

The Tropical Legumes projects were a series of initiatives that developed and distributed high-yielding, climate-resilient food legume varieties to millions of poor farmers across Africa and Asia. Implemented over a 12-year period with US\$67 million in funding from the Bill & Melinda Gates Foundation, the projects were led by three international CGIAR research organizations – the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the International Center for Tropical Agriculture (CIAT), and the International Institute of Tropical Agriculture (IITA) – and executed by national and regional partners.

In Uganda, the main partner was the National Agricultural Research Organization (NARO). The projects also collaborated with several other organizations to exchange knowledge and resources, including the Alliance for a Green Revolution in Africa and the Integrated Seed Sector Development program.



CONTEXT

The Tropical Legumes initiatives prioritized improved common bean and groundnut varieties in Uganda. In 2018, the country produced more than 1,000,000 tons of common bean grain, the second highest in Africa, and over 240,000 tons of groundnut grain.^a However, despite the economic and nutritional benefits of these two crops, they could play a far greater role in the national economy and help to address Uganda's malnutrition burden, which afflicts 29% of under-fives with stunting and 28% of women of reproductive age with anemia.^b

In 2018, Uganda was the second highest producer of common bean grain in Africa, with more than 1,000,000 tons produced.^a



APPROACH

STRENGTHENING BREEDING CAPACITY

New irrigation facilities and other infrastructural improvements have been key to improving the performance of Uganda's crop breeding programs. Another area of investment was capacity strengthening, offering training sessions on genomics, molecular breeding, data collection, and other critical skills that will help the country's crop breeders meet future climate challenges. As a result of the support provided by the Tropical Legumes projects, **60 groundnut crosses and 75 common bean crosses were being made each year by 2018.^c**

DEVELOPING FARMER-PREFERRED VARIETIES

With support from the Tropical Legumes projects, Uganda's crop improvement programs developed climate-resilient varieties of common bean and groundnut. These new varieties are high-yielding, drought-tolerant, and resistant to a range

CROP FOCUS:

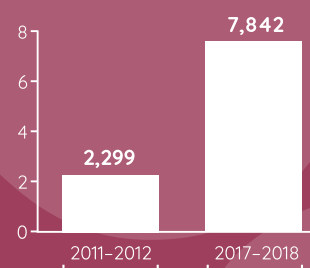


Common
bean



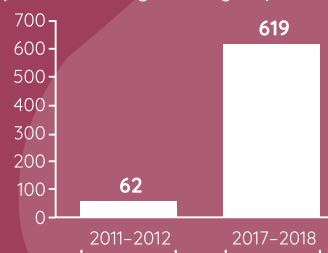
Groundnut

Improved seed produced
(annual average tons/year)^c



Common bean

Improved seed produced
(annual average tons/year)^c



Groundnut

^a FAOSTAT: www.fao.org/faostat/en

^b Global Nutrition Report 2020

^c Tropical Legumes III, Final Narrative: <https://tropicallegumeshub.com/rc/tropical-legumes-iii-final-report/>

UGANDA: FACTSHEET

of pests and diseases, as required by Uganda's farmers. Between 2015 and 2018, Ugandan communities hosted **more than 800 awareness-raising events:** demonstration trials, field days, and exhibitions to promote the new common bean varieties.^c

IMPROVING SEED DELIVERY SYSTEMS

Seed delivery systems were enhanced through public-private partnerships and the inclusion of local seed producers, including farmers, farmer groups, and informal seed companies. **Over 19,400 people received training** in seed production, management, and marketing.^c

OUTCOMES

As a result of the interventions of the Tropical Legumes projects, an annual average of **2,299 tons/year** of certified common bean seed was produced in the two-year period 2011–2012, increasing to **7,842 tons/year** in 2017–2018. For groundnut, over the same period, an annual average of **62 tons/year** was produced in 2011–2012, which increased to **619 tons/year** in 2017–2018.^c

The Tropical Legumes initiatives estimate^d that over the two-year period 2011–2012, the amount of common bean seed produced would have been sufficient for **164,000 households** per year on average to plant the seed, but by 2017–2018 this figure had grown to **560,000 households**. For groundnut, the annual average increased more than tenfold, from **3,000 households** for the period 2011–2012 to over **30,000 households** in 2017–2018.

Estimates^d demonstrate the growing economic value of the improved varieties. In 2011–2012, the improved seed was sufficient to produce common bean grain worth an average **US\$26 million per year**, increasing to **US\$109 million** in 2017–2018. For groundnut, the equivalent figures grew from **US\$209,000** in 2011–2012 to just over **US\$2 million** in 2017–2018.

Specific efforts were made to increase women's adoption of the new varieties. These centered on a training program that sensitized crop breeders and social scientists to gender issues, and studies that explored the traits most attractive to women. Beans that took less time to cook were particularly attractive – as they reduced fuel consumption and freed up time for other activities.^c

LOOKING AHEAD

The gains of the Tropical Legumes initiatives are now being consolidated by a new project, Accelerated Varietal Improvement and Seed Delivery of Legumes and Cereals in Africa (AVISA), which is building on the experience of its predecessors to continue enhancing the efficiency and effectiveness of breeding programs and seed systems in Uganda and other African nations. Remaining challenges include the limited availability of early generation seed, the slow pace of variety development, the limited capital available for seed producers, and the insufficient amount of seed produced by the private sector. In order to address these challenges, future work will focus on efforts to catalyze private sector investments, expanding seed distribution networks, and developing and strengthening links between key players such as farmers, processors, seed companies, and seed dealers.

^d Calculations are based on an average plot size of 0.2 hectares per household, seeding rate of 0.10 tons/hectare (groundnut) and 0.07 tons/hectare (common bean), and a price/ton of US\$452.70 (groundnut) and US\$601.70 (common bean). These prices are averages taken from FAOSTAT figures for 2007–2017.

**TROPICAL
LEGUMES HUB**

Find out more about the
Tropical Legumes projects at
www.tropicallegumeshub.com

PARTNER:



LED BY:

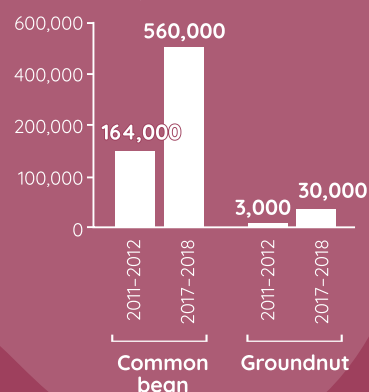


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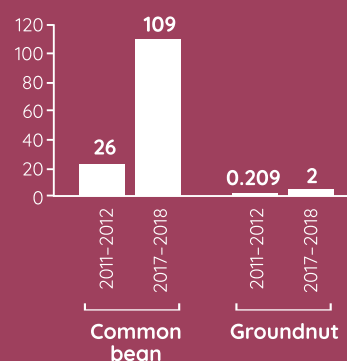
Households

(estimated number that could grow the improved seed annually, in thousands)^d



Economic value

(estimated average annual value of grain produced from the improved seed, in US\$ million)^d



Find out more: Varshney, R.K., Ojiewo, C., Monyo, E. A decade of Tropical Legumes projects: Development and adoption of improved varieties, creation of market-demand to benefit smallholder farmers and empowerment of national programmes in sub-Saharan Africa and South Asia. *Plant Breeding* 2019; 138: 379–388.