

To apply granular XL is to excel in your preemergence weed control.

With just one application, you can keep your ornamental and landscaped areas free from many grass and broad-leaf weeds, for six to eight months.

And because XL contains Surflan®, your control's also stronger than Ronstar® against crabgrass. And just as strong or stronger against many other weeds. At less cost, too.

Not only that, XL stays put. And once activated, it forms a barrier to prevent weed breakthroughs better

and longer than anything else. Most importantly, XL is gentle on a broad range of ornamental species. Even when it's applied to wet foliage.

So excel with XL. See your Elanco distributor. Or call toll-free: **1-800-352-6776.**

Elanco Products Company  
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XL™—(benefin + oryzalin, Elanco)  
Refer to the XL label for complete use directions.  
Surflan®—(oryzalin, Elanco)  
Ronstar® is a registered trademark of Rhone-Poulenc.



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Contains Surflan®**

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# XL™ excels.



**For longer-lasting, broad-spectrum  
weed control, excel with granular XL.**



# The battle of bunker hill just became history

**You know the situation.** Your hydrostatic rake loses front wheel traction coming out of a bunker and becomes as helpless as a beached whale.

**That fight is over.** Introducing the new John Deere 1200 Bunker and Field Rake. The 2-wheel-drive machine that wins the traction battle with built-in drivetrain efficiency—not built-in drivetrain expense.

**The components are the keys.** The 1200 is powered by a high-torque 10-hp engine. A pressure-lubricated 4-cycle workhorse designed for long life in tough conditions. A gear-driven transaxle with differential lock puts that power to work with an impressive gear reduction of 164:1.

**Add the standard wet clutch** and offset lug design of the tires and you bring impressive power, smooth operation and superior traction to every job. All at an affordable price.

Plus, you don't have to park this one once you're done grooming your bunkers. A standard hitch and optional front blade or cultivator helps the 1200 do even more.

**Talk to your John Deere distributor today** for more information about the gutsy new 1200 Bunker and Field Rake. Or write John Deere, Dept. 956, Moline, IL 61265 for free literature. You're going to like what you see.

*The 1200's 3-section 78-inch rake hugs ground contours closely with a choice of serrated or smooth blades.*



Nothing Runs  
Like a Deere®



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Project managers Steve Plummer (left) and Butch Foster look over water irrigation plans for the 18-hole Tustin Ranch course.

# BLENDING AESTHETICS WITH CONSERVATION

Today's irrigation systems give landscape managers the best of both worlds- efficiency and beauty.

**P**lanned to conserve and built to hazard. That's precisely what America's top golf course designers had in mind as they planned and constructed the irrigation system for The Irvine Company's new \$10 million, championship-quality Tustin Ranch Golf Course.

Conceived by world-renowned golf course architect Ted Robinson, the 18-hole course's network of lakes, cascading waterfalls and meandering waterscapes will not only serve as scenic and strategically placed water hazards, but will also provide a functional irrigation system that will ultimately conserve millions of gallons of water annually for Orange County.

"The lakes scattered around the course will provide golfers with hand-

icapping, yet beautiful obstacles while they serve the community and the county by helping to save precious water," said Robinson, who has developed more than 120 courses worldwide during the past 25 years. "By using the lakes as reservoirs instead of continually pumping water into the area, we can help conserve several thousand gallons of water every week."

## Not just deserts

Robinson pointed out that using lakes as water-saving elements at golf clubs, a technique first developed in the design of desert courses, is becoming more common in water-conscious areas such as Southern California. Courses typically require a substan-

tial amount of water which can be wasted through improper in-take levels, poor drainage, overflows and overwatering. The system in the Tustin Ranch Golf Course helps eliminate water loss by hydraulically monitoring flows of reclaimed water that is stored in lakes which are lined to prevent seepage, he said.

"The system is extremely efficient because the only way water is lost is through evaporation," explained Robinson. When fully operational, the golf course irrigation system will in-take a continual flow of reclaimed water from two large reservoirs at the Michelson Reclamation Water Plant in Irvine each day for nine hours, according to John Economides, senior engineer at the Irvine Water District



# Look at it this way.

## Is there really any other choice in grub control?

CHIPCO® SEVIN® brand SL carbaryl insecticide consistently demonstrates effective control of the most damaging species of white grubs. Plus control of 29 other destructive turf pests—including sod webworms, chinch bugs and bluegrass billbugs. It even provides dependable control of more than 86 insects known to attack trees, shrubs and ornamentals.

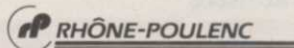
And CHIPCO® SEVIN® brand SL carbaryl insecticide gives you all this control at a cost of only about one dollar per 1,000 sq. ft. But the advantages don't stop there. CHIPCO® SEVIN® brand SL carbaryl insecticide is ideal for control of nuisance pests such

as ants, fleas, ticks and mosquitoes that thrive around the perimeters of your course. And it's easy to apply. There's no need for special protective clothing, no odor, and play can be resumed as soon as the spray has dried. CHIPCO® SEVIN® brand SL carbaryl insecticide is low in toxicity to fish, and other formulations of SEVIN® brand are used for control of pests on household pets, poultry and some game birds. When you add it all up, is there really any other choice in grub control?



### Chipco® Sevin® SL

Brand Carbaryl Insecticide



As with any crop protection chemical, always read and follow instructions on the label. CHIPCO is a registered trademark of Rhone-Poulenc. © 1989 Rhone-Poulenc Ag Company  
CHIPCO SEVIN is a registered trademark of Rhone-Poulenc for carbaryl insecticide.

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who helped plan the system. During this nine-hour period, as much as 1,000 gallons per minute will be piped into the lakes. Once in the lakes, water will be pumped into the sprinkler system and will then be used to water grass, trees and natural foliage throughout the area.

Though this reclaimed water is purified, regulations prevent it from being used as drinking water, Economides said. During the 15 hours that the system is not irrigating, water flows back into the lakes, a process

**"The course's reservoirs help alleviate some of our difficulties in serving the public during peak demand periods."**

**-John Economides**

which keeps debris such as dust and fallen leaves from stagnating in the water.

According to Economides, this refilling process also helps relieve the strain on the water company. "The course's reservoirs help alleviate some of our difficulties in serving the public during peak demand periods," said Economides. "Because the course has a large water storage capacity, we can decrease the strain on the community's waterlines by redirecting the main flow to meet needs in other parts of the local area."

Equipment for the turf care professional.

**Olathe**

**Setting the standards for sweepers.**



Feel like your grass clippings may be getting ahead of you? Try this model 54HL 5' self-propelled sweeper unit with high lift for large area cleanup. 24hp engine, hydraulic-drive, with optional thatcher, sweeps wet or dry materials using 'sure-grip' rubber fingers.

Olathe personnel have been helping solve leaf/debris problems for over 30 years. Ranging in size from our model 42 (36" wide, 5hp tow-behind) to the large area tow units which are the 166e, the 166hl and the 65 PTO (all with 5' width, 5 cu. yd. capacities). Ground and high lift models.



Model 166E PTO powered tow-type



Model 65 PTO-powered 5' width



Model 166e 5' hydraulic ground dump



Model 166hl 5' width, 8 1/2' lift



Model 42 tow-type, 1/3 cu. yd. 5 hp, 3' swath, finger or brush reels.

Model 41MVS - 66" wide tow-type, self-contained with 7 cu. yd. capacity



Write or call your local Olathe/Toro dealer for free demo or call 1-800-255-6438.

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**Keeping water clean**

To maintain the purity and luster of the waterscapes, the course's in-take system includes hydraulic jets that propel water up to the top of waterfalls where it cascades slowly down to the lakes and is then recycled back into the jets. This hydraulic system is also used within the lakes to force movement in the water and to provide an ozonization treatment, a process that helps keep the water clear, bacteria- and algae-free.

Although water conservation is of utmost importance, the Tustin Ranch course's water elements have also been developed to reflect the beauty and spirit of the local community and to provide the ambiance of an upscale, top-quality golf course, according to Jim Colbert, head of Jim Colbert Golf Inc., Las Vegas, the company that is overseeing construction of the course and will manage it once it's completed.

"The challenge of the Tustin Ranch project has been to blend a water-saving irrigation system with a well-designed, attractive series of water hazards," said Colbert, who has helped formulate several professional Golf Association Clubs along with providing commentary for ESPN's live golf tournaments.

"What we've nearly finished creating is a handsome, manicured lake and water conservation system that imparts the feeling of a world-class golf course that offers area residents a quality club where they can enjoy their leisure time."

Scheduled for completion this summer, the 160-acre course will include a clubhouse, driving range, putting green and other related facilities. The course is the first of several golf courses planned by The Irvine Company in new residential communities in Laguna Canyon, Orange and along the Irvine Coast. The course will complement the Tustin Ranch, a 1,740-acre community along the eastern border of the city of Tustin. **LM**



# Mitsubishi Covers New Ground

Introducing the Mighty Mits. Rugged, dependable multi-purpose vehicles that cover a variety of your general work needs.

They're efficient. Quiet. And loaded with features:

- A low-maintenance, 3-cylinder water-cooled engine with balance shaft for reduced vibration and noise.
- A payload capacity of up to 1750 pounds.
- Quick and precise rack and pinion steering.
- A compact 12½' turning radius—for easy maneuverability.

- A raised cab roof with generous headroom for increased roominess and comfort.

Choose from Flo-Thru, Full-Door and Tilt Bed models. With 2- and 4-wheel drive options.

The Mighty Mits. They're high. They're mighty. And best of all, they're Mitsubishi.



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Circle No. 151 on Reader Inquiry Card





# New amine-compatible iron greens up turf in less than 48 hours.

Prosperity resolution for 1989: Use FERRAMEC® AC (amine-compatible) in your lawn-care program. Green up your world and green up your wallet ... get a Roll-X™ Measuring Wheel in the bargain.



Everett Mealman, President  
PBI/Gordon Corporation

Ferramec liquid sprayable iron can produce a deep, vibrant, emerald-green color in ornamental turfgrass very, very rapidly ... and very, very economically. In most instances, it can achieve this miracle in less than 48 hours, at a cost of about \$1.70 for a 6,000 sq. ft. lawn.

... But, wait! That's only part of the good news about Ferramec. Equally important is the fact that Ferramec does not produce a lot of rapid top growth that requires hours of expensive, unwanted time on the business end of a mowing machine, plus exposure to disease that so often results from abnormal growth caused by using excessive amounts of expensive nitrogen out of season to generate the green color of the grass.

And there's still more good news!

Nitrogen will eventually produce a green color, but excess nitrogen plus turfgrass equals hay. Obviously, Ferramec is a better way!



Ferramec AC can be tank mixed with any TRIMEC® Herbicide formulation, so it gets a free ride. And guess what else. The Ferramec actually speeds up the activity of the Trimec!

Indeed Ferramec is unique. There's absolutely nothing like it on the market.

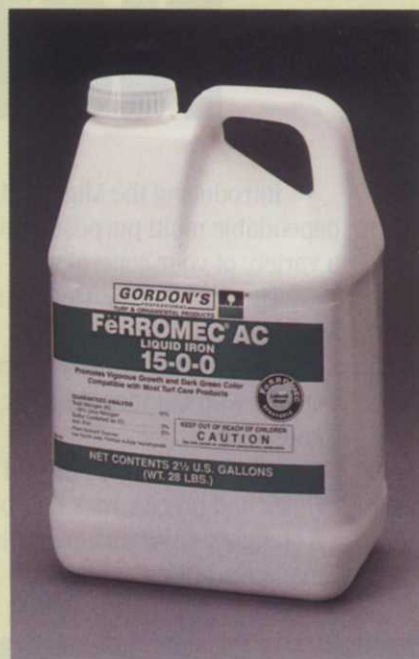
No wonder literally thousands of lawn-care operators, landscape managers and golf-course superintendents are now using Ferramec in their turf-care programs.

## The importance of color

Perhaps George Toma best summarized the case for Ferramec when he said, "We spend untold time and effort preparing the playing field of the Super Bowl so the turf will hold up under the battering it takes ... But do you know what it is we hear about? We hear about that beautiful green color we get from Ferramec!"

Color is so important! You give a homeowner a brilliant green lawn, and give it to him fast, and you've got a happy customer who will recommend you to his friends.

Surely you'll want to try some Ferramec in 1989. To help you make that decision, we're offering you a chance to order a \$60 value



Roll-X™ Measuring Wheel for only \$20 when you buy five gallons of Ferramec AC. (You'll need an extra wheel to measure all the new lawns you'll be invited to bid on when your customers tell their friends about your work.)

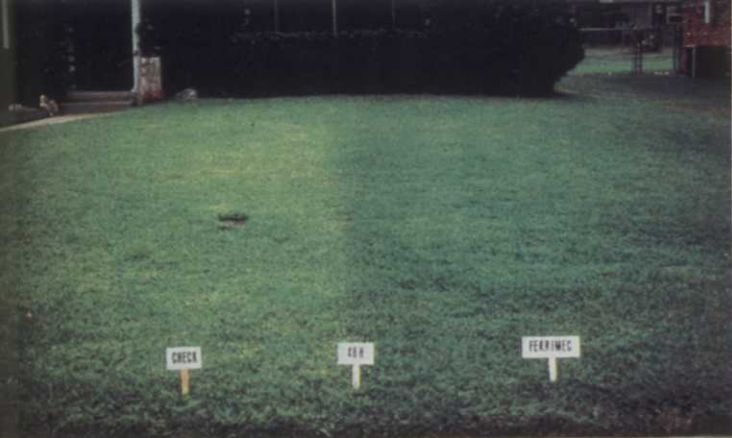
Meantime, you might like to review some of the facts about iron, which will help you understand how Ferramec works, and why no other company can offer you a product like our patented Ferramec sprayable iron.

## Facts about iron that turf professionals need to remember.

First: Iron is essential for the synthesis of chlorophyll. No iron ... no green.

Second: In most instances where ornamental turf is being grown there is not enough naturally occurring iron in a useable ferrous state to produce a vibrant green color. Accordingly, a chelated iron can be added to the soil.





St. Augustine grass lawn in Texas showing the darker color (right) produced by Ferromec Liquid Iron applied in early September at 8 oz./1,000 sq. ft. The green-up became visible within 2 hours and the darker color persisted until dormancy, a couple of months later, according to Wallace Menn of Bryan, Texas, a turfgrass specialist who conducted the test.



Half of this green at Hodge Park Golf Course in Kansas City was sprayed with Ferromec and, within 24 hours, the color change was dramatic. Under normal growing conditions, visual response usually occurs between 8 and 48 hours after application. Ferromec is also effective on trees, shrubs and herbaceous plantings.

Third: Chelated iron is primarily absorbed through the roots rather than by foliar activity. To get enough chelated iron into the grass through the roots to produce the desired color rapidly, it is necessary to speed up the growth by using nitrogen. This will eventually cause the grass to green up. But it will also bring on excessive growth that will cause unwanted mowing and exposure to disease.

### FerROMEK is different

Ferromec, on the other hand, is unique; and it works in a totally different way.

Ferromec is a patented process

that involves bonding a ferrous iron molecule to a urea molecule. When sprayed on turf, Ferromec is ingested almost immediately via foliar intake at the point where chlorophyll is formed. Once inside the plant, the iron-urea molecular bond breaks apart because the plant has such a ravenous appetite for nitrogen.

The result is that the iron molecule in Ferromec goes to work almost immediately to create chlorophyll and, depending on the condition of the turf and the weather, green-up occurs any time within 8 to 48 hours ... *without causing excessive growth.*

### Special formulations for special problems

Iron is a micronutrient essential for all plants, but the amount required can vary dramatically, depending on the kind of fertilizer used and the composition of the soil. Sometimes zinc and/or manganese are also required, so we have developed special formulations to cover such specific needs. For information relevant to your own situation, call us.

**Call Toll-free 1-800-821-7925**  
**In Missouri, 1-800-892-7281**  
**Ask for Sales Service Department.**



1988 Super Bowl playing field at the Jack Murphy Stadium in San Diego received three applications of FERROMEK Liquid Iron along with Gordon's BOV-A-MURA® Organic Activator. Internationally known NFL turf consultant George Toma (right), pictured with son Chip, says the playing surface was

sparsely covered with dormant Bermuda, including many areas of bare ground, and was seeded with turf-type ryegrass only 25 days prior to the game. "We couldn't have made it," says Toma, "without the root-building strength of BOV-A-MURA and the color enhancement of FERROMEK."

### Measuring Wheel 2/3 Off When You Buy Ferromec®

To receive via UPS your \$60 value Roll-X™ Measuring Wheel with collapsible handle for only \$20, send this coupon to PBI/Gordon Corporation with proof of purchase (a copy of invoice or sales ticket) showing you have purchased five gallons or more of Ferromec AC Liquid Iron between November 1, 1988 and October 31, 1989, when offer ends. Limit one per customer.



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FERROMEK is available from Green Cross in Canada, Toyo Green in Japan and Farmura Ltd. in the United Kingdom. For other sources abroad, inquire of Gordon International by FAX: 816-474-0462.

# Fe<sup>++</sup>RRROMEK® AC

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AMINE-COMPATIBLE LIQUID IRON

712-1088

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# A GUIDE TO TURFGRASS FERTILIZATION

Many factors are involved in establishing and managing healthy turf. Overlook one, and you may be wasting your time with the rest.

by Thomas R. Turner, Ph.D, University of Maryland

**M**aintaining a quality turfgrass stand depends of a variety of management practices. The most critical are proper species and variety selection for the site, soil preparation, mowing, irrigation and fertility practices. Failure to seriously consider and properly implement any of these factors invariably leads to a decline in turfgrass performance and a rise in potential pest problems.

Some landscape managers, like lawn care operators, often have control only over the site's fertility. Thus, it becomes even more critical for these businesses to implement sound fertilizer programs that maximize the performance potential of an existing turfgrass stand.

## Nitrogen fertility

Nitrogen fertility has received far more attention than any other nutrient and more than most other management practices. This is not surprising. Nitrogen can have a dramatic impact on turfgrass growth, color, density, recuperative capacity, tolerances to environmental stresses, competitiveness against weeds, and incidence of diseases. Using a sound nitrogen fertility program can have a major beneficial impact on producing quality turf. But an unsound program can just as easily create major problems and result in the rapid deterioration of a stand.

Several factors must be considered when implementing a nitrogen program: turfgrass species, rate and time of application, geographic location, source of nitrogen, soil type, other management practices and special problems. All of these factors are interrelated and impact on the final nitrogen program devised. Consideration of only one or two of these factors in a program's development will generally result in less than satisfactory results.

## Turfgrass species

Large differences exist among the turfgrass species in nitrogen rate re-



Sod damaged two weeks after installation due to high soluble salts. When soil testing for new sites, obtaining a soluble salts test in addition to the regular test can prove very valuable.



Phosphorus deficiency on creeping bentgrass. The turf has thinned to a wilted, purplish appearance that could be mistaken for drought stress. This turf will green up slowly in the spring.