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CERTIFICATION AND MARKETING

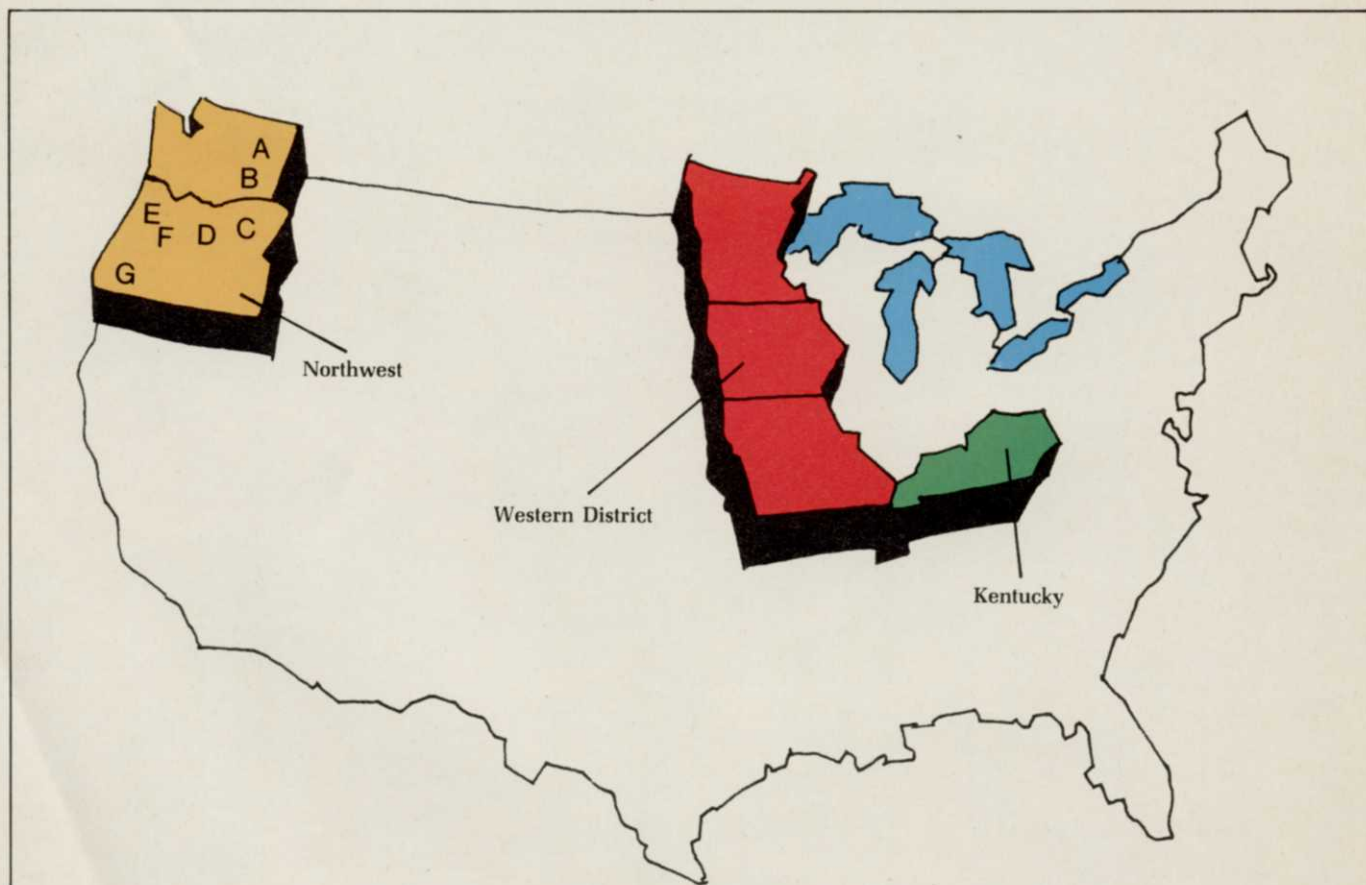
The reputation of a golf course superintendent, grounds manager, or landscape contractor depends upon his materials. Not only is it his responsibility to recommend the appropriate type of seed for a particular site, he must make certain the seed he buys is weed-free.

For example, if you are seeding a

Kentucky bluegrass/perennial ryegrass/red fescue mixture, you could end up with more bentgrass than ryegrass or fescue. Where did the bentgrass come from? If you purchased uncertified seed this is very possible. As little as two percent bentgrass in a mixture with ryegrass or fescue will provide more bent-

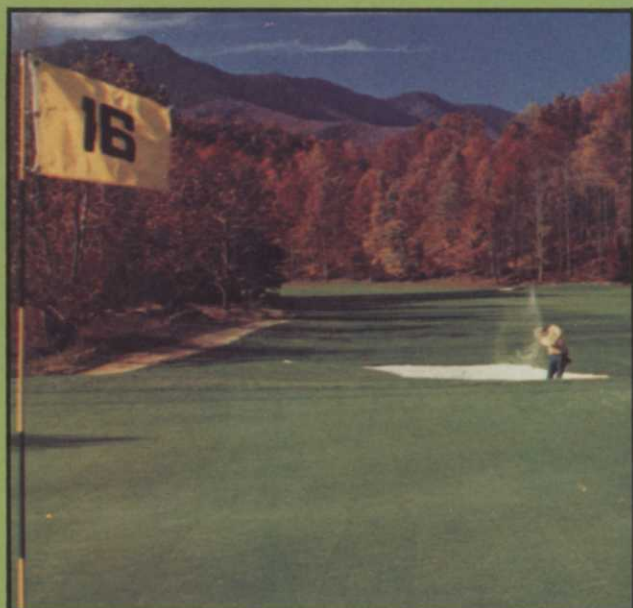
grass seeds than ryegrass or fescue seeds.

The need for certification is obvious. Under pressure from agricultural interests, states began to establish minimum purity standards in the 40's. Each state has specific requirements for seed purity. These standards are not merely about



Seed Production Areas. Seed stripping crews started in Kentucky in early June and worked northward in the Western District. Today, some common bluegrass is grown in the Midwest and Canada, but by far the most improved turfgrass seed is produced in the States of Oregon, Washington and Western Idaho. Notable areas in the Northwest are (A) Spokane Valley, (B) Pomeroy area, (C) Union County, OR, (D) Madras area, (E) Willamette Valley, (F) Silverton Hills bentgrass region, (G) Rogue River Valley.

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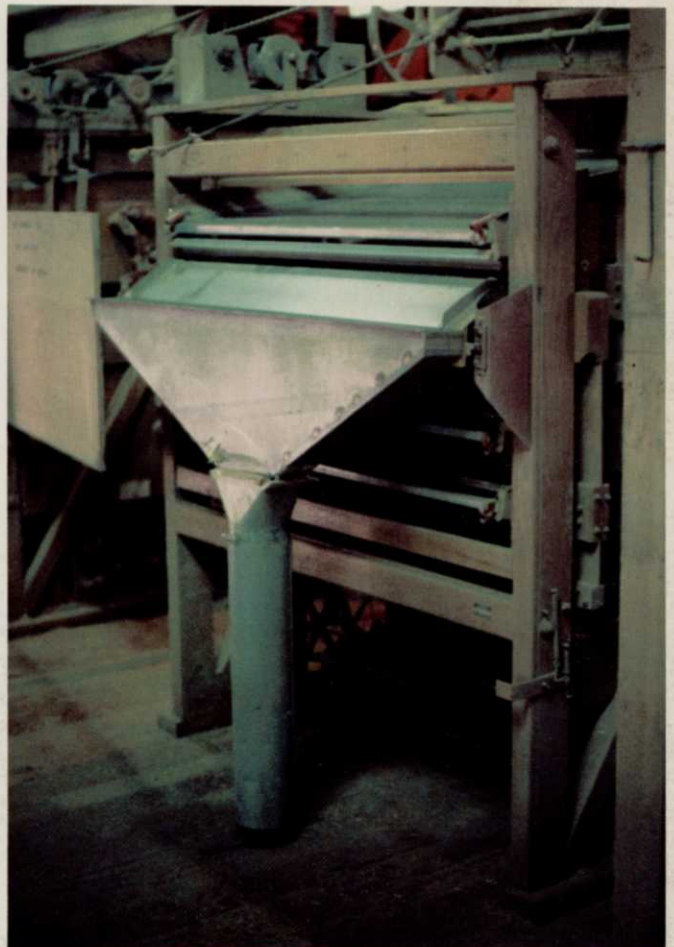
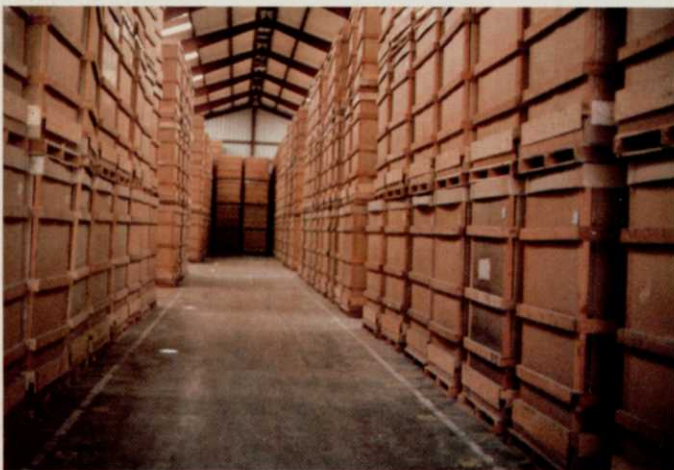
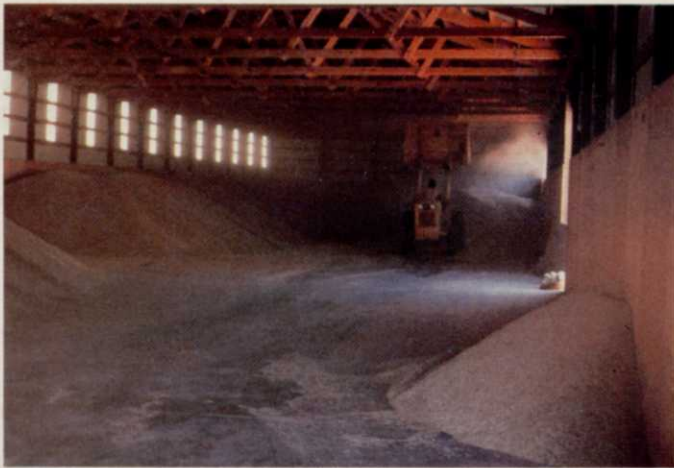
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For more information about Penncross or Penneagle write:

Penncross Bentgrass Growers Assn.
1349 Capitol N.E., Salem, Oregon 97303

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Bin storage of seed following harvest and before cleaning (upper left).

Seed separator (right) which removes weed seeds, improper turfgrass seeds and trash from the seed brought from the fields and stored. **Bulk storage** after cleaning and before bagging (bottom left).

levels of impurities in the final product, they dictate how close a field of one seed type is to a field of another type. Each step of production is inspected by state officials to keep track of the seed lot from planting to bagging.

The purpose of certification is not just to protect the consumer from impurities, it is to protect the genetic integrity of the turfgrass type. With the increased number of cultivars of a particular species of grass, it is critical to keep the seed of one separate from another. The similarities between some Kentucky bluegrass seeds is so great, even microscopic detection is impossible. You may not know what cultivar you have until the seed germinates and the actual plant becomes evidence.

To prevent intermingling of cultivars, fields used for growing seed of one type may be restricted for growth of another seed type. Fields must be at least regulation distance apart to prevent contamination

of adjacent fields. Herbicide treatments are timed to eliminate any weed seeds brought to the surface by cultivation. Burning eliminates all straw, weed seeds, and new generation seed left on a field after combining. Usually a planting produces seed for three years before it is plowed under and a new planting made. The burning does not kill the parent seed plants, only seed and trash leftover in the field after harvest.

Current production techniques were developed to produce purity at a reasonable cost. Seed is drilled into the soil rather than upsetting the soil by cultivation and surface seeding. Soil disturbance uncovers buried, but viable weed seed. Studies have shown that colonial bentgrass seed can remain viable for more than five years when buried.

One method of planting uses a seed drill and a device which covers the seeded row with activated charcoal. Herbicide is then applied with

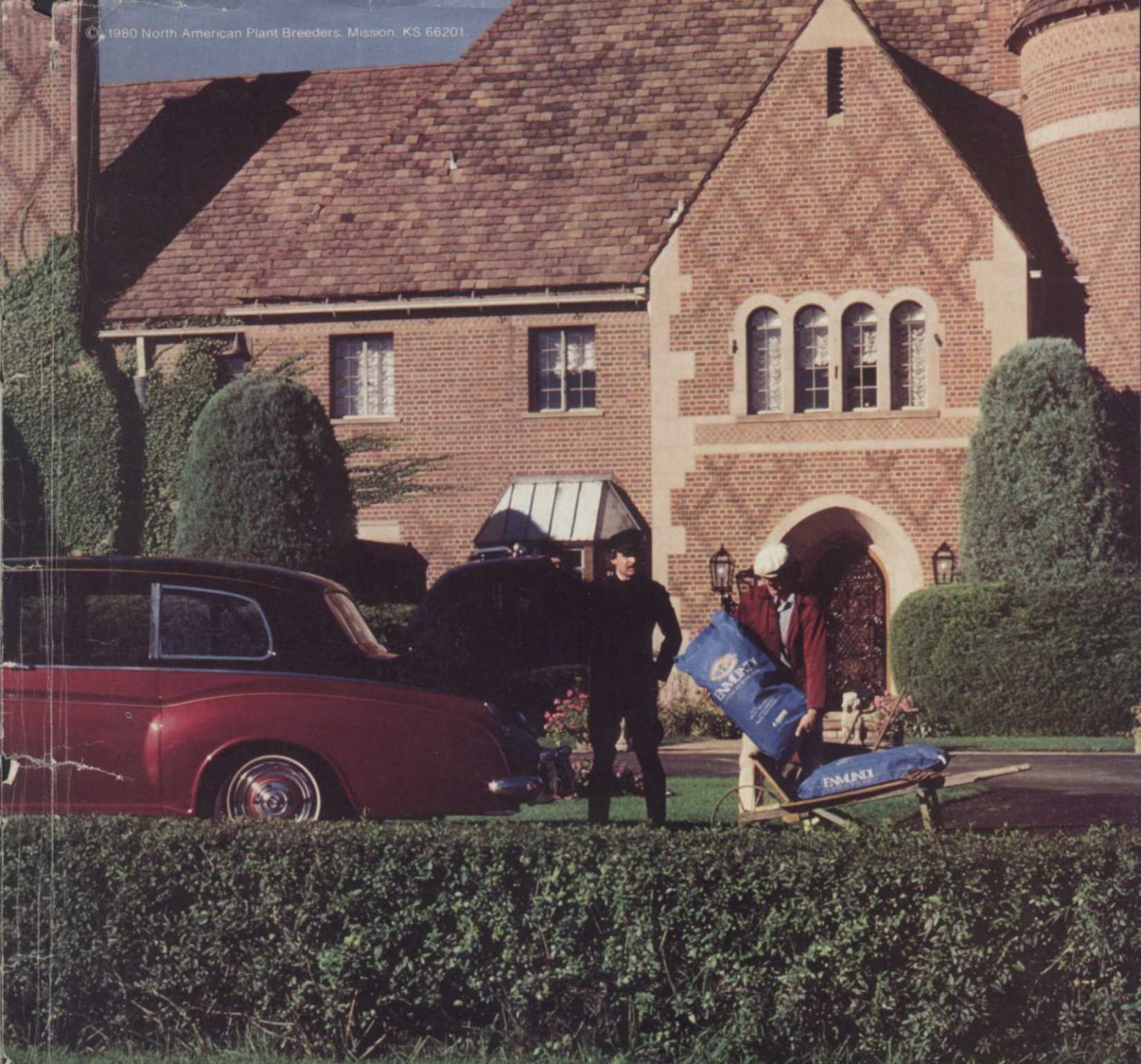
a boom sprayer and the charcoal protects the foundation seed from harm.

After the seed has germinated and grown for two or three months, a selective herbicide is applied to remove weeds. The grass goes into dormancy for the winter.

In the spring, spot treatments are made during a procedure called roguing to eliminate offtypes and weeds.

In June and July fields are mown when still green. This eliminates losses to seed shattering by equipment. The seed dries on the stalk in windrows in the field. If it rains the windrows are turned over once. About two weeks later, providing rain has not spoiled the process, a combine is used to pick up the windrows of seed and stalk. The combine separates the seed from the other material. The seed is placed in large boxes and stored until cleaned.

Cleaning is a mechanical process involving air separation and screen-



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Bags of cleaned and tagged seed ready for pickup by trucks and rail cars.

ing. It is an amazing process that can distinguish between almost identical seeds in huge volumes. Many farmers have their own cleaning plants.

When cleaning of one type of turfgrass seed is completed, the machinery is thoroughly cleaned before the next seed is cleaned. Rarely will the machinery used to clean bentgrass be used to clean bluegrass or ryegrass.

After cleaning, the seed is again stored in boxes until bagged or blended. Bags are placed on pallets and inspectors take representative samples from bags. These samples are sent to state labs for inspection. If the seed meets the standards set for certification, the bags are tagged.

Some of the checks made from seed samples are for weed seed, inert matter, and germination percentage. Perennial ryegrasses undergo a test for annual ryegrass. This test uses ultraviolet light. If more than a certain percentage of the seeds fluoresce under the light, the seed can-

not be certified.

Certification is a process which begins by filling out records prior to planting and doesn't end until the bags leave the hands of the grower. Meeting these standards adds considerably to the cost of the seed. But the results are worth the extra expense from an end-user standpoint.

Marketing and Distribution

Prior to the Plant Variety Protection Act of 1970 there was relatively little promotion of improved turfgrasses. Although chemical and equipment suppliers to the turf industry advertised in the 60's, seed companies did not begin national promotional efforts until Jacklin and a few grower associations started small schedules in 1968. The American Sod Producers Association had been created the year before and Weeds Trees & Turf, then only five years old, started to provide regular coverage of sod production. Jacklin was promoting Fylking in their original ads.

In 1972, Lofts began their promotion of Baron. Pennfine promotion first appeared in 1972. Warren's began A-20 promotion in 1973, as did Burlingham with Bonnieblue.

Today, promotion of improved turfgrasses can be estimated at more than \$1 million with shows, magazine advertising, and direct mail. At the same time the market has grown from an estimated \$62 million in 1965 to an estimated \$400 million in 1979.

The market is more sophisticated than it was in the early 60's. Quality involves more than dark green color, it involves disease resistance, germination percentages, seed mixtures, and many new varieties. Obviously, marketing helped the growers and distributors. But, it also improved the market. The individual industries which use seed are now significant markets of commercial importance. The local seed store is now a million dollar enterprise with many products. Turfgrass seed improvement is to be credited with this achievement.



Ten grams of a seed sample are checked for weed and off-type seed in a lab.

VARIETY PROTECTION

European turf researchers made great strides in the 30's with discovery of bluegrass apomixis by the Swedish researcher Munz and developed and released a few improved varieties. Some of the reasons for their gain in this period was variety protection between countries in Europe, a cutback in U.S. efforts during the depression, and eventually the World War II. The fact that the Arlington Turf Gardens was moved to Beltsville so that the Pentagon could be built there, was a clear sign of the setback caused by the war.

Before protective legislation from the USDA, a number of methods were tried to guard the seed from any interested seed grower. Growers of Manhattan perennial ryegrass, Penncross bentgrass, Merion Kentucky bluegrass, and other improved grasses formed cooperative associations to simplify supply lines and to promote their seed. Other tactics used to protect development costs were swelling the seed only in mixtures (Adikes did this with NK-100 in the 50's and 60's) and secrecy. Cooperatives still exist for some grasses, Manhattan Ryegrass Growers, Highland Bentgrass Growers, Seed Production and Introduction Corporation, and Merion Bluegrass Growers Association among others. Many of these associations are sponsoring research which may soon lead to the development of improved cultivars of their primary turfgrass, and which will provide them with exclusive rights under the Plant Variety Protection Act of 1970. Manhattan and Merion cultivars are expected within the next three years.

So, by 1960, technological aspects of seed production had been mastered. The ability to grow large quantities of high grade turf seed existed. The price of improved turfgrasses had become commercially attractive. However, concern existed for the lack of protection of improved turfgrass seed from a commercial standpoint. Grower associations worked with regional and national seed companies to control seed quality. States had begun to require certification of seed to insure the genetic integrity.

When protection was finally obtained from the 1970 Plant Variety Protection Act, a new importance was placed upon improved varieties. The differences between public and patented varieties were stressed by patent holders. Universities began to receive financial support for research into improved turfgrasses and some larger seed companies created their own research department. The seed company could now control production of its improved varieties released after 1970. The term proprietary turfgrass was coined.

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VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: What causes gummosis?

A: Trunk, limbs, and twigs of certain trees (particularly stone fruits) exude gummy sap when injured by mechanical agents, insect punctures, or diseases. Some species are susceptible to a bacterial canker that also causes exudation of sap.

Q: What would you suggest for the control of yellow nutsedge that will not injure lawns? Last year we tried MSMA but were not satisfied with the results.

A: The methanearsonates such as MSMA (monosodium methanearsonate) usually give good control when applied properly. We had excellent results with Bentazon (Basagran) last year with no noticeable injury to Kentucky bluegrass.

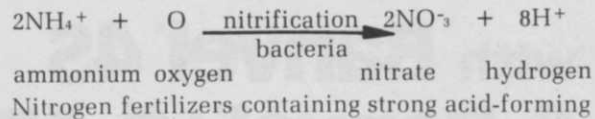
Q: I used glyphosate (4 ozs. to 1 gal.) on Bermudagrass in trailing gazanias. The glyphosate killed the Bermudagrass but not the gazanias. The trailing gazanias are still living after six months. Why?

A: Gazania is not on the glyphosate label. I called Monsanto, basic producers of glyphosate and was

told that they have no information for its control. In general, the glyphosate has not been absorbed into plants that show no injury symptoms, and the chemical has not translocated properly in plants that show initial injury and then recover. Glyphosate is absorbed only through green tissue and since gazania is a relatively tender herbaceous plant you should have gotten control unless you did not get adequate coverage over the leaf surface.

Q: Why do nitrogen fertilizers increase soil acidity?

A: Soil is acidic because of the presence of hydrogen ions H⁺ and any material which releases or causes the release of hydrogen ions increases the acidity. During the nitrification process, hydrogen ions are released when the ammonium ion is converted to nitrate. Therefore, any nitrogen fertilizer containing or forming ammonium will increase soil acidity.



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anions, such as sulfate, have the greatest effect on soil acidity.

Q: What chemical can you use to neutralize preemergent herbicides so you can reseed a lawn?

A: Depending upon the herbicide used, you could simply wait the recommended time period before seeding or apply activated charcoal. Finely powdered activated charcoal should completely neutralize just about any preemergence herbicide in the soil even if the herbicide has been applied shortly before the charcoal. Activated charcoal is effective either incorporated dry into the upper soil or suspended in water as a slurry and sprayed on the soil surface.

Q: Last year many of the maples started dropping leaves early in the spring and the same thing is happening again this year. What is causing the leaf drop and can it be controlled?

A: I can't positively identify the problem without a sample, but it sounds like petiole borer. The larva of a sawfly (*Caulocampus acericaulis*) tunnels in the upper end of the leaf petiole about ½ inch from the leaf blade. Leaf drop may be abundant on sugar and sycamore maples, particularly on the lower branches but defoliation rarely injures the trees.

Insecticides such as malathion and methoxychlor sprayed as the leaves open in May are recommended for control.

Q: How can you identify verticillium wilt on Norway maple?

A: Positive diagnosis for verticillium wilt can be made only by isolation culturing of infected sapwood in the laboratory because many other problems cause similar symptoms.

In Norway maples, the discoloration in the outer sapwood rings is characteristically a bright olive-green and is more commonly found near the base of the trunk or in the main roots since verticillium is primarily a soil-inhabiting fungus.

Q: Our lawn service includes mowing and last year we raised our mower height to three inches for the bluegrass lawns during the summer. Most of the lawns looked real nice but some had a thin, shaggy appearance and the grass lay down. What are we doing wrong?

A: The common Kentucky bluegrasses and some of the improved cultivars can be mowed at a 3-inch height but others should not be mowed at a height over 2½ inches. The symptoms you mentioned are typical of improved Kentucky bluegrasses mowed too high.

Send your question or comments to: Vegetation Management c/o WEEDS TREES & TURF, 9800 Detroit Ave., Cleveland, OH 44102. Leave at least two months for Roger Funk's response in this column.