

PROBLEM MANAGEMENT

by Balakrishna Rao, Ph.D.

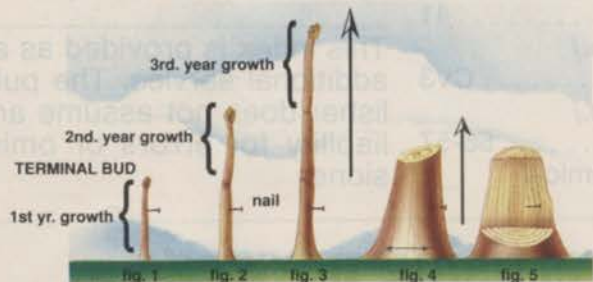
'How do trees grow?'

Problem: I have been employed in the parks department of the city of Galesburg, Illinois for about 12 years. I had never given much thought about the growth of trees until a new employee asked, 'How do trees grow?' One of the old-timers responded, 'From the top up,' and said that if you drove a nail into a young tree you would find it at the same elevation 50 years later.

I find that hard to believe. When I look at a tree that's 50 feet high and see a crotch that's 10 feet above the ground, I can't believe the tree was that tall when it was planted, or that all the previous features disappeared, leaving the crotch.

I know that a tree feeds down from the leaves and then again up from the roots. But does it grow up and out? (Illinois)

Solution: The "old timer" on staff proves that there's no teacher like experience. Trees do grow from the top up. This drawing and explanation should help you understand the situation.



Trees grow from the top up from the terminal bud (Fig. 1). These terminal buds are produced every year at the tip of the current year's growth. From this new terminal bud, new growth will be reproduced during the following growing season, usually in spring (Figs. 2-5). The stem will elongate for a period (depending on species and growth habit) and then stop growing and develop a new terminal bud for future growth.

The yearly growth and elongation and terminal bud setting process will continue as the trees grow from the top upward. Depending on growing conditions—such as soil, environment and fertilization—a given tree may produce different lengths of growth during different years. So stem (or trunk) elongation occurs each year as new growth occurs from the terminal bud. Pre-existing stem tissue does not elongate.

Because of the tree's growth habit, if the nail was driven into the current season's growth before the yearly elongation process stops, the final elevation of the nail may be slightly higher than the original height. However, if the nail was introduced after the elongation process was stopped, it will stay at the same elevation thereafter.

You are also correct in saying that trees grow up and out. As far as upward growth, refer to the above explanation.

The outward growth takes place from a layer of tissue (cambium) located between the xylem and phloem. The cambium layer is responsible for secondary and outward growth. It produces xylem (sapwood) inward and phloem and bark tissue outward. So the outward growth we see on any tree is due to cambial

activity. Every year this will produce growth layers, one outside the other, which are called "growth rings" without any elongation upward. Because of the outward growing habits of trees, a nail or any other foreign objects, such as wire or systemic injection tools left over, can be gradually enclosed inside by growth layers and the callosing process.

Treating snow mold

Problem: A number of our clients' lawns had snow mold disease problems in past years. What is the best way to manage this problem? (Pennsylvania)

Solution: Success in snow mold disease management depends on properly diagnosing the causal agents and following good management guidelines. Since we do not have a good broad-spectrum fungicide to manage all snow mold diseases, proper identification is very important.

Several different fungal agents can cause turf disease at low temperatures. Among these are pink snow mold (*Fusarium patch*) caused by *Fusarium nivale* and gray snow mold caused by *Typhula* spp., which are the two most common and important snow mold diseases and are active during the winter months.

Pink snow mold is characterized by reddish-brown spots with pinkish colored margins. Pinkish mycelial growth may be present at the border of patches in the early morning. Gray snow mold has gray to black mycelium with hardened yellow-brown fungal bodies (sclerotia) embedded in the leaf and crown of infected plants.

Often snow mold problems can be managed successfully by following good cultural practices. Avoid heavy fertilizing late in the fall that produces lush growth. Continue mowing until turfgrass growth stops, and manage whatever thatch problem may exist.

Since snow molds usually kill only the turfgrass leaves, rake and break up infected and matted leaves to encourage new tiller growth from the crown. This should be done before the grass greens up in the spring and prior to pre-emergence crabgrass herbicide application(s).

Lawns with a history of snow mold disease severity can be treated with fungicides. General fungicide recommendations include one application before the first snow cover, the second application during mid-winter and the third application after the snow melts in the spring. Among these three applications, the one that is made in the late fall, before the snow cover, is most beneficial and practical. Chemical treatments in the spring may not be very effective, since the damage has already been done. **LM**



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Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.