

عنوان مقاله:

Grafting and Silicon Improve Photosynthesis and Nitrate Absorption in Melon (*Cucumis melo* L.) Plants

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خلاصه مقاله:

Grafting of Cucurbitaceae species to some rootstocks seems to be especially beneficial for the nitrogen nutrition of these plants. Moreover, melons (*Cucumis melo* L.) have been considered among those plants that could benefit from the addition of Silicon (Si) in the Nutrient Solution (NS). Thus, two experiments were carried out in the following order: (i) it was investigated how grafting affects nitrate absorption (following the disappearance of nitrates from NS), leaf water relations, leaf gas exchange, chlorophyll parameters and antioxidant activity, and (ii) it was also assayed which of the aforementioned physiological factors could be associated with Si supply in melon plants at early developmental stage when metabolism is intense. Results revealed that grafting and Si supply could improve photosynthesis, nitrate absorption, and biomass production in melon plants with respect to non-grafted or plants not receiving extra Si. Grafting melon on *Cucurbita* rootstock improved photosynthetic performance associated with higher antioxidant activity in melon leaves. Silicon supplementation results lend support to an active role of Si in biochemical processes at chloroplast level in melons. Increased assimilation rates in grafted and Si treated plants (۲۰ to ۳۵%), resulted in higher nitrate depletion from the medium (۱۷ to ۱۸%), which boosted shoot biomass production (۲۳ to ۲۶%) compared to the control plants. Our results suggest that grafting and Si supply in melon plants may lead to a better crop performance and a lower environmental impact of greenhouse fertigation effluents with respect to nitrate leaching, in some instances.

کلمات کلیدی:

Antioxidant activity, Biomass production, Gas exchange, Hydroponic melons

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