STOP #2

PLANT GROWTH REGULATORS ON HIGHWAY ROADSIDE GRASSES

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The cost of mechanical mowing continues to rise dramatically. Higher equipment and labor costs are primarily responsible for these increases. Economic pressures have forced state highway departments to consider alternate management practices regarding highway roadsides. "Chemical Mowing" which is the use of chemical plant growth regulators (PGR's) is an alternative.

The current PGR research at Michigan State University is in cooperation with the Michigan Department of State Highways and Transportation emphasizing the development of recommendations for the application of chemical PGR's to highway roadsides.

At this time, Embark is the only compound that is commercially available. MON-4620 is in the final stages of testing and is expected to be released within the next two years. These two compounds plus several other experimental materials are being evaluated for their effectiveness as plant growth regulators in turf. Promising results have been observed with currently available and experimental PGR compounds when used on utility grasses receiving little traffic such as roadsides, limited use park areas, industrial grounds and for growth control around trees, buildings and fence rows. Both foliar absorbed and crown or root absorbed compounds are being evaluated at highway and campus research sites. The following compounds are being tested at several rates and in selected combinations: Embark (3M), EL-500 (Elanco), Eptam (Stauffer), PP-333 (ICI Americas), MON-4621 (Monsanto), and Glean (DuPont).

Eight highway grass species were planted in monostand blocks in June 1982 at the Hancock Turfgrass Research Center. Several PGR compounds at selected rates and one compound combination were applied May 17 and 18, 1983. Data on relative seedhead density, quality of control, and average seedhead height for perennial ryegrass are found in Table 2. Excellent results were recorded with Eptam (5 and 10 lb.) and MON-4621 (1.5 and 2.5 lb.). Good results were found with PP-333 (2.0 lb.). Other compounds, rates and combinations did regulate plant growth but not as dramatically.

Relative seedhead density, quality of control, and average seedhead height data on Redtop are presented in Table 3. Excellent control was observed with Eptam (10 lb.) and MON-4621 (2.5 lb.). Good control was produced by Eptam (5 lb.) and MON-4621 (1.5 lb.). Plant growth was not significantly affected by all other compounds, rates and combinations.

As our understanding of plant growth regulators and their activity improves, so will the potential for their effective utilization in turfgrass stands. Further investigations are needed to identify appropriate application rates, effective compound combinations, and to understand the critical time of application necessary for seedhead suppression. More research, both basic and applied, is needed to determine the potential uses of chemical plant growth regulators in turfgrass management.

Table 2. Effect of plant growth regulators applied to perennial ryegrass on May 18, 1983

Treatment		Relative Seedhead Density (9 = Greatest)	Quality of Control (9 = Ideal)	Average Seedhead Height (cm)
Chemical	Rate lb ai/A	6-13-83	7-21-83	7-6-83
Control	--	3.5 A*	2.2 DE*	56 A*
MON-4621	1.5	1.2 AB	7.5 A	32 CE
MON-4621	2.5	1.0 B	7.5 A	17 EF
Embark	0.25	2.8 AB	3.7 BE	49 AC
Embark	0.375	3.0 AB	3.7 BE	50 AB
PP-333	1.0	1.2 AB	3.0 CE	38 AD
PP-333	2.0	1.0 B	5.5 AD	30 DE
EL-500	1.0	3.0 AB	1.7 E	56 A
EL-500	2.0	1.2 AB	1.7 E	48 AD
Eptam	5.0	1.2 AB	6.5 AC	30 DE
Eptam	10.0	1.0 B	7.2 AB	0 F
Embark + Glean	0.125 +0.5 OZ	1.2 AB	5.2 AE	32 BE

Table 3. Effect of plant growth regulators applied to redtop on May 18, 1983

Treatment		Relative Seedhead Density (9 = Greatest)	Quality of Control (9 = Ideal)	Average Seedhead Height (cm)
Chemical	Rate lb ai/A	7-20-83	7-21-83	7-6-83
Control	--	7.0 AB*	1.7 CD*	81 AC*
MON-4621	1.5	4.0 C	4.3 AC	59 DE
MON-4621	2.5	4.0 C	4.8 AB	58 E
Embark	0.25	6.3 AC	2.2 BD	71 BE
Embark	0.375	5.7 BC	4.3 AC	73 AE
PP-333	1.0	8.0 AB	1.3 D	76 AC
PP-333	2.0	8.3 A	2.0 CD	68 CE
EL-500	1.0	8.3 A	1.0 D	85 AB
EL-500	2.0	8.0 AB	1.3 D	73 AD
Eptam	5.0	4.7 C	4.0 AC	71 BE
Eptam	10.0	1.0 D	5.8 A	38 F
Embark + Glean	0.125 +0.5 OZ	8.3 A	1.0 D	87 A

*Values followed by the same letter are not significantly different. Means separation by Duncan's Multiple Range Test (5%).