

## **EFFECT OF MULCHING TREE LEAVES INTO TURFGRASS**

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One of the major sources of yard waste during the fall season is tree leaves. The leaves must be removed regularly to permit adequate light and air to penetrate into the turf canopy for healthy turf growth. In October, 1990 a study was initiated to evaluate the effect of mulching tree leaves into a Kentucky bluegrass turf at the Hancock Turfgrass Research Center. Three leaf rates (none, low and high rates) were applied to 4 feet by 8 feet plots. The leaves were predominantly maple with leaves from a few other species present. The leaves were mowed with a Toro mulching mower, using two passes to adequately grind up the leaves. Four nitrogen fertilization regimes were followed. Nitrogen was applied with a major emphasis on the N applied in the spring or in the late fall. Two N rates were used for each N regime, 2 or 4 lbs. N per 1000 sq. ft. annually. There were replications of each treatment.

The data on turf quality ratings are given in Table 1 for the 1992 growing season. There were few differences among quality ratings caused by either leaf rate or N regime. Visual observation of the thatch/mat layer during the growing season of either 1991 or 1992 revealed any significant visible accumulation of the ground up tree leaf residue.

A second study was initiated in October, 1991 in which oak and maple leaves were applied to a Kentucky bluegrass turf. A single rate of leaves was applied and an untreated check was included. A nitrogen variable was included with 4 lbs. N applied per 1000 sq. ft. annually with most of the N applied in spring or late fall. A treatment with no N applied was also included. There were 4 replications of each treatment.

Data are presented in Table 2. As observed in the first study, there were few differences in turf quality ratings. There was a response to the N applied compared to the no N plots. And there were short periods when there was an advantage for fall vs spring, but these disappeared shortly.

In Table 3, are several different types of data collected in Fall, 1992 on the oak/maple comparison plots. Included are turf density ratings, "thatch" depth measurements, amount of organic matter in the "thatch" layer, % organic matter in the "thatch" layer, and numbers of dandelions per plot on 2 different dates. There were no meaningful significant differences.

From the data available to date, it appears that returning leaves to the turf is not harmful to the grass if the leaf mulching is done regularly. It is important to use an effective mower with sharp blades to achieve fine grinding of the leaf material so it will fall into the turf adequately. Mulching the leaves is most effectively done if the leaves are dry. Although there appears to

no particularly benefit to the additional N applied, we still suggest some additional N may be useful in enhancing decomposition of the tree leaves. An additional 1/2 lb. N per 1000 sq. ft. is suggested until more data are available.

Table 1

**GENERAL LEAF MULCH STUDY QUALITY RATINGS**  
Initiated November 1990

TREATMENT	4/27	5/15	6/15	7/15	8/17	9/14	12/18
.NO LEAVES	7.2	6.5	7.3	7.4	7.8	8.7	6.6
LOW	7.4	6.5	6.8	7.3	7.8	8.9	6.7
HIGH	7.4	6.9	6.8	7.1	7.6	8.7	7.1
LSD (P=0.05)	NS	0.4	0.4	NS	NS	NS	0.2

**GENERAL LEAF MULCH STUDY QUALITY RATINGS**  
Initiated November 1990  
Average over all leaf treatments

TREATMENT	TIMING	4/27	5/15	6/15	7/15	8/17	9/14	12/18
2 lbs N/M/year	Spring	6.4	6.7	6.9	7.4	7.6	8.7	6.6
2 lbs N/M/year	Fall	7.3	6.0	6.8	7.6	7.6	8.4	6.7
4 lbs N/M/year	Spring	7.1	7.6	7.3	6.8	7.8	8.9	6.8
4 lbs N/M/year	Fall	8.5	6.2	6.9	7.3	7.9	9.0	7.1
LSD (P = 0.05)		0.4	0.4	NS	NS	NS	NS	0.3

**GENERAL LEAF MULCH STUDY QUALITY RATINGS**  
Initiated November 1990  
Interactions

LEAVES	NITROGEN	TIMING	4/27	5/15	6/15	7/15	8/17	9/14	12/18
No Leaves	2 lbs N/M/year	Spring	6.5	6.3	7.7	6.8	7.3	8.3	6.5
No Leaves	2 lbs N/M/year	Fall	7.3	5.7	6.8	8.0	7.8	8.3	6.7
No Leaves	4 lbs N/M/year	Spring	7.0	7.7	7.8	7.3	8.0	9.0	6.5
No Leaves	4 lbs N/M/year	Fall	8.2	6.3	7.0	7.3	8.0	9.0	6.8
Low Rate	2 lbs N/M/year	Spring	6.7	6.8	6.3	7.5	7.8	9.0	6.7
Low Rate	2 lbs N/M/year	Fall	7.0	5.8	6.7	7.5	7.8	8.7	6.5
Low Rate	4 lbs N/M/year	Spring	7.2	7.5	7.3	6.5	7.7	9.0	6.7
Low Rate	4 lbs N/M/year	Fall	8.7	6.0	7.0	7.8	7.8	9.0	7.0
High Rate	2 lbs N/M/year	Spring	6.0	7.0	6.8	7.8	7.5	8.7	6.7
High Rate	2 lbs N/M/year	Fall	7.7	6.5	6.8	7.2	7.2	8.3	7.0
High Rate	4 lbs N/M/year	Spring	7.2	7.7	6.8	6.7	7.8	8.7	7.2
High Rate	4 lbs N/M/year	Fall	8.7	6.3	6.7	6.7	8.0	9.0	7.5
LSD (P=0.05)			NS	NS	NS	NS	NS	NS	NS

Table 2

**EFFECT OF LEAF MULCH ON TURF QUALITY  
AVERAGE OVER ALL NITROGEN TREATMENTS**

<u>LEAVES</u>	<u>4/27</u>	<u>5/15</u>	<u>6/15</u>	<u>7/15</u>	<u>8/17</u>	<u>9/14</u>	<u>12/18</u>
NO LEAVES	6.6	7.4	6.9	7.6	8.1	8.7	7.2
OAK LEAVES	6.6	6.8	7.5	7.4	8.2	8.6	6.6
MAPLE LEAVES	6.1	6.6	7.5	7.4	8.3	8.7	6.7
LSD (P=0.05)	NS	NS	0.5	NS	NS	NS	0.4

**AVERAGE OVER ALL LEAF TREATMENTS**

<u>FERTILITY</u>	<u>4/27</u>	<u>5/15</u>	<u>6/15</u>	<u>7/15</u>	<u>8/17</u>	<u>9/14</u>	<u>12/18</u>
NO N	5.9	6.4	6.8	6.7	7.7	8	6.2
SPRING N	5.8	7.4	7.7	8.2	8.4	9	6.8
FALL N	7.5	7.1	7.5	7.7	8.4	9	7.5
LSD (P=0.05)	1.0	NS	0.5	0.4	0.4	0.4	0.5

Table 2 (cont'd)

## INTERACTIONS

<u>LEAVES</u>	<u>FERTILITY</u>	<u>4/27</u>	<u>5/15</u>	<u>6/15</u>	<u>7/15</u>	<u>8/17</u>	<u>9/14</u>	<u>12/18</u>
NO LEAVES	NO N	6	6.7	6.5	6.7	7.5	8	6.3
NO LEAVES	SPRING N	6	7.7	7.5	8.5	8.3	9	7.3
NO LEAVES	FALL N	7.7	8	6.8	7.7	8.5	9	8
OAK LEAVES	NO N	6.2	6.3	7	6.7	7.8	7.8	6.2
OAK LEAVES	SPRING N	6	7.3	7.7	8	8.3	9	6.5
OAK LEAVES	FALL N	7.5	6.8	7.8	7.7	8.3	9	7
MAPLE LEAVES	NO N	5.5	6.2	6.8	6.7	7.8	8.2	6.2
MAPLE LEAVES	SPRING N	5.5	7.2	7.8	8	8.5	9	6.5
MAPLE LEAVES	FALL N	7.3	6.3	7.8	7.7	8.5	9	7.5
LSD (P=0.05)		NS	NS	NS	NS	NS	NS	NS

<sup>1</sup> Leaves Applied in November

**Table 3** **EFFECT OF LEAF MULCH ON TURF QUALITY<sup>1</sup>**  
**AVERAGE OVER ALL NITROGEN TREATMENTS**

<u>LEAVES</u>	<u>DENSITY</u>	<u>DEPTH(mm)</u>	<u>OM (gm)</u>	<u>% OM</u>	<u>DANDELIONS PER PLOT</u>	<u>DANDELIONS PER PLOT</u>
	<u>9/14</u>				<u>5/15</u>	<u>9/14</u>
NO LEAVES	7.8	29.3	4.5	4.3	0.4	0.7
OAK LEAVES	7.9	28.3	4.8	4.2	0.9	2
MAPLE LEAVES	7.6	27.3	4.9	4.5	1.1	0.8
LSD (P=0.05)	NS	NS	NS	NS	NS	1.3

**AVERAGE OVER ALL LEAF TREATMENTS**

<u>FERTILITY</u>	<u>DENSITY</u>	<u>DEPTH(mm)</u>	<u>OM (gm)</u>	<u>% OM</u>	<u>DANDELIONS</u>	<u>DANDELIONS</u>
	<u>9/14</u>				<u>5/15</u>	<u>9/14</u>
NO N	6.3	28.7	4.8	4.2	0.8	3
SPRING N	8.4	28.8	4.8	4.4	0.6	0.2
FALL N	8.7	27.6	4.6	4.3	1.1	0.2
LSD (P=0.05)	0.7	NS	NS	NS	NS	1.4

Table 3 (Cont'd)

## INTERACTIONS

<u>LEAVES</u>	<u>FERTILITY</u>	<u>DENSITY</u>	<u>DEPTH(mm)</u>	<u>OM (gm)</u>	<u>% OM</u>	<u>DANDELIONS</u>	<u>DANDELIONS</u>
		<u>9/14</u>				<u>5/15</u>	<u>9/14</u>
NO LEAVES	NO N	6.3	29.3	4.5	4.2	0.3	2
NO LEAVES	SPRING N	8.3	28.2	4.6	4.4	0.7	0
NO LEAVES	FALL N	8.8	30.4	4.4	4.2	0.3	0
OAK LEAVES	NO N	6.3	29.6	4.8	4	1	5.7
OAK LEAVES	SPRING N	8.8	29.1	4.9	4.4	0	0
OAK LEAVES	FALL N	8.7	26.3	4.6	4.2	1.7	0.3
MAPLE LEAVES	NO N	6.2	27	5	4.5	1	1.3
MAPLE LEAVES	SPRING N	8	28.9	4.9	4.4	1	0.7
MAPLE LEAVES	FALL N	8.5	26	4.8	4.5	1.3	0.3
LSD (P=0.05)		NS	NS	NS	NS	NS	2.0