



SRA-LGAREC UPDATES

Published by the SRA-La Granja Agricultural Research and Extension Center La Granja, La Carlota City
Negros Occidental, Philippines ☎ 0912-510-1003

September 1997

Vol. 1 No. 3

p. 1

NON-SYMBIOTIC N₂ FIXING INOCULANT FOR FERTILIZER SUPPLEMENT OF SUGARCANE

Nitrogen fertilizer comes from an energy consuming synthetic process, therefore very costly in the market.

Cost of production may be minimized only if a fraction of the total agricultural need for nitrogen will come from synthetic or natural fertilizer while the remaining portion will be satisfied through biological fixation of atmospheric nitrogen.

An emerging technology, with the potential to remedy low N in the soil or depleted soil of sugarcane, is the use of biological non-symbiotic N₂ fixing bacteria.

What is a non-symbiotic nitrogen fixing bacteria?

Non-symbiotic nitrogen fixing organisms are free-living bacteria which are associated with the roots of grass family. One of these bacteria was isolated by Garcia and co-workers (1986) of BIOTECH-UPLB from the roots of the native grass "Talahib", of the sugarcane

family, from Pantabangan, Nueva Ecija.

The isolated strain was cultured and used in the preparation of liquid inoculant.

How does N₂ fixing bacteria work?

The earth's atmosphere consists of 78% inert nitrogen which is useless to higher plants, unless converted to usable forms.

Nitrogen fixing bacteria are capable of converting this inert nitrogen into a usable form.

Initial results showed that in the use of N₂ fixing inoculant, N requirements ranging from 30 to 75% was replaced in the field trials of corn, rice and sugarcane.

RESULTS OF EXPERIMENT CONDUCTED BY SRA, AR&D, LA GRANJA

Dug-out Experiment

N₂ fixing inoculant applied with either organic fertilizer or mudpress replaced 50% of the recommended N to increase the number of millable stalks and weight per stool of the sugarcane variety Phil 8477.

Field Experiment

Phil 8477 applied with N₂ fixing inoculant increased in yield by 21.46 Lkg/ha over the uninoculated plants.

HOW TO APPLY

1. Apply first dose fertilization in the furrow.
2. Cover fertilizer with thin layer of soil.
3. Soak canepoints into 1:10 inoculant-water solution for 5 minutes.
4. Plant immediately the canepoints after soaking.
5. Cover canepoints with soil.
6. Apply second dose fertilization two months after planting.
7. Follow usual cane culture practices.

MEASURES TO BE UNDERTAKEN WHEN USING N₂ FIXER INOCULANT

1. Apply lime if area is acidic.
2. Apply organic fertilizer or mudpress if soil is low in organic matter.
3. Soak canepoints in the inoculant in the morning while the temperature is low.
4. Canepoints should be planted in area with adequate moisture. /glr

SOURCE:

R.M. Bombio & G.A. Gayotin .1997. Non-symbiotic N₂ Fixing Inoculant for Fertilizer Supplement of Sugarcane. Paper presented to the 1997 DA-BAR-Symposium, Manila.