studied are known to survive in thatch.

CORRECTION

Chart, captions were reversed

In the May issue of Landscape Management, two captions and two colors on a disease control chart were reversed.

In the article "Diseases of Cool-Season Turf," which began on page 48, the disease identified as necrotic ring spot was actually take-all patch and vice versa.

Colors in the disease calendar on page 50 were also reversed. The chart is reproduced correctly on page 58 of this issue.

The magazine regrets any inconvenience to author Noel Jackson, Ph.D., or any of its readers.

INDUSTRY

Monsanto buys 'Clipper' TGR

Monsanto Agricultural Co. has made an agreement with ICI Americas whereby it gains exclusive U.S. distribution rights to ICI's Clipper tree growth regulator.

The regulator extends tree trimming cycles so that electric utility companies can trim less often.

Clipper is injected through small holes drilled into tree trunks. It slows the growth of a variety of deciduous and broadleaf evergreen trees without adversely affecting flowering.

RESEARCH

ASPA doles out $6,800 for research

The American Sod Producers Association (ASPA) reported distributing $6,800 in grants to four researchers who are assessing the environmental impact of turfgrass and sod.

ASPA grants went to Thomas L. Watschke, Ph.D., Penn State University for his study The Effects of Irrigated Turf on Environmental Cooling and Energy; Henry T. Wilkinson, Ph.D., University of Illinois, The Use of Pseudomonas Flourescens to Increase the Efficiency of Water Absorption by Bluegrass; and A. Martin Petrovic, Ph.D., Cornell University, Effects of Turfgrass Management on Ground Water Quality and Water Use.

continued on page 28

THE RIGHT STUFF...Pilot Field, the new home of the Class AAA Boston Bisons minor league baseball team, is made of the right stuff. That is, real grass. Bison president Robert E. Rich Jr. notes: "When we conceived the initial design for Pilot Field, we made sure of two very important details. We wanted the sun to shine on our fans, and our players to play on natural grass." The field, sodded last fall, contains a mixture of Victa, Bristol and Merit Kentucky bluegrasses with 10 percent Pennfine perennial rye. The field's irrigation system was designed by Toro Irrigation and installed by the John W. Danforth Co. Others involved in completing the field were George Terzian of Star Landscaping, Jim Hornung of Elber's Landscaping and Gerald Rothenberger of Cowper Management. Also, Comiskey Park's Roger Bossard served as a consultant.

PUSHING SOD...The American Sod Producers Association has updated its publication "Guideline Specifications to Turfgrass Sodding." It is divided into five sections: subsoil preparation; topsoil material; fertilizer, pH correction materials and final soil preparation; sod materials and transplanting; and maintenance. For more information, contact the ASPA at 1855-A Hicks Rd., Rolling Meadows, IL 60008; (312) 705-9898.

BARK WITH BITE...The National Bark & Soil Producers Association has just released the 1988 issue of its Bark & Soil Product Index. The index lists major suppliers of 14 different bark and soil products (from mulch and nuggets to professional soil mixes, peat and potting soil) and another 30 industry service suppliers. It is available free of charge to landscape contractors, nurserymen, garden centers, landscape architects and other businesses. For your copy, write the NBSPA, 13542 Union Village Circle, Clifton, VA 22024 or call (703) 830-5367.

YOU, THE CEO...The Associated Landscape Contractors of America has released the seventh in its series of in-depth reports about the industry entitled "Leadership in the Landscape Industry: the Changing, Challenging Role of the Chief Executive Officer." The report examines the CEO's role, explores his position in an evolving business and details his relationship with middle management. The report's cost is $5 for non-ALCA members and $3 for members. Write: Publications Dept., ALCA, 405 N. Washington St., Falls Church, VA 22046.

THE BEST COURSE?...Superintendent Mike McBride received nothing but compliments from touring pros for the shape he had Muirfield Village Golf Club in for the Memorial Tournament May 23-29. Greg Norman said the Dublin, Ohio course was "perfect." Tournament host and participant Jack Nicklaus, who developed the course, also praised his superintendent. However, he had to enjoy the course from the CBS broadcast booth on Saturday and Sunday. He missed the cut.
370 - LANDSCAPE OPERATIONS: MANAGEMENT, METHODS & MATERIALS
by Leroy Hannebaum
An in-depth examination that combines technical training in landscape science with methods of accounting, business management, marketing, and sales. Discusses effective methods for performing lawn installations, landscape planting and maintenance. Step-by-step accounting calculations are explained in simple terms. $34.00

350 - TREE IDENTIFICATION
by George Symonds
Pictorial reference to identifying trees by checking leaves, buds, branches, fruit and bark. Like its sister publication, SHRUB IDENTIFICATION, popular and botanical names are listed with index tabs for easy reference. $14.95

405 - WOODY ORNAMENTALS
by Partyka, Joyner, Remelspach, Carver
Illustrates plant identification characteristics. Organized in two basic sections: plant identification and disease, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification. $32.50

365 - LANDSCAPE PLANTS IN DESIGN
by Edward C. Martin
An annotated photographic guide to the design qualities of ornamental plants and their aesthetic and functional use in landscape design. Over 600 trees, shrubs, vines, ground covers and turfgrasses are described in non-technical language. Over 1900 photographs. Provides a basis for selecting the best plant materials for any particular use in landscape design. Contains detailed indexes that provide quick reference to particular design qualities and growing conditions. $58.95

375 - RESIDENTIAL LANDSCAPES
by Gregory Pierceall
An excellent reference for individuals involved in the design and development of planting and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. $41.00

500 - THE 1988 PESTICIDE DIRECTORY
by Lori Thomson Harney and W. T. Thompson
A guide to producers and products, including pest control information. Includes basic manufacturers and formulators with their products and products, district/regional offices and other pertinent information. For United States pesticide information in one place, this directory is a must. $75.00

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JULY 1988/LANDSCAPE MANAGEMENT 23
Why Fine Fescues?

Frequently overlooked by turfgrass managers, fine fescues are among the most adaptable and versatile of lawn grasses, as research from Rhode Island proves.

by C.R. Skogley, Ph.D., University of Rhode Island

Seed for chewing fescue is grown in Oregon.

In 1984, this magazine presented a series of articles on turfgrasses. In one article under this byline, it was noted that fine fescues were an under-used group of grasses. This is particularly so, as improved varieties continue to become available to us. The wide range of adaptation and versatility of fine fescues remains impressive today. They grow from coast-to-coast in the temperate regions of the United States and Canada, and from central Italy through Scandinavia in Europe. They do well in the Mediterranean climate of Italy and France, on the sand beaches of Belgium and the cold, windy prairie provinces of Canada. They have long been major components of turf stands in the cool humid northwest, throughout the British Isles and the northeastern region of the U.S. At least 35 species of the genus (fescue) have been identified throughout the U.S., and some species are found in the wild in nearly every state of the union. The fine fescues used for turfgrass purposes are creeping red fescue Festuca rubra L subsp. trichophylla Gaud.), spreading fescue F. rubra L. subsp. rubra, chewings fescue F. rubra L. subsp. commutata Gaud.), hard fescue F. longifolia Thunbl.) and fine-leaved sheeps fescue F. tenifolia Sibth.) Red fescue and sheeps fescues are reportedly found in 35 or 40 of the 50 states. One or the other appear to be missing only in the south-central and southeastern states.

Fines fescues differ greatly from their related species, tall fescue, F. arundinacea Schreb. and meadow fescue, F. pratensis Huds. The latter are coarse-textured grasses with different climatic and cultural requirements.

All fine fescues are relatively fine-bladed and will tolerate mowing to 1½ inches or less, are adapted to both sun and shade and are tolerant of rather acid, infertile and dry soils. They have been used as turfgrasses since the beginning of lawn culture.

Tender loving care

Until the mid-1900s, lawns were generally not pampered. They seldom received much fertilizer nor were they generally irrigated. This held true also for most golf course fairways and other extensive turf areas. Under these conditions the fine fescues were often abundant in turf stands in many areas of the United States—particularly in the temperate regions having acid soils or a maritime climate. Fine fescues were particularly adapted to areas where soils were infertile and or of light texture.

With the advent of increasing fertilization and irrigation, these grasses decreased in popularity and, when once abundant, ceased to be a major component of turf stands. It might be said that these grasses could not stand "prosperity." It was not immediately clear why they backed off under increasing levels of maintenance.

It took years to determine that diseases, primarily leafspots, were a major factor in lose of fescues. For many years this loss was not particularly disturbing as improved Kentucky bluegrass and, then, turf-type perennial ryegrasses were entering the market. As long as inexpensive fertilizer and water could be supplied, these grasses were very adequate replacements. Fine fescues became known primarily as shade grasses or for use mainly in low-fertility situation.

Until the release of Merion Kentucky bluegrass in the 1950s, all available turfgrasses were essentially of "common" type. They had not been selected or bred specifically for turfgrass purposes. Even though named varieties were being marketed, the names most often related to their area of production or to a particular type that developed in the producing area.

The release of Merion opened many eyes to the potential for breeding superior turf-type grasses, and the search for more improved turfgrasses was immediately begun.

Fine fescue on trial

In 1960, trials were established at the Rhode Island experimental station that included Merion, two experimental bluegrasses and five common bluegrass varieties. In the same trial were seeded five common fine fescues and one experimental, R.I. No. 6 (eventually released as Jamestown). The purpose of this study was to evaluate the performance of those grasses when fertilized with one, two or three pounds of N/1000 sq.ft. annually—relatively low rates in that era.

One outstanding result from this trial was the observation that a fine fescue could provide equal or better quality turf than even the best Kentucky bluegrass, at each level of fertility. This was the first indication that the potential existed for "improved" fine fescues.

Regional turfgrass research trials were initiated within the 13 northeastern states in 1968. That year, sepa-
Fine Fescues Defined

What are Fine Fescues and why are they so important to turf managers?

Our Fescue turfgrasses are part of most every park, golf course, industrial campus, athletic field, condominium commons and home lawn from the transition zone, Northward.

But, many people are not aware of that. Perhaps we are the most overlooked turfgrass in existence.

We feel that Fine Fescues are the best turf investment a grounds manager can make. And, we'd like to point out why.

Fine Fescues are real grass. And, as with all living things, there is give and take. Sure, our Fescues take water and some maintenance, but they are better givers. Our natural grass turns noxious gases into oxygen and is a natural air conditioner for turf users.

We feel that while artificial turf has its place on locker room floors, it has no business where real people work, play and relax. Our grass is just naturally more refreshing.

Our Chewings (Festuca rubra commutata) and creeping red (Festuca rubra rubra) Fescues are rather unique when compared with other turfgrass species. Although they have most of the features of other cool season grasses, Fescues have several distinct benefits worth noting.

Fine Fescues are low maintenance. Our varieties require less fertilizer and water than other species. That's a big plus at today's water, fertilizer and manpower prices.

Fine Fescues fare well around trees. It seems our grass doesn't need as much sunlight, water and nutrients as other turfgrass species. Because Fescues don't compete with trees for these important elements, they're called shade grass. Our Fescues don't creep into flower beds, nor crowd out other species in a mixture.

And, because they're Oregon grown, our Fescues germinate, adapt and perform better than imported types.

You'd expect to pay a fortune for such a turfgrass, but Fescues are quite reasonable

Why don't Fescues cost a great deal? Fine Fescues have been around a long time and have been changed very little. Why mess with a good thing? While other former "pasture" species are coming closer to looking like our old standard; receiving notoriety for their "improvements" and enjoy the price increases associated with the word "new," our Fescues have continued what they do best... support the up-and-comers. But then, Fine Fescues were meant to be stepped on.

Fine Fescues are Ideal for Recreation, Sports and Leisure

Not only do Fine Fescues excel alone or in perennial ryegrass/Kentucky bluegrass mixtures on horizontal playing surfaces; Fescues are excellent for low maintenance areas like berms, roadside banks, ski slopes and hilly spots that don't retain moisture. So, you see, Fescues are ideal all-around grasses for all around your recreation and sports facility. Their low maintenance requirements offer turf managers a chance for a little more leisure... and there's nothing wrong with that.

For a series of nine tech sheets on Oregon grown Chewings and creeping red Fescues, call or write:

Oregon Fine Fescue Commission
2140 Turner Road SE
Salem, OR 97302
503/585-1157

Circle No. 133 on Reader Inquiry Card
rate Kentucky bluegrass and fine fescue trails were seeded at several locations throughout the region. The trails contained 55 cultivars of Kentucky bluegrass and 24 fine fescues. All grasses were evaluated at mowing heights of 1½ and ¾ inches and were fertilized at the rate of three to four pounds of N/1000 sq. ft. annually.

These trials were continued through 1973. Results from this study were most encouraging for fescue grasses. Evidence of superior performance by selected, improved varieties, over common varieties was clear. Chewings varieties such as Atlanta, Halifax, Highlight and Jamestown were clearly superior to commonly available varieties, and the chewings type generally performed better than the creeping or spreading types. Some of the better varieties performed well even at the ¼-inch cutting height, which was not expected.

Subsequent variety trials of fine fescues have led to a number of conclusions:

1. Improved varieties of chewings and hard fescue, particularly, are far superior to common varieties. They are more disease resistant, will tolerate closer cutting and will provide excellent density in pure stand.

2. Hard fescues establish more slowly than chewings fescue but seem to be more tolerant of heat, moisture and salt stresses. They will tolerate higher fertility usage.

3. Most fine fescues are prone to summer disorders and possible injury if fertilized during periods of summer heat stress. It appears that, if they are to be fertilized, cooler spring or fall periods would be best.

4. Fine fescues, once established, do not require much fertilizer. They are adapted to lower fertility soils and perform best under low fertility management programs. They develop deep, extensive, root systems and are very efficient in moisture and nutrient acquisition.

Adding versatility

Sod producers in New England generally used as much as 50 percent creeping red fescue, in combination with Kentucky bluegrass, as a seeding mixture until the mid-1970s. The addition of the fescue provided a more versatile product. The sod was more widely adapted to sun or shade and infertile areas as well as fertile soils.

Creeping red fescue was not competitive with vigorous bluegrasses, however, and often at sod harvest very little fescue was evident.

With the availability of improved cultivars of chewings fescue many growers are currently using them with their bluegrasses, but at a reduced rate. Because fine fescues establish more rapidly than does bluegrass, and chewings fescue is capable of profuse tillering, 10 to 15 percent of seed, by weight, appears to be adequate.

In a study of Kentucky bluegrass and red fescue cultivars at the Rhode Island station in 1970, it was evident that rerooting of transplanted sod was faster when fine fescues were combined with Kentucky bluegrass. Each fall at the research farm, new turfgrass cultivar trails are seeded. These trails include potentially improved selections and several standard varieties for comparisons of Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescues.

The trials are maintained for at

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* Turf Quality Ratings: 9 = best quality
1 = bare ground or dead turf

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*Turf Quality Ratings: 9 = best quality
1 = bare ground or dead turf

26 LANDSCAPE MANAGEMENT/JULY 1988
ANOTHER TURN FOR THE BETTER

Ransomes out-maneuvers the competition. Again. With the new T-3100 Bobcat (our idea of a great machine). Hydrostatic drive eliminates bothersome clutching and shifting. Just effortless forward and reverse control from a single foot pedal. And a three-wheel ride means precise turns for close trim work. If you think all this makes the T-3100 expensive, forget it. It’s the most affordable commercial rider in its class.

The new T-3100 Bobcat from Ransomes.
Where else would you turn for great ideas?

For more great ideas, turn to your Ransomes distributor. Or, call Ransomes, Inc., One Bob Cat Lane, Johnson Creek, WI 53038, (414) 699-2000.
least five years during which time performance date are obtained. The grasses are mowed at a 1/2-inch height, watered as required and weeds and insects are controlled. Fertilizer is applied to provide about three lbs. of N/1000 sq. ft. annually. All plots are observed and rated for quality during the first 10 days of each month throughout the growing season, April through November.

For the purpose of comparing quality of the fine fescues with Kentucky bluegrasses and perennial ryegrasses, records of larger trials established in 1978, 1980, 1981 were checked. The five-year monthly and seasonal averages of quality ratings for these three grasses were reported. The highest quality throughout the five-year period were recorded.

The data retrieved are presented in Table 2. It should seem obvious why we are so high on the fine fescue varieties, this has generally been the case. Although early improvements were primarily among chewings cultivars, hard fescues started to make their presence known in the early 1970s and excellent varieties of each species that exhibited the highest quality throughout the five-year period were recorded.

The data retrieved are presented in Tables 1, 2 and 3. It should seem obvious why we are so high on the fine fescue varieties, this has generally been the case. Although early improvements were primarily among chewings cultivars, hard fescues started to make their presence known in the early 1970s and excellent varieties of both are currently being marketed.

The 1985 progress report of the National Fine Leaf Fescue Test established in 1983 clearly shows the fine turf potential of hard fescues. There are 47 entries in this test. The 1985 report includes data from 19 locations nationally. One sheeps, 14 creeping and spreading, nine hard and 21 chewings fescues among the top 10 cultivars.

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![Turf Quality Ratings: 9 = best quality 1 = bare ground or dead turf](image)

### Table 3.
Quality ratings of the top three cultivars of perennial ryegrass, fine fescue and Kentucky bluegrass cultivars in the evaluation trial, 1982-85.

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| Overall Ave | 5.5 | 6.6 | 5.3 |

**Turf Quality Ratings: 9 = best quality 1 = bare ground or dead turf**

### NEWS from page 21

**EQUIPMENT**

**Danger of ATVs require caution**

All terrain vehicles (ATVs) may present a risk of severe injury or death in certain circumstances, warns Tommy Valco, an agricultural safety engineer with the Texas Agricultural Extension Service.

Valco says the Consumer Product Safety Commission recently sounded a safety alert concerning these vehicles, saying that more than 900 people, including many children, have died in accidents associated with ATVs since 1982; many people have become paralyzed or suffered severe internal injuries as a result of accidents associated with ATVs; and thousands of people are treated in hospital emergency rooms every month for injuries received while riding an ATV.

“You and your employees should be aware that an ATV is not a toy and may be dangerous to operate,” says Valco.

“An ATV handles differently from other vehicles and can roll over on the rider or violently throw them without warning. Even hitting a small rock, bump or hole at low speed can upset it.”

Because of the grim statistics, Valco adds, the U.S. government has filed a lawsuit against all manufacturers and distributors of ATVs asking the court to declare the vehicles hazardous and that additional regulations to protect ATV riders be established.

**INSECTS**

**Monitoring flowers can save you money**

Nurserymen who monitor their flowers for pests may reap substantial cost savings, says Harvey A. Yoshida, a doctoral student at the University of California, Riverside (UCR).

Monitoring enables flower growers to detect, evaluate and record pest populations and trends, Yoshida says. He reminds landscape managers that even small numbers of some pests can ruin the aesthetics of many floricultural crops.

Monitoring also enables growers to evaluate the effectiveness of their pest control programs, not to mention save the nursery money by enabling nurserymen to determine when and at what levels insecticides should be used.

Yoshida recommends combining visual walk-throughs with the use of an insect trap system, such as blacklight traps, pheromone traps, and yellow sticky traps, in order to make good management decisions about pest control.

Where to place the traps depends on the type of pest present, but, in general, Yoshida recommends one blacklight trap per 5,000 sq. ft.; one pheromone trap and one yellow sticky trap per 10,000 sq. ft.

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Acclaim kills crabgrass much more effectively than the old postemergence arsenates—and it's a lot easier on turf. Even better, Acclaim generally requires only one treatment versus two or three arsenate treatments. Also, Acclaim allows you the flexibility to reseed within 24 hours—so by the time the crabgrass is gone, all you see is lush, beautiful turf.

ACCLAIM®
Because your turf is always on display.
ENGINE IRREGULARITIES

Armed with a few simple facts, your field-level employees can often isolate minor engine problems before they grow into expensive major breakdowns.

by John Peterson

The engine is the heart of any piece of outdoor equipment. Keeping it in good working condition helps maintain the equipment's overall efficiency.

Although many engine problems can be complex and require a trained mechanic to repair, the field operator can often detect irregularities that indicate when a major mechanical failure is developing. With a few simple facts and a few extra minutes, the operator can often isolate these minor problems before they become more expensive.

Before startup

The morning equipment inspection is the first line of defense in diagnosing potential engine problems. It should start with a walk around the vehicle, checking for puddles, which can indicate leaks in any one of a number of systems. Also, check engine surfaces for unusual amounts of fluid and try to trace them.

For example, if the piston rings are worn, several drops of oil will appear around the blow-by pipe. Normally, the area at the end of the pipe will be covered with oil-soaked dust. If the engine has excessive blow-by, oil may be washing the dust away. A compression check will determine if the rings have worn to a point that engine efficiency is affected.

After a visual inspection for leaks, check the oil. Unexpectedly low levels are another indication of a leak that needs attention.

To check for both fuel and coolant in the oil, a simple test can be conducted on a weekly basis. After running the engine for five minutes to get the oil warm, pull out the dipstick and put a drop or two of oil on a paper towel. Unless the oil has been changed in the last few hours, a dark circle surrounded by a lighter, less distinct, ring will appear. The inner circle is oil and the outer ring is diesel fuel, which is thinner than the oil and spreads faster on the paper towel.

The fuel ring should be a thin halo around the oil. A fuel ring twice the diameter of the oil circle indicates there is enough fuel in the crankcase to start interfering with the oil's lubricating effects.

Although some fuel seepage into the oil is normal, too much before a scheduled oil change may indicate a leak in the fuel system.

Prolonged idling at low speeds also causes fuel dilution. If this is the case, the engine will not warm up enough to expand the rings and the resulting poor rings-to-cylinder sealing will lead to lower compression, allowing more unburnt fuel and oil to mix.

Milky-looking oil may indicate a leak in the cooling system. This can be verified by opening the oil pan drain plug slightly and catching the drippings in a cup. Since antifreeze (even mixed with water) is heavier than oil, it will separate from the oil and a blue or green color will appear. Again, have a mechanic address this problem immediately.

The next step in the daily inspection is to check fan and alternator belts. Try to turn the fan or alternator cooling fins by hand while the engine is not running. The resistance offered by the engine should make these components difficult to move if the belt is properly adjusted and in good condition. If you suspect a belt is loose, run the machine five or 10 minutes and then check the temperature of the pulleys. If belts are loose, the pulleys will be hot.

A quick visual check can detect slippage on a standard V-belt, as the sides of the belt will be glazed from wear.

After inspecting the belts, look for loose hoses or hose clamps.

Next, check the air filter. Many have warning indicators to show that the filter is clogged. If this is the case, have it replaced or cleaned.

The morning equipment inspection should also include an inspection of systems that are related to the engine. Often a minor malfunction in one of these systems may appear to be a major engine problem but is, in fact, far less serious.

Here is a brief list of other systems that should be inspected before startup:

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Unexpectedly low oil levels are a sign that a leak needs attention. Excessive oil use or very dirty oil is a cause for concern.

Peterson is a service engineer at JL Case in Racine, Wisc.