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Enhancing Red Potato Color And Quality: A Nutrient-Based Approach

In red potatoes, vibrant color and smooth skin are key quality indicators to commodity buyers and consumers.

Recent research from AgroLiquid suggests growers can produce a more marketable crop by adding soluble liquid calcium and a micronutrient blend at planting to intensify color vibrancy and improve skin condition in red potato crops.

Dan Peterson, agronomist for AgroLiquid, has been leading trials that explore the use of specialized nutrient blends to increase skin color and quality in red potatoes. He notes that growers have long applied 2,4-D to enhance the red skin color. “In our trials, we wanted to see if we could achieve the same or better results through crop nutrition,” he explains. “We did this by adding AgroLiquid’s soluble calcium and a micronutrient blend to the grower’s liquid in-furrow starter fertilizer of choice, usually 10-34-0, at planting. We found we could match or improve color while simultaneously boosting skin quality.”

The Role Of Calcium And Micronutrients In Potatoes

Plants need calcium to build cell walls and grow. Calcium also helps improve resistance to stress, drought and disease by balancing soil fertility and improving water penetration.

Micronutrients work with macronutrients to support plant processes like cell development, photosynthesis and the transport of sugar, helping plants grow to their full potential. They can also help plants overcome micronutrient deficiencies in the soil and improve the utilization of other nutrients.

Testing The Hypothesis

During the trials, AgroLiquid worked with researchers in Minnesota and Manitoba over four growing seasons to assess the impact of adding calcium and a micronutrient package, specifically AgroLiquid’s LiberateCa and Micro 600, to potatoes treated with 2,4-D.

Side-by-side field trials began in 2021 with two fresh market red potato growers in northwest Minnesota and continued with one additional grower in 2022. In 2021, growers used 2,4-D as usual. “We had a substantial improvement in skin quality and dramatic improvement of the color in the 2021 trial,” says Peterson.

In 2022, the growers were asked to drop 2,4-D from their protocols to see if the calcium and micronutrient products could equal the 2,4-D impact on color and quality. “Placed side-by-side, the color and quality of the potatoes treated with AgroLiquid’s calcium and micronutrient blend and those treated with the grower’s conventional liquid starter fertilizer and 2,4-D were equal,” says Peterson.

In 2023, AgroLiquid worked with a third-party researcher in southwest Manitoba, Canada, to see if the Minnesota results could be replicated. As with the Minnesota trials, red potatoes in the region were typically

treated with 2,4-D, but instead of using the grower’s standard starter fertilizer, growers used AgroLiquid liquid phosphorus starter, Pro-Germinator.

In each plot, 25 tubers were assessed for color. Tubers were split into two groups, light red and dark red. There were clear color differences between treatments. Once again, red potatoes treated with the calcium and micronutrient blend showed equal color and fewer blemishes. Treatments two, three and four all improved color over the Pro-Germinator starter alone. The combination of calcium plus micronutrients was the best of this group. The darkest red tubers resulted from treatments that included 2,4-D (treatments five and six). 2024 results are still pending.



Benefits Beyond Aesthetics

Though color and quality were the primary focus of the studies, other potential benefits came to light. In the first Minnesota trial (2021), nutrient-treated red potatoes also showed higher levels of protein, phosphorus, potassium and magnesium compared to untreated samples. Peterson describes these results as “unexpected and rather astonishing,” though he emphasizes the need for continued research to confirm repeatability.

In the Manitoba trial, the addition of calcium and micronutrients resulted in the highest yield of all the treatments that did not include 2,4-D. The addition of the 2,4-D treatment did not significantly increase yield.

Return On Investment

Peterson says the potential for premium pricing due to improved color and quality can help growers get a return on investment. But he says some study data also points to the potential for increased yield.

In the Canada trial, the best return on investment came from adding two quarts of the micronutrient blend to the

2,4-D treatment. This resulted in a 26.4 bag yield increase over the control (nine gallons of AgroLiquid's starter fertilizer) and a 53:1 return on investment.

The addition of one gallon of calcium also showed positive results, increasing yield by 14.8 bags for an ROI of 14:1. The combination of the calcium and micronutrients also had a nice yield increase and an ROI of 6:1. While exact ROI figures depend on current market prices, Peterson says the study results look profitable for growers.

For growers interested in exploring this approach, Peterson advises starting small. He said, "For those growers who are potentially interested in moving away from 2,4-D

treatments, this approach is low risk and can be done on a small scale. However, it's important to trial enough so that it is measurable to see the comparison on their potato growing operation. Consulting your agronomist can help ensure you have the right inputs for your field."

Though more research is needed, Peterson remains cautiously optimistic. "With four consecutive seasons of trials across multiple cooperator plots, we have growing confidence that our liquid calcium and micronutrient blend applied in-furrow at the start of the growing season can indeed replace the standard 2,4-D treatments," he said.

For more information, visit agroliquid.com. PG

Third Party Red Potato Trial, Manitoba 2023

