



EFFECT OF SOME AGRONOMIC TREATMENTS ON YIELD, LINT AND YARN QUALITY PROPERTIES OF EGYPTIAN COTTON

By

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ABSTRACT

Two field experiments were conducted at the Experimental Farm of Sakha Agricultural Research Station (Kafr El-Sheikh Governorate), Agricultural Research Center, Egypt, during two successive seasons of 2019 and 2020 to study the performance of two Egyptian cotton varieties, *i.e.*, Giza 94 and Giza 97 (promising hybrid of [(G.89 × R.101) × G.86] × G.94) as affected by foliar spray with natural extracts and mineral fertilization rates, *i.e.*, control (full dose of mineral fertilization rates with 60 kg N, 30 Kg P₂O₅ and 48 kg K₂O/fed [A], 75 % A and foliar spray of compost tea, 75 % A and foliar spray of algae extract, 75 % A and foliar spray of compost tea with algae extract, 50 % A and foliar spray of compost tea, 50 % A and foliar spray of algae extract and 50 % A and foliar spray of compost tea with algae extracts on cotton vegetative growth, yield components, yield, fiber and yarn properties. The two experiments were laid out in Randomized Complete Block Design (RCBD) with four replicates.

Results showed that almost cotton growth, yield, yield components as well as fiber and yarn properties under study were differed significantly among the two Egyptian cotton varieties (Giza 94 and Giza 97) in the 2019 and 2020 seasons. While, mean values in No. of un-opened bolls/plant and fiber maturity ratio in the two seasons, opened bolls percentage and bolls shedding percentage in the second season were not significantly affected by Egyptian cotton varieties under study. Growing the promising cotton variety of Giza 97 significantly gave the maximum mean values in No. of sympodial/plant, No. of fruiting sites/plant, No. of opened bolls/plant, No. of total bolls/plant, opened bolls percentage, seed cotton yield/plant, lint cotton yield/plant, boll weight, lint percentage, seed cotton yield/fed, lint cotton yield/fed, upper half mean length, fiber uniformity index, fiber bundle strength, fiber elongation, micronaire value, fiber yellowness degree, fiber diameter, fiber circumference and leaf count strength product in addition to recording the lowest bolls shedding percentage, fiber brightness degree, yarn unevenness/100 m and No. of neps/100 m in the two seasons.

Results indicated that all growth, yield, yield components as well as fiber and yarn properties of Egyptian cotton were significantly influenced foliar spray with seven studied natural extracts and mineral fertilization rates except No. of monopodial/plant, No. of un-opened bolls/plant, bolls shedding percentage, seed index, fiber uniformity index, fiber maturity ratio and yarn unevenness/100 m were not significantly affected in 2019 and 2020 seasons. Cotton plants treated with 75 % and foliar spray of compost tea plus algae extracts significantly produced the maximum mean values of plant height, No. of sympodial/plant, No. of fruiting sites/plant, No. of opened bolls/plant, No. of total bolls/plant, opened bolls percentage, seed cotton yield/plant, lint cotton yield/plant, boll weight, lint percentage, lint index, seed cotton yield/fed, lint cotton yield/fed, upper half mean length, fiber bundle

strength, fiber elongation, micronaire value, fiber brightness degree, fiber diameter, fiber circumference and leaf count strength product in 2019 and 2020 seasons, respectively, in addition to recording the lowest fiber yellowness degree and No. of neps/100 m in both seasons respectively, followed by cotton treated with 75 % A and foliar spray of algae extract treatment. On the other hand, the lowest mean values of almost traits were obtained from cotton sowing under fertilized by 50 % A and foliar spray of compost tea in both seasons, respectively. While, Cotton plants treated with 100 % mineral fertilizer treatment markedly recorded the lowest mean values of No. of opened bolls/plant and opened bolls percentage in both seasons.

Results illustrated that the interaction effect among Egyptian cotton varieties and fertilization treatments induced significant differences on almost growth, yield, yield components as well as fiber and yarn properties except No. of monopodial/plant, No. of unopened bolls/plant, seed index, lint index, upper half mean length, fiber uniformity index, fiber elongation %, fiber maturity ratio and yarn unevenness/100 m during the both seasons. Egyptian cotton variety of Giza 97 when received 75 % A and foliar spray of compost tea plus algae extracts produced the highest mean values in No. of sympodial/plant, No. of fruiting sites/plant, No. of opened bolls/plant, No. of total bolls/plant, opened bolls percentage, seed cotton yield/plant, lint cotton yield/plant, boll weight, lint percentage, seed cotton yield/fed, lint cotton yield/fed, fiber bundle strength, micronaire value, fiber diameter, fiber circumference and leaf count strength product as well as recorded the lowest mean values of No. of neps/100 m during the both seasons. On the other hand, planting Giza 94 variety treated with 50 % A and foliar spray of compost tea gave the lowest mean values in almost traits during the both seasons.

Conclusion

Based on the this study it could be concluded that, growing promising cotton variety of Giza 97 treated by 75 % of NPK (A) along with foliar spray of compost tea and algae extract treatment produced the maximum seed cotton yield and lint cotton yield as well as the properties fiber and yarn have improved.

Keywords: Egyptian cotton varieties, compost tea, algae extract, mineral fertilization rates, fiber and yarn properties

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