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The Effectiveness of Grafting to Improve Salt Tolerance of Sensitive Melon When the Tolerant Melon is Use as Rootstock

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Abstract

Melon is one of the important species of the *Cucurbitaceae* family. However the salinity sensitivity of the melon is the significant limitation in melon production areas. Grafting can be an alternative solution for saline conditions however the rootstock affinity of melons with the other species of the *Cucurbitaceae* family, mainly different squashes, is still economically uncertain. Therefore may be the melon itself can be good rootstock for the melon scions. In this research, the melon rootstock for melon scion was studied for salinity tolerance. Melon cultivars that are sensitive and tolerant to salinity were reciprocally grafted and plants were grown under salt stress with control plants. Growing culture was vermiculite and plants were irrigated by the complete nutrient solution. Thirty days old melon plants, grafted and un-grafted were subjected to salinity stress during 25 days with 100mM NaCI. Some physiological parameters were investigated. Grafting on the tolerant melon increased the responses of the sensitive melon to salinity in comparison to the un-grafted one. The shoot fresh weight and leaf area both were increased by 27%, leaf water potential was increased by 65%. Leaf membrane injury was decreased by 13 and stomatal conductance was increased by 18%. Grafting technique and salt tolerant-melon-rootstock can be good solution for melon production under the saline conditions.

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Keywords: Salt stress; grafting; rootstock; *Cucumis melo*; melon, tolerance, scion, saline, climate change

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