

# CONTENTS

Page No. (i)

Preface	.....	I
Acknowledgement	.....	III
List of abbreviations	.....	IV
Glossary	.....	VII

## CHAPTERS

### 1. INTRODUCTION

1.1. Introduction to <i>Solanum melongena</i> L. (brinjal or egg plant)	.....	1
1.2. Nature and symptoms of damage caused by four major pests of brinjal	.....	3
1.3. Screening of brinjal germplasm against major insect pests	.....	7
1.4. Variability studies on different traits of brinjal cultivars	.....	8
1.5. Correlations and path-analysis of various traits of brinjal	.....	9
1.6. Genetic divergence in brinjal	.....	11
1.7. Judicious use of pesticides under IPM	.....	11
1.8. Performance of parent and F <sub>1</sub> hybrids	.....	12
1.9. Principal objectives of the present investigation	.....	13

### 2. REVIEW OF LITERATURE

2.1. List of brinjal pests occurring in India	.....	15
2.2. Effect of environmental factors on the bionomics of pests species	.....	18
2.3. Screening of germplasm	.....	20
2.4. Variability studies	.....	30
2.5. Correlation and path analysis	.....	34
2.6. Genetic divergence	.....	38
2.7. Chemical control	.....	40
2.8. Heterosis in brinjal	.....	40
2.8.1. Vegetative characters		
2.8.2. Reproductive characters		
2.8.3. Susceptibility components		

<b>3. MATERIALS AND METHODS</b>	
3.1. Major pests studied and the methods employed for pest sampling	46
3.2. Agroclimatic features of the experimental site	47
3.3. Source of germplasm	48
3.4. Source of agrochemicals	50
3.5. Screening of <i>Solanum melongena</i> for its relative susceptibility to four major insect pests	50
3.5.1. Relative susceptibility to <i>Leucinodes orbonalis</i> as a fruit borer and as a shoot borer	
3.5.2. Relative susceptibility to jassid, aphid and spotted leaf beetle	
3.6. Variability studies	52
3.6.1. Genotypic and phenotypic variability for vegetative characters	
3.6.2. Variability for some reproductive characters	
3.6.3. Variability for some important susceptibility components for <i>L. orbonalis</i> attack	
3.7. Correlation and path analysis	56
3.8. Genetic divergence	57
3.9. Screening of 12 agrochemicals using <i>L. orbonalis</i> as a shoot borer and as a fruit borer	57
3.9.1. Efficacy of 12 agrochemicals on the suppression of <i>L. orbonalis</i> infesting a local cultivar (Dhepa)	
3.9.2. Impact of 12 agrochemicals on growth and yield of brinjal and cost : benefit ratio	
3.9.3. Efficacy of pesticide combinations using six promising brinjal cultivars under modern concept of IPM	
3.10. Performance of six selected parents and their thirty F <sub>1</sub> hybrids	60
3.11. Statistical calculations and biometrical methods	65
3.12. Computer software used	68

<b>4. RESULTS</b>	
4.1. Screening of <i>Solanum melongena</i> for its relative susceptibility to four major insect pests .....	69
4.1.1. To <i>Leucinodes orbonalis</i> as a fruit borer and as a shoot borer	
4.1.2. To jassid, aphid and spotted leaf beetle	
4.2. Variability studies .....	74
4.2.1. Variability of <i>S. melongena</i> for some vegetative characters	
4.2.2. Variability for some reproductive characters	
4.2.3. Susceptibility components for the attack by <i>L. orbonalis</i>	
4.3. Correlation and path analysis .....	76
4.3.1. Three levels of correlation and path analysis for some important vegetative characters with marketable yield.	
4.3.2. Three levels of correlation and path analysis for some important reproductive components with total yield.	
4.3.3. Three levels of correlation and path analysis for some important susceptibility components towards the attack by <i>L. orbonalis</i> with loss of yield	
4.4. Genetic divergence .....	80
4.5. Screening of 12 agrochemicals using <i>L. orbonalis</i> as a shoot borer and as a fruit borer .....	83
4.5.1. Efficacy of 12 agrochemicals on the suppression of <i>L. orbonalis</i> infestation	
4.5.2. Impact of 12 agrochemicals on growth and yield of brinjal and the cost : benefit ratio	
4.5.3. Screening of pesticide combinations using six promising brinjal cultivars under modern concept of IPM.	
4.6. Performance of six selected parents and their thirty $F_1$ hybrids .....	87

# CONTENTS

Page No. (iv)

4.6.1. Vegetative characters	
4.6.2. Reproductive characters	
4.6.3. Susceptibility components	
<b>5. DISCUSSION</b>	
5.1. Screening of <i>Solanum melongena</i> against four major insect pests	103
5.2. Variability studies	107
5.3. Correlation and path analysis	110
5.4. Genetic divergence	119
5.5. Screening of 12 agrochemicals using <i>L. orbonalis</i> as a shoot borer and as a fruit borer	122
5.6. Performance of six selected parents and their thirty F <sub>1</sub> hybrids	127
<b>6. SUMMARY</b>	136
<b>7. HIGHLIGHTS</b>	145
<b>8. REFERENCES</b>	148
<b>ANNEXURE-I.</b> List of abstracts of paper presented in Seminars/Symposia and the papers communicated for publication	i
<b>ANNEXURE-II.</b> List and copies of published papers related to the Thesis Work	iv

---

---