a sharp turn at 10 to 15 mph. If it sways significantly while unloaded on flat ground, it's likely to roll over when fully loaded if a driver swerves to miss something.

For suspension, you'll want a system that allows adequate ground clearance and won't let the UV sag too much under a full load. Consider hydraulic shock absorbers, which are adept at smoothing out bumps. For steering, consider a rack-and-pinion system, which provides a tight turning radius.

Body and Frame

A UV, especially a heavy-duty one, should have a frame that can withstand the most grueling punishment. Notice the gauge of steel used in construction and if the frame is welded or bolted together. Welded "unitized" frames are preferable. Durability increases with the addition of rust- and corrosion-proof materials, especially for frames and cargo boxes. Injection-molded plastic components can enhance durability and appearance. Vehicles with rust- and corrosion-proof materials have higher trade-in values and can lower long-term operating expenses.

Serviceability

How do you purchase serviceability? Buy a brand with a service department in your area. Also, buy a model that makes self-servicing as easy as possible. In other words, when deciding on a UV, consider design simplicity and accessibility of areas that need servicing. Maintenance like changing oil, oil filters, cleaning air filters, tire pressure and so forth can be done in-house.

For some servicing, however, you'll need to take the UV to a dealer's service department, so consider how conveniently it's located and its reputation for providing quick, reliable service. When looking at UVs, also check out the vehicle's warranty and cost of service contracts.

Safety and Operability

UVs get used hard, and not always by the most knowledgeable or skilled workers. Therefore, to help part-time operators, some models have controls familiar to anyone who can drive a stick-shift pickup.

In general, less-complicated vehicles that require less gear shifting are easier to operate, so people are less likely to make mistakes and are thus safer. Controls should be easy to reach when the UV is in motion, so drivers have no difficulty maintaining control. Now, most UVs use automatic transmissions since they are usually hydrostatic drive. Gas, brake and steering wheel are all the controls you normally use.

There are many other possible safety features you'll want to consider. For instance, today's UVs include the following options: reverse warning beeper, front grille guard, rear fenders, roll bar, restraining cage, revolving amber roof light, spare tire and wheel, spark arrestor, hazard warning flashers, seat belts, tail lights, stop lights, electric horn, mud flaps, and emergency power on-off button. Some manufacturers also offer the necessary equipment for making a UV street legal should you want to operate it on public roads.

Outlined above are but a few of the choices you face when you shop around for a utility vehicle. You'll run into many more as you peruse catalogs and cruise show rooms. You'll also see various options for handling weather conditions, different types of transmissions, and tires of various widths and pressures, to name a few. It seems like there's something out there to meet every turf manager's needs. ❑

Spreading Your Time and Money Using Adjuvants

By Helen M. Stone

Although adjuvants may not be the most glamorous horticultural topic, getting to know these useful additions can aid you by cutting labor and material costs while enhancing chemical efficacy. Webster's Dictionary defines an adjuvant as, "A substance added to a prescription to aid the operation of the principal ingredient." In simple words, adjuvants can make your "plant prescriptions" work better.

Technically, then, surfactants, spreaders, stickers and wetting agents can be thought of as adjuvants. They are added to emulsifiable concentrates, flowables, wettable powders, soluble powders and other chemicals during the mixing process. They can extend, enhance, concentrate, reduce drift or disperse the liquid formulation to make it more effective. However, used incorrectly, they can cause phytotoxicity or even damage plant roots.

Water is a unique compound because of a phenomenon called hydrogen bonding. Hydrogen atoms in the water molecule have a strong attraction to other hydrogen atoms in other water molecules. However, these charged hydrogen atoms also have a strong inclination to bond to other surfaces with an opposite charge. Organic matter and the minerals in soil cause the molecules to "attach" themselves, making them available to absorptive plant roots.

Some surfaces are considered "hydrophobic." Plant leaves are often coated with a natural waxy surface or have small "hairs" to minimize water loss. However, this surface also causes the water molecules to bond together tightly on the leaf surface, resulting in water "beading." If a chemical is mixed with the water, it will not be distributed evenly over the plant leaf. Adjuvants allow these bonds to "relax." The water/chemical mixture can then be dispersed evenly over the leaf surface.

Surfactants are one of the largest groups of adjuvants. The term surfactant is shorthand for "surface active agents." Surfactants reduce the surface tension of the water drops, causing them to flatten out instead of beading up. This results in greater coverage. Spreaders and wetting agents are surfactants.

Nonionic surfactants have no electrical charge and are generally compatible with most pesticides and herbicides. They can make a water droplet "flatten" to cover six times the area of a droplet of plain water.

As well as the component that causes the release of surface tension (the alkyl polyoxylkanes or similar compounds), a nonionic surfactant also should contain fatty acids. The fatty acids cause the mixture to adhere better to the leaves. Alkyl polyoxylkanes will reactivate the first time the plant becomes wet from irrigation, rainfall or dew, causing the pesticide to wash off the leaves. The fatty acids prevent this, and the compound will stay where it is put after it dries.

A new family of nonionic surfactants, the organosilicones, is the latest in adjuvant technology. Organosilicones came on the scene about six years ago. The new chemistry caused a great deal of excitement, because a water droplet could be dispersed to cover 15 to 16 times the area than without the surfactant. However, early organosilicones were extremely dangerous to the eyes (most had a "Danger" signal word), had a high potential for phytotoxicity and evaporated so quickly that the pesticide had little or no residual action. Manufacturers have thoroughly researched these initial problems, and products are now available that have greatly reduced or eliminated them.

Because the leaves of the plants are thoroughly covered, pesticide action is enhanced. Therefore, where two sprays may have been necessary to achieve control, sports turf managers might be able to do the job with a single spray. In addition, since a drop of pesticide solution covers 16 times the area of a solution without an organosilicone surfactant, the total amount of spray solution to achieve complete

coverage can be dramatically reduced. This can result in substantial savings when spraying acres of turf in an athletic field or park.

Organosilicones do not require fatty acids to adhere. The compound breaks down within 24 hours, so additional rewetting will not cause the pesticide to wash off the leaves. For this reason, be sure to use the pesticide immediately or shortly after mixing. Some organosilicones even contain an ultraviolet light screen, so pesticide degradation by sunlight is slowed.

Stickers cause the pesticide to adhere more firmly to the leaves. They are primarily used if rain is expected after spraying. Spreader/sticker combinations are often sold together. However, remember that the more a compound spreads, it will generally stick that much less.

Drift control agents keep spray droplets from breaking apart during application. The larger and heavier drops stay on target more consistently and are less likely to be blown away by light winds. In addition, evaporation is reduced.

Buffering agents control the pH of the mixture. Many pesticides are designed to work at a pH of 7 (neutral). If your water is above or below that pH, the effectiveness of the formulation can be greatly reduced. Buffering agents will eliminate this problem. Foam suppressants are self-explanatory. They can reduce foaming both in the tank and at the nozzle tip.

Selecting for Success

Your first reference point when selecting the appropriate adjuvant is to read the label of the chemical you are applying. More than 200 chemicals have label requirements for some type of adjuvant. Some chemicals' labels require the use of an adjuvant. Others specifically prohibit the use of adjuvants. Some state that you may use an adjuvant. Considering the benefits, unless a label specifically states that an adjuvant should not be used, it makes economic sense to add a surfactant (spreader/sticker).

The wide array of available adjuvants can make selection a confusing process. There are more than 4,000 named adjuvants, with approximately 300 companies manufacturing them. Unfortunately, studies have shown that many are not effective, or do not live up to their claims. There have been materials touted as adjuvants that are 92-percent plain water!

How can this be? The main problem is that, unlike pesticides, adjuvants do not require EPA registration. This means that manufacturers can call a wide range of formulations adjuvants and be within their legal limits.

For example, alcohol can be legally called an adjuvant. Also seen on labels as isopropanol (IPA), alcohol evaporates very quickly and is relatively ineffective as a spreader.

Your best defense against an ineffective product is to educate yourself about adjuvants. Ask questions about alcohol percentage, fatty acids and the actual formulations of the adjuvants you are considering for purchase. Read label rates.

Finally, ask about support materials. A reputable manufacturer will be happy to provide you with literature that explains exact formulations. Manufacturer's representatives should be able to answer any questions to your satisfaction. The bottom line is that the right adjuvant can help your spray program become more effective and less costly. ❑

What You Must Know About Turf Pesticides and the Environment

Dr. Richard J. Cooper

In order to understand the movement of pesticides after application to turfgrass areas, one must first understand the nature and composition of a turfgrass community. Any analysis of the potential for a pesticide to leach into groundwater must take into account the amount of applied material reaching the soil surface and the amount that, in fact, moves down through the soil past the root system. Thus, plant density, rooting and thatch development have a significant effect on leaching potential.

Following seeding, turfgrass plants have a great capacity to produce additional plants from the one primary plant that develops from the seed. This process of tillering, as well as rhizome or stolon production, enables a turfgrass area to maintain and actually increase its density over a period of years, despite the fact that existing plants are maturing, senescing and dying due to environmental stresses and pests.

Although we think of turfgrass as perennial in nature, individual plants are not truly perennial and seldom live more than a year. The turf stand as a whole is perennial only because of its ability to continuously produce additional plants that grow and mature to take the place of those that die. Thus, turfgrass areas can attain plant densities approaching 2,000 to 4,000 plants per square foot, depending upon species and conditions.

This dense soil cover of plants is capable of intercepting and significantly reducing the amount of applied pesticide available to reach the soil surface and potentially leach.

Each of the several thousand plants growing per square foot of turf develops a root system to provide for water and nutrient uptake. As with shoot development and tillering, the roots of turfgrasses are not long-lived perennials and must be replaced on a regular basis in order to maintain their function.

Thus, in a period of one to two years there exists an extensive and well-developed network of roots underlying healthy turfgrass areas. Root systems underlying bentgrass and Kentucky bluegrass turf have been observed to reach maximum depths of 12 and 48 inches, respectively, with a majority of the root system occurring within the top four to six inches of soil.

While root development will vary with soil texture, mowing height, fertility, etc., these estimates provide an appreciation for the extensive nature of a typical turfgrass and are capable of adsorbing and absorbing applied pesticides that might penetrate the canopy and thatch and reach roots. Indeed, numerous pesticides are formulated as systemic materials designed to be absorbed by plant roots. The prolific rooting of healthy turf helps to reduce the vertical movement of applied pesticides.

Used properly, pesticides do not leach into groundwater and are little, if any, threat to the environment. Photo courtesy: Cushman.

In a vigorously growing turf environment, such as a golf course, the rate of plant tissue accumulation often exceeds the rate of decay, resulting in the development of thatch. Thatch is defined as a layer of living and dead plant material that accumulates between the zone of green vegetation and the soil. A moderate thatch layer is useful in tying up pesticide residues and preventing their leaching in soil. Also, the eventual decay of leaves, stems, roots and thatch increases the organic matter content of underlying soil. This increase in soil organic matter may aid in binding pesticides and retarding their movement to groundwater.

In addition to the tendency of the turf system itself to adsorb pesticides and limit their vertical movement, other processes act to degrade or absorb pesticides applied to turf and thus reduce their potential to leach. Depending upon the compound applied, avenues of dissipation include gaseous losses (volatilization), photodegradation by ultraviolet light, microbial decay, hydrolysis (breakdown in water), conversion to other compounds and adsorption to soil particles in unavailable forms.

Concerns about possible adverse effects of turfgrass pesticides on the environment generally focus on potential pesticide movement in runoff or groundwater contamination. Several research studies have demonstrated that a well-maintained, dense turf area can reduce runoff to near zero. This is due in large part to the fact that a turfgrass area has tremendous potential to absorb precipitation. It has been estimated that a 150-acre golf course has the capacity to absorb 12 million gallons of water during a heavy (three-inch) rain-

storm. The velocity of overland flow of water across a dense turfgrass stand is sufficiently slowed enough that, under most conditions, the vast majority of water will infiltrate into the turf/thatch/soil profile before it can move horizontally from a site as runoff.

Studies conducted in Rhode Island have revealed that during a two-year period overland runoff from lawn type turf (three-percent slope) occurred on only two occasions. Both runoff events resulted from unusual climatic conditions. In one case, rain fell on snow-covered frozen ground, and in the other case, extremely wet conditions preceded a five-inch rainstorm that generated runoff.

In the latter case, although a total of 10 inches of rain fell within one week, the depth of runoff was less than 1/13 inch. Work in Pennsylvania determined that irrigation applied at a rate of six inches per hour was necessary to cause measurable runoff from sodded slopes of nine to 14 percent overlying a clay soil. Runoff due to natural rainfall did not occur during the study (1985-1988).

In many areas of the northeastern United States, storms generating rainfall of even four inches can be expected to occur only once every five years. Because turfed areas have a great capacity to absorb precipitation and prevent runoff, runoff from turf would not be expected to routinely travel onto adjacent nontarget areas.

Research concerning the effect of pesticide applications on groundwater underlying turf areas has increased substantially within the past five years. Most of this work has focused on the fate of herbicides and insecticides. The fact that these materials are, in many cases, intended to reach soil and are more persistent than most fungicides makes them a greater concern for leaching than materials targeted for above-ground pests.

Work in Ohio by Niemczyk and Associates has consistently shown that turfgrass insecticides normally penetrate no deeper that one to one-and-a-half inches into the soil profile. When commonly used turfgrass insecticides including bendiocarb, chlorpyrifos, ethoprop, isazofos and isofenphos were applied to a golf course fairway, 98 to 99 percent of the residue remained in the thatch layer rather than leaching into the soil below (as determined one to two weeks after treatment). Residues in the upper inch of soil never exceeded 0.8 ppm during the 34-week sampling period. Indeed, one of the factors hampering soil-inhabiting insect control is the inability of turf insecticides to penetrate below the first few centimeters of the soil profile.

Research evaluating the vertical mobility of preemergence herbicides applied to turfgrass has recently been reported in Ohio by Krause and Niemczyk. When applied to thatch turf, 78 to 100 percent of recovered residues of pendimethalin, bensulide and oxadiazon were found in the thatch layer. When applied to thatch-free turf, 82 to 99 percent of recovered residues of those herbicides were located in the upper inch of soil. Other work evaluating the preemergence herbicide pendimethalin has shown it to be relatively immobile and not susceptible to leaching.

The mobility of the broadleaf herbicides 2,4-D and dicamba has been

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Pesticides

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evaluated by Gold, et al., following application on Kentucky bluegrass growing on a sandy loam soil. Both herbicides were applied at standard rates (2,4-D: one pound per acre; dicamba: 0.009 pound per acre) either during June alone or three times yearly in April, July and September. In addition, duplicate treatments were overwatered by applying 1/2-inch of irrigation three times weekly regardless of rainfall. During the two-year study, 2,4-D and dicamba concentrations were less than one part per billion (ppb) in 80 percent and 91 percent, respectively, of a total of more than 350 samples. No increase in soil concentrations were detected during the second year, indicating that degradation of both herbicides was sufficient to prevent accumulation.

Average concentrations of 2,4-D ranged from 0.55-0.87; standards for 2,4-D and dicamba are 100 ppb and 12.5 ppb, respectively. These researchers stated that the thatch/soil zone underlying Kentucky bluegrass creates an aerobic zone high in organic matter that enhances microbial degradation and adsorption of the herbicides. They concluded, "Given the current water quality standards, routine applications of 2,4-D and dicamba to home lawns do not appear to threaten groundwater quality."

Evidence concerning the immobility of turfgrass fungicides and herbicides has also come from recent groundwater sampling studies on Cape Cod, MA, golf courses. Four Cape Cod courses were chosen for study because they represented a "worst-case scenario" for leaching of pesticides into groundwater. All four courses are located on highly permeable, sandy soils, more than 30 years old, and had a history of high pesticide use. In addition, sampling wells were located where the depth to groundwater averaged 28.5 feet and was as shallow as 5.3 feet below the surface in one case. Cohen, et al., reported that no currently registered turfgrass pesticides were detected in toxicologically significant concentrations.

In addition, they concluded that the "use of turfgrass pesticides by the four golf courses with vulnerable hydrogeology was found to have minimal impact on groundwater quality."

The potential environmental hazard associated with most turfgrass pesticides appears to be minimal since the pesticides most frequently used on turf are not generally highly mobile, highly toxic or very persistent. Those herbicides and insecticides that are intended to reach soil are not usually applied more than once or twice per year. In addition, turfgrass pesticides are normally applied in extremely dilute solutions rather than in concentrated forms. Processes such as volatilization, photodegradation, hydrolysis and microbial decay often act to break down existing residues. And finally, the dense canopy of a well-maintained turf and highly adsorptive thatch minimize runoff and potential leaching.

The pesticide-binding capacity of a turf is strongly related to plant density, thatch development and rooting, which are improved through proper fertilization and pest management. Rather than threatening environmental quality, improved turf quality achieved through judicious use of pesticides can protect the quality of water emanating from a turf area compared to a poorly maintained area or other land uses.

While the evidence is strong that the use of turfgrass pesticides does not appear to threaten groundwater, one should not take this as a license to apply pesticides excessively or without due caution. Cultural and biological approaches to pest control need to be more fully integrated into management plans, with an eye toward reducing pesticide application. There is little doubt that, in numerous cases, pesticide use could be reduced substantially by employing primarily curative spray programs for non-lethal pest problems and by increased adherence to integrated pest management practices. ❑

Dr. Richard J. Cooper works at the Department of Plant and Soil Sciences within the University of Massachusetts. This article is reprinted from the University of Massachusetts Cooperative Extension System publication, Planting and Maintaining Sustainable Landscapes: A Guide for Public Officials and the Green Industry. *To order the 75-page manual, send your check for $7.50 payable to UMass Bulletin Distribution Center, Cottage A, University of Massachusetts, Amherst, MA, 01003. Call (413) 545-2717 for more information.*

Sports Turf Managers Association

CHAPTER NEWS

Florida Chapter #1: The Florida Chapter will hold a meeting on December 12 at the Royal Palm Polo Grounds in Royal Palm Beach, FL. The program will include an examination of the recent installation of ground rubber (Rebound) and details on polo-ground maintenance.

The Chapter's January meeting will be held on January 17 in Lake Worth, FL, in conjunction with the Southeast Florida Turf Conference. For more information on these events, the Florida Chapter, and other pending activities, contact John Mascaro at (305) 938-7477.

Southern California Chapter: The Southern California Chapter combined a total field renovation workshop and a helping hand on October 28. A combination of corporate donations and volunteer expertise and effort converged on the Cal State Fullerton baseball field. The Titan's Field was dubbed the "Field of Screams" by the Orange County *Register* last April.

Results of the Chapter's handiwork will be on display at the STMA National Field Day when the Southern California Chapter hosts the National Sports Turf Managers Association Conference on January 24-28, 1996. Also featured during the conference will be educational sessions, tours and a top-notch trade show. For information on the Southern California Chapter and upcoming activities, contact Chris Bunnell at (619) 432-2421.

Midwest Chapter: Plans are already underway for the next annual meeting, which will be held in March. Those with suggestions for the annual meeting or with topics that they would like to have covered, are urged to call the Chapter Hotline at (708) 439-4727.

Colorado Chapter: The Colorado Chapter's annual meeting and election of officers will be held in conjunction with the 42nd Annual Rocky Mountain Turf Conference and Trade Show, December 6-8 at Currigan Hall in Denver.

For information on the turf conference, the Colorado Chapter or other upcoming events call the 24-Hour CCSTMA Hotline/FAX: (303) 438-9645 and leave a message, or contact: Ross Kurcab, Denver Broncos, at (303) 649-9000.

Minnesota Chapter: The forming chapter in Minnesota will hold its next meeting in conjunction with the Minnesota Turf & Grounds Annual Trade Show and Convention on December 6-8 at the Minneapolis Convention Center. For more information contact: Scott Turtinen, Executive Director of the Minnesota Turf and Grounds Foundation, at (612) 473-0557. For more information on the Minnesota Chapter or for details on becoming a member, contact: Brian Deyak at (612) 255-7223.

Iowa Chapter: Welcome to the Iowa Sports Turf Managers Association, STMA's newest official chapter. ISTMA will hold its next meeting January 22-24, 1996, in conjunction with the Iowa Turfgrass Conference at the Des Moines Convention Center. The conference will feature workshops for both beginning and advanced sports turf managers, pesticide recertification training, and the ISTMA annual membership meeting. For more information on this event, the Iowa Chapter or other upcoming activities, contact Lori at the Turf Office, (515) 232-8222 or fax, (515) 232-8228.

HAPPENINGS

Gwynn to Keynote STMA Conference

Future Hall-of-Famer Tony Gwynn of the San Diego Padres will be among the top speakers at the Seventh Annual Sports Turf Managers Association National Conference and Exhibition, January 24-28 in Anaheim, CA. Gwynn will keynote STMA's awards banquet with a player's perspective on field conditions and provide an entertaining look at life in the big leagues. Gwynn has been a member of the Padres for more than ten seasons, earning five batting titles and completing 12 consecutive seasons of hitting .300 or better. As a strong supporter of local charities and educational efforts, Gwynn gives inspiration to sports turf managers in their efforts to gain new knowledge through the STMA Annual Conference.

The conference will also include educational sessions, facility tours and hands-on product demonstrations. For more information about the conference, call the national STMA headquarters at (312) 644-6610.

Video Showcases Louisville Expo

Where should all members of the lawn, garden and power equipment industries be July 28-30, 1996, if they want to stay on the cutting edge? Expo 96, in Louisville, KY. The dates are set, plans are under way and contracts reserving exhibition space are being returned daily for the 13th annual International Lawn, Garden and Power Equipment Expo.

For more information, call Bill Lewis, (214) 709-5562.

Gravely, DewEze Sign Joint-Venture Agreement

Gravely International of Winston-Salem, NC, and DewEze of Harper, KS, announced a joint-venture agreement for the manufacture and marketing of DewEze mower products. Gravely International is a division of Ariens Co. of Brillion, WI.

DewEze manufactures three models of all-terrain mowers sold primarily to federal and state governments, municipalities and commercial markets. Gravely International will assume worldwide marketing and distribution of DewEze products. Manufacture of the all-terrain mowers will continue in Harper, KS. Gravely International was founded in 1916 by Benjamin F. Gravely, the inventor of the motor plow.

Grounds Maintenance School Set

The Southern Illinois Grounds Maintenance School, sponsored by the University of Illinois, Urbana-Champaign, College of Agriculture Cooperative Extension Service is scheduled for February 28-29, 1996, at the Gateway Convention Center in Collinsville, IL.

The program features two keynote speakers and 18 educational sessions covering topics such as woody ornamentals and landscaping, turf and herbaceous plants. A trade show is also included. For more information, contact Ron Cornwell, (618) 692-9434.

Send your industry news to:
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or FAX us at: (619) 770-4380

ROOKIES

New Tractor Line

The Sabre is a line of four mid-priced tractors and two walk-behind mowers. The mowers will feature a 5.5-hp engine and 21-inch cast aluminum deck. Model 14ss has a two-speed transmission, while the 14PS is a push mower.

The tractor line includes four models from 13 to 16 hp. All will be produced in Greeneville, TN. The 1338G includes a gear-drive transmission and a 38-inch mower deck, while the 15-hp 1538H is powered by an OHV powerplant for reduced emissions. The 15-hp 1546G and 16-hp 1646H both feature OHV engines and 46-inch decks. Safety features include color-coded controls, maintenance-free battery, and a safety seat switch that turns off the engine if the operator leaves the seat while the blades are engaged.

JOHN DEERE

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Topdresser

This topdresser will fit in the box of most utility vehicles. A single operator can mount it in the box in minutes, without dismantling any part of the utility vehicle. The unit is self-contained and powered by a five-hp Briggs & Stratton engine. It can distribute topdressing material from either side or in a full-spread pattern.

TERRACARE PRODUCTS

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Core Aerators

The models TA-19 and TA-26 are roll-type core aerators with 3/4-inch tines that give up to nine holes per square foot and are powered by a four-hp Honda engine.

The smaller TA-19 can aerate 24,000 square feet per hour and the TA-26 can aerate up to 34,000 square feet per hour.

CLASSEN MANUFACTURING INC.

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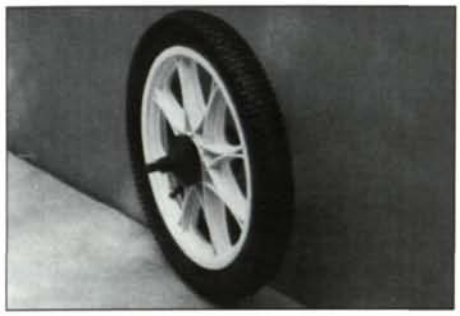
Turf Tire



The turf-friendly wide profile is less prone to leaving ruts and will carry heavy loads over soft terrain. The turf tread pattern is puncture-resistant and will give equipment the industrial-strength look. Two sizes of the pneumatic HF224 are available: the 16-by-2.125 size is 16.2 inches tall, 2.1 inches wide and will carry a load of 174 pounds per tire. The 20-by-2.125 size is 20 inches tall, 2.2 inches wide and will carry a load of 213 pounds per tire.

DURO TIRE CORP.

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Field Marker

The Trumark Athletic Field Marker is designed for safety, convenience and economy. Mark fields all day with the 12-volt deep-cycle marine battery. Dual nozzle spray head provides a distinctive line from two to six inches wide in a single pass. The fold-down handle is convenient for storage and transportation. Ten-inch pneumatic tires on ball-bearing hubs provide rolling ease. The Trumark field marker is safe to use because there are no combustible fuels, pressurized vessels or canisters.

SPARTAN INDUSTRIES

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Snow, Ice Melter

Melt Man® Plus contains no rock salt, yet quickly melts snow and ice at temperatures below zero Fahrenheit. A combination of three fast-melting proven ingredients, it will not harm grass, trees or shrubs, nor leave a chalky or oily residue.

It's offered in two sizes, 18 pounds and 40 pounds, with easy-carry handles, and stores well from season to season.

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PRODUCT SHOWCASE

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