

CRS Farmer to Farmer Ethiopia

Bacterial Inoculant Increases Bean Yields and Improves Soil Fertility in Southern Ethiopia

PROJECT LOCATION	Ethiopia
TIMEFRAME	2019-2023
COUNTRY PROJECT	Modernizing Agriculture
HOST	Sodo Catholic Secretariat (SCS)

PROGRAM STATISTICS

191

Number of assignments conducted

10,073

Number of people directly trained

120

Number of hosts supported



In southern Ethiopia, the population density is high, and farmers have small parcels of land, which presents a huge challenge for food and nutrition security. Boosting yield is crucial to addressing livelihoods security. With the aim of increasing productivity, Sodo Catholic Secretariat (SCS) requested for volunteer technical assistance on cereals and pulses agronomy.

Prof. Hans Kandel, an extension agronomist from North Dakota State University, travelled to Ethiopia in 2014 and trained 405 (69 female) farmers, host and government staff on modern agronomic practices. While in the field, he observed poor vegetative growth of haricot bean (common bean) and absence of nodules on the roots, and indication that the plants were not fixing sufficient nitrogen from atmosphere to the soil. Prof. Kandel recommended inoculating the bean seeds with rhizobium bacteria before planting.

Prof Kandel assisted the host in identifying and locating the inoculant manufacturer in Addis Ababa. SCS initially purchased and distributed the inoculant to 240 farmers. These farmers recorded increase in grain yields of 20 percent, and large biomass used as livestock feed and organic matter. Increased nodulation was also noted on the bean roots, further proof of nitrogen fixation. The cost was also friendly, and farmers required only 40 ETB (\$1.8) worth of inoculant for half-hectare of land.

Mr. Shanko Anjulo, (pictured) a 50-year-old farmer owns 1.75 ha of land where he grows maize, beans teff, among other crops. the beans are on 0.25 ha of land, and a major source of income for his family.

From his quarter of hectare, he was previously earning less than five quintal of beans. Mr. Shanko is one of the target beneficiaries of SCS and a direct beneficiary of Prof Kandel assignment. **“When I received invitation to attend the training to be provided by a foreigner, I was expecting a per-diem but there was nothing except sharing his knowledge and skill.”**

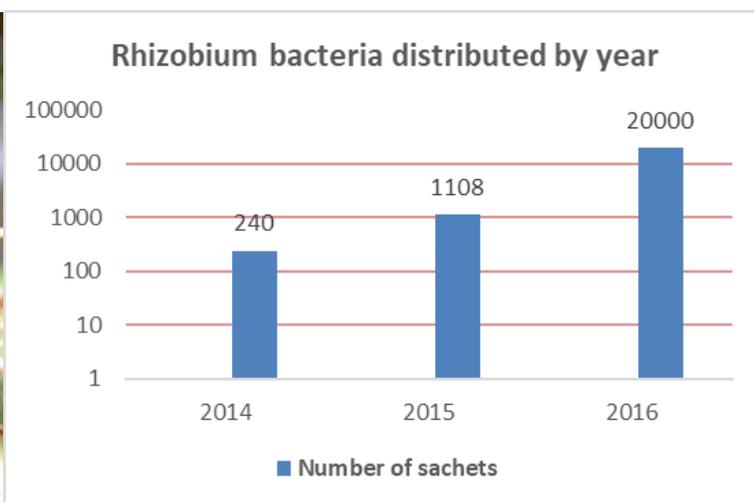
'He further explained that "after the training I rushed to apply the volunteer recommendation because I was suffering from poor productivity of beans and thanks to SCS they provided us the inoculant to try."

Even before the time of harvest, he had observed the difference from the vegetative growth and nodulation. He harvested 6.5 quintals from his 0.25 ha of land, a 30 percent increase. He now allocates more land for haricot beans, has enough to feed the family and earns higher incomes from his land. This success is replicated among many other farmers who were directly assisted as well as the others who adopted the technology once they observed the changes with their peers.

To ensure sustainability SCS signed partnership agreement with N2 Africa*, Damota Farmers' Cooperative Union, MBI, and Hawassa University, and strengthened ties with the government offices of agriculture. The actors are now playing critical roles in disseminating the technology and improving output market linkage. SCS mobilized fund from N2 Africa for technology dissemination and adoption through on farm trials, organizing field days and radio broadcasts. The trend shows that in 2014 only 240 farmers were using the technology, the following year 1,108 farmers have utilized and in (2016) more than 20,000 farmers are using the inoculant. And now the government office of agriculture takeover the promotion of the technology through the extension system and disseminated to more than 76 thousand farmers in many districts of Wolayta and other zones. The increased demand created a business opportunity for agro-dealers in sodo town. Farmers have also started using specific strains of bacterial inoculant for other crops such as faba bean and chickpea.



Roots of haricot bean with nodules



Rhizobium bacteria distributed by year

*N2 Africa: Nitrogen for Africa, is a project focused on putting nitrogen fixation to work for smallholder farmers growing legume crops in Africa