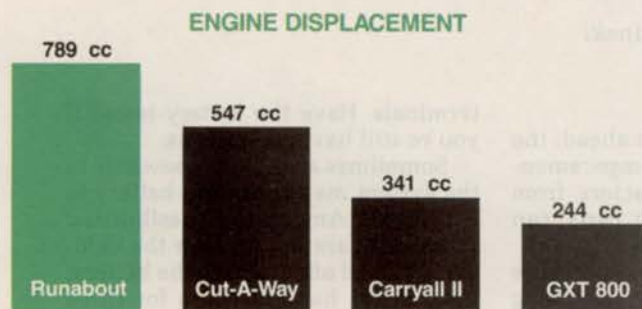




Why does the competition shrink from a side-by-side comparison to the Cushman® Runabout?

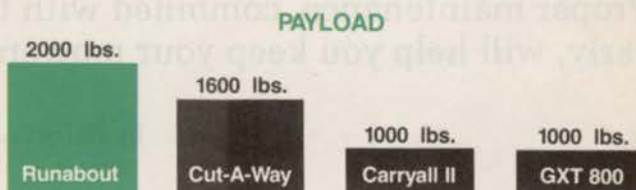
Why? Because the Cushman® Runabout gives you more payload and more power to do more jobs for more years. And at \$5,220*, no other utility vehicle can match its blend of value and performance.

It's that simple.



The proven, Cushman 222 overhead valve engine provides greater displacement for more torque and horsepower in the critical RPM range required for turf applications. A beefier, boxed-channel frame of carbon steel accommodates heavier implements and a one-ton payload.

The heavy-duty Runabout is more maneuverable. More durable. And it's backed by the industry's finest network of dealer service.



When a light utility vehicle isn't enough, and a full-function Cushman® Turf-Truckster™ is more than you need, the Cushman Runabout stands head and shoulders above the rest. Contact your Cushman dealer for a convincing demonstration, or call toll-free 1-800-228-4444 for more information today.

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BUILT TO LAST

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Using proper weight oil in mowers prevents excessive oil consumption, a symptom of which is blue smoke blowing from the exhaust during mowing.

REDUCING MOWER DOWNTIME

Proper maintenance, combined with the ability to recognize danger signals early, will help you keep your mowers out of the shop and out on the grass.

by Robert L. Tracinski

While most lawn care specialists probably don't think of themselves as mechanics, even the best in the business are only as good as their equipment. Engine trouble, poor performance and equipment that's just not doing the job can mean frustration and lost profits.

Some of the most common mower problems involve basic operational systems like the engine or transmission; others may affect the end result, such as an uneven cutting job. Whatever the situation, you don't have to be an expert mechanic to deal with it. By learning to recognize and correct routine mower problems quickly and efficiently, you can devote more time to the productive

work—lawn care.

With a big mowing job ahead, the last thing you need is a temperamental engine. A variety of factors, from weather changes to worn parts, can contribute to hard starting.

Your first task is to determine whether you're getting a spark. Using insulated metal pliers, remove the spark plug and touch the threaded area of the plug to a metal surface on the engine. Turnover the engine and look for a blue spark. If you don't have a good spark, the problem may be in the ignition or electrical system.

First try replacing a worn or corroded spark plug with a fresh one. Next, take a look at the battery condition. Check the electrolyte levels, add water if necessary, and clean the

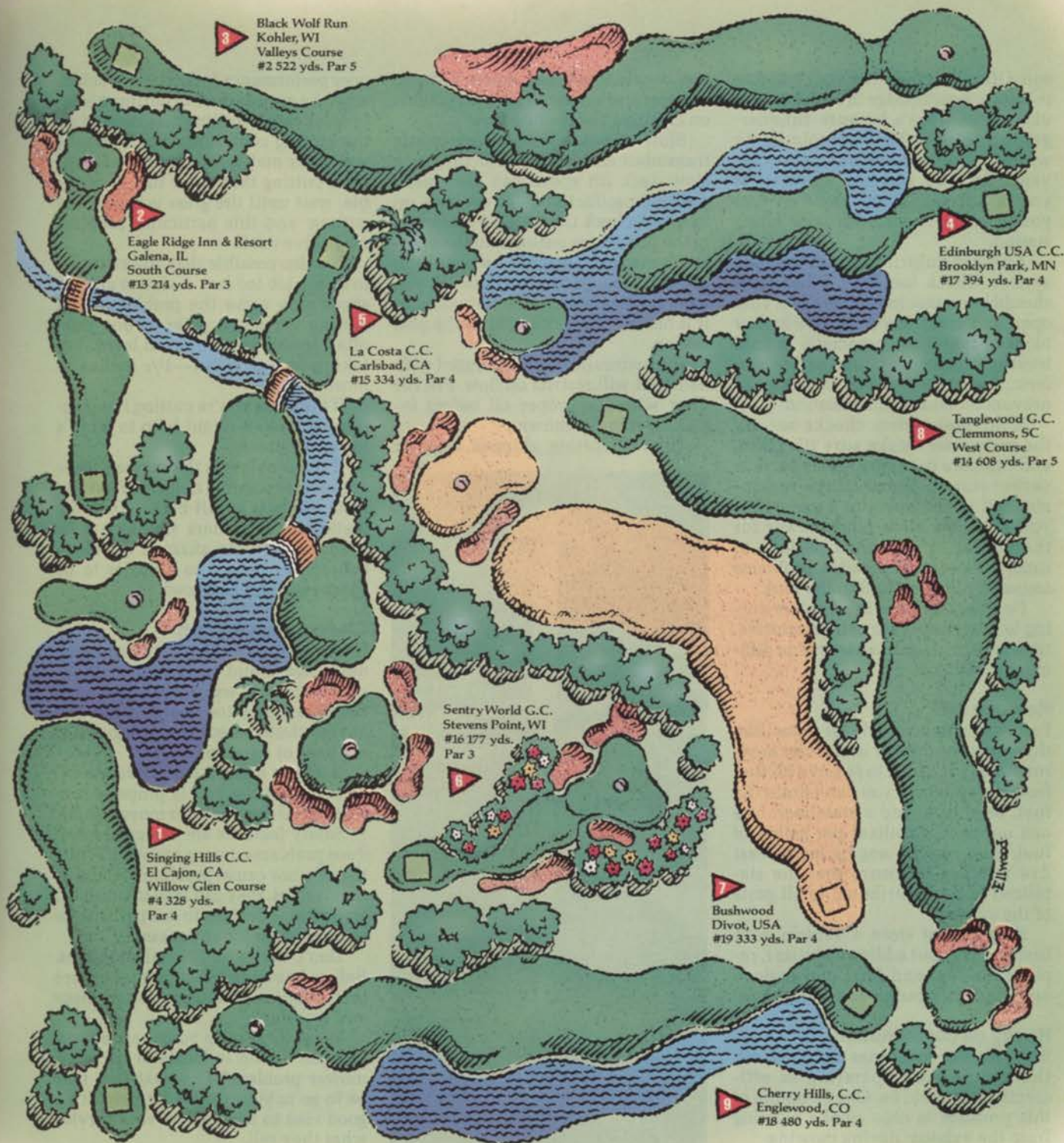
terminals. Have the battery tested if you're still having problems.

Sometimes a problem elsewhere in the system may cause the battery to run down. Among the possibilities: accessories are left on after the vehicle is turned off, draining the battery; the vehicle has been idle for three months or more, during which time the battery has deteriorated; battery cables or connections are heavily corroded, leading to voltage seepage.

If you do get a good spark after testing the spark plug, the problem may be in the fuel.

Fuel problems

Be sure you're using fresh fuel with an alcohol content of less than 10 percent, and the right blend for the sea-



3 Black Wolf Run
Kohler, WI
Valleys Course
#2 522 yds. Par 5

2 Eagle Ridge Inn & Resort
Galena, IL
South Course
#13 214 yds. Par 3

5 La Costa C.C.
Carlsbad, CA
#15 334 yds. Par 4

4 Edinburgh USA C.C.
Brooklyn Park, MN
#17 394 yds. Par 4

8 Tanglewood G.C.
Clemmons, SC
West Course
#14 608 yds. Par 5

6 SentryWorld G.C.
Stevens Point, WI
#16 177 yds.
Par 3

7 Singing Hills C.C.
El Cajon, CA
Willow Glen Course
#4 328 yds.
Par 4

9 Bushwood
Divot, USA
#19 333 yds. Par 4

10 Cherry Hills, C.C.
Englewood, CO
#18 480 yds. Par 4

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son. Often, engines that start just fine in winter won't budge in summer, and vice versa. That's because summer-grade fuel can be less volatile in winter, while winter blends can cause vapor lock in warmer weather. If you're not sure what blend of fuel you're using, check with your filling station.

Another culprit may be the fuel system. Check fuel flow. Pulse lines should be connected and the fuel vent open and clear. Look for pinched or blocked fuel lines, especially in cold weather when moisture or ice can form; keep the tank full in winter to prevent moisture condensation.

If the fuel system checks out, try the carburetor. Make sure it's clean, and compare the adjustments on your carburetor to the settings recommended in the operator's manual. If you routinely store your mower for the winter or extended periods of time, be aware of possible problems caused by leaving fuel in the tank.

Fuel that remains in a vehicle during long-term storage can deteriorate, turn to varnish and cause engine difficulty or damage.

Remove fuel

Before storing a vehicle for more than three months (or less in warmer environments), it's best to remove all fuel from the system. If you don't drain the fuel, be sure to add a stabilizer. Use one ounce of stabilizer per gallon of fuel, then run the engine for at least five minutes to insure that the stabilized fuel is distributed to all parts of the system.

If you must store a vehicle with fuel and without adding stabilizer, replace the fuel and filter and remove and clean the carburetor before use.

Heavy oil consumption

If the mower consumes too much oil, the engine isn't operating as efficiently as it could be. One symptom of this problem is blue smoke blowing from the exhaust during mowing.

Overconsumption of oil usually indicates an engine problem. If you suspect this is the case with your mower, use the following checklist to identify the specific engine problem:

Oil level is too high. Drain off the excess and keep an eye on the level in the future.

Improper weight oil being used. Review the operator's manual for recommended weights for summer and winter operation.

Operation of engine above recommended speeds causes oil to foam. Follow guidelines for engine operation in the operator's manual.

Overheating engine thins the oil

and causes it to break down. Refer to the operator's manual for instructions on cleaning the cooling fins.

Slow response from a hydrostatic transmission, steering difficulty or a slow deck lift speed can also mean reduced productivity. To get back up to speed, check the oil level according to the procedure outlined in the operator's manual. Check for moisture in the oil. Change the oil filter if you have problems with contamination or if it has not been changed in the past season.

If a hydraulic filter is plugged with debris, it will restrict oil flow. Fill the filter with the proper oil before installing it in the mower.

Uneven cutting, skipped areas or

poor performance indicates a problem with the mower deck or cutting blade. In some cases, striping may depend on the cutting conditions. For example, wet grass may be more prone to uneven cutting than drier turf. If possible, wait until the grass is dry before cutting, and this particular problem may solve itself.

It's also possible that you're trying to do the job too fast. A slower ground speed may solve the problem. Also, cutting too much grass at one time often results in an uneven lawn. Try taking less of a cut—1½ inches at most.

If the grass you're cutting is exceptionally fine, it might help to go to a lower lift blade.

If the problem is the mower, there are several possible culprits. First and most likely is a dull blade. Keep the blade sharp; corners should not be rounded. You can sharpen the blade yourself or take it to a dealer to be sharpened and balanced.

Cleaning underneath

Keep the underside of the mowing deck clean, and inspect it to make sure that it isn't warped or distorted. If the deck has a toe guard at the discharge chute, check that the guard is not bent or damaged.

If you're using a belt drive model, be sure that the belt is properly tensioned and that the idler moves freely.

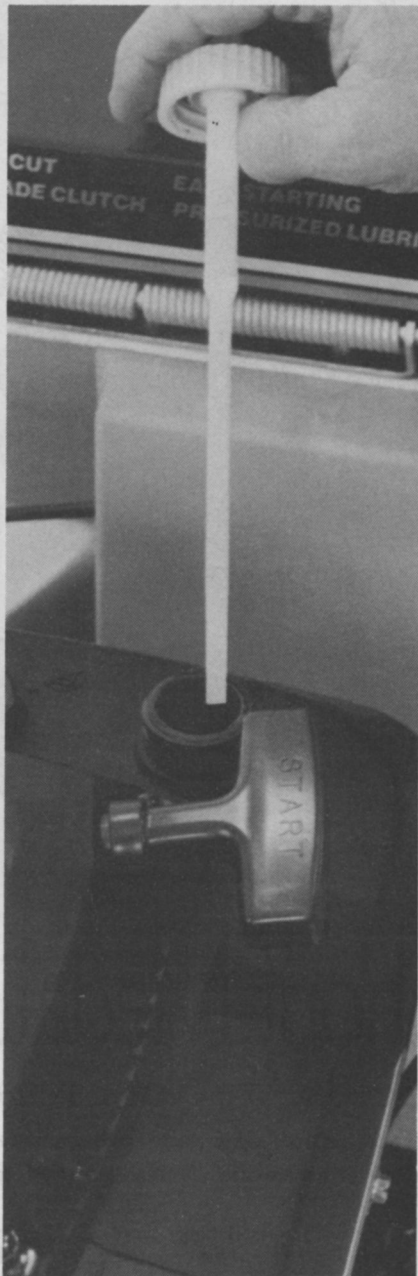
Safety features are designed to reduce problems during mowing. While they do not cause problems in and of themselves, they can lead to trouble if an operator decides to tamper with or remove them for any reason.

Don't invite additional problems. Before mowing, always make sure that safety mechanisms are in place and working.

What if, despite your best efforts, you can't seem to locate or correct a mower problem? The next step may be to go to your dealer for help. It's a good idea to use dealers who service what they sell.

Some manufacturers have established a "hotline" service which allows a dealer to call the manufacturer, describe a problem and get an answer in one phone call. In any case, your dealer should be able to assist you in solving the problem.

It doesn't take an expert mechanic to keep equipment up and running and business at its best. Learn to identify common mower problems, correct the trouble at its source, and get back to business. **LM**



Maintain the mower's proper oil level. Drain excess before operation.

Bob Tracinski is consumer information manager for John Deere & Company.



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The incredible 25" turning radius on the Ransomes Slicer/Seeder has everybody talking. Its unique articulated design makes it the ideal choice for renovation work around plantings, trees and other obstacles.

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Professional landscapers appreciate its wide tires and front wheel drive, which provides unmatched maneuverability and climbing power. And you can seed up to 20,400 square feet per hour at the top speed of 2.3 m.p.h. It's easy to see why the Ransomes

Slicer/Seeder runs circles around the competition.

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WHERE GREAT IDEAS START.



Now! Affordable post-emergent control of Crabgrass & Nutsedge plus the broadleaves you get with Trimec® HERBICIDE

Thousands of your fellow turf-management pros tested Trimec® Plus Herbicide last year. Read how you can profit from their experiences with this new herbicide that is labeled for Kentucky bluegrass and Bermudagrass:

"Sometimes things are so obvious that they take you by surprise." No, that's not Yogi Berra double talk . . . It's the essence of what so many of our turf friends said when they sampled Trimec Plus last year.

Listen to Sandy Queen, Certified Superintendent of Golf for the city of Overland Park, Kansas. "The minute I read the Trimec Plus label, I said to myself, Hey, this will work! I just know it will!"

It was in August of 1988 when Sandy saw the Trimec Plus label and the first thought that came to his mind was to test it against a \$250.00-a-gallon post-emerge he

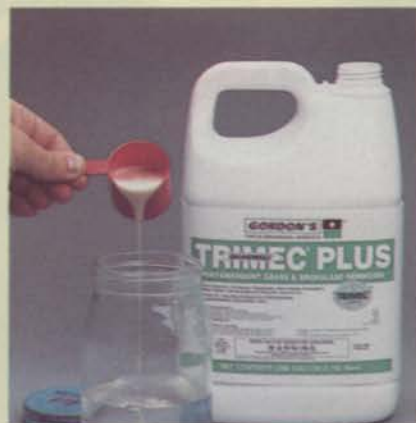


Everett Mealman
President
PBI/Gordon Corporation

had already purchased to use on the goosegrass of a newly seeded driving-range tee at the Overland Park Golf Course.

"You remember the weather last year," said Sandy, "so you won't be surprised to learn that, even though a pre-emergent had been used, the tee was loaded with goosegrass and crabgrass. We sprayed half of it with the super expensive exotic and the other half with Trimec Plus, which I believe costs \$27 a gallon and, based on the rates we used, cut our cost per acre in half.

"The super expensive exotic only



New free-flowing formulation: Active ingredients are in a stable, uniform suspension that is as easy to work with as any other Trimec Complex.

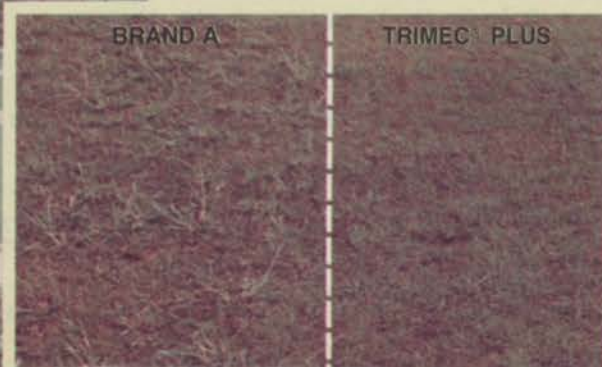
got the young goosegrass. It did virtually nothing on the mature plants. But that one application of Trimec Plus virtually cleaned out all the grassy weeds as well as a good deal of yellow nutsedge that was also immune to the more costly treatment."

We'll tell you what Sandy Queen saw on the Trimec Plus label that made him so sure it was a winner, but first, here are a few more comments from your peers.

Works with no burning or discoloration

Russell Kestler, who owns Rus-

Below is a polaroid showing the goosegrass control of brand A, vs. Trimec Plus. At left in photo is August Leitzen, Superintendent of Overland Park Golf Course, with Sandy Queen, Certified Superintendent of Golf for the city of Overland Park, Kansas.





1) Tom Tomlinson, left, of Lawn Doctor in Trumbull, West Redding, Connecticut with two of his drivers, Gary Schwarz (center) and Matt Werthmann. Tomlinson reports excellent results with Trimec Plus on yellow nutsedge.



2) Russell Kestler, of Russell's Landscaping, Malverne, N.Y. Kestler used Trimec Plus to control crabgrass in 85° temperature with very good results and no burning or discoloration.

sell's Landscaping of Malverne, New York out on Long Island, said, "We used Trimec Plus last season on approximately 140,000 sq. ft. of residential turf that was loaded with crabgrass. We got excellent results with just one application — and there was no discoloration or burning of the turf, even in August."

Tom Tomlinson of Lawn Doctor in West Redding, Connecticut used it on over 40 lawns last year to clean out yellow nutsedge and crabgrass. "The results were excellent," said Tomlinson. "Trimec Plus totally cleaned up an unusually heavy infestation of nutsedge and crabgrass in spite of erratic and difficult weather conditions, and in most instances only one treatment was needed.

"And guess what," continued Tomlinson. "Trimec Plus also cleaned up our clover problems."

After listening to Tomlinson, we almost think we should have named our new herbicide Trimec Plus-Plus-Plus: nutsedge *plus* crabgrass, *plus* broadleaves, *plus* economy.

Why Trimec Plus is so efficient

Now, back to what Sandy saw on the Trimec Plus label that got his enthusiasm up — it was MSMA as an ingredient in a new Trimec Complex. As a Certified Superintendent

of Golf, Queen is quite naturally a dyed-in-the-wool user of Trimec and, of course, he has had extensive experience with MSMA.

He knows that MSMA is surely one of the most effective herbicides for use on grassy weeds and sedges, but that it has a major flaw. To get enough of it into a grassy weed to kill it requires repeated applications, or so much of a wetting-and-penetrating agent that burning and discoloration will occur.

And he also knows that Trimec has a unique eutectic characteristic that gives it unparalleled penetrating power.

A new Trimec Complex

So, when MSMA is locked into a Complex with Trimec — which is precisely what Trimec Plus is — you have a superior system for delivering the MSMA to grassy weeds such as crabgrass, dallisgrass, barnyardgrass and nutsedge — and, of course, the delivery system itself, Trimec, is the undisputed number one post-emergent broad-leaf herbicide for ornamental turf in all the world!

Trimec plus MSMA. But, wait! Remember that word, *Complex*.



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Controls Ground Ivy



Controls Nutsedge



Controls Oxalis



Controls Spurge



Controls Crabgrass

Trimec Plus is not a tank mix of Trimec and MSMA. Trimec Plus is a specially compounded amine complex of 2,4-D, MCPP, Banvel® and MSMA . . . in a stable, uniform suspension that is as easy to work with as any other Trimec Complex.

You'd have to buy at least two or three other herbicides to do all of the things that Trimec Plus, alone, will do — control crabgrass; control yellow nutsedge; control the widest spectrum of broadleaves.

Sprayer offer: For details on how you can receive a \$100-value SP-1 Back-Pack Sprayer for only \$35 when you buy Trimec Plus, call our Sales Service Department.

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In Missouri, 1-800-892-7281.

TRIMEC® PLUS

HERBICIDE

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NOZZLE SELECTION MAKES THE DIFFERENCE

Reducing coverage gaps, chemical costs and drift are just some of the many benefits reaped from choosing the right nozzle for your sprayers.

by Steve Pearson, Ph.D.

Turf chemical sprayers, even when operated by the best people, are only as effective as the nozzles along the boom. Selecting the best nozzles for your particular chemicals and your application conditions is the key to safe, effective and profitable chemical use.

Can you afford gaps in the coverage of your turf chemical applications? Can you afford to have streaks from over-applied chemicals? Can you afford to have your chemicals drift off target and damage ornamental plantings? In almost every case your an-

swer has got to be a definitive, No!

Nozzle selection

In the 1990s, it's more important than ever to assure that every chemical application is as accurate as possible. Budgets are being stretched, demand for high quality turf increases and environmental concerns are near an all-time high. Fine-tuning nozzle selection to the specific chemical and specific application situation will increase spraying accuracy, reduce chances of off-target movement of chemicals and save you time and

money by getting chemical applications right the first time.

The most important thing to remember about spraying is that not every nozzle is ideal for every application situation. The nozzles you select for each chemical application need to be evaluated for their effectiveness and uniformity. Both of these characteristics must be matched against the specific application situation and the requirements of the chemical being applied.

The spray pattern is the most obvious differences between nozzles.

continued on page 60



For applicators who maintain susceptible plants near turf areas or who have environmentally sensitive areas nearby, chemical drift should be a primary concern.

Woods makes the grade... the commercial grade, that is.

Since our introduction of the first tractor powered rotary mower in 1947, customers have consistently awarded our equipment top grades for innovation and reliable performance.

Now we've applied our engineering and manufacturing expertise to an expanded line of commercial turf maintenance equipment. From the design stage right through component specification and assembly, these products are in a class by themselves.



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Zero turning radius mowers in five tractor sizes with mowing decks from 44" to 72".



Landscape Rakes

Seven rugged model series in 6 ft., 7 ft. and 8 ft. lengths for tractors rated up to 60 hp.

Isn't it time you moved to the head of the commercial grounds maintenance class with Woods professional equipment? For more information contact your Woods dealer or write today to Woods, Dept. LM, Oregon, Illinois 61061.



Walk-Behind Mowers

Smooth operating hydrostatic drive mowers with cutting swaths from 36" to 61".



Division of Hesston Corporation

Nozzle selection for boomed sprayers

Nozzle Type	HERBICIDES		INSECTICIDES		FUNGICIDES		GROWTH REGULATORS
	Contact	Systemic	Contact	Systemic	Contact	Systemic	
Wide-Angle Full Cone		Excellent		Excellent		Excellent	
Extended-Range Flat Fan	Excellent	Good	Excellent	Good	Excellent	Good	Excellent
Standard Flat Fan	Good		Good		Good		Good
Wide-Angle Hollow Cone		Good		Good		Good	
Twin Flat	Excellent		Excellent				Good
Flooding Nozzles		Good		Good		Good	

NOZZLES from page 58

Spray patterns are a result of the way liquid leaves the nozzle. Terms like flat spray, flooding nozzle, full cone or hollow cone are typically used to describe patterns.

Spray pattern

Each nozzle pattern has a specific range of droplet sizes and specific type of coverage. Some nozzle patterns are more uniform, others offer finer droplets and some have both. Within each nozzle type there are various flow rates and operating pressures that influence the droplet size.

In addition to nozzle spray pattern, droplet size is a critical factor in most chemical applications. Selecting the optimum droplet size is often a balance of coverage versus drift. In many turf applications, uniform coverage of the target is vital.

The smaller the droplets, the more drops per square foot and the better the coverage. These small droplets, however, are easily effected by envi-

ronmental conditions (like wind speed, temperature and humidity).

For applicators who must maintain susceptible plants near their turf areas, who have open water or environmentally sensitive areas nearby, chemical drift should be of concern.

Since chemical application can't always be limited to days when weather conditions are perfect, nozzle types that minimize drift are very important. Generally speaking, the higher the spray volume per 1,000 square feet and the lower the pressure, the larger the droplets and the smaller the chance that the droplets will drift—regardless of the nozzle type used (see chart 1).

Wide-angle nozzles

Wide-angle full cone nozzles provide a uniform, circular pattern at pressures from 15 to 40 psi. Droplets are larger than other nozzle types of the same capacity, making wide-angle full cone nozzles a good choice to reduce drift.

Wide-angle full cone nozzles are

typically operated at pressures of 15 to 25 psi. At lower pressures, these nozzles produce excellent target coverage and uniformity along the boom. Lower operating pressure also results in less wear on pumps and valves.

When mounted at a 45 degree an-

Nozzle spray pattern and droplet size are critical factors in chemical applications.

gle, wide-angle, full cone nozzles provide an excellent balance of uniform distribution and drift control.

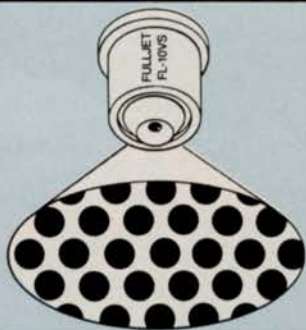
Wide-angle full cone nozzles provide excellent coverage for all systemic pesticides. When used to apply contact pesticides, these nozzles are often used with larger spray volumes to improve coverage of the target (see illustration 1).

(TEEJET)

Illustration 1

Spray pattern: The wide-angle full cone nozzle has a circular pattern of relatively large droplets and is designed for pressures from 15-40 psi.

Best application: When used at 15-25 psi, wide-angle full cone nozzles are an excellent choice to reduce drift with systemic pesticide applications. At these lower pressures, these nozzles produce excellent target coverage and uniformity along the boom. Lower operating pressure results in less wear.



(XR TEEJET)

Illustration 2

Spray pattern: Flat fan nozzles produce medium sized droplets within a tapered pattern which is ideally suited for overlapping along the boom to achieve uniform broadcast coverage. Extended-range nozzles are designed to operate over a wider range of pressures than standard flat fan nozzles (15-60 psi for extended-range and 30-60 psi for standard flat fan nozzles).

Best application: Excellent for applying contact and systemic pesticides as well as growth regulators.



Flat fan nozzles

Extended-range flat fan nozzles produce a tapered pattern similar to standard flat fan nozzles but are designed to operate over a wider range of pressures. The recommended pressure range for extended-range nozzles is 15 to 60 psi compared to 30 to 60 psi for standard flat fan nozzles.

Standard flat fan nozzles are good for applying all contact pesticides and growth regulators. The lower pressure capability makes the extended-range tip excellent for systemic pesticides as well as contact pesticides and growth regulators.

The nozzle is a good choice for drift control since it provides uniform coverage at pressures as low as 15 psi. The nozzle is also ideal for sprayers equipped with automatic sprayer controls since it allows a wider range of operating pressure without changing the spray pattern.

Extended-range nozzles can also