Effect of Preceding Crop, Rates and Splitting of Nitrogen Fertilizer on Bread Wheat Production and Nitrogen Use Efficiency

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Abstract:

A field experiment was conducted at the Agronomy Department Farm, Faculty of Agriculture, Assiut University during 2015/2016 and 2016/2017 seasons to study the effect of preceding crop, rates and splitting of nitrogen fertilizer on bread wheat production and nitrogen use efficiency. The experiment was carried out in randomization complete block design (RCBD) using split-split plot arrangement with three replications. Cropping system (corn-clover-wheat and corn-fallow-wheat) were assigned in main-plots while nitrogen fertilizer rates (56.25, 75.00 and 93.75 kg N/fed) were allotted in sub-plots and splitting doses of nitrogen (two, three and four equal doses) were allocated in sub-sub plots. The obtained data showed that plant height, spike length, number of spikes/m2, number of grains/spike, weight of grains/spike, seed index, grain yield, straw yield and nitrogen use efficiency were significantly affected by cropping sequence in favor of planting wheat after clover (fahlerberseem) in the two growing seasons except nitrogen use efficiency in the first season. Increasing nitrogen fertilizer rates resulted in significant increase in all previous traits except nitrogen use efficiency trait which was decreased by increasing nitrogen fertilizer rates in both seasons. Moreover, splitting nitrogen rates into four equal doses significantly increased all studied traits as compared to three or two equal splits in the two growing seasons. Also, all interactions had a significant effect on all studied traits in both seasons. The highest mean values of grain yield (27.47 and 28.22 ard/fed in the first and second seasons, respectively) were obtained from the sequence of corn-clover-wheat when received highest nitrogen rate (93.75 kg N/fed) which was applied at four equal doses.

Keywords:

Bread wheat, Preceding crop, Nitrogen fertilizer rates and splitting number.

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