

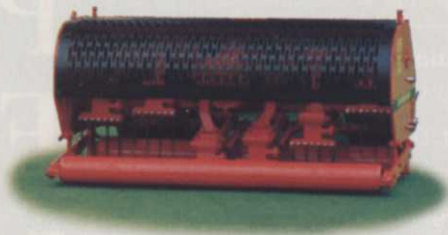
## In aeration, there are three ways to go.



**Too fast.**



**Too slow.**



**Just right.**

### Knowing the difference could make all the difference in your job, not to mention your turf.

Sure, there are pull-type aerators that will run over your turf very fast. But like the hare in the fable, they won't produce winning results. And, of course, there are those drill-type aerators where you have to be a little more cautious like our friend the tortoise, because you're not quite sure of the result, how well it will work. What you're really looking for is an aerator that will go just right.

Fitting your needs exactly with the correct piece of aeration equipment for your soil conditions is precisely why Verti-Drain® offers a dozen models, from a narrow width pedestrian to a wide-swath, high-production unit.



*Verti-Drain's unique, patented shattering effect.*

And all Verti-Drain models offer you the option of either solid tining or pulling cores. You

might be surprised to find that solid tining is preferred often for severely compacted soils.

Many turf professionals have discovered our thinner tines called needle tines – the aeration holes are so small that you can hardly see them, yet you still get the patented Verti-Drain shattering effect under the surface.

With the heaving/shattering action, each tine is forced backwards underground, cracking the soil so air and water can move freely, strengthening roots and helping grasses resist pests, weeds, disease, drought and hard play.

**So, the moral of the story is that there is a Verti-Drain® just right for you. Call today to contact one of our knowledgeable distributors to find out more details.**



*Verti-Drain's Mustang model*

**VERTI-DRAIN®**



Breaking barriers to better turf.

950 Sathers Drive, Pittston Township, PA 18640

1-800-597-5664



## Property at a glance

**Location:** Peterson Air Force Base, Colorado Springs, CO

**Staff:** Embassy Lawn/Davey Commercial

**Category:** Government building or complex

**Total budget:** \$1,500,000

**Year site built:** 1942

**Acres of turf:** 682

**Acres of woody ornamentals:**  
13,500 shrubs and perennials, 9,800 trees

**Acres of display beds:** 70

**Total paved area:** N/A

**Total man-hours/week:** 1,600

## Maintenance challenges

- ▶ Extremely strict specifications
- ▶ Semi-arid, 6,000-ft. elevation
- ▶ Work orders — job orders

## Project checklist

(Completed in last two years):

- ▶ Installation of 700 new trees and shrubs
- ▶ 42 special events
- ▶ Complete update of CAD landscape inventory and irrigation system

## On the job

- ▶ 25 full-time staff, 25 seasonal employees, 2 certified arborists, 2 certified irrigation technicians, 2 licensed pesticide applicators

# Peterson Air Force Base

## The 1999 Grand Award Winner of the Professional Grounds Management Society for Government Building or Complex

You better believe the grounds at Peterson Air Force Base in Colorado Springs, CO, are closely manicured, enough to bounce a quarter off them. Any mower operator missing a section of turf has to drop and do 20 push-ups.

But seriously, Embassy Lawn of Kansas City, MO, and Davey Commercial Grounds Management of Kent, OH, work together to tend this large complex with contract specifications of over 75 pages. Included in the contract is a "Performance Requirement Summary" (PRS) issued by two full-time government "quality assurance evaluators." Talk about pressure! The PRS establishes rules of government surveillance, level of defects allowed and the formula for withholding pay if defects are found.

Given that the base is located in a dry climate, all but a few native plants must be irrigated. The irrigation system, which includes drip lines throughout planted beds, is extensive enough to require two full-time certified irrigation technicians and one systems monitor.

Rock beds coexist with turf areas, and in no case is finding a weed larger than 2 in. high or wide in the beds acceptable. In winter, when crews apply sand to walks and steps, the sand has to be removed within one hour of the snow and ice melting. After the 685.5 acres of turf are mowed, this is one tired crew.





► A special blend of granular fertilizer containing micronutrients is applied three times per year to the 117 acres of improved turf.

▼ Historic military aircraft displayed throughout the base add to the site's beauty.



Editors' note: *Landscape Management* is the exclusive sponsor of the Green Star Professional Grounds Management

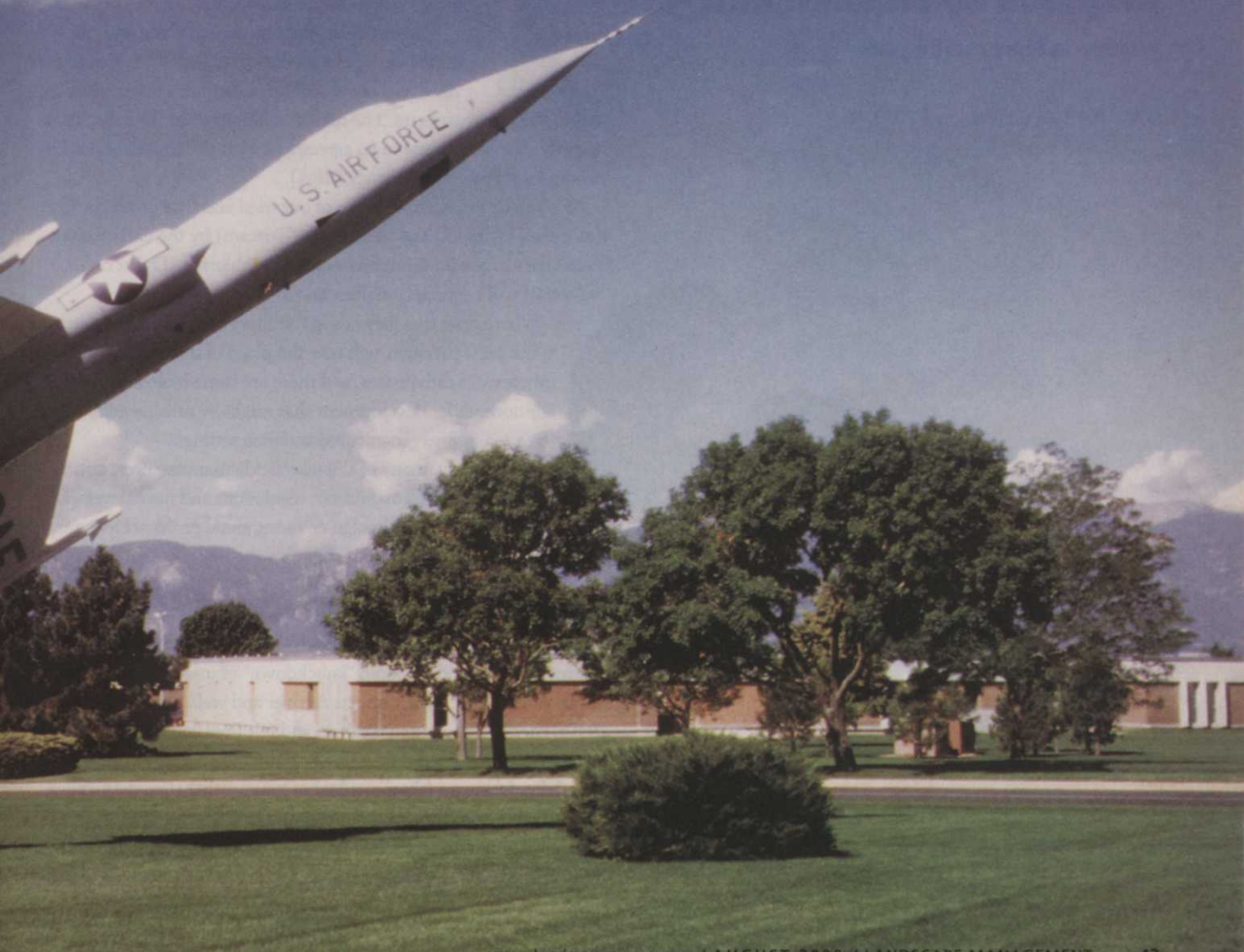
**Landscape**  
MANAGEMENT

Awards for outstanding management of residential, commercial and institutional landscapes. The 2000 winners

will be named at the annual meeting of the Professional Grounds

**PGMS**

Management Society in November. For more information on the 2000 Awards, contact PGMS at 120 Cockeysville Road, Suite 104, Hunt Valley, MD; 410/584-9754. Web-site: [www.pgms.org](http://www.pgms.org)





# LIFE AFTER DURSBAN: The new insecticides

**The rules are changing for insect control, so be prepared by understanding your alternatives**

DR. PATRICIA J. VITTUM



**T**he rules of pest management are changing. The 1996 Food Quality Protection Act (FQPA) is having a significant impact on the availability of pesticides you can use to manage turf.

In particular, the organophosphate and carbamate insecticides are being subjected to intensive review, and many will be pulled from the market within the next two years. The maker of chlorpyrifos (Dursban) just recently cancelled its use in an agreement with the United States Environmental Protection Agency (EPA).

We will be losing many more of our tried and true products, like isofenphos (Oftanol) and bendiocarb (Turcam) by the end of 2001. There are many who think diazinon and trichlorfon (Dylox or Proxol) will become casualties, too.

Where does that leave us in the short term? You do have options. New products will take the place of the organophosphates and carbamates, and there are some biological control options under development that might be reliable enough to be used in finely manicured turfgrass settings.

Fortunately, many of the insecticide manufacturers anticipated the changing government regulations and have developed new chemistry with more benign environmental profiles. Here are some of them:

#### **The pyrethroid option**

Pyrethrum is a natural product derived from certain chrysanthemums in Africa, and provides a rapid "knockdown" of insects, acting like a stun gun. However, many insects recover and walk away. In the 1940s, chemists studied pyrethrum and felt they could design compounds that resembled it structurally but would not have the perceived disadvantages (short residual of hours rather than days, quick breakdown in sunlight and limited ability to kill target insects).

Several iterations of pyrethroids were developed in the next 40 years. Some have become popular in the turf market because they are



relatively immobile in water (and less likely to reach ground water than other products). They remain in the thatch, where they can be effective against surface insects.

Most of the current products work within one or two days after application, remain active for two to four weeks and hold up well in sunlight. (Pyrethroids can be sensitive to high temperatures, so mid-summer applications may be less effective than those made in cooler periods.) Application rates usually are an order of magnitude lower than those of the organophosphates and carbamates — 0.1 lb. AI/acre versus 2 to 5 lb. AI/acre.

**Best application spots.** Because pyrethroids often do not penetrate past the thatch, they are not normally recommended for use against soil insects like white grubs. For the same reason, they are ideal candidates to control insects that remain on the surface or in the upper layers of the thatch, such as annual bluegrass weevil adults or black turfgrass ataenius adults. Pyrethroids have become popular choices to control chinch bugs, cutworms and webworms, all of which spend most of their time in the thatch or on the surface.

**Commercial examples.** Several synthetic pyrethroids are available and labeled for some uses in turf, including bifenthrin (Talstar), cyfluthrin (Tempo), deltamethrin (Deltagard) and lambda-cyhalothrin (Battle, Scimitar). Application rates range from 0.05 to 0.2 lb. AI/acre, depending on the product and target insect.

#### **Thiomethoxam — a neonicotinoid**

Thiomethoxam is a new insecticide in the process of being released by Novartis (soon to be Syngenta), and will be marketed as Meridian in the turf market and Flagship in

the ornamentals market. It reduces populations of many different kinds of insects, including those with sucking (e.g. aphids) and chewing mouthparts (e.g. white grubs). While it is relatively soluble in water, it is systemic (translocated through the xylem) so it is rapidly taken up through the roots.

This material remains active for about 50 days in soil, which is longer than many materials currently available. Insects that come in contact with or ingest it change their behavior almost immediately — they stop feeding or using their antennae to inspect their surroundings. Application rates usually are less than 0.5 lb. AI/acre.

**Best application spots.** Thiomethoxam appears to be effective against many of the white grub species — perhaps in part because it is relatively soluble and can reach the root zone with post-application irrigation. Because of its relatively long residual, it can be applied somewhat earlier in the year than the "traditional" products. (Current use patterns involve application beginning within a week or two of the time when adult beetles begin laying eggs.) It also can be used as a soil or foliar application in ornamentals because it is systemic.

Field trials indicate thiomethoxam has activity against a wide range of insects in the ornamentals market, especially aphids, whiteflies and mealybugs. It tends to be less detrimental to beneficial insect species than contact insecticides (because the beneficial insects like predatory beetles feed on other insects, not on plant material). It may be an option in areas where less benign products could lead to problems and

*continued on page 46*



**Targeted new products can reduce populations of grubs, here shown under the turf layer.**



The organophosphate and carbamate insecticides are being subjected to intensive review, and many will be pulled from the market within the next two years.

*continued from page 45*

may have activity against red imported fire ants.

#### **A chloronicotinyl compound**

Imidacloprid (Merit) has been used in turf for several years so should not be considered "new," but its properties are different than insecticides like Dursban or Oftanol. Both imidacloprid and thiomethoxam have similarities in their chemical characteristics — both are systemic and can be used against soil insects as well as insects feeding on ornamentals.

Imidacloprid is much slower acting than the traditional materials when used in turf — it may be two weeks before you begin to see dead grubs. But it remains active in the soil much longer than traditional products. Some managers apply it in the spring, allowing that application to control grubs that emerge in late summer. However, these early spring (April or May) applications will not have any significant effect on the grub population already present (having just emerged after the winter).

Some "season-long control" claims that appear in marketing releases can be misleading. Some people read "season-long control" and expect that a spring application will control everything for the entire growing season (including the grubs that are already present in the spring). At least with white grubs, that is not necessarily true.

Imidacloprid does have the residual activity to affect grubs in late summer, but most university entomologists urge turf managers not to make applications too early.

Why not wait until just before the young grubs begin to hatch out of eggs? Then, the pesticide will be that much

fresher and have a better chance to provide control.

#### **Halofenozide timing**

While halofenozide (Mach 2) is hardly new either, we should mention a few things about it. It could be considered a growth regulator because it is a "molt accelerating compound." An insect enters the molt before it has had a chance to save up the energy it will need to complete the molt. In other words, the process is virtually guaranteed to fail. In most cases, an insect that encounters halofenozide stops feeding quickly, so damage does not worsen. The insect usually dies within two or three weeks, sometimes even sooner.

Vertebrates (including people and their pets) don't molt, so halofenozide is much less toxic to vertebrate organisms than most other insecticides currently available. Nevertheless, the label notes it does have characteristics (solubility, half-life, etc.) similar to those that are eventually detected in ground water. The usual precautions should be taken to provide adequate buffer zones when treating areas near surface water or sensitive soils.

**Best application spots.** Halofenozide is most effective when targeting small stages of immature insects such as white grubs and various caterpillars. Its interference with the molting process can be effective against young insects.

Some suppliers say that halofenozide provides "season-long control" against white grubs, but the field data reports are contradictory. Most studies that involve April, May or early June applications do not provide significant reductions in grubs that are already present in the spring.

This makes sense when we consider the material's mode of action — the grubs are

*continued on page 48*

Timing treatments will become more critical with the new insecticides in development.







Landscape architecture by Toscanini.  
Ornamentals by Monrovia.  
Turf by Confront.

To create a landscaping masterpiece, you need the best of everything. Like Confront<sup>®</sup> herbicide, from Dow AgroSciences. Confront provides spectacular control of dandelion, clover, chickweed and other tough broadleaf species for up to 12 weeks. So your turf is as beautiful as possible... your customers, as happy as possible. Confront.  Dow AgroSciences. When only the best will do. **Confront<sup>®</sup>**

Specialty Herbicide

www.dowagro.com/turf 1-800-255-3726 Always read and follow label directions. \*Trademark of Dow AgroSciences LLC



## Expect additional restrictions at the federal and local levels on the use of turf and ornamental insecticides.

*continued from page 46*

already in their largest stage of development by the time it is applied so the only molt that might be compromised is the molt from grub to pupa. By then, the damage is already done. However, applications made within a month after adult beetles begin to lay eggs appear to work well.



This material remains active in the soil long enough to be effective when larvae first emerge.

Trials indicate that late summer applications (usually at slightly higher rates) can also be effective against grubs after they have been feeding for a couple of weeks. So halofenozide can be used as a preventive (early summer application relying on residual activity to control young grubs beginning their first molt) or as a curative (late summer application controlling mid-sized grubs before they reach full size).

Field trials confirmed that some species of grubs are less sensitive to halofenozide than others. Generally, European chafers are much less vulnerable, as are oriental beetles. Fortunately, Japanese beetles and masked chafers are relatively sensitive, so it can be a good control option. It also can be effective against species of caterpillars, including some cutworms and webworms.

### **Spinosad for caterpillars**

Spinosad, sold as Conserve, is a byproduct of a soil bacterium that affects acetylcholine receptors on nerve cells. But it works differently than other materials. It does not appear to affect the receptors on vertebrate nerve cells in the same way, so it is much less toxic to mammals and other vertebrates than the OPs and carbamates.

It is being used on ornamentals and turf to control various caterpillars. Spinosad is relatively specific, even within the caterpillar group, but one advantage is that it seems to have little impact on most beneficial predatory insects found in turf. It can be used to control sod webworms, cutworms and armyworms, but is most effective if applications are made when those caterpillars are still quite small. It is not effective against chinch bugs, ants, grubs, billbugs or mole crickets.

Spinosad is still relatively new in the turf market and the full profile is not yet understood. But we can expect to see more products like spinosad coming on the market within the next few years. **LJM**

— *The author is associate professor in the Department of Entomology, University of Massachusetts, Amherst, MA.*

## Watch for more impact to come

As FQPA's impact continues to grow, we can expect more traditional insecticides to be removed from the turf market. At the same time, new products with very different chemistries and modes of action are being developed. Compared to the materials we have used for the past 40 years, these new products will have:

- ▶ lower levels of acute toxicity to vertebrates,
- ▶ lower rates of application and lower solubility and
- ▶ more targeted control against some of the turf insect pests but not all.

Expect additional restrictions at the federal and local levels on the use of turf and ornamental pesticides. One of the most predictable offshoots of these regulations will be greater emphasis on finding biological control options with the reliability and consistency that is critical to successfully managing turf insects.

You will have to be even more vigilant, monitoring insect activity and knowing the specifics of the life cycle of each pest. Then, you will have to match the pest with the best of the products available, and remember that each product has notable strengths and weaknesses. Timing will be even more critical.

— *Pat Vittum*





*your good judgment*

Will tell you to select

*turf type*

Tall Fescue seed from Oregon

*the beauty*

of the blades

*the strength*

and durability

*the tolerance*

to drought & disease

*the quality!*

Look for the grown in Oregon label. It puts all others in a lower class. A lush, healthy, deep green turf is your reward for selecting superior seed. The world's leading turf grass breeders have been perfecting it for more than 20 years. The tough, vibrant turf will not only tolerate drought, but survive cold winters.

When you select Turf Type Tall Fescue seed from Oregon you can be sure you will enjoy your "good judgment" decision year after year.

**TURF  
TYPE  
TALL  
FESCUE**

**SEED FROM OREGON**

Oregon Tall  
Fescue Commission  
1193 Royvonne, Suite 11  
Salem, OR 97302  
503-585-1157



## High-tech wonders

BY JASON STAHL /  
MANAGING EDITOR

It's the Year 2000. There aren't any flying cars yet, nor can people communicate through telepathy. But it's safe to say that more technological advances have been made in the last ten years than in the last 100. Buy a computer today, and it's out of date tomorrow. Rocket scientists are actually considering colonizing the moon. Doctors have cloned animals.

What does all this mean for landscape professionals? Better business, that's what. True, it's still the guys on your crew who are doing all your hard work, but you would be foolish to ignore the technology around you. You need every advantage you can get in today's crammed landscape market.

With so many crews spread out doing so much work, you need to have an adequate communications system. If you have the right software to show a client how his yard could look before you start your actual service, he might hire you instead of the next guy. No doubt your maintenance barn looks like a busy freeway with crew members driving here and there. Wouldn't it pay to invest in a monitoring system so your guys could see what's behind them when backing up? And what about a Web site? Haven't built

one yet? You may be missing out on a prime marketing opportunity, not to mention a good way for your clients to get a hold of you when you're out in the field.

Don't be stubborn. Stick to your hard work ethic but let today's technology help you in whatever way it can. Your customers, and you, will appreciate it.

### MOTOROLA

<http://AccessSecure.mot.com/Accesspoint>

The Motorola Accessories and Aftermarket Division has a full line of accessories to support the recently introduced iDEN i700plus handset, which combines phone, two-way radio, messaging and Internet data capabilities all in one. Data cables connect the handset to most popular PDAs, providing a wireless connection for e-mail and Internet, and transfer data back and forth between iDEN unit and PDA. A "slim" nickel metal hy-



See where rearview mirrors can't with Superior Signals' collision avoidance system.

### what to look for in software

- ▶ **Ease of use. Make sure it's not difficult for the staff to learn.**
- ▶ **Flexibility. Make sure it can accommodate the expansion of your company so you don't have to replace it down the road.**
- ▶ **Windows-based.**
- ▶ **Help. Find out the costs of technical support.**
- ▶ **Reliability. Companies should offer you lists of customers who can tell you their experiences with the product.**