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FORMULATION	REBATE AMOUNT
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Betasan 2.9-E	\$.50/gal.
Betasan 3.6-G	\$.70/cwt.
Betasan 3.6-G + Fertilizer	\$.70/cwt.
Betasan 4.6-G + Fertilizer	\$.90/cwt.
Betasan 7-G	\$1.25/cwt.
Betasan 12.5-G	\$2.25/cwt.

*This offer also applies to any formulation of Lescosan<sup>®</sup>, Presan<sup>®</sup>, or Betamac<sup>®</sup>.*

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**NO.1 AGAINST CRABGRASS**

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Because Northern Petrochemical borders the Illinois River, the firm must be careful not to use herbicides that will leach out into the river.

who had heard about Du Pont's program for industrial weed control, contacted that company's Chicago office. Midwest industrial weed control specialist Alec Rogers was im-

mediately dispatched to the plant site.

Rogers inspected the site, analyzed the problems and suggested a specific herbicide program: five ounces per

acre of Oust and 10 pounds of Karmex to cover the broad spectrum of weeds.

But he included one proviso: he insisted on training the five persons who would be doing the spraying. Rogers gave four hours of classroom instruction followed by three sessions in the field covering such topics as calibration, spray pattern and application speed.

The Northern Petrochemical crews began spraying on April 18 and continued, as their schedules allowed, through early summer.

At the start, they used a dye in the spray mixture to indicate the width of the boom's coverage. But, as they gained experience, the dye was discontinued.

"We were highly satisfied with the first year's results," says Paulson. "We had a call from one of the assistant superintendents complimenting us on the job in his area. That made us all feel good.

"We spent \$50,000 on equipment, materials and labor in the first year, but we believe it was a good investment. The sprayer and other gear can be amortized over a number of years and, in the long run, we're saving money along with getting better results."

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# A MONSTER OF A PROBLEM

A country club in Washington state has to deal with huge insects which, as 'leather-jackets,' are up to one inch long and can quickly eat up a green.

**T**hey look like giant Alaskan mosquitos. When they cover the lights and windows of the clubhouse, you'd swear they could give you a blood transfusion. But they don't bite, sting or draw blood. The whole purpose of the adult crane fly is to find a partner, mate, lay eggs, then die. It's what hatches out of those eggs that can quickly eat up a green," explains Mike Bauman, superintendent at Meridan Valley Country Club in Kent, Wash.

Kent lies minutes from Puget Sound, Tacoma and Seattle. On a clear day, you can stand on Kent's highest hill and see Mount Rainer, commercial fishing fleets in the Sound, giant Douglas firs in the forests and the skyscrapers of downtown Seattle.

The club is the home of the Safeco Classic, one of the final three tournaments of the year for the Ladies Professional Golf Association Tour, a tournament where the women pros tune up for their upcoming Masters.

They chose Meridan Valley after scouting many courses in the Northwest. It was decided the layout, the length and the natural amphitheater banks would serve as the perfect setting for the LPGA Tour and its gallery.

Designed by golf course architect Ted Robinson in 1965, Meridan Valley was molded into shape out of a Kent

marshland by Mike Bauman and his father. Mike's father cared for the course until his retirement in 1978 when Mike was named his replacement.

"There's a lot of family blood, sweat and self in this course," says Mike. Because of this family connection, the finale of the year for Mike is the September Safeco Classic. It's a time to show off the year's work.

## Grass spoilers

One of his major turf pests is the crane fly. It is one of the most difficult grass spoilers to control for the Classic, though it does most of its damage in April, May and June.

According to Dr. Roy Goss, extension agronomist and turfgrass specialist at Western Washington Research and Extension Center in Puyallup, Wash., the crane fly is a native of northern Europe which showed up in British Columbia, Canada, in 1965. It has since made its home in Washington and Oregon, and is moving south.

The life cycle of the crane fly begins in late August to mid-September when it emerges from the soil, looking strikingly similar to a one-inch mosquito.

Within 24 hours after coming out of the soil, the adult female mates and

lays eggs on the surface of greens and fairways. Then it dies.

"Thousands of adults mate throughout August, and each female can lay as many as 300 eggs," says Bauman. Within two to three weeks, these eggs hatch into small gray-brown worms that develop a tough skin. Northwesterners call them "leatherjackets."

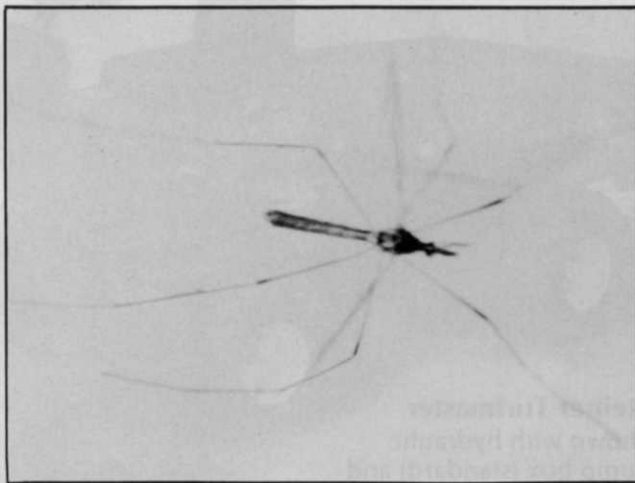
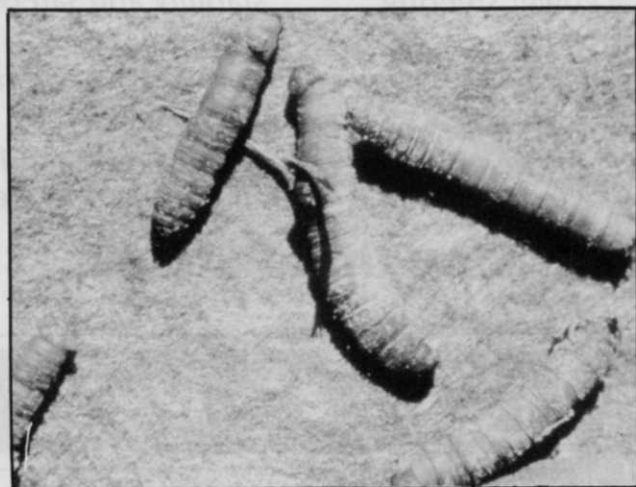
These little tough-skinned grubs burrow into the ground and live just below the turf surface during the daytime. On damp fall evenings, they surface and feed on blades of grass. The larvae grow to more than one inch in length, and are vigorous eaters. They continue to feed throughout the fall, and overwinter in the grub stage in the soil where they munch on roots.

As soon as the weather warms up in the spring, they begin to feed again above the ground. In mild winters, they cause noticeable damage to the turf, as early as January. Normally, damage is common February through April.

"If you have more than 30 crane fly grubs per square foot, you can expect them to destroy turf," says Dr. Goss.

## Controlling the beasts

Three things help control crane flies, according to Dr. Goss:



Crane fly grubs are vigorous eaters. Adult crane flies look like giant Alaskan mosquitos.

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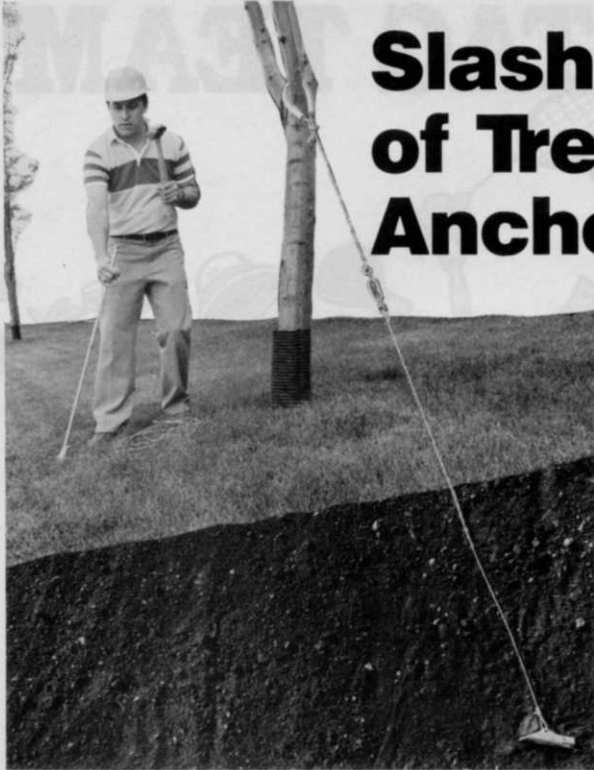
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## New Duckbill Total System Tree Anchor Installed in Seconds by One Man

The Duckbill Total System Tree Anchor, a completely pre-assembled tree support for trees up to 6 inches in diameter, is available in two models. Model 40, which holds 300 lbs. in normal soil and anchors trees up to 3 inches in diameter, consists of the anchor with 12 feet of galvanized steel cable attached, a tree collar and a 1/16 inch cable clamp. Model 68, which holds 1100 lbs. in normal soil and anchors trees up to 6 inches in diameter consists of the anchor with 13 feet of galvanized steel cable attached, a tree collar and a 1/8 inch cable clamp. Both models are available 3 in a kit or in bulk. A kit of three anchors one tree.

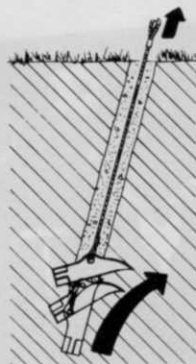
Because it is pre-assembled, the Total System Duckbill Tree Anchor can be installed in seconds by untrained labor. Several trees can be anchored in the time it takes to anchor one tree by conventional methods.



Duckbill is driven into the ground with a drive rod and heavy hammer. An upward pull on the cable rotates the anchor into load lock position, like a toggle bolt in undisturbed earth.

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Duckbill Anchors are available in different models with holding capacities from 300 to 20,000 lbs. They are the safest anchor you can use because no rigid rods are left above ground to injure people or damage motorized equipment. Once in the ground, Duckbill **stays** in the ground. When anchoring is no longer needed, simply cut cables at ground level, leaving no sign anchors were used. For complete information and your nearest supplier call or write today. Foresight Products Inc., 10780 Irma Drive, Unit 22, Northglenn, Colorado 80233. Phone 1-800-325-5360 or (303) 457-0222 in Colorado.



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1) Extreme cold for an extended period of time will reduce the population below the damage level. In areas where temperatures dip below zero, crane flies are not a problem. Natural predators can often reduce populations as well.

2) If infestation is less than 30 per square foot, Dr. Goss recommends applying fertilizer the first week of December so the turf will have a good growth at the beginning of spring. If the infestation is heavy, Dr. Goss believes fertilizer will still help the grass sustain itself or recover quicker from the crane flies' damage.

3) An application of Oftanol insecticide between April 1 and April 15 usually reduces the populations below the 30 per square foot damage level. Dr. Goss stresses watering in the insecticide immediately to move it through the thatch and into the upper inch of soil so that it can make contact with the crane fly grub.

"While the damage is greatest in the fall, there are enough crane flies hatching during other times of the year when weather conditions are right to be a damaging nuisance," says Bauman. "Oftanol seems to stay through the rain."

### Cultural maintenance

To further satisfy the trend in golf for faster ball speed, Bauman trims all bentgrass greens to between  $\frac{3}{16}$  and  $\frac{3}{32}$  of an inch. Tees are cut to  $\frac{3}{8}$ -inch and poa annua fairways are clipped to  $\frac{1}{2}$ -inch. Roughs are trimmed to  $1\frac{1}{2}$  inches year round.

On the average, all greens receive nine pounds of nitrogen per 1,000 square feet. The tees receive six pounds, and the fairways  $4\frac{1}{2}$  pounds.

The major weed problems, veronica and creeping speedwell, are controlled with postemergent compounds (Dacthal and Turflon D) between April and June.

For fusarium and anthracnose, the major disease problems, Bauman rotates Bayleton and about six other fungicides starting in June and continuing through September.

Trees and flowering ornamentals are sprayed with diazinon for insect control on a curative basis.

### A rosy future

The course will soon begin a 10-year re-design.

"We've rehired Ted Robinson to design a program so the course suits all types of golfers, from touring pros to the player who hits 120," says Bauman. "We're even looking at over-seeding our poa annua with a drought-resistant rye that is very playable and can stand short cuttings." **WT&T**

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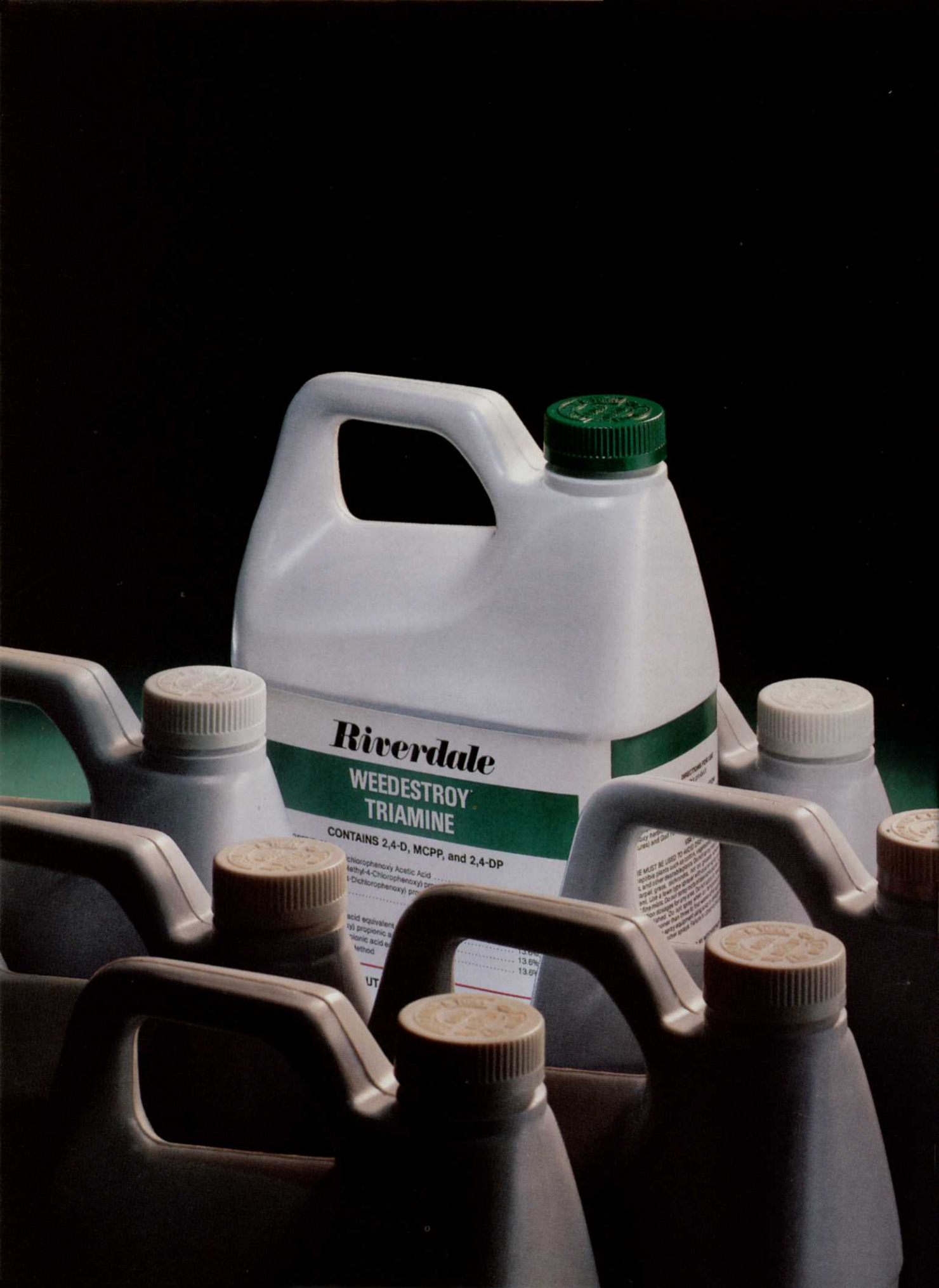
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