



Annual bluegrass is growing in areas missed when preemergence herbicides were applied in Texas. Photo courtesy: Bill Knoop.

(June to July) after spring sports season have ended will remove crabgrass and goosegrass missed by preemergence products. It enables the sports turf manager to overseed in the spring and to delay grassy weed control until the spring season is over. Since the herbicide is not a residual, reseeding and overseeding can take place a short time after application. Fenoxaprop can be tank mixed with preemergence herbicides for the second split application to improve summer control.

Split applications are helpful in the North when the turf contains both annual grassy weeds and annual broadleaf weeds, explains Shearman. Single treatments that may control crabgrass may not control oxalis, spotted spurge and prostrate spurge since they germinate later. Fall applications may be necessary for control of annual bluegrass, chickweed or knotweed. However, fall is also the primary time for reseeding cool-season turf, including bentgrass, ryegrass, tall fescue and Kentucky bluegrass. Some success has been achieved in removing annual bluegrass from overseeded ryegrass turf in the South with ethofumesate (Prograss) from Nor-Am.

While the length of control of siduron is relatively short compared to other preemergents, it is safe to apply on newly seeded turf. Turf managers can still provide weed control after reseeding in either the spring or fall with siduron.

Shearman cautions that high rates of preemergence herbicides can decrease wear tolerance, slow recovery and decrease root and rhizome development. He recommends that sports turf managers maintain sufficient levels of potassium for wear stress and phosphorus for root and rhizome development. He also urges sports turf managers to exercise caution when applying preemergence herbicides near ornamentals or plant beds.

Once you have identified the primary weeds that you need to control with preemergence herbicides and have pinpointed their primary germination period for your area, the next step is to apply them properly. Turf should not be wet when dry products are applied to avoid any possible leaf burn. Sprayable herbicides should be mixed with a spray pattern indicator to avoid skips and misses. A uniform barrier of a sufficient rate of herbicide must be created in the top inch or two of soil. Both products should be watered-in quickly following application to rinse the active ingredient off the foliage and down to the soil.

The same guidelines should be followed for split applications, although the rate is typically one half to three quarters of the original rate. The idea is to restore a threshold rate and to replace the portion of the herbicide that has been broken down by soil microorganisms.

Sports turf managers have to decide for themselves whether important cultivation practices such as verticutting and aerifying are too important to delay until after preemergence herbicides have done their job, says Milt Kogiyama, pesticide specialist for Scotts. "Technically, anything that disturbs the herbicide barrier will reduce control," states Kogiyama. "But, if you have a major

*continued on page 31*

# The Irrigator that follows you anywhere.

Across the playground.  
Polo field. Park. Or petunia patch.  
It's perfect.

If you have land to irrigate, Rain For Rent has a revolutionary hard hose irrigator engineered for you—the affordable Bauer Rainboy 50T.

No pipe. No pop-ups. No permanent system.

Just a mobile, versatile, efficient and reliable unit that works on water pressure (44 psi), provides uniform, even, adjustable participation, keeps running till the work is done—and stops automatically.

It's lightweight,  
easy to  
position  
and



move, and non-soil  
compacting.

And it's available for  
rent or purchase.

There's only one Rainboy. And it's only at Rain For Rent. We promise you'll be impressed. Call or come by, today. We think our Rainboy will follow you home.

Toll Free Hotline, 1-800-272-RAIN  
(In CA) 1-800-742-RAIN



**Rain For Rent**  
P.O. Box 2248,  
Bakersfield, CA 93303

**TORO**

Now, another model

# NETWORK 8000

*The central / satellite control system  
that saves energy, water, labor . . . money!*

Superior irrigation control translates into two major advantages: better turfgrass and substantial reductions in the use and cost of energy, water and labor.

Toro's *Network 8000* provides exactly that: demonstrably superior irrigation control. It is the first and only totally automatic irrigation control system. Just enter design, weather/climate, geographical and agronomical information. Network 8000 then *automatically* computes the operating times for all stations, based on the evapotranspiration rate, modified by any applicable rainfall:

Network 8000 accomplishes all of this by combining a computerized central controller with satellites of amazingly extensive stand-alone capabilities.

The central controller utilizes an IBM personal computer as the hub of the operation, including keyboard, color monitor, matrix printer and a "mouse" for easy access to all functions.

This non-dedicated central is capable of "transparent" multiple function, which provides for *simultaneous* business and irrigation program

operation. It's like getting two important pieces of equipment for the price of one!

Network 8000 provides automatic adjustment of irrigation system operation, responding to such key factors as rainfall, evapotranspiration rate, plant materials, soil types, soil compaction, geographic location, terrain slope, Ph factor and system design. A manual override is provided for all factors.

The central programmer will operate any station, set the running time, assign it to any program and set up to three repeats for any station. It can operate up to 800 satellites of 32 stations each, for a total of 25,600 stations.

Toro's new Network 8000 central provides two-way communication: it "down-loads" information to the satellites and "up-loads" information from the satellites.

Also, with this central station you enjoy the advantages of water-budgeting by means of percentage increase/decrease control (by station, by program, by CSG, or the total system), from 1% to 900%.

But this is only the beginning of the story. You have to see it perform to fully appreciate exactly what it can do for you and your irrigation. Call *The Man from Toro* for a no-obligation demonstration.

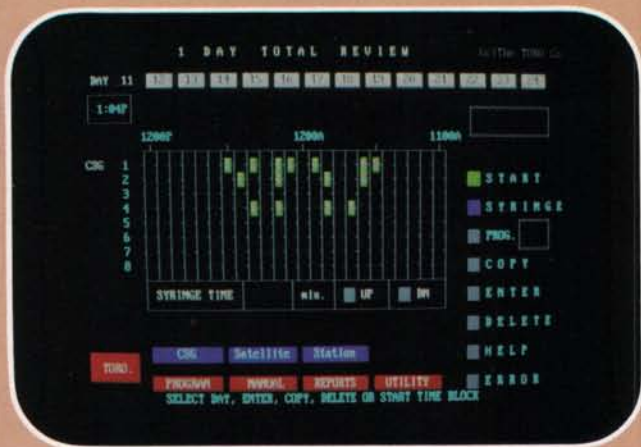
\*Requires satellite rain gauge monitoring equipment



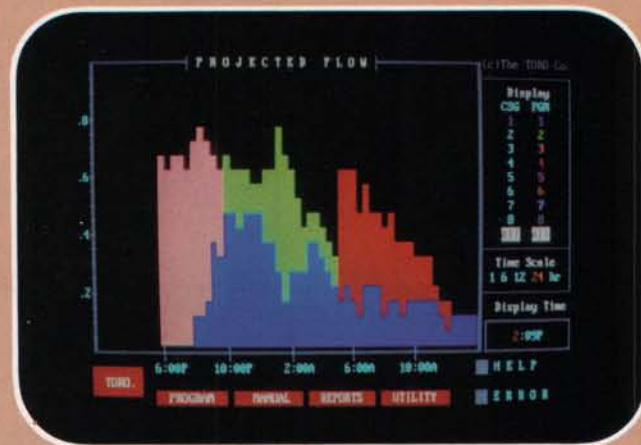
*Key components to Network 8000 are the IBM personal computer, with color monitor and keyboard, operated with handy "mouse" and/or keyboard. Shown in the middle is Toro's Delay & Distribution Unit. On the right, IBM matrix printer and stand.*

MODEL 198-39-88

## THREE TYPICAL SCREEN DISPLAYS



This screen quickly displays complete irrigation program for one full day, for each of 14 days in the system.



Screens such as this Projected Flow Chart can be used for fast easy-to-read reference to assure efficient operation.



## SATELLITE CONTROLLER

Matching the Network 8000 central for advanced and innovative design is Toro's new satellite/stand-alone solid state controller, available in a stainless steel case or a green painted steel case. The satellite is a 32-station unit, with each station capable of operating three Toro electric valve-in-head solenoids.

As with the central, this new satellite offers two-way communication. It receives, stores and sends all commands generated by central. At the same time, it up-loads to the central such key factors as satellite status, air temperature\*, changes made in station timing at the satellite, and valve wire failure sensing.

Each station is capable of minute and hour timing, from 1 minute to 4 hours and 15 minutes per station, in one-minute increments.

Toro's new Network 8000 Satellite also provides water-budgeting capability, with percentage increase/decrease from 1% to 900%.

The combination of the equally amazing new satellite and central controllers make Network 8000 your first step into the 21st Century, with pay-off *now* in terms of better turfgrass at lower costs.



**Excellence in Irrigation®**

For additional information, contact:

**The Toro Company**  
Irrigation Division

Dept. ST-288, P.O. Box 489, Riverside, CA 92502



## SUN DEVIL STADIUM PREPARES FOR CARDINALS

The announcement by St. Louis Football Cardinals owner William Bidwell that his team is leaving the riverfront city and Busch Stadium for Phoenix, AZ, was no surprise to Dr. Bent Brown, vice president of Arizona State University in Tempe. Brown has spearheaded an effort by the University and the state of Arizona for months to entice the Cardinals to move to Phoenix. If the owners of the other National Football League teams vote to approve the Cardinals' move in March, ASU's Sun Devil Stadium will serve as the team's home field until a new stadium is built in downtown Phoenix.

Sun Devil Stadium was the home field for the Arizona Outlaws of the short-lived United States Football League. The crew there, headed by Assistant Physical Plant Director Don Dickerman, knows the requirements of a professional football franchise. The stadium has also hosted the Fiesta Bowl since 1971.

If the NFL gives Bidwell its blessings, ASU will provide the Cardinals with both the 72,000-seat stadium and practice facilities on campus. Construction has already started on a seven-story expansion on the south end of the stadium. The addition will house a sports medicine center, the ASU athletic department offices, weight training center,

classrooms and new locker rooms. The university will add luxury suites and a new press box to the stadium for the Cardinals.

"We won't have time to rebuild the field this year," says Dickerman, "but the surface will be renovated and resodded this spring." He hopes to lower the field more than five feet and install a modified Prescription Athletic Turf (PAT) field before the 1989 season whether or not the Cardinals move. "By lowering the field we can greatly improve the value of the first three rows of seats."

This spring an intensive program of aerification and topdressing will be instituted to improve drainage and relieve compaction caused by a series of concerts and events last year. New Santa Ana sod will be installed. "We are trying to develop a better cushion for the players," explains Dickerman.

The biggest concern of the field crew is switching the field from college specifications to professional when the Sun Devils play on Saturdays and the Cardinals play on Sundays. "Sun Devil games start at 7:30 p.m. when it's cooler," explains Dickerman. A Sunday afternoon Cardinals game would give the crew slightly more than 12 hours to change the goal posts, hash marks and emblems painted on the field. Monday night Cardinals games would give the crew more time but could conflict with student parking for evening classes. "There are a lot of

details to work out when things are finalized in March," Dickerman adds. "Strategic planning and scheduling will be the keys to success."

## RAIDERS MOVE FORWARD ON IRWINDALE STADIUM

The goal of Los Angeles Raiders owner Al Davis is to break ground this fall on a 62,000 seat stadium in Irwindale, CA. If all goes well, the Raiders will play their 1990 season in the new stadium, says John Herrera, senior executive for the Raiders.

Despite efforts by the Los Angeles Coliseum to block construction of the Irwindale stadium, the judge has not enjoined the Raiders from proceeding to develop the site, a 200-foot-deep, abandoned rock quarry 25 miles northeast of Los Angeles. Davis alleges that the Coliseum has not fulfilled obligations made to him when the team moved from Oakland.

Work has already begun on preparing an environmental impact study for the site. "We hope to start the grading work this fall," said Herrera. The quarry will be partially filled in and the entire site will be regraded to be aesthetically pleasing, much more so than the abandoned quarry which sits next to a major crosstown freeway. The city of Irwindale is providing \$10 million to help fund development work.

## Improve your Athletic Fields with this versatile maintenance tool

Low-Cost  
**FUERST**  
F-L-E-X-I-B-L-E  
TINE  
HARROW®



### IT'S VERSATILE

Use it to keep your ball diamonds, football/soccer fields, cinder tracks and all turf areas in top condition. Dries drags and floats basepaths and skinned infields. *The only maintenance tool approved by Little League Baseball.* A single pass aerates, brings up thatch, crumbles and scatters cores without clogging. Prepares seedbeds without disrupting existing growth when overseeding worn areas. Works in seed and fertilizer. Revitalizes worn spots while it strengthens turf.

### IT'S TROUBLE FREE

Adjusts without tools for deep or light penetration or as a smoothing drag mat. Unique tines hug the turf at 6-8 mph. Never needs maintenance. Rolls up for easy storage. 4 to 42 ft. widths. *We guarantee your satisfaction.*

For FREE literature, testimonials, prices call toll-free 1-800-435-9630 (In IL call 217-784-4266) or write:



**FUERST BROTHERS, INC.**

P.O. Box 427-ST1, Gibson City, IL 60936

Circle 128 on Postage Free Card

## SPRINKLERS REBUILT

THE **AMERICAN** WAY



SEND US THIS...

SATISFACTION  
GUARANTEED

NO HASTLES  
IN BETWEEN



WE'LL RETURN THIS...

We rebuild: Aqua Dial, Buckner, Rainbird, Royal Coach, Thompson, Weathermatic, Weather-Tec, Rain-O-Mat, & much more...

Large stock of sprinkler parts, valve parts, and a great selection of irrigation supplies. Do yourself a favor, call us today!

WE BUY  
OLD USED  
SPRINKLERS



IRRIGATION REPAIR & SUPPLY CO., INC.

3270 Seldon Court #3 Fremont, California 94538

**(415) 659-8558**

GUARANTEED WORK  
GUARANTEED TURN-  
AROUND TIME!!!

Warren Morey, architect of Cowboy Stadium in Dallas, TX, has been commissioned to design the stadium which will feature a sand-based field similar to the one at the Coliseum. "The field will definitely be natural turf," says Herrera. "The players like the field at the Coliseum. They like the cushion the sand provides." The team constructed a similar field at its current headquarters and practice facility in El Segundo, CA.

The original 62,000 seat design will be expandable to 70,000 seats, still considerably less than the Coliseum's nearly 100,000. Between 80 and 120 luxury suites will be included. Construction of similar suites at the Coliseum was a major point of contention between the Coliseum and Davis.

The Raiders plan to build a new headquarters, practice facility and Hall of Fame at a site within two miles of the new stadium. The Raiders lease at its current headquarters also expires in 1991.

## **SUPER BOWL CREW USES AERATOR TO HURRY PREGERMINATED SEED**

After 22 years of preparing stadium fields across the country for the National Football League's Super Bowl, George Toma and now his son Chip continue to adapt turf management practices to get the fields ready for the internationally popular event. This

January the pair combined solid-tine aeration and overseeding with pregerminated perennial ryegrass to revive thin spots in the field at San Diego's Jack Murphy Stadium.

"We wanted to get the roots down two inches into the soil before the game," states Toma. "That would prevent the young turf from tearing loose during the game and halftime show." Toma thought aerating would give the pregerminated ryegrass a head start in growing through the dormant bermudagrass, but he didn't want to collect soil cores or disturb the surface any more than necessary.

On January 1, the day after the Holiday Bowl, Chip began to soak the Ph.D. blend of perennial ryegrass in 12 large drums. As the seed was prepared, the emblems from the Holiday Bowl were brushed off the turf with a revolving plastic brush on the front of a tractor. This was a change from verticutting the paint out of the turf. "It worked great without tearing up the turf," Toma remarks.

The year before George and Chip had experimented with solid tine aeration in the end zones of the Rose Bowl, Pasadena, CA, which had already been verticut to remove the paint from the Rose Bowl game. The pregerminated seed in the core holes grew vigorously and rooted deeply. They thought that an aerifier with solid tines making a dense pattern of holes could be used for

an entire field if necessary.

They got their chance in San Diego. A busy schedule of baseball, football and concerts had taken its toll on the overseeded ryegrass. Exceptionally cool weather had prevented the ryegrass from establishing enough to withstand football, especially during rain games. After the Holiday Bowl, more than a third of the turf needed to be reseeded.

Using a Green Care CoreMaster aerator with 3/8 inch solid tines, the Tomas punched more than 70 inch-deep holes per square foot over the entire field. They also used a disc sprigger to make grooves in two directions in the surface. The pregerminated seed was mixed with Milorganite and spread over the field and dragged into the core holes and grooves. Finally they toppedressed the field with a mixture of sand and Nitrohumus. After a light application of Subdue fungicide, the field was watered by hand on a daily basis. "We started mowing after ten days and have had to mow every other day since then," says Toma. Core samples showed the roots had penetrated two inches into the sandy soil.

The Tomas have already started working with Dale Sandin, grounds supervisor at the Orange Bowl in Miami, FL, for next year's Super Bowl. "Every year we learn something more and add it to our list of tools. We're happy to share it with other groundskeepers," he concluded.

FERTIGATION. . .



WITH:

## **TURF N' JECTOR™**

A METERING PUMP FOR INJECTING FERTILIZERS AND CHEMICALS IN YOUR SPRINKLER SYSTEM

SAVE LABOR AND FUEL COSTS

A PROVEN TURFGRASS MANAGEMENT TOOL

FOR FURTHER INFORMATION OR FREE BROCHURE, CONTACT:

**INJECT-O-METER MFG. CO., INC.**

820 Thornton Clovis, New Mexico 88101

(505) 763-4461

FAX 505-762-2497

1-800-545-4440

TELEX 9102502594

# DAKOTA HAND

**NEW  
FOR '88**

## **The Ultimate, All-In-One Landscape Implement!**

*The unique, new Dakota Hand is designed to be a do-any-thing, go-anywhere landscape tool.*



Patent #46256621

The main parts are a towable, bucket or 3-point mount tree transplanter, a boom sprayer, a log splitter, a dump box, post hole digger, and a spreader. The transplanter's patented floating cradle enables you to hydraulically vary the rootball diameter up to 28 inches.

Options include water pumps, hydraulic pumps, jack hammers, hydraulic power packs, and much more.

The Dakota Hand is made specifically for resorts, golf courses, apartment complexes, hobby farms, parks, nurseries, municipal and state facilities, and for rentals, landscapers or soil conservation.

**CALL OR WRITE: 1-800-327-7154**

Dealer Inquiries Welcome  
Product Demonstration  
Available on Video

**MID DAKOTA CORPORATION  
GARRISON INDUSTRIAL PARK  
BOX 728  
GARRISON, ND 58540**

# Mowers: 60 Years Of Changes



One of the original 50 reel mowers produced by Locke Steel Chain Co. in 1930. Locke president Tom Herrman still uses it.

**P**icture mowing a fairway or athletic field in the early 1920s. You see two basic types of mowers, a walk-behind reel mower (with or without an engine) and a gang of ground-driven reels pulled by an agricultural-type tractor. The walk-behind provided a fine cut and the gang an acceptable utility cut. Many of these mowers had to be altered by the greenskeeper or ground-keeper to suit his needs.

Ten years before it was common to see a horse pulling a gang of reels across a golf course or park. Power in the form of agricultural tractors and even washing machine engines enabled many turf managers to turn their stables into maintenance buildings. A small group of inventive machinists went to work to take the mowing industry off hay and onto gasoline. They had some idea how to go about making these changes since a British company called Ransomes, Jefferies and Sims had powered models on the market in Europe.

Beginning in the late teens and '20s, the foundation of the gasoline-powered reel mower industry was established. National Mower Company, Locke Manufacturing and Jacobsen started producing powered walk-behind reel mowers. Worthington Mfg. Co., which had been manufacturing reel gangs for horse-drawn mowers, National and Toro developed tractors with reels suspended from the sides and below to provide the kind of maneuverability needed on golf courses and other large turf areas. Reel gangs, however, continued to play a large role in mowing large turf areas for decades to come. Worthington, Toro, Jacobsen, Ransomes, Roseman, National, Brouwer, and Jerry Clipper still produce reel gangs today.

Now picture mowing the same areas today. The walk-behind, reel gang and tractor mowers are still there, in modernized versions, having survived the test of time for more than 60 years. Today, the reel gangs are used on golf course roughs and

large areas around fields on university campuses and park grounds. The walk-behinds, many with grooming attachments on the front, are found on golf and bowling greens, croquet courts, grass tennis courts and smaller areas of fine turf. Riding reel mowers up to 15 feet in width mow entire golf courses, parks and campuses in a single day.

A little closer look, however, will reveal an entire generation of rotary equipment, a budding fine-cut flail mower market, low-slung four-wheel-drive tractors with interchangeable attachments and widespread use of hydraulics. Maneuverability, speed and efficiency far exceed those of the '20s. Some mowers even sport digital gauges that provide exact information important to operation and maintenance. Mowing today is a far cry from hooking up reel gangs to a horse's harness and snapping the reins to get the horse to walk.

While reel units were the first type of

professional mowing equipment, rotary units developed in the early '50s assumed a substantial position in the turf market by the late '70s. Established largely by Goodall (now Bunton) and Whirlwind (now Toro), the commercial rotary mower rapidly gained acceptance for areas where a fine cut was not essential. It had no reels or bedknives to grind, was highly maneuverable and was easy to service and maintain. It was also simpler to manufacture.

Jacobsen took a strong position in the commercial mower market in the '50s when it bought Worthington and later started manufacturing rotary mowers. It was the beginning of a major competitive battle between "Big Red" (Toro) and "Big Orange" (Jacobsen)—a battle that has played a major factor in the growth of the commercial and professional mower market.

Goodall charted new waters in rotary mowers when it introduced a 36-inch, self-propelled walk-behind in the early '60s. By incorporating brakes on the two drive wheels, Goodall was able to build a wider, heavier mower with good maneuverability. It also brought the concept of zero turning radius to the industry. The operator could turn the mower, much like a Caterpillar tractor, by applying the brake on one wheel while the other wheel continued to turn.

These concepts of maneuverability, large size and zero turning radius were also applied successfully by Gravely, Exmark, Kees, Toro, Snapper, Wisconsin Marine (now Ransomes), Yazoo and other companies. Oddly enough, these large, walk-behind mowers did not achieve great commercial success until the early '80s. Today, walk-behind rotaries stretch up to 60 inches wide. Sulkies can be attached to them to provide an inexpensive riding mower. Jacobsen, John Deere, Scag and Lesco have since joined the group.

Excel, a manufacturer of tractor cabs, had bigger things in mind and took rotary mower size and maneuverability a step further. Rather than turning a small garden tractor into a mower by suspending a rotary deck from its belly, Excel redesigned the drive unit so that the deck could be mounted in front. The company also invented a steering mechanism consisting of two levers and independent drive on the front wheels so the mower could actually spin around in one location. After a little practice, the operator could guide the front-mounted deck along curving walkways and around trees without slowing down. The deck could also be removed and replaced with a snowblower or plow blade.

In 1965, Excel added a larger engine and a 72-inch deck to cut mowing time in half and nearly eliminate the need for trim mowing. Finally, the company replaced mechanical drive to the independently front wheels with hydrostatic drive. In 1983, Excel boosted horsepower further to add cutting decks on the side of the drive unit called Range Wings. Now, a single rotary tractor could cut a swath 15 feet wide, the same width as large, reel gangs.

Howard Price, Jacobsen, Ransomes and Toro have adopted similar technology and added hydraulic drive to the cutting decks. Hydraulics are also used to lift the side decks when necessary. Many of these principles were quickly applied to tractor reel units at the same time.

Out-front, riding rotaries today are available from a number of companies, including Bunton, Cushman, Deines, Howard Price, Ingram, Jacobsen, John Deere, Gravely, Kut-Kwik, Lesco, Middlesworth, Scag, Toro, Yazoo, and others. In the mid-'70s a small, family-owned company in Ohio developed a small turf tractor to resemble the latest large agricultural tractors. To retain maneuverability and to pull farm implements on soft or wet fields, ag equipment companies had introduced four-wheel drive tractors that were hinged in the center. These articulated units had tremendous traction and could turn in half the space it took a conventional tractor. Once the Steiner Corp. had successfully miniaturized the farm

tractor, it began adding a wide assortment of attachments, including front-mounted rotary and reel mowing units, broom, edger, scoop and blower. Like its big brother, it can also pull implements. The Steiner family was satisfied with its small share of the market which grew largely by word-of-mouth. That may be changing since Ransomes, Sims and Jefferies, the British parent company of Ransomes, Inc., purchased Steiner Corp. last month.

Hydraulic drive and using one tractor or drive unit to power a variety of attachments forced turf equipment engineers to take a closer look at hydraulics. It takes more horsepower to drive hydraulic devices than it does mechanical ones. However, hydraulic drive will allow infinitely variable speed for both the tractor wheels and for the attachments. It also enables manufacturers to eliminate belts and pulleys and their adjusters.

A hydraulic system consists basically of a pump, powered either by the tractor

*continued on page 28*



**John Deere's 3325 Pro Turf Mower cuts a 138-inch swath as low as 3/8 inch. Instruments monitor 12 different operating functions.**



**The Metrac 3003K from Lely is a highly flexible prime mover that can operate attachments on both front and rear. The low-profile machine has four-wheel drive and steering.**



Scag's commercial walk-behind rotary mowers cut up to 61 inches wide.



The Excel Hustler Range Wing mower can cut 60 acres of turf in an eight-hour day.



The Steiner tractor articulates in the center and features four-wheel drive. It can support a wide range of attachments both front and rear.

## Mowers

*continued from page 27*

engine or PTO, that circulates oil under high pressure in hoses to small motors located on the devices to be driven. Valves regulate the pressure and flow rate of the oil in hoses thereby determining the speed of the motor. Dirt or debris in the oil can harm the components, so a filter in addition to regular cleaning and maintenance are important.

Companies like National have chosen not to use hydraulics, preferring instead to provide mowers with smaller engines, lower cost and simpler from a maintenance standpoint. Other companies, such as Excel and Brouwer, utilize hydraulics for hydrostatic drive and lifting attachments but not for driving attachments. Many manufacturers offer models with different combinations of mechanical and hydraulic drive.

"Hydraulics are here to stay," says Helmut Ulrich, product marketing manager with Toro. "The operator has more confidence in hydraulics than he did four years ago. Manufacturers have made hydraulic "prime movers" simpler to service and more reliable. With hydraulics you can precisely match forward ground speed to the speed of the reels."

Tom Carter, vice president of Jacobsen, has been one of the pioneers in hydraulic mowing equipment. "Hydraulics have greatly increased the versatility of turf equipment," he explains. "The operator has more control than he has ever had." Carter admits that mechanics must be trained to maintain and repair hydraulic units, but once that hurdle is cleared, the units provide greater flexibility with no more maintenance than mechanically-driven units.

Both Carter and Ulrich used the term "prime mover" frequently. The term is proof that manufacturers are heading toward multi-use tractors or drive units. Prime movers that can drive reel, rotary and flail mowing attachments will also be used for verticutting, aerating, vacuuming, blowing, brushing and more. As manufacturers expand the usefulness of mowing tractors, they are also introducing all-purpose prime movers. Examples of these are the low-slung, four-wheel drive, four-wheel steering tractors currently available from Bunton, Jacobsen and Lely. They can drive attachments in front or in the rear and have excellent stability on slopes. The Steiner articulated tractor, and Brouwer's new four-wheel drive tractors are smaller versions of all-purpose prime movers. Kubota introduced a four-wheel steering mowing tractor in 1986.

As turf standards change, so must mowers. When Sylvanus Locke built his first triplex reel mower in 1928, he had no idea that the triplex would set the standard for fairways and stadium fields 50 years later. In fact, it wasn't golf courses he had in mind when he designed it. He was thinking of large estate lawns and that was its primary use in the U.S. He didn't realize the potential the mower had for sports turf. When Tom Herrmann purchased Locke in 1987, he



quickly discovered that the mowers were being used in Europe primarily for sports fields.

In the '70s, Jacobsen, Ransomes, and Toro introduced lightweight triplex greens mowers to reduce the time it took golf course crews to cut the greens in the morning. As prestige courses started raising the standards for fairways, the triplex began to spend more time on the fairways than on the greens. Superintendents were impressing club members with the striped, sharp-edged pattern imparted on the fairways with the mowers. At the same time, the lighter weight triplex caused less compaction and allowed the superintendent to pick up clippings, both factors in reducing populations of annual bluegrass on fairways. The mowers grew in importance as fairway cutting heights shrunk to the half-inch mark.

Light-weight mowing had been born and the triplex, and later larger light-weight units, were the mowers of choice. The golf course mowers started finding their way into professional and university stadiums across the country. The mowing pattern in the outfield of baseball fields and between the five-yard lines of football fields has also become the standard for stadiums.

The trend was good news for Locke and National, that had been making triplex and five-reel mowers since the early '30s. Lesco introduced its first triplex in 1986.

Changing standards for greens are having



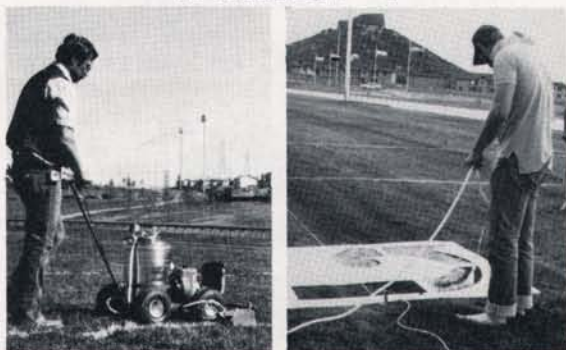
Three-wheel drive provides improved traction and maneuverability for Jacobsen's Tri-King 1471 triplex reel mower.

a big impact on greensmowers. As golfers wanted greens on their course to be as fast as those seen during championships on television, the superintendent had to respond. At first he tried lowering the height of cut and topdressing with sand to make the golf

ball roll faster and further. He verticut the greens lightly and frequently to remove excess tillers and thatch that could slow the ball down. These maintenance practices were not only time consuming, they were

*continued on page 30*

## IS YOUR FIELD A "WINNER"?



NEWSTRIPE can supply the products to make your sports surfaces the most attractive in your conference. Our line markers and stencils are being used by major universities, school districts and soccer clubs for field maintenance.

### Check these possibilities:

- Football
- Soccer
- LaCrosse
- Baseball
- Basketball
- Playgrounds
- Shuffleboard

**NEWSTRIPE** Inc.

P.O. Box 440881  
Aurora, CO 80044

CALL  
1-800-624-6706  
For Details

## Designed to perform, built to last!



ComboPlane™ with optional attachment

MT/ComboPlanes™ give you superior grading performance, every time. Three scarifier options for different ground compaction conditions, positioned for maximum penetration, hydraulically controlled. Scraper moves dirt, determines grade. Planing beams flow the soil evenly. Plus a variety of finishing attachments for professional results on ballfields, sod and seed beds, parking lots, running tracks, golf courses. MT/Comboplanes are ruggedly built for long life and low maintenance, with abrasion-resisting steel in critical wear areas.

For more information, prices, and literature, call toll free:

**1-800-328-8322** Ext. 240

**METROTURF, INC.**

The Most Versatile Grading Tools on Earth™

6029 225th St. W., Farmington, Minnesota 55024  
(612) 463-3880

Patents 3,556,228; 4,418,759; 4,448,258; 4,585,075  
Patents Pending

## Mowers

continued from page 29

stressful to the bentgrass, bermudagrass or overseeded ryegrass. The superintendent needed a device that would enable him to speed up his greens without creating additional stress.

It took Larry Lloyd, an inventive California superintendent, to come up with the answer, a grooming device attached to the front of the greensmower. Not only did the device remove the tillers, stems and thatch during mowing, it stood the turf up so it could be cut as evenly as possible. He found that he could reduce verticutting, let the grass grow higher and thus healthier, and eliminate much of the grain on the green without slowing down ball roll.

Jacobsen bought the rights for the groomer from Lloyd and began offering the device in 1986. It consists of vertical blades positioned to slice turf and vegetation raised up by a grooved, crimping roller. "It's not a verticutter as we know it," explains Carter. Recently, Bunton, Deere, Lesco and Toro have developed their own versions of a groomer for their greensmowers.

The next step for mowers is advanced control, predicts David Legg of Ransomes, Inc. Digital read-outs will tell the operator information critical for operation and maintenance. Reel mower operators will be able to know what speed the reels are turning in addition to ground speed. They will be able to check an entire list of engine and



**Brouwer powers the reels on its seven-gang with the tractor PTO but uses hydraulics to raise and lower them for transport.**

equipment conditions to gauge performance and efficiency.

Most importantly, says Jacobsen's Carter, the control system will warn the operator of problems immediately so that they can be corrected before damage to the equipment takes place. A multi-function check system will tell the operator when maintenance is needed so that the mower can reach its maximum life and productivity.

Greater flexibility, closer control over cutting conditions and increased efficiency have changed and will continue to change mowers for sports and utility turf. Indications are that refinements of existing technology will

be coming rapidly in the next five years. They will be primarily in the tractor or drive unit. As the horse was replaced by the first tractors earlier in the century, the tractors we know today will be replaced with "prime movers".

"We may mow turf with lasers in the future," says John Kinkead, president of National Mower Company. But for the moment, manufacturers are testing fine-cut flails to serve as a type of intermediary between reel and rotary. Reels still provide the best cut with the least amount of energy. Increasing efficiency without sacrificing quality remains the driving force behind the industry.

## ATHLETIC FIELD LINING WITH LESS DOWNTIME.

### Heavy-duty stainless steel tanks.

#### EASY LINER™

##### all-purpose liquid liner.

- Self-propelled means no pushing.
- Air compressor provides up to 45 psi pressure for lasting penetration of latex or oil paints.
- 12 gallon tank lines a football field with one load.
- Marking box is offset. Replaceable nozzle. Adjustable width.



#### STREAM LINER™

##### economy liquid liner.

- Air compressor for fast, dependable lining.
- Lightweight and well-balanced for easy handling.
- Big 7 gallon tank with auxiliary manual pump.
- Operator controls are easily accessible.



# SMITHCO

WAYNE, PENNSYLVANIA 19087

## What do you get when you order a full-course aerator?



**ANSWER: The Ryan GA™ 30 Aerator.** It's the only aerator that delivers green-quality aeration to your entire course. From tee to green, fence to fence. You get the versatility of variable core spacing, the speed of a riding machine, and Ryan's quality precision coring action. For all the facts, return the reader service card in this publication today.

**RYAN®**

**BUILT TO LAST**

6213 Ryan, OMC-Lincoln, P.O. Box 82409, Lincoln, NE 68501  
Toll Free: 1-800-228-4444

© Outboard Marine Corporation, 1988. All rights reserved.