



**Study entitled:**

# The effect of spraying neem extract on the black scorch in Date palms in Khasab city.

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**2023-2024**

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## **Abstract:-**

The research aims to study the impact of Black scorch on the agricultural environment in Khasab. We have noticed a decline in the amount of agricultural yields of dates in Khasab and in different regions of the Sultanate, and this is what interests us as the city of Khasab is an agricultural region and is characterized by the fertility of its soil and the abundance of palm trees. The research questions are: What is black scorch ? we found that the black scorch disease affects all parts of the palm tree, even the roots. Symptoms appear in four forms or conditions, as follows: The appearance of burned areas on the palm leaves or on the fronds, which may be in the form of long or intermittent lines and along the leaves or the central vein of the frond. We selected a study sample that contains black scorch. Neem tree were chosen as a solution to the disease because of its many benefits to agriculture, and we prepared the extract from neem trees' leaves. By applying the laboratory protocol. Then we apply the extract on the palm trees with the black scorch it was observed that black scorch we stopped from spreading

The research recommendations came in educating the surrounding community about the problem, its causes and effects, and how to prevent it, encouraging farmers to use safe methods that reduce this problem, following modern and approved methods in protecting agricultural crops, identifying and treating their problems.

## Main terminology: -

**Black scorch** is a fungal disease affecting different plants and it is also known as fools disease. It is a disease that affects all parts of date palm. It has been found on palm in many countries such as Gulf countries.

**Neem (*Azadirachta indica*)** plants is a versatile and valuable tree native to the Indian subcontinent. It has been used for centuries in traditional medicine, agriculture, and various other applications. Neem possesses numerous beneficial properties, making it a popular choice for natural remedies

## Study questions: -

- 1- What is the effect of Neem extract on the Black scorch diseases in date palm?
- 2- Can natural antifungal have an effect on the Black scorch disease in palm dates?
- 3- Can we reduce the effect of Black scorch and avoid further damage to palm trees?

## Introduction:

Black scorch is a plant disease that affects various crops and ornamental plants, causing significant damage to their foliage. It is caused by a fungal known as *Alternaria alternata*. This pathogen thrives in warm and humid conditions and can spread rapidly under favorable circumstances. Black scorch is characterized by

the appearance of dark, irregular lesions on the leaves, stems, and fruits of affected plants. If left untreated, it can lead to severe defoliation and reduced crop yields and in Khasab town there are some date palm trees that are affected by this disease.

Furthermore, *Azadirachta indica* plants (known as Neem) is a versatile and valuable tree native to the Indian subcontinent. It has been used for centuries in traditional medicine, agriculture, and various other applications. Neem possesses numerous beneficial properties, making it a popular choice for natural remedies and sustainable practices such as soil enhancement. They are used as organic fertilizers. They improve soil fertility, enhance microbial activity, and promote nutrient absorption in plants. Neem is an environmentally friendly alternative to synthetic chemicals. By using neem-based products, farmers can reduce the environmental impact of agriculture, minimize chemical residues in food, and protect beneficial insects and pollinators. Therefore, we decided to study the effect of the neem plant on the black scorch of Datepalm in kasab farms.

## **Research Study plane:-**

- Sense of the problem: Noting the spread of the Black scorch problem in various regions in the Gulf and its recent appearance in the Sultanate of Oman, the result of the presence of this disease is the destruction of palm trees and reduction in date yield.

- Choosing the research problem: It was identified by the researchers and discussed with the teacher
- Determine the study tools: laboratory testing for Black scorch and microscopic observation
- Visiting the farms of the study community and taking samples from the dates that has the Black scorch disease>
- Taking notes (different experiments to reduce Black scorch and observing the plants under the microscope with the help of the laboratory technician at the school and the Globe supervisor to find out whether the materials affect Black scorch, then entering the data on the program's website.
- Experimenting the materials to be chosen on the palm affected by Black scorch
- Comparing results and writing recommendations.

## Study timeline:

| Time and period | Steps and actions                                      |
|-----------------|--------------------------------------------------------|
| September 2023  | Identify the problem and collect information about it. |
| December 2023   | Collect the samples and apply protocol on them         |
| February 2024   | Observe the samples microscopically                    |
| February 2024   | Apply the experiment on the samples                    |

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| February 2024 | Entering data in GLOBE.gov                                       |
| February 2024 | Observing results and writing the research paper                 |
| February 2024 | Spread awareness to the community about the problem and solution |
| February 2024 | Research presentation                                            |

## Study location

Sultanate of Oman / Musandam Governorate / Khasab city  
Alwaim region / palm farm .  
khawla bent alazwar school

## Study materials and equipment

- 1- Two affected palm trees were identified and samples of the palm leaves were sent to agriculture center in Barka city for identification of the black scorch fungi.





2- Then, Neem trees were located and sufficient amount of leaves were collected and the leaves were washed and dried by using air fryer because it dries a good amount in short time.



3- The Neem leaves were grinded in a grinder and amount of 30 gram were added to 450ml of Ethanol (an organic compound with the chemical formula  $\text{CH}_3\text{CH}_2\text{OH}$ ). The solution was mixed very well.





4- The solution then was filtered with filter paper to obtain pure solution as this is the proper method explained by agriculture engineer. Then the neem extract was prepared and ready to be used for the experiment.

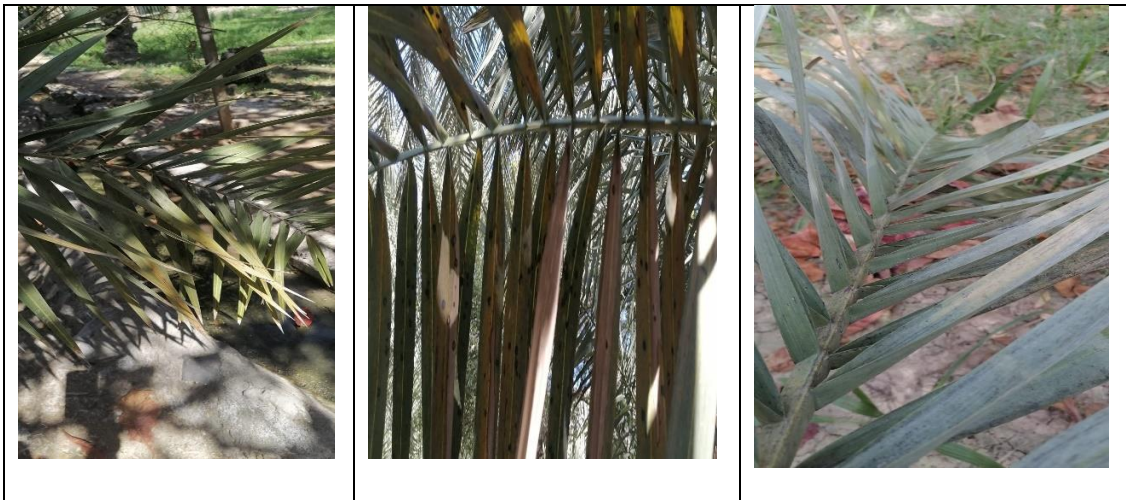


- 5- After the solution was prepared and taken to the farms were the affected palm trees are, we sprayed the leaves that were affected and the leaves that were not affected next to them. For three weeks.
- 6- The palm trees were observed daily and pictures were taken every day.

## Results and analysis: -



We observed that the black scorch spots were not spread to the laves that were healthy, also from the pictures we were able to see that the affected leaves were not increasing in the amount of fungi spot.





## **Result discussion and conclusion: -**

It has been proven that the neem extract contains many benefits to the plants. It contains elements and compounds that kill pathogenic organisms like some mites and fungus. Therefore, we were able to observe the positive effect of the neem. Hence, we conclude that this study should be followed in a longer period of time and we must spray the young palm trees to prevent the future effect of the diseases.

We should spread awareness of the benefits of the neem plant and how farmers can use it as a naturally agricultural pesticide

## **Recommendations: -**

- 1- To follow more procedures and protocols about the neem use such as targeting the roots of the palm and other parts of the farm.

- 2- To Educate farmers and community members about the problem of the effect of black scorch on palm trees.
- 3- To Encourage farmers to use natural methods that limit the presence of black blight.
- 4- Spreading awareness among farmers through lectures by informing them of the importance of eliminating this epidemic and using safe methods to reduce it.

## Acknowledgments:

We would like to thank the following participants who helped us in this study

- 1- Eng. Mohammed ALrebibi
- 2- Eng. Laila ALgaithi
- 3- Eng. Bader ALduhori
- 4- Eng. Mohammed Ali ALabdli(Plant disease researcher/  
General Directorate of Agricultural and Animal Research in  
Al-Ramis – Barka)
- 5- Eng. Mohammed ALnassri(General Directorate of  
Agricultural and Animal Research in Al-Ramis – Barka)
- 6- Eng. Zaher Saif ALSalmani ( Head of the Palm Research  
Department at the Palm Research and Plant Production  
Center - General Directorate of Agricultural and Plant  
Research - Ministry of Agricultural Revolution, Fisheries and  
Water Resources)
- 7- Mr.Sultan Said Hmood Sultan ALShehhi(Agricultural  
extension technician)
- 8- Mr. Ahmed Sulaiman Mohammed ALShehhi( Plant protection  
technician)



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