



Contents

C O N T E N T

| <u>Chapter</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| | INTRODUCTION | 1 |
| 1 | PHYSICAL AND CHEMICAL PROPERTIES OF SOILS | 7 |
| | I. Introduction | 8 |
| | a) Red soils | 9 |
| | b) Black soils | 14 |
| | c) Red + Black soil | 17 |
| | II. Material and Methods | 18 |
| | A) Material | 18 |
| | B) Methods | 19 |
| | III. Results | 20 |
| | a) Soil-texture, water holding capacity and bacterial count | 20 |
| | b) Moisture percentage | 22 |
| | c) Soil pH | 22 |
| | d) Mineral constituents | 24 |
| | IV. Discussion | 25 |
| | a) Soil-texture, water holding capacity and bacterial count | 25 |
| | b) Moisture percentage | 27 |
| | c) Soil pH | 28 |
| | d) Mineral constituents | 30 |
| | i) Sodium | 30 |
| | ii) Potassium | 31 |
| | iii) Calcium | 32 |
| | iv) Magnesium | 33 |
| | v) Manganese | 34 |
| | vi) Iron | 35 |
| | vii) Phosphorus | 36 |
| | viii) Chlorides | 37 |

Content - (contd.)

| <u>Chapter</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2 | EFFECT OF SOIL TYPE ON INORGANIC CONSTITUENTS OF <u>C. CAJAN.</u> VAR. T-84 | 39 |
| | I. Introduction | - 40 |
| | General role of mineral elements in crop growth. | - 40 |
| | a) Sodium | - 40 |
| | b) Potassium | - 41 |
| | c) Calcium | - 43 |
| | d) Magnesium | - 45 |
| | e) Phosphorus | - 46 |
| | f) Iron | - 48 |
| | g) Manganese | - 49 |
| | h) Chloride | - 50 |
| | II. Material and Methods | - 51 |
| | A) Material | - 51 |
| | B) Methods | - 51 |
| | III. Results | - 52 |
| | a) Moisture | - 52 |
| | b) Sodium | - 52 |
| | c) Potassium | - 53 |
| | d) Calcium | - 53 |
| | e) Magnesium | - 53 |
| | f) Phosphorus | - 53 |
| | g) Iron | - 53 |
| | h) Manganese | - 56 |
| | i) Chlorides | - 56 |
| | IV. Discussion | - 58 |
| | a) Moisture | - 58 |
| | b) Sodium | - 58 |
| | c) Potassium | - 58 |

Content - (contd.)

| <u>Chapter</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2 contd. | d) Calcium | - 60 |
| | e) Magnesium | - 60 |
| | f) Phosphorus | - 62 |
| | g) Iron | - 62 |
| | h) Manganese | - 65 |
| | i) Chlorides | - 68 |
| 3 | EFFECT OF SOIL TYPE ON ORGANIC CONSTITUENTS OF <u>C. CAJAN</u>, VAR. T-84 | |
| | I. Introduction | - 67 |
| | II. Material and Methods | - 68 |
| | A) Material | - 68 |
| | B) Methods | - 68 |
| | III. Results | - 69 |
| | a) Titratable Acid Number (TAN) | - 69 |
| | b) Chlorophylls | - 71 |
| | c) Polyphenols | - 71 |
| | d) Carbohydrates | - 71 |
| | e) Nitrogen | - 72 |
| | f) Protein | - 75 |
| | g) Proline | - 75 |
| | IV. Discussion | - 75 |
| | a) Titratable Acid Number (TAN) | - 75 |
| | b) Chlorophylls | - 78 |
| | c) Polyphenols | - 82 |
| | d) Carbohydrates | - 85 |
| | e) Nitrogen | - 85 |
| | f) Proteins | - 90 |
| | g) Proline | - |



Content - (contd.)

| <u>Chapter</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| 4 | EFFECT OF SOIL TYPE ON GROWTH OF <u>C. GAJAN</u> , VAR. T-84 | - 95 |
| | I. Introduction | - 95 |
| | II. Material and Methods | - 95 |
| | A) Material | - 95 |
| | B) Methods | - 98 |
| | III. Results | - 102 |
| | IV. Discussion | - 105 |
| 5 | SUMMARY AND CONCLUSION | - 114 |
| | BIBLIOGRAPHY | - 119 |
| | STATEMENT I | - 135 |
| | STATEMENT II | - 156 |

...