

The right HEIGHT

Fertilizer, pesticide, seed and other treatments will accomplish little if lawns are not mowed at a height that is healthy for the grass plant.

by PAUL SACHS

Low mowing heights weaken turfgrass. More surface area on the leaves of the plant mean more photosynthetic production of nutrients for the roots. More extensive roots mean better access to water and nutrients.

And that results in a healthier and heartier plant.

Fig. 1 shows that for each eighth of an inch the mower is raised, the amount of leaf surface exposed to the sun increases by 30 percent. When a mower is raised from $\frac{3}{8}$ inch to 3 inches, the leaf surface area is increased by more than 10,000 percent.

Turf root systems are generally annual. They die off every year and new roots grow the next spring from the plant's crown. Old roots contribute and distribute organic matter to the soil. This organic material improves the turf's water and nutrient retention, lowers soil density, and significantly increases beneficial biological activity.

Container experiments at the University of Maryland show a significant increase in organic matter produced from root growth (see Fig. 2) when the mowing height is raised. What is even more impressive is the increase in rhizome development (see Fig. 3): more than 1000 percent when the mowing height is raised from $1\frac{1}{8}$ to $2\frac{1}{2}$ inches.

Another advantage of setting the mower deck higher is that it shades the soil and preserves moisture during crucial times of the year when lawns often go into dormancy from drought. Cooler soil temperatures also slow the biological decomposition of, and preserve, vital soil organic matter.

Research shows that crabgrass control without chemicals is fundamentally possible simply by increasing mowing height. Fig. 4 shows that a mowing height of $3\frac{1}{2}$ inches suppressed crabgrass to an acceptable level—actually, as well as any of the herbicides.

The one-third rule

Removing more than one third of the top growth can cause turf to stop growing for up to 28 days. If too much leaf surface is removed, photosynthesis is diminished to the point where the plant must use nutrient reserves. When new top-growth exposes itself to the sun, photosynthesis will begin to produce nutrients for the roots again, but will first have to replenish the reserves used when the leaves were too short. The energy needed for normal functions plus the restocking of reserves can stop root growth for almost a month.

Root growth is relative to how a plant fares through many different types of stresses such as heat, cold and drought. Root production of organic matter in the soil is a long-term asset that can benefit many future generations of turf plants. Loss of root growth during crucial times of the season can make the difference between a lawn with problems and one without problems, in both the short and long term.

Wrong!

For years, the classic response to questions about lawn clippings has been that they

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INFLUENCE OF MOWING HEIGHT ON PHOTOSYNTHESIS BY TURFGRASSES

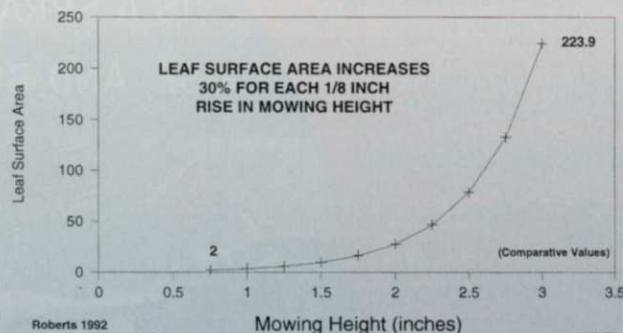


FIG. 1

INFLUENCE OF MOWING HEIGHT ON ROOT PRODUCTION (KENTUCKY BLUEGRASS)

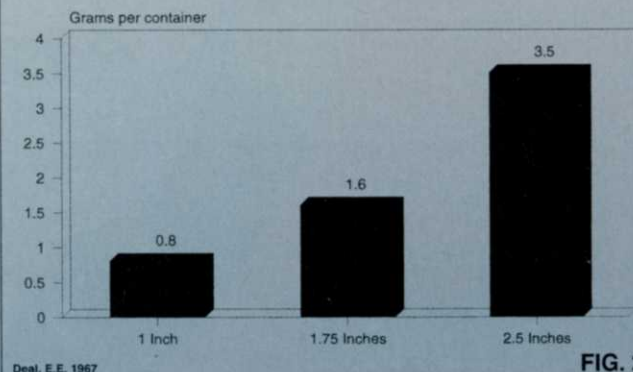


FIG. 2

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must be removed because they can cause thatch, turf diseases and an unsightly appearance. Research tells us that this advice is wrong. In fact, clippings contain 58 percent of the nitrogen that we apply to our lawns. Removing them is equivalent to sweeping up most of the fertilizer that you have just applied. Leaving the clipping adds about 2 lbs. N/1000/sq. ft./year.

According to research, returned lawn clippings have other benefits:

- crabgrass suppression,
- increased earthworm populations,
- improved water infiltration into the soil,
- improved turfgrass color,
- disease suppression,
- thatch reduction, and
- acting as a temporary mulch to preserve soil moisture.

Mowing without the bag will produce a quality lawn if it is done at proper intervals. Infrequent or inconsistent mowing can produce clumps of clippings that can block necessary sunlight from grass plants.

The new mulching mowers are designed to chop clippings into smaller particles, shortening the time it takes for them to decompose. They do not work well, however, if you're not mowing often enough. These machines also consume more energy than conventional mowers. Many experts in the field say that the clippings from conventional mowers disappear quickly enough without using a mulching mower.

The nutrients and organic matter contained in grass clippings should be replaced to

compensate for the loss generated by mowing. If practical, annual topdressing of compost should be applied to lawns where clippings are removed.

'Cold' composting

Clipping disposal can become a problem, especially in municipalities where they are not allowed in landfills. Composting is a good idea if you've got the time and carbon-based materials needed to do it right.

An alternative to standard composting is "cold" composting. A golf course superintendent in Maine discovered that clippings could be effectively recycled into compost by tilling them into the soil. He chose one site where all the clippings from the entire course are incorporated into the soil. There were no odors, and the vastly improved soil could be used in numerous applications around the course.

Mowing frequency

Mowing frequency should depend on the growth of the plants, but is often based on a service contract, or when the opportunity presents itself, such as whatever day of the week you service a particular neighborhood.

During rapid growth periods—after fertilization or heavy rain—grass should be mowed more often, so that no more than one third of the plant is removed at one time. This may only amount to one or two extra cuttings per year.

Mowing techniques have more to do with producing a quality lawn than all other treatments combined.

A tremendous amount of

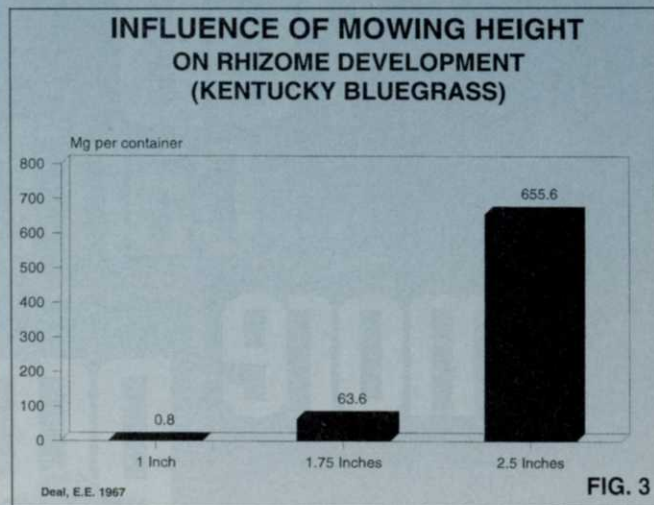


FIG. 3

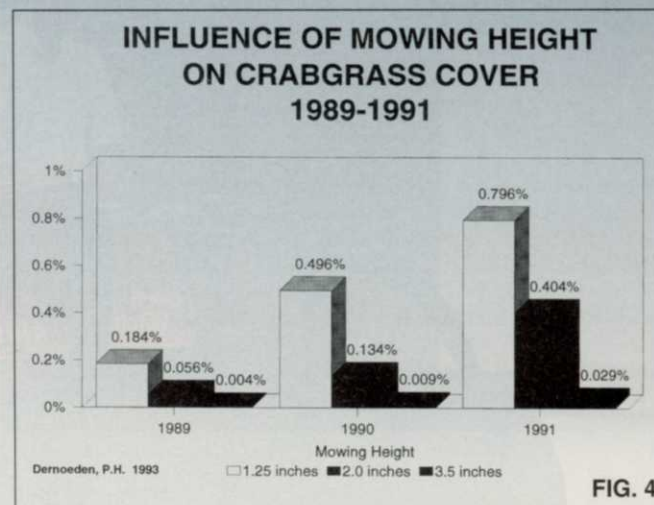


FIG. 4

damage and stress can be caused by improper mowing. Most lawns, especially residential lawns, do not serve a specific purpose such as sport recreation. The need is usually only an aesthetic one that includes uniform color and height. There is rarely a good reason for mowing a lawn short or for removing the clippings.

Lawns mowed at or near maximum mower height during the hottest part of the year can often weather the summer months without going into dormancy, or at least have a much shorter dormant period. Clippings returned to the lawn are rarely noticed and literally dis-

appear in a day or two. The benefits that are eliminated when the clippings are removed can be more easily noticed. Finally, the sharpness of the mower's blade can make a big difference between a lawn with problems and one without. **LM**

—The author is founder of North Country Organics, a Bradford, Vermont-based supplier of natural fertilizers and soil amendments for commercial use. This article is excerpted from his second and latest book, "Handbook of Successful Ecological Lawn Care," published by Edaphic Press, P.O. Box 107, Newbury, VT 05051; (802) 222-4277.