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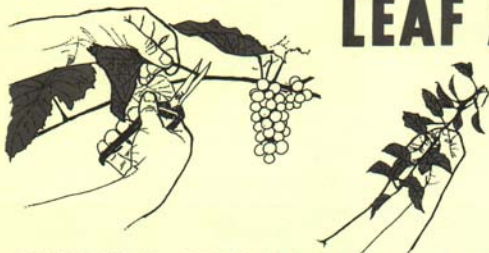
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Leaf Analysis for Fertilizer Requirements of Michigan Fruit Crops  
Michigan State University Extension Service  
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# LEAF ANALYSIS



for fertilizer requirements  
of Michigan  
fruit crops

COOPERATIVE EXTENSION SERVICE, MICHIGAN STATE UNIVERSITY

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LEAF ANALYSIS is the best aid in determining fertilizer needs of established fruit trees.

Leaf analysis is often used to confirm or diagnose a particular problem in an orchard after a symptom has developed. More important, leaf analysis can determine shortages or excesses of nutrients *before* symptoms are visible. It may show a need for fertilizer not being used. Also, it may show that certain fertilizers being used are not needed.

## LEAF ANALYSIS PROGRAM

The Michigan State University leaf analysis program to help fruit growers determine fertilizer needs was established in 1953. It was one of the first in the country. This program is similar to the M.S.U. Soil testing service except that leaves (leaf petioles in the case of grapes) are analyzed instead of soil.

The leaf analysis program is self supporting. Charges are based on actual cost. Samples are handled in the order they are received.

## FRUIT CROPS ANALYZED

Tree fruits (apple, pear, cherry, peach, plum and apricot), blueberry and grape samples may receive complete analysis (nitrogen, potassium, phosphorous, calcium, magnesium, manganese, iron, boron, copper, and zinc), or may be analyzed for nitrogen alone, potassium alone, or spectrographic (8 elements) analysis only. Grape petiole samples are normally analyzed for potassium only, but will receive complete or spectrographic analysis on request. The analysis made on each leaf sample is according to the grower's desire which he indicates when submitting the samples.

## TAKING LEAF SAMPLES

**Tree fruits.** You'll need about 100 leaves for each sample collected as follows:

1. Collect all leaf samples between July 1 and August 15 — the earlier date in Southern Michigan.
2. Use at least 4 or 6 trees for each sample. The trees should be uniform and represent the condition in question by the grower. Use only one variety for each sample.
3. Select all leaves from the middle of current terminal shoots (see Fig. 1). Do not select spur leaves. Not more than 2 leaves should be taken from any one shoot. Use shoots that you can reach from the ground and located on different sides of the trees. All leaves should be free from insect, disease or mechanical damage.
4. Remove the leaves with a downward pull so that the stem (petiole) of the leaf remains attached to the leaf. Place leaves in a No. 5 or similar perforated bag.
5. Before they wilt, wash the leaves to remove spray residue and dirt. This may be done by dipping the leaves in a detergent solution and rinsing quickly.

Fig. 1. For tree fruits, select all leaves from the middle of current terminal shoots. Remove the leaves with a downward pull so the stem remains with the leaf.



Do not allow the leaves to stand in the detergent or rinse water for more than one minute.

6. After washing, place the leaves back in the bag and dry at room temperature. Clip the bag shut to prevent spilling.

**Blueberries.** Select 10 or more bushes of one variety for sampling. Collect samples between July 15 and August 15. Then follow the same steps as for tree fruits. Be sure to collect 100 or more leaves for each sample.

**Grapes.** Use the following method to collect grape leaf petioles for analysis:

1. Collect all samples between July 15 and August 15.
2. Use at least 10 to 15 vines for sampling. The vines should be uniform and represent the condition in question by the grower. Include only one variety for each sample collected.
3. Select mature leaves near the center of the shoot, but beyond any fruit clusters.
4. Cut off the leaf including its petiole or stem close to shoot (Fig. 2).
5. Cut leaf blade from attached petiole (Fig. 3).
6. Discard leaf blade. Save only the petiole.
7. Collect 100 petioles for analysis (Fig. 4).
8. Place petioles in paper bag and dry for several days at room temperature. Clip bag shut to prevent spilling.

### SENDING IN THE SAMPLE

When leaves or petioles have dried to a crisp stage, send samples to Dr. A. L. Kenworthy, Department of Horticulture, Michigan State University, East Lansing. All samples should be received by September 1 of each year.

**Additional information needed.** An information sheet must accompany each sample. Place it in the bag with the sample. It should give the following information:

1. Grower's name and address.
2. Variety and age of plants from which sample was taken.
3. Average amount of growth and average yield.
4. Fertilizer program for last 3 years.
5. Soil management program.
6. Spray materials used.
7. Soil test results (if possible).

The above information will help in a more accurate interpretation of the plant analysis results.

**When will results be available?** Tree fruit and grape samples to be analyzed for potassium only will be com-



Fig. 2 Select mature grape leaves near the center of the shoot. Cut off the leaf including its petiole or stem close to the shoot.



Fig. 3 Cut the leaf blade from the petiole. Discard the leaf blade and save only the petiole.



Fig. 4 Collect 100 grape petioles for analysis. Dry them in a paper bag for several days at room temperature.

pleted and returned to the grower within 60 days after being received at the Department of Horticulture.

If possible, all results will be returned by November 1 for fall applications.

**Charge for analysis.** The following charges are made to cover the cost of the service.

Nitrogen only	—	\$ 2.00 per sample
Potassium only	—	2.00 per sample
Spectrographic only	—	7.00 per sample
Complete analysis	—	10.00 per sample

For further information, contact your county extension offices or write A. L. Kenworthy or R. P. Larsen, Horticulture Department, Michigan State University, East Lansing, Michigan.