DELLAVALLE™
LABORATORY INC

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Tomato Leaf Sampling

Sampling Notes

Processing tomatoes have a slow rate of nutrient uptake during establishment and early vegetative growth, a higher rate of uptake between early fruit set and the early red fruit stage, and then a slower rate of nutrient uptake again once the fruit begins to color. As of 2012, 85% of processing tomatoes are produced using drip irrigation, which allows for the precise application of water and nutrients to the crop based on the growth phase. Therefore, tissue sampling at various growth stages can lead to actionable information for growers. Following a nutrient and irrigation schedule based on estimated yield and historical evapotranspiration allows for very efficient management of nutrients and irrigation water. Our certified Crop Advisors can help develop fertilization and/or irrigation schedules for tomato production. Organic and conventionally grown tomatoes should follow the same sampling timing and process.

General Sampling Instructions

Sampling Time: Leaf samples can be collected anytime between early-bloom and just before first color.

- *Early-Bloom*: The earliest you can sample your tomato field is early-bloom, when the first few yellow flowers start opening on each plant. At this crop stage, the plants will not yet cover the entire bed.
- *Full Bloom:* Full bloom, typically 8 weeks after transplanting, is the optimal time to check the nutrient status of your tomato field and still respond with mineral fertilizer application. The results can help you adjust your fertilization program to ensure adequate nutrition for crop quality and yield. At this crop stage, the field will look like a sea of yellow flowers and the plants will cover the entire beds but won't entirely take up the furrows.
- *First Color:* Just prior to first color is the last time tomato tissue should be sampled. First color is the onset of fruit ripening, typically 11-12 weeks after transplanting, and samples taken at this time follow-up on full bloom analyses, particularly if measures were taken to correct nutritional deficiencies. At this crop stage, the plants will have reached their maximum size, covering the furrows. After this crop stage, tomato plants don't take up substantial nutrients, only reallocate what is already in the tissue, so further sampling is not necessary.

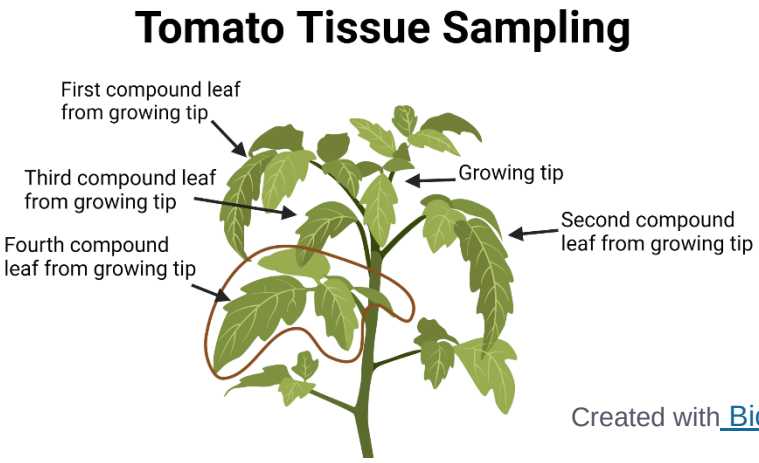
Quantity per Sample: A minimum of 30 leaves are required per sample.

Sampling Frequency: Samples should be collected 3-6 times throughout the season.

Sampling Area: The maximum area that can be collected from per sample is ~ 70-80 acres, though we usually recommend sampling on a ~40-acre basis. Take a different sample for every field that differs in soil type or management. Avoid sick/nutritionally deficient plants, or sample them separately and compare them to areas of better growth to determine what nutrients are lacking. Don't sample within 50 feet of the field edge.

Overview of Sample Collection: Walk across your field or sampling block diagonally and randomly collect a most recently matured leaf (full-size and dark green) from representative plants, combining them in a paper

bag. The most recently mature leaf is typically the fourth leaf from the growing tip. Tomatoes have compound leaves, and you will be sampling the entire compound leaf, including all the leaflets and the petiole.



Recommended Tests: Where chloride is not a problem, the recommended analysis is “L1” (N, P, K). If you notice any unusual symptoms in a field or area of your sampling block, sample it separately and request “L2” (NPK + micronutrients). If chloride is a concern, the recommended analysis is “L3” (NPK + micronutrients+ chloride).

Preparing Sample for Lab: Take any notes about the field/sampling block and the growth stage of each sample. Once collected, try to keep the samples cool. Please submit or ship your samples to Dellavalle Laboratory as soon as possible with a **work order form**.

References

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Hartz, T. (2007). Fertility Management of Processing Tomato. *Plant and Soil*, (3), 71–76.

Taylor, R., Parker, D., & Zilberman, D. (2014). Contribution of University of California Cooperative Extension to drip irrigation. *ARE Update*, 5–8. Retrieved from http://s.giannini.ucop.edu/uploads/giannini_public/c3/d4/c3d4e148-59b5-4938-abc1-70beffcba8cc/v18n2_2.pdf