



Oman

Ministry of Education

Directorate General of Education and  
Education, North Eastern Province

Al-Huwari Bin Mohammed Al-Azdi School for  
Basic Education for Grades (5-10) for Boys



## Causes and symptoms of Anthraosins in bananas and how to prevent it



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### Summary:

The aim of this research is to study the causes and symptoms of anthracnose disease on the fruit of the banana plant and how to prevent it in order to answer the following questions:

- 1) What are the causes of anthracnose?
- 2) What are the symptoms of this disease on banana?
- 3) What are the ways to prevent this disease?

This is for several purposes, including:

- 1) Study the etiology of anthracnose in banana
- 2) Study the symptoms of anthracnose disease on the fruit of the banana plant
- 3) Find out how to prevent anthracnose in bananas

The research team initiated the research plan and used the soil, vegetation and water protocol protocol, and we used these protocols to conduct experiments on two plants, one of which .is infected with the second

Through these experiments, we have obtained the following conclusions: we conclude that the soil-lined temperatures, acidity and soil sample characteristics taken are almost identical to each other, although samples from the ocean . . adjacent to the trees are infected and the other is not

Vastly different from the percentage of soil salinity (patient) (patient) (A) but the percentage of soil salinity taken around the uninfected.) (B) Plant taken from the plant

One of our conclusions is that it is a type of fungus that causes .this disease and is most often prevalent in summer plants

Recommendations and prevention methods are:

- 1) Trying to increase the salinity of the soil
- 2) These of insecticides against this disease
- 3) Using organic fertilizers that help strengthen the plant and strengthen its immunity

### Study concepts and terminology:

**Anthrachnose:** Is a disease that usually affects summer crops and is caused by one of the fungi scattered in agricultural fields

**Anthrachnose treasures in bananas:** it is a disease that comes in the form of deep black spots formed on the crust of a banana plant.

**Organic Fertilizer:** Is a natural fertilizer consisting of the remnants of living organisms

### Study objectives:

Study the etiology of anthracnose in bananas.

Study the symptoms of anthracnose diseases on the fruit of the banana plant.

Find out how to prevent anthracnose in bananas.

## Study questions:

This research sought to answer the following questions:

- 1) What are the causes of anthracnose?
- 2) What are the symptoms of this disease on bananas?
- 3) What are the ways to prevent this disease?

## Introduction:

Fungi cause dark brown or black spots on the crusts of infected fruits. As for yellow fruits, these are ulcers of different sizes and can combine until they become large and deep black spots. Fungal spots of orange or pink color appear similar to the color of salmon in the middle. Symptoms can also begin to appear on the tip of the fruit and result from a previous inflammation that has infected the flowers. Initial symptoms also appear long after harvesting either during transport or storage.

This research is of great importance as farmers who do not have the means to buy pesticides also suffer from this problem on the other hand, many agricultural crops, including the banana tree, are spoiled by this disease (anthracnose); surrounding us because it is characterized by the spread of banana cultivation.

## Search method

### 1) Search plan:

Schedule the search plan

Table (1) Search plan timeline

Date	Action Plan
2019/ December/10	Formulating the problem of research and identifying tools
2020/January/9	Data collection and analysis
2020/January/14	Reaching conclusions and writing research
2020/February/ 11	Provide research

Distribution of work roles to the research team, consisting of the preparation of tools and field application

Table (2) Distribution of roles to the research team

Work	Students executed
Clearly formulate the research problem and identify and process the required tools	Humam / Al-Huwari
Collect and analyze data by applying planned protocols both within School or outside and on-site data entry	Humam / Al-Huwari / Zakaria
Reaching conclusions through the data collected and from the drafting of the summary .And write the research	Humam / Al-Huwari / Zakaria

Table (3) Search plan application sites

Site	Work
.A farm with a banana plant	Study and use of special protocols to reach the answer to research questions

Identify activities protocols appropriate to be applied to data collection

Work	The right protocol
Study of the properties of the banana plant	Vegetation Protocol
Study the properties of water used for plant watering	Water Protocol
Study of soil properties near banana plant	Soil Protocol

Table (4) protocols applied in search

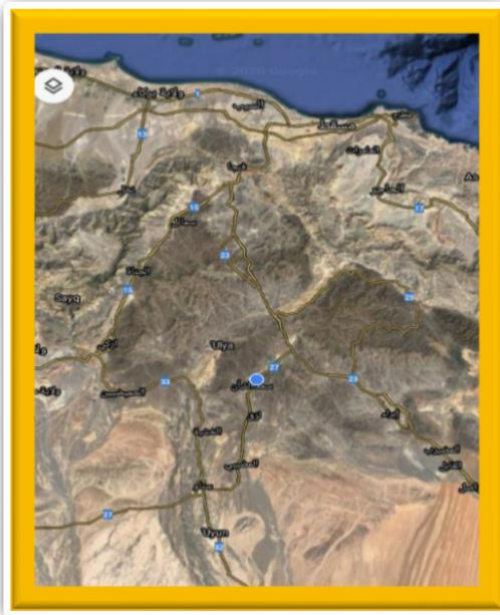
**Study site:**

Oman - North Eastern Province

Website / Sharia - Samad

Time / February - It's cold

Study site



A comprehensive map of the study site



Coordinates	Site
58 42'09	Longitude
22 31'49	Latitude
585 m	Height

### 3) Data collection and analysis:

#### Water protocol:

Acidity (PH)

Water transparency

#### Soil protocol:

1) Soil thermometer (10-5) cm

2) Soil acidity measure for collected samples

3) Soil consistency



- 4) Soil salinity scale for collected samples
- 5) Amount of roots
- 6) Amount of rocks

### Vegetation protocol:

Nearby plant species

Height of neighboring plants

Question	Protocol	Work
1	Soil Protocol Vegetation Protocol Water Protocol	We used the protocol tools used to find out the cause of .this disease
2	Search and in-kind observation protocols	We've observed both the infected plant and the uninfected plant and the difference between their .fruits
3	Soil Protocol Vegetation Protocol Water Protocol	We observed changes in both samples and through them we identified the problem and also looked for the cause of this disease in .the internet networks

### Results:

The results described in the tables below were compared between two plants: infected plant (A) and healthy plant (B)

Table (6) Subsoil temperature data

(A)

5cm	10cm
23	23
22	24

(B)

5cm	10cm
19	21
21	22

Table (7) PH in water

PH in water				
Average	Experience3	Experience2	Experience1	
8	8.3	8	7.7	Sample

Table (8) Transparency ratio in water

Transparency ratio in water	
Sample	93cm

Table (9) Acidity of the soil

Acidity				Sample
Average	Experience3	Experience2	Experience1	
7.4	7.1	6.9	5.4	A
8.3	7.7	6.9	10.5	B

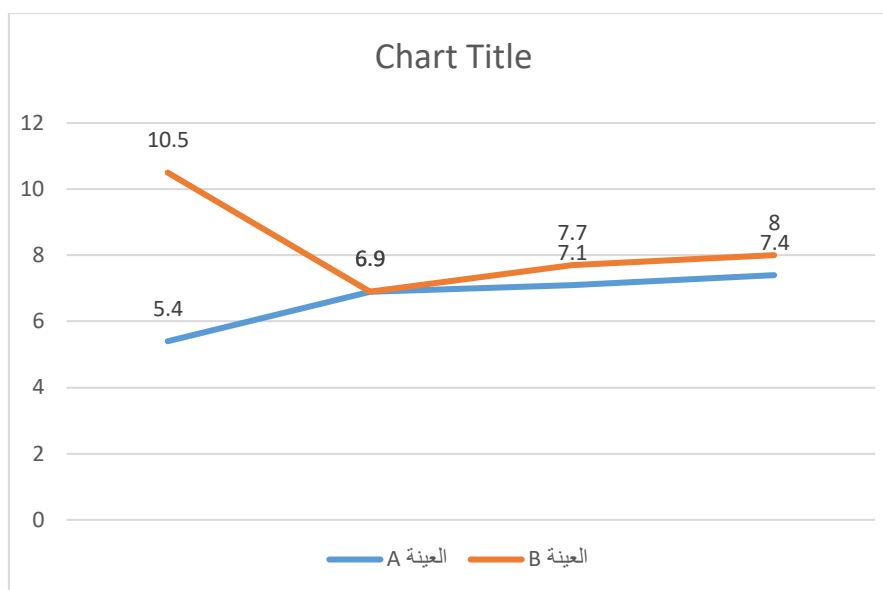


Table (10) soil salinity

salinity				Sample
Average	Experience3	Experience2	Experience1	
284	255	296	303	A
849	856	839	854	B

Table (11) Soil sample characteristics

Sample	A	B
Consistency	(Easy to break up (fragile	Easy to break up (fragile)
Amount of roots	Very little	.A few
Amount of rock	Medium	Medium

Table (12) Humidity

B	A	
%24	%23	Humidity

Table (13)

Comparison	A	(B)
Height of neighboring plants	5.5m	4.5m
The type of plants adjacent	Palms and banana trees	Palms and banana trees

## Discussion of results

To answer the first question in the research: What are the causes of Anthraosins disease?

We refer to the above findings, from which we conclude that the soil-lined temperatures ranging from (19-23) and acidity in water (8HP) and soil acidity (7HP-8.5HP) and soil sample characteristics taken are almost identical to each other, although samples taken from the adjacent ocean One is injured and the other is not

However, the percentage of soil salinity taken around plant A is vastly different from the proportion of soil salinity taken from plant B and ranges from (284) in the affected plant, while in the uninfected plant it was between (849). Low soil salinity can be one of the causes of this disease in bananas, but after research and question between us and the community, it has become clear that a species of fungus is the cause of the spread of this disease in the fruits of the banana tree

To answer the second question in the research is: What are the symptoms of this disease on bananas?

The team members prepared for the research were able to answer this question by observing, looking at the affected fruit and using protocols, the answer was the appearance of black spots or dark, deep brown spots in the crust and the banana crust was slightly semi-fossilized.

To answer the third question in the research: What are the ways to prevent this disease?

We refer to the above results, from which we conclude that the temperatures that are lined with soil and affect the acidity and characteristics of the soil samples taken are almost identical from each other, although the samples taken from the ocean adjacent to the two trees are infected and the other does not.

But the percentage of soil salinity taken from around the infected plant is vastly different from the percentage of soil salinity taken from the uninfected plant, so it will be one way to prevent this disease.

- 1) Trying to increase the salinity of the soil
- 2) The use of insecticides against this disease
- 3) The use of organic pesticides that help strengthen the plant and strengthen Immunity

## Dedication and thanks

We pay a good tribute to all those who contributed to the  
.success of this study

And also in honor and in recognition of our beautiful thanks

For those who have worked hard to help us in the field of  
scientific research, glope program and in particular Dr. Nadira  
Al Harthi, national coordinator of glope environmental program  
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guiding us and helping us to collect the research material, God  
.has rewarded him with all the best

And let us not forget to thank the director of the school, Mr.  
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And don't forget the preference of the parents of the students  
involved in the research to support them

Finally, we thank all those who have helped us get this research  
out to the fullest

## The bottom line is that

This research sought to find out the causes of disease Anthraosins in bananas and how to prevent this disease and what are the symptoms that appear on the plant and we have used the protocols available to complete what we seek and we have found that the soil of the infected plant is where the differences in the information collected and did not affect The water that the plants water in the banana plant and also the length and types of plants affecting it, but what affects this disease is soil salinity, since if the salinity rate decreases the .effectiveness of the spread of the disease and vice versa

These findings lead us to further research and investigate the possibility of spreading this disease in bananas and to answer questions that come to our mind.

## References

[https://plantix.net/ar/library/plant-diseases/100078/anthracnose-of-\(2020\)\\_banana](https://plantix.net/ar/library/plant-diseases/100078/anthracnose-of-(2020)_banana)

### Introduction

[https://agronomie.info/%D9%85%D8%B1%D8%B6-\(2020-%D8%A5%D9%84%D8%A7%D9%86%D8%AB%D8%B1%D8%A7D9%88%D8%B2-anthachose-disease/\\_%D9%83%D9%86%](https://agronomie.info/%D9%85%D8%B1%D8%B6-(2020-%D8%A5%D9%84%D8%A7%D9%86%D8%AB%D8%B1%D8%A7D9%88%D8%B2-anthachose-disease/_%D9%83%D9%86%)

Study questions (2020)

[https://mawdoo3.com/%D9%85%D8%A7\\_%D9%87%D9%88\\_%D8%A7%D9%84%D8%B3%D9%85%D8%A7%D8%AF\\_%D8%A7%D9%84%D8%B9%D8%B6%D9%88%D9%8A](https://mawdoo3.com/%D9%85%D8%A7_%D9%87%D9%88_%D8%A7%D9%84%D8%B3%D9%85%D8%A7%D8%AF_%D8%A7%D9%84%D8%B9%D8%B6%D9%88%D9%8A)

Study questions





## صور من إدخال الطلاب للبيانات في الموقع

خلق الخريطة بنجاح طباعة هذا العرض ، عرض الملاحظات أو إنشاء واحدة جديدة

التحرير درجة حرارة الهواء 1 يوم

أدخل تاريخ ووقت المراقبة (24 ساعة)

2020-02-07 09:06

التوقيت المحلي

المحصول على الوقت المحلي بالتوقيت العالمي

هو (N / A) وقت بالتوقيت العالمي المحول إلى التوقيت المحلي

إتساف الشمس في وقت الظهيرة

يشير إلى الأقسام أو الحقول المطلوبة \*

درجة حرارة الهواء

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خط الطول \* 55.260638 °

الارتفاع \* 555 م

شمال جنوب الشرق الغرب

منسّم الارتفاع

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