بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سامية زكى يوسف

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

ملاحظات: لا يوجد

ENVIRONMENTAL ASSESSMENT OF UTILIZATION OF SOME ORGANIC AND BIOLOGICAL FERTILIZERS FOR QUINOA CROP PRODUCTION

Submitted By

Amal Abd El-Gabar Mohamed Abd El-Wahab

B.Sc. of Agricultural Sciences, Faculty of Agriculture, Cairo University, 2006

Diploma in Environmental Sciences, Faculty of Graduates Studies & Environmental Research, Ain Shams University, 2009

M. Sc. in Environmental Sciences, Faculty of Graduates Studies & Environmental Research, Ain Shams University, 2017

A Thesis Submitted in Partial Fulfillment
Of
The Requirement for the Doctor of Philosophy Degree
In
Environmental Sciences

Department of Environmental Agricultural Sciences
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APPROVAL SHEET

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ABSTRACT

A field experiment was carried out in sandy soil of Agriculture Station at Ismailia governorate, ARC, Egypt, during two successive winter seasons 2019/ 2020 and 2020/2021.The aim of this study was to investigate the effect of organic and bio fertilizers as a partial replacement of mineral fertilizer on soil fertility and productivity of quinoa (*Chenopodium quinoa).*

Four mineral NPK rates (0+0+0,50+100+25,75+150+50 and 100+200+75N, P_2O_5,K_2O kg/ fed.) alone or with organic and bio fertilizers i.e. (algea (Cyanobacteria), bio-fertilizer, compost+ bio-fertilizer and compost) .

Results revealed the following findings:

The application of organic and bio fertilizers i.e. (algea (Cyanobacteria), bio-fertilizer, compost+ bio-fertilizer and compost) alone or with levels of mineral treatment gave a significant increase for nutrient concentration and uptake of (nitrogen, phosphorous, potassium, iron, manganese and zinc) in soil and quinoa plant at 30,40 and 70 days after sowing (vegetative stage) as average of two seasons.

Also, a marked increase was observed for plant growth parameters, i.e. plant length, No. of branches and weight of 1000 seeds of quinoa when compared with non-treatment.

Moreover, yield of seed (ton /fed.),seed content of oil ,protein and carbohydrates as well as macro and micronutrient uptake were also increased as affected with the above mentioned treatments as compared to untreated ones. The interaction effect between organic

and bio fertilizers with levels of mineral treatments gave a significant increase in growth parameters , seed quality and seed composition .

On the other hand, application all treatments (algea (Cyanobacteria), bio-fertilizer, compost+ bio-fertilizer and compost) alone or with levels of mineral treatment decreased saponin yield.

The best results were obtained with application of compost at rates (75N+150 P_2O_5 +50K_2Okg/fed) as compared with other treatments. Therefore, application of organic or bio fertilizers at rates (75N+150 P_2O_5 +50K_2O kg/fed) for production of quinoa plant in sandy soils was recommended in order to give reasonable production of quinoa in sandy soil i.e. land of new reclamation , and to reduce the use of mineral fertilizers in agriculture , this will help to protect the environment against the adverse effects of mineral fertilizers

Key words: quinoa productivity and quality, sandy soil, organic and bio-fertilizers , Protecting the environment from the adverse effects of mineral fertilizers.

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