

Improving nitrogen and phosphorus use efficiency of potted chrysanthemums grown in a subirrigation system



Reducing crop inputs without affecting crop quality is a preferred outcome for most growers.

Dr. Barry Shelp of the University of Guelph is leading a research project to help reach that outcome with commercially important chrysanthemum cultivars.

He is working to optimize the timing and application rates of soluble nitrogen and phosphorus in two popular subirrigated chrysanthemum cultivars.

The goal is to determine how low nitrogen and phosphorus levels can be during the first half of the crop cycle while still ensuring high quality plants.

Although work is ongoing in the three-year project, initial results show that only half the typical nitrogen supply in the first half of

the crop cycle and no nitrogen supply in the second, reproductive phase is sufficient with subirrigation to produce high quality plants and flowers.

This means growers could potentially reduce their nitrogen use by three quarters over the entire chrysanthemum crop cycle.

Similar trials will be conducted in the second year of the project to determine optimal phosphorus levels and results of both nitrogen and phosphorus trials will be validated in a commercial greenhouse setting in the project's final year.



High quality plants of two chrysanthemum cultivars were produced with a wide range of N supply (decreasing from left to right in the picture). These plants were debudded so that only a single stem and flower was produced.

Why is this project important to the ornamental horticulture industry?

This project will add new knowledge around fertilizer timing and supply to subirrigated floral crops like chrysanthemum, which helps in reducing unnecessary nutrient usage and minimizing environmental risks associated with the management of spent nutrient feed water.



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