

CASE STUDY

FROM SEED TO SELL-THROUGH HOW EVOFACTOR IMPROVES PRODUCTION AND MITIGATES THE FERTILIZER CONUNDRUM

Executive Summary

Verano365 partnered with a Top 100 greenhouse grower to evaluate Evofactor on 13 plant varieties during plug production from seed. The trial compared the grower's standard nutrient management practices with a program utilizing a 50 percent fertilizer reduction plus Evofactor.

Evofactor is a nutrient adjuvant that is designed to improve nutrient uptake, allowing growers to get the most out of their fertilizer. The trial occurred at a time when growers are facing fertilizer market volatility:

- **Reduced availability of fertilizer** – The Fertilizer Institute reported in March 2022, that fertilizer supplies in the U.S. are at about 50% of what growers need.
- **Higher prices for fertilizer** – The Texas Farm Bureau reported in Q1 2022, that prices for fertilizer are up 200% year-over-year.
- **Delivery delays** – Supply chain issues are rippling through every industry, and horticulture inputs are not immune.

The trial was designed to counteract these market forces and determine how Evofactor could off-set a significant need for applied nutrients without sacrificing plant health and marketability. Evofactor is powered by Verano365's proprietary additive, OpusMAX, which forms supramolecular structures from nutrients allowing for improved stability and nutrient uptake.

Trial Protocol & Results

The grower's Evofactor trial included 13 different plant varieties: Geranium, Pepper, Tomato, Impatiens, Trailing Petunia, Salvia Splendid, Salvia Farinacea, Pansy, Viola, Verbena, Vinca, Snapdragon, Portulaca. The grower included 45 plants in the control and trial groups for each species.

The control used the grower's standard nutrient application of 14-2-14 on constant feed method at 100ppm. In the trial group, Evofactor was added to 50ppm of the 14-2-14 on constant feed.

At the conclusion of the trial, the grower noted that all 13 varieties grown at 50ppm + Evofactor were visually equitable and sellable as compared to the control group. Evofactor successfully grew plants that were equal to, and in some cases bigger, than the plants in the control group. To objectively evaluate the results, the grower selected six varieties of the untreated and treated plants to send to JR Peters Inc lab for quantitative testing.

OPUSMAX EXPLAINED

OpusMAX is a first-of-its-kind delivery system that is anchored by a charged particle. This particle has an attraction force that acts as a host or carrier, which facilitates the self-assembly of supramolecular structures. When OpusMAX localizes active chemical or biological molecules into these structures, the impacts are gains in efficiency and increased probability of uptake and/or usage.

EVOFACTOR FOR REDUCED FERTILIZER TREATMENT



THE BIG TAKEAWAYS

At the trial conclusion, three key learnings emerged:

- Yes, Evofactor can grow equitable or even bigger plants at 50% fertilizer rates.
- Plants will be as healthy as those grown with a full, standard nutrient load.
- When Evofactor is utilized with a water-soluble fertilizer, nutrients are retained in the profile for the plant's future growth and development, supporting ongoing plant health.



RESULTS | Aerial Biomass

Third-party lab testing was conducted on six varieties, including: Geranium, Tomato, Salvia Farinacea, Salvia Splendid, Viola, and Snapdragon. For all six species, the fresh weights measured in grams on the combined sample and average per plant were statistically equivalent, with the exception of Geranium, which showed a 20% increase in fresh weight. At dry weights, similar results were captured for all six varieties showing the results held—demonstrating that the plants had not simply taken up more water.



RESULTS | Nutrient Analysis in Tissue

Third-party nutrient analysis was conducted to evaluate uptake of both macronutrients (N, P, K) and micronutrients (Ca, Mg, S, Fe, Mn, etc.). The tissue analysis showed positive indicators that the Evofactor treated plants that received less overall applied nutrients demonstrated equal to or better nutrient uptake. The treated plants exhibited not only like size but like nutrient density.



TREATMENT	DRY WEIGHT PLANT AVERAGE (g)	REMAINING N IN GROWING MEDIA AT TRIAL CONCLUSION
GERANIUM		
100ppm Control	0.27	5.67
50ppm + EVO	0.32	14.65
TOMATO		
100ppm Control	0.19	2.32
50ppm + EVO	0.20	3.12
SALVIA FARINACEA		
100ppm Control	0.18	1.21
50ppm + EVO	0.19	18.22
SALVIA		
100ppm Control	0.21	0.88
50ppm + EVO	0.20	2.12
VIOLA		
100ppm Control	0.20	3.69
50ppm + EVO	0.20	11.37
SNAPDRAGON		
100ppm Control	0.17	8.89
50ppm + EVO	0.20	21.45

RESULTS | Growing Media Analysis

Lab analysis of the growing media on all six varieties at the conclusion of the trial evaluated pH, ECs, and Total N, P, and K among other soil health indicators. The results showed that plants treated with Evofactor were able to retain more N in the media, indicating leaching mitigation. With only 50% of the nutrient load, the treated media showed an average of 347% more N retained in the media. At the low end, we saw a 34% increase in N retained, and on the high-end we saw 1,405% more N retained versus the control groups.

Further, with that much more nitrogen retained, we would have expected to see a correlating variance in pH. However, the pH levels across the board held statistically steady.