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Growth parameters as influenced by graded levels of nitrogen and *Azospirillum* in watermelon (*Citrullus lanatus* Thumb.)

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ABSTRACT

A field experiment was conducted in the Department of Horticulture, Faculty of Agriculture, Annamalai University to study the influence of graded levels of nitrogen and *Azospirillum* on growth parameters in watermelon. The experiment was carried out in Factorial Randomized Block Design with 10 treatment combinations in 3 replications. The experiment consisted of application of nitrogen in 5 different levels (N_1 -30, N_2-45, N_3 - 60, N_4 -75 and N_5 - 90 kg ha^{-1}) and *Azospirillum* was applied in 2 levels (A_0-without *Azospirillum*; A_1-with *Azospirillum* application). Results revealed that application of nitrogen @ 75kg ha^{-1} along with *Azospirillum* @ 200 g per kg of seeds recorded the highest vine length, number of primary and secondary branches, number of nodes, leaf area and dry matter production.

Key words : Nitrogen, *Azospirillum*, Growth parameters, Watermelon

Watermelon (*Citrullus lanatus* Thumb.) is one of the important vegetable crops grown throughout the world. The pulp of the fruit is juicy and delicious. Among the various methods to improve the productivity, crop management is an important aspect to increase the yield of the crop. Plant nutrients play an important role in the productivity and development of the crop. Since it is a long duration crop requires heavy amount of nitrogen for enhancing the yield. Nitrogen plays an important role in the yield and quality of watermelon. *Azospirillum* is a symbiotic nitrogen fixing bacteria which is capable of fixing about 25-30 kg nitrogen per hectare. The use of *Azospirillum* in recent time is increasing in horticultural crop cultivation. If the chemical use has to be optimized, other sources of the nutrients are to be promoted. Therefore, the applications of plant nutrients through organic sources like compost, farmyard manure and bio fertilizers remain the alternate choice of the growers for maintaining its sustainable production. Having these ideas as background the present investigation was conducted to study the influence of graded levels of nitrogen and *Azospirillum* on growth parameters in watermelon.

MATERIALS AND METHODS

Field experiment was conducted in the Department of Horticulture, Faculty of Agriculture, Annamalai University during 2000-2001. The experiment was carried out in Factorial Randomized Block Design with 10 treatment combinations in 3 replications. The experiment consisted of application of nitrogen in 5 different levels (N_1 -30, N_2-45, N_3 - 60, N_4 -75 and N_5 - 90 kg ha^{-1}) and *Azospirillum* was applied in 2 levels (A_0-without *Azospirillum*; A_1-with *Azospirillum* application). The soil of the experimental field was sandy clay loam. Plots were earmarked for each treatment with an area of 20 m^2 and then beds were formed at a spacing of 1.5 m within each plot. In each bed, pits were taken at a spacing of 1.5 m. Five seeds were sown in each prepared pits. Thinning was done ten days after germination, the seedlings are thinned by maintaining two healthy seedlings per pit. The crop was raised by following the recommended interculture and plant protection practices. The first dose of nitrogen was applied at the time of sowing followed by top dressing at 30 days after sowing. The entire phosphorus and potassium were applied basally during the time of sowing. The fertilizers were applied in the form of urea, single super phosphate and muriate of potash. The required quantity of seeds was taken and it was treated with *Azospirillum* culture and then dried in shade for 30 minutes before sowing. Ethrel was applied @ 250 ppm in three sprays. The first spray was given at two true leaf stage and at fortnight intervals. Observations on vine length, number of primary and secondary branches, number of nodes, leaf area and dry matter production were recorded and subjected to statistical analysis as per the procedure given by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Application of different levels of nitrogen, *Azospirillum* and their interactions recorded significant differences on growth parameters. The highest value was