Effect Of Different Systems Of Intensification And Fertilization On Some Wheat Cultivars

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Abstract:

This study was carried out to calculate response of two cultivars of wheat which represent the hexaploid and tetraploid species to different cropping sequences and nutrient rates of NPK. This study was carried out in the Experimental Farm of Faculty of Agriculture, Assiut University in the two growing seasons of 2004/2005 and 2005/2006 seasons. Two cropping systems were studied, i.e. corn – clover – wheat and corn – fallow – wheat. The cultivars studied were Sakha 93 & Beni-suef 1 in 2004/2005 and Sids 1 & Beni-suef 1 in 2005/2006 season. The nutrient rates of NPK (kg/fed.) were 80, 15 and 50, i.e. the recommended rates, 40, 7.5 and 25 kg/fed. of NPK, 20, 3.75 and 12.5 kg/fed. NPK and without nutrients. The variables studied were distributed in a split-split plot design in which crop sequence was allotted in the main plots. The cultivars were in split plot whereas the nutrients were distributed in the sub-sub plots. The results obtained in this study could be summarized as follows: 1- The growth parameters such as plant height, leaf area index, number of tillers/plant and total dry matter/plant were improved by planting wheat after clover as compared with the cropping system of corn-fallow-wheat. Cultivars belong to the hexaploid cultivars were characterized by favorite growth parameters as compared with simolina cultivar. The recommended nutrients of NPK favored the growth attributes. 2- Average interval from planting to 50% heading tended to be increased significantly when planting wheat was after clover. No significant differences in earliness among the two cultivars studied were detected. The consistent increase in nutrient rates prolonged the interval to 50% heading. 3- Yield components such as number of tillers/plant at harvest spike length, number of spikelets/spike, and seed index tended to be increased when wheat planting was after clover as compared with the sequence of corn-fallow-wheat. Wheat yield components of hexaploid cultivars, i.e. bread wheat surpassed the semolina cultivar in all attributes except the seed index. The later took the contradict trend in this respect. Linear increases in all yield components were observed as nutrients rates were increased. 4- Average grain yield/fed of wheat was increased significantly when wheat was grown after clover compared with cultivating it after fallow. This is true in the two growing seasons. No significant difference among the cultivars studied was observed. Grain yield per unit area tended to be increased as nutrient rates were increased. Here too, the first order interaction of intensification x fertilization revealed that the cropping sequence of corn-clover-wheat increased the response of grain yield to the recommended rates of NPK compared with the sequence of corn-fallow-wheat. 5- Straw yield/fed was reacted significantly to the cropping sequence practiced in favor of planting wheat after clover. Hexaploid cultivars were superior in straw yield production per unit area compared with tetraploid cultivar. Average straw yield was increased significantly as nutrient rates were increased up to the recommended rates. 6- The biological yield/fed was influenced significantly by cropping systems studied in favor of the cropping sequence of corn-clover-wheat in the two growing seasons. The bread cultivars produced heavier weight of biological yield than semolina cultivar. This relation was significant in the two growing seasons. Consistent increase in biological yield/fed was achieved as nutrient rates increased. 7- Harvest index did not show any definite response to intensification system. Here, semolina cultivar improved harvest index as compared to bread cultivars. Negative trend was noted between harvest index and nutrient rates. This means that harvest index tended to be increased as nutrient rates was decreased. 8- Here it should be noted that the average yield of clover produced from the cropping sequence of corn - temporary clover - wheat was ranged from 8781.82 to 10650 kg/fed. in 2004/2005 season. In 2005/2006 it ranged from 12109.09 to 17318.18 kg/fed.

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