Foliar Application Effect of Magnesium and Manganese Gluconates on Tuber Yield in Yellow Diploid Potato (Group Phureja)

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Abstract

In Colombia, Yellow Diploid Potato *(Solanum tuberosum* group Phureja), is a valuable genetic resource of potato with a center of diversity and an important cropping area (10000 ha/year). The Yellow Diploid Potato is known for its high nutritional value, color, flavor, texture and rapid cooking, properties with high consumer acceptance. Yellow diploid potato is frequently produced in soils with low Mg and Mn levels. Gluconates could be a viable and effective option to improve Mg and Mn crop nutrition, tuber quality and yield. Currently, there is no recent and verifiable information regarding the effect of gluconates applied in foliar spray on the development of potato plants. The objective of this work was to evaluate the effect of foliar fertilization with different levels of gluconates (Gluconat Mg + Mn®) on chlorophyll content and yield variables in yellow diploid potato cv. Criolla Colombia. The effect of five levels of Gluconat Mg + Mn® (0, 150, 300, 450 and 600 mL ha^{-1}) was determined under a randomized complete block design (RCBD) with three repetitions at the Marengo Agricultural Center (Mosquera, Cundinamarca). Plants treated with 300 mL ha^{-1} of gluconates had a higher tuber yield. All the treatments showed a relative increase of 23% (3.9 t ha^{-1}) for the total tubers weight and 18.9% for the tubers number. In general, the plants treated with the different doses of gluconates had significantly higher chlorophyll content compared to the control. Results suggest that foliar spray with 300 mL Ha^{-1} of gluconates are recommended for cv. Criolla Colombia to obtain a higher yield and quality.

Core Ideas:

- Foliar application of Mg and Mn gluconates enhance the availability of this elements for yellow potato plant.
- Mg and Mn gluconates has a positive effect in chlorophyll contents.
- Mg and Mn gluconates improve the total tubers weight and tubers number of yellow potato.
- Applications at 300 mL ha^{-1} of Mg and Mn gluconates improve tuber yield of yellow potato.
- Higher doses than 450 mL ha^{-1} of Mg and Mn gluconates had a negative effect in tuber yield of yellow potato.