
شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم


# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

## يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

**To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%**

# بعض الوثائق الاصلية تالفة

# بالرسالة صفحات لم ترد بالاصل

# Environmental Studies Including the Effect of Gamma Irradiation on Growth and Some Biochemical Processes of Some Egyptian Plants

By

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B.Sc. (Biochemistry), Cairo University (1995)
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Thesis

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(Biochemistry)

Department of Biochemistry
Faculty of Agriculture
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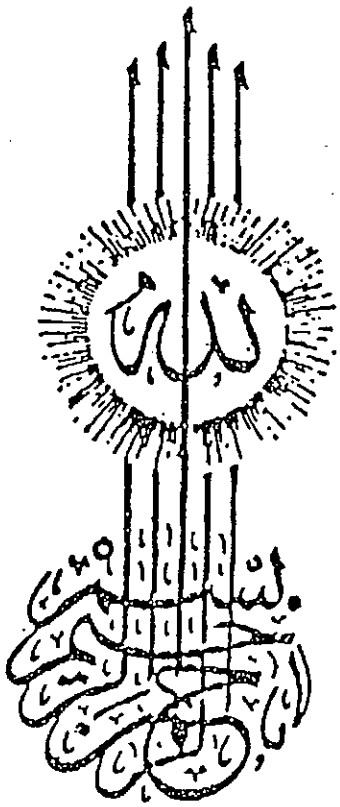

وَقُلِ اعْمَلُوا فَسَيَرَى اللّٰهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ

«صدق الله العظيم»

# APPROVAL SHEET

Title: Environmental Studies Including the Effect of Gamma Irradiation on Growth and Some Biochemical Processes of Some Egyptian Plants

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**Title of Thesis** Environmental Studies Including the Effect of Gamma Irradiation .....on Growth and Some Biochemical Processes of Some Egyptian Plants
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## ABSTRACT

According to the wide utilization of gamma irradiation in agriculture, their side effects were deeply investigated. Our investigation in this field covered two main parts: In the first part, the effects of gamma irradiation with different doses on two important Egyptian crops, corn and soybean were investigated. Different doses of gamma irradiation (25, 50, 100, 150, 200, 250 and 300 Gy) for corn and (5, 10, 20, 30, 40, 50, 80 and 100 Gy) for soybean were studied regarding the effects on yield and chemical composition of grains and seeds. In the second part, the corn plants were used as a bioindicator for radioactive contamination. Doses of 150 and 40 Gy gave the highest germination percentage (100%) for corn grains and soybean seeds respectively after 3 and 4 days compared with the control. Also, 150 and 40 Gy increased Photosynthetic pigments, total hydrolysable carbohydrates, total soluble sugars, reducing sugars, non-reducing sugars, nucleic acids and proteins after 46 days from germination in corn and soybean leaves. It was cleared that corn yield was increased to 131.45% at 150 Gy, while soybean yield increased to 120.56% at 40 Gy. The soluble proteins in corn grains and soybean seeds were analyzed using SDS-PAGE. It was found that protein patterns were not affected in corn grains but on soybean seeds all doses produced a new protein with molecular weight of 16.52 KDa. Saturated fatty acids percentages were increased with increasing the dose level and at the same time unsaturated fatty acids were decreased. While, unsaponifiable matters such as sterols were decreased with increasing the dose in corn grains and soybean seeds. It may be concluded that, the use of gamma irradiation with dose 150 Gy significantly increased the germination percentage, chemical constituents and grains yield of corn grains. The same trend was found in soybean plant with dose of 40 Gy. The second part comprised the use of corn plants as bioindicator for radioactive contamination or heavy metals pollution. It was found that photosynthetic pigments, carbohydrates, nucleic acids and protein contents were all decreased sharply with increasing the concentration of uranium nitrate. While, the resistant enzymes peroxidase and polyphenyl oxidase highly increased with increasing the concentration. It could be recommended to use 150 Gy for corn crop and 40 Gy for soybean crop because these doses gave the highest yield for grains and seeds for both crops.