Long-term study confirms clippings sustain fertility

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Leaving clippings on a lawn recycles plant nutrients and enhances turfgrass quality.

A recent study conducted at Rutgers concluded that when clippings are returned, an equivalent or better turf color can be achieved by using only two pounds of nitrogen per 1000 square feet per year instead of the usual rate of four pounds of nitrogen per 1000 square feet per year (Table 1). Leaving clippings was also found to reduce the population of weeds in turf.

In 1994, the first year the plots with the two different mowing practices were established, turf color improved throughout the growing season where clippings were returned when compared to where they were removed. A darker green, more luxuriant appearance was apparent within four months of initiating the practice of returning clippings.

This difference in turf color continued during the following fall, winter, and spring months. In subsequent years of returning or removing clippings, a better turf color was consistently maintained when clippings were returned. These results suggest that the improved turf color was a result of nutrients being recycled within the turfgrass system.

After six years of comparing mowing practices, soil test results confirm that higher levels of soil fertility are maintained when clippings are recycled.

When clippings are removed about 300 pounds of fresh clippings (58 pounds of dry

TABLE 1.

Turfgrass color responses to nitrogen application rate and mowing practice.

Nitrogen Rate	Season Average Turf Color Rating	
Pounds N per 1000 square feet per year	Clippings Returned	Clippings Removed
	Color Rating[1]	
0	5.2	3.2
2	6.9	5.5
4	7.7	6.4

1=A 1-10 COLOR SCALE WAS USED WITH 1 REPRESENTING BROWN TURF AND 10 REPRESENTING DARK GREEN COLOR.

TABLE 2.

Influence of six years of mowing practice (clippings returned vs. clippings removed) on soil fertility (Mehlich-3 soil test method) of a Kentucky bluegrass turf at the Rutgers Hort Farm II. Soil sampling was performed on May 10, 2000 from the 0 to 2 inch depth.

Soil Test Item	Clippings Returned	Clippings Removed	Statistics†
Soil pH	6.3	6.3	NS
Exchange Capacity (meq/100g)	8.8	8.5	**
Soil Organic Matter %	3.3	3.0	**
Nitrate, NO_3-N (ppm)	2.3	1.7	*
Ammonium, NH_4-N (ppm)	8.7	5.3	**
Soluble Sulfur (ppm)	21	21	NS
Phosphorus (ppm)	245	244	NS
Potassium (ppm)	168	125	***
Calcium (ppm)	992	978	NS
Magnesium (ppm)	244	221	***

†,*,**,*** SIGNIFICANT AT THE 0.05, 0.01, AND 0.001 LEVELS, RESPECTIVELY.
NS = NOT SIGNIFICANT.

matter) are collected per 1000 square feet of lawn in one year. Leaving these clippings on the turf would instead recycle an estimated (pounds per 1000 square feet per year) two pounds of nitrogen, 0.18 pounds of phosphorus (0.4 pounds P_2O_5) and 1.2 pounds of potassium (1.4 pounds K_2O). Thus, the recycling of clippings after a period of years may be expected to maintain soil fertility levels better than when clippings are removed.

After six years of comparing mowing practices soil test results confirm as predicted that higher levels of soil fertility are maintained when clippings are recycled

Soil nutrient supplies to turfgrass were significantly greater for nitrogen, potassium, and magnesium where clippings were returned. The soil organic matter content was also increased by the return of clippings. These findings support the recommendation that fertilizer rates should be reduced when clippings are being recycled.

Based on the findings of the current study and previous research (Heckman et al., 2000) Rutgers Cooperative Extension recommendations for turf management when leaving clippings are as follows:

Use a slow release fertilizer to reduce surge growth and amount of clipping residue.

Apply less fertilizer. The nitrogen application rate should generally not exceed 2 pounds of nitrogen per 1000 square feet per year. Phosphorus and potassium application rates may also be reduced but the amounts to apply should be based on the results of regular soil sampling and testing.

Increase the frequency of mowing during periods of rapid growth.

REFERENCE:

Heckman, J.R., H. Liu, W.J. Hill, M. DeMillia, and W.L. Anastasia, 2000. Kentucky Bluegrass Responses To Mowing Practice and Nitrogen Fertility Management. Journal of Sustainable Agriculture. 15:25-35.