شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومـــات 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 اعدت دون آية تغيرات

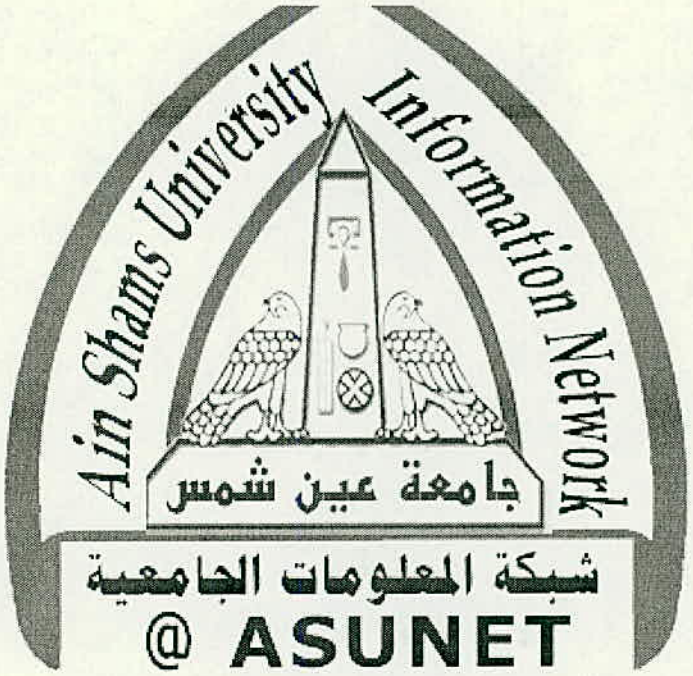
Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
@ ASUNET

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



بالرسالة صفحات

لم ترد بالأصـــل

بعض الوثائق الأصلية تالفة

Zagazig University (Benha branch)
Faculty of Science
Botany Department

Studies on Natural Virus Infection of *Lactuca sativa* in Egypt

A Thesis

Submitted in partial fulfillment of the requirements for the M. Sc.degree
In Microbiology (Virology)

By

SABAH ABO EL MAATY AHMED EL SAYED

B. Sc. Botany
Supervised by

Prof. Dr. Johsephine Kamel Eskarous.
Professor of Virology Faculty of Science-Cairo University.

A. Prof. Dr. El Sayed Tarek Abd Elsalam.
Assistant Professor of Virology Faculty of Science-Cairo University.

Prof. Dr. Hussein Olama.
Professor of Botany and Head of Botany Department Faculty of Science, Zagazig University, Benha Branch.

2001

Zagazig University (Benha branch)
Faculty of Science
Botany Department

Studies on Natural Virus Infection of *Lactuca sativa* in Egypt

A Thesis
Submitted in partial fulfillment of the requirements for the M. Sc.degree
In Microbiology (Virology)

By

SABAH ABO EL MAATY AHMED EL SAYED

B. Sc. Botany
Supervised by

Prof. Dr. Johsephine Kamel Eskarous.
Professor of Virology Faculty of Science-Cairo University.

A. Prof. Dr. El Sayed Tarek Abd Elsalam.
Assistant Professor of Virology Faculty of Science-Cairo University.

Prof. Dr. Hussein Olama.
Professor of Botany and Head of Botany Department Faculty of Science, Zagazig University, Benha Branch.

2001

Contents

Acknowledgement

Firstly, my deepest thanks go to **Allah**.

I wish to thank **Dr. Johsephine Kamel Eskarous**, Professor of Virology Faculty of Science-Cairo University.

I am greatly indebted to **Dr. El Sayed Tarek Abd Elsalam**. Assistant Professor of Virology Faculty of Science-Cairo University. for suggesting the problem, kind supervision, useful criticism and continuous help.

Cardinal thanks are also to **Dr. Hussein Olama** Professor of Botany and Head of Botany Department Faculty of Science, Zagazig University, Benha Branch. For kind help and encouragement.

Introduction

Introduction

Lactuca sativa L., local name "khass" was found to be naturally infected by a virus disease in a field near Benha, Kalubia, Egypt.There are at least 12 viruses affect lettuce production, the most distructive virus is lettuce mosaic virus . Like most potyviuses, lettuce mosaic virus has a wide artificial host range, transmitted through seed and aphid, thermal inactivation point ranged from 50-66°C, dilution end point is 10^{-2}-10^{-3}, longevity in vitro is 1-4 days and the virus particles are flexuous rods ranging from 740-760 X 13-22 nm.Cytoplasmic inclusions of all potyviruses are pinwheels and bundles. The virus induced severe mosaic mottling, sharp distortion and abnormalities on the leaves. Since *Lactuca sativa* is a very important commercial vegetable plant for people in Egypt and lettuce mosaic virus causes loss of weight of lettuce reached 40% and some plants failed to form heads, it was thought useful to study the virus on *Lactuca sativa* in the hope of making clear identification of it. Also, it considered important to study the virus and evaluate the possible significance of this plant as a source of infection for economically important cultivated plants.

The followinng studies of the virus have been made:

Part 1- Isolation and Identification of the virus according to:

Host range, transmission, virus morphology and physical properties.

Part 2- Histopathology of virus infected leaves showing necrotic local lesions.

Review of the literature

Review of the literature

Part I. Isolation and Identification of Virus :-

Newhall (1923) stated that lettuce mosaic virus is seed-borne.

Smith (1937), Ainsworth and Ogilvie (1939) and Holmes (1939) described lettuce mosaic as lettuce mosaic virus on the basis of symptomology, limited host-range studies and transmissibility.

Chamberlain (1949) noticed that lettuce mosaic virus infected endive, aster, cineraria and mangold.

Grogan and Bardin (1950) noticed that lettuce mosaic virus, which caused considerable damage in the commercial lettuce crop, was seed-borne. In all lettuce fields so far examined, a high percentage of the plants were affected with the disease.

Grogan *et al.* (1952) stated that the transmission of lettuce mosaic virus depending on the environmental conditions.

Wilkinson and Hirsch (1952) reported that *Gomphrena globosa* and *Chenopodium urbicum* are local lesion hosts of the common lettuce mosaic virus and that these plants are suitable for quantitative virus assay.

Couch and Gold (1954) studied the properties of lettuce mosaic virus in plant sap. They found that the thermal inactivation point was between 55°and 60°C, the dilution end-point was 1:100,if mixed with 0.5 per cent

sodium sulphate and a little abrasive .the longevity in vitro was 48 hours or less in crude extracted sap at room temperature. Virus particle was a long flexuous and averaging 746 X 22 mμ.

They stated that *Zinnia elegans*; *Tagetes erectra*; *Cichorium endivia*, *Callistephus chinensis* and *Gomphrena globosa* were local lesion hosts.

Hollings (1955) found that lettuce was an important host to tomato aspermy virus. He stated that the thermal inactivation point of the virus was 50-55°C, the dilution end point was 10^{-2}-10^{-3} and the longevity in vitro was 24-28 hours.

Zink *et al.* (1956) found that the rate of transmission of lettuce mosaic virus depending on the variety of lettuce.

Smith (1957) stated that the thermal inactivation point of lettuce mosaic virus was 55-60°C for 10 min.

Smith and Mcwhorter (1957) studied the histology of tomato leaf infected with tomato ring spot virus and reported that the mesophyll tissue near necrotized area was destroyed, phloem cells were necrotized and xylem vesseles were blocked with dark material.

Costa and Duffus (1958) stated that infection of spinach with lettuce mosaic virus showed a faint mottle.

Brandes and Wetter (1959) described the mean length of lettuce mosaic virus particles which was 745 ± 7.5nm.