

HISTORY OF RHIZOBIA INOCULANTS USE FOR GRAIN LEGUMES IMPROVEMENT IN NIGERIA - THE JOURNEY SO FAR

A. A. Abdullahi*¹, J. Howieson¹, G. Ohara¹, J. Tepollili¹, R. Tiwari¹, A. Vivas-marfisi¹, A.A Yusuf².

1. Centre for Rhizobium Studies, Murdoch University, South Street, 6150, Western Australia.
2. Department of Soil Science, Faculty of Agriculture/Institute for Agricultural Research, Ahmadu Bello University, Zaria, Nigeria.

*Corresponding author; email: aanchau@yahoo.com

ABSTRACT

Even though, the use of rhizobium inoculants for improvement in N-fixation and productivity of grain legumes has been well established in developed countries; it is still in the developing stage in most parts of sub-Saharan Africa, Nigeria inclusive. Grain legumes are generally grown in low fertility soils in the country. The most frequently deficient nutrient is nitrogen, while nitrogen fertilizers are costly, inadequate, and not timely in supply. This makes the use of rhizobia inoculants a cheaper and easier option to improve the productivity of grain legumes. However, the use of inoculants in Nigeria, though initiated as far back as 1970s, still has a long way to go. This was through the use of imported inoculants. Initially there was poor response to the inoculants, due to incompatibility with the environment. A lot of studies on the use of these inoculants were conducted on Soybean (*Glycine max*), mostly the “US type” which requires specific inoculation with *Bradyrhizobium japonicum*, which is inadequate in the soils, for optimum productivity, leading to over 100% increases in yield. Studies on inoculation of cowpea (*Vigna unguiculata* (L.) Walp), were also conducted, but rarely Bambara groundnut (*Vigna subterranea*) and groundnut or peanut (*Arachis hypogaea*), being naturally more adapted and promiscuous. Unfortunately, the results ended with the researchers, mostly not applied by farmers. Since 1980s, the International Institute for Tropical Agriculture (IITA) Ibadan, Nigeria, introduced the promiscuous soybean varieties; Tropical glycine cross (TGx), to relief the farmers from difficulties in obtaining inoculants. These varieties nodulate without inoculation, fix a large amount of nitrogen, still have high grain yields. However, some experiments indicated the requirement some of the varieties for inoculation (40-45% yield increases). Hence, the ultimate option remains the development of inoculants that are adapted to the environment. Highly effective or elite strains need to be selected for the production of bespoke inoculants for particular crops from the diversity of indigenous strains. Therefore, attention needs to be paid to the establishment of industries that could meet the farmers’ needs. Thanks to the recent efforts of N2Africa programme in that direction.

Key words: grain legumes, N-fixation, nitrogen, nodulation, rhizobia inoculants.