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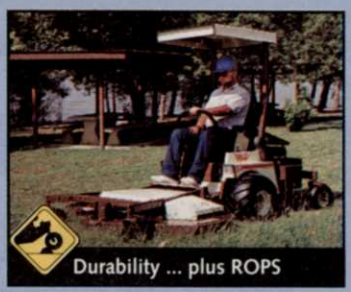
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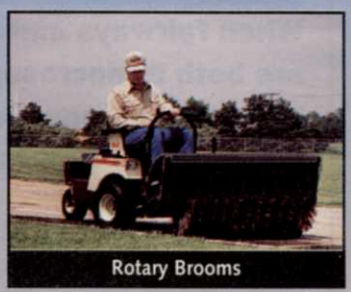
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Define fairways with a little bit of 'color'

When fairways and roughs are both Penncross, you have to take unusual measures to separate them visually.

■ Vince Bracken has fairways to die for. The golf course superintendent at Fiarmount Country Club in Chatham, N.J. maintains a 95 percent Penncross bentgrass course, including roughs and intermediate areas. He finds the turf is relatively low maintenance and extremely pleasing to look at.

Vince Bracken with one of his newly-defined fairways in the background. Note distince color difference between fairway and cut rough.

"Our fairways are some of the best in the state," says Bracken, who became superintendent at Fairmount in 1989. "Penncross has very few problems with insects and diseases and offers the bet playing surface you can find. Golfers just love hitting the ball of it."

Hal Purdy designed the north-central New Jersey course in 1960 to incorporate moderate undulations and "fall-away" greens. Cupping areas comprise only about 40 percent of the 6,000-sq.ft. greens, with the remaining area gently sloping down into the fairways. "It's a difficult but fair course," notes Bracken.

Except for the lack of definition between fairways and roughs, Bracken had no major complaints about the course when he took the job. Contour effects remain defined between fairways, greens and tees because of the different cutting heights. But Penncross appears "puffy and uneven" when grown at higher cuts, says Bracken. "Early in the spring, we lost the contour between our fairways and roughs," he adds. "Golfers couldn't tell where the fairway left off and the rough began."

Dramatic distinctions—In 1990, Bracken started correcting the problem. He decided to convert his roughs to an 80/20 bluegrass/rye mixture, but wanted to start with a dramatic distinction in the intermediate areas. He chose to chemically burn off a 20-foot collar around the fairways before seeding with his 80/20 mixture. Then he planned to overseed on the remaining rough.

"I was looking for a product that would give me a quick kill and quick seeding time. I knew Roundup would take too long to show results, and I couldn't get back in to seed right away. My distributor recommended a new herbicide that was still under an Experimental Use Permit."

Bracken sprayed what has become known as Finale (EPA registration came in late 1993) at 4 quarts in 60 gallons of water per acre. Applications were made on the fifth, sixth and eighth roughs in 1990. Twenty-four hours after the application, he ærated, verticutted and seeded. He also applied 1½ lb. N/1,000 sq. ft. Within 48 hours, the turf was yellowing; within three days, it was dead. Within 10 days, Bracken saw germination. He then cut in the blue-rye mixture on the outer rough areas.

No wait—"Those roughs look terrific now, and the membership loves looking down from an elevated tee and seeing the nice, dark green color against the lighter-colored fairway," Bracken says. "Seeing the results so fast helped the membership grasp what we were trying to do. Using Finale let us get the project completed quickly, which is very important in today's golf industry. Golfers don't like to hear that they have to wait."

In five years, Bracken has converted four other roughs to the blue-rye mixture. He expects to complete all rough conversions by 1996.

On the border

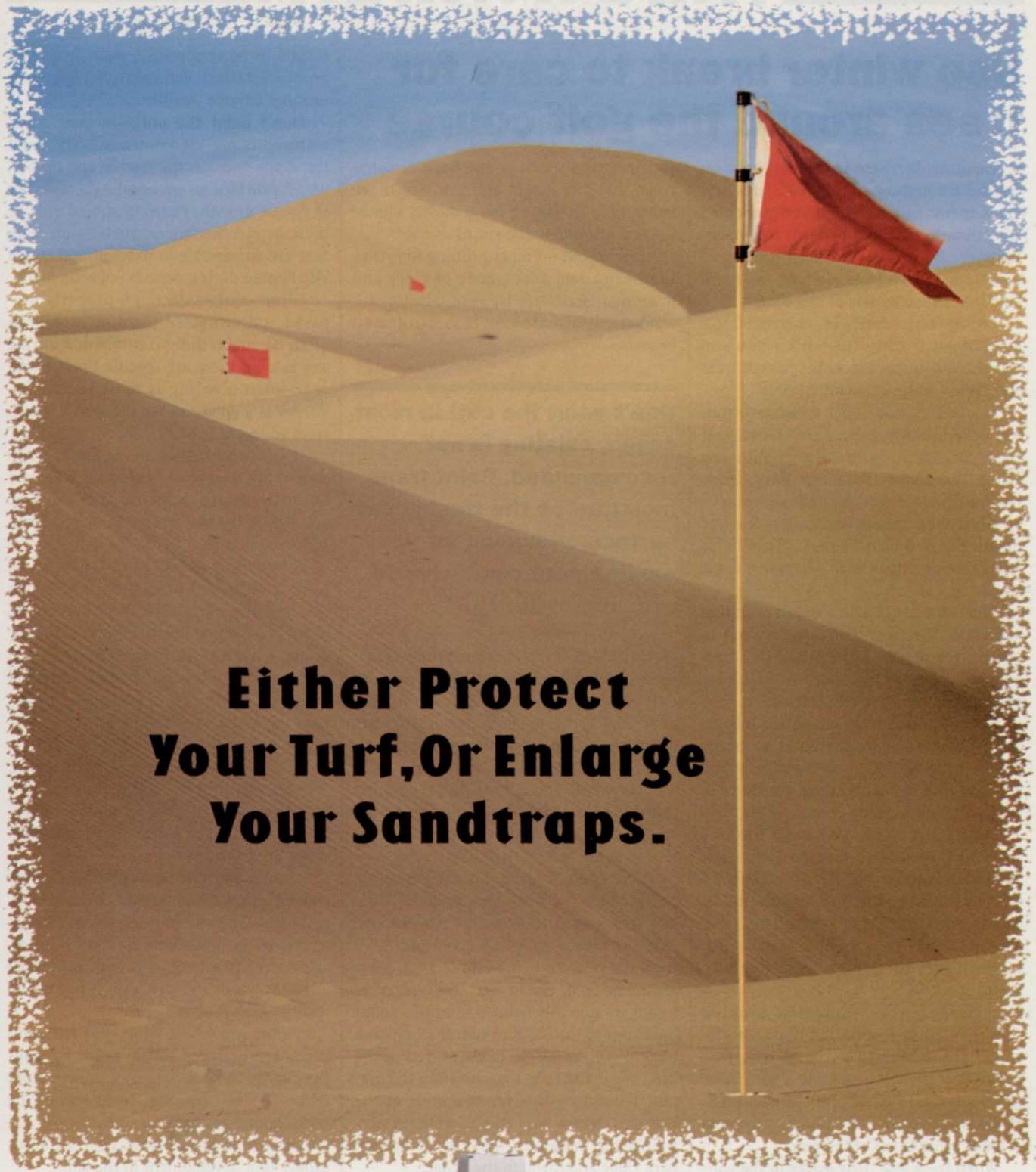
■ "We have the distinction of bordering, on two sides of the course, a 6,000-acre National Wildlife Refuge called the Great Swamp," says Vince Bracken. "Because the five ponds on our course drain into the swamp, I don't treat them at all. I have a company that comes in strictly to maintain the ponds. But we have to be extra careful about pesticide applications."

Fairmount's Penncross turf allows Bracken to reduce pesticide use. He remains on a preventive disease program. He makes one pre-emergence weed control application and has isolated insect problems. He feeds the turf throughout the season.

Bracken applies a blend including Nutralene controlled-release nitrogen every four weeks on fairways, and every two weeks on greens. "We don't like to see spurts of growth, so I like the sustained-release products," he says.

To keep thatch low, Bracken aerates fairways and greens once or twice a year and verticuts in the fall before winter sets in. After ærifying greens, he drags the material back into the holes, blows off excess thatch, applies seed, drags it in, and fertilizes with 1 1/2 lb. N/1,000 sq. ft.

In extreme heat and exceptionally cold weather in 1993 and 1994, the Penncross fared extremely well. "We hand-watered greens during hot weather, but did not have to syringe," explains Bracken. "Our well water stays at 52 degrees, so that helps cool things down. But during the bad winter last year, I didn't even take the ice off our greens. They were healthy, elevated and well-drained, so I didn't worry about them."



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Use winter break to care for trees around the golf course

■ A winter decrease in golf activity on courses throughout the United States provides many golf course superintendents with time to plan and perform tree maintenance. If you have limited funds and resources, pruning and planting tasks will help make effective use of this time.

Proper winter care will get trees off to a good start. During the winter you can prune trees, inspect recently planted trees and decide on spring planting sites.

Prune regularly—Set a regular pruning schedule for golf course trees. Len Burkhart, Ph.D., horticulturist with The Davey Tree Expert Company, Kent, Ohio, recommends a three-year pruning cycle.

"Every year, prune one-third of the tree population," Burkhart says. "This helps keep trees healthy while keeping costs down."

Trees that are not on a regular pruning schedule often are radically pruned to achieve the desired form. When that happens, workers overprune to make up for pruning they don't schedule later.

Thus, the tree loses too much foliage, and is unable to produce enough energy for the pruning cut to close properly and quickly. With radical pruning, the tree will slowly decline and may eventually die.

Larger, open cuts also make the tree more susceptible to disease problems, especially canker rot fungi. The fungi weaken the tree structure and eventually causes breakage. Large pruning cuts can also indirectly compromise tree health, which makes them more susceptible to pests.

When to prune—Intensive pruning should be performed in the dormant season. Late winter to early spring, just before new growth begins, is a good time to prune trees. Proper pruning cuts made in the winter close more rapidly than cuts made at other times of the year.

When trees lose their leaves in the winter, it is easier to spot problem areas and place pruning cuts, says Richard Rathjens, a Davey technical advisor.

"The new leaves that emerge the following spring will help hide cuts made in the winter," Rathjens says. "Also, pruning in late fall and early winter minimizes sap flow from pruning cuts on trees such as conifers, maple, birch and walnut."

Winter pruning also minimizes damage to some tree species. The bark of some trees, such as maple and ash, are more susceptible to tearing loose during climbing and pruning in the spring.

How to cut—Proper pruning improves the health and appearance of trees and prolongs their life by removing dead, weakened, diseased or insect-infested branches.

Don't paint the cut! In most cases, painting is not recommended. Paint traps moisture on the freshly cut surface, providing an environment conducive to fungal growth.

Untrained workers often prune incorrectly. Professional arborists place pruning cuts outside the branch collar, the swollen area where the branch attaches to the main trunk. You can easily see the branch collar on many trees.

"The whole idea behind proper pruning is to avoid injuring the trunk," Rathjens says. "Once the trunk is damaged, it can lead to decay and death of the tree."

A common pruning mistake is making one straight cut through a branch. When cut this way, the branch's weight can cause the wood to splinter and pull bark from the tree. To help avoid tearing, a cut should be made on the branch's underside, a foot or two out from the trunk, about one-third of the way through the branch.A second cut should be made on top of the limb a few inches farther out from the first cut. These two cuts remove most of the branch's weight. The stub is removed with a final cut made just outside the branch bark ridge and through the collar.

Wound closure begins from the edge of the pruning cut. This produces a roll of tissue called callus. The callus that develops from a correct cut resembles a round doughnut.

"Topping" is another pruning mistake. This occurs with the indiscriminate removal of a tree's main leader and branches, resulting in unsightly stubs. Topping severely disfigures trees and results in "watersprouts," weak limbs that are susceptible to damage from high winds or other adverse weather.

Don't paint the cut!—In most cases, painting is not recommended. The paint traps moisture on the freshly cut surface, which provides an environment conducive to fungal growth. Painting should only be done in rare instances, such as on trees that are susceptible to oak wilt and Dutch elm disease during periods of beetle flight.

'Plan'-ting—Although properly prepared and protected planting stock can often be successfully transplanted during any season, there are specific times of the year when planting is most successful. Winter is a good time to determine which trees you want to plant.

It's usually best to move plants when shoots are dormant. Deciduous trees are normally planted in the fall after leaf drop and before the soil freeze. In early spring, before bud break.

Narrowleaf evergreens also may be planted in the fall or in the spring before new growth starts. Broadleaf evergreens should be planted in the spring in climatic zones where soils freeze. In northern regions, where the soil freezes early and deep, spring planting of evergreens is perhaps the safest, says Burkhart.

"In the South, with its mild winters, fall planting is preferred," says Burkhart. "Winter planting is fine for plants with a root ball large enough to contain undisturbed roots that supply branches with water until spring."

Transplant into warm soil—Correct transplanting often depends on soil temperatures. The soil must be warm enough to permit the growth of new roots immediately after planting, and continue until adequate root growth can support the plant's water requirements.

"Roots grow best when soil temperatures are between 60° and 80° F," says Burkhart. "Because tree root growth stops when the soil freezes, trees should be transplanted at least four weeks before soil temperatures drop below 32° F to allow proper root development in the fall."

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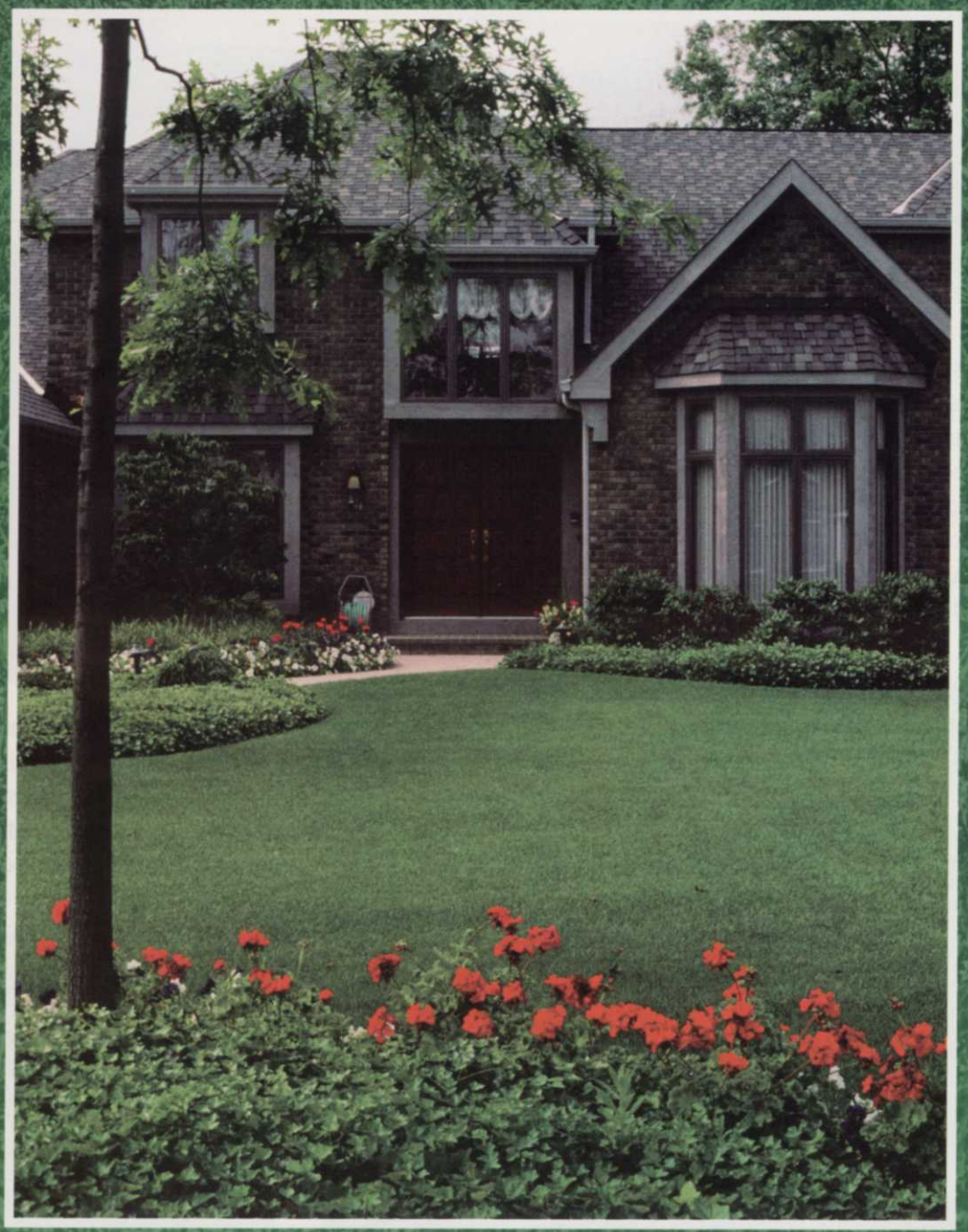

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Spring fertilization 'jump starts' turf

Spring fertility programs are needed for vigorous turf root growth. But go easy on the nitrogen.

by John Roberts, Ph.D.

■ Spring represents a season to initiate new growth for turfgrass, and often signals a time for turf managers to fertilize.

Following winter dormancy, both warm- and cool-season turf begins an important period of growth. For northern turf, spring and fall represent the peak seasons for shoot and root development when temperatures range between 50 degrees and 75 degrees Fahrenheit.

Root initiation occurs first in early spring when soils begin to thaw. Active shoot development follows, as temperatures climb b between 60 and 75 degrees Fahrenheit.

For warm season turf, late spring through summer represents the optimum time for development as temperatures reach between 75 and 90 degrees. Fertilization programs often coincide with these peaks.

While"Mother Nature" alone helps stimulate spring green-up, most turfgrasses need additional fertilization to achieve their maximum growth potential. Spring fertilization is especially critical on recreational turf areas, such as soccer fields, which receive intense traffic. Without additional fertilization, they often become severely worn and weed-infested.

'Starter' formulations—For cool-season turf, 'starter type' formulations are popular. These products supply nitrogen, phosphorous and potassium in ratios which are desirable for spring shoot and root growth. Unlike high nitrogen formulations which promote mostly topgrowth, starter types contain higher proportions of phosphorous (i.e., a 1:2:1 ratio).

The additional phosphorous helps initiate root development and early turf establishment of new seedlings.

Nitrogen in moderation—Nitrogen is the most important element in a turfgrass fertilization program. However, there are limits to its use. In fact, there are advantages of having the grass greener on the other side of the fence!

When turfgrasses are over-fertilized with spring nitrogen, excessive topgrowth—which requires extra mowing—and shallow rooting result. (See photographs). There is also a greater threat of nitrate leaching, a higher incidence of disease, and reduced environmental stress tolerance —including summer drought—is more likely.

In most situations, avoid applications of more than one pound of N/1000 sq. ft, when using "fast release" or highly water soluble nitrogen.

When using only fast release nitrogen sources, light applications—1/8- to 1/2 lbs. of N/1000 sq. ft.—are more desirable, and should be applied more frequently.

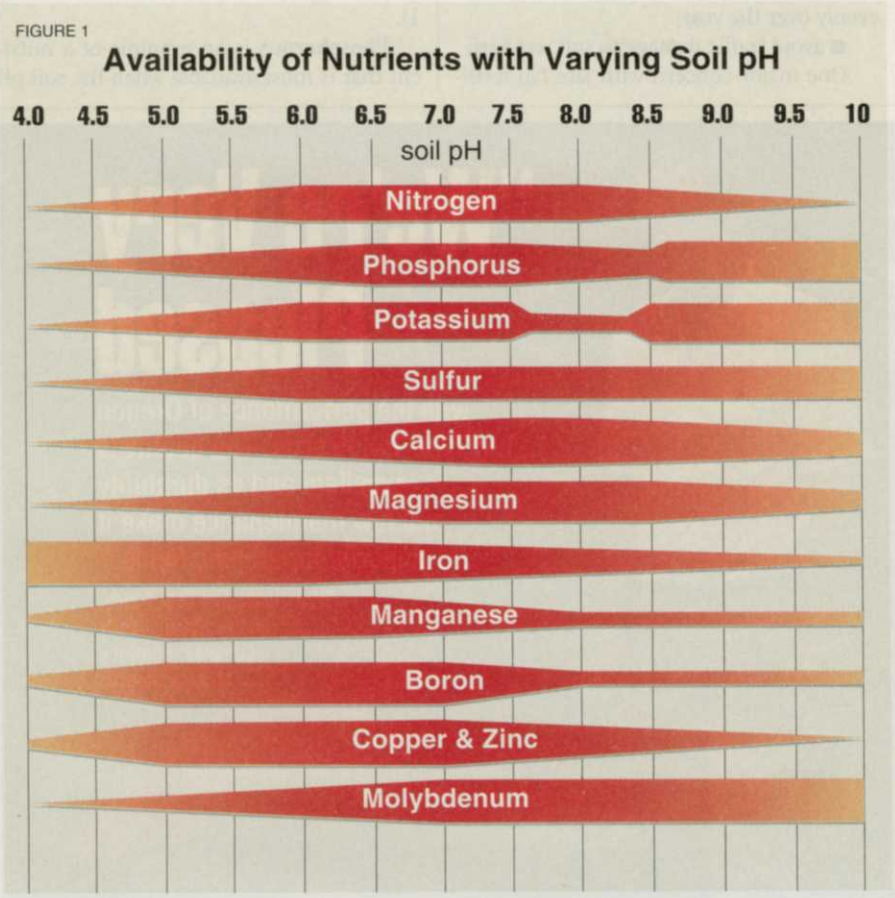
This "spoon-feeding" approach has become increasingly popular on golf course putting greens.

Fast- vs. slow-release—A widely-used strategy in the spring is to fertilize with products having a combination of fast- and slow-release nitrogen sources. Fast-release nitrogen stimulates earlier green-up and growth which is often sought in recreational and landscaped settings. Slow-release nitrogen sources, wither synthetic or natural organic, last eight to 15 weeks, are less likely to burn the turf and release nitrogen more uniformly than inorganic N sources.

Turf managers often must strike a balance between which combinations to use in each situation.

Sometimes this requires supplementing small amounts of fast-release nitrogen

FIGURE 1



into the spring feeding.

Late fall substitute—A late fall or dormant fertilization can provide a successful alternative to an early spring application. This strategy is primarily used by athletic field managers to:

- accelerate spring green-up and growth;
- help distribute the workload more evenly over the year;
- avoid traffic damage to soft wet turf.

One major concern with late fall fertilization is the increased potential of nitrate leaching during the winter. Using lighter rates of slow-release nitrogen will help minimize this threat. However, this strategy will generally be slower to stimulate growth in cold spring soils.

Soil pH and nutrients—The soil pH has a considerable influence on the nutrient availability of most nutrients (See Fig. 1).

Phosphorous is an example of a nutrient that is most available when the soil pH is between 6.0 and 7.0. However, in highly acidic soils with pH of less than 5.0, phosphorous gets "tied up" with iron and aluminum to form complexes which are unavailable to turfgrasses.

Maintaining near neutral soil pH values also favors the activity of beneficial soil microorganisms, the release of nitrate from nitrogen fertilizers and more vigorous growth of most turfgrasses.

In highly acidic soils, toxic concentrations of aluminum, iron and manganese may develop and cause impaired rooting—roots are short, brown and spindly—a decrease in overall turf vigor, shoot growth, drought tolerance and recuperative potential.

Potassium for all seasons—

continued on page 52

Turfgrass in the top photo received high nitrogen without potassium and phosphorous. Topgrowth is more vigorous, but root development is poorer than turf in the bottom photo, which received lower N levels.