

To determine combining ability and inheritance of some agronomic traits in yard long bean, 6 varieties with different genetic background were used to produce 15  $F_1$  hybrids by half diallel cross. The hybrids were tested under 2 seasons i.e. rainy season (May, 2005- Sept, 2005) and cool season (Oct, 2005-Jan, 2006) by using RCBD with 3 replications to estimate combining ability and heterosis. Three crosses with high yield and good storage quality i.e. SR/TB40, JD/KD#5 and KH/TB40 were selected and used to produce  $F_2$  and backcross (BC) generations. Sixth generations, i.e. parental lines ( $P_1$ ,  $P_2$ ),  $F_1$ ,  $F_2$ ,  $BC_{11}$  and  $BC_{12}$  were grown for analyzing generation mean and heritability by using RCBD with 6 replications.

The results showed that the combining ability and inheritance of the hybrids in different seasons were differences in the characteristics studied. TB40 and SR varieties were found to be the good parents because of their high general combining ability (GCA) in yield per plant, especially for cool season. JD and KH varieties were also considered to be the good parents for both seasons due to their high GCA in pod number per plant. The  $F_1$  hybrid SR/TB40, JD/KD#5 and KH/TB40 gave the high specific combining ability (SCA) in yield and good storage quality. In addition, heterosis in yield per plant of each cross was differences within each season. SR/TB40, JD/KD#5 and KH/TB40 gave the high values in heterosis under rainy season, while SR/TB40, KH/JD and KH/SR gave the high values in cool season. For inheritance, JD/KD#5, KH/JD and KH/SR showed the high values of narrow sense heritability ( $h_n^2$ ) in loss fiber content after storage and medium values in flesh thickness.

The results from joint-scaling test of gene effect indicated that additive gene action were more important for 4 characteristics studied of all 3 crosses, i.e. pod length, flesh thickness, fiber content before and after storage. The dominant gene action were more important for 4 characteristics of all 3 crosses, i.e. pod length, pod width, flesh thickness and fiber content after storage. Moreover, the epistasis gene interaction were dominance x dominance effects for pod per plant in all 3 crosses, while they were differences in the other characteristics among crosses.