

CONTENTS

	Page
INTRODUCTION	1
REVIEW OF LITERATURE	3
MATERIALS AND METHODS	37
RESULTS AND DISCUSSION.....	45
1. Vegetative characters.....	45
1.1. Plant height	45
1.2. Number of branches per plant	56
2. Yield and its components.....	60
2.1. Number of days to first flower bud anthesis	60
2.2. Fruit length	72
2.3. Fruit diameter.....	75
2.4. Fruit weight.....	80
2.5. Early yield.....	86
2.6. Total number of fruits per plant.....	88
2.7. Total yield per plant.....	94
3. Chemical characters	99
3.1.Fruit fibers content.....	99
3.2. Fruit non-reduced sugars content.....	107
3.3. Fruit reduced sugars content.....	109
3.4. Fruit total sugars content.....	111
SUMMARY AND CONCLUSION.....	114
REFERENCES	120
ARABIC SUMMARY	-

LIST OF TABLES

No	Table	Page
1	Sources of variation, degrees of freedom and expected mean square	41
2	Means of plant height and number of branches per plant of different parental genotypes and its F ₁ hybrids evaluated in the field	46
3	Mean square values of plant height and number of branches per plant for the different sources of variance	46
4	General combining ability effects (g _i) for plant height and number of branches per plant for the different parental genotypes.	49
5	Specific combining ability effects (S _{ij}) of the different F ₁ hybrids for plant height and number of branches per plant	50
6	Manual plotting for parabola limits and regression line, calculated statistics and tested hypothesis in the diallel eggplant crosses for plant height according to Jinks-Hayman analysis	53
7	Estimates of genetic components of variation and heritability values for plant height according to Jinks – Hayman analysis	55
8	Tested hypothesis in the diallel eggplant crosses concerning number of branches per plant, for validity of Jinks-Hayman analysis	59

No	Table	Page
9	Broad and narrow sense heritability estimates calculated using Griffing analysis for number of branches per plant	59
10	Means of number of days from transplanting to first flower bud anthesis, fruit length, fruit diameter, fruit weight, early yield per plant, total number of fruits per plant and total yield per plant of different parental genotypes and its F ₁ hybrids evaluated in the field	61
11	Mean square values of number of days from transplanting to first flower bud anthesis, fruit length, fruit diameter, fruit weight, early yield per plant, total number of fruits per plant and total yield per plant for the different sources of variance	62
12	General combining ability effects (g _i) for number of days from transplanting to first flower bud anthesis, fruit length, fruit diameter, fruit weight, early yield per plant, total number of fruits per plant and total yield per plant for the different parental genotypes	64
13	Specific combining ability effects (S _{ij}) of the different F ₁ hybrids for number of days from transplanting to first flower bud anthesis, fruit length, fruit diameter, fruit weight, early yield per plant, total number of fruits per plant and total yield per plant	65

No	Table	Page
14	Manual plotting for parabola limits and regression line, calculated statistics and tested hypothesis in the diallel eggplant crosses for number of days from transplanting to first flower bud anthesis according to Jinks-Hayman analysis	67
15	Estimates of genetic components of variation and heritability values for number of days from transplanting to first flower bud anthesis, fruit diameter, fruit weight and total number of fruits per plant according to Jinks-Hayman analysis	70
16	Tested hypothesis in the diallel eggplant crosses concerning fruit length, early yield per plant and total yield per plant for validity of Jinks- Hayman analysis	74
17	Broad and narrow sense heritability estimates calculated using Griffing analysis for fruit length, early yield per plant and total yield per plant	74
18	Manual plotting for parabola limits and regression line, calculated statistics and tested hypothesis in the diallel eggplant crosses for fruit diameter according to Jinks-Hayman analysis	78
19	Manual plotting for parabola limits and regression line, calculated statistics and tested hypothesis in the diallel eggplant crosses for fruit weight according to Jinks-Hayman analysis	84

No	Table	Page
20	Manual plotting for parabola limits and regression line, calculated statistics and tested hypothesis in the diallel eggplant crosses for total number of fruits per plant according to Jinks-Hayman analysis	92
21	Means of fruit fibers, fruit non-reducing sugars, fruit reducing sugars and fruit total sugars (g/100g.d.w.) of different parental genotypes and its F ₁ hybrids evaluated in the field	101
22	Mean square values of fruit fibers, fruit non-reducing sugars, fruit reducing sugars and fruit total sugars content for the different sources of variance	102
23	General combining ability effects (gi) for fruit fibers, fruit non-reducing sugars, fruit reducing sugars and fruit total sugars for the different parental genotypes	103
24	Specific combining ability effects (Sij) of the different F ₁ hybrids for fruit fibers, fruit non-reducing sugars, fruit reducing sugars and fruit total sugars content.	105
25	Tested hypothesis in the diallel eggplant crosses concerning fruit fibers content, fruit-non-reducing sugars content, fruit reducing sugars content and fruit total sugars content for validity of Jinks-Hayman analysis	106
26	Broad and narrow sense heritability estimates calculated using Griffing analysis for fruit fibers content, fruit-non reducing sugars content, fruit reducing sugars content and fruit total sugars content	106

LIST OF FIGURES

No	Figure	Page
1	Fruits of the different parental eggplant genotypes	38
2	Variance (VR) and covariance (WR) graph of plant height in F ₁ generation of eggplant germplasm (P1= Balady Long Purple, P2= Black Beauty, P3= Balady Long White, P4= Belleza Nera, P5 = Violetta Lunga and P6= Baker).	54
3	Variance (VR) and covariance (WR) graph of number of days from transplanting to first flower bud anthesis in F ₁ generation of egg plant germplasm (P1 = Balady Long Purple, P2 = Black Beauty, P3 = Balady Long White, P4 = Belleza Nera, P5 = Violetta Lunga and P6 = Baker).	68
4	Variance (VR) and covariance (WR) graph of fruit diameter in F ₁ generation of egg plant germplasm (P1 = Balady Long Purple, P2 = Black Beauty, P3 = Balady Long White, P4 = Belleza Nera, P5 = Violetta Lunga and P6 = Baker)	79
5	Variance (VR) and covariance (WR) graph of fruit weight in F ₁ generation of egg plant germplasm (P1 = Balady Long Purple, P2 = Black Beauty, P3 = Balady Long White, P4 = Belleza Nera, P5 = Violetta Lunga and P6 = Baker).	85