

EFFECT OF APPLICATION METHODS OF SOME MACRONUTRIENTS ON GERMINATION, FLOWERING, PRODUCTIVITY AND QUALITY OF EGYPTIAN COTTON (GIZA 89 CULTIVAR)

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ABSTRACT:

Field experiment was carried out at the experimental Farm, Faculty of Agriculture, Minufiya University, Shebin El-Kom to study the effect of application methods (soaking and coating of seeds) of some macronutrients (N, P, K, Mg, Ca, S and their mixture) on growth, flowering, yield and its components and fiber quality of cotton (Giza 89 cultivar) during 2005 and 2006 seasons. The obtained results showed that, the highest seed germination characteristics (germination %, germination vigor % and germination rate) were obtained by using seeds soaking or coating method with N element followed by P, K, Mg, mixture, Ca and S, respectively. Application of N element using coating method followed by P and K gave the highest increase in the number of flowers and bolls setting / plant. So, it was more effective in the increase of no. of open bolls / plant, boll weight, seed index, seed cotton yield / plant and seed cotton yield / fed. The highest values were obtained by using seed coating method with the mixture of macroelements for fiber length and with N element for fiber strength, fiber fineness and oil % in both seasons. However, the highest values of fiber strength were obtained by the application of N element using coating seeds in the first season and soaking seeds in the second season. Reversely, the two application methods of all tested macroelements had no significant effect on lint % in both seasons.

Key words: cotton, macroelements, seeds coating and soaking, germination, yield and quality.

EFFECT OF SOIL NITROGEN FERTILIZATION AND FOLIAR APPLICATION WITH SOME MACRO AND MICRONUTRIENTS ON THE PRODUCTIVITY AND QUALITY OF BREAD WHEAT

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ABSTRACT:

Two field trials carried out at El-Gemmeiza Agric. Research Station Farm, A.R.C., El-Gharbia Governorate, Egypt, during the two successive growing seasons 2005/2006 and 2006/2007 to study response of wheat (Gemmeiza 10 cv.) to soil application of nitrogen levels (0, 40 and 80 Kg N/fad) and foliar application of macronutrients (0, 3 % Urea, 3 % Calcium superphosphate, 3 % Potassium sulphate and 9 % Mixture of the three macro elements) and foliar application of micronutrients (0, 1 % Manganese sulphate, 1 % Zinc sulphate, 1 % Ferrus sulphate and 0.5 % Borax). 1- Soil fertilization with 80 kg N/fad produced the highest significant values of number of spikes/m², spike yield and yields/fad (grain, straw and biological yields/fad) and harvest index as well as grain protein percentage in both seasons, 1000-grain weight (in the first season) and number of grains/spike (in the second season). 2- The response equation show that the values of wheat yield and its components could have been maximized due to predicted additions of 60.3 and 70.7 kg N/fad for number of grains/spike, 67.8 and 63.1 kg N/fad for straw yield/fad, 69.5 and 65.8 kg N/fad for biological yield/fad and 91.69 and 94.29 kg N/fad for grain protein percentage in the first and second seasons, respectively, and 74.7 kg N/fad for spike yield in the first season and 62.5 kg N/fad for 1000-grain weight in the second season. The grain yield/fad could have been optimized to 3.262 and 3.204 ton/fad due to predicted N additions of 70.2 and 68.8 kg N/fad in the first and second seasons, respectively. These additions could produce total profit of 3466.1 and 3696.8 L.E./fad in the two seasons, respectively. 3- Foliar application of 9 % NPK mixture produced the maximum values of number of spikes/m², number of grains/spike, 1000-grain weight, spike yield, grain, straw and biological yields/fad and harvest index as well as grain protein percentage in the two seasons. 4- Foliar application of 1 % zinc sulphate recorded the highest values of number of spikes/m², number of grains/spike, 1000-grain weight, spike yield, grain, straw and biological yields/fad and harvest index as well as grain protein percentage in both seasons. 5- Results of the interaction among the three studied factors refers to : A- Soil application of 40 kg N/fad with foliar application of 9 % NPK mixture produced the highest values of number of spikes/m², 1000-grain weight, grain and straw yields/fad in the two seasons. B- Soil application of 80 kg N/fad and foliar application of 1 % zinc sulphate produced the highest values of number of spikes/m², number of grains/spike, 1000-grain weight, spike yield and grain yield/fad in both growing seasons. C- Foliar application of 9 % NPK mixture with 1% zinc sulphate produced the highest values of number of spikes/m², 1000-grain weight and grain yield/fad in both growing seasons. D- The second order interaction among the three studied factors, i.e soil application of nitrogen levels, foliar application of macronutrients and foliar application of micronutrients had no significant effect on all characters studied of growth, grain filling, yield and its components and grain protein % in the first and / or second seasons. 6- It can be concluded that the best results for high productivity and grain quality value mostly obtained when the plants were soil fertilized by 40 kg N/fad and sprayed with mixture of NPK (3% urea + 3% calcium superphosphate + 3% potassium sulphate) and 1 % zinc as compared with these either unsoil fertilized with N or soil fertilized with 80 kg N/fad.

Key words: Wheat, yield, soil and foliar fertilization, macro elements (N, P and K), micro elements (Zn, Mn, F

EFFECT OF FOLIAR APPLICATION OF GROWTH REGULATORS, MACRO AND MICRONUTRIENTS ON ABSCISSION, YIELD AND TECHNOLOGICAL CHARACTERS OF EGYPTIAN COTTON (*Gossypium barbadense*, L.).

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ABSTRACT:

Two field experiments were conducted at Gemmeiza Agricultural Research Station, Ministry of Agriculture in Gharbia governorate, Egypt, to study the effect of foliar application of some growth regulators (control, Atonik and Pix), macronutrients (control, P and K) and micronutrients (control, Zn and B) on the production and abscission of squares and bolls (numbers of squares "fruiting points", setting bolls and bolls/plant as well as squares, bolls and total abscission percentages), productivity (number of open bolls/plant, boll weight, seed index, earliness % and seed cotton yield per plant and fed) and technological characters of seeds (oil and protein percentages) and fiber (lint%, fiber fineness and fiber strength) of Egyptian cotton (*Gossypium barbadense* L.), Giza 89 cv. during 2005 and 2006 seasons. The cotton plants were sprayed with Atonik (1 ml/liter), Pix (1 ml/liter), P (phosphoric acid 1 ml/liter), K (potassium citrate 1 g/liter), Zn (zinc chelate 1 g/liter) and B (boric acid 1 g/liter) twice at start of flowering and 30 days later. The results obtained could be summarized as follows: 1- The results indicated that foliar application of Pix significantly increased the values of number of squares and bolls /plant, yield and its components (number of open bolls / plant, boll weight, seed index, seed cotton yield /plant and seed cotton yield/fed) and technological characters of seeds (oil and protein percentages) and fiber (lint %, micronaire reading and strength) but decreased bolls abscission and total abscission percentages compared to the untreated plants in the two growing seasons. 2- Foliar application of the tested macronutrients (P and K) significantly increased the most production and abscission of squares and bolls characters, yield and its components and technological characters of seeds and fiber in favour of K compared to untreated plants in the two seasons. 3- Foliar application of the tested micronutrients (Zn and B) significantly increased the most production and abscission of squares and bolls characters, yield and its components and technological characters of seeds and fiber in favour of B compared to untreated plants in the two seasons. 4- The interactions among the tested growth regulators, macronutrients and micronutrients were found to be significant for most characters of yield and its components. Foliar application of Pix or K and/or B combinations being the most effective interactions treatments for produce the highest values of yield and its components, while the lowest values were obtained when the plants were untreated with any tested growth regulators, macronutrients and/or micronutrients of these characters in the two seasons.

Key words: Plant growth regulators, macro and micronutrients, abscission, yield, technological parameters, Egyp

PRODUCTIVITY AND NITROGEN ACCUMULATION AND TRANSLOCATION OF SOME MAIZE GENOTYPES AS AFFECTED BY DIFFERENT NITROGEN FERTILIZATION LEVELS

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ABSTRACT:

Field experiment was carried out at the Experimental Farm, Faculty of Agriculture, Minufiya University in 2008 season and repeated in 2009 season to investigate the effect of nitrogen fertilization levels (0, 30, 60, 90 and 120 Kg N / fed) on the productivity and nitrogen accumulation of five maize varieties differed in their prolificacy (number of ears), i.e Single cross 122 (S.C. 122), Single cross 30 K 8 (S.C. 30 K 8), Three way cross Nefertiti (T.W.C. Nefertiti), Synthetic variety Composit 1 and Open pollinated variety Giza 2. The results could be summarized as follows : 1- Application of Nitrogen fertilization generally significantly increased ear diameter, shelling % and N harvest index in the first season and 100-grain weight, N assimilation/ plant at 50% silking and N retranslocation in the second season (up to 30 Kg N/ fed); ear length, 100-grain weight, cob weight/ ear, no. of ears/ plant, sub apical ears %, grain, cob and ear yields / fed, N assimilation in grains, straw and total plant at maturity in the first season and grain and total weights/ ear and grain yield from apical ear in the second season (up to 60 Kg N/fed); N % in total plant at 50 % silking, no .of grains/ ear, grain and total weights/ ear, grain yield from apical and sub apical ears, N assimilation/ plant at 50% silking and N retranslocation in the first season and ear diameter, shelling %, grain, cob, ear, biological and straw yields/fed, N assimilation in grains and in total plant at maturity in the second season as well as total grain yield/ plant in both seasons (up to 90 Kg N / fed). However, the differences between the application of 90 and 120 Kg N / fed were not significant for all characters studied. 2- S.C 30 k 8 and T.W.C Nefertiti varieties generally surpassed the other tested varieties in grain weight/ ear, total ear weight, no. of ears/ plant, grain yield from apical and sub apical ear, total grain yield/ plant and sub apical ears %, grain, cobs, ears, straw and biological yields/ fed and N assimilation in each of grains, straw, total plant at maturity as well as N translocation indices (N harvest index, N retranslocation and N retranslocation efficiency). 3- Growing single cross 30 K 8 and / or three way cross Nefertiti varieties and fertilizing them with 90 and/or 120 Kg N/ fed are the best treatments for improving the productivity of maize under Minufiya Governorate conditions through increasing dry matter accumulation and nitrogen translocation as well as number of ears/ plant and grain yield / fed.

Key words: Maize, N levels, genotypes, productivity, N assimilation and translocation