بسم الله الرحمن الرحيم

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بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

INTERCROPPING CORN WITH SOME SOYBEAN VARIETIES UNDER LOW IRRIGATION WATER LEVELS

By

NEAMA ABD El SALHEEN SALEH
B.Sc. Agric. Sci. (Agronomy), Fac. Agric., Cairo Univ., 2013
M.Sc. Agric. Sci. (Agronomy), Fac. Agric., Cairo Univ., 2017

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APPROVAL SHEET

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Date: 28 /2 / 2022

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Title of Thesis: Intercropping corn with some soybean varieties under low irrigation water levels

Supervisors: Dr. Abd El-Alim Abd El-Rhaman Metwally
Dr. Sayed Ahmed Safina

Department: Agronomy **Approval:** 28 /2/ 2022

ABSTRACT

A three-year study was carried out at the Agricultural Experiments and Research Station, Faculty of Agriculture, Cairo University, Giza, Egypt during three successive summer seasons (2018, 2019 and 2020) to evaluate the effect of low irrigation water levels on the productivity of corn and soybean varieties under different solid and intercropping systems. The factors of this study included three levels of applied irrigation water (3000, 2400 and 1800 m^3/fad were expressed as 100 "W_{L0}", 80 "W_{L1}" and 60%"W_{L2}", respectively), cropping systems (alternating ridges 2:2 "Int_1", mixed "Int_2" and solid plantings of corn "ridges Sc_1 and beds Sc_2" and soybean "ridges Ss_1 and beds Ss_2") and four soybean varieties Giza 21, Giza 22, Giza 35 and Giza 111. A split-split plot distribution in randomized complete blocks design with three replicates was used. All soybean traits were decreased by decreasing irrigation water levels up to 60%. However, it is important to mention that there were no significant differences between W_{L0} and W_{L1} for all soybean traits in all seasons. Number of pods per plant was affected significantly by the cropping systems in one season, meanwhile seed yield per plant and seed index were affected significantly in two seasons. However, seed yield per fad was affected significantly in all seasons. Significantly higher seed yield per fad were recorded in solid plantings than in intercropping systems. Soybean varieties did not differ significantly for all soybean traits in all seasons except number of pods per plant in the third season. Seed protein content was not affected significantly by applied irrigation water levels; meanwhile W_{L1} had high seed oil content. Intercropping systems had high seed protein content and low seed oil content. Soybean varieties did not differ significantly for seed protein content. Meanwhile, soybean variety Giza 111 had high seed oil content. All corn traits were decreased by decreasing irrigation water levels up to 60%. Int_2 had high 100 – kernel weight and grain yield per fad. All corn traits were not affected significantly by soybean varieties in all seasons. IWUE was increased by decreasing applied irrigation water level from 3000 m^3/fad to 1800 m^3/fad. Int_2 recorded high values of IWUE. IWUE was not affected significantly by soybean varieties in the three seasons. LER was not affected significantly by applied irrigation water levels or soybean varieties in the three seasons. Int_2 recorded high LER. The results show that corn and soybean plants are dominant and dominated components, respectively. Most interactions were significant through seasons of the study. This study could be concluded that growing soybean variety Giza 21 or Giza 111 with corn in raised beds that received the deficient – irrigated water (2400 m^3/fad) had high productivity, quality of soybean seeds, IWUE, LER and the lowest Agg compared with others.

Keywords: Intercropping, Soybean varieties, Corn, IWUE, Comptetive relationship.

DEDICATION

I dedicate this work to my family and my colleagues

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