91. Verification of the agronomic efficiency of a rhizobium strain for cowpea (*Vigna unguiculata*) recommended for non-irrigated areas of the Northeast Brazil

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The beneficial effects of BNF following legume inoculation with rhizobium are well known specially in the tropics where N availability in soils is hindered by adverse edafo-climatic conditions.

For soybeans, for instance, the use of inoculation technology results in an economy estimated in U$ 2.5 billion/year and this legume is the most important crop for Brazilian agribusiness. Therefore, it is not surprising to find that most of the commercially available rhizobium inoculant is recommended for soybean. Availability of inoculant for other legume crops is scarce even though some crops are of great regional and strategic importance.

Cowpea, for example, is largely cultivated by small/medium-sized farms in Northeast Brazil, especially in non-irrigated areas. BNF contribution to this crop, based on experimental data is estimated to be US$ 13 million/year. Yields are very low (300 to 400 kg/ha) but inoculation of seeds with selected strains of efficient and competitive rhizobia can improve yields up to 30% with no further inputs.

A participatory research program with farmers from Volta do Riacho (PE, Brazil) was set up during the 2002 and 2003 growing seasons, to demonstrate the practical importance of seed inoculation, and to verify the possible yield improvements and adoption of this technology by farmers.

It was observed that farmers in general have very little information but readily adopt technologies well adapted to their production systems. The results show that seed inoculation results in significant yield increases. In 2003, 30 to 50% yield increases were observed. Farmers accepted this technology as attested by the increased inoculated crop area.

These results were presented in the XII RELARE (Laboratory Network for Recommendation, Standardization, and Technology Transfer of Microbial Inoculants of Agricultural Interest) and strain BR 3267 was temporarily recommended as an inoculant for cowpea.

The definitive recommendation of this strain still depends on further evaluation of its agronomic efficiency by conducting the following RELARE'protocols: 2 experiments in consecutive years, in 2 areas, comparing the new strain with previously recommend ones and a control plot fertilized with mineral N. These are ongoing studies to definitively validate the strain preliminary to its release for commercialization.