

سامية محمد مصطفى



شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



سامية محمد مصطفى



شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



سامية محمد مصطفى



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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بالرسالة صفحات
لم ترد بالأصل





MINUFIYA UNIVERSITY

FACULTY OF AGRICULTURE

DEPARTMENT OF
AGRICULTURAL BOTANY

**PHYSIOLOGICAL RESPONSE OF SOME PLANTS
TO SOME SOURCES OF POLLUTION**

*A Thesis Submitted in Partial Fulfillment
For the Degree of
Doctor of Philosophy*

In

Agricultural Science "Agricultural Botany"

By

Sabah Mohamed Ahmed El-Gamal

M.Sc. Agric. (Agricultural Botany), 1991

Supervised by :

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Dr. Ansary E. Moftah (Ph.D.)

Shibin El-Kom

2000

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اَللّٰهُمَّ صَلِّ وَسَلِّمْ عَلٰى اَوْلِيَّائِكَ اَلِابْنِ اَبِي حَنِيفَةَ
 اَلْعَلِيِّ بْنِ اَبِي طَالِبٍ وَارْحَمْهُمَا

صدق الله العظيم

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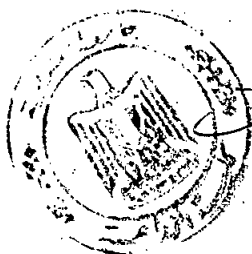
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PHYSIOLOGICAL RESPONSE OF SOME PLANTS TO SOME SOURCES OF POLLUTION

By

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ABSTRACT

The present investigation was conducted in the Agricultural Farm of Faculty of Agric., Minufiya University during the two successive winter seasons of 1994 / 1995 and 1995 / 1996. The objective of this work was to study: the response of pea and spinach plants to some environmental pollutants namely acidity (sulfuric and nitric acid pH 2.5, 4.5 and 5.5), cadmium (at 0, 50 and 100 mg / L) and pirimicarb (0 and 0.75 mg/L) and the effect of these pollutants on the growth, physiological behaviour, chemical constituents and yield of both crops. This study was also extended to investigate the effect of some growth promoters i.e., gibberellic acid (50 ppm) and kinetin (10 ppm) on the polluted plants in a trial to overcome or at least reduce the harmful effect of pollutants. Nitric or sulfuric acid pH 2.5 and 4.5 decreased the plant height, leaf number, leaf area, dry weight of shoots, net assimilation rate of both crops. Chlorophyll and carotenoid concentrations were affected by the high pH values. Under pollutant stress, total carbohydrate, soluble sugars, GA₃ and cytokinen all decreased at high pH values. Potassium and phosphorus were decreased as acidity increased. The yield of pea and spinach decreased when plants were treated with high acidity (low pH).

Treatments with Cd²⁺ especially high concentration inhibited the growth, photosynthetic pigments and carbohydrate concentration, NPK, iron, GA, cytokinin and the yield of both crops. Pirimicarb treatment decreased the growth, photosynthetic pigments and carbohydrate concentration. Nitrogen, iron and the yield of spinach GRs reduced the unfavorable effect of acid, cadmium and pirimicarb pollutants on the vegetative growth, photosynthetic pigments, carbohydrate concentration, NPK and yield of both crops. In addition, GRs reduced the phytotoxic effect of pirimicarb.

