Maintaining Bel Air

Continued

sages thus created. Bel Air maintenance experts find that Diazinon, Dursban or Proxol are all effective in combating these types of insect pests.

Equipment used in this control program presently consists of a 200gallon fungicide and insecticide sprayer, for greens only, plus a 150gallon sprayer containing herbicides for fairways and roughs, and a 50-gallon herbicide spray rig for small weed control jobs. Each rig contains its own motor and compressor and is drawn by tractor, and careful attention is paid to insure there is no mixup in pesticides, since this could result in killing desirable grasses.

Still a gleam-in-the-eye, Twombly enthusiastically describes his "next" piece of new equipment, a 300-gallon spray rig rated at 600 p.s.i. pressure. This will enable Bel Air maintenance professionals to reach their tallest trees, formerly reserved for outside maintenance crews at least three days each year.

A final piece of equipment, shown with pride, is a foam marker rig. This unique device dispenses a trail of foam, to show personnel where herbicides have been sprayed or fertilizers placed, thereby preventing wasteful or even tragic mistakes.

Fertilization tailored to needs

A fertilization program for Bel Air Country Club must take into account a predominately acid soil rich in phosphate (P_2O_3). Since Poa annua thrives on phosphate, little or none can be applied. Consequently, a 20-0-16 blend (as Scott Greens Fertilizer) is a favored mix. In winter months, a supplementary dressing of potash (K_2O) is often applied, preferably in the form of potash nitrate (KNO_3) or sulfate of potash (K_2SO_4) straights.

High nitrogen fertilizers are favored, during cooler weather, for fast greening of turf. Examples are a 20-0-0 with trace elements (Scotts' Pro Turf) or a complete mix such as a 16-4-7 (as Best Fast Green). The pelletized form is generally preferable, to insure ease of application and no setting-up in the sacks.

Supplementary soil conditioners are found helpful at Bel Air, such as gypsum to provide better water penetration, and limestone to neutralize excess soil acidity. This latter condition was found to prevail in certain areas, with a soil pH in the 4 to 5 range, from repeated dosages with sulfate of ammonia. Twombly reports that such treat-*Continued on page 42*



JUNE 1977/WEEDS TREES & TURF 41



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Bel Air' continued

ments finally failed to produce adequate grass growth, and after a soil analysis to detect the cause, limestone was tried with notable success. During hot summer months, especially July and August, a low nitrogen, slow-release fertilizer (Milorganite) is used to keep grass growing slowly and steadily, without hazard of burning. In addition to fairways, tees and greens, this is even used on roughs and around trees.

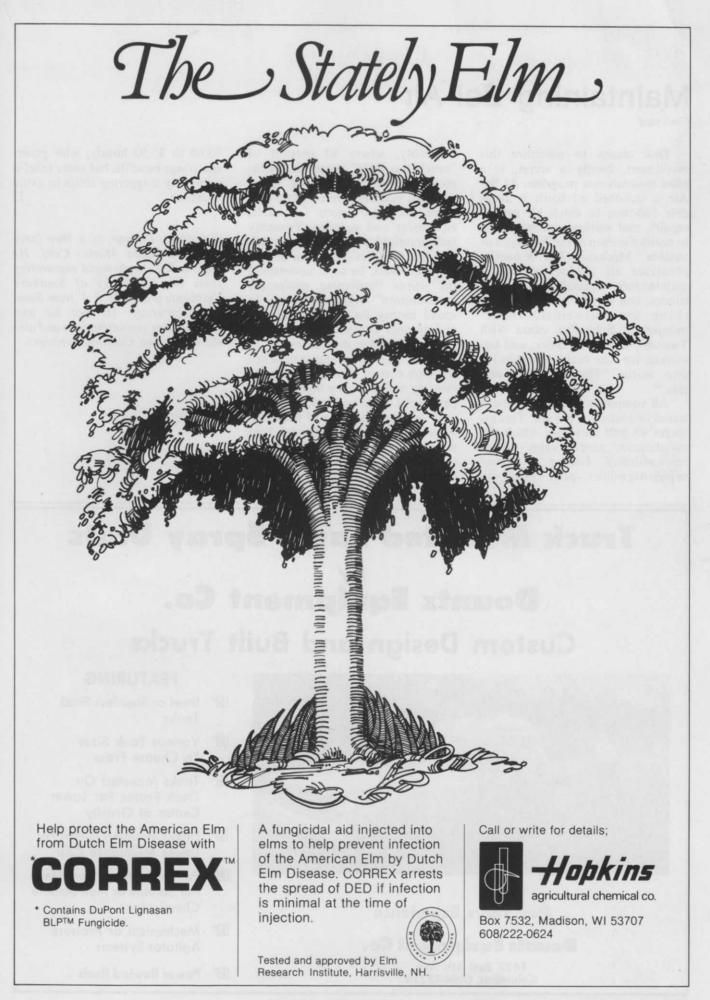
In addition to Milorganite, trees are fed with other slow-release fertilizers. For this purpose, holes are drilled in the ground at the drip line and fertilizers poured in.

Equipment package impressive

At today's prices, the value of maintenance equipment owned by Bel Air Country Club exceeds \$220,000, on a replacement cost basis. Unlike many courses, Bel Air is bisected by a public roadway and is so hilly as to require four separate, underground tunnels (one 400 feet long) to permit players a full eighteen holes of golf. Some mowing equipment is kept at the fourteenth green, instead of transporting across the public road, and the total equipment investment is thereby increased. Again, with escalating costs of labor, Twombly feels that as much mechanization as possible is justified.

An impressive list of maintenance equipment at Bel Air is summarized in the chart. One of the most-used items is a tractor-drawn, 9 gang hydraulic mower.

Rising replacement costs for equipment are well illustrated by the Bel Air capital improvement program. Spending for this purpose has risen to approximately \$20,000 per year, up from only \$10,000 a few years ago. To illustrate, a 22-inch walking mower costing \$626.46 in 1973, now commands a sales price of \$959.30. Again, a 200 gallon spray rig dramatically shows the effects of inflation: a \$1,700 item in 1972, now exacts \$3,142 to replace. *Continued on page 44*



Maintaining Bel Air

Continued

One means to minimize this investment, hardly a secret, is a good maintenance program. At Bel Air, a seasoned mechanic is available full-time to catch all needed repairs, and workers are instructed to notify his shop at the first signs of trouble. Mechanic Bill Schaeffer practices all trades related to maintenance, especially enjoys electronics, and says he can do "everything but automatic transmissions." Schaeffer came with Twombly from New York, and has worked for him many years, in his own words "Through thick and thin."

All equipment is owned, none is leased or rented, at Bel Air. This includes 45 golf carts, for which the maintenance center must accept responsibility. Unlike a former superintendent post held by Twombly, where 90 percent of "much too little" space was occupied by golf carts, at Bel Air a spacious maintenance building provides adequate room for carts, equipment and supplies. Twombly feels grateful for the progressive attitude and business acumen of Bel Air members who, he says, understand the words "expensive equipment deterioration" and are willing to spend money for a more efficient maintenance operation.

The need for mechanization to conserve payroll is apparent when the high cost of overtime labor for mowing and changing holes (7 days per week) is considered. Exaggerated last year, because of the U. S. Amateur Championship match held there, Bel Air is seeking a 10 percent to 15 percent cut in overtime during 1977. Pay scale ranges from \$3.00 to \$5.50 hourly, with generous fringe benefits, but some relief is gained by staggering shifts to avoid overtime. □

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Holden Continued

petent help is always a problem, with the higher wages of nearby landscapers often luring away the more experienced help.

Three 32-hp diesel units and two older utility models comprise the tractor fleet, along with four 15-hp compact tractors and two interchangeable power units. The major attachments are two 60-in. flail mowers, three 60-in. rotary mowers, one 72-in. disk harrow, one frontend blade, four angle-type snow blades, and allied units for the compacts and power units.

Small powered tools at Holden include a push mower, 18-in. rotary tiller, 30-in. rotary tiller, leaf blower, and two chain saws. Three large selfpowered units are a 500-gal. sprayer, portable irrigation pump, and wood chipper. The next item on Martin's most-wanted list is a backhoe. His truck fleet consists of two fourwheel drive models, a 1 ½-ton stakebed and, a 1 ½-ton dump type, a ¹⁄₄- ton pickup, and a van.

The busiest season is in the fall when containerized nursery material is transplanted. There are 20 acres of nursery on the main grounds, plus green house, and a much larger network of nurseries on a nearby 600-acre tract of land.

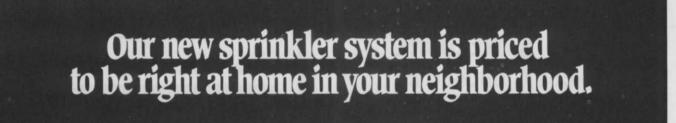
Weather permitting, most leaf removal and chipping operations are performed in the fall. Snow removal proved to be an especially big job last winter, when county plows were unable to get anywhere near Holden. The jury is still out on how much damage the harsh '76-77 winter did to plant material. Some evergreens and test plants are visibly affected, but Martin is waiting until June to assess the full extent of damage.

An annual affair at Holden is operation of a Sugar Bush. The maples yielded 250 gal. of syrup this spring under the tutelage of nearby Amish farmers, who also are called on to make building repairs.

Main preparation for the tourist season involves clean-up, trimming, and mowing operations. Applications of Casoron herbicide are made in the spring. Pests are not much of a problem at Holden, says Martin, but he uses Malathion when necessary. The only recurring pests seem to be birch borer, scale in general, and leaf mites on holly. Grounds are fertilized in the spring, whereas shrub/tree collections receive random applications through the spring and summer. The irrigation period occurs during late-July and August.

This year's goals — prime displays in key areas — will be attained in part through close cooperation with a new horticulturist, Peter Bristol, and the plant propagator, Steve Lamore. Also, the landscape design for Thayer Center is being revised, increasing the amounts of labor and concentrated supervision, in order to ensure speedy performance of work and an improved finished appearance.

A consistent, long-term management plan is being formulated for Holden's prize rhododendron collection — one that Martin hopes "to be proud of" when he retires. *Continued on page 46*



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Holden Continued

This collection presently consists of about 3,000 plants in 25 beds featuring 325 different cultivars and species.

Also under development is an even longer term master plan. Although still tentative, it has key provisions allowing much higher levels of maintenance and calling for the establishment of a miniarboretum within the complex, with maintenance and appearance levels of the first rank.

For now, Martin has a budget of \$300,000 for labor, equipment, and supplies (double the amount of two years ago). Regardless of funds, Martin and his men consistently achieve yearly incremental improvements in maintenance operations. Some of the chief reasons for this lie in his management techniques.

At the outset, Martin broke down the arboretum into a hierarchy of 14 key areas. Many of them are further divided into subareas. The breakdown enabled him to rank the areas according to maintenance priorities based on amount of visitor traffic and density of plantings in a collection. The payoff for all this is evident in a coherent system for scheduling manpower and equipment — an imperative when there is not enough of either to go around.

For example, areas with dense plantings and/or heavy visitor traffic are mostly likely to be mowed with push or compact-tractor mowers. Remote and open areas of the arboretum are mowed less often with 60-in.-wide flail or rotary units mounted on utility tractors.

Another management tool of Martin's is a scheme for monitoring work performed in each area on a daily basis. This is accomplished through time slips, or sheets, which are turned in by each crewman for each site he worked at that day. These records help to plan daily and weekly work routines, and are essential in calculating the annual distribution of hours spent on various areas. Such a breakdown is pitted against appearance levels — those achieved versus those desired — and used in setting new maintenance objectives for the coming year.

The time-slip system promotes smooth execution of work anywhere in the four-square-mile arboretum. It also helps to minimize the number of daily rounds Martin and a ³/₄-ton pickup must make over a complex having an end-to-end distance of four miles. As it is, supervisory rounds and administrative details keep Martin from spending more than 20% of his time performing on-site work with his men. Eventually, he hopes to get this figure into the 40% to 50% range.

Two foremen help Martin to maintain Holden's far-flung collections of woody plants. One foreman is responsible for the multifaceted main-display area, which includes Thayer Center. The other is in charge of the prestigious rhododendron and quercus collections. At peak times, a foreman can request the help of other crewmen. Mini-task forces are thus hastily formed, but they are just as quickly abandoned and redeployed as soon as the critical jobs are completed. \Box



Hemlock scale spreading among evergreens

An extensive survey for the hemlock scale by the Connecticut Agricultural Experiment Station shows that the insect is more widespread and attacks a greater variety of evergreens than previously thought.

Dr. Mark McClure, an entomologist at the Experiment Station, said that all 16 towns within a triangle running from Greenwich to Danbury to Stratford are infested. In all, 279 locations in 31 towns were checked for hemlock scale.

The elongate hemlock scale, which throughout most of its life looks more like a fish scale than the insect it is, attacks the underside of needles and feeds on sap. It prefers new needles, and primarily attacks the bottom branches. It may kill a hemlock within a few years.

McClure found the heaviest infestations in Greenwich, Stamford, New Cannan and Ridgefield. "There was not a single uninfested site among 52 samples in these towns," he said.

McClure said that the distribution of the hemlock scale is as would be expected for such a winddispersed insect. It was introduced in Queens, N.Y. in 1908, and has since spread slowly into southeastern Connecticut.

An exception is an isolated heavy infestation in a part of New Haven, which McClure says probably resulted from the scale being brought there by man rather than carried by the wind.

McClure spent last summer looking at insect parasites and predators that could possibly be used in biological control of the scale. In some towns, he found one parasite which commonly kills 40 to 50 percent of the scale.

But this winter in Ridgefield, where he was investigating an area of hemlocks that was heavily infested. McClure found another parasite that kills between 80 and 99 percent of the hemlock scales.

McClure and Michael Ferigione also found that exotic firs, spruces, pines and hemlocks that had not previously been reported as hosts for the scale were being successfully attacked.

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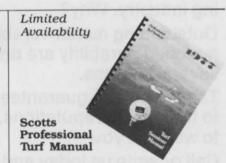
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Tent caterpillars can be controlled

Tent caterpillars are everywhere this year but the damage that they have done by feeding on the foliage of trees will generally not harm the trees.

This is the opinion of Keith Kennedy, extension entomologist at Michigan State University. "There is plenty of time for the trees to put out new leaves and continue storing up food for the winter," he adds.

Though tent caterpillars will feed on a wide variety of shade and fruit trees, their preferred hosts are wild cherry and apple. The female moths lay their eggs on these species in late July and early August.

The caterpillars typically hatch in mid-April, spin their distinctive tents in the crotches of the host tree, and crawl out to feed on the emerging leaves. If the caterpillars are out before the leaves, they will feed on the leaf buds.

The early warm temperatures this spring brought the caterpillars out earlier than usual, Kennedy observes. Without a cloak of foliage to conceal them, their tents have been highly visible, and concerned laymen have deluged foresters and entomologists with calls and requests for help and advice.

"Because their favorite food trees aren't of much economic value, tent caterpillars aren't usually considered a problem," says Kennedy. "They will get into valuable trees, however, if they deplete their original food supply."

Kennedy offers the following precautions to prevent damage:

If you can reach the tents, prune them out and destroy the worms. If tents are too numerous, you can spray.

The safest material for controlling these is *Bacillus thuringiensis*, a bacterial disease that affects only the worms. Though it does not kill them at once, it does stop their feeding within a few hours.

The chemical insecticides Sevin, Diazinon and malathion may also be used against tent caterpillars.

"Don't wait until the mature caterpillars — one and a half to two inches long, dark brown with black heads, a light stripe down the middle of the back, and black and blue spots on each body segment — are wandering down from the trees to find a place to spin their cocoons," Kennedy says. "Chemical and bacterial controls are much more effective on the caterpillars when they are small."

Management essential for Xmas tree farms

Each Christmas season depletes Christmas tree reserves of nearly 30 million pines, spruces, firs, cedars and balsams. This heavy toll for decking the halls could present a considerable rotation or replacement problem if tree farmers weren't prepared. Fortunately, many meet the situation with careful and even creative plans.

Theoretically, replacement fills a one to one ratio. When a tree is cut, a sapling replaces it. According to Donald McNeil, executive director of the National Christmas Tree Growers Association, Milwaukee, a new season may require two to three saplings to replace a harvested tree if weather or other factors damage or kill the new trees. Which species to plant depends upon marketing possibilities, maturation rates and soils; rotation sharpens a human and animal element, as well.

John Sester, state forester of Illinois Division of Forestry, Springfield, and owner of 10 acres of Christmas trees, stressed maturation and public demands. Growing a six foot pine takes five to six years for red pine, seven to eight for scotch, and eight to nine years for white pine, he said. Firs require eight to 10 years; spruces average 10 to 12. McNeil said scotch pine is the most popular tree species with Douglas fir placing second and balsam close behind. Spruces, white and red pine, and cedar also adorn homes.

Saplings are selected by age. The most economical saplings are known as 3-0, the number indicating that they grew in the seed bed for three years with no years in a transplant bed. 3-1 trees sell and have an advantage of one year in a transplant bed although Sester said he considered the extra cost unnecessary.

Tree sources also differ. State supported nurseries in Illinois grow species sold at 12 inches from the root collar to the top of the saplings while private stock is six to eight inches high.

Planting is best done as soon as possible. Saplings must remain

moist and cool and stored along the north side of a building. If planting waits for a longer period, "heeling in" is recommended. This is done by digging a V-shaped trench and positioning the sapling in it, then covering it with enough soil and water. For planting, a temperature of 40 to 50 degrees and overcast weather provides the ideal start. March and April are best planting *Continued on page 50*



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Xmas tree farm management

Continued from page 49

months in most regions. Watch for sunshine or windiness which can dry roots. Rain soon after planting is another plus.

Sester advised planting no closer than six by six feet, although he prefers eight by six feet to allow for easier mowing, weed control and to prevent shading of lower branches. Any species can grow together, side by side, since only distance regulates their well-being, Sester said. Sapling can thrive beside a stump. However, Sester noted that white pine start with greater difficulty but last once they begin to grow.

Seventy five to 80 percent survival is average for each year. McNeil said 1976 planting suffered and will need replacement since many saplings failed to endure the double clout of summer drought and the harsh winter.

After planting, a one or two

week check for three months protects the tree from encroaching dangers of weeds, insects or animals. Bagworm, field mice, deer and choking weeds may threaten. Checking also benefits the grower since trees protect and flourish upon agricultural wasteland too poor to support corn. Instead, the trees offer beauty, erosion control and encourage wildlife.

After June, mowing becomes necessary to combat weeds that would grow over saplings and blur distinct tree rows. But the saplings themselves don't need special care until their third or fourth year when "shearing" begins. Shearing, the careful shaping of trees by cutting, usually happens in June, Sester said. Its purpose is to provide a bushier, more conical and aesthetic looking tree for the buyer.

ing. The soil can support planting cycles without damage, Sester explained, so no special crops are needed for rotation. Yet, the grower can use the fields to support other crops while waiting six or more years for the first tree harvest. Barley, oats, soybeans, and sorghum, as "nurse crops," cut weed growth and yield grains for lifestock. By planting one half or a normal seedling of grains and keeping them for several years, the grower gets a yield until trees grow too tall and interfere. At this time, energies are best directed toward the trees.

"In one interesting case a man did plant Christmas trees and planted sorghum between the rows," Sester recalled. "He harvested this for his livestock until the trees got too big. All he did was get something off it for three to four years.'

There are alternatives in plant-



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