

Landmarks of Rhizobial Inoculant Technology in Ethiopia



N2Africa - Putting nitrogen fixation to work for smallholder farmers in Africa

Overview

- Rhizobial inoculants have been used successfully in world agriculture for about 100 years. Rhizobial inoculation biofertilizers are also considered as one of the best and sustainable soil fertility management interventions in Ethiopia.
- Efforts have been devoted to identify and characterize the efficient forms of local and exotic rhizobial strains for major grain legumes.
- The overall advancement of research on rhizobial biofertilizer in Ethiopia has focused mainly on rhizobium and can be put in three distinct phases: start-up, middle and recent phases.

Start-up phase (Pre 1990)

EIAR and International Foundation for Science (IFS) started collaborative research in 1983.

The alliance has made the first nodule collection and isolation for field pea, faba bean, cowpea, chickpea, soybean, common bean, and lentil from the main growing corridors of Ethiopia.

The rhizobial isolation was done at EIAR-Melkassa; EIAR-Holeta and the present National Soil Testing Center (NSTC) come afterwards.

Middle phase (1991- 2000)

EIAR established separate organizational unit and capacitated with experts and research facilities. Addis Ababa, Hawassa and Haramaya universities joined the national rhizobiology research.

NSTC developed elite isolates for six grain legumes (chickpea, common bean, faba bean, field pea, lentil, soybean).

Field evaluations and demonstrations of elite isolates were worked out in representative research sites.

Recent phase (2001-onwards)

In-depth researches and scaling up of the rhizobial technology for productivity of grain legumes and sustainable food supply.

Establishment of private company (Menagesha Biotech Industry) for rhizobial inoculant production

Emerging of international initiatives, i.e. COMPRO-II and N2Africa.

Developments of biofertilizer standards and standard operating procedures (SOPs)

Challenges

- Absence of institutionalized quality control scheme.
- Nonexistence of rhizobial technology release policy.
- Deficiency of molecular characterization knowledge and facilities
- Less focus on forage and tree legumes
- Lack of legumes-specific extension packages

Prospects

- Availability of functionally and genetically diverse rhizobia in Ethiopian soils.
- Huge legume demand for food, feed and international market.
- Enormous grain legume cultivation areas in various agroecologies (> 1.6 million ha).
- Promising indications of legumes productivity improvements (>10%) due to rhizobial inoculation.
- Integration of inoculant demand and supply information with other agricultural inputs.

Some of N2Africa Contributions in Ethiopia (2014-2018)

- Contributes for wider promotions and scaling up of rhizobial inoculants with improved legume seeds and phosphorus fertilizers.
- Provides hand on trainings given for local experts and farmers as well MSc and PhD level opportunities.
- Contributes for commercialization of biofertilizers through N2Africa initiated PPPs.
- Facilitates local and international rhizobia strains exchange modalities.
- Contributes for the development of biofertilizer SOPs and registration guidelines.
- Contributes for policy advocacy discussions with policy makers, development partners, and researchers, for further developments of the legume sector in Ethiopia.
- Evidences candidate strains show locations and legume variety specificity, thus indicating the need for site and/or variety specific inoculant formulations



ILRI-N2Africa, Box 5689 Addis Ababa, Ethiopia • +251 11617 2000

ilri.org • n2africa.org • n2africa-ethiopia.ilriwikis.org

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