

when the forward speed of the mower is excessive. Conversely, if the clip is appreciably shorter than the mowing height, air movement generated by the reel prevents proper contact of grass leaves to the reel blades and results in a ragged, nonuniform cut. Hydraulic driven reels provide a variable clip and usually extends the mowing height range that a reel mower can provide.

Operating a reel mower to obtain satisfactory results requires that the bedknife be parallel with the reel, the reel just barely making contact with the bedknife as it turns, and that the bedknife and cutting edges of the reel be sharp and straight. A properly adjusted and sharpened reel should cleanly and easily cut a piece of paper. Adjusting the distance between reel blades and bedknife as well as sharpening blades by the standard process of backlapping are used to provide this desired cut. Backlapping involves applying an emery powder slurry to the reel as it is rotating backward to help maintain a sharp cut between grindings. Reel blades should have equal contact with the bedknife along its entire length. A clean cut, not pinched, piece of paper should occur along at least 3 points the length of each blade.

During operation, tight turns should be avoided or, at least, performed slowly. When the mower strikes turf, it has a tendency to dip and dig into the turf. This results in the mower being depressed on the side opposite direction of the turn. Fast, tight turns may result in scalping or severe grass defoliation from this dipping.

Except during periods of adjustment or sharpening, reel mowers should only be operated when in contact with grass. The dew on and juices within grass acts as a lubricant for the metal-to-metal contact between reel blades and bedknife. If the reel is operated during transport or over nonvegetative surfaces such as roadways or sidewalks, heat expansion of metal may result in severe wear or warping.

Reel mowers do have some disadvantages. Most notably is their inability to cleanly cut grass that is maintained above approximately 1 1/2 inches. Similarly, tall seedheads, weeds, and tough seed stalks are not cleanly or uniformly cut with reel mowers. Reel mowers, especially hydraulically driven ones, are more expensive than other mowers and usually require a higher level of maintenance and skill to operate and adjust.

Rotary and flail mowers

Two impact-type cutting mowers involve rotary and flail mowers. Rotary mowers have blades that are horizontally mounted to a vertical shaft which cuts grass by impact at a high rate of speed. The key to success with rotary mowers is to maintain a sharp, balanced blade. Rotary mowers cut grass similar to that of a machete and as long as the blade is sharp and balanced, the quality of cut is quite good. A dull mower blade shreds leaf blades instead of cutting them and leaf tips become jagged and frayed (Fig. 4). When leaf tissue is mutilated from use of an unsharpened rotary blade, wounds heal slowly and greater water losses occur through evaporation since the leaf area exposed to the environment is increased. Mutilated tissue also increases the invasion points for diseases. If blades are nicked from hitting hard objects, they should be grounded or filed to restore the original cutting edges.



Fig. 4. Frayed leaf tips resulting from mowing with a dull rotary blade.

Rotary mowers have the advantages of being relatively inexpensive and more versatile than reel mowers. They can be used to cut very tall grass, tough seed stalks, and weeds where reel mowers can not. Rotary mowers are also more maneuverable to trim around trees and buildings than reel mowers. Rotary mowers generally have lower initial costs and simpler maintenance requirements. A replacement blade, for example, for rotary mowers is generally much cheaper compared to a reel mower blade.

Disadvantages of rotary mowers include their inability to provide a quality turf at heights lower than about 1 to 1 1/2 inch. Rotary mowers are also dangerous in terms of hands or feet being accidentally placed under the mowing deck while the