

Abstract

To study the effect of nitrogen fertilizer, organic source and biofertilizer inoculation on growth and quality of soybean plants (Giza 21) grown on sandy soil, a pot experiment was carried out during two successive seasons (2007 and 2008) in the greenhouse of Plant Nutrition Res. Sec., Soils, Water and Environmental Res. Inst., Agric. Res. Centre, Giza, Egypt.

Sixty four fertilization treatments represent four nitrogen fertilizer rates (0, 20, 40 and 80 kg N fed⁻¹) four organic manure sources (untreated, towm refuse, chicken manure and FYM) and four seeds inoculation (*uninoculation*, *Rhizobium leguminosarm*, *Bacillus megatherium* and *Yeast & Associated N₂ fixing bacteria*).

The obtained results indicate that :-

Untreated pots (0 N fed⁻¹+ 0 organic manure + uninoculated with biofertilizer) gave the lowest dry matter yield of soybean roots and shoots. The highest values were obtained by application of nitrogen at the rate of 80 kg N fed⁻¹ + 1% chicken manure compost + inoculation with *Rhizobia*. No significant difference was obtained between 40 kg N fed⁻¹ +1% chicken manure with *Rhizobia leguminosarm* or *Yeast & Associated N₂ fixing bacteria* inoculated and 80 kg N fed⁻¹+ 1% chicken manure with *Rhizobia leguminosarm* or *Yeast & Associated N₂ fixing bacteria* inoculated in both seasons.

The untreated plants gave the lowest dry matter yield of soybean pods, seeds and straw, while the highest dry weight

were obtained by the application of 40 or 80 kg N fed⁻¹ with *hizobium leguminosarm*, inoculation and 1% chicken manure in both seasons.

The highest N, P and K values in pods, seeds and straw were obtained by application of nitrogen fertilizer at the rate of 80 kg N fed⁻¹ +1% chicken manure with seeds inoculation with *Rhizobium leguminosarm* or *Yeast & Associated N₂ fixing bacteria*. However, no significant different was obtained between 40 or 80 kg N fed⁻¹+ 1% chicken manure and biofertilizer inoculation.

The effect of the interaction between nitrogen fertilizer, organic manure and seeds inoculation with biofertilizer on percentage of the crude protein and oil in soybean seeds were found to be significant. The lowest value was obtained with untreated plant and the highest value was found by application of nitrogen fertilizer at the rate of 80 kg N fed⁻¹ + 1% chicken manure and seeds inoculation with *Rhizobium leguminosarm* in both seasons. On the other hand, no significant difference between 40 or 80 kg N fed⁻¹+1% chicken manure + seeds inoculation with *Rhizobium leguminosarm* or *Yeast & Associated N₂ fixing bacteria*.

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