GTI RESEARCH HILITES

INTEGRATED PEST MANAGEMENT

The reduction in the requirement for pesticides may be achieved by promoting the factors in turf management which exploit the maximum competitiveness of the grass with the weed invaders. This process has been called Integrated Pest Management (IPM), which in reality is integrated turf management.

As a part of the program of GTI on IPM an experiment was seeded at the Ridgetown College of Agricultural Technology under the direction of Dr. Ron Pitblado and Mr. E. Hoste of Ridgetown, with assistance by Prof. Chris Hall and Mr. Norm McCollum of the GTI.

The objective of the experiment was to investigate the choice of species, cultivar and fertility program on the weed populations in turf.

The experiment was seeded on Sept. 12, 1991, at Ridgetown on a well-drained gravelly loam soil. The fall was extremely dry with no appreciable rainfall for three weeks after seeding. Six turfgrass cultivars of four turf types, Kentucky bluegrass, turf type tall fescue, fine leaf fescue, perennial ryegrass and three commercially available home lawn mixes, were seeded.

Prior to seeding 5-20-20 fertilizer was incorporated in the plot area at a rate providing 0.7 lb N/1000 ft^2. An additional application of 1.0 lb N was applied four weeks after seeding using 25-4-10 SCU. The fertilizer program for 1992 was O.5 lb N as 25-4-10 SCU in April, followed by 1.0 lb N at the end of May, August and in November.

Assessment of the weed population on August 18, 1992, was taken by identifying and counting the number of weeds in five, 8-in by 8-in squares randomly chosen within a larger 32 square string overlay. A visual assessment of the ground coverage was made using a rating of 0 to 10 where 10 was 100% ground cover.

Due to the dry conditions in the fall of 1991 creating slow emergence and relatively poor establishment, weed invasion into the plot area was high. However, favourable weather conditions for turf prevailed throughout the summer of 1992 resulting in the almost compete exclusion of weeds within the perennial ryegrass cultivars (Table 1). Many of the fine leaf fescues were also able to eliminate or reduce weed colonization, especially when the plots were fertilized. Weed pressures were much higher in the tall fescue and Kentucky bluegrass plots.

Both the tall fescues and the Kentucky bluegrass cultivars grew more slowly than the fine leaf fescues and perennial ryegrass allowing 'room' for weed activity. The tall fescues were a much more robust plant but there were many 'holes' or bare spots that did not fill in leaving room for the competitor weeds. Kentucky bluegrass was very slow growing and initially could not keep up with the more rapid growing

Table 1: Suppression of weeds and ground coverage by turfgrass cultivars and fertilizer applications.

		Weed Count**		Coverage Rating	
Type*	Cultivar	No. Fert.	Fert.	11-12-1991	10-17-1992
		(number***)		(rating: 0 to 10#)	
KB	America	4.5	3.0	6.0	7.5
KB	Touchdown	4.5	6.5	5.5	7.5
KB	Sydsport	7.0	1.0	4.0	7.5
KB	Gnome	6.5	6.5	5.3	7.5
KB	Barzan	7.0	5.0	3.0	7.5
KB	Geronimo	3.5	1.5	5.5	7.5
TF	Shortstop	4.5	1.0	7.0	7.5
TF	Mini Mustang	10.0	12.0	6.8	7.5
TF	Bonsai Dwarf	3.0	1.5	6.8	7.5
TF	Pixie	9.5	10.0	6.8	7.5
TF	Jaguar	12.5	10.5	7.0	9.0
TF	Thunderbird	4.0	12.5	6.3	7.5
FLF	Victory	1.5	1.0	7.3	10.0
FLF	Jasper	3.0	3.0	6.0	9.5
FLF	Wilma	2.5	1.0	6.5	10.0
FLF	Shademaster	6.0	2.5	3.8	8.5
FLF	Koket	4.0	2.0	6.8	10.0
FLF	Franklin	4.0	0.0	5.3	9.0
PR	Fiesta II	0.0	0.0	8.9	10.0
PR	Dasher II	0.0	0.0	8.9	10.0
PR	Dimension	0.0	0.5	8.9	10.0
PR	Pinnacle	0.0	0.0	8.9	10.0
PR	Saturn	0.0	0.5	8.9	10.0
PR	Competitor	0.0	0.5	8.9	10.0
MIX	Pro Hardware	0.0	1.0	7.0	9.0
MIX	W.G. Thompson	3.5	0.5	7.0	9.0
MIX	Canadian Tire	3.0	1.0	7.0	9.0

* KB - Kentucky Bluegrass; TF - Tall Fescue; FLF - Fine Leaf Fescue; PR - Perennial Ryegrass; MIX - Mixtures.

** Measurements made Aug. 18, 1992.

*** Total number of weeds in five, 8 in. by 8 in. squares.

A visual rating of ground cover on a scale of 0 = no growth, 10 =full ground coverage (approximates percentage ground cover)

weeds. Weeds such as dandelion and chickweed moved rapidly into the turf plots. Henbit and shepherd's purse were also present.

The fertilizer regime improved the competitiveness of only the fine fescues, thus reducing the number of weeds found in the fescue. It appears that additional fertilizer was required in the trial as the fertilizer effect, as illustrated by the colour of the turf, was less as the season progressed.

America was the fastest emerging Kentucky bluegrass while Sydsport, Barzan and Gnome were the slowest. In general tall fescues emerged earlier than the fine leaf fescues, however, the fine leaf fescues grew faster, knitting quicker over the ground. Jaguar emerged rapidly providing the best ground cover rating throughout the summer and fall. The fine leaf fescues became established second only to perennial ryegrasses. All the Chewings fescues - Koket, Victory and Wilma - produced a ground cover faster than the creeping red fescues - Jasper, Shademaster and Franklin. Perennial ryegrass emerged very quickly, providing a uniform turfgrass cover prior to any of the other grasses. There was no difference between the six perennial ryegrass cultivars.

Grass clippings

Mushrooms (commonly referred to as "toadstools") and puffballs are the fruiting structures of saprophytic, basidiomycetous fungi. Their appearance is indicative of decaying organic matter in the soil, especially buried tree stumps, dead roots, logs, boards, or thick thatch. They are most likely to develop following heavy rainfall or intensive irrigation.

NURSERY SOD BULLETIN

The Nursery Sod Growers Association of Ontario have recently published a small brochure called "Specifications, Classification & Use of Turfgrass Sod in Ontario". The Bulletin is available from

Nursery Sod Growers
Association of Ontario,
P.O. Box 235,
CARLISLE, ON.
L0R 1H0

In addition to the brochure you will receive a copy of the Association membership list which will aid you in contacting a supplier if you are in need of nursery sod.