

Turfseed breeders embrace endophytes

■ They're so tiny you need a powerful microscope to see them, but they're a big hit with turfseed buyers.

Virtually all seed producers are accelerating efforts to put endophytes into as many varieties as they can.

The result: even more varieties of endophyte-enhanced turfseed coming to market, which seems to be fine with turfseed end users.

Turfseed-buying professionals have evidently taken to the idea that endophytic fungi—barely known just a decade ago—provide turfgrass with enhanced insect resistance (above-ground insects) and, more recently discovered, disease resistance. Turfgrass experts feel this translates into reduced use of traditional chemical controls, and hardier turfgrass.

"The seed companies aren't driving the end users," says Eric K. Nelson, research director for Medalist America. "The demand is coming from the customers. This is something they want. Its time has come."

Adds Dr. Fred Ledebor of Turf Merchants, Inc., "All new germplasm of tall fescue, perennial ryegrass, and fine fescues that enter our breeding program is screened immediately for endophytes.

"Plants that do not contain endophytes are channelled into a branch of the program to introduce endophytes, while endophyte-infected plants are moved immediately into the breeding program."

Suichang Sun, a researcher who came to Jacklin Seed this past March after six years at Rutgers University, says

endophyte-infected varieties originate from naturally infected plants that were selected from a nursery. Or breeders select good looking plants that are then artificially inoculated.

He says researchers are studying an *Acremonium* endophyte that will be artificially inoculated into fine fescues. But studies at Rutgers have shown an inhibition to *Acremonium* endophyte in Kentucky bluegrass varieties.

To develop a variety of Kentucky bluegrass containing endophytes, researchers will either have to find a type of endophyte that will not be rejected by Kentucky bluegrass, or cross endophyte-infected plants of neighboring *Poa* species with Kentucky bluegrass.

Actually, it's not the endophyte itself that provides insect resistance, it's the alkaloids that the endophyte produces, the reason why endophytes are undesirable in forage grasses.

—Ron Hall

'Topping' trees is a likely mistake

■ Tree "topping" occurs when the crown of a tree is cut. It's not only aesthetically unpleasant, it can cause the tree to become infected or die.

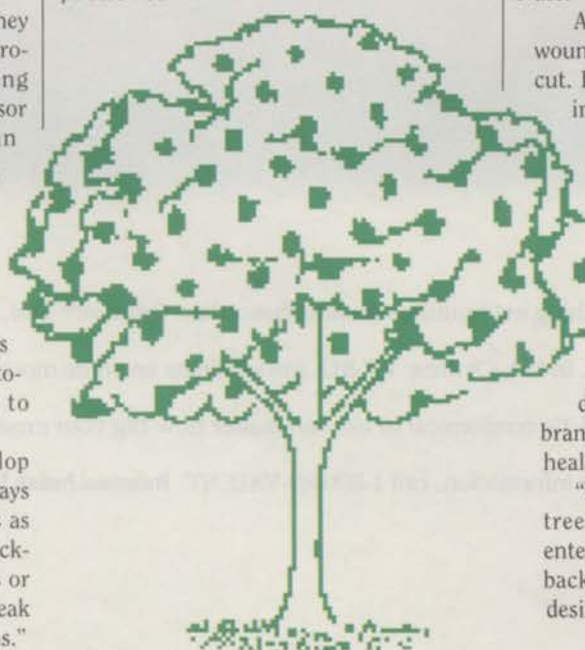
"Many homeowners assume that if they top a large tree, it will compensate by producing a new, healthy, lower-growing crown," says Dr. J. Robert Nuss, professor of ornamental horticulture in Penn State's College of Agricultural Sciences.

According to Nuss, removing the central trunk and the tops of main branches permanently destroys a tree's form and causes unnatural growth.

Removing too many leaves weakens the tree. Without enough leaves to photosynthesize, the tree slowly starves to death.

When trees are topped, they develop bristling "water sprouts," or suckers," says Nuss. "To the untrained eye, this looks as though the tree is rejuvenating, but suckers don't develop into substantial limbs or produce enough leaves. They remain weak and spindly, and snap off easily in storms."

Nuss says a topped tree might develop a double leader, or trunk. This new trunk often is weaker than the original and is prone to



splitting. The massive root system also is weakened because it no longer receives adequate nourishment from the crown. Trees in this condition are more likely to split or blow over in a storm.

"A mature tree with a healthy root system is much less likely to blow over than a weak one with damaged roots," advises Nuss.

A topped tree also causes large wounds where the crown and limbs are cut. It takes years for these to heal, and in the meantime can invite insects, disease and decay.

Before you prune a tree, Nuss says, consider what you want to accomplish.

Consider the tree's natural form, growth habit, growth rate, height and spread.

"Pruning is meant to remove dead, damaged or insect-infested branches and keep the rest of the tree healthy," says Nuss.

"It's also used to open the center of a tree and allow more air and light to enter. All pruning cuts should be made back to side branches pointing in the desired direction."