#### 3. SPRAYER.

It's a 100-gallon polyethylene tank that holds liquids for spraying greens, trees, bushes or roughs guickly and accurately. Team it with the Turf-Truckster equipped with a standard 2 to 1 auxiliary transmission, optional PTO and ground speed governor

for properly controlled spraying.

#### 4. TOP DRESSER.

Compared to self-powered or walk-type top dressers, this unit pays for itself in the hours it can save vour crew. A rubber fabric moving bed and rotating

brush are regulated by



the vehicle's ground speed to maintain an even spreading pattern over a 311/2" swath. And the hopper holds up to 1,000 lbs. of material from rock salt to powdered fertilizer.

#### 5. SPREADER/SEEDER.

Mounted on the optional Short Box or Flatbed/Box, its cyclone action spreads up to 300 pounds of seed, sand, salt or fertilizer over areas up to 40' wide. The Spreader/Seeder is powered by the Turf-Truckster's optional PTO with extension shaft. And since all controls are operated from the driver's seat, one man can



#### 6. QUICK AERATOR.

We call it the Quick Aerator because its 46" wide swath lets you finish big

aerating jobs fast. It can also move from job to job fast. because it can be

hydraulically lifted by controls from the driver's seat for ground transport (optional hydraulic system and dump set required). Three tine styles are available for different soil conditions: slicing, coring (2 sizes) and open spoon.

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Now you can groom non-turf areas with your Cushman Turf-Care System. Attach the new Grader/ Scarifier to your Turf-Truckster and you're ready to break up compacted dirt on ball diamond infields or golf car pathways. As a professional grading tool, it will keep your grounds even, or create new surfaces. There's a built-on dragmat holder, driver-operated controls and an optional scarifier replacement bar with extra-close 11/2" tooth spacing.



#### 8. POWER CONVERTER.

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#### 9. CUSHMAN RUNABOUT.

If you need a vehicle for moving people and equipment efficiently, consider the Cushman Runabout. Either the two-man 18-hp Runabout, or the one-man 12-hp model. Both give you maneuverability and feature a big pick-up box, and 3-speed transmission. And both Runabout models let your crew get to the job without tying up a golf car that could be on the course earning a profit.



The Cushman Runabout. The Cushman Turf-Truckster. The Cushman Turf-Care System. They're all designed with the kind of quality you've come to expect from Cushman. And common sense engineering for less downtime, helping you hold down rising operating costs.

If you'd like to see our turf system in action on your grounds, return this coupon. Your Cushman Turf Dealer is ready to demonstrate our labor-saving System to you now.

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## ALTERNATIVES TO SILVEX FOR BROADLEAVED WEED CONTROL

By Thomas R. Turner, Extension Turf Specialist, University of Maryland, College Park, MD

The Environmental Protection Agency has temporarily suspended many uses of silvex (2, 4, 5-TP), including virtually all uses on home lawns, golf courses, and other turfgrass areas. Because of this ban, many questions have been asked concerning broadleaved weed control in turf, especially relating to alternatives to silvex. The University of Maryland Agronomy Mimeo 79, "Weed Control in Established Bluegrass Lawns," which describes broadleaved weed control in turf, is no longer distributed due to its recommendations for silvex use and is currently being revised.

Most broadleaved weeds which were controlled by silvex can be controlled by either 2,4-D, dicamba, MCPP, or a combination of two or all of these materials. Chemical alternatives to silvex for some of the broadleaved weeds commonly found in turf are shown in Table 1. Often, combinations of the herbicides listed in Table 1 provide better control than the individual herbicides alone.

The weeds for which silvex was formerly recommended and about which most questions have been asked include white clover, the chickweeds, black medic, henbit, ground ivy, oxalis, wild straw-berry, and violets. Use of 2,4-D will not control these weeds. MCPP will control white clover and the chickweeds, but higher rates and repeated applications are needed for what may be marginal control of black medic, henbit, and ground ivy. MCPP will not control oxalis, violets, or wild strawberry, which presents a special problem when growing under trees or near shrubs. Although dicamba will control oxalis and wild strawberry, it will not control violets and should not be used under the drip line of trees or near shrubs since it moves readily in the soil and is absorbed by plant roots. Thus, although oxalis, wild strawberry, and violets could formerly be controlled to some degree by silvex, these weeds are now considered mearly uncontrollable by home lawn care companies, which cannot afford to take the risk of applying dicamba near trees or shrubs.

One possible hope for chemical control of oxalis in shady areas is Ronstar (oxadiazon), which is labeled for preemergence control of oxalis. Also, some alternatives to silvex for these difficult to control weeds may be found in current research which is being conducted to further study the effectiveness of various combinations of 2,4-D, dicamba, MCPP, and other less commonly used materials such as 2.4-DP. However, due to the difficulty that has been encountered in chemically controlling many broadleaved weeds, which has been compounded by the restrictions placed on silvex use, new emphasis needs to be placed on non-chemical methods of control, especially management practices.

Many steps can be taken to reduce the dependence on the use of herbicides for broadleaved weed control. The most effective means of control of any weed is to prevent the weed from becoming

Continues on page 47

Weeds Controlled By Silvex	Alternative Means of Chemical Control	
black medic	dicamba	
buttercup (creeping)	2,4-D*, dicamba*	
carpetweed	2,4-D, dicamba, MCPP*	
chickweeds	dicamba, MCPP*	
chicory	2,4-D, dicamba, MCPP	
cinquefoil	2,4-D*, dicamba*, MCPP*	
clover (white)	dicamba, MCPP	
daisey (oxeye)+	dicamba*, MCPP*	
dandelion	2,r-D, dicamba, MCPP	
dogfennel	2,4-D*, dicamba, MCPP*	
ground ivy+	dicamba*, MCPP*	
henbit	dicamba, MCPP*	
knawel	dicamba, MCPP*	
mallow (common)+	2,4-D*, dicamba*	
oxalis (yellow woodsorrel)	dicamba*	
pineappleweed+	dicamba, MCPP*	
purslane	2,4-D*, dicamba	
violets+		
wild carrot	2,4-D, dicamba, MCPP*	
wild strawberry	dicamba*	

+ Usually required more than one application of silvex for fair to good control.

May require repeated treatments for fair to good control.

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"The main reason I'll use Chipco 26019 is to control dollar spot. Picking up brown patch and the others is gravy, as far as I'm concerned. This is a real good new chemical."

-Bob Dickison, golf course superintendent Upper Montclair Country Club, Clifton, N.J.

"I feel very good about this product. We tested it during one of the roughest summers in my memory. I think, over a 14-day period in August, we had very close to 10 inches of rain. It was an acid test for the material. These chemicals come and go, and some of them are short-lived. But you folks have something good here. The sprayability of Chipco 26019 is very impressive. And you only need six to 10 hours of drying time, which helps a lot during rainy periods. Some other materials require at least 12 hours.

> -Paul Boizelle, golf course superintendent, and John Fenwick, foreman, Fiddler's Elbow Country Club, Far Hills, N.J.

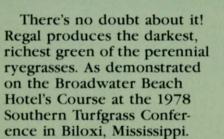
"We started using Chipco 26019 in June of 1977. Before we started using it, we had very little luck with our other contact and systemic fun-

gicides in certain areas. We were applying some contact fungicides at preventative and curative rates, and still only getting two or three days control, with the usual cold fronts coming through, followed by large outbreaks of dollar spot. Since we started using Chipco 26019, we haven't found dollar spots in these areas at all." -Randy Wahler, golf course superintendent Glen Flora Golf Course, Waukegan, Ill.

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Regal's color advantage is apparent on the No. 5 hole at the Broadwater Beach Hotel's Sun Course, Biloxi, Mississippi. Regal on the right. A leading competitive grass on the left.

into spring, and through the spring transition. While the turf quality of other ryegrasses decreases in the spring, Regal maintains superior quality while yielding to bermudagrass, for a smooth transition.

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#### Alternatives from page 42

established in the first place. Thus, proper turf-grass establishment is important in preventing future weed problems. Steps that can be taken include:

Buy good quality seed. Poor seed, containing varieties not adapted to your area, will ultimately result in a poor turfgrass stand which will enhance the chances of weeds becoming established. Buy certified seed of varieties adapted to your particular state.

Seed at the proper time. Seeding during stressful periods results in a poorer turfgrass stand and thus less competition against weeds. Also, conditions for germination and growth of many weeds are more favorable at other times of the year.

Fertilize seedbed according to recommendations. Too little or too much lime and fertilizer will result in poorer turfgrass establishment and thus more weeds. Soil should be tested to determine the proper amount of liming material and fertilizer to apply.

Any other management practice, such as proper mulching and watering, which encourages vigorous seedling growth and thus increases competition against weeds should be used.

Many of these same principles apply to established bluegrass and fescue. Management practices which encourage a vigorous and dense turfgrass stand will help reduce the chances of weed encroachment. Proper mowing, watering, and fertilization are critical. Grass mowed too close or not frequently enough (which results in too much of the grass plant being removed at one time) results in a poorer root system and less competitive turf. Frequent, light watering can result in a shallow root system and more disease susceptible turf and thus a less competitive turf. Also, a continually moist soil surface encourages weed seed germination and provides a more favorable environment for weeds such as clover, chickweed, and ground ivy. Watering thoroughly and only when needed will thus discourage weed encroachment.

Applying fertilizer in the proper amounts and at the correct time is a must for obtaining a vigorous stand of grass and discouraging weed encroachment. Good soil drainage and minimizing soil compaction are also important in favoring your grass

Continues on page 56

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47



#### Forklift innovation stops pallet theft

The owners of an Indiana turf farm have developed one practical method of reducing work site theft of sod pallets. The system allows a forklift to remove the pallet from the sod stack without damage to the sod. Harold and Victor Keigley and

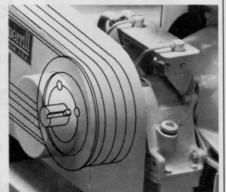


Applying engineering designs which "Sound Conditioned"\* our industrial scrap reduction machinery, Mitts & Merrill can modify our brush chippers for low noise levels. At the same time, those engineering features which have made Mitts & Merrill the leader for years have been retained.

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Harold Helter of Red Hen Turf Farm devised the method with the help of equipment maintenance man Don Kilgore in 1978 and gave the idea to the American Sod Producers for further development. Four turf equipment companies have begun to work on production of prototypes.

Called an extruder system, the devise consists of a thick plastic plate attached to the pallet and hydraulic push bars on the forklift to slide the sod off the pallet.

The innovators said pallets last longer, the need to pick up pallets after the job is eliminated, and theft is virtually eliminated.

#### Second Orlando Inn to house meeting goers

If you haven't already made your reservations to attend the American Sod Producers Association Winter Meeting in Walt Disney World's Contemporary Resort Hotel because you thought there were no rooms, there still is a way to have a hotel room when you get to Orlando. The Dutch Inn Resort on the edge of Disney World will take reservations until Feb. 1st. ASPA advises you call the Inn (305-828-4444) right away and guarantee a room by credit card or deposit.

Scheduled dates for the ASPA meeting are Feb. 24-26. For conference registration contact ASPA. Association Bldg., 9th and Minnesota, Hastings, NE 68901 (402-463-5691)

ASPA President John Hope recently indicated that the meeting and future association efforts will seek to differentiate northern and southern sod production. More attention to vegetative production methods is likely in 1980. For this reason sessions will be split in Orlando to help serve the southern grower better. Afternoons will be free to enable show goers to sample some of the vast recreation potential of Disney World and other Orlando attractions, such as Sea World.

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#### Florida researchers seek ways to hasten vegetative turfgrasses

Philip Busey and B.J. Myers of the Florida Agricultural Experiment Station in Ft. Lauderdale, recently reported in the Agronomy Journal (Vo. 71, No. 5) that it may be possible to accelerate growth of vegetatively propagated turfgrasses and thereby improve the efficiency of commercial sod production.

The researchers have begun tests to counteract the slowing effect on grass growth caused by a natural tendency for stolons and rhizomes to pack together. The plants becoming self-inhibiting when densely spaced.

Improved growth rates were achieved by dividing the sod frequently. This was accomplished under greenhouse conditions by cutting two- to three-node stolon pieces from each clone and transplanting them in the same plot. Frequency of division and improvement of growth rate depended upon the type of turfgrass. Other findings by Busey and Myers included improved growth rates in sand over sand/muck or sludge, and little improvement by temperature changes.

For more information contact the Busey or Myers at the University of Florida Agric. Res. Center, 3205 S.W. 70th Ave., Ft. Lauderdale, FL, 33314.

#### Brouwer rolls out 1,000th harvester

Gerry Brouwer, president of Brouwer Turf Equipment, Keswick, Ontario, Canada, must have felt very confident and proud of his product as the 1,000 sod harvester came off the line recently.

Sharing in the celebration was the buyer of the 1,000 unit, Greg Lurvey of Lurvey Sod Farms, Dausman, WI, and the seller, Rolley Kieffer of Milwaukee Ford Tractor.

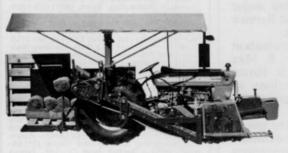
The well-known harvester is now sold in 11 countries.

If that weren't enough, the government of Ontario presented the company its achievement award for increased exports, job creation, facilities expansion, and product research and development. Slightly more than 100 companies have received the award in the 17 years of its existence.



Celebrating Brouwer's 1,000 harvester are (I. to r.) Gerry Brouwer, the Lurveys, and Rolley Kieffer of Ford.

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ROUWE

The Turf Equipment People

Dottie Krantz and James Williams from the park district told participants at the Ohio Parks and Recreation Association annual conference, held in Cleveland Nov. 26-28, that in a six-month period 63 volunteers gave 5,000 hours of their time. This figured into a savings of \$15,000-\$30,000 after a training expense of \$400-\$500.

Park personnel asked volunteers to fill out two cards - one with basic information and the other with hobbies, interests, and prior volunteer programs. Through the special information from registrants, the park found people with a variety of useful talents. Volunteers were then placed in the best position for their skills. One person designed the park's brochure and others helped out in some extraordinary ways.

The park gave each volunteer a manual explaining about the park, its wildlife and vegetation, along with guidelines for work. All volunteers wore "V.I.P." (Volunteer-In-Park) badges on them at all times.

After 10 weeks of training, volunteers were given a certification of achievement. At the end of the full session, they had a graduation picnic. A questionnaire about the program asked if they would continue and most said "yes." Not only is their time and effort

profitable to the park district, said Dottie Krantz, but their public relations. "As they go out, they're selling the park to others with their enthusiasm."

Other sessions on the program dealt with minority recruitment, team leadership in management, publicity for the media, the Urban Park and Recreation Recovery Program, safety and security, computers as management aids, and maintenance and conditioning of athletic fields.

#### ENERGY

#### **Forest fires destroy** vast amounts of energy

Forest fires in the U.S. annually burn the energy equivalent of 447,-000,000 barrels of oil-or more than 12 percent of the oil we import, says Norval Morey, president of Morbark Industries Inc.

Morey says that if we would thin our forests and use the wood for energy we would help solve our forest fire and avoid most of this loss. A forest virtually without dead wood to kindle extreme temperatures.

Our forests are in deplorable condition today, with a vast amount of dead, dying, diseased, overmature, and undersized trees as well as trees that are of species not in demand for such things as lumber, pulp, paper, and other conventional wood product uses, Morey says. The forest should be properly managed and used to power industries across the nation that now burn imported oil to make steam heat and electricity.

In countering arguments of studies showing a high degree of air pollution in areas where wood is burned in wood stoves, Morey points out that burning wood in industrial boiler systems represents one of the cleanest fuels available today.

Industrially burned wood, for example, has very low sulfur content, a tenth that of the lowest sulfur coal. There is very little particulate emission. The proportionately small amount of ash generated can be collected and sold as a fertilizer ingredient. Industrial wood-fired boilers easily control nitrous oxide emissions.

#### FORESTRY

#### Forest chief: we need wise management in 80's

Efficient management of small, privately-owned commercial forests and careful planning of governmentowned wilderness areas are major concerns of the U.S. Forest Service in the 1980's, its chief says.

Speaking to faculty and students at Michigan State University, R. Max Peterson, chief of the U.S. Forest Service, discussed directions in natural resource development for the next decade.

He said the forest service would like to do more to provide the owners of small, private forestry operations with information on how to manage their forests for more and better uses of the wood they produce.

"Many people think of forests as the property of state and federal governments for the most part," he says. "Actually, more than 60 per-cent of all the commercial forestlands in this country are operated by small, private owners."

Continues on page 60

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