REMEMBER THE BASICS - MOWING

Many times good mowing practices are taken for granted. Mowing is not the simple operation of only removing excess growth. It is a process which greatly affects the health and vigor of turf and therefore should be worthy of careful study. Without good mowing the finest of other maintenance practices would never be completely effective.

When a turf area is mowed, the most obvious result is that the leaf surface of the grass plant is reduced. However, there are many other less obvious consequences resulting from mowing. Some of these are: 1) a temporary stopping of root growth, 2) carbohydrate production and storage is reduced, 3) the ratio of top growth to roots changes, 4) shading of lower leaves is reduced, 5) a port of entry for diseases is opened, 6) water loss is temporarily increased and 7) water uptake is decreased.

The turfgrass manager has several management choices which directly affects the less obvious consequences resulting from mowing. The principal choices are: height of cut, frequency of mowing, when to mow, the patterns of mowing and type of equipment to be used. The majority of these choices were discussed in ProTurf Issue 3. In this article we will discuss patterns of mowing and types of equipment used.

Mowing Pattern

Mowing continually in the same direction encourages the grass leaves to grow in the same direction. Such a pattern is often referred to as grain. Changing direction with each mowing decreases grain and creates an attractive pattern.

Because of design it is often easier to change mowing directions on some turf areas than on others. For instance, it is easier to alter mowing directions on greens and tees than on long areas such as fairways. Mowing pattern is even more rigid on some institutional areas. The first cut is generally made on the outside of the area and the same pattern is repeated over and over until the tires form a track or compacted strips. On subsequent mowing this means that the wheel will follow in the same path time after time.

Many times it is profitable to stop and take enough time to study mowing practices and patterns. For example, we mentioned that golf course fairways are generally mowed lengthwise. Undoubtedly, this does save some valuable time. However, when fairways are mowed continuously in this manner, turns are usually made in front of the tee or approach to the green. As a consequence, the valuable playing area in front of the green suffers, looks poorly and tends to loosen grass. Of course, such areas are also subject to more compaction which directly affects the area being maintained.

One solution which will help prevent this problem is to initially consider building the green or tee so mower turns can be made by circling behind the green or tee with alternating passes. When this is done there is less wear and tear on the approach areas as well as less compaction problems. A second solution is to make gradual turns and disengage the reels if possible so turns can be made with the reels idle. When making turns, spinning reels may cause scraping and damage. Of course the sharper the turn and the faster the reel spins, the more severe the damage.

There is also the possibility of mowing the fairway crossways rather than lengthwise. This practice is not as time consuming as one might think. Cross mowing can often be continued without interfering with play or interrupting the tractor driver, especially if two parallel fairways can be mowed at the same time. A driver mowing a fairway lengthwise may be stopped 20-30% of the time waiting on play. It may also be feasible to mow such areas from corner to opposite corner. In other words, on long slanting paths. This will permit alternate mowing in two directions.

We originally referred to "grain" which may result by continuous mowing in one direction. Vigorous growing grasses such as creeping bents and bermudas produce above ground parts called stolons. They grow horizontally along the ground and many of them are not cut off by normal mowing operations. When they accumulate a "grainy" condition develops. In time a mat or thatch problem exists.

A grainy condition can generally be kept to a minimum by alternating mowing patterns and occasionally using a brush attachment on greens mowers. Brushing will raise the stolons so they are cut off in mowing. Brushing should be performed frequently during spring and fall when the growth rate is rapid. Infrequent brushing is suggested during the hot summer months. Verticutting in combination with brushing are the keys in preventing graininess and thatch build up.

Kinds of Mowers

Mowers used to maintain recreational turfgrass areas are either of the reel or rotary type although flail mowers may also be used for certain areas. Each mower has its advantages and disadvantages and only you can decide which mower type is best for your specific needs. Most manufacturers do a fine job by providing specific information which will be helpful in making the proper selection.

Reel mowers are generally used on areas where a low and quality cut is desired. Good examples are golf course greens, tees and fairways. A real mower should not be used to mow tall grass.

Rotary mowers perform best on grasses being maintained at higher mowing heights. They are especially adapted to coarse-textured grasses. One of the biggest advantages of a rotary is economy. The blade is usually mounted directly on the engine shaft. Belts, clutches and gears are not required for operation as in the case of most reel mowers. With frequent filing the blade is also simple to sharpen. However, rotary mowers are more dangerous to use than reel mowers. The high velocity of the rotating blade can pick up foreign objects and hurl them with lethal force.

Regardless of the mower selected, good maintenance is of utmost importance. If there is a single most important function in mowing, it is keeping the blade sharp. The frequency of sharpening depends on conditions of use. The more foreign objects passing through a mower, the more often it will need sharpening. A reel mower should be sharpened by back lapping where the reel and bedknife is sharpened and mated. Lapping can also be used between sharpenings to increase the keenness of cut. However, lapping will not correct dullness when the blade is rounded and worn.

Mowers should be cleaned after every mowing. Manufacturers recommendations should be closely followed. In addition to increasing the life of the mower, cleanliness also develops pride. When a crew member uses a clean, sharp and well-maintained mower, he becomes more than a mower jockey. A man with pride in his mower will do a better job and also increase the life of the machine because he will give it better care. Of course, this has to be taught from the beginning of his first workday.

Any mower is potentially dangerous and careless operation should never be tolerated. The number of mowing injuries could be greatly curtailed by following an absolute set of safety rules.

Proturf Issue Four
Jud Engstrom
Marysville, Ohio

The following are offered - subject to prior sale for liquidation of a business:

Aqua T	Little Horn Seeders
Portable Bases	Orthene/Medicaps®
Blue Pond Dye	Mini-Medicaps®
Line Tender	Yellow Mr. Chain®
Cup Setters	Athletic White Super Striper Paint®

Substantial savings--please reply to:
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Lombard, Illinois 60148
312-629-0223

FOR SALE at Plum Tree C.C. Jacobsen versatile 548 Aero-Blade. Best offer, contact Supt. Peter Bild. Phone 815-943-7477.

The deepest sympathy of the Midwest Association of Golf Course Superintendents is extended to the Bradley Nass family. Bradley, brother of Mike Nass who is supt. at Bryn Mawr C.C. was killed on August 7 at 2:30 a.m. in a train accident near Aurora, Ill.

USS Vertagreen Fall Fairway Fertilizer... We'll help winterize your fairways!

Hit the fairways this fall with an application of this great new USS Vertagreen fertilizer and you're on your way to fewer turf problems next spring. This quality product is ideal for fall fairway fertilization because it has a high potash analysis ...and that means less winter kill.

A soil test in the late summer or early fall will determine if your fairways lack this vital nutrient. If they do, USS Vertagreen Fall Fairway Fertilizer is the answer because it's formulated with primary nutrients specifically for your area. See your USS Vertagreen distributor and he'll show you how to winterize your fairways this fall. Next spring you'll be glad you did.

USS TRADEMARK

Agri-Chemicals

Division of United States Steel

P.O. Box 1685, Atlanta, Ga. 30301

WINTERIZING YOUR UNDERGROUND SPRINKLER SYSTEM

It's that time of the year to think about winterizing your irrigation system to avoid damage caused by freezing. By taking the necessary steps to protect your system now, you will avoid costly springtime repairs.

Blowing out your irrigation system with an air compressor has proven to be the most popular and sure way of draining irrigation systems in the Midwest. We strongly recommend this method.

Drainage Procedure

The following sequence for drainage should be followed in order, and tailored to your particular installation:

1. Several days or a week before actual draining:
   A. Locate irrigation drawing.
   B. Turn off water supply.
   C. Open drains that flow directly into tile lines, creeks or ponds.
   D. Insert sprinklers at the high and low points of the lines to replace the water as the low heads drain.
2. Connect suitable sized air compressor near the source of water. Note: A piping system of 3'' and less can be blown quickly with one 125 cfm compressor. Piping systems 4'' - 8'' can be blown faster with less chance for error with two 125 cfm compressors.
3. Beginning at the water source, open each sprinkler outlet until you get air and no water, then close, on one branch of the main line and follow it to the dead end. Do the same on each branch of the main line until you have air and no water coming from each outlet. Be sure to allow compressor to build up pressure so the water will be moved with a large volume of air.
4. Repeat step 3 to check drainage.
5. Starting again at the water source and working toward the end of each lateral, crack the drain valves slightly to be sure air and no water escapes. Close the drain, wait a minute, and repeat. Water may have collected at the low points. Note: Drains and standing surface water usually occur at low points in the terrain. Closed drains will prevent the surface water from entering the pipe line through the drain valve (along with stones from the drainage sump), and eliminate the drain closing chore during spring turn-on.

Pumphouse Drainage

The basic piping system is now drained and special attention is needed to properly drain the pump-house. One small slip at this state of drainage could be very expensive.

6. Pumphouse drainage:
   A. Starting at the discharge line in the pumphouse wall, trace the flow of water in the piping through gate valves and check valves, and open necessary drains.
   B. Drain pump volutes by removing the bottom plug or opening drainage cock.
   C. Remove or drain suction drop pipe.
   D. Remove water from pressure reducing valve covers by blowing out or loosening cover bolts.
   E. Turn pump motors off and protect windings against possible rodent nesting.
   F. Drain water from pressure gauges, switches, tank sight glasses, tank air chargers, and other special items subject to freeze in pumphouse.
7. Program automatic valves to operate once a day for 5 minutes to prevent the solenoid plunger from sticking and reduce the moisture in the solenoid coil and automatic controller contacts.

Before going out and renting an air compressor and blowing your system, take several hours with your blueprint and the above procedure. Write down in sequence the steps you plan to take when you start actual drainage. The steps can be listed by thinking of yourself as entering the pipeline at the source of water and your job is to push the water out on top of the ground as you move through the pipe. What routes will you have to follow to push all of the water out the dead end of every line? The same route you took entering the pipes at the source to get to the dead ends must be followed by the wall of air you will put into the system when blowing out.

Frost damage repairs have got to rate near the top of the bad job list. In addition they occur at a critical time of year from a manpower standpoint, and can cause several weeks of anguish if the dirt is not properly flushed after the repair is made. Now is the time to think about any necessary pump and sprinkler repair required for next year's operation. Get the necessary part on order and make the repairs conveniently in the winter rather than wait for the spring rush.

Take the time to properly drain your irrigation this fall.

from Century/Rain-Aid

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FUSARIUM BLIGHT ON BLUEGRASS FAIRWAYS

Fusarium blight has been a severe problem on my Kentucky bluegrass fairways for the last two years. It has not damaged large areas of turf, but has consistantly blemished our fairways during hot, dry weather. Fusarium blight is becoming more severe each year and shows up earlier in the season each year. When I first noticed the disease four years ago it was present on only two fairways on south slopes. It has now spread to every fairway on the course with the heaviest damage on the higher and drier areas.

My attempts at controlling Fusarium blight have been only marginal at times and good at other times. I have been using Tersan 1991 as a chemical control and heavy watering as a cultural practice. My intention has been to limit the extent of damage rather than total control due to the cost involved. In 1975 I used no chemical control for Fusarium as the disease was only active in small areas on a few fairways. Heavier than normal watering did minimize the damage. In 1976 the wilt symptoms of the disease were evident the first week in June despite good rainfall. Tersan 1991 was applied at a 5 oz. per M rate on nine of the most affected fairways. In treating nine fairways 216 lbs. of material was used at a cost of $2,130 or about $130 per acre. The application was made in the evening and watered in before the material dried on the grass blades. The disease did not progress past the wilt stage except in some areas where the irrigation system did not cover well. The untreated fairways continued to show wilt and damage as the disease continued to develop over a two week period. Changing weather conditions then stopped disease development, but wilting was still present on the untreated fairways in the afternoons. At this point I was pleased with the results from the 1991 application, but I didn't know how long the control would last because disease activity subsided after two weeks. In July wilt symptoms and damage again showed up and by the middle of July with higher temperatures and drier weather Fusarium activity began picking up. Areas that had been showing wilt were now being damaged severely. At this time another 5 oz. application of 1991 was made to the same nine fairways and watered in heavily. The results were disappointing in that damage continued and when comparing treated areas with untreated areas I could find little difference. The second application exhausted my chemical supply so no further applications were made in 1976. I continued with the heavy irrigation and managed to hold the damage down to about 10% in most areas. The only explanation I can offer for the poor control from the second application is that the disease had advanced beyond the wilt stage when the application was made.

In 1977 I anticipated increased Fusarium blight activity, but I didn't anticipate this activity in the middle of May. On May 1 Tersan 1991 was applied at a 5 oz. rate to seven fairways that were showing severe wilt symptoms. The appication was watered heavy in the evening and again in the morning. Within a week the treated fairways were showing much less wilt than the untreated fairways. By the end of the second week it was evident that we were getting disease control as the untreated fairways began to show damage, while the treated fairways continued to show some wilt only. The fungicide seemed to control the Fusarium for a 3 to 4 week period before some damage showed up on the treated fairways. Heavy irrigation was used on all the fairways and did minimize the damage on the untreated fairways.

To summarize, Tersan 1991 did control Fusarium blight at a 5 oz. per M rate if it is applied when early wilt shows. Control seemed to last 3 to 4 weeks, but changing weather conditions made it difficult to determine how long we were getting control. Heavy and frequent irrigation is required even if a fungicide is used. However, the heavy irrigation is causing significant increases in our Poa population. In the past four years Fusarium blight has progressed from a minor disease problem to a major problem and it appears earlier in the season each year. In my opinion it is not feasible to chemically control Fusarium on fairways for an entire season as the cost would be staggering. If control was required through July and August only, a fungicide program should be considered. Resistant grass varieties seem to be the only real solution to Fusarium blight on my course. In the May, 1977 issue of Weeds, Trees and Turf there is an article entitled Reflections on Fusarium Blight by Dr. Richard W. Smiley that is very informative.

Credit - Ind. G.C. Supt. Assoc.
Ralph Piske, Supt.
Kokomo Country Club

AMERICANS ALL ...

This Anniversary (of our independence) animates and gladdens all Americans hearts. On other days of the year we may be party men, indulging in controversies more or less important to public good. We may have likes and dislikes, and we may maintain our political differences, often with warm, and sometimes with angry feelings. But today we are Americans all; nothing but Americans.—DANIAL WEBSTER, address delivered July 4, 1851, at the cornerstone laying of the new wing of the Capitol.

THOUGHT FOR THE MONTH

YOU DON'T buy a newspaper - you buy news.
YOU DON'T buy life insurance - you buy security for others.
YOU DON'T buy flowers - you buy sentiment and service.
YOU DON'T buy eyeglasses - you buy vision.
YOU DON'T buy awnings - you buy shade.
YOU DON'T buy membership in your Association - you buy cooperation of the ablest men in the turf management profession with whom you can join hands to do things that you can't accomplish alone.
YOU DON'T do a service to yourself or to GCSAA by failing to pay your annual dues on time, and by not convincing others to join our ranks!

Illinois State Florists' Association Bulletin

Don't skimp on time or the relatively small amount of money it takes to keep your **electric irrigation motor in proper operating condition**. An adequate power supply, regular lubrication, providing a good "home" for the motor and pumping plant, and shutdown maintenance save you time and money, especially if your motor tires of abuse during a critical period in your irrigation schedule.

First, of course, the motor and pump must be carefully matched. Too-small or too-large motors are inefficient and energy-wasters. Then, your motor must have a good power supply--one in which there is little voltage deviation or imbalance. The reason is that minor voltage differences cause major increases in motor temperature.

This two-part formula describes the increase in temperature due to voltage variation: The percentage of voltage imbalance equals 100 times the maximum deviation from the average voltage divided by the average voltage. The related motor temperature rise equals 2 times the percentage of voltage imbalance squared. For example, if the average voltage reading is 215, and the voltage readings are 220, 215 and 210, the percentage of voltage imbalance is 2.3 percent. The increase in motor temperature, is 10.58 percent.

Generally, the motor's life is doubled for each 18 degrees **F** that operating temperature is reduced so skimping on wire size to your motor is obviously false economy. Unfavorable power source conditions will burn your motor out in minutes. The interruption of power on one line of a three-phase source means the other two lines will furnish about twice the normal current to part of the motor winding.

Less than normal current also increases the motor's current-draw. Thermal-type overload relays--which open automatically if overload persists--help protect motors. It is also essential that fuses or circuit breakers are provided according to engine specifications and that the motor has a well-grounded lightening arrestor.

Shading from direct sunlight, regular lubrication, and keeping the motor clean from dust and dirt, chaff and grease also help keep the motor cool.

Proper lubrication includes oil type used, schedule of changes, and gauging stress from the motor's environment. Some motors need oil for continuous lubrication of thrust bearings, and ordinary motor oils won't do. The detergent in motor oils keeps wear particles and contaminants in suspension, which promotes bearing wear. In addition, most motor oils are not made for the heavy service expected in irrigation motors.

Excessive heat oxidizes the oil, which forms gums, varnish, and organic acids. All of these by-products reduce the oil's lubricating capacity and encourage wear. For each 15 degree F increase in oil temperature, oxidation doubles and oil life is cut in half.

On motors where the bearings need greasing, regrease at least once a year or oftener. On some motors, an exit plug has to be removed to permit flushing of old grease. If the bearings become "over-packed", the balls slide instead of roll, and excess heat builds up. Water-cooled bearings always need adequate water flow.

Your motor's efficiency and useful life are also heavily dependent on its foundation. Misalignment of the drive shaft is a leading cause of motor-pump drive failure. Proper motor-pump alignment means a stable foundation, preferably concrete, to reduce vibration. Because foundations often shift after a period of time, the foundation, motor, and drive should be inspected for alignment at least once a year.

Shutting down your motor properly is also a maintenance function. Drain old oil while the motor is warm and replace it with the proper grade of new oil. To avoid seizure of bearings and gears, operate the motor at least five minutes once a month. At least once each year, check the wear pattern of gear teeth and gear backlash in the pump drive for signs of abnormal wear.

Following these simple maintenance steps will help you get more useful life from your motor--and for less money. When you irrigate is another money-factor to consider. To help reduce costs, check with your power company about operating during off-peak hours when demand is low. These periods are usually at night, when temperatures are lower and motor operation is more efficient anyway. And, because lower demand by other users help avoid fluctuations, operating during off-peak hours may save additional money from improved motor operation.

A new paving for turfgrass areas is being introduced by Turfgrass Products Corp. of North Miami, Florida. Tom Mascaro, president and internationally known turfgrass expert and inventor has developed GRASS-CEL• Paving to help eliminate soil compaction and turfgrass wear on intensive use areas. Grass-Cel Paving has a honeycomb structure that resembles small six sided flower pots joined together. The walls of the cells support the weight and wear of traffic while protecting the soil and grass plants. As easy to install as floor tile, ordinary work crews can plant them. Made of tough resilient green synthetic materials, Grass-Cel is practically invisible after established.

Principle uses on golf courses will be golf car paths and sides, tee areas, around shelters and for foot paths. Grass-Cel Paving can also be utilized in many hard use areas other than golf courses. Additional parking lots can be developed around the club house while still keeping the natural beauty of grass. Pro shop areas, golf car parking and practice areas can use the load bearing features of this paving.

Grass-Cel Paving Blocks open new and exciting concepts in landscape design. This unique and practical product will be available from the company and through dealers.

1065 N.E. 125th Street, Suite 101
North Miami, Florida 33161
Phone 305/895-1536

FIRST AID FOR HERBICIDE OVER-APPLICATIONS

1. Apply activated charcoal (200 lbs. per acre) to the surface.
2. Irrigate heavily (two inches) to leach out free herbicide.
3. Hole-punch if possible.
4. Topdress heavily (one quarter inch).
5. Stop mowing and fertilizing.
6. Apply fungicide at regular intervals.
7. Mow new growth only when necessary. Begin fertilizing lightly at this time. If step 3 was not done, aerify now and follow with a light topdressing.
8. Keep traffic off until recovery is assured.

Do these steps in order and as rapidly as possible.