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General combining ability analysis of sex expression, fruit and seed characteristics in melon (*Cucumis melo* L.)

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Melon is the most diverse species of the genus *Cucumis*, which is characterized by a rich diversity of shape, color and size of the fruit. This study has been conducted in order to select melon genotypes that will be used as starting material in melon breeding programs. Determination of general combining ability (GCA) is important for facilitating the selection of parents from which it is possible to get good commercial hybrids. Four monoecious genotypes (Sesame, ED-3, ED-4, Pobeditel) and 5 andromonoecious genotypes (Chinese muskmelon, Anannas, Fiata, Honey dew, A2-3lb) have been crossed (partial diallel design without reciprocal crosses) and used in the experiment. Andromonoecious lines were used only as pollen donors. The experiment was conducted during two vegetative seasons (2010 and 2011) in the experimental plots of the Institute for Vegetable Crops in Smederevska Palanka, Serbia (latitude 44°21'24.79''N, longitude 20°56'55.70''E, altitude 103 m). Fourteen melon characteristics were analyzed of which five related to flowering and sex expression, seven fruit, and two seed characteristics. According to the results, best general combiner for all five characteristics of sex expression was monoecious cultivar Sesame. In addition, great general combiner was A2-3lb, line that is characterized with extra small sized fruits. The best general combiner for the most observed fruit characteristics was cultivar Pobeditel, while the poorest combiner was genotype ED-3. If the aim of melon breeding will be to create hybrids with large fruit length, width, and weight - cultivar Pobeditel should be used. In this study, this cultivar has the largest, positive value of GCA, which is significant at the 0.01 level. The opposite, if the aim will be to create smaller melon hybrids with small fruit length, width and weight than genotype ED-3 should be used, which had the lowest value of GCA for this characteristics. Best general combiner for seeds weight and number of seeds is also cultivar Pobeditel.