

(Winter Injury cont'd.)

nitrogen - 2 to 1 or 3 to 2. For bentgrasses, the nutrition is not as important because these grasses have more inherent tolerance to cold.

For bluegrasses, cutting heights of from one and one half to two inches is usually good. More carbohydrates accumulate and there is more biomass. Crowns are protected because of greater insulation.

The principles are the same for warm season grasses. More winter kill is observed at low mowing heights.

More winter kill is often observed where herbicides are used - particularly the pre-emergence type.

Thatch raises the crown above the soil. Thatch also holds water and increases the hydration level.

Leave aeration holes open to prevent low temperature kill.

Never let an ice sheet stay on the alfalfa more than twenty days for it dies of suffocation. Injury from ice on turf is not due to suffocation, but to the probability of increased hydration. May remove ice and get winter kill from desiccation, or leave it on and get winter kill from crown hydration. Bentgrasses, bluegrasses and *Poa annua* have been kept in ice for as long as seventy five days with no injury. At ninety days, *Poa annua* dies. Bentgrass and bluegrass have survived up to 150 days in ice.

Traffic on frozen slush injures turf. This pushes water into the crown area and increases hydration so that low temperature kill is realized. Snow mobiles cause no injury to the turf as long as there is one inch of snow cover. Snow mobiles on frozen slush cause increased low temperature injury.

Another type of winter injury is caused by winter desiccation. During dry, open winters on sandy soils, turf injury may be significant. This type of injury is of less importance than low temperature kill.

Grasses that are more salt tolerant are also more tolerant of desiccation. For example, Seaside bentgrass. Thus, cultivar variation does exist.

Higher rates of nitrogen in the fall favor winter desiccation injury.

The presence of thatch increases the likelihood of winter desiccation.

Open aeration holes favor the development of winter desiccation injury.

Covers protect turf from adverse winter conditions. Fungicides help prevent winter diseases.

Soil warming also prevents injury from low temperatures.

Desiccation affects the crown meristematic tissue. The crown must survive if the plant is to live. Cells in the lower crown are larger. When they are killed, roots are dead. Tops may be alive. If roots are not regenerated quickly, tops will also die.

Credit: Newsletter, GCSA of New England 1/85

Reel Versus Rotary Mowers¹

by Roger J. Thomas²

¹Presented at the 38th Northwest Turfgrass Conference, Sheraton Hotel, Spokane, WA, September 18-20, 1984.

²Jacobsen Division of Textron Inc., Racine, WI.

The age old controversy of reel mowers versus rotary mowers continues on and on. Areas to be maintained vary so much between cities, school districts, county highways and parks and

institutions, that the most one can do is present a few guidelines for thought.

LEVEL OF MAINTENANCE

To determine the proper machines to use, a level of maintenance must be determined. Formal turf can be defined with the following concepts in mind:

A well groomed area mowed weekly or more often during the good growth period of the turf. Another view may be if the appearance of the area is important as a showplace, for example, schools, municipal buildings, parks, and athletic fields, the classification can be, formal turf. Another element to test whether there is a weed control program, or are clippings being collected. In any event, if the quality of cut is important, then the level of maintenance can be considered, formal turf.

Semi-formal turf generally is defined as a mowed area a distance from general viewing, weed control in itself does not seem to be the most important element, and even some skip/mow programs can be initiated. Higher cut of the grass is generally acceptable, yet suitable to walking traffic and the appearance is not quite as important as for formal turf.

Informal turf would be considered for areas of weeds and grasses that may well adapt to a skip/mow program. They are viewed by the public from some distance, and quality of cut is not the most important element. It could almost be defined as "It's green so it is satisfactory". Informal turf is mowed at cutting heights of 3, 4, or 5 inches, and generally not a walking traffic area.

ENGINE HORSEPOWER REQUIREMENTS

84" Triplex Reel Versus 72" Riding Rotary

For our determination, consider an 84" triplex reel mower versus a 72" riding rotary. On the market today, the 84" reel mowers are equipped with 12 or 14 H.P. engines. The 72" rotary machines are equipped with 20-23 H.P. engines. The reel type mower requires less power at slow speeds because the top speed of the reel blade is approximately 900 feet per second. Compare that with the top speed on rotary mowers that is between 18,000 and 19,000 feet per second. Generally, the rotary mower engines operate at higher speeds, even though in the last few years riding rotaries have variable traction speeds so that the engine can operate at a "fixed" speed.

ECONOMICS

The 84" triplex mower requires less horsepower; hence, less fuel. Indicative of this is the 84" triplex at operating speed uses approximately 1.03 gallons of fuel per hour. Consider also that the 84" unit is cutting a 16% wider swath than the 72" rotary. The cost of the 84" machine runs about 15% to 25% less than a 72". Somewhat on the negative side, bedknife adjustments are necessary by people familiar with the unit. Repairs at the end of the season include grinding.

The 72" riding rotary, since it is equipped with a higher horsepower engine, uses more fuel. A 20 H.P. engine uses approximately 2.18 gallons per hour during operation. The 12" less swath results in just under 3 acres per day of less cutting. While reel grinding is not necessary on a rotary, rotary blades must be kept sharp, and require sharpening or replacement more often. Air and oil filters must be changed more often in rotary operations because of the dusty atmosphere in which it works. Engine fins, radiators, or filter screens must be cleaned often to avoid overheating, which is an enemy of the life-span of an engine.

(cont'd. page 14)

**Specializing in Trees
of Distinction
at competitive prices.**



Eugene A. de St. Aubin & Bro., Inc. Nurseries

P.O. Box No. 351, Kirkland, IL 60146
Phone: 815/522-6662

KOELPER BROS., INC.

Golf Course Building and Remodeling
444 E. Mors Avenue
Wheeling, Illinois 60090

312-438-7881
DANIEL I. KOELPER

312-541-9182
VICTOR C. KOELPER

FOR THE FINEST IN SOD

THORNTON'S SOD NURSERY

312 - 742-5030

Rt. 2 Box 72

Elgin, Ill. 60120

BOJO TURF SUPPLY CO.

ALL MAJOR TURF SUPPLIES



- PAR-EX
- Vertagreen
- Du Pont
- Daconil - Dacthal
- FMC Sprayers
- Chipco
- Naiad
- Aqua-Gro

R R 1, Box 101

Peotone, Ill.

312-258-3485

(Reel vs. Rotary Mowers cont'd.)

LARGE TURF REELS VERSUS LARGE ROTARIES

It is difficult to discuss the 11- to 15-foot reel versus rotary as there are few rotaries of this size on the market at this time and the history of the performance of 11- or 15-foot rotaries is limited in the self-contained units. The pull type P.T.O. driven bat wing rotaries have been around for a long time, but the self-contained have only been out for a few years.

The first determination must be whether we are going to be cutting formal, semi-formal, or informal turf. It is simple to say that formal turf should be cut by reels for appearance sake, and informal turf should be cut by rotaries. The broad area of semi-formal turf for parks or large areas that do serve as playgrounds, etc., requires more analysis. Again, coming into play in the semi-formal turf is the height of cut desired, whether a skip/mow plan can be installed, and how important is the quality of turf on a particular area.

The most effective method of mowing turf would be by ground driven gang mowers on formal or semi-formal turf. It is by far the least costly method of maintaining large areas. Most manufacturers have frames for transporting these units with standard tractors. By the use of hydraulics to mow, lift, and go, one important element is that any tractor can be used for towing and the tractor can be used for other applications.

Self-contained units, while they limit the use of the tractor, are extremely efficient when cutting large areas of turf in remote areas, i.e., school districts, municipal park applications, etc. Transport requirements have to be considered, and generally the self-contained units will travel up to 25 mph so as not to delay traffic. It is very easy to use self contained units to cut a 15-foot swath, unless the area is broken up with trees, bushes, or shrubs. Consider also the safety of reel type mowers versus the rotary operations at parks, schools, or areas where people are present during the mowing operations.

Because of the relatively short time that the self-contained rotaries have been on the market, life cycling is very difficult to achieve: however, we do have the experience that the self-contained reel units sometimes last between 8 to 12 years. So, while the initial purchase price may be higher, the cost is more than made up by the efficiency of operation, the time that the unit lasts and, of course, time saving of the 15-foot cut.

RECOMMENDATIONS

Based on cutting quality, it appears to be fairly obvious that for formal turf, reel type mowers should be used. For semi-formal turf, much depends on the area, its location, and the quality of turf desired. To mow informal, or "rough turf", the rotary machines are definitely more desirable.

From a standpoint of economy, the reel type mower apparently uses less fuel, and could be the monetary difference in the subject of repairs and/or initial costs. It is apparent that with rotary mowers, one would have less problems with rough areas but more problems with filters and dust. The reel type mowers do need occasional sharpening, and some simple skills in blade adjusting must be taught. So, in conclusion, the best recommendation that can be made is to analyze the turf areas involved, determine the level of turf maintenance required, consider life cycle and fuel usage, and adopt the most efficient maintenance equipment to meet your plan.