



This daunting shot faces players teeing off from the blue tees on #12. A special permit is required to keep the mangroves trimmed in front of the tee. Photo by Daniel Zelazek.

Producers of Quality Turfgrasses for Golf Courses and Athletic Fields



Pike Creek Turf *inc.*

Route 2, Box 376-A Adel, Georgia 31620

1-800-232-7453

**High quality sod and sprig
turfgrasses available:**

- ◆ Tifway 419
- ◆ Tifway 419-II
- ◆ Tifgreen 328
- ◆ Tifdwarf
- ◆ Centipede
- ◆ Meyer Zoysia
- ◆ Centipede Seed

**We install sod and/or sprigs on
Golf Courses and Athletic Fields**

Rowplanting Services Available

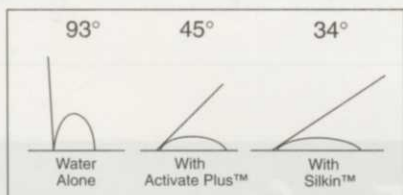
Using Adjuvants In Your Plant Protection Program

Here's how adjuvants can improve the performance and coverage of your plant protection product applications.

Using adjuvants in your turf management program can help you improve plant protection product performance. They can even make the difference between peak and poor performance. The starting point is to find the right adjuvant for the job. The most commonly used adjuvants for turf are: wetting agents; spreader/stickers; spreader/activators; sticking agents, and buffering and compatibility agents.

Wetting Agents

If you've been making thorough herbicide, fungicide and insecticide applications but still aren't getting the control you expect, your plant protection product may not be penetrating plant tissue surfaces. This reduces control and leaves spray residue susceptible to wash-off. The wetting agent Riverside® Silkin™ helps sprays penetrate plant tissue quicker for improved overall performance.



The wetting agent Riverside Silkin and spreader/activator Riverside Activate Plus™ reduce surface tension of spray so that it forms "flatter" droplets, improving coverage and absorption.

do. They deliver more uniform droplet distribution, quicker wetting and increased spray retention on leaf and stem surfaces when used with herbicides, fungicides and insecticides.

The spreader/activator Riverside Activate Plus improves performance and efficiency by moving the spray into plant tissue more quickly. By speeding up penetration, you get increased pest control.

Sticking Agents

Contact herbicides, and non-systemic fungicides and insecticides can sometimes be washed away by rain, irrigation or even dew. Plant protection product sprays are also affected by drift. The sticking agent Riverside Plex® helps plant protection products penetrate the vegetation canopy and stick to plant tissue. That also helps control drift. Using



Spreader/Stickers

Good control in some areas and poor control in others could mean drift and wash-off are taking their toll on spray performance. During application, spray droplet size varies, reducing adhesion and causing spray to miss the target. To improve coverage and adhesion, use the spreader/sticker Riverside Complex™. It adjusts droplet size for better performance, even under adverse conditions. By reducing surface tension in the spray droplet and keeping the spray mixture suspended, Complex can dramatically improve the efficiency of herbicides, fungicides and insecticides.

Spreader/Activators

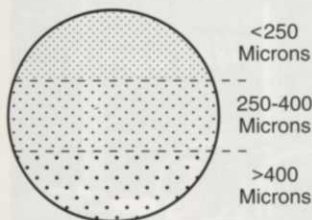
Droplet size varies during applications, making retention and distribution more difficult. Spreader/activators work in much the same way wetting agents



**Riverside®
Adjuvants
Maximize Your
Pest Control.**

Plex will help you make applications that will last longer, even in wet conditions.

Approximate Actual Size



Spray droplets under 250 microns are susceptible to drift and poor coverage. Using Riverside Plex or the spreader/sticker Riverside Complex to control droplet size effectively controls drift and

improves coverage. Both maintain droplet size near 400 microns, ideal for the best application.

Buffering and Compatibility Agents

If you're not getting the control you want but have followed label directions to the letter, it could be a pH problem in your tank mix. The buffering agent Riverside Combine® will help you correct the pH level for maximum performance from your spray mixture. If you're unsure of your pH level, use a pH test kit or, if you don't have one, contact your Terra representative.

Combine® pH use chart.

		Starting pH			
		9	8	7	6
Desired pH	8	2	0	0	0
	7	4	2	0	0
	6	16	12	8	0
	5	20	16	12	8
		Oz/100 gal. water			

A chart like this one makes it easy to adjust pH level for optimum results. For example, if your desired pH is 7 and your starting pH is 9, you would need to mix 4 ounces of Combine per 100 gallons of water to get the proper pH.

In addition to buffering, Combine also works as a compatibility agent. The compatibility agent Combine should be used when: more than one plant protection product is included in a tank mix; when tank mixing different formulations like wettable powders and liquids; or when applying micronutrients or plant protection products with fertilizer. Also, Combine improves spray mix stability and dispersion.

To see if a compatibility agent will help your tank mix, try the jar test. Fill two quart jars each with a pint of water or carrier. Use the same source and temperature as you would in your actual tank mix. Mark one jar "with" and one "without." Add 1/4 teaspoon of Riverside Combine to the jar marked "with" and shake it gently for 5-10 seconds. Add the plant protection product(s) to both jars in the proper volume and sequence according to the label directions. Shake gently before adding each new product. Wait 5-10 minutes. Check both jars. If no gels, sludge, flakes or other irregularities are present, the mix is compatible.

If the jar marked "with" is compatible and the jar marked "without" isn't, a compatibility agent should be added to your tank mix. If the jar marked "with" isn't compatible, the tank mix shouldn't be used.

Wait 30 minutes. If the mixture separates but readily mixes again, the tank mix can be used with proper agitation.

Adjuvants Pay Off

Overall, adjuvants can help you protect the investment you make in plant protection products by making them more effective. Whether you're using wetting agents, spreader/stickers, spreader/activators, sticking agents, buffering and compatibility agents or all five, they can help you overcome some of the common problems faced by turf professionals.

For more technical information on adjuvants, contact your nearest Terra Professional Products representative.



Get maximum plant protection product performance with Riverside® adjuvants. They make spray mixes work harder, perform better and control more.

Adjuvants help you get the most out of your program and protect your plant protection product investment at the same time. Riverside adjuvants make the difference between a good job and a great job. Use them with your spray applications to maximize performance.



Terra Industries Inc.
P.O. Box 6000
Sioux City, Iowa 51102
1-800-831-1002
www.terraindustries.com

Sailfish Pointers Photo Page

Photos by Joel Jackson



This LANDA self-contained washdown and recovery system collects and separates clippings and rinsate from golf course equipment. It also serves as a mix and load site.



Remote divot sand fill stations on the front and back nines allow members to refill sand buckets on their golf carts during the round.



One of several turtle crawl boards provided on a water hazard that is surrounded by a sea wall. The cattail planting signals "water hazard" to unwary golfers down the fairway.



Communicating daily pin locations is done with permanently mounted greens diagram on the cart steering wheels. Each green is divided into 5 zones. The zone in use is posted daily on the first tee with a removable numbered tag.



Practical Alternative - This area was once a crushed shell waste area. Constant tidal flooding and shell pieces scattered into the turf was solved by adding fill dirt and sodding to make a grassy bunker.

Chelation

MAKES THE DIFFERENCE



Longest lasting green-up
Buffers tank mix to neutral
Will not stain concrete



and

TORO®

present...



REELMASTER®

2300-D

AND

2600-D

**VERSATILE
TRIM MOWERS**



Proven performers up, down and around greens, bunkers, water hazards, tees, approaches, intermediate roughs and wherever else you want a consistently superb quality of cut.

REELMASTER® 2300-D and 2600-D come from a renowned family.



For generations, the name Reelmaster has been synonymous with value. The best dollar for dollar values in design, engineering, performance and durability. The 2300-D and 2600-D live up to that heritage.

WHICH IS BEST FOR YOU?

Reelmaster 2300-D and 2600-D share the same powerful traction unit. The 2300-D is preferred for rolling terrain because it excels in close ground contour following. And its 72 inch cutting width means extra maneuverability in tight spots.

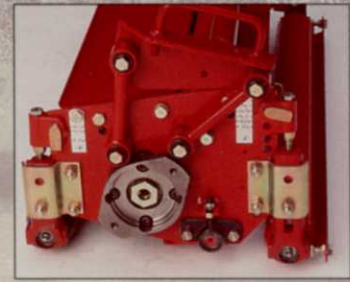
The 2600-D is the mower with an impressive 11 inch overhang on both sides to extend your trimming reach without collapsing edges. And its 85 inch cutting width provides amazing productivity – saving you time, labor and money.



PUT HIGH TORQUE TO WORK.

The 2300-D and 2600-D slice through thick, wet grass without clogging. Thanks to high torque hydraulic reels with powerful motors. And all three reels are interchangeable. One spare will do.





EXPECT A CONSISTENT CUT.

Toro's exclusive L-I-N-K-S™ suspension system teamed with an adjustable spring counter-balance enhances ground contour following with no extra down pressure. And the manually adjustable, variable reel speed has been added to create a consistently superb quality of cut.

MAKE THE RIGHT MOVES.

A balanced three wheel design with your choice of 2- or 3-wheel drive ensures exceptional maneuverability. Out front cutting units offer a clear view for close trimming. And steering is virtually effortless.



COMMAND ABUNDANT POWER.

The 18 hp Perkins diesel engine powers a hydrostatic drive and hydraulic reels for plenty of mowing and climbing energy.



ENJOY UPWARD MOBILITY.

Hill climbing and crosshill mowing demand maximum traction. The 2300-D and 2600-D rise to the occasion with operator selectable 3-wheel hydraulic drive. Large flotation tires not only aid traction but also minimize scuffing. And the engine is positioned over the front wheels for effective traction and braking.





BE KIND TO YOUR OPERATORS.

Starting with Toro's safety without compromise. Clear visibility. Ergonomic controls. Intelligent instrumentation. Single pedal forward, reverse and braking. One lever cutting units control. Selectable 2- or 3-wheel drive on the go. Electric declutching for cold weather starts. Deluxe seat and more.



SIMPLIFY ROUTINE SERVICE.

With easy to access components. And onboard backlapping to sharpen blades. No removal required. Less downtime.



CONSIDER YOUR OPTIONS.

Customize your 2300-D or 2600-D with 5 or 8 blade floating units quickly adaptable to fixed position. Other options are full, sectional and Wiehle front rollers.



SEE FOR YOURSELF.

Call 1-800-803-8676.

Your Toro Distributor offers free demonstrations. Plus service far beyond the sale. Maintenance manuals. Operator training videos. And fast delivery of genuine Toro parts.

Commercial Products



We reserve the right to improve our products and make changes in the specifications, designs and standard equipment without notice and without incurring obligation.

Products depicted in this brochure are for demonstration purposes only. Actual products offered for sale may vary in design, required attachments and safety features. See your Toro Distributor for details of our warranties.



The Reelmaster 2300-D and 2600-D are manufactured in Tomah, WI ISO 9002 Certified Plant.

Visit Toro on the World Wide Web at www.toro.com

©1997 — The Toro Company. All Rights Reserved.

Printed in U.S.A.

Irrigation: It's a matter of control

Irrigation practices are controlled by permits, restrictions, water quality, soil conditions, course design and much more.

BY JOEL D. JACKSON, CGCS

From the cover story on Sailfish Point to the Legislative Updates in the "Official Business" section (see page 90), it is plain to see how important water is to our business. Water issues can be anything from a political time bomb to just a simple question of, "How much irrigation should I run tonight?"

Our ability to irrigate our golf courses is controlled by permits, water management district restrictions, water quality, soil conditions, course design and construction, pumping system capacities, controller capabilities, computer-controlled weather stations, system designs, wind and golfer expectations. Have I left anything out?

Turf research and consumptive use permits have taught us that we should and must learn to live with less water.

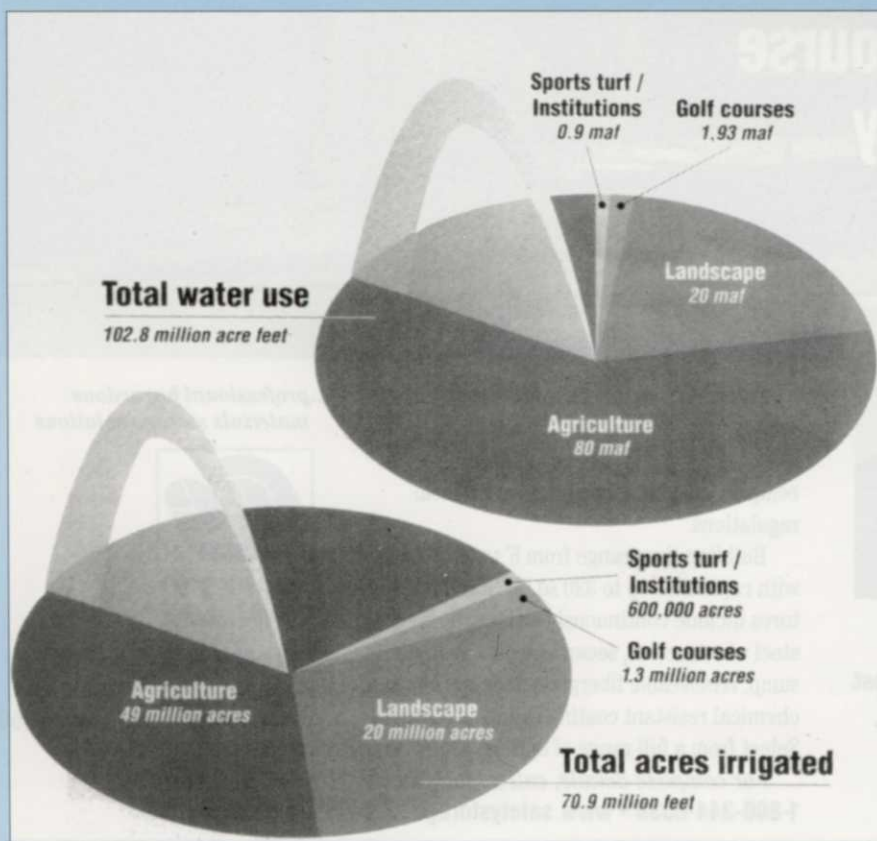
Users of higher saline water have begun to use more salt-tolerant grasses or inject diluted acid into their supply lines to modify the pH level of the water. Some courses along the coast are

Continued on page 58



Hot spots by design?

Poor water distribution. Is it lack of head to head coverage or ineffective intermediate nozzle patterns creating the parched donut around the head? Or is it some other factor? There were about a dozen of these "donuts" scattered around the course in the early spring. After renovation and increased rainfall they have disappeared. Photos by Joel Jackson.



Who's actually using all of our water?

"Why do golf courses get to 'waste' so much water?"

That's what some casual observers are wondering out loud when they see an irrigation system at work on fairways, tees or greens. As with many things having to do with managing often scarce resources, people just driving by a golf course have a tendency to jump to conclusions — very often, the wrong ones.

These often well-meaning, but misinformed, citizens could do well to look at their own backyards, and those of their neighbors, before pointing an accusing finger. Residential and commercial (business places, industrial parks and corporate offices) irrigation has expanded more than 30 percent in the last 15 years and, according to the Irrigation Association of America, more than 20 million acres of residential and com

Continued on page 58

Continued from page 57

mercial landscape are irrigated today. Golf courses account for only 1.3 million acres.

And these figures consider just the fairly sophisticated irrigation installations found in residential areas (albeit they may be do-it-yourself systems) and not the friendly neighbor with his lawn sprinkler and garden hose who puts as much water on driveway and sidewalk as he does the lawn.

Since 85 percent of this residential market gets its water from public or private water agencies, the cost of putting water on this property is substantial.

The association estimates that residential and commercial installations about 20 million acre feet of water each year. If an acre foot (325,000 gallons of water) costs \$400, the value of the water applied by these systems would be in the neighborhood of \$7 billion.

(According to the American Water Works Association, the average cost of

public water to residential users is \$572 per acre foot.)

By contrast, the golf course industry uses fewer than 2 million acre feet of water each year—less than 10 percent of what's used by homeowners.

And many golf courses draw irrigation water from wells on the property, or ponds and impoundments built just for that purpose. They don't rely on public water sources for irrigation.

Since the first automatic landscape irrigation systems were invented nearly a century ago, residential irrigation has often been considered a luxury rather than a necessity, but that's no longer the case for many people.

Next time a well-intended but short-sighted neighbor questions your "wasting" water, share some of these figures. Billions of dollars can be saved by homeowners and business owners making better use of irrigation technology—the kind of technology golf course superintendents use every day!

Credit: Minnesota Hole Notes.

Matter of control

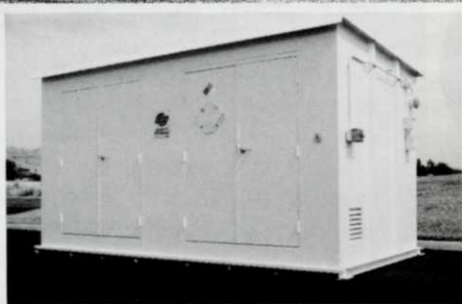
Continued from page 57

already turning to desalination equipment to manufacture their own fresh water.

Irrigation delivery systems around the state range from a night water man using manual snap valves to radio-controlled, computer-managed systems with automatic remote weather station adjustments. No matter how primitive or sophisticated a system is, it still takes a human to evaluate conditions. A weather station doesn't know you applied a pesticide or a fertilizer that needs additional watering. Only humans know that the back left of No. 14 green will start drying out before anything else 24 hours after that half-inch rain yesterday.

The use of surfactants (wetting agents) to condition the soil is becoming more common. Dedicating more manpower and labor hours to spot-watering localized dry spots is a necessity for the conservation of water resources and the sound management of the surrounding turf. Putting good quality water where

Keep your golf course chemical liability to a minimum...



Safety Storage, Inc. prefabricated, relocatable buildings provide a low-cost solution to safe storage, containment, mixing, and dispensing of golf course chemicals and hazardous materials.

Safeguard personnel, avoid the liability arising from soil and groundwater contamination, meet fire safety needs, and achieve full compliance with federal, state, and local regulations.

Building sizes range from 5' to 32' in length with capacities up to 320 sq. ft. Standard features include continuously-welded, heavy-gauge steel construction, secondary containment sump, removeable fiberglass floor grating, and chemical resistant coating inside and out. Select from a full range of options

**For complete details, call us toll free at:
1-800-344-6539 • www.safetystorage.com**

*...professional hazardous
materials storage solutions*

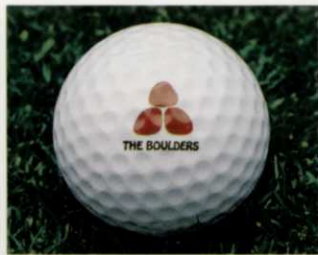


**SAFETY
STORAGE®**

**Petro-Chem
Environmental Systems, Inc.**
15310 Amberly Drive, Suite 250
Tampa, Florida 33647
800-330-6949
Fax: 813-972-0955



*Grand National
Auburn/Opelika, AL*



*The Boulders Resort
Carefree, AZ*



*Grayhawk Golf Club
Scottsdale, AZ*



*Four Seasons Resort Aviara
Carlsbad, CA*



*Keystone Ranch Golf Course
Keystone Resort, CO*



*Jupiter Hills Club
Jupiter, FL*



*Lake Nona Club
Orlando, FL*



*Pine Tree Golf Club
Boynton Beach, FL*

The Best Courses In America Use Primo. Which May



*Reynolds Plantation
Greensboro, GA*



*Ivanhoe Club
Ivanhoe, IL*



*Bryn Mawr Country Club
Lincolnwood, IL*



*Glen Oaks Country Club
West Des Moines, IA*



*Lassing Pointe Golf Course
Union, KY*



*Bethesda Country Club
Bethesda, MD*



*Poquoy Brook Golf Club
Lakeville, MA*



*High Pointe Golf Club
Williamsburg, MI*

A golf course's biggest asset is its grass. Fast greens, luxurious fairways, and thick roughs leave lasting impressions with every golfer.

That's why superintendents at the country's best courses use Primo®. It redirects the

growth of grass, for a thicker, more compact stand, more root mass, and ultimately, better-looking grass.

Plus, by effectively managing turf growth, Primo reduces clippings and mowing time.



Charter Member
Platinum Tee Club

©1997 Ciba-Geigy Corporation, Turf and Ornamental Products, Box 18300, Greensboro, NC 27419.