

# MEASURE AND MANAGE

## Plant Tissue Sampling Procedures

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Farmer's sample plant tissue:

- For perennial tree fruit and grape crops, to determine fertilizer recommendations
- For annual crops, to diagnose fertility problems, particularly micronutrient deficiencies

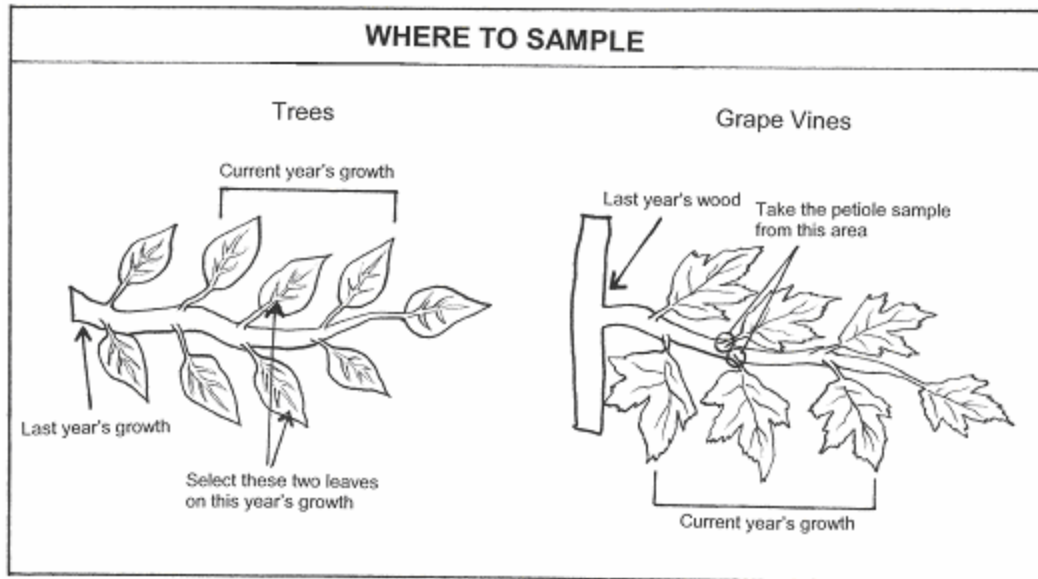
### Tree Fruit and Grapes:

Take tissue samples from fruit trees between July 15<sup>th</sup> and 31<sup>st</sup>. Take samples of grape petioles between September 1<sup>st</sup> and 15<sup>th</sup>. These dates correspond to standard nutrient levels of mature leaves, against which your tissue samples will be compared with in the lab.

Sample each variety and block of fruit trees separately. Collect at least 100 leaves for each sample. The best way to get a representative sample is to take 5 leaves each from 20 trees. Do not combine healthy and unhealthy leaves. (Fig 1)

To sample grape vines, select only the stems (petioles) of mature leaves. Keep varieties and blocks of different ages separate. Ideally, collect stems from a number of different rows in a block. Collect at least 100 stems for each sample. For Vinifera and French hybrid varieties, collect 150 petioles.

Figure 1



### Field Crops:

Take samples from at least 50 plants collected randomly across the field. Use the chart (Table 1) to find the right time to sample, as you want your samples to be compared to the standard values.

### Diagnosing problems:

You may have to sample outside the recommended times to get diagnosis. In this case, the nutrient contents will not correspond to the values at the standard times. You will have to compare healthy and affected areas.

Sample both normal growth and affected areas. Do not sample dead plants but those from border areas. Take soil samples from the same areas to check pH and nutrient status.

### Shipping:

Put leaf or petiole samples into paper bags, not plastic or they will sweat and rot. Label each bag so that you will be able to relate the analysis to the specific block in the orchard.

### Keeping Records:

Keep records of each block sampled, including variety and year. Keep the analysis of each block with the records of fertilizer applied, weather conditions and final yields. This will help determine trends in fertility levels.

Table 1

RECOMMENDED TIMING AND PLANT PARTS FOR TISSUE SAMPLING		
	<b>Timing</b>	<b>Plant Part</b>
Corn	3-5 leaf stage silking	Whole plant (zinc & phosphorus only) middle third or ear leaf
Soybeans	First flowering	Top fully developed leaf (3 leaflets + stem)
Cereals	At heading	Top 2 leaves
Forages	Late bud	Entire above ground portion
Edible beans	First flowering	Top fully developed leaf (3 leaflets + stem)
Potatoes	Early, mid or late season	Petiole of 4 <sup>th</sup> leaf from tip
Tomatoes	Early bloom	Petiole of 4 <sup>th</sup> leaf from tip
Broccoli, cauliflower	Start of head formation	Midrib of young, mature leaf
Cabbages	At heading	Midrib of wrapper leaf
Carrots	Mid-growth	Petiole of young, mature leaf
Celery	Mid-growth	Petiole of newest elongated leaf
Lettuce	At heading	Midrib of wrapper leaf
Onions	Minimum of 3 times per season	Tallest leaf
Spinach	Mid-growth	Petiole of young, mature leaf
Sugar beets	12 weeks	Youngest mature leaf
Tree fruits	Last two weeks of July	Fully expanded leaves from mid-point of current year's growth
Blueberries	Mid August	Fully expanded mature leaves, including petioles
Grapes	September 1-15	Petioles (leaf stalks) from leaf opposite bunch
Raspberries	Recently matured	Fully expanded leaves
Strawberries	Late June for fruiting Mid August for non fruiting plantings	Fully expanded recently matured leaflets only (discard petiole)
Tobacco	At topping	10 <sup>th</sup> leaf from top

