CHAPTER V

CONCLUSION AND DISCUSSION

5.1 The inbred line selection from F_3 plants to F_6 plants of 2 types galia melon

The study selection of parental to selected parental (Table 4.1), found that 5 parentals of green-fleshed galia melon (GG), 7 parentals of orange-fleshed galia melon (GO). It was different genotypes were shape, peel color, pulp color and percentage of mesh. The different genotype, which is good in terms of breeding program. The nature of the plant to be breed, propagation mating, characteristics genetic diversity and relevant genetic information such as qualitative or quantitative characteristics and heterosis. This information will be helpful in making informed plant breeding decisions and effective to achieve the objectives (Kankaew, 2011).

5.2 The study combing ability test, heterosis of F_1 hybrids

5.2.1 Green-fleshed galia melon (GG)

The combining ability test was using half diallel cross method, followed Griffing's Method 2 Model 1 (Griffing, 1956), which seeds of F_5 seeds in selected. For green-fleshed galia melon (GG) gave 10 hybrids and planted compare 5 parentals. The experiment plan used the completely randomized design (CRD). There were 3 replications and 3 plants per replication. From analysis of variance of mean in fruit and yield component characteristics, found that the genotype, the comparison among the parent lines, the comparison among the hybrids and the class comparisons between parent lines and hybrids. There was statistically significant difference in commercially important characteristics. When comparing the GCA : SCA ratio, found that the positive gene effect with more important than the negative gene influence in all characteristics studied. This is consistent with the study of El-Eslamboly (2018). From analysis variance, found that the lines A3 and A4 had low fruit cavity length. In addition, the lines A1, A2

and A5 had the best parent, especially A2 line had good characteristics such as fruit weight, fruit length and fruit pulp thickness. That, there were corresponds to GCA, found that the line A2 has high GCA values of important characteristics. The estimates of SCA in F_1 hybrids, found that the hybrids A12, A14, A23 and A24 had high SCA values, corresponds to heterosis values, these hybrids had high heterosis values for important characteristics. This hybrid can be used to develop into a hybrid in the future (Figure 5.1).

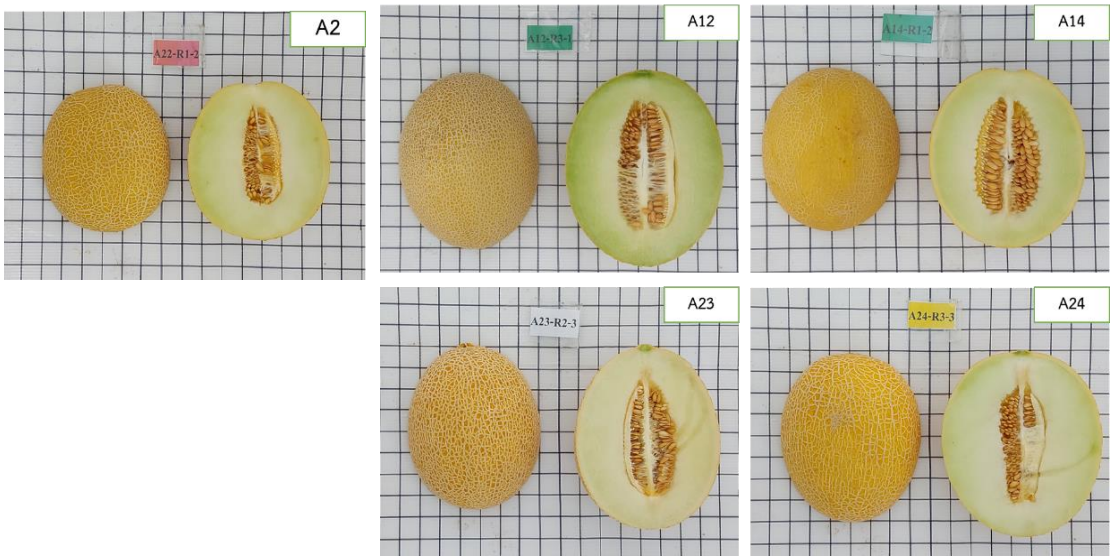

Figure 5.1 The parent line was high GCA and F_1 hybrids were high SCA and heterosis for important characteristics of fruit in green-fleshed galia melon.

5.2.2 Orange-fleshed galia melon (GO)

The combining ability test was using half diallel cross method, followed Griffing's Method 2 Model 1 (Griffing, 1956), which seeds of F_5 seeds in selected. For orange-fleshed galia melon (GO) gave 21 hybrids and planted compare 7 parentals. The experiment plan uses the completely randomized design (CRD). There were 3 replications and 3 plants per replication. From analysis of variance of mean in fruit and yield component characteristics, found that the genotype, the comparison among the parent lines, the comparison among the hybrids and the class comparisons between parent lines and hybrids. There was statistically significant difference in commercially important characteristics. When comparing the GCA:SCA ratio, found that the positive gene effect with more important than the negative gene influence in all characteristics studied. This is consistent with the study of El-Eslamboly (2018). From analysis variance, found that the line B4 has high sweetness and low fruit cavity length. In addition, the lines B2, B3, B4, B6 and B8 especially B2 line had good characteristics such as fruit weight, fruit width, fruit length, firmness, and percentage of pulp. That, there were corresponds to GCA, found that the line B2 and B3 had high GCA values of important characteristics. The estimates of SCA in F_1 hybrids, found that the hybrids B18 and B34 had negative SCA values of fruit cavity length, which mean was thin peel of fruit. The hybrid B12, B27 and B78 had high SCA values in percentage of pulp and sweetness, corresponds to heterosis values, these hybrids had high heterosis values for important characteristics. This hybrid can be used to develop into a hybrid in the future (Figure 5.2).

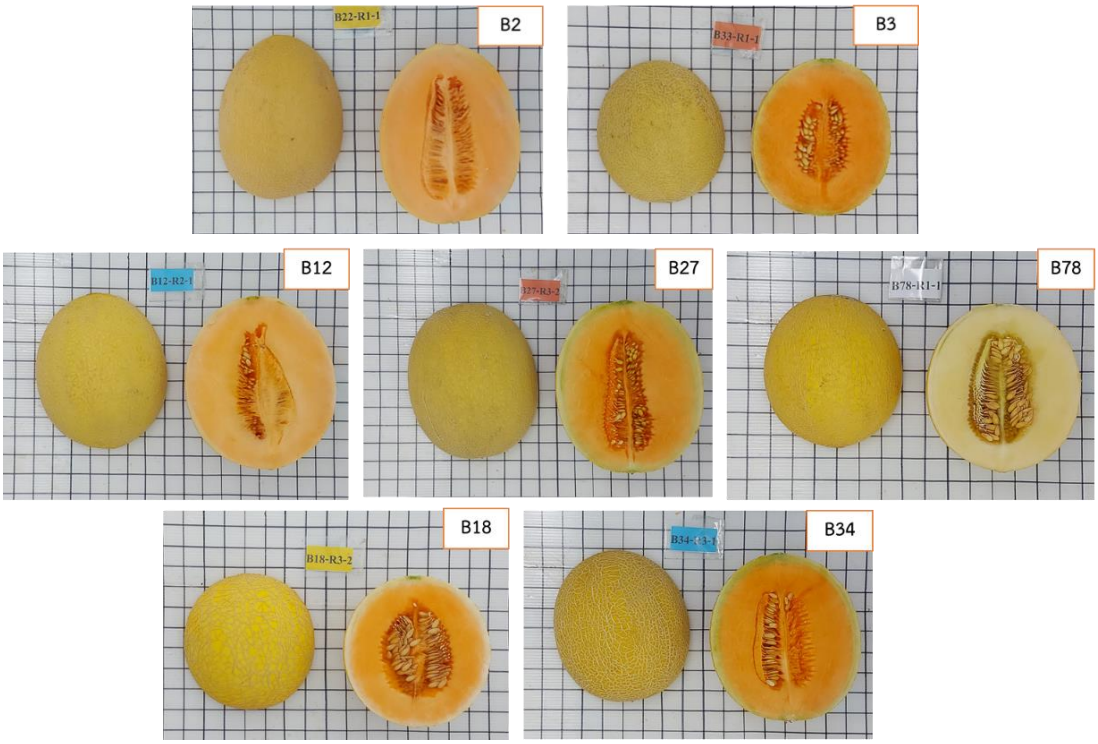

Figure 5.2 The parent lines were high GCA and F_1 hybrids were high SCA and heterosis for important characteristics of fruit in orange-fleshed galia melon.

The results were consistent with the study of Pathet (2006) study the heterosis between 2 varieties of cantaloupe, it was found that yield per plant gave a heterosis value of 12.71%, and total yield per plant gave a heterosis value of 8.20%. Showing that the hybrid between 2 varieties of cantaloupe gave yield per plant had high heterobeltiosis, and the total yield per plant was high heterosis. The last, Pidkwamlub (2014), they was study about inbred line selection in the hybrid glutinous rice corn improvement project and genetic testing, which selecting population by S_1 selection: (1) half - sib (HS), (2) full - sib (FS), and (3) S_1- progeny test (S_1); this method was able to select S_2 population with good agricultural potential The later, Kamer (2015) studies was the hybrid vigor, heritability, inbreeding depression, number of gene pairs were valued for fruit characters and yield in melon. They used half diallel mating system to obtain 10 hybrids combinations. The results revealed the hybrid were significant with positive heterosis and heterobelosis for all character. The later, Khanobdee (2016) study improvement of long fruit hybrid cucumber (*Cucumis sativus* L.) for resistance to downy mildew on increasing productivity and reducing the cost of chemicals used two

methods of combined ability test follow Griffing's method I. From diallel cross showed moderate resistance to downy mildew, stable stability with a high negative SCA of downy mildew resistance and positive SCA of fruit length. The last, Pornsuriya (2016) study was to estimate heterosis for fruit characters and yield in the inter-varietal hybrids of oriental sweet melon. They were used a half diallel cross. The results, where significant variety effect was observed for all characters. Heterosis effect was significant for fruit weight, fruit width, fruit shape index and yield. Overall heterosis partitioned into components showed that average heterosis and variety heterosis were significant for fruit width and fruit shape index. Specific heterosis was significant for fruit weight, fruit width, fruit shape index and yield. The last, Pornsuriya (2018) study the yield performance and heterosis for yield of crosses between Thai melon lines and cantaloupe testers was determined involving 4 Thai melon lines (L1, L2, L3 and L4) and 3 cantaloupe testers (cantaloupe populations: T1, T2 and T3). The results revealed that parents and crosses were significantly different in yield. The hybrid gave the highest yield, and significantly positive heterosis and significantly positive heterobeltiosis.

5.3 The study correlation between fruit component and yield characteristics

5.3.1 Green-fleshed galia melon (GG)

The study correlation was studied between weight characteristics, fruit width, fruit length, fruit cavity width, fruit cavity length, fruit pulp thickness, fruit peel thickness, sweetness, firmness. and percentage of pulp. It was found that fruit weight, fruit length and fruit cavity length. There was a positive correlation with all characteristics. Fruit width and fruit pulp thickness characteristics were positively correlated with all characteristics and except for the firmness. Fruit cavity width characteristic was positively correlated with all characteristics and except for the appearance of the thickness of the peel and the sweetness. Sweetness characteristic was negatively correlated with firmness and percentage of pulp. The firmness characteristics, there was a negative correlation with the percentage of pulp.

5.3.2 Orange-fleshed galia melon (GO)

The study of correlation was studied between weight characteristics, fruit width, fruit length, fruit cavity width, fruit cavity length, fruit pulp thickness, fruit peel thickness, sweetness, firmness, and percentage of pulp. It was found that fruit weight and fruit width were positively correlated with all characteristics, except the sweetness. Fruit pulp thickness was positively correlated with all characteristics studied. Fruit length correlated with fruit cavity length, fruit peel thickness and percentage of pulp, but there was a negative correlation with fruit cavity width and sweetness. Fruit pulp thickness was positively correlated with percentage of pulp. The results were consistent with the study of Iathet (2006) studies was correlations of fruit characters and yield in of Thai melon. They are with two inbred lines (RM1 and LM2) of slicing melon. The results revealed the fruit width correlated negatively with fruit length and the result shape index. Fruit shape and fruit size did not correlate with fruit number per plant and yield. While the number of fruits per plant had a high positive correlation with the yield per plant. Shows that correlations between traits can be used to help improve plant varieties. Indirect selection may be conducted in multiple characteristics or in multiple characteristics at the same time. Using data from correlated studies. The last, Pak J Biol Sci. (2013) study was genotypic correlation and path analyses were carried out for growth, yield, and fruit quality traits in 13 sweet melon genotypes collected from different places in Egypt. They were study the correlation at under irrigated conditions. The results revealed the total yield per plant was positively and significantly correlated with fruit weight, flesh fruit thickness and fruit length. Positive direct effects were exhibited for fruit weight, number of fruits per plant and stem length on total yield per plant, while maximum positive indirect effects on total yield per plant were exhibited by fruit length and flesh fruit thickness through fruit weight.

Recommendation

1. Planting test lines in this research, that just only one location and one season. It's recommended to test plants at 3 locations and 3 seasons for consistent strain.

2. Conclusion tend to have high yields; this hybrid can be developed into a hybrid breeding further.