

Isozyme Analysis of Hybrids and Their Parents of Watermelon [Citrullus lanatus (Thunb.) Matsum. & Nakai]

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Abstract

Ten  $F_1$  hybrids and their 16 parents of watermelon [Citrullus lanatus (Thunb.) Matsum. & Nakai] were used for isozyme analysis of peroxidase (POD) and esterase (EST) of dry seeds, germinating seeds, cotyledons and roots at the cotyledonary stage. The results obtained indicated that zymograms of POD and EST varied at different stages and different parts of the plant. Isozyme variation between hybrids and their parents was found at the seed germination stage and cotyledonary stage of POD, as well as cotyledonary stage of EST. The following cases were observed in our study:  $F_1$  hybrids had the same zymogram as their two parents, or maternal parents, or paternal parents, or had 'hybrid enzyme' or lacked some zymographic bands of their parents. High heterosis was generally found in the hybrids with the same isozyme zymograms of POD as their paternal parents, and EST as their maternal parents.

Evidence for a Tetrasomic Line in Watermelon

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A tetrasomic genotype has  $2n + 2$  chromosomes. If the chromosomes are simply duplicates of a given pair of homologues and segregation of this extra pair is normal, genes on these chromosomes should behave as expected for a tetraploid. Phenotypic differences between a tetrasomic and tetraploid should be a distinguishing feature. Also, a tetraploid x diploid cross will produce sterile triploids. However, a tetrasomic x disomic cross will produce trisomic progeny which should be much more fertile than triploids.

A glabrous, male sterile tetraploid watermelon line has been described (1). This line has been hybridized with diploid lines to produce triploid seedless progeny. We reported a related line that generally segregated as expected for a tetraploid line (2). The + + gms gms genotype generally produced progeny