Hybrid vigor and correlation for some yield and yield component traits in pumpkin (Cucurbita moschata Poir.) at Northern Saudi Arabia conditions

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The main objectives of this investigation were to determine the amounts of heterosis versus the mid-parents and the better parent and genotypic and phenotypic correlation. Four pumpkin varieties belong to the species (Cucurbita moschata Poir.), were crossed to obtain 12 F1 hybrids according to a complete diallel crosses mating design system. These parental varieties were: Butternut Pumpkin (P1), Queensland blue pumpkin (P2), Bugle pumpkin (P3) and Long Island cheese pumpkin (P4). The seeds of these parental varieties were obtained from different countries: P1 from Egypt; P2 from USA; P3 from India and P4 from Pakistan. Data were recorded for nine traits: Fruit Length (FL cm), Fruit Diameter (FD cm), Fruit Shape Index (FShI), Total Soluble Solid% (TSS%), Flesh Thickness (FT cm), Weight of Fruit (WFg), Seeds Weight (SW gm), Number of Fruits Per Plant (No.F/P) and Total Yield per Plant (TY/P kg). The results also indicated that the amounts of heterosis versus mid-parents showed highly significant values for all studied traits. The estimates of heterosis versus the better parent showed highly significance for most studied traits. None of the hybrids exhibited maximum heterosis for all the traits, but significant and desirable level of heterosis over midparents and better parent was obtained in several hybrids for the different traits. However, GCA values were larger than their corresponding estimates of SCA for studied yield and yield component traits at both F1,1r hybrids. Reciprocal effects (r) were significant for most studied traits. The results indicated that the parents P1, P3, P4, P5 and P7 were seemed to be the best combiners for fruit length (FL.cm), fruit shape index (F.Sh.I.) and number of fruits per plant (No.F./P.). Also, P2 was the best combiner for Total Soluble Solid% (T.S.S%). In the same time, the two parents P2 and P6 were the best combiners for fruit diameter (FD.cm) and weight of fruit (W.F.g). These results indicated that the parents P1, P2 and P4 were seemed to be the best combiners for fruit yield per plant (F.Y./P.kg). All 49 genotypes (seven parents, 21 F1's and 21 reciprocal hybrids) were evaluated in a field trial at the growing summer. The experimental design was the Randomized Complete Blocks Design (RCBD) with three replications of 2010. This study was conducted in the Kaha Research Farm of Vegetables Breeding Department, Horticultural Research Institute, (HRI), Agric. Res. Center (ARC), Giza, Egypt.