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The effect of hydropriming and explants on shoot initiation and tetraploids in small watermelons

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Abstract

Hydropriming had positive effects on the time for germination to reach 50%, the germination index, the time to final germination percentage, and the number of uniform seedlings with enlarged cotyledons in *in vitro* germination of small watermelon. In addition, the highest shoot initiation was obtained from hydroprimed cotyledonary nodes (95± 6%), followed by non-primed cotyledonary nodes (78 ± 6%), hydroprimed cotyledons (72 ± 4%), and non-primed cotyledons (48 ± 4%). Meanwhile, no shoots were initiated from hypocotyls. The total number of shoots that initiated from cotyledonary nodes and cotyledon explants was insignificant, indicating that both cotyledons and cotyledonary node were good sources for the *in vitro* culture. Choosing explant sources that favor tetraploidy should be the key for producing higher polyploidy plants; a total of 10.5% of tetraploid regenerants were entirely identified from cotyledon explants. Cotyledons with highly differentiated cells might show higher variations than cotyledonary nodes with more preexisting meristematic cells. Cells of cotyledon tissue might undergo changes in ploidy level during differentiation of the culture, or it might be that some of the variations were already present in the tissues of the donor plant. Morphological changes in fruit length of tetraploid regenerants are genotype-dependent.

Keywords: germination index, hydropriming, regenerants, tetraploids

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