

Sap analysis to ensure optimal N nutrition of fertigated tomato crops

The nitrate (NO₃⁻) concentration of petiole sap in tomato is strongly influenced by the nitrogen (N) status of the crop. This has been demonstrated both for open field processing tomato and fresh market tomato grown in greenhouses. The use of petiole sap NO₃-analysis provides growers with a tool to ensure that fertigated tomato crops are not N deficient which would appreciably reduce production. Growers will also not feel the need to apply excessive insurance N applications in order to avoid possible N deficiency. Analysis of sap can be rapidly conducted on the farm using quick test systems such as ion selective electrodes e.g. the LAQUAtwin nitrate meter. Therefore, growers and advisors can very quickly assess crop N status at any given time.

The recommended practices are:

- Collect petioles from the most recently fully expanded leaf in 20 different plants in different parts of the field
- The plants must be representative regarding appearance, management and soil type
- Protocols must be followed regarding handling, storage and maintenance of petioles and extracted sap samples
- Cut the petioles into 1 cm long pieces and use a garlic press to obtain a composite sap sample
- As rapidly as possible, analyse using a quick test system
- Alternatively, the petiole samples can be sent to a commercial analytical laboratory that provides a relevant service. With laboratory analyses, there will a delay of several days to obtain results
- When using laboratory analyses, care should be taken with handling, packaging and transport; the laboratory will provide recommendations
- Interpret the results using recommended reference values. These are best obtained from local sources.

Extra info

<http://edis.ifas.ufl.edu/cv004>

https://extension.umd.edu/sites/extension.umd.edu/files/docs/articles/PlantPetioleNitrateSapTesting_update_0.pdf

https://www.extension.umn.edu/garden/fruit-vegetable/nutrient-management-for-commercial-fruit-and-vegetables-in-mn/docs/5886_35-36.pdf

http://vric.ucdavis.edu/pdf/fertilization_fertilitymanagement.pdf

<http://www.novacropcontrol.nl/en>

<http://public.hortus.net.au/Home.aspx>

<http://edis.ifas.ufl.edu/cv004>

https://extension.umd.edu/sites/extension.umd.edu/files/_docs/articles/PlantPetioleNitrateSapTesting_update_0.pdf

<https://www.youtube.com/watch?v=vBU1ssE2-9g>

<https://www.youtube.com/watch?v=8EHbojLfXek>

https://www.youtube.com/watch?v=81E7NWRJ_V4

https://www.youtube.com/watch?v=0XBsgszPr_k

<https://www.youtube.com/watch?v=6uA4hulezUU>

<https://www.youtube.com/watch?v=GOYh0Zg4zUU>