



revised
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Agronomic Services for Christmas Tree Growers

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Nutrient analyses—both soil & plant tissue—are key components of quality tree crop management that foster efficient and economical applications of fertilizer and lime. The NCDA&CS Agronomic Division provides both of these testing services.



Preplant Soil Testing

Three to six months before planting, collect soil samples from new production areas or areas to be replanted and have them analyzed. Trees get a better start if recommended lime and fertilizer are mixed into the soil before planting. Since post-plant applications are put out on the soil surface, they take longer to reach the root zone and become effective. Proper soil amendment and preparation before planting are key to success.

To collect soil samples, outline each distinct field on a map or aerial photograph and assign permanent identification codes (five characters maximum). Avoid making units too large (15–20 acres) or too small. Test results and recommendations are based on soil chemical and physical properties. Since these can vary within a short distance, look for changes in soil color, texture, slope and treatment history. Divide the field into separate, uniform areas based on these differences. Avoid field borders, ditch banks, old brush piles, burn sites, and outbuildings.

Walk a random pattern over each uniform sampling area collecting 15 to 20 cores, 4 inches deep. Use a clean stainless steel soil probe or other steel sampling instrument. If the soil is very wet, wait for drier conditions. Wet soils are difficult to mix thoroughly and may affect the quality of the subsample taken.

Place each soil core into a clean plastic bucket. Avoid using metal buckets or containers. Thoroughly mix all the cores for one sample area breaking up clumps and removing any large particles of trash. Fill the sample box to the fill line marked on the side of the box. Label the box with the correct sample identification and grower name.

Soil and Tissue Testing for Established Plantings

Within each block of trees, flag 10 random trees, and always collect samples (soil and tissue) from these specific trees over the entire 7- to 8-year growth period. Collect soil samples in September or October, taking four cores to a depth of 4 inches from around each tree. Submit soil samples every two to three years or maybe annually from sites with coarse, sandy soils.

Tissue analysis (\$5 per sample) provides data on whether concentrations of 11 essential elements are within the desired ranges for optimum color and growth. Routine (predictive) analysis helps growers monitor nutrient status and optimize the fertilization program; problem (diagnostic) analysis helps diagnose suspected deficiencies or toxicities and determine the best corrective action. Using accepted sampling procedures ensures the most meaningful test results.

Revised tissue sampling recommendation: *To monitor an existing fertilization program*, collect samples any time after new growth has hardened off (>May 15) and before frost (~Sept 15). For Fraser fir, collect two or three shoots from the upper 1/3 to 1/2 of each of 8 to 12 trees. Do not include shoots from the leader or top whorl. Break shoots off so they are 4–6 inches long. Using knives or clippers can spread disease.

To diagnose a suspected nutrient problem, take tissue samples (for problem diagnosis) whenever foliage is off color or trees are growing abnormally. For comparison of nutritional health, it is important to submit a sample from plants that do not look healthy and a separate sample from plants that look good. Likewise, submit separate matching soil samples from around healthy and unhealthy trees.

Nematode Assay

Several plant-parasitic nematodes can infect the Christmas tree species grown in North Carolina, but they rarely cause serious concern. In problem situations, however, it is a good idea to submit a soil sample for nematode assay (\$3 per sample). Visit our Web site for instructions on taking and submitting samples for nematode assay.

Submitting Soil and Tissue Samples to the NCDA&CS Laboratory

Use standard NCDA&CS soil sample boxes. Place tissue samples in a paper bag or envelope, never in a plastic container. Complete the necessary information form(s), and include appropriate fees, if any, with samples.

If you send samples to the lab via UPS or Federal Express, use the Agronomic Division's physical address. Address samples sent through U.S. Mail to our Mail Service Center address. Make sure that shipping cartons with tissue samples are addressed to the Plant/Waste/Solution laboratory. Soil samples go to the Soil Testing laboratory.

Sample envelopes, soil boxes and information forms are available at all county Cooperative Extension offices and the NCDA&CS laboratory or from your local regional agronomist. Information forms are also available online. Test results are posted online soon after completion, and a report is mailed to the grower.

The NCDA&CS Agronomic Division provides meaningful nutrient management information for profitable production. For help in learning how to take and submit samples or to interpret report recommendations, visit the Division's Web site or contact your local NCDA&CS regional agronomist.

*Thank you for using agronomic services to manage nutrients and safeguard environmental quality.
— Steve Troxler, Commissioner of Agriculture*