

TROPICAL TURFGRASS MOWING

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MOWING is the most costly turf management operation, but also the most important, as good mowing practices are essential for achieving dense, quality turfgrass.

MOWING PRINCIPLES

Dense, quality turf requires mowing at proper height and frequency. Each tropical turfgrass species has an optimum mowing height range (Table 1). Decreasing mowing height within this range will stimulate lateral branching, increasing turf density and quality (Fig. 1). However, mowing below the minimum height for a given species will starve the turf, causing turf thinning (Fig. 2).

Table 1. Optimum mowing heights and frequencies of tropical turfgrass species. (Please refer to Page 2 for the full table)



Fig. 1 Effect of reducing mowing height on shoot density and rooting depth



Fig. 2 Mowing below the minimum mowing height for a species results in thinning and dieback

Scalping occurs when too much leaf area is removed at a given mowing, causing starvation and thinning (Fig. 3). No more than 35-45% of the total leaf area should be removed at a given mowing, which is known as the "1/3" rule (Fig. 4). Therefore, as mowing height is lowered, mowing frequency must increase to stay within the 1/3 rule. (see Table 1). Turfgrasses which can be mowed at lower heights have finer leaf texture and higher shoot density, and therefore higher quality potential. However, these turfgrasses also require higher management levels, including more frequent mowing. Care must be taken to choose the turfgrass species based on level of quality required, and maintenance budget available (see CUGE Know Your Turfgrass series).

	STREETSCAPES		PARKS			EVENT / SPORTS LAWN	
	Mowing Height (mm)	Mowing Frequency ¹ (days)	Mowing Height (mm)	Mowing Frequency (days)	Mowing Height (mm)	Mowing Frequency (days)	
TURFGRASS							
AXONOPUS COMPRESSUS (cowgrass)	40-55	14-21	25-40	10-14	25-35 (not recommended)	6-10 (not recommended)	
AXONOPUS 'Pearlgrass'	30-45	40-60	25-40	30-50	not recommended	not recommended	
CYNODON DACTYLON (common bermuda)	not recommended		25-40	7-12	25-35	6-9	
DIGITARIA DIDACTYLA (Serangoongrass)	35-50	14-21	25-40	8-12	25-35	6-10	
EREMOCHLOA OPHIUROIDES (centipedegrass)	40-55	14-21	30-45	10-14	not recommended	not recommended	
PASPALUM VAGINATUM (seashore paspalum)	not recommended		25-35	7-10	20-30	6-8	
STENOTAPHRUM SECUNDATUM (St. Augustinegrass)	55-75	14-21	35-55	10-14	not recommended	not recommended	
ZOYSIA JAPONICA (Japanese lawngrass)	not recommended		25-40	10-14	25-35	6-10	
ZOYSIA MATRELLA (Manilagrass)	not recommended		25-40	7-12	20-30	6-9	
ZOYSIA PACIFICA (mascaremegrass)	not recommended		25-40	7-12	20-30	6-9	

Table 1. Optimum mowing heights and frequencies of tropical turfgrass species.

¹ Mowing frequency and height are positively related, i.e. longer frequencies require greater heights.



Fig. 3 Scalping results when more than 40% of total leaf area is removed

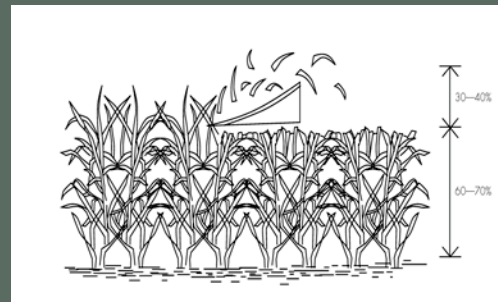


Fig. 4 The "1/3 rule" for mowing turfgrasses

MOWER TYPES

a) Rotary

Rotary mowers are the most flexible in terms of mowing height, are inexpensive to operate, and provide greatly improved cutting quality over backpack mowers. They are ideal for moderately maintained parks, streetscapes, and lawn turf. Mower consists of a rotating blade (Fig. 5a). Clippings may be collected, or allowed to fall back into the turf (preferable).

Rotary mowers have advantages, including flexibility of cutting heights (25 – 75 mm). They are inexpensive to operate and maintain and can cut tall grass, weeds, and tough seedstalks, and debris or surface irregularities will not damage the mower. However, mower can cause flying debris that is a hazard to operator and people nearby. Also, minimum mowing height is 25 mm. Quality of cut will suffer, due to shredded leaf blades, if blade is not kept sharp.

b) Reel

Reel mowers provide the highest quality cut obtainable, and are the only mowers able to cut at less than 25 mm height. Therefore, they are used for high quality turfgrasses on golf courses, sports fields, and high quality lawns. Mower consists of a rotating drum having a series of curved blades, which cut against a cutting bar (Fig. 5b). However, they require high maintenance to operate, including frequent backlapping, cutting bar grinding, and adjusting – this requires skill and experience. Irregular ground surface and debris will damage mower. Therefore, reel mower use is generally limited to sports or other high quality turf sites.

c) Flail

Flail mowers are similar to rotary mowers in cutting height. They can cut very tall grasses and weeds, and can cut over irregular, debris-strewn terrain without damaging the mower. There is less danger of flying debris, compared to rotary mowers. Their quality of cut is lower than rotary, though higher than backpack, and newer models offer improved cuts. Flail consists of many small T-shaped blades attached by swing bolts to a spinning shaft (Fig. 5c). Debris causes the individual blades to deflect back, not damaging the mower.

d) Backpack

Backpacks are inexpensive and require no maintenance. The spinning filament can cut both turf and weeds, though they will not cut tough seedstalks (Fig. 5d). However, they provide a very uneven, low quality cut, tearing the blades. Turf scalping occurs, as mowing height cannot be easily controlled. They also frequently damage young trees by girdling. Therefore they are not recommended, except in uneven, cramped terrain where regular mowers cannot go.

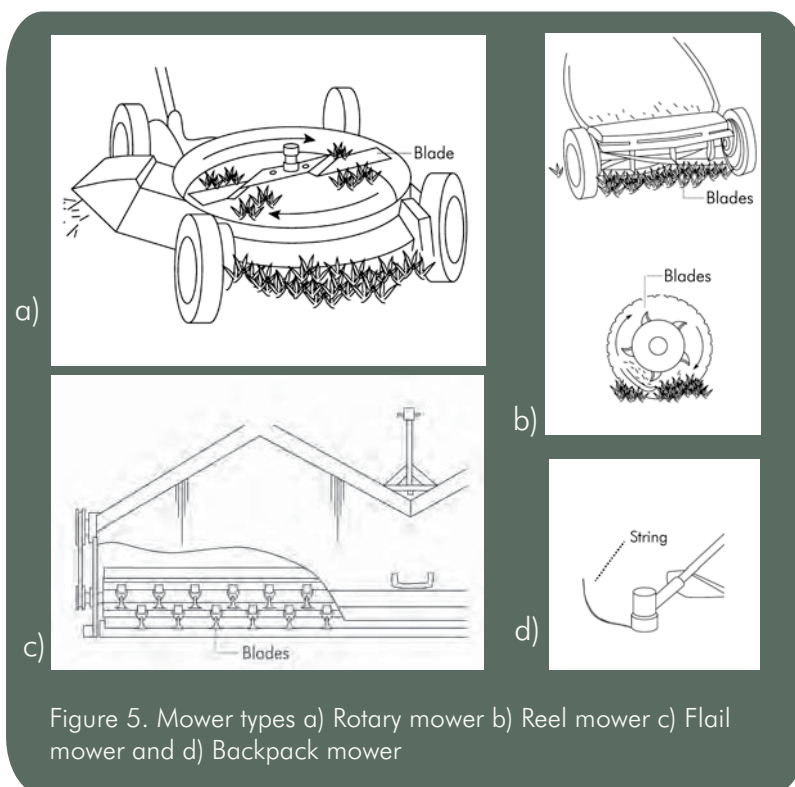


Figure 5. Mower types a) Rotary mower b) Reel mower c) Flail mower and d) Backpack mower

High quality, dense turfgrass is dependent on mowing at the correct height and frequency for a given turfgrass species. Using a sharp, well-adjusted mower also plays a role, as dull mowers (as well as backpacks) tear, rather than cut leaf blades. After mowing with a dull blade, turfgrass appears grayish, due to shredded, brown leaf tips, and the damaged leaf blades are also more susceptible to diseases and insects. Quality turfgrass depends on proper cutting height, mowing frequency, and blade sharpness, which can only be obtained by using rotary, reel, or flail mowers.