

CONTENTS

| | Page |
|--|------|
| INTRODUCTION | 1 |
| REVIEW OF LITERATURE | 4 |
| MATERIAL AND METHODS | 21 |
| I. Growth and yield characteristics | 23 |
| II. Determination of oil percentage and fatty acids ... | 24 |
| 1. Oil percentage | 24 |
| 2. Identification and determination of fatty acids .. | 24 |
| III. Genetical analysis | 25 |
| 1. Heterosis | 29 |
| 2. General and specific combining ability | 30 |
| RESULTS AND DISCUSSION | 35 |
| I. Growth and yield characteristics | 35 |
| A. Analysis of variance, means, heterosis and inbreeding depression | 35 |
| a. F ₁ -generation | 35 |
| b. F ₂ -generation | 45 |
| B. Combining ability | 57 |
| a. F ₁ -generation | 57 |
| b. F ₂ -generation | 67 |
| II. Seed oil content and fatty acids | 75 |
| A. Analysis of variance, means, heterosis and inbreeding depression in F ₁ and F ₂ -generations | 75 |
| B. Combining ability in F ₁ and F ₂ -generations | 85 |
| SUMMARY | 92 |
| LITERATURE CITED | 101 |
| ARABIC SUMMARY. | |