

Park Plants Wildflowers

continued from page 29

After dividing the available seed into various test batches, the staff was ready to start the actual installation. Plot development was purposely broken down into a series of different procedures, mainly involving soil preparation.

Wildflowers are very different from turfgrass in terms of planting techniques. All plot areas were treated with a nonselective herbicide about a month before work began. Ten days prior to soil preparation, these plots were again treated on a spot basis. Roundup was utilized for all vegetation control because of its high safety factor.

The plots were scalped with rotary mowers. Various preparation techniques were tried. A number of the plots were tilled with a large disk that made several passes in different directions, completely turning the soil to a depth of at least six inches.

Other areas were tilled more lightly. Plots in small, confined situations were hand-tilled with a walk-behind rototiller. Steep slopes were vigorously hand-raked after scalping, to provide seed-soil contact.

After this preparation, all plots were seeded by hand, using small rotary broadcast spreaders. This method was chosen because of the extremely small volume of seed needed to cover a large area. Many of the seed varieties were so tiny that a full pound contained up to six million seeds, with seeding rates recommended at four pounds or less per acre. This created an extremely difficult application problem, in terms of assuring consistent and even distribution.

It was necessary to use some kind of bulking agent to assure good coverage. After some experimentation, it was thought that perhaps a product called Turface, a vitrified clay similar to fine kitty litter, would work in the hand spreaders. The staff experimented with several pounds of kale seed in an unused parking lot to practice and perfect application rates.

Two special notes should be made at this point. First, the Turface product had a tendency to catch in the gear drive of the spreaders, so perhaps ground corn cobs or walnut shells could be used in the future. Secondly, the material used for the spreader's hopper is very important. Many spreaders have a canvas bag to hold the seed. Avoid using such bags because seed can get caught in the fabric, causing uneven distribution.

After the plots were seeded, all test areas were dragged with a light screen mesh. A baseball-infield drag was used for this purpose, but a piece of chain link can be substituted. It is very important that dragging be as light as possible, for it was found that many of the seeds buried more than ¼ inch deep did not germinate.

After dragging, all of the plot areas were mulched with a light application of clean straw—approximately 1,200 pounds per acre. Again, it is important to keep this appli-

cation as light as possible, to avoid reducing potential germination.

In open areas where wind was expected to create a problem with the straw, it was gently watered to provide a knitting effect on individual pieces. It is theorized that a standard application of asphalt tackifier might also affect germination, which is a possible concern even with some of the improved acrylic-based coats.

The installation process was completed in the late spring of 1984, and the bureau anticipated a positive response from the plants within a few weeks.

Immediately after seeding, temperatures soared into the mid 90s and no rain fell for month. By mid-July and August the test plots had progressed very little. There was extremely limited vegetative cover, few flowers, and a bumper crop of weeds. However, random portions of the plots, although a very small percentage, showed marginal cover and color.

As fall approached, with its cooler temperatures and additional rainfall, the plots began to come alive. These plots were still thin, but the colors were quite vibrant. The bureau entered the first winter with mixed emotions as to the success of the tests. Fortunately, some of the original information had indicated that wildflowers would be slow to establish, so a three-year evaluation schedule was set.

Much of the original literature indicated that wildflower meadows should be mowed at least once a year, in order to maintain a respectable appearance, retain the vigor of the plant material, and keep woody volunteers under control. Most of the recommendations suggested mowing at any time after the meadows went dormant.

Mowing was scheduled for late February to provide solid footing for the large tractor mowing units; to limit the amount of soil compaction; and to enhance winter cover for wildlife, overwintering birds, and small mammals. It was also decided that areas that had been extremely thin the previous season should be overseeded before mowing. The plots still held a large amount of mature seed on the stalks, and the mowing would break this seed free. The stalk residue would act as light mulch. The department performed no further work on the plots, other than regular observation, until the spring of 1985.

During the first-year review, several steep slopes had been identified as having excessive and unacceptable weed populations. These selected areas had been spot-treated with Roundup the previous fall, and were hydroseeded in mid-April. Hydroseeding was accompanied by only the barest minimum of fiber mulch, otherwise the seeds would tend to bind up in the fibers and not make good soil contact.

Throughout the spring, the wildflowers on these slopes appeared to compete well with the existing population, but by late June the weeds once again dominated one particular test site. Because this site was part of the historic district in the county seat and

had maximum visual impact, the testing here was terminated and the plot returned to turfgrass.

Most of the other plots showed varying results that could be described as ranging from marginal to truly outstanding; on a scale of 10, they ranked perhaps 5 through 9. However, by midsummer of the second year, the color in the wildflower plots started to fade.

Although there was always some color, an interesting pattern of textures, and high contrast with the adjacent turf areas, the department began to realize that plot location would be critical to any future success.

Public response to the wildflower meadows was tremendous, especially from April through June. Local magazine articles, special newspaper features, and enthusiastic calls from public groups and individuals all attested to the popularity of the program.

A classic example of public reaction to the wildflowers occurred at Long Reach Park. Director of Recreation and Parks William M. Mitchell approached several residents who were digging clumps of flowers and placing them in paper grocery sacks in the backs of their cars. When the residents were asked what they were doing, they replied, "These flowers are so magnificent, and there are so many, that we wanted to save them before the county mowed them down!"

The bureau learned a very important lesson from this experience. It had failed to anticipate the public's reaction, but the lesson was clear: When introducing an alternative landscape, it is imperative to clearly define the location and boundaries.

The public will understand and respect wildflowers and other plantings—if it is evident that they have been put there for a special purpose. Fortunately, the magazine and newspaper articles soon helped get the word out, as did the department publications and signs.

During July and August the wildflower plots took on a whole new appearance. While they still provided contrast in terms of color and texture, they became somewhat drab in comparison to the beauty they had shown in spring and early summer.

The bureau believed that with the cooler temperatures and rainfall in September, plus the abundance of late-blooming varieties among the seeds, the plots would come back as they had the previous fall. However, although there was some increase in the amount and intensity of colors, it was not as pronounced as it had been the previous year. This was probably due to the predominance of perennial varieties in later years.

The department has put together some general recommendations, primarily for its own use, that combine the best features of what has been learned to date:

Soil Preparation—Probably the most important factor in developing a successful plot is limiting the tilling of the soil. As more soil is turned, more dormant buried

continued on page 32

Park Plants Wildflowers

continued from page 31

weed seed is brought to the surface and can germinate. Wildflowers require good seed-soil contact, but at a maximum depth of 1/4 inch.

Additional plots to be installed by the department will be prepared with a flail mower with verticutting blades. This will open the soil surface, but will disturb as little of the earth as possible.

Species and Variety Selections—Whenever a local native plant can be identified and used to add color and texture to a particular site, its potential for success is higher than that of an introduced plant.

Seeding—Many of the seed companies stressed the need to plant cover grasses

with the wildflowers. Yet no grasses were seeded in any of the original 13 plots. In some situations, the bureau's tests indicate that this may not be necessary. However, steep slopes and drainage swales in new construction would be candidates for this technique. It is important to note that normal recommendations for these grasses appear to be excessive in comparison to the amount of wildflower seed: In many instances, even non-aggressive grasses seeded at such high rates will compete heavily with the wildflowers.

Mulch—A light application of clean straw mulch seems to be the most effective method of completing the planting, especially for new construction. This technique provides both shade and moisture reten-

tion. It is feared that the seed will tend to bind to fiber mulch materials, or be completely buried and smothered if normal rates are used.

Many technical questions about wildflowers remain unanswered. Although the department is now somewhat confident about site preparation, seeding rates, and maintenance requirements, more testing is required in such areas as pH and organic soil content.

For instance, preliminary soil analyses indicate that there is an inverse correlation between organic content and the general success of the plots: Apparently, lower organic content produces better results.

The tests have produced some highly positive results. The department believes that the wildflowers and other native plantings can be used successfully as an alternative to turf. This principle has already been applied to several large park-development projects, and will be continued as an integral part of park landscapes in Howard County.

The department now has several "second-generation" test sites in the planning stages. These will combine the most successful varieties with the best planting techniques.

Several years ago, 40 percent of the existing park turf was identified as passive-use area. Although the department has found that not all of this acreage is appropriate for wildflowers or other naturalized plantings, it still hopes to include many portions of these areas in the program.

If the use of wildflowers reduced 30 routine mowings to one off-season winter mowing, at only the width of one pass of the equipment, the savings could be dramatic. Fully equal to that benefit is the improvement in the visual quality and wildlife habitat of these areas.

This simple program can greatly expand the ability of the Department of Recreation and Parks to meet the public's need for a great deal more than active sports programs and other high-use turf facilities. The fact that the department can provide wildflower, butterfly, and bird walks in these areas is as much a benefit to the public as is containment of maintenance costs.

Make no mistake, however—our cost containment has been considerable. Figuring in the expense of mowing, fertilizing, applying herbicides, and aerating for a typical acre of maintained turf, 1987 costs total \$690 per acre. For wildflowers, one mowing a year and herbicide spot treatment amounts to only \$31 per acre. The savings of \$659 per acre can be used to enhance the maintenance efforts in high-use areas such as athletic fields and sports turf. □

Editor's Note: This article was adapted from a Howard County Department of Recreation and Parks report. For further information on the department's ongoing wildflower program, contact Jeffrey A. Bourne, Chief, Bureau of Parks, or Mark D. Raab, Supervisor, Grounds Division, Department of Recreation and Parks, 10,000 Route 108, Ellicott City, MD 21043.

Tips for Success

By Crystal Rose-Fricke

Wildflowers can be used to enhance the deep rough of golf courses and to add color to parks and other public facilities. They are also useful for soil erosion control, adding color to roadsides, to cover difficult to mow areas and for landscaping around structures.

When purchasing wildflowers, it is important to be aware of aggressive species which may take over your mixture and spread to unwanted areas. These species do well in difficult areas as they are quite vigorous, but in a mixture they could take over if used at a high percentage. Therefore Chicory, White Yarrow, Ox-eye daisy, Butter-n-Eggs, and Snow-in-Summer are some examples of species which should be used in small proportions in a wildflower mixture.

There are several different management schemes to choose from when growing wildflowers. A mixture of all annual species can be planted and reseeded yearly to insure a broad range of colors and textures. After flowering is completed they can be mowed and Roundup can be used to control weeds before reseeding each spring.

Annuals and perennials can be used together, achieving color with the annuals flowering the first summer after a spring planting. Cold winter temperatures vernalize the perennials so they initiate flowers the following spring, a year after planting. Herbicides can be used prior to the initial planting. After the annual species die out the bare areas will be open to weed invasion, so they should be reseeded with more annuals each spring until the perennials take over.

When using annuals in mixes it is advantageous to use those which reseed themselves each year. A few examples are Bird's-Eyes, Farewell-to-Spring, Tidy Tips, Mountain Phlox, and Bachelor Buttons. Also, if you must plant in the fall, there are annuals which can survive during moderate winters,

like those in Oregon. These would include Corn Poppy, Garland Chrysanthemums, Plains Coreopsis, Catchfly and others.

A third possibility would be to seed an all perennial mix in the spring or fall. If planted in the spring, only a few flowers will be evident until the winter temperatures vernalize the plants. At this time, herbicides can only be used before planting, followed by hand weeding for the life of the stand.

Nonaggressive bunch grasses, such as sheeps fescue, can also be used in mixtures for soil stabilization to fill in areas where annuals die out. In our tests, 15 percent sheeps fescue proved to be a good mixture with plenty of flowers plus enough grass to fill in bare areas.

Seeding rate tests with our Bloomers Mix, a mixture of both annual and perennial wildflowers, revealed that 10 to 15 pounds per acre gave better coverage than five or 20 pound rates. Higher rates provided better competition against weeds and more color the summer after seeding as well as the following summer. Twenty pounds per acre was too high with the annual wildflowers crowding out the perennials so that the following summer more weeds encroached where the annuals died out.

A National Wildflower trial of 25 annual and 25 perennial wildflowers was initiated this spring to study the performance of some of the better producing wildflowers in many locations across the U.S. Seed was sent for trials in 50 locations to be planted this past spring or this fall. Data from the trials will be summarized and used to make recommendations for the use of wildflowers in various areas.

Editor's Note: Crystal Rose-Fricke is a plant breeder for Pure-Seed Testing and Turf Seed Inc., of Hubbard, OR. She is a nationally-recognized specialist in wildflower selection.

NAVY REMODELS SEABEE GOLF COURSE

The U.S. Navy's nine-hole Seabee Golf Course at Port Hueneme, CA is undergoing major renovation. The original course, built by Seabees just after the Korean War, will be completely remodeled.

Leisure Planning Associates, the golf course architecture division of Halsey Design Group, Inc., has been chosen to redesign the course, and to design an additional nine-hole course. When completed, the links will be an 18-hole, par-72, 6,513-yard, championship-play facility.

Jack Daray, LPA project golf course architect, said that the work will be funded by non-appropriated Navy funds at no cost to taxpayers. The Navy has been planning the project for the past nine years. However, all work will be done by civilian contractors. The LPA will design all aspects of the project, including course layout, pumping and irrigation systems and artificial lakes to be constructed on the property.

The new nine-hole course will replace a material storage facility now on the site.

FASTER GERMINATION STUDIED BY JACKLIN

Jacklin Seed Co. of Post Falls, ID, is working on a method of treating turfgrass seed prior to packaging to speed up germination. The process, called "seed priming," has cut germination time for Kentucky bluegrass nearly in half.

Dr. Douglas Brede, the company's head of research, has been testing the process for more than three years. "One goal is to shorten the germination period for Kentucky bluegrass to be more like perennial ryegrass," said Brede. "We want to provide sports turf managers with the quick germination they need."

"Priming eliminates pregermination by the turf manager," explains Gayle Jacklin-Ward, director of communications. "Seed is treated here at the plant before it is shipped. We hope to have primed seed available within the next two years."

NORTH CAROLINA PRAISES NEW TURF CENTER

The newly constructed Turf Field Center building at North Carolina State University was honored in a ceremony held May 18. Dr. Durwood Bateman, Dean, College of Agriculture and Life Sciences; Dr. George Kriz, Associate Director, North Carolina Agricultural Research Service; and Dr. Billy Caldwell, Department head of Crop Sciences were on hand to address invited guests.

The new building serves as a support facility for the turf projects within the Departments of Crop Science, Plant Pathology, Entomology and Horticulture. These projects include research, extension and teaching activities and seek to improve turfgrass quality and reduce maintenance.

PGMS RELEASES RESULTS OF SALARY SURVEY

The Professional Grounds Management Society recently conducted an extensive survey of its current members to acquire 1988 salary figures. The survey, which included PGMS members from the 50 United States and parts of Canada, yielded diverse results. The country was divided into six regions for the purposes of the survey.

The Mid-Atlantic region, consisting of Pennsylvania, Maryland, Delaware, Virginia, and the District of Columbia, boasted the highest single salary of those grounds managers who responded to the survey. The high was \$70,000, but the region's average salary ranked only third at \$32,445.

The Northeast region, which included Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, and New York, had the "lowest" high salary recorded at \$41,000, but the average pay of the grounds managers who answered the questionnaire was \$32,470, slightly higher than the Mid-Atlantic average. The lowest reported income was \$22,500, the "highest" low salary in the six regions.

The Far West region consisting of Washington, Oregon, Idaho, Montana, Nevada, Utah, Arizona, Wyoming, Colorado, California, Alaska, Hawaii, and western Canada registered \$58,800 for its high salary

and a low of \$18,000. The average salary for the region was the highest among U.S. and Canadian grounds managers at \$33,466.

The Mid-West region, including North and South Dakota, Minnesota, Wisconsin, Nebraska, Iowa, Michigan, Illinois, Indiana, Ohio, and central Canada, reported high and low salaries of \$48,000 and \$19,200, respectively. The average salary was \$30,198.

The Southeast region, comprised of North and South Carolina, West Virginia, Georgia, Kentucky, Tennessee, Alabama, and Florida, had an average salary of \$27,592. The high salary was \$50,000, the low being \$14,400.

Last and least, in terms of salary only was the Southwest region; Kansas, Missouri, New Mexico, Oklahoma, Arkansas, Texas, Louisiana, and Mississippi. The high salary of \$43,000 was higher than the high for the northeast region, but the low salary for the Southwest was only \$14,000, the lowest among the six regions. The average salary of those who replied was \$25,211, also the lowest reported in the country.

The results of the survey, which received a 42 percent response rate, gives a general overview of grounds managers' incomes in the U.S. and Canada.

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CHALKBOARD

TIPS FROM THE PROS

PLAN AHEAD FOR FOOTBALL FIELD MARKING

By Mike Hebrard

After spending so much time getting the turf into shape for the football season, it makes sense to devote a few hours before major games to field marking. The best groundskeepers know that marking a football field is a lot like managing the dirt of a baseball field—it can make a big difference to the players, coaches and fans.

Don't wait until the week before the first game to think about field marking. Painting takes planning and practice. But once you learn the tricks, it provides better results than chalk in not much more time. Paints manufactured specifically for turf will not harm or kill turf. They are brighter and last longer than chalk.

It's wise to check the field dimensions before every season. Mark the corners permanently with sections of two-inch metal pipe driven into the ground slightly below the surface. The corners can then be located in future years with a metal detector. The metal pipe can also be used for securing the cord to mark the field.

A tape measure should always be used for marking yardlines. Cords or string can stretch and provide inaccurate measurements. However, nylon cords used properly can save time. When stretched tight from one edge of the field to the other, they provide a straight line to guide marking machinery. A spool connected to a cordless electric drill can wind the cord up quickly.

First stretch a cord down the sidelines from one corner pipe to the other. Then use a tape measure to mark every 15 feet along the tight cord. Place stakes where the yard line meets the sidelines. Stretch a cord across the field between the stakes. This is the guide for the sprayer. If you have two cords, one person can be painting while two other workers advance the second cord to the next yardline.

Cords should also be used to indicate the location of the hash marks and numbers. Accurate spacing is necessary so the stencils will be lined up evenly for painting.

Hash marks can be made with stencils or with a guide. A guide can be made out of 1½ inch PVC pipe, tees and elbows. Such a guide should be 15 feet long so it only has to be moved once between yardlines. Tees and elbows mark the location of each hash mark. This pipe guide can be broken down quickly to move it from one field to another.



A single letter in the center of the field can turn an ordinary field into a sharp one.

Stencils for numbers and arrows should be at least four feet tall for the numbers to be clearly visible to the players, officials and fans. Stencils can be made out of heavy plastic or plywood. The plastic stencils are easier to store and transport.

If you want to decorate the field, stay in the middle and avoid the endzones. Most of the fans sit in the middle of the stands. Marking the end zones can take more time and material than marking the entire field. If you want an end zone design, keep it simple, such as a single letter outlined with a dark color. Put the home team's logo in the

center of the field and forget the end zones if you can.

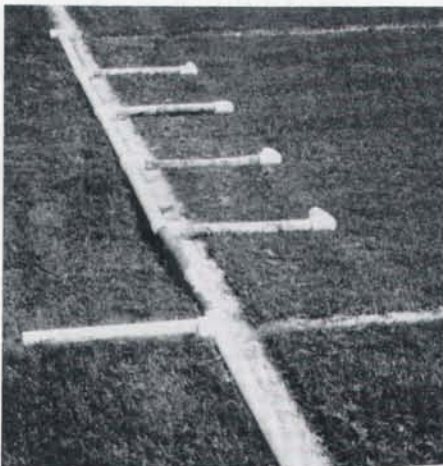
Logos, especially multicolored logos, require a good stencil (or stencils) and some skill. The easiest design is a white background outlined with the team's color. Spraying dark colors on top of white makes them look brighter. The white paint actually protects the turf from some of the harmful components of other colors. Use latex paints designed specifically for turf even if they cost more.

Designs will frequently take more than one coat of paint. The paint needs to be diluted in water. Using warm water can help the paint dry faster. Keep all people and animals away from the area while the paint dries.

Some sports turf managers like to mix herbicides or growth retardants with paint to kill or stunt the turf underneath the lines. This may be helpful when marking practice fields, but it's not a good idea for stadiums.

Line marking machinery is always a good investment because it saves time and helps you do a better job. Use quick-change nozzles with interchangeable filters. A long spray gun reduces the amount of bending over you have to do.

Once you get a routine down with the right equipment, you may even want to experiment with some "free-hand" designs. After all, painting is an art whether it's on canvas or on turf.



Hash mark guide made of PVC pipe.

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ROOKIES

PRODUCT UPDATE

REFLECTIVE RAIN COVER



Engineers at Covermaster have figured out how to make rain covers lighter and less expensive without sacrificing strength and durability. Using new fiber technology, the company has made the field cover light enough for four people to handle. The material is also highly tear resistant so it can stand up to surface traffic and gusting winds.

A coating on the fabric reflects heat from sunlight keeping temperatures underneath the cover from damaging turf for up to 20 hours. The company has specialized in athletic field covers for nearly 20 years supplying stadiums and sports facilities across the U.S. and Canada.

COVERMASTER INC.

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WATER SAVING CONTROLLER



The Calsense 1000 irrigation control computer working in conjunction with field moisture sensors can reduce water usage by 30 percent or more according to California Sensor Corp.

The computer communicates with the sensors over the existing wiring. A single sensor can be used for several stations while still maintaining individual control for each station. These two features reduce installation costs compared to moisture sensors in valve boxes.

Operation requires only periodic adjustment of set points to maintain moisture at desired levels. An automatic override enables valves to be serviced without interference from the computer.

The controller stores irrigation history for a month or longer. This data can be transferred to a portable computer for analysis of trends and for optimizing irrigation programs.

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DEEP AERIFIER



Under the right conditions turfgrass root systems grow deep into the soil. Air, water and nutrients deep in the soil encourage roots to grow and expand below the top three inches typically cultivated by aeration machines. Without periodic deep aeration root systems are shallow and cannot withstand the stresses of traffic, drought and pests.

The Verti-Groove cultivates the soil from one to six inches deep allowing air, water and nutrients to penetrate and encourage deep rooting. It also breaks through sub-surface layers that can restrict root depth and disrupt drainage.

The aerifier cuts and removes a narrow groove of soil and thatch without creating a hardpan layer. It has no moving parts and can be attached to various tractors to aerify at any speed. The Verti-Groove is manufactured by Ransomes Inc.

TURF-TEC INTERNATIONAL

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NUMBER STENCILS



Marking yard lines on football fields is faster and more professional looking with giant stencils from Newstripe. High schools, colleges and parks can improve both practice and stadium fields with the six-foot numerals and letter "G."

The durable, thick polyethylene stencils last for seasons and fold up conveniently for storage. They make touch up between games simpler so that a high quality appearance can be maintained throughout the football season regardless of the use of the field.

The company also manufactures a complete line of marking equipment and a wide assortment of stencils for sports and traffic uses.

NEWSTRIPE, INC.

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FERTILIZER WITH IRON

In an effort to improve turf performance, the ProTurf Division of O.M. Scott & Sons has introduced Turf Fertilizer with Iron, which combines the advantages of SREF (Slow Release Encapsulated Fertilizer) technology with sufficient iron in plant-available form (ferrous sulfate) to help correct and prevent iron deficiencies. It is formulated for use on all turf grasses on fairways and other large turf areas.

Because of the single coating of sulfur on each SREF particle, the nitrogen in Turf Fertilizer delivers good greening for up to two months, with consistent, sustained nitrogen release for great turf performance.

Other product features include a clean, dust-free, free-flowing form that's ready to use; no inert carrier; choice of application rates for cool and warm season grasses; and easy application with a rotary spreader.

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Unique one-piece construction is easy to install.

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"Evergreen one-piece covering systems not only protected our greens from desiccation throughout the past two harsh winters, they also created a greenhouse effect stimulating more rapid growth and enhanced healthy root development in early spring compared to uncovered grasses."



**APPLICATION PROVEN BY GOLF COURSE SUPERINTENDENTS AND TURF MANAGERS
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ROOKIES

PRODUCT UPDATE

WILDFLOWER SEED

North American Low Growing Wildflower Mixture offers lower, more controlled plant height and growth habit. Because of its tidy appearance, this mixture can be used in areas that border on turfgrass.

The mixture, packaged by Environmental Seed Producers, Inc., combines 21 native and naturalized wildflowers which are six- to 16-inches tall. The species create a well balanced blend of annuals and perennials offering a diverse range of colors and a long blooming period. The mixture is adapted to a wide range of climatic conditions and will perform well in every region of the country.

ENVIRONMENTAL SEED PRODUCERS

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NATURAL FUNGICIDE



Ringer Corporation calls Turf Restore "a completely natural, total-turf-care product." It is said to eliminate conditions that promote common patch diseases, allowing older patches to fill in and preventing the chance of new problems from occurring. It also reduces thatch and is a long-lasting fertilizer.

This product contains actual soil microorganisms and enzymes, along with special organic materials. Through decomposition, nutrients are fed naturally to lawns, helping to recreate the natural cycle of growth.

Beneficial microorganisms are produced by the billions, gradually outnumbering the 40 sportsTURF

disease pathogens and suppressing the disease. Thatch is also reduced through the decomposition process. Turf Restore is designed to treat the cause of lawn disease, not the symptoms.

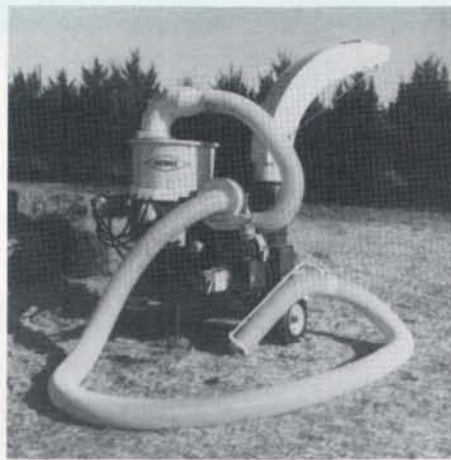
However, it is not an instant cure, the maker warns. It is a product that has proven successful when used as a program. Within two to four weeks of the first application, you should be able to see that your lawn has become greener and that the problem areas have stabilized. After the second and third application, problem areas steadily begin to fill in, and the whole lawn will look thicker, lusher and greener, the maker promises.

The product contains bone meal, feather meal, wheat germ, soya, yeast, and muriate of potash.

RINGER CORPORATION

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CHIPPER/GRINDER



Henke Machine has increased the versatility of its chipper/grinder by adding a blower assembly with a six-inch-diameter, 30-foot-long hose. Not only does the unit grind up limbs and lumber, the blower and hose assembly can be used to distribute mulch or to vacuum leaves and debris for grinding.

The chipper hopper allows the operator to grind up to 3.5-inch-diameter tree limbs, including evergreen limbs and 2 x 4 lumber. With the round tub and hopper assembly, it is capable of grinding baled hay, straw, corn cobs, compost, pine needles, newspapers, cardboard, etc. Two adjustable finger grates make it possible to size the material to your specific needs.

The PTO model, powered by tractors with 20 to 50 hp, is designed for continuous heavy

duty. A self-powered chipper/grinder is also available.

HENKE MACHINE INC.

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SELF-PROPELLED STRIPER



EZ-Liner Industries has developed a new self-propelled option for both its single and dual version of Model 588 EZ-Liner. The unit is belt driven with fully pneumatic controls. Its double handle and fixed rear caster allow for maximum maneuverability and straight line operation. The dual gun set-up with adjustable stripe width from two- to six-inches, makes double-line marking quick and easy.

The Model 588 comes with a five hp Briggs and Stratton engine and an 8 1/2 gallon paint tank. The gun detaches for hand painting of curbs, stencils, etc.

EZ-LINER INDUSTRIES

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COMMERCIAL SWEEPER

The Hako-Groundskeeper 36-inch Commercial Broom Sweeper clears dirt, dried mud, debris and trash wherever it is found outdoors. For instance, it cleans driveways, sidewalks, parking lots and stadium walkways.

Powered by an industrial 203 cubic centimeter, 3.5 kw, air-cooled engine with electronic ignition, the Commercial Broom Sweeper has two forward speeds and one reverse, all controlled from the handle. A water-spraying attachment and front rubber apron prevent excessive dust kick-up. The broom angle is fully adjustable.

HAKO INTERNATIONAL

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