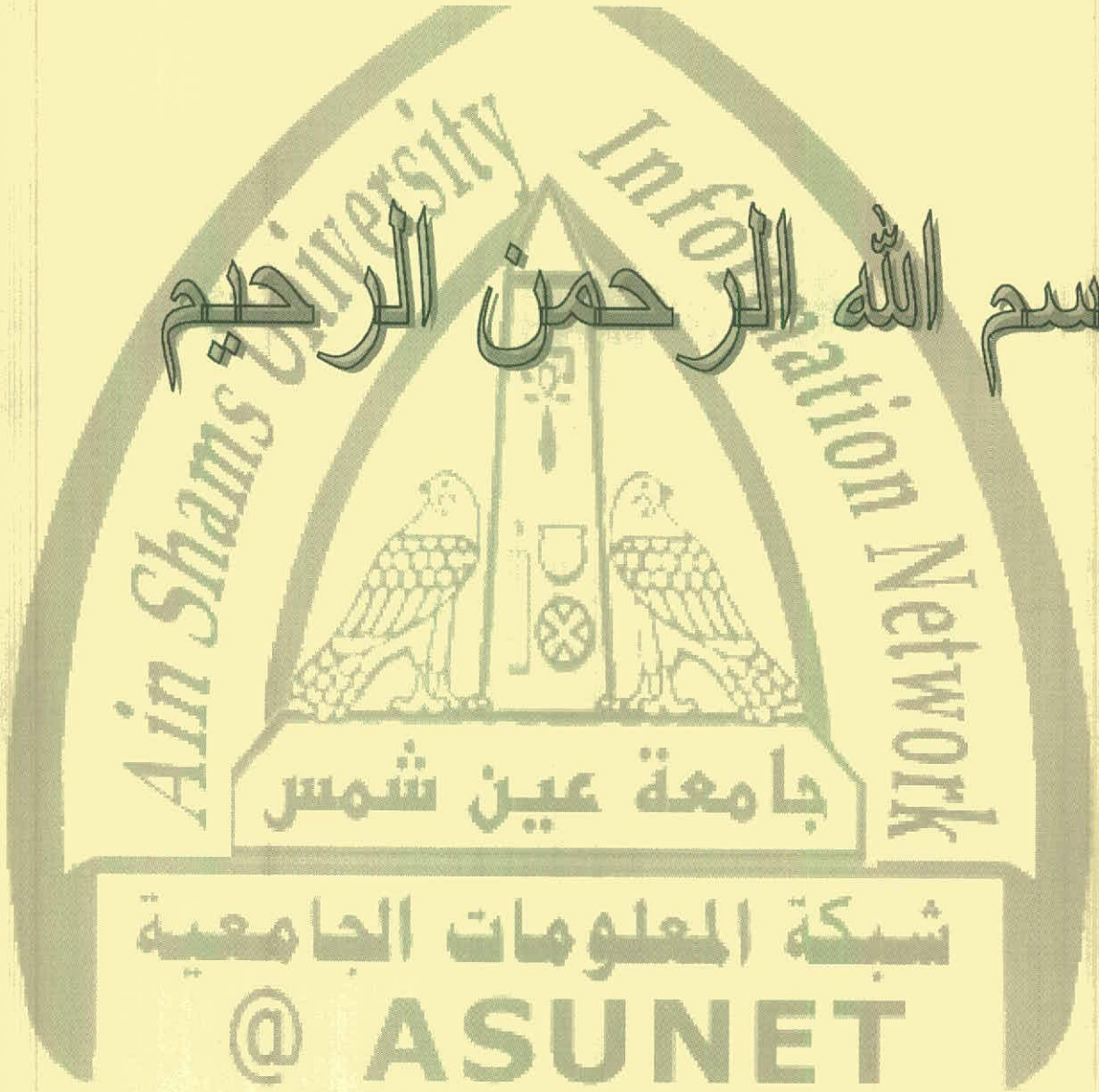
شبكة المعلومات الجامعية



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 الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

PHYSIOLOGICAL AND CYTOLOGICAL EFFECTS OF TRIAZINE-HERBICIDE ON *VICIA FABA* PLANT.

A Thesis

Submitted for Partial Fulfillment of the Degree of Master of Science in Botany

(Physiology)

By

Ebrahim Mohammed Ebrahim El-Shity

(B. Sc. Botany and Chemistry)

To

Botany Department
Faculty of Science
Zagazig University

1997

ACKNOWLEDGMENT

First of all, I am thanking ***Allah (Almighty)*** *who enabled me to finish this work.*

I am very happy to thank ***Prof. Dr. Yehia A. El-Zawahry,*** *head of Botany Department, Faculty of Science, Zagazig University for providing the research facilities to perform this work*

I wish to express my great thanks to ***Dr. Ahmed Ghareeb,*** *Ass. Prof. of Plant Genetics, Botany Department, Faculty of Science, Zagazig University, for his help, suggestions and critical reviewing of this work. I am also wish to present my thanks and gratitude* ***to Dr. El-Sayed Hashem,*** *Lecturer of Plant Physiology, Botany Department, Faculty of Science, Zagazig University, who has suggested and supervised the practical experiments and I greatly appreciate his laborious efforts in the critical reading and reviewing of the results of the physiological studies.*

My thanks also involve all the staff members of Botany Dept. Faculty of Science, Zagazig University, for their excellent cooperation.

INTRODUCTION

Vicia faba is considered as one of the most important leguminous crops all over the world. The importance of *Vicia faba* raises from the fact that, it has the highest nutritional value amang legu minous crops for containing high quality of protein. Therefore, it is used 6as an excellent source for human and animal nutrition.

Vicia faba plants were found to be affected greatly by the existence of competing weeds which consequently affecting the crop yield and composition. Moreover, nutritional and economic value of *Vicia faba* crop would be reduced.

The competition of weeds with crops is demonstrated in many ways. They may compete for water, light and nutrients. Weeds may also compete with crops for space above and below soil surface. Some weeds may parasite on crop plants. Therefore, weeds should eliminated from fields.

Controlling of weeds takes place by using chemicals (herbicides) which give good results for the elimination of weeds, however using chemicals was found to have harmful effects on plant. Moreover, chemical

controlling of weeds by herbicides leads to the pollution of the environment and may affect other living organisms e.g. fishes.

In this study we tried to evaluate the effects of triazine herbicide (topogard) at the physiological and cytological levels of *Vicia faba* plant.

LITERATURE REVIEW

LITERATURE REVIEW

The continuous increase in using of pesticides in agriculture for controlling weeds and insects has resulted in harmful effects on plants . The use of herbicides greatly affect the morphological characters and the physiological processes in plants.

I- Effect of Triazine-Herbicides on Morphological Characters of Plants:

I-1 Effect of triazine-herbicides on shoot length.

Ashour and Abdou (1990) reported that, treatment of *Vicia faba* (broad beans) with any of the following triazine-herbicides: Igran (terbutryn), topogard (Terbutryn + chlorotriazine) and eptam (EPTC) at 625-5000, 3750- 30,000 and 937.5 - 7500,0 ppm, respectively was found to reduce the shoot length.

Likewise, **Valadon and Kates (1984)** demonstrated that, treatment of maize seedlings with 126 M perfliudone, has resulted in a decrease in shoot length. Similarly, **Hoagland and Duke (1981)** have observed an inhibition in the growth rate and elongation of soybean seedlings after 48 hours of treatment with fenuron and mnitalin at 0.2 mM and 1.8 μM, respectively.

On the other hand, **Nemat-Allah (1991)** found that, treatments of soybean and maize plants with different herbicides e.g. fluometuron, trifluralin, atrazine, alachlore and metalachlore generally resulted in a remarkable decrease in shoot length of both plants

Vintila *et al.* (1984) reported that,, in the case of treatment of maize with butylate herbicide, inhibited the shoot growth. **O'Donovan and prendeville (1975)** carried out an experiment by locally placing the herbicides prometryne. linuron and diuron in the soil at the first or second shoot internodes of dwarf broad bean (*Vicia faba*) and they have observed in all cases that, there was an equally reduced aerial plant growth. Also when *Phaseolus coccineus* was treated separately with different herbicides, it was found that, a marked reduction in growth occurred with all herbicide treatment.

Hiller and Smid (1981) demonstrated that, in case of treatment of potato plants with herbicide, the treated plants became stunted. Likewise, **Duke *et al.* (1974)** found that, treatment of both soybean and cotton seedlings with glyphosate herbicide, reduced plant height.

Concerning the ratio by which herbicides decrease the shoot length, **Ali and Fletcher (1978)** reported that, the glyophosate herbicide (1.2 kg/ha) reduced corn seedlings height by about 62% as compared to the untreated seedlings. In the same respect **Hoagland (1977)** found that, glyophosate herbicide reduced the length of maize, soybean, radish and cotton shoots by about 57%, 38% and 19%, respectively.

On a study carried out by **Wilson and Stewart (1973)** for demonstrating the effects of the widely used herbicide trifluraline on tomato plants, it was found that, the height of tomato plants was markedly decreased with increasing the concentration of trifluralin and throughout further studies for comparing the shoot length inhibiting effect of trifluralin with other herbicides. **Eshel and Katan (1972)** have reported that, trifluralin was found to be the most effective herbicide for inhibiting shoot growth of tomato plants. In addition, they have also found the same effect of trifluralin in inhibiting shoot growth of some other *Solanaceae* vegetables e.g. pepper (*Capsicum annum*, L. var. vindale) and egg plant (*Solanum melongena* L. var. black beauty).

Anderson *et al.* (1967) found that, trifluralin caused a stunting in height of cotton seedlings .As slight and moderate stunting of shoot growth of cotton seedlings was found to occur a concentration of 0.75 lb/acre. Increased herbicide concentration resulted in more severe reduction in weight

I-2 Effect of triazine-herbicides on root length.

Nemat-Allah (1991) found that, the root length of soybean and maize plants were reduced with treatment by different herbicides treatment e.g. fluometuron, trifluralin, atrazine, alachlore and metalachlore.

Ashour and Abdou (1990) have reported that, treatment of *Vicia faba* (broad bean) with the following triazine-herbicides: Igran (terbutryn) topogard (terbutryn + chlorotriazine) and eptam (EPTC) at 625-5000. 3750- 30,000 and 937.5 - 7500,0 ppm, respectively reduced the root length

Hoagland (1990) found that,the inhibition of root elongation of soybean plants occurred after treatment with glyphosate herbicide. Similar effect was demonstrated by **Vintila *et al.* (1984),** who found that, inhibition of maize root has been occurred after treatment with butylate herbicide .