



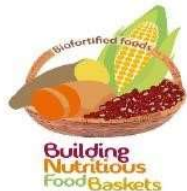
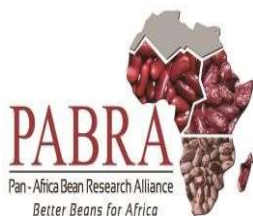
Agricultural Research Institutes – Selian, Uyole and Maruku Released Nine (9) Improved Common Bean Varieties in January 2018.

Common bean (*Phaseolus vulgaris*) plays a principal role in the livelihoods of smallholder farmers in Tanzania as food security crop and source of income. It is the leading leguminous crop, accounting for 78% of land under legumes (FAO, 2013). Per capita bean consumption is 19.3kg, contributing 16.9% protein and 7.3% calorie in human nutrition and 71% of leguminous protein in diets. It is estimated that over 75% of rural households in Tanzania depend on beans for daily subsistence (Grisley, 1991; Rugambisa 1990 & Kalyebara *et al.*, 2008). The crop residues are used as livestock feed and source of organic matter to enhance soil fertility (Vaclav, 1999 & Romney *et al.*, 2003). Tanzania ranks 5th worldwide in bean production and is the leading producer of beans in Africa which is produced almost entirely under intercropped systems with maize and other crops (FAOSTAT, 2014 & Binagwa *et al.*, 2014). Smallholder farmers who operate 1 to 5 acres on the average produce over 70% of the national bean production in Tanzania for own consumption and for markets (about 40% of the harvests are marketed by households). The main bean production areas in Tanzania are in the northern regions; Arusha, Kilimanjaro and Manyara, great lakes/western; Kagera and Kigoma the southern highlands; Mbeya, Iringa and Rukwa (Katungi *et al.*, 2010 & Xavery *et al.*, 2006).



Photo 1: Selian Bean sub-program researchers evaluating performance of 186 bean genotypes on-station Arusha. Photo credit to Erick Msangi.

Among of the objective of Agricultural Research and Development (ARD) in Tanzania is to promote sustainable food security, income generation, employment, growth and export enhancement by developing and disseminating appropriate and environment friendly technologies, with emphasis on sustainability of production systems and maintaining the productivity of natural resources. Therefore, National Bean Research Program contributes to this overall objective by developing Bean Based Technologies (BBT) particularly improved bean varieties with agronomic and market traits preferred by bean stakeholders that resist/tolerate the primary biotic and abiotic stresses in the country while enhancing the genetic gains of the bean varieties (Binagwa, 2016).



Selian Agricultural Research Institute (SARI) is one of the agricultural research institutes in the Research and Development Division under the Ministry of Agriculture. SARI operates across northern zone which covers a total area of about 104000sq. km and has a population of over 5 million people northern zone and has >20 districts which are characterized into 17 Farming Systems. SARI has given mandate to define its research and development agenda, resource mobilization, allocation, implementation, monitoring and evaluation. Its research mandate is focused on annual food crops. The major crops being maize, common beans, wheat and barley. It also involved in soil and fertility research, Socio economics and farming systems research (SARI annual report, 2016).

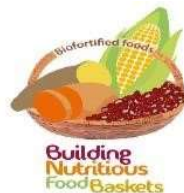
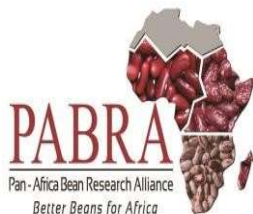
Selian Agricultural Research Institute through Bean sub-programme together with partners including CIAT/PABRA, ARI-Uyole, ARI-Maruku, Local government authorities, Farmers and public/private organizations has evaluated, tested and released the early maturing (2) first white canning beans (3), high iron and zinc (2) and high yield (2) bean varieties in a year of 2018.







Photo 2: Farmers participatory variety selection at Kitengule Karagwe district in Kagera region. Photo credit to Alen Natai.

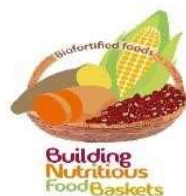
Considering that the common bean is the most important grain legume crop grown and consumed in Tanzania, these improved varieties are expected to provide a cheap source of micronutrient nourishment to the most vulnerable group which constitute of rural farmers to improve health and livelihood through





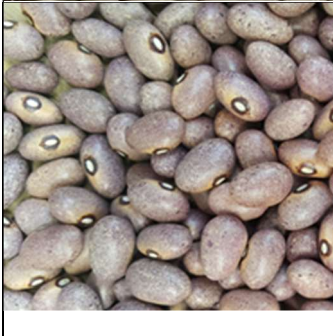
growing and consumption of these new bean varieties. Apart from this, the three canning bean varieties (SELIAN 09, SELIAN 10 & SELIAN 11) have canning quality for industries and can easily packed as pre-cooked beans in different pack sizes for consumption and will contribute to Tanzania slogan of Industrialization.

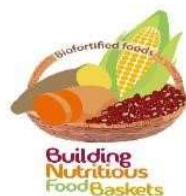
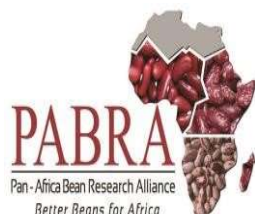


The newly release bean varieties with corresponding attributes.

	<p>Name: SELIAN 14</p> <ul style="list-style-type: none"> ▪ Growth habit: Climber ▪ Medium seeded ▪ Iron: 75.17-85.35ppm ▪ Zinc: 26.38-41.65ppm ▪ Yield potential: >2000 kg/ha ▪ Maturity: 90-110 days ▪ Best suited for mid to high-altitude area ▪ Cooking time: 19-40 minutes ▪ Resistance/tolerant: Anthracnose and common Bean Virus
	<p>Name: SELIAN 15</p> <ul style="list-style-type: none"> ▪ Growth habit: Climber ▪ Large seeded ▪ Iron: 74.22-81.35ppm ▪ Zinc: 27.38-42.55ppm ▪ Yield potential: >2000 kg/ha ▪ Maturity: 90-110 days ▪ Best suited for mid to high-altitude area ▪ Cooking time: 19-40 minutes ▪ Resistance/tolerant: Anthracnose and Bacterial blight
	<p>Name: SELIAN 13</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Medium seeded ▪ Maturity: 67-75 days ▪ Cooking time: 39-50 minutes ▪ Yield potential: >1200 kg/ha ▪ Best suited for low-mid altitude area
	<p>Name: SELIAN 12</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Medium seeded ▪ Maturity: 67-77 days ▪ Cooking time: 40-50 minutes ▪ Yield potential: >1200 kg/ha ▪ Best suited for low-mid altitude area



	<p>Name: SELIAN 09</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Small seeded ▪ Maturity: 80-90 days ▪ Water uptake 98.53% ▪ Hydration coefficient ratio 1.98 ▪ Yield potential: >1500 kg/ha ▪ Best suited for low-mid altitude area
	<p>Name: SELIAN 10</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Small seeded ▪ Maturity: 80-90 days ▪ Water uptake 100.52% ▪ Hydration coefficient ratio 1.99 ▪ Yield potential: >1500 kg/ha ▪ Best suited for low-mid altitude area
	<p>Name: SELIAN 11</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Small seeded ▪ Maturity: 80-90 days ▪ Water uptake 101.19% ▪ Hydration coefficient ratio 2.00 ▪ Yield potential: >1500 kg/ha ▪ Best suited for low-mid altitude area
	<p>Name: Uyole 17</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Large seeded ▪ Best suited for low-high altitude area (800 -2000masl) ▪ Maturity: 84 days ▪ Yield potential: >1600 kg/ha ▪ Good taste and attractive color ▪ No flatulence
	<p>Name: Uyole 18</p> <ul style="list-style-type: none"> ▪ Growth habit: Bush ▪ Medium seeded ▪ Best suited for low-high altitude area (800 -2000masl) ▪ Maturity: 82 days ▪ Yield potential: >1900 kg/ha ▪ Resistance/tolerant: Bacterial blight, Anthracnose and (Angular Leaf Spot) ▪ Good taste and attractive color ▪ No flatulence



Did you Know

Africa produces 4.8 million MT per year and approximately 70% are produced from sub-Saharan Africa countries?

Top five common beans producing countries in Africa are Tanzania as a leading producer of (1.02 million MT), Uganda (0.88 million MT), Kenya (0.62 million MT), Ethiopia (0.51 million MT) and Rwanda (0.42 million MT)?

Common bean production has increased from 675,000 MT in 2011 to 1,114,500 MT in 2014

The average bean productivity was 0.76ton/ha in 2004 which has increased to 0.98 ton/ha in 2014 and expecting 1.2t/ha by 2020?

Since 1975, Tanzania has released over 30 bean improved varieties with market demanded traits?

More than 5,000,000 farmers (2014-17) have gained awareness on the uses of improved bean seeds with other good agronomical practices by exposing them to new agronomic practices and technologies through sharing leaflets, field days, exhibitions, etc. and has helped to increase production and productivity?

High-iron beans are a highly cost-effective intervention for iron deficiency and anemia.

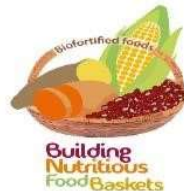
Note: MT=metric tons

Acknowledgement:

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References:

- Binagwa, P.H, Bonsi, C.K, Msolla, S.N. & Ritte, I.P (2015). Morphological and Molecular Identification of *Pythium spp.* Isolated from Common Beans (*Phaseolus vulgaris*) infected with Root Rot Disease. Afr. J. Plant Science DOI: 10.5897/AJPS2015.1359. Vol.10 (1) p.1-9.
- Binagwa, P.H., (2016). State of the Art: National Report: Phaseolus Bean Research Programme. Selian Agricultural Research Institute Arusha – Tanzania.
- FAO, 2013. FAOSTAT database, Retrieved from <http://faostat.fao.org>.



- FAOSTAT (2014). Food and Agriculture Organization (of the United Nations), Statistics Division. (Available at <http://faostat3.fao.org/>).
- Grisley, W (1991). Proceedings of workshop on national research planning for bean production in Uganda. Kampala Uganda.
- Kalyebara M. R., Andima. D., Roger. K and Robin, B. (2008). Improved Bean Varieties and Cultivation Practices in Eastern-Central Africa: Economic and Social Benefits. Centro Internacional de Agricultura Tropical-CIAT. Cali, Colombia.
- Katungi E, Farrow A, Chianu J, Sperling L. and Beebe S. (2009). Common bean in Eastern and Southern Africa: a situation and outlook analysis. International Centre for Tropical Agriculture.
- Nile Basin, 2012. Estimating the Impact of Climate Change on Agriculture in Low-Income Countries. Environ Resource Econ (2012) 52: 457
- Romney, D.L; Thorne, P; Lukuyu, B and Thornton P.K (2003). Maize as food and feed in intensive smallholder systems: management options for improved integration in mixed farming systems of east and southern Africa - Approaches to improve the utilization of food-feed crops, Field Crops Research, Volume 84, Issues 1–2, October–November 2003, Pages 159–168
- Rugambisa, J. (1990). Marketing of beans in Sub- Saharan Africa and impact of market on new cultivars. In: Smithson, J.B. Progress in improvement of common bean in Eastern and Southern Africa. Proceedings of the Ninth SUA/CRSP and Second SADCC/CIAT Bean Research Workshop, Sokoine University of Agriculture, Morogoro, Tanzania, 17-22 September, 19 1990. CIAT Africa Workshop Series No. 12.
- Vaclav, S. (1999). Crop Residues: Agriculture's Largest Harvest Crop residues incorporate more than half of the world's agricultural phytomas. Department of Geography at the University of Manitoba, Winnipeg R3T 2N2, Canada. American Institute of Biological Sciences.
- Xavery P, Ngulu F, Kasambala S. and Muthoni R. (2006). Factors affecting the uptake of bean based technologies in northern Tanzania. Unpublished report.

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***Corresponding Author address;**

Papias H. Binagwa
 National Lead Scientist – Phaseolus Bean Research Programme Selian Agricultural Research Institute, P.O. Box 6024, Arusha – Tanzania.
 Email: hongera1984@yahoo.com
 Cell: +255764951596; WhatsApp: +2556858856762
 Skype: Papias. Hongera

