THE INFLUENCE OF DIFFERENT RATES OF NITROGENOUS FERTILIZER ON THE EFFICIENCY OF INOCULATION IN THE CULTIVATION OF SOYBEANS (Glycine max)

BY

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ABSTRACT

The nitrogen nutrition of soybeans is complex. The response to nitrogen is confounded by the ability of the plant to utilize both mineral nitrogen from soil and atmospheric nitrogen through symbiotic relationship with Rhizobium japonicum. The objectives of this study were to determine whether soybeans under local conditions can respond to inoculation and can use more nitrogen from soil than is provided by symbiosis, and if so, how much it can be supplied. Accordingly, a field experiment on soybeans was designed and conducted at the University Farm to achieve such objectives. Nitrogenous fertilizer at rates 0, 30, 60 and 90 kg N/ha, as basal application to inoculated and uninoculated plants were tried in the experiment.

Results of this study indicate that inoculation of soybean seeds favourably affects the rate of nodulation with a corresponding beneficial yield response. Although high nitrogen levels favourably affect the growth and development of plants, the rate of nodulation is inversely related to the increase in fertilizer nitrogen. Results also indicate that the application of fertilizer nitrogen at rates greater than 30 kg/ha decreases the seed yield, suggesting that optimum seed yield is possible with only 30 kg/ha nitrogen and inoculation.

CONTENTS