



**KNM GOVT .DEGREE COLLEGE
MIRYALAGUDA-NALGONDA**

**BOTANY
JIGNASA STUDENT STUDY PROJECT
2022-2023**

KNM GOVERNMENT DEGREE COLLEGE -MIRYALAGUDA

DEPARTMENT OF BOTANY

JIGNASA-STUDENT STUDY PROJECT

Academic Year 2022-23

On

“Prevention of Crown Gall Disease in Tomato Plants

By Garlic Extract”

PRESENTED BY

G. Varun kumar (B.Sc. BZC, III Year)

R. Sanghavi (B.Sc. BZC, III Year)

MD. Sana (B.Sc. BZC, III Year)

T. Srinadh (B.Sc. BZC, II Year)

P. Shiva (B.Sc. BZC, II Year)

D.Sravani (B.Sc. BZC, III Year)

SUPERVISED BY

R. SWAPNA

Lecturer in Botany


KNM GDC, Miryalaguda

CERTIFICATE

This is to certify that this project report entitled, "*Prevention of Crown Gall Disease in Tomato Plants by Garlic Extract*" is the bona fide work of B.Sc. students during the academic year 2022-23 under the supervision of R. Swapna, Lecturer in Botany.

Place: Miryalaguda

Date: 02.05.2023


Principal
K.N.M. Govt. Degree College
MIRYALGUDA

ACKNOWLEDGEMENTS

We are expressing our thanks to Smt.R.Swapna, Lecturer in Botany, graduation courses KNM Government Degree College, Miryalaguda. My supervisor for her valuable guidance of the project,

We would like to thank to Dr .B.Bixamaiah Goud Principal KNM Government Degree College, Miryalaguda, Nalgonda for providing necessary facilities to carry out our project work.

We also extended our special thanks to Dr.G.Naresh Lecturer in Economics and Jignasa Coordinator for the initiation, progress and completion of the study project.

We would like to express our heartfelt thanks to the Teaching and Non – Teaching faculty of KNM Government Degree College Miryalaguda for their unconditional support to completion of this project work.

B.Sc Students 2022-2023

Our project is about if garlic capsules can prevent crown gall, which is basically cancer in plants.

Aim

Prevention of crown gall disease in tomato plants by garlic extract.

Abstract

Crown gall is a plant disease caused by the soil bacterium *Agrobacterium tumefaciens*. This project uses tomato plants to investigate whether garlic extract can prevent crown gall infection.

Objective

The objective of this project is to determine whether or not a garlic powder solution can prevent crown gall in tomato plants.

Introduction

Crown gall is a plant disease caused by the bacterium *Agrobacterium tumefaciens*. Crown gall affects a large variety of broad-leaved (dicotyledonous) plants, including tomato, apple, pear, cherry, almond, raspberry, and rose plants. It is characterized by the development of *galls*—large, tumor-like swellings—on the plant. Typically (but not always), the galls appear on the crown of the plant, just about the soil level. Figure 1, shows photograph of crown galls on tomato

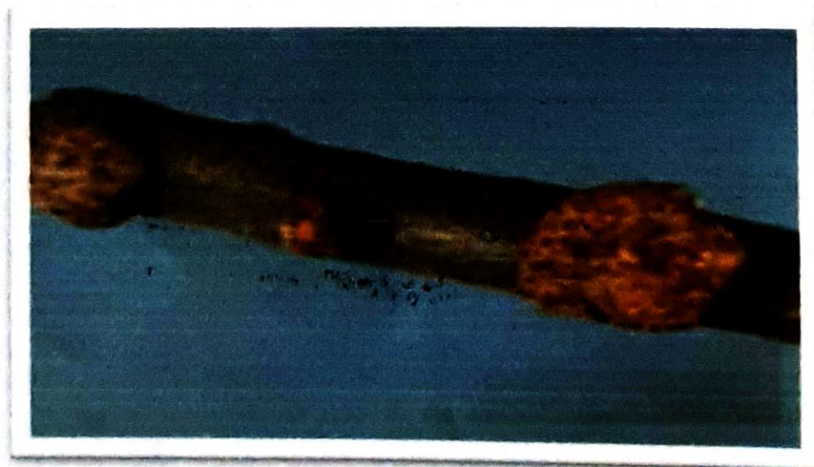


Figure 1. Crown gall on a Tomato plant

Research Methodology

Data Analysis

1. In this project we take Two different sets of tomato plants, with 6 plants each. The table shows the experimental conditions for the four sets.

#	Description	Innoculation	Treatment
1	POT #1	stab with crown gall pin	plain water
2	POT#2	stab with crown gall pin	garlic solution

2. Pot #1 is a positive control. These tomato seedlings will be stab inoculated with bacteria, and the stabs will be treated with plain water. we should expect all of these seedlings to develop galls (that's why it is called a "positive" control.) It is important to include this control condition. These plants must develop galls.

3. Pot #2 has the test seedlings. These will be stab inoculated with bacteria, and the stabs will be treated with garlic solution. Comparing these seedlings to those in pot #1 will tell us if the garlic treatment has a preventive effect.

4. For plants treated with garlic solution (pots 2), pipette 1 ml of the garlic solution over the stab wound immediately after inoculation, and then once a day for the next four days (5 treatments total).

5. For plants treated with water (pots 1), pipette 1 ml of water over the stab wound immediately after inoculation, and then once a day for the next four days (5 treatments total).

6. Allow the plants to grow for 2–3 weeks. We observe the plants daily.
7. Figure 2, shows an example of a tomato seedling that has developed a crown gall three weeks after stab inoculation with *A. tumefaciens*.



Figure 2. Examples of crown galls developing on tomato seedlings three weeks after stab inoculation (arrows) with *A. tumefaciens*.

8. Compare the number of seedlings with galls between pots 1 and 2. Is garlic effective at preventing crown gall at the concentration we tested.







Agrobacterium tumefaciens

- It is a Gram-negative bacterial agent of crown gall disease in many plant species of dicots.
- It is a soil saprophyte. Genus is *Agrobacterium* and bacterium is *Agrobacterium tumefaciens*.
- It is a serious pathogen of many crops, particularly ornamental plants etc.
- It is naturally harmful for most of the crops.
- It is characterized by the development of galls large and small.
- It attacks the gall apparatus of the plant.

GOVERNMENT OF TELANGANA
Commissionerate of Collegiate Education
JIGNASA 2022-23
STUDENTS STUDY PROJECTS
STATE LEVEL PRESENTATIONS & SELECTIONS
Government College (A)
Nayadole
State Project









Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to R. SWAPNA
Asst/Assoc. Professor of Botany GDC MIRYALAGUDA
in recognition of his/her participation as
Faculty Supervisor in Jignasa-Student Study Projects-State Level Presentation &
Selection in the subject _____ **for the academic year 2022-23.**

Academic Guidance Officer

Commissioner of Collegiate Education

Sponsored by State Project Directorate, RUSA



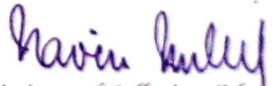
Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to G. VARUN KUMAR
of GDC MIRYALAGUDA in recognition of
his/her participation in Jignasa-Student Study Projects-State Level Presentation &
Selection for the academic year 2022-23.


Academic Guidance Officer


Commissioner of Collegiate Education

Sponsored by State Project Directorate, RUSA



Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to R. SANGHAVI
of GDC Minyalaguda in recognition of
his/her participation in Jignasa-Student Study Projects-State Level Presentation &
Selection for the academic year 2022-23.

Academic Guidance Officer

Navin Kulkarni
Commissioner of Collegiate Education

Sponsored by State Project Directorate, RLISA

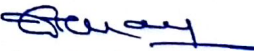


Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to D. SRAVANI
of GDC Minyalaguda in recognition of
his/her participation in Jignasa-Student Study Projects-State Level Presentation &
Selection for the academic year 2022-23.


Academic Guidance Officer


Commissioner of Collegiate Education

Sponsored by State Project Directorate, RLISA



Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to T.SRINADH
of GDC Minyalaguda in recognition of
his/her participation in Jignasa-Student Study Projects-State Level Presentation &
Selection for the academic year 2022-23.

Academic Guidance Officer

Commissioner of Collegiate Education

Sponsored by State Project Directorate, RLISA



Government of Telangana
Commissionerate of Collegiate Education



Certificate of Participation

This certificate is awarded to P. SHIVA
of GDC Minjalaguola in recognition of
his/her participation in Jignasa-Student Study Projects-State Level Presentation &
Selection for the academic year 2022-23.

Academic Guidance Officer

Commissioner of Collegiate Education

Sponsored by State Project Directorate, RLISA