



Sohag University



Faculty of Science



Botany & Microbiology Dept.

**ASSESSMENT OF PHYSIOLOGICAL PERFORMANCE AND
GROWTH OF SOME CROP PLANTS DURING BIOCONTROL
OF THEIR MEALYBUG PEST USING THE
ENTOMOPATHOGENIC FUNGUS
*BEAUVERIA BASSIANA***

A THESIS

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TABEL OF CONTENTS

| SUBJECT | PAGE |
|---|---------------|
| ACKNOWLEDGMENTS | i-ii |
| TABEL OF CONTENTS | iii-iv |
| LIST OF TABLES | v |
| LIST OF FIGURES | vi-vii |
| ABBREVIATIONS | viii |
| ABSTRACT | ix |
| INTRODUCTION | 1-4 |
| AIM OF THE WORK | 5 |
| REVIEW OF LITERATURE | 6-18 |
| MATERIALS AND METHODS | 19-27 |
| RESULTS | 28-57 |
| Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on cotton plant. | 28 |
| Effect on vegetative growth. | 28 |
| Effect on synthesized vital compounds. | 32 |
| Effect on pigments of photosynthesis: chlorophyll a & b and carotenoid (mg/g leaf f. wt.). | 32 |
| Effect on total proteins. | 34 |
| Effect on total flavonoids (μg QE/mg d. wt.) and total antioxidant capacity (%). | 36 |
| Effect on antioxidation capacity (peroxidase and catalase enzymes). | 38 |
| Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on tomato plants. | 41 |
| Effect on vegetative growth. | 41 |
| Effect on synthesized vital compounds. | 45 |
| Effect on pigments of photosynthesis: chlorophyll a & b and carotenoid (mg/g leaf f. wt.). | 45 |
| Effect on total proteins. | 47 |
| Effect on total flavonoids (μg QE/mg d. wt.) and antioxidant capacity. | 49 |
| Effect on antioxidation capacity (peroxidase and catalase enzymes). | 51 |

TABEL OF CONTENTS

| SUBJECT | PAGE |
|---|--------------|
| Effect of endophytic, <i>Beauveria bassiana</i> with two inoculation methods on the artificial infestation of mealybug, <i>Phenacoccus solenopsis</i> on cotton plants. | 54 |
| Controlling of mealybug, <i>P. solenopsis</i> by using endophyte, <i>B. bassiana</i> inoculation on cotton plants. | 54 |
| DISCUSSION | 58-68 |
| SUMMARY | 69-71 |
| CONCLUSION | 72-73 |
| RECOMMENDATION | 74 |
| REFERENCES | 75-94 |
| الملخص العربي | ٣-١ |

LIST OF TABLES

| TABLE NO. | TITLE | PAGE |
|------------------|---|-------------|
| 1 | Table (1): Fresh and dry parameters of cotton roots and stems affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 29 |
| 2 | Table (2): Chlorophyll a & b and carotenoid affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 33 |
| 3 | Table (3): Total protein content affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 35 |
| 4 | Table (4): Total content of flavonoids and total antioxidation capacity affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 37 |
| 5 | Table (5): Activities of some antioxidation enzymes: peroxidase and catalase enzymes affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 39 |
| 6 | Table (6): Fresh and dry parameters of tomato plants affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 42 |
| 7 | Table (7): Chlorophyll a & b and carotenoid affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation of tomato plants | 46 |
| 8 | Table (8): Total protein content affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 48 |
| 9 | Table (9): Total content of flavonoids and total antioxidation capacity affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 49 |
| 10 | Table (10): Activities of some antioxidation enzymes: peroxidase and catalase enzymes affected by mealybug, <i>P. solenopsis</i> infestation and <i>B. bassiana</i> inoculation | 52 |
| 11 | Table (11): Effect of two inoculation methods of endophytic, <i>B. bassiana</i> on the artificial infestation of <i>P. solenopsis</i> on cotton plants | 56 |

LIST OF FIGURES

| FIG. NO. | TITLE | PAGE |
|-----------------|---|-------------|
| 1 | Figure (1): Fresh stem and root lengths of treated cotton plants in addition to control. | 30 |
| 2 | Figure (2): Fresh stem and root weights of treated cotton plants in addition to control | 30 |
| 3 | Figure (3): Dry stem and root weights of treated cotton plants in addition to control | 31 |
| 4 | Figure (4): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on chlorophyll a & b and carotenoid | 34 |
| 5 | Figure (5): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total protein content | 35 |
| 6 | Figure (6): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total content of flavonoids | 37 |
| 7 | Figure (7): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total antioxidation capacity | 38 |
| 8 | Figure (8): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on activity of peroxidase enzyme | 40 |
| 9 | Figure (9): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on activity of catalase enzyme | 40 |
| 10 | Figure (10): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on fresh stem and root lengths of tomato plants | 43 |
| 11 | Figure (11): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on fresh stem and root weights of tomato plants | 43 |
| 12 | Figure (12): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on dry stem and root weights of tomato plants | 44 |
| 13 | Figure (13): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on chlorophyll a & b and carotenoid of tomato plants | 47 |

LIST OF FIGURES

| | | |
|-----------|--|-----------|
| 14 | Figure (14): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total protein content of tomato plants | 48 |
| 15 | Figure (15): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total content of flavonoids of tomato plants | 50 |
| 16 | Figure (16): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on total antioxidant capacity of tomato plants | 50 |
| 17 | Figure (17): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on activity of peroxidase enzyme of tomato plants | 52 |
| 18 | Figure (18): Effect of endophytic, <i>B. bassiana</i> inoculation and mealybug, <i>P. solenopsis</i> infestation on activity of catalase enzyme of tomato plants | 53 |
| 19 | Figure (19): Mean (\pm SEM) days after inoculation of cotton plants by <i>B. bassiana</i> with different methods of leaves and roots inoculation and mean number of adults and crawlers | 57 |

ABSTRACT

Background: Bio-control measures of using fungi are based on exogenous application, which is very costly, as the presence of unsuitable condition may kill most of the conidia resulting in multiple applications. With endophytic establishment, the biocontrolling fungi can be present continuously. The present work was carried out to explore the effect of inoculation of endophytic fungus, *Beauveria bassiana* (Balsamo) Vuillemin (Ascomycota: Hypocreales), (family Cordycipitaceae) and infestation of *Phenacoccus solenopsis* (Pseudococcidae; Hemiptera) on growth and physiological activities of two important plants, Egyptian cotton, *Gossypium barbadense* (family Malvaceae), and tomato, *Solanum lycopersicum*, (family Solanaceae), at Shandaweel Agriculture Research Station, Sohag Governorate, Egypt under semi field conditions during 2019 season.

Results: The study was conducted in three main directions: First: Effect of fungus on plants. The effect of *B. bassiana* was positive on most of the traits studied such as fresh weight, plant height, total protein, content of flavonoids, and antioxidation capacity. Second: Effect of insect infestation on plants. The effect of *P. solenopsis* infestation on plants was non-significant for most of the traits studied, but the common effect of fungus and insect had clear significant differences for some of the qualities. Third: Indirect effect of the fungus on *Phenacoccus solenopsis*, where the effect of the use of *B. bassiana* on the plant in the census of *P. solenopsis* on plants and on the life cycle of the *P. solenopsis*.

Conclusions: In conclusion, *B. bassiana* enhanced growth and physiological process performance. The insects of the mealybugs were affected by using the fungus.

Key words: Antioxidant, *Beauveria bassiana*, cotton, endophytes, entomopathogen, flavonoids, *Phenacoccus solenopsis*, protein, tomato.