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Circle No. 125 on Reader Inquiry Card

Taking care of a county

PROPERTY AT A GLANCE

Location: Anne Arundel County Central Services, Annapolis, MD
Staff: Anne Arundel County Horticulture Department
Members: Rodney Gott, Gary Burns, Ron Offer, Jeff Puls, Stan Speaks, Mike Burton
Total budget: $406,000
Year site built: 1988-1993
Acres of turf: 71.5
Acres of woody ornamentals: 9
Acres of display beds: 32.6
Total paved area: 40.8 acres
Total man-hours/week: 240

(photo above) Crew member Rodney Gott prunes deadwood from a juniper at the Heritage Complex entrance island.

With 419 square miles of territory and a north-south length of 36 miles, Anne Arundel County is one big grounds maintenance challenge

BY JASON STAHL

Mike Burton usually has to explain himself when he tells people about all of the roadkill he takes care of as horticulture supervisor of Anne Arundel County Central Services, Annapolis, MD. That's because the roadkill he's talking about doesn't necessarily have fur on it.

"It's our plants," Burton says, referring to the plants found in the medians along 11 miles of the county's busiest roads. "About 30 to 40 times a year, we respond to a call about a car driving into the median and killing some of them."

And there are countless other times when Burton and his five-man crew will stumble upon some unreported "roadkill," so it's anybody's guess as to how many plants wear treadmarks each year.

But massacred plants are only one of the problems Burton has to deal with when tending to the median strips. Lanes have to be closed to protect his crew from cars that whiz by at up to 55 miles per hour, and that, according to state and county regulations, can only be done between 9 a.m. and 3 p.m., requiring advance scheduling to ensure productivity. The application of pesticides has to be done during the off hours of the day.

"That's a nightmare," Burton says. "When we use a power sprayer, we have to use low pressure so it doesn't blow into traffic."

Lots of ground to cover

Median strips compose only a fraction of the 419 square miles Burton and his crew handle. Over 116 landscapes in and around office complexes, senior centers, libraries, gateways, police stations, sediment ponds and other places require their attention. With such a huge territory to cover, Burton has turned his crew into one lean, mean efficiency machine.

"We have to be efficient because going from one end of the county to the other takes an hour and 20 minutes," he says. "When we head in one direction, we make sure to make several stops."

Efficiency is also required with water use, as only five of Anne Arundel's sites have automatic irrigation. To water everything, including seasonal plantings like annuals, mums and pansies at 24 different sites, Burton makes use of two 400-gallon water trailers. The tanks are filled using outside faucets at various facilities, but three portable water meters were recently ac-

quired to tap into hydrants to water such inaccessible areas as the landscape showcases in the median strips.

Chain gangs and crossing guards

Any time Burton gets a chance to increase his manpower, he jumps all over the opportunity with the enthusiasm deer and rabbits show when eating his plants. All mowing is contracted out, but when the number of soda bottles and cigarettes start to outnumber the flowers in the median strips, the local chain gang is called on to form a trash clean-up crew.

"I give them guidance and the materials to do the job," Burton says. "In some cases, each day worked outside means one day taken off their sentence."

When the requests for pesticide applications started becoming more than the few licensed pesticide applicators could handle, Burton started training and licensing people on the county's custodial crew, library staff members and his own crew members. Now, over 20 individuals in Burton's command are pesticide technicians.

"That has greatly reduced the requests we get and allowed things to be serviced that we don't have time for," Burton says.

Burton even cadged a few workers out of what would seem like an unlikely group — crossing guards. "Of course, crossing guards only work during the school season, but the county was looking to make them full-time," he says. "The ones who opted to continue their employment through the summer had various options, so I asked if we could use these people. So far, they've been great at keeping our plants alive."

Burton also took advantage of a teen opportunity program sponsored by the local police department last summer. Any time the local garden club or Eagle Scout troop wants to get involved with his crew's everyday activities, Burton welcomes them.

"You can't have a good program without good people," Burton says. "People typically have a bad impression of government workers but my guys are great. One of our guys was planting flowers one time and he turned to me and said, 'We actually get paid for this?'"

Stan Speaks and Ronald Offer of Anne Arundel Co. Central Services work on Solomon's Island roadway median, where signage and visibility are important for safety.

A balancing act

In addition to coordinating his horticulture staff, additional personnel, contractors, and community participants, Burton must keep up on other county departments.

"The county's management strongly encourages interdepartmental cooperation," Burton says. "For many of our projects, we receive the use of personnel and equipment from road operations, utilities, traffic maintenance, water operations and others."

To expand the capabilities of his crew, Burton made sure that four of his staffers became class "B" state certified drivers. Even though there is no equipment in the horticulture department that requires a heavy duty truck license for operation, the licenses enable crew members to drive trucks borrowed from other departments. At any time, Burton's crew has found it necessary to borrow arrow boards for lane closures, bucket trucks, heavy tonnage dump trucks, a 5,000-gal. tanker truck for watering roadway plants, and backhoes.

Special projects

The Anne Arundel crew's responsibilities recently expanded to include Tipton Airport at Fort Meade, which had been neglected ever since it was put out of service nine years ago.

Because of a drought, however, the department hired a subcontractor and, after three-ft. tall weeds were cut down, Burton's crew applied a concoction consisting of industrial pre-emergent, Round Up and Schism to eliminate any re-growth. **LM**

Who is Anne Arundel?

When someone first hears about Anne Arundel County in Maryland, the first question that pops up is: Who is Anne Arundel, any way?

She was Lady Anne of Arundel, who longed to voyage to the new world but never got to realize her dream.

Each year, usually in May, a company called Homestead Gardens formally celebrates the arrival of the Lady Anne Arundel daylily. This year, to commemorate the county's 350th anniversary, Homestead Gardens donated 300 daylilies to be planted at all five county gateways.

Inside-out disease control

You'll get the best results when you use the right fungicide for the problem. New products give you even more options

BY MICHAEL L. AGNEW, PH.D.

Lawn disease problems are getting more complicated and selecting the proper fungicide to use is not a simple process, especially if it is to be used on residential lawns. The Food Quality Protection Act evaluation process has resulted in the voluntary removal of several fungicides from use on residential lawns. If you treat turf diseases, you may have to consider new solutions.

The ideal fungicide for use on residential lawns should be reasonably priced and possess curative properties, long term disease control and a positive human safety profile. The best way to select a fungicide is to understand key diseases and how a fungicide works on or in the plant.

How fungicides deliver control

"Mode of activity" is a phrase that refers to how the fungicide's active ingredient delivers disease control on or in a plant. You can use the mode of activity to give a general classification of the length of disease control provided by a particular fungicide, and to determine if the fungicide will provide any curative activity once the pathogen has infected the plant. There are three mode of activity types:

- contact,
- penetrant, and
- mesostemic fungicides.

Contact fungicides act only on the plant surface. They provide effective preventive disease control on those fungi that are present on the outside of the plant, but little to no effect on a fungi present inside the plant. Because contact fungicides act on the surface, you must get thorough coverage with the fungicide to protect the plant. Contact fungicides are constantly being exposed to degradation through weathering and exposure to light (photodecomposition); thus, a typical contact fungicide will only provide protection for a period of seven to 14 days.

Examples of contact fungicides include chlorothalonil (Daconil), mancozeb (Fore) and quintozene (PCNB). Chlorothalonil produced after 1999 will no longer carry a label for residential lawn use.

Penetrating activity

Penetrant fungicides (sometimes referred to as systemic) act on the plant's surface, but they also stop the spread of fungi by penetrating the plant in quantities significant enough to be toxic to fungi inside. There are three subclassifications within penetrant fungicides: localized, acropetal and systemic.

Localized penetrants move into the plant tissue and remain at the point of entry. They protect only the immediate area where they were sprayed. There is little or no translocation within the plant, making it necessary to reapply every 14 to 21 days.

Examples of localized penetrant fungi-

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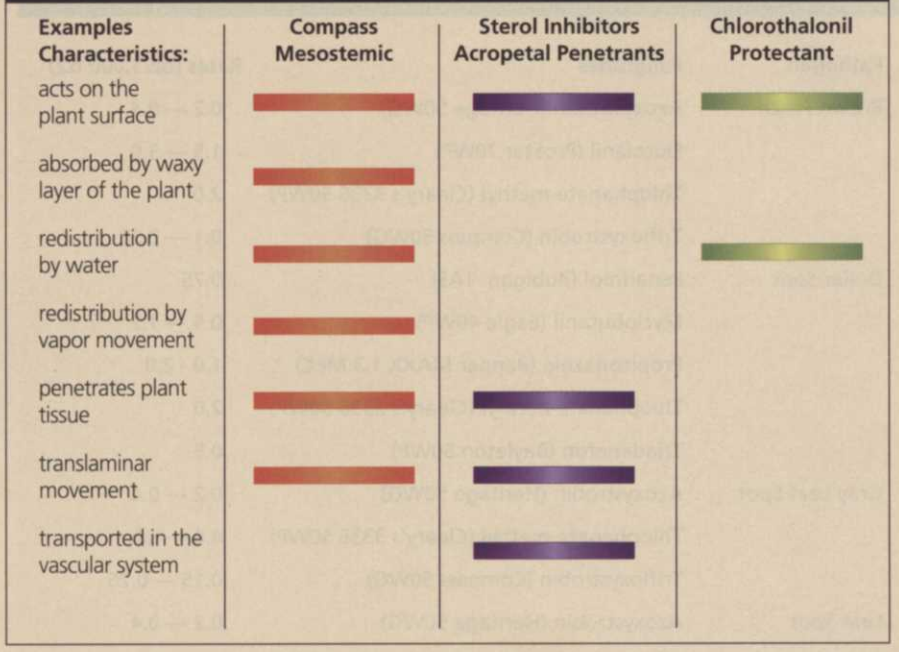
Necrotic ring spot symptoms

Necrotic ring spot being controlled

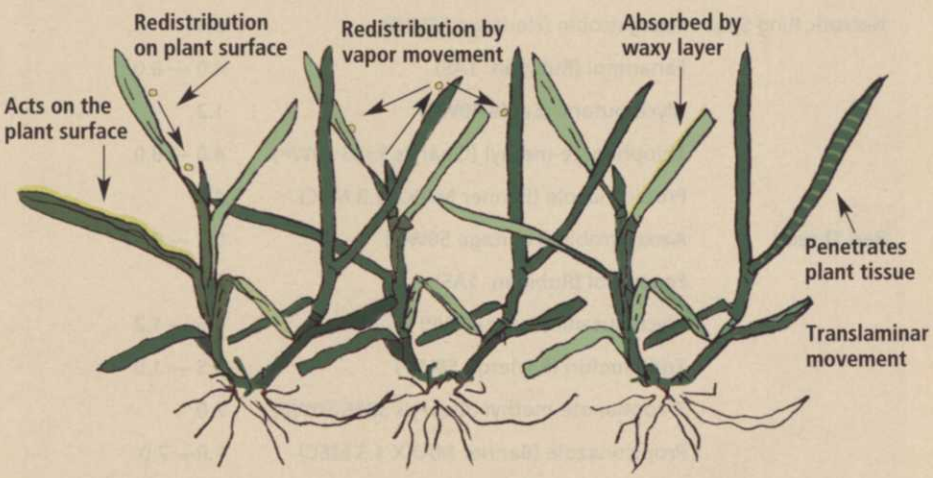
MODE OF ACTIVITY COMPARISON



Compare costs & rates

As a lawn care operator or turf manager, you are not without various options. Newer fungicides may appear more expensive at first glance, but be aware that the application rates are a lot less then the rates for older standard fungicides. For example, the rate for Compass (0.1 to 0.25 oz/1,000ft^2) is approximately 90% less than that of Daconil Ultrex (1.8 to 7.8 oz/1,000ft^2). Reduced rate fungicides equate to less active ingredients placed into the environment, less exposure to an active ingredient by the applicator and less storage space.

MESOSTEMIC ACTIVITY



FUNGICIDE COST COMPARISON

Product	Rate	Spray interval (days)	Cost per application ($/1000 ft^2)	Cost per treatment-day ($/1000 ft^2)
Daconil Ultrex 82.5WDG	3.67 oz	14	2.06	0.21
Compass 50WDG	0.2 oz	21-28	3.38	0.12-0.16
Banner MAXX 1.24MEC	2.0 fl oz	28	3.82	0.13
Banner MAXX 1.24MEC	1.0 oz			
+ Compass 50WDG	0.15 oz	21-28	3.60	0.13-0.17
Heritage 50WG	0.4 oz	28	8.62	0.31
Cleary's 3336 50WP	6.0 oz	28	7.44	0.27

TABLE 1. FUNGICIDES LABELED FOR RESIDENTIAL LAWNS

Pathogen	Fungicides	Rates (oz/1,000 ft2)
Brown Patch	Azoxystrobin (Heritage 50WG)	0.2 — 0.4
	Flutolanil (ProStar 70WP)	1.5 — 3.0
	Thiophanate-methyl (Cleary's 3336 50WP)	2.0
	Trifloxystrobin (Compass 50WG)	0.1 — 0.25
Dollar Spot	Fenarimol (Rubigan 1AS)	0.75
	Myclobutanil (Eagle 40WP)	0.5 — 1.2
	Propiconazole (Banner MAXX 1.3 MEC)	1.0 - 2.0
	Thiophanate-methyl (Cleary's 3336 50WP)	2.0
	Triadimefon (Bayleton 50WP)	0.5
Gray Leaf Spot	Azoxystrobin (Heritage 50WG)	0.2 — 0.4
	Thiophanate-methyl (Cleary's 3336 50WP)	4.0 — 8.0
	Trifloxystrobin (Compass 50WG)	0.15 — 0.25
Leaf Spot	Azoxystrobin (Heritage 50WG)	0.2 — 0.4
(Melting out)	Thiophanate-methyl (Cleary's 3336 50WP)	4.0 — 8.0
	Trifloxystrobin (Compass 50WG)	0.1 — 0.2
Necrotic Ring Spot	Azoxystrobin (Heritage 50WG)	0.4
	Fenarimol (Rubigan 1AS)	4.0 — 8.0
	Myclobutanil (Eagle 40WP)	1.2
	Thiophanate-methyl (Cleary's 3336 50WP)	4.0 — 8.0
	Propiconazole (Banner MAXX 1.3 MEC)	4.0
Red Thread	Azoxystrobin (Heritage 50WG)	0.2 — 0.4
	Fenarimol (Rubigan 1AS)	8.0
	Myclobutanil (Eagle 40WP)	0.6 — 1.2
	Triadimefon (Bayleton 50WP)	0.5 — 1.0
	Thiophanate-methyl (Cleary's 3336 50WP)	2.0
	Propiconazole (Banner MAXX 1.3 MEC)	1.0— 2.0
	Trifloxystrobin (Compass 50WG)	0.1 — 0.2
Summer Patch	Azoxystrobin (Heritage 50WG)	0.4
	Fenarimol (Rubigan 1AS)	4.0 — 8.0
	Myclobutanil (Eagle 40WP)	1.2
	Triadimefon (Bayleton 50WP)	2.0
	Thiophanate-methyl (Cleary's 3336 50WP)	4.0 — 8.0
	Propiconazole (Banner MAXX 1.3 MEC)	4.0
	Trifloxystrobin (Compass 50WG)	0.2 — 0.25

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cides include vinclozolin (Vorlan, Curalan) and iprodione (Chipco 26GT). Iprodione produced after 1999 will no longer carry a label for residential lawn use.

Acropetal penetrants enter the plant tissue and move translaminarly, from the top of the leaf surface through the leaf tissue and to the bottom of the leaf. They also move upward in the xylem, the water-conducting tissue of the plant's vascular system. This protects the plant tissue from the point of entry into the plant and upward. These fungicides have limited or no downward movement, so you must use enough water carrier to get the fungicide to the crown of the plant, typically 2 gal. of water per 1,000 ft^2. Most acropetal penetrants can provide up to 28 days of disease control, depending on rate and target fungi.

Some acropetal penetrants include propiconazole (Banner MAXX), triademefon (Bayleton), azoxystrobin (Heritage) and mefenoxam (Subdue MAXX).

Systemic penetrants are similar to acropetal penetrants, but they also move through the phloem (food-conducting tissue) as well as the xylem. When applied, systemic penetrants can move both upward and downward in the plant tissue.

The only systemic penetrant used in turf is fosetyl Al (Aliette). This is limited to the control of Pythium blight and labeled to provide protection up to 21 days.

New activity mode

A new class of fungicide with a unique mode of activity called "mesostemic" was introduced in 1999. Trifloxystrobin (Compass) is the first turfgrass fungicide with a mesostemic mode of activity, combining some attributes of both contacts and penetrants to provide additional disease protection. This type of fungicide has similar activity to penetrant fungicides in that both

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What makes a mesostemic fungicide unique is that it forms a weather-resistant deposit on the surface in the waxy layer of the plant.

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penetrate the plant tissue and translocate translaminarly to the bottom of the leaf surface.

What makes a mesostemic fungicide unique is that it forms a weather-resistant deposit in the waxy surface layer of the plant. This deposit is a reservoir for continual penetration that replaces active ingredients lost to metabolism.

Mesostemic and contact fungicides both act on the plant surface to provide protection from external fungi. In addition, both types of fungicides can be redistributed on the leaf tissue.

Unlike a contact fungicide, however, mesostemic fungicides are rainfast and not appreciably affected by weathering and photodecomposition.

A mesostemic fungicide also has the unique ability to redistribute at the plant surface by localized vapor movement despite lacking volatility and, consequently, the ability to move off-site. The vapor phase activity is seen over short distances of 2 in. to 3 in. within the plant canopy, and movement is greatest within the first 7 to 14 days after the application. This is when the free portion of the fungicide is available for redistribution. It also appears that the fungicide will move off of clippings to provide enhanced disease protection for the same time period.

The different ways a mesostemic fungicide can provide plant protection adds up to 21 to 28 days of disease control.

Designing a program

Once you've decided which fungicide to use, use it properly. Consider these three factors:

- ▶ timing the fungicide application,
- ▶ water carrier volume, and
- ▶ turfgrass growth rate.

Timing. Most fungicide applications work best if applied on a preventive basis. You not only use less fungicide, but there is no plant damage. If you are treating for brown patch or gray leaf spot, get the first application on before weather conditions

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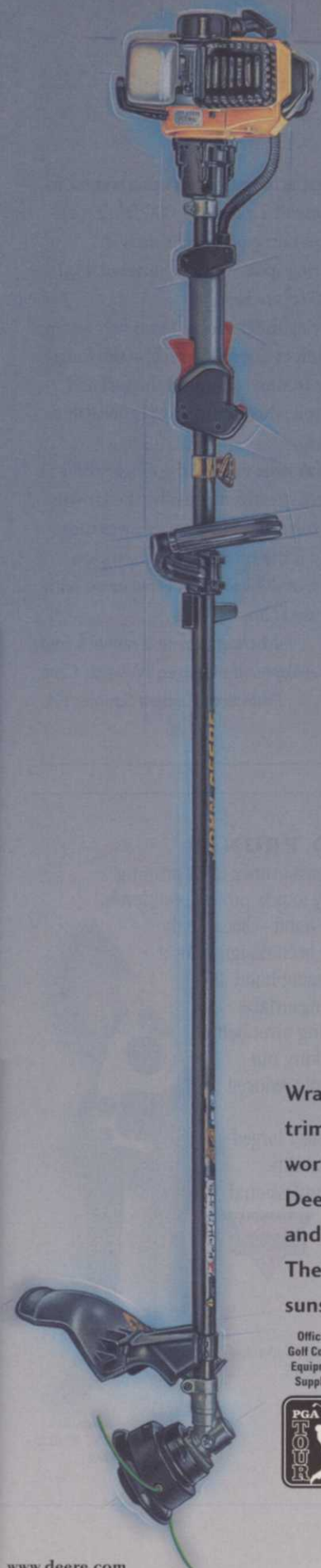

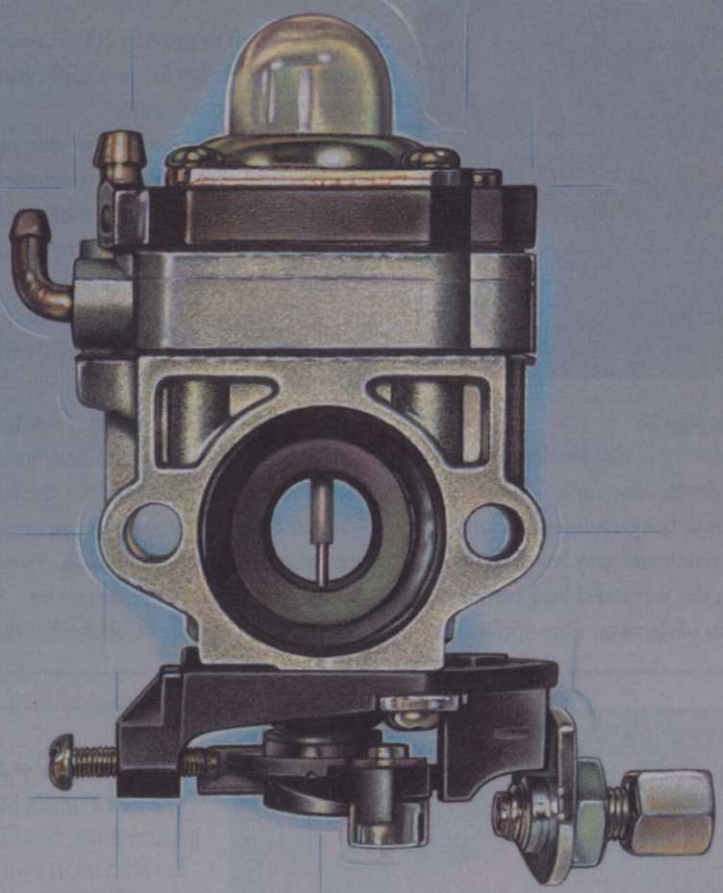

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Brown patch: individual patch on tall fescue

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that are conducive to disease development occur — otherwise, the application should be considered as the post-infection kind. Both brown patch and gray leaf spot are active within the turf stand long before you see symptoms of damage. One application is rarely enough to provide 100% control of brown patch. Plan for two applications spaced 21 to 28 days apart.

A typical application for leaf spot or red thread control is to apply the fungicide at the first sign of disease. Since these are primarily foliage diseases, a one-time application may be enough to provide disease control. If weather conditions persist, a second application may be necessary 21 to 28 days later.

Water. Always use enough water to provide thorough coverage. Skimping on water volume can greatly reduce the length of disease control. If you don't use enough water when applying a fungicide, coverage is not good and the fungicide can be mowed off quickly. Control of foliar disease is best achieved when using water carrier volume of 2 gal. per 1,000 ft^2. If treating for soil-borne pathogens such as necrotic ring spot, water volumes of 4 gal. per 1,000 ft^2 are best.

Applying fungicides in too much water can also affect disease control — the fungicide may be moved beyond the turf and into the soil where it may not be available for uptake.

Growth rate. Finally, the efficacy of a fungicide is greatly affected by the growth rate of a turfgrass. Mowing removes fungicides, and if the turfgrass is growing too fast, more of the fungicide is removed with the increased clipping. **LM**

—Michael Agnew is research and development manager, Novartis Crop Protection, Kennett Square, PA.

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