

Response of Two Wheat Varieties to Partial Replacement of Recommended Nitrogen Fertilizer by Bacterial Inoculations

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TWO FIELD trials were carried out at the Agricultural Production and Research Station, National Research Centre, El Nubaria Province, El Behira Governorate, Egypt, during the two successive winter seasons 2006-2007 and 2007-2008, to study growth characteristics, yield and yield attributes of two wheat varieties, *i.e.* Sakha-93 and Sakha-94, to partial replacement of recommended nitrogen fertilizer by bacterial inoculation (Azospirillum or Nitrobein). The plant height, number and dry weight of spikes/m² and straw yield/feddan showed substantial varietal differences. While, the dual application of biofertilizers and recommended nitrogen fertilizer increased almost all growth characteristics, yield and yield components, this increase was significance with the studied characters except, plant height at 90 days after sowing and blades area (cm²) at 90 and 120 days after sowing and number of spikelets /spike, number of grains /spikelet, seed index, harvest index and grain protein content. Seed inoculation with either Azospirillum or Nitrobein and 50 % of recommended nitrogen fertilizer showed the lowest values of the aforementioned traits compared with the other treatments. The effect of the interaction between varietal differences and nitrogen fertilization treatments on growth characteristics, yield and yield components are not significant in most studied characters except number of spikes/m² in the two growth samples and dry weight of spikes/m², grain, straw and biological yield /feddan.

Keywords : Wheat varieties, Nitrogen fertilization, Bacterial inoculation, Growth characteristics, Yield and yield attributes.

Egypt, like other developing countries, suffers from food shortage problem as a result of large increase in population and loss of agricultural soils. This situation makes the problem of food production and human nutrition more acute. Egypt is considered the biggest importer of wheat in the world. To meet our present and future food production goals, high yielding and disease resistant varieties, application of balance fertilizers, improved agricultural practices and application of suitable plant protection measures must be adopted. However, maintenance of soil fertility / productivity is increasingly challenging due to intensive production of food crops, excessive tillage, and depletion of soil organic matter and increase in soil salinity.