B-45: Response of rice variety Bw 267-3 inoculated under monoxenic conditions

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Rhizosphere association of cereals and grasses is still considered the principal alternative to legume/Rhizobium symbiosis. Rice variety Bw 267-3 showed a better response to inoculation of the 6 local varieties tested with 3 diazotrophs, under monoexenic conditions. This response was found 30 days

after planting (DAP) on dry wet basis and no nitrogenase activity was found in any of the associations. Objective of this experiment was to study the response of this rice variety with a higher density of the inoculum.

Rice variety Bw-267-3. Bacterial strains - *Azospirillum irakense* KBCl, *A. irakense* KBC1 (P O.2) and *Alcaligenes faecalis*

Surface sterilized pre-germinated uncontaminated seeds were transferred to sterille gravel in test tubes to which inoculum suspension was added (final density was 10^8 CFU/g gravel). Autoclaved inoculum of the same density was used as the control. Another set with same treatments but without plants were also maintained. This experiment was conducted in a completely randomized design. Total plant dry wt., N yield, ARA *in vitro* and bacterial count of the substrate were recorded 15 and 30 DAP.

All inoculated plants showed a high nitrogenase activity 15 and 10 DAP than the inoculated, though statistically not significant.

Biomass production was significantly higher 15 DAP but not 30 DAP. With a higher density of inoculum a significant difference was observed only 30 DAP. The bacterial density in the substrate increased during the 1st 15 days but decreased in the latter 15 days. This may be due to inadequacy of substrate for the inoculum.

In the absence of a plant the bacterial strains showed nitrogenase activity to a considerable extent only 30 days after inoculation (DAI) but not 15 DAI. Bacterial density also varied accordingly. This may be attributed to presence of polymers in *Azospirillum*

The bacterial strains fix dinitrogen and in the absence of a host plant or an exogenous carbon source.

Under monoxenic conditions bacterial strains support the growth of the rice variety Bw 267-3 at early stages possibly *via* Biological Nitrogen Fixation. However, the continuation of this process may be interrupted by the inadequacy of substrated for the inoculum, for its N_2 fixation.

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