

## University of Arkansas

### Procedure for Leaf and Petiole Sampling for Plasticulture Strawberry

Leaf and petiole analyses provide the best means of monitoring nutritional status and correcting deficiencies that may occur in a strawberry crop. Proper crop nutrition ensures that yield and quality are optimized and protects against applying excess nutrients in the environment and incurring unnecessary expense.

The key to success in a nutrient monitoring program is to sample the correct tissue in a timely manner. A Strawberry nutrient analysis kit consisting of six plant tissue nutrient samples is being offered at \$48.00, through the University of Arkansas Agriculture Diagnostic Lab. For each of the six samples, a total analysis (N, K, S and B) will be provided on the trifoliates and nitrate nitrogen ( $\text{NO}_3\text{N}$ ) will be determined on the petioles to provide an additional evaluation of nitrogen status.

#### Directions for Submitting Samples for the Strawberry Program:

1. Sampling period is approximately March 1 - May 15.
2. Randomly collect 20-25 trifoliates and petioles from plants that represent the average appearance of the crop. Select most recent mature trifoliolate including petioles from a plant. See Figure 1.
3. Collect separate individual samples from different fertilizer injectors or fields.
4. Separate petioles from the trifoliates and secure both in separate bundles with rubber bands or a twist tie.
5. Samples should be collected weekly or bi-weekly (on Sunday or Monday) for the first three weeks of March then every 2-3 weeks until six samples have been collected.
6. Submit check for full amount (\$48) with first submitted sample. Check should be made out to "Agriculture Diagnostic Lab"
7. Complete attached paperwork for each sample. Use a *Sample ID* that you can easily remember and associate with where the samples are being collected. Use this same *Sample ID* for all six sampling collected from this field or area.

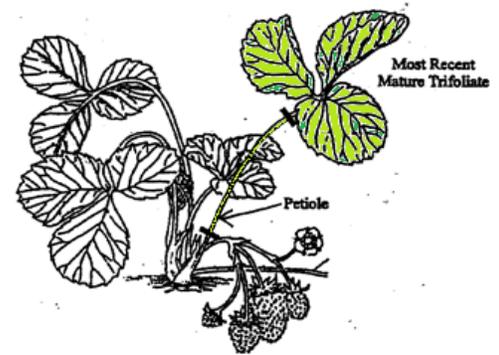


Figure 1. The proper plant parts, petiole and most recently mature trifoliolate, should be sampled for

Mail all samples with completed paperwork to:

**Agriculture Diagnostic Lab**  
**1366 W. Altheimer Drive**  
**Fayetteville, AR 72704**

8. To avoid mailing delays, do not put "University of Arkansas" anywhere on the shipping label and ship via US Post Office or other commercial shipping company. The goal is to have the sample arrive at the lab as soon as possible after the sample was collected, for this reason we suggest collecting the sample on Sunday or Monday and mailing immediately.
9. On the completed paperwork, please provide an email address, fax number, phone number or mailing address so that we can return your results.
10. Results should be returned to you 4-5 business days after the sample is received in the lab.

**Notes on Strawberry fertilization and plant tissue nutrient content:**

- A total of about 90-120 units of N is needed for the strawberry crop.
- Petiole NO<sub>3</sub>-N values should reach 3000-4000 ppm by early harvest and then gradually decline to around 500 ppm by the end of harvest.
- In general, NO<sub>3</sub>-N levels should never be below 500 ppm. Exceptions to this rule are during early winter dormancy and after harvest.
- During plant establishment petiole NO<sub>3</sub>-N should approach 1,500-2,000 ppm. During vegetative growth (early spring) NO<sub>3</sub>-N should increase to 4,000-6,000 ppm.

Research at North Carolina State has demonstrated that the best fertility program in spring for plasticulture 'Chandler' and 'Camarosa' strawberries is to apply from 30-60 pounds of nitrogen per acre through the drip system. The higher rate is used on deep, sandy soils, and the lower rate on deep fine texture (clay) soils. Medium texture soils would need an intermediate rate of 45 pounds per acre. Make applications weekly starting around March 1 when new "spring growth is visible. Initial fertilizer application rates should be 0.75 to 1.0 lbs Nitrogen/acre/day (5.25 to 7.0 lb. Nitrogen/acre/week.) These rates will be adjusted based on petiole analysis. Excessive NO<sub>3</sub>-N greater than 10,000 ppm may reduce yield and fruit quality.

If you have questions, contact:

Amanda McWhirt, Ph.D.

Extension Specialist – Horticulture Crops Production  
2301 S. University, Little Rock, AR 72204  
Email: amcwhirt@uaex.edu  
Phone: 501-671-2229