

Sampling Pecan Leaves for Analysis

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Pecan tree performance is not consistently or highly correlated with soil nutrition analyses. Leaf analyses have been used successfully to define nutritional needs of pecan trees. Leaflets are used for tissue analysis because they are more sensitive to changes in nutrient supply than other tissues such as roots and twigs. Leaf analysis indicates nutrient uptake while soil analysis indicates nutrient content, which may or may not be available to the pecans. Leaf analysis can be used to identify toxicity as well as deficiency symptoms, and to distinguish between nutrient disorders and other types of tree injury. A leaf analysis detects hidden hunger, a level of nutrition where deficiency symptoms are not apparent but yields are reduced.

Collecting the Leaflets

Successful diagnosis depends on the sampling procedures followed. It is important that a given method used for leaf sampling in pecan trees be followed consistently every year. Concentration of nutrients varies with variety, sampling time, position of the leaf in the shoot and position of the leaflet in the leaf. The recommended sampling procedure for pecans consists of sampling the middle pair of leaflets from the compound leaf on the mid-position of the current season's shoot (figure 1). Take around 60 leaflets from the entire orchard or area to be tested to collect a representative sample. Insect and disease damaged leaflets, and leaflets showing severe deficiency symptoms, should be avoided or should be sampled separately. Leaflets need to be picked 4 to 6 feet from the ground. Each sample should be collected so leaflets come from representative trees over the entire sample area. Collect leaflets

from all sides of the tree exposed to sunlight and that can be easily reached from the ground.

Sampling pattern must be the same where samples are taken annually for comparison. If possible, samples should be taken every year from the same marked rows or trees. Changing the sampling procedure can affect the results and yearly comparisons may become meaningless. Avoid taking samples after foliage has been sprayed.

Every 10 acres of orchard or every soil type and every variety should be sampled separately. Growers should sample problem blocks separately. Answers to problem areas are often found by comparing samples from the problem areas with samples from the good areas. It will help to take two or three samples during the year, every year, to learn more about nutrient availability, i.e. nitrogen content in May is much higher than in September. If this is not possible, a leaf sample should be taken in late July or early August, after the leaflets have acquired their final size and weight. It seems this stage indicates the true nutritional status of the pecan tree better if only one annual leaf analysis is going to be made.

Managing the Samples

Do not collect leaves in galvanized containers because these contain zinc which could affect results. Wash leaflets thoroughly to clean all spray residues that may influence analysis results, especially micro-nutrients. Different washing procedures have been recommended to remove spray residues from pecan leaflets. The washing procedure most recommended is to wash leaflets with 0.1% hydrochloric acid (HCl) solution and three separate demineralized distilled water baths. Elimination of only one step could give unreli-

able leaf analysis results. If HCl is not readily available, leaflets should be washed in water containing a small amount of detergent, followed by a rinse in tap water and by two distilled water rinses. Leaflets should not be allowed to stand in the detergent, tap or distilled rinse more than one minute. Leaflets to be analyzed only for macronutrients (N, P, K) need not be washed. The same procedure should always be used for washing pecan leaflets.

Once the leaflets have been washed, place them in a perforated bag and air dry them at room temperature. Put the dry leaf samples in paper

bags (not plastic), identify bags by sample number or orchard name, close the bags with tape (do not use metal staples), and pack in shipping carton or large envelope. Do not allow any contamination from soil samples or other extraneous material.

When submitting pecan leaf samples, give accurate information about your orchard. Information concerning past treatments, leaf and soil nutrient contents, and your evaluation of yield and tree conditions is necessary to make the best recommendations.

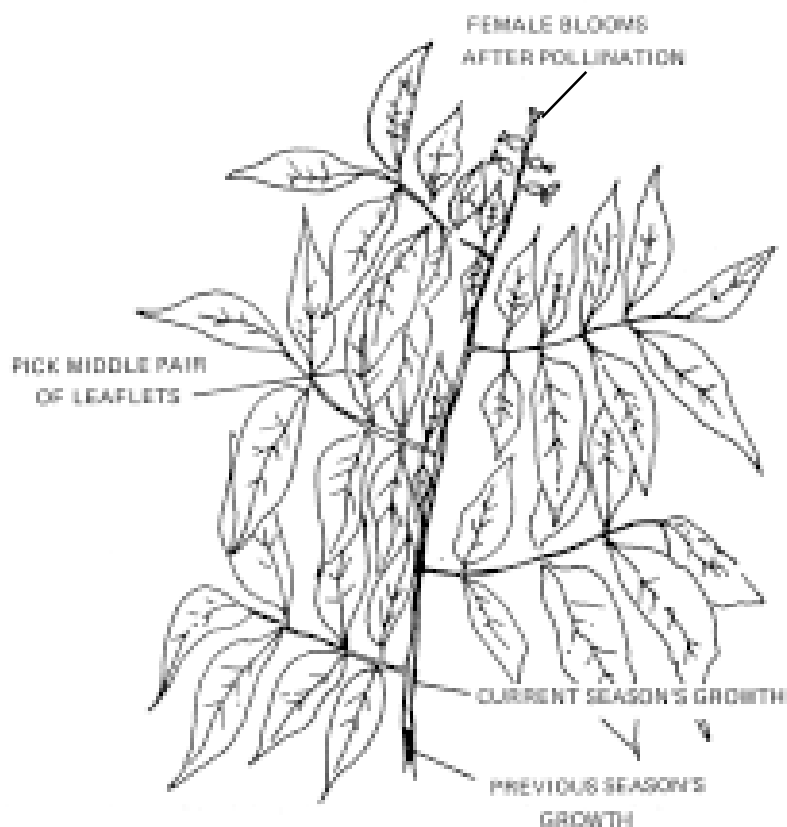


Figure 1. Pecan leaf sample is taken by picking middle pair of leaflets from compound leaf in the middle of the shoot of current year's growth.