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Growth of Mycorrhyzal Lulo Plants (*Solanum quitoense* Lam. Var. *septentrionale*) Affected by Shading

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Abstract

Lulo (*Solanum quitoense* Lam. var. *septentrionale*) is an exotic fruit originated and cultivated in the high Andean tropics. The plant exhibits a very low growth rate and the growth period can be extended to up to 2 years. Plants are fragile and must be protected to strong winds and direct sunlight. Plant growth is optimal under partially shade conditions in forestall areas. The present work was carried out under greenhouse conditions to evaluate the response of mycorrhyzal and non-mycorrhyzal lulo plants to shade conditions in Tunja-Colombia. At transplanting, plants were mycorrhizae inoculated with *Scutellospora hetereogama*, *Acaulospora mellea*, *Glomus white* and Mycobiol ® (Corpoica) (commercial mixture of mycorrhizae containing *Glomus* sp., *Entrophospora colombiana* and *Acaulospora mellea*). To simulate shading, some plants were grown under a black net that reduced 24,9 % of the sunlight. Plants under shade showed to have an increment of 56,8 % regarding leaf area, however, the dry matter production was 27,3 % lower compared to plants exposed to full sunlight. Mycorrhyzal plants showed larger foliar areas compared to non-mycorrhyzal plants. *S. heterogama*, *G. white*, *A. mellea* and Mycobiol induced increments in dry matter of 152,7; 131,8; 114,6 and 106,9 % respectively compared to non-mycorrhyzal controls. There was a reduction of 37,3 % in the specific leaf weight (dry matter in leaves / leaf area) in plants exposed to shade compared to plants exposed to full sunlight. The relative growth rate (RGR) in dry matter was affected by shade, however, not by the mycorrhiza, hence, the shadow reduced 29,4 % the value of this variable. The absolute growth rate (AGR) was reduced 37,5 % on plants growing under shade, in contrast the mycorrhiza positively affected this variable. An increment of 188.8 % in the AGR was found in mycorrhyzed plants using *S. heterogama*, 155,5 % with *G. white*, 133,3 %, with Mycobiol and finally 116,6 % using *A. mellea*. The net assimilation rate (NAR) was reduced by 27,5 % in plants growing under shade conditions, however, with respect to control plants, mycorrhiza induced an increase of the value of this variable of 400 % using *S. heterogama*, 328,5 % with G. white, 285,7 % with *A. mellea* and 271,4 % using Mycobiol®.

Keywords: *Acaulospora mellea*, *Glomus white*, Mycobiol, *Scutellospora hetereogama*

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