
CONTENTS



- o - C O N T E N T S - o -

| <u>CHAPTER</u> | <u>TITLE</u> | <u>PAGE</u> |
|----------------|--|-------------|
| | <u>INTRODUCTION</u> .. | 12 |
| (I) | <u>REVIEW OF RELATED LITERATURE</u> .. | |
| A) | General account of safflower- | 19 |
| B) | Physiological studies in safflower- | 32 |
| C) | Scope of present investigation- | 38 |
| (II) | <u>MATERIAL AND METHODS</u> .. | |
| A) | About the pesticide used in the present investigation. | |
| 1. | Metacid - 50 (Methyl Parathion) | 43 |
| B) | Material | 44 |
| C) | Methods | 45 |
| C1.) | <u>Before Insecticide Spray</u> | |
| (a) | Physical Properties | 45 |
| (b) | <u>Organic Constituents</u> | |
| 1. | Chlorophylls | 46 |
| 2. | Nitrogen | 47 |
| 3. | Polyphenols | 48 |
| 4. | Carbohydrates | 49 |

| <u>CHAPTER</u> | <u>TITLE</u> | <u>PAGE</u> |
|----------------|--|-------------|
| (o) | <u>Inorganic Constituents</u> | |
| i) | Preparation of acid digest | 51 |
| ii) | Estimation of Sodium and Potassium | 52 |
| iii) | Estimation of Calcium, Magnesium Iron, Copper, Zinc and Manganese. | 52 |
| iv) | Estimation of Chlorides | 52 |
| C2.) | <u>After Spray Insecticide</u> | 53 |
| (a) | Physical Properties | |
| (b) | Organic Constituents | 53 |
| i) | Chlorophylls | |
| ii) | Nitrogen | |
| iii) | Polyphenols | |
| iv) | Carbohydrates | |
| (c) | <u>Inorganic Constituents</u> | 53 |
| i) | Preparation of acid digest (Extract) | |
| ii) | Estimation of sodium and Potassium | |
| iii) | Estimation of Calcium, Magnesium, Iron, Copper, Zinc and Manganese. | |
| iv) | Estimation of Chlorides. | |
| (III) | <u>RESULT AND DISCUSSION</u> | .. |
| A) | <u>BEFORE SPRAY THE INSECTICIDE</u> | 54 |
| (a) | Physical Properties | 58 |
| (b) | <u>Organic Constituents</u> | |
| i) | Chlorophylls | 58 |
| ii) | Nitrogen | 62 |

| <u>CHAPTER</u> | <u>TITLE</u> | <u>PAGE</u> |
|----------------|------------------------------------|-------------|
| iii) | Polyphenols | 59 |
| iv) | Carbohydrates | 59 |
| (c) | <u>Inorganic Constituents</u> | |
| i) | Sodium | 64 |
| ii) | Potassium | 64 |
| iii) | Calcium | 66 |
| iv) | Magnesium | 67 |
| v) | Iron | 67 |
| vi) | Copper | 68 |
| vii) | Zinc | 68 |
| viii) | Manganese | 69 |
| ix) | Chlorides | 69 |
| (B) | <u>AFTER SPRAY THE INSECTICIDE</u> | |
| (a) | Physical properties | 72 |
| (b) | <u>Organic Constituents</u> | |
| i) | Chlorophyllia | 74 |
| ii) | Nitrogen | 76 |
| iii) | Polyphenols | 75 |
| iv) | Carbohydrates | 75 |
| (c) | <u>Inorganic Constituents</u> | |
| i) | Sodium | 78 |
| ii) | Potassium | 78 |
| iii) | Potassium/Sodium ratio | 79 |

| <u>CHAPTER</u> | <u>TITLE</u> | <u>PAGE</u> |
|----------------|----------------------------------|-------------|
| iv) | Calcium | 79 |
| v) | Magnesium | 80 |
| vi) | Iron | 80 |
| vii) | Copper | 81 |
| viii) | Zinc | 82 |
| ix) | Manganese | 82 |
| x) | Chlorides | 83 |
| (IV) | SUMMARY AND CONCLUSIONS - | .. 84 |
| | BIBLIOGRAPHY | .. 89 |
| | STATEMENT - I | .. 109 |
| | STATEMENT - II | .. 108 |

- o - LIST OF TABLES - o-

| <u>Chapter No.</u> | <u>Table No.</u> | <u>Title of Table</u> | <u>Page No.</u> |
|--------------------|------------------|--|-----------------|
| (I) | 1) | Total area, total production and average yield of oil seed crops in Maharashtra and India (1978-79 to 1983-84). | 22 |
| | 2) | Area, production and yield of different oil seed crops in Maharashtra and India (1983-84) | 23 |
| | 3) | Area, production and yield of different oil seed crops in INDIA (1980-81 and 1984-85). | 24 |
| (III) | 4) | Effect of Aphid infestation on physical properties of safflower. (<u>Carthamus tinctorius L.</u>) Variety. | 57 |
| | 5) | Effect of aphid infestation on organic constituents in the leaves of safflower (<u>Carthamus tinctorius L.</u>) variety. | 60 |
| | 6) | Effect of Aphid infestation on inorganic constituents in the leaves of safflower (<u>Carthamus tinctorius L.</u>) Variety. | 65 |

| Chapter No. | Table No. | Title of Table | Page No. |
|-------------|-----------|--|----------|
| | | 7) Effect of methyl parathion on physical properties of safflower (<i>Carthamus tinctorius L.</i>) variety. | 71 |
| | | 8) Effect of methyl parathion on organic constituents of safflower (<i>Carthamus tinctorius L.</i>) variety. | 73 |
| | | 9) Effect of methyl parathion on inorganic constituents of safflower (<i>Carthamus tinctorius L.</i>) variety. | 77 |

- 0 - 0 - 0 - 0 - 0 -

- o - LIST OF FIGURES - o -

| <u>Chapter No.</u> | <u>Figure No.</u> | <u>Title</u> | <u>Page NO.</u> |
|--------------------|-------------------|---|-----------------|
| (II) | I) | Healthy safflower <i>(Carthamus tinctorius L.) Variety.</i> | 55 |
| | II) | Aphid Infestation on safflower <i>(Carthamus tinctorius L.) Variety.</i> | 56 |
| | III) | Identification of Aphids (Close up) | 60 |
| | IV) | Aphids on the lower surface of leaf of safflower <i>(Carthamus tinctorius L.)</i> Variety) and also Healthy leaf. | 63 |
| | V) | Effect of Methyl parathion on safflower <i>(Carthamus tinctorius L.) Variety.</i> | 70 |

- o - o - o - o -