.org.

SEED SECTOR DEVELOPMENT



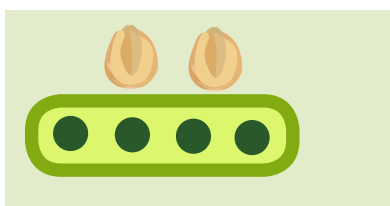
Box 1: Seed Supply Chain: Actors and their roles in maize seed value chains in Tanzania



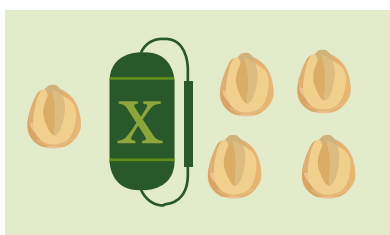
Research and production of foundation seed: The breeding activity in Tanzania is largely a public sector affair typical of many seed sectors in Africa apart from South Africa. National Agricultural Research Organisations (NAROs) have the mandate to conduct crop research aimed at the development of varieties suitable to different agro ecological conditions. Apart from producing breeder (basic) seed, NAROs also have the role of providing agronomic package to the public.



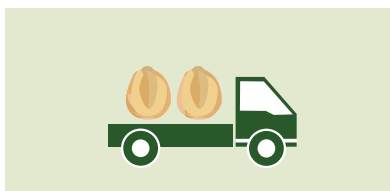
Governance and oversight: The Tanzania Official Seed Certification Institute (TOSCI) has a primary oversight role in the seed sector in the country. The main functions of TOSCI include seed quality control and certification, which involve variety testing and registration. TOSCI carries out control analysis of varieties to be released by conducting Distinctiveness, Uniformity and Stability (DUS) tests. Furthermore, it carries out seed testing in the laboratory before issuing certificates permitting the seeds to be supplied to the Agricultural Seed Agency (ASA) for production of foundation seed.



Production of foundation seed: After quality control tests by TOSCI, the breeders from NAROs are responsible for the supply of breeders' seed to ASA, which is involved in foundation seed multiplication and distribution to private seed companies for seed multiplication.



Seed multiplication: Seed multiplication is done by private seed companies and farmers. The primary function of these actors is seed multiplication and distribution (both hybrid and OPV). The seed is sold either through regional or zonal seed companies' offices or in some cases through input dealers. ASA also participates in seed multiplication and sale. Such sales are made directly to farmers, agrodealers and other players. Farmers are given foundation seed by ASA to produce Quality Declared Seed (QDS). Seed designated QDS are quality certified although to be used as seed although not derived from a formal varietal breeding process.

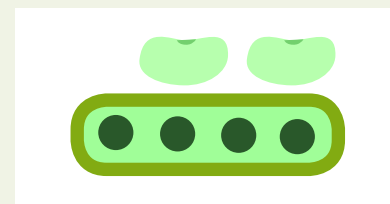


Seed distribution - Agro-dealers/seed dealers: Agro-dealers/seed dealers act as the links between farmers and seed supply from the public and private companies.

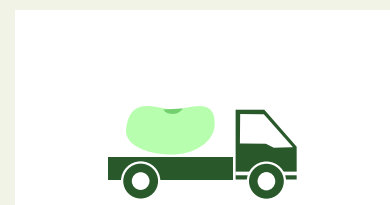
Box 2: Demand and supply scenarios for legume seeds



Research and development : The Directorate of Research and Development (DRD) in the Ministry of Agriculture and Sokoine University of Agriculture, are the key players in bean research in Tanzania. Research institutes from the respective zones (ARI Selian-Northern Zone, ARI Uyole-Southern Highlands, ARI Maruku-Lake Zone), develop breeder seed and recommend bean varieties suitable for their respective zones (Bean Based Technologies BBT). Production of breeder seed is done by breeders from research institutes and SUA. The breeder seeds are sent to ASA for production of foundation seeds.



Production of foundation/certified seed: Foundation seed is mainly produced by ASA and these are then used for seed multiplication. ASA also participates in seed multiplication. Production of Quality Declared Seed (QDS) at farmers' fields has been tried but is limited by low capacity for sufficient quality and quantity.



Seed distribution: ASA, Agro-dealers, stockists and farmers are the main players for seed distribution. Agro-dealers or seed dealers form a link between farmers and seed supply from the public seed sector. They also supply the retail seed industry in the farming communities across the country and cover large areas through both formal and informal seed networks.

Farmer-level information on maize and legume seed use

In well-developed seed markets and where farmers have the purchasing power, the recommendation is to plant fresh hybrid seeds each season. In Tanzania, recycling of hybrid seed has been estimated to be up to three years in some cases. Results indicate that farmers recycle both maize and legumes. In terms of the predominant varieties, the data collected in 2010–2011 on seed type use in Tanzania showed that OPVs (Staha) and hybrid (SC 627) have equal market share of about 30 percent each. Most farmers were found to recycle Staha with a 61 percent frequency. However the hybrids, SC 627 and DK 8031 are for the most part procured from agro dealers (see Fig. 1 and Fig. 2). Jesca bean variety appears to be the most known in Karatu and Lyamungo 85 and 90 series in Mbulu (Fig.3). Similar patterns are repeated in the data about usage (Fig 4). Still, about 10 percent of hybrids are still recycled. For the legume crops, the main source of seed is from seed saved from previous harvest (Fig. 5 and 6).

Figure 1: Top four maize varieties known to farmers in 2010 (%)

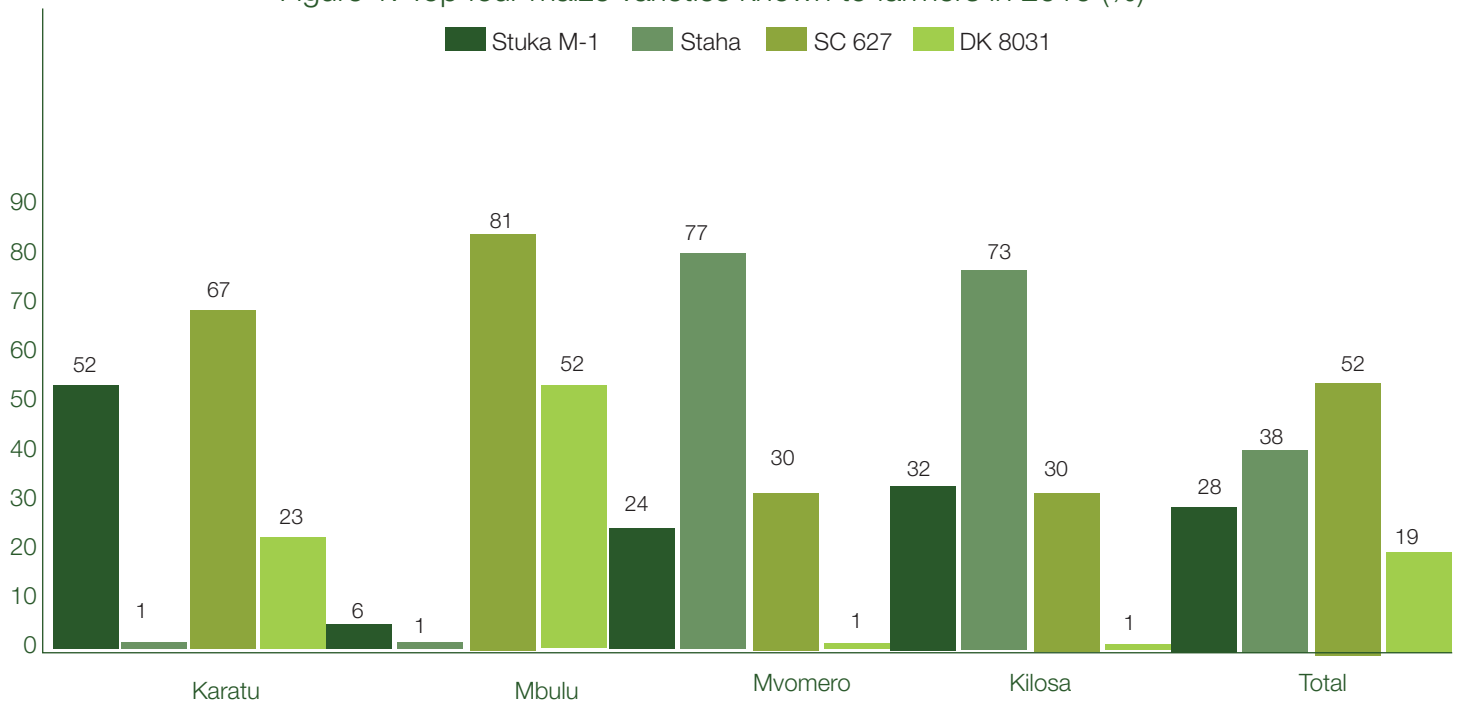


Figure 2: Top four maize varieties planted by farmers in 2010 (%)

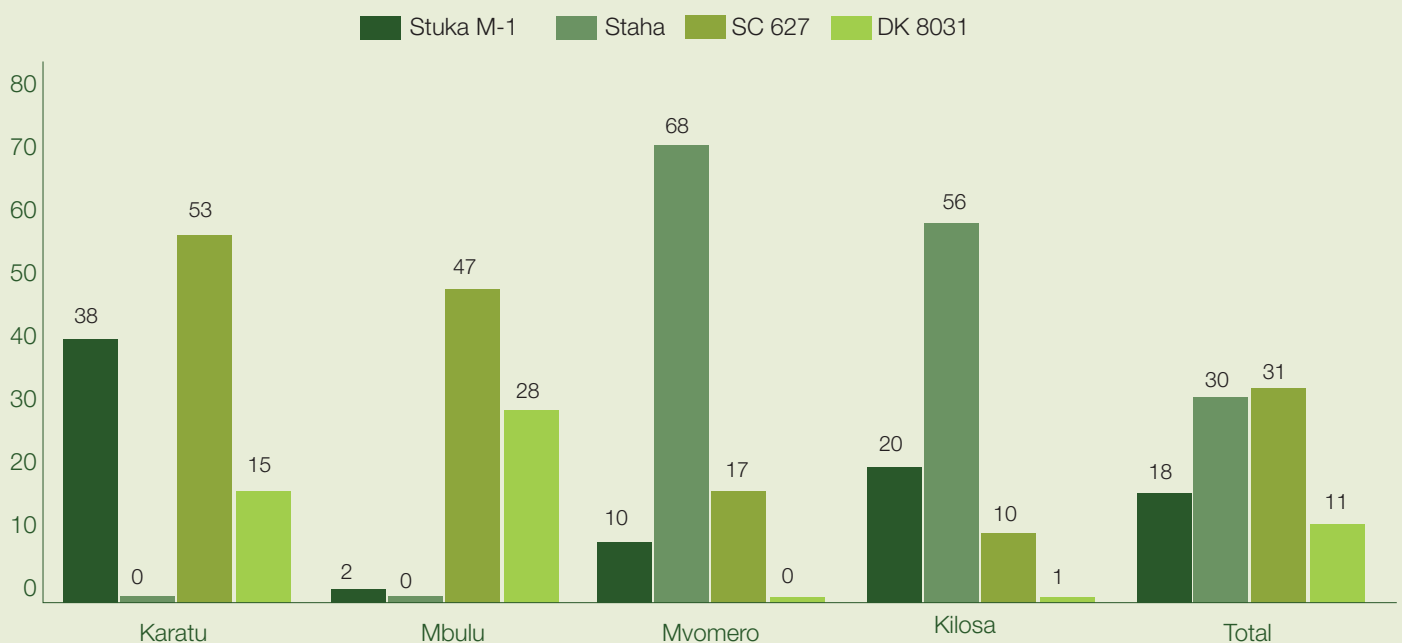


Figure 3: Top four bean varieties known to farmers in 2010 (%)

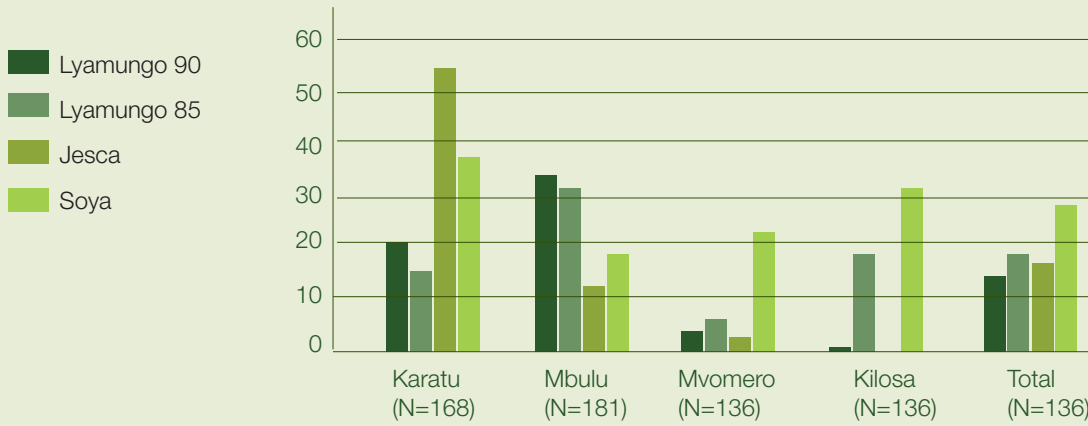


Figure 4: Top four bean varieties planted by farmers in 2010 (%)

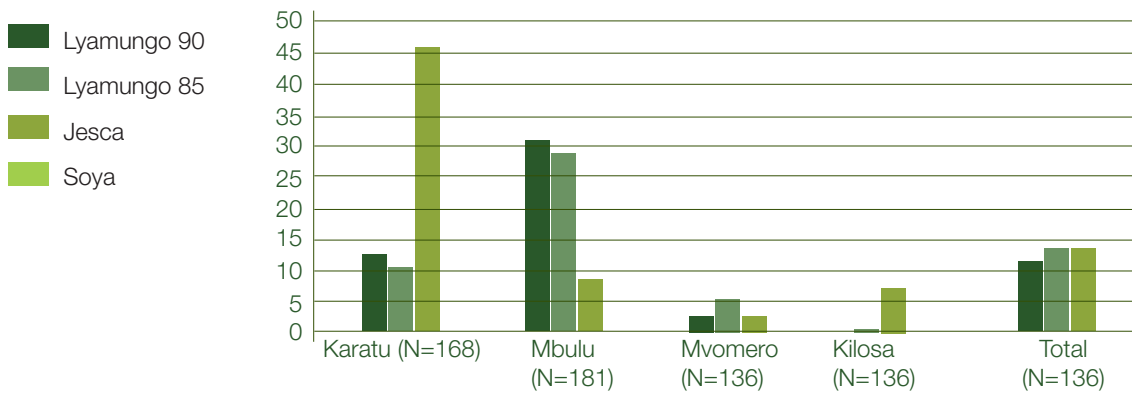


Figure 5: Farmer sources of maize seed by variety (%)

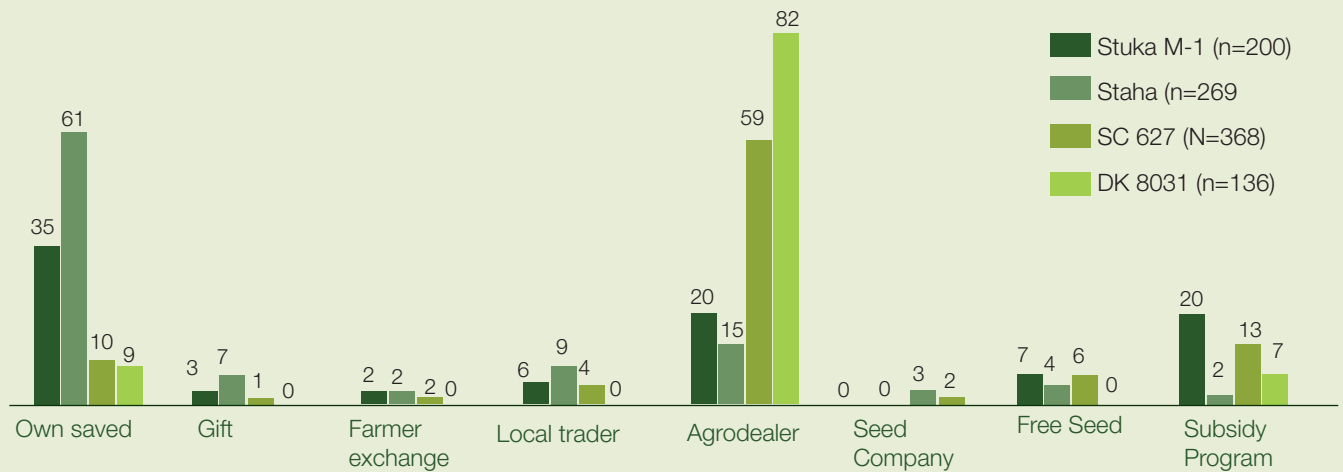
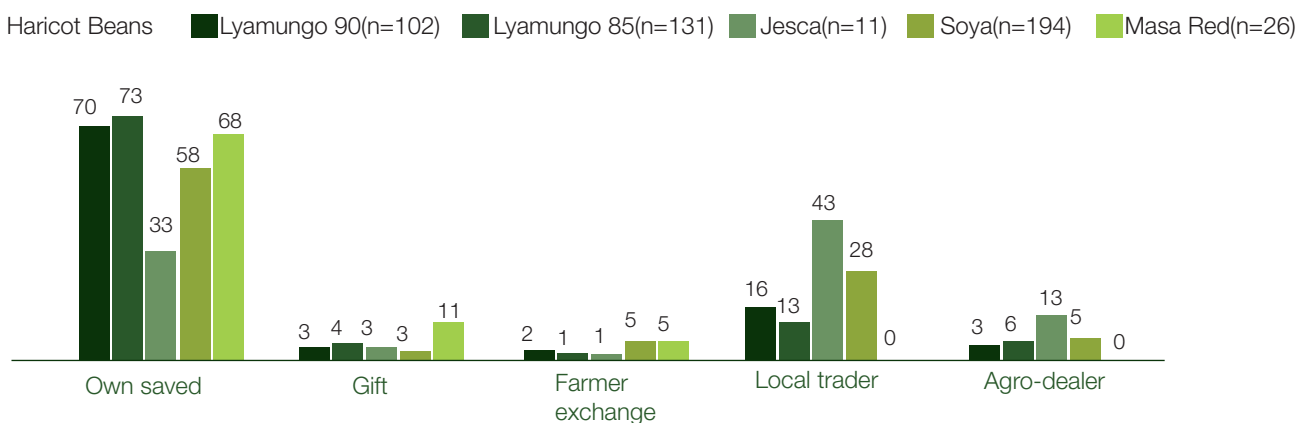


Figure 6: Farmer sources of bean seed by variety (%)



Access to seed and agricultural markets

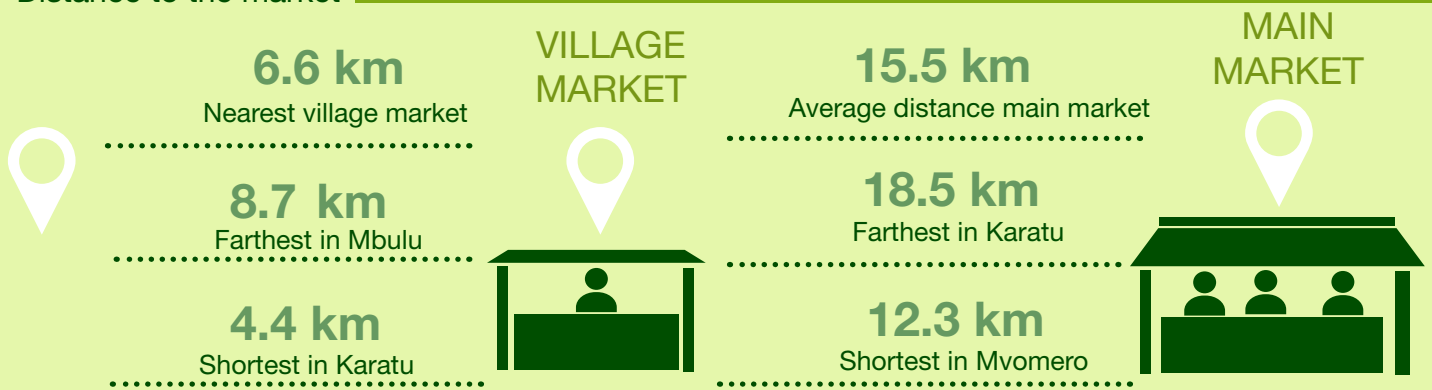
One of smallholders' major impediments to commercial oriented farming in Tanzania is lack of access to reliable and lucrative markets. Local rural markets are small, and trading in distant urban markets is not profitable due to high transportation costs. Smallholder farmers also face challenges of gaining access to credit, high-quality inputs, improved technology, information on good agricultural practices, and business development services. Lack of infrastructure also prevents farmers from accessing markets even when there are buyers.

In the SIMLESA project sites, household surveys done in 2011 showed that the average walking distance to the nearest village market was about 6.6 km. The average distance to the nearest village market was farthest in Mbulu (8.7 km) and shortest in Karatu (4.4 km). The average transport (one way) cost to the village market was higher in Mbulu than any other district (TSh. 489) compared to TSh 229 in Karatu district. Another indicator of the ease (difficulty) of

market access was that the main means of transport to the local markets was walking (46 percent) and use of bicycles (11 percent), while just a few (3.1 percent) respondents reported using a vehicle transport.

The average walking distance to the main market for the four districts was about 15.5 km reflecting diversity in infrastructure and market access, these distances were 18.5 km in Karatu, 17.8 km in Mbulu district and lower in Kilosa (13.4 km) and Mvomero (12.3 km). The majority (57 percent), considered their road condition to be of below average/poor quality and 38 percent of the respondents reported to having a road of average quality and 5 percent reported having a very good road to the main market. On average, the road to the main market is passable to trucks for about 9.5 months within a calendar year. However, there is no information on whether the two bad months when the road is not passable occur in the middle of the marketing season when farmers need to take produce to the market.

Distance to the market



Transport cost to the market in 2010



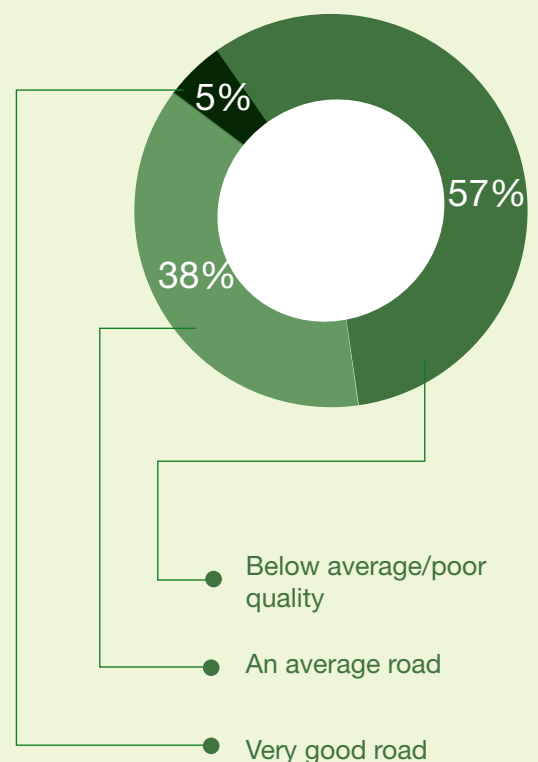
TSh. 489

higher in Mbulu than any other district

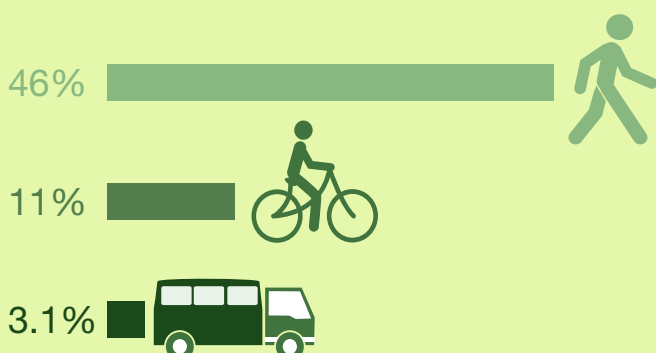
TSh 229

in Karatu district

State of the roads



Means of transport to the local markets

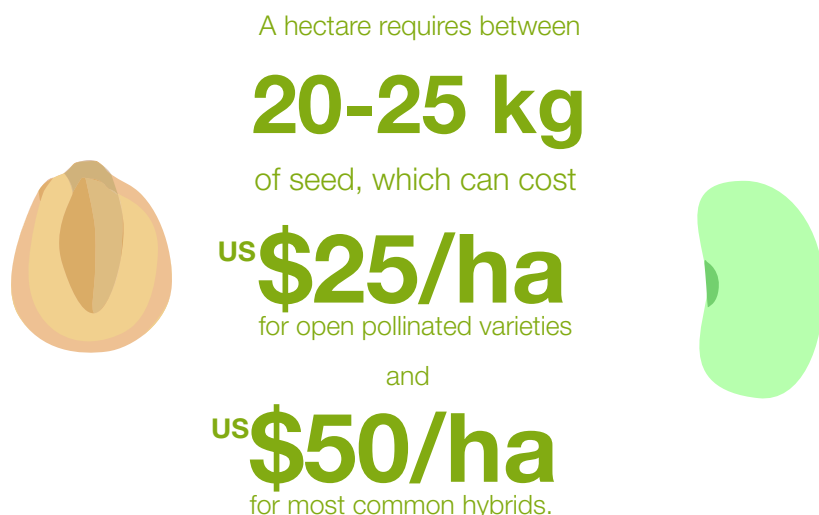


Messages to inform agricultural policy for seed sector development

This brief outlines the main features of seed value chains in Tanzania. The aim was to produce an overview of the seed value chains and identify some constraints to these value chains to inform some possible policy and agribusiness actions. The results suggest that although the seed sector has opened up in recent years and now there is private sector participation, seed supply and use remain inconsistent with many maize farmers in using recycled seed.

In terms of seed sector business development, purchasing power and limited infrastructure are some of the constraints. While seed costs are typically estimated to be modest, a hectare would require

between 20-25 kg of seed, which can cost about US\$25/ha for open pollinated varieties and US\$50/ha for most common hybrids. In an environment of US\$700 annual per capita income, seed expenses for one hectare would easily constitute the equivalent of one month worth of income for a farming household. This weak purchasing power calls for a strong credit system. Innovations around microfinance to deliver such credit are certainly called for. In the long run, increasing the supply and competition in seed markets to make more seed available to many farmers at prices they can afford represents one of the most sustainable solutions.



In an environment of **US\$700 annual** per capita income, seed expenses for one hectare would easily constitute the equivalent of one month worth of income for a farming household.

Further readings and literature consulted

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Acknowledgments

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ETHIOPIA



KENYA



MALAWI



MOZAMBIQUE



TANZANIA



AUSTRALIA

