Bentgrass and Fineleaf Fescue Cultivar and Species Differences in Phytotoxicity to Mesotrione

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Two studies were conducted at the Washington State University Turfgrass and Agronomy Research Center (TARC) in Pullman, WA. The objective of these studies was to observe phytotoxicity across species and cultivars of bentgrass and fineleaf fescue. The 2003 bentgrass fairway/tee National Turf Evaluation Program (NTEP) test and the 2003 fineleaf fescue NTEP test were used. Twenty-eight cultivars of bentgrass and 53 cultivars of fineleaf fescue were included in the studies (Tables 1 and 2). The bentgrass study area measured 30' by 70' and the fineleaf fescue study area measured 60' by 80'. Within each study area, three replications of each cultivar were established, on 21 September 2004, in 5' by 5' plots. Within each 5' by 5' plot, an 18 inch band was treated with mesotrione on 26 May 2006 and 12 June 2006. Each study area was independently irrigated. The bentgrass study area was mown 3 times weekly at a height of cut (HOC) of 0.375 inches. The fescue study area was mown once weekly at a HOC of 1.5 inches. Post-emergence split applications of mesotrione were applied on 26 May 2006 and 12 June 2006 at 280 g a.i./ha at each application. A bicycle-wheeled, CO_2 pressurized experimental sprayer was used with a single TeeJet 8004 E flat-even spray nozzle at 40 psi and 44 gallons per acre for both applications. Phytotoxicity was rated each week up to 10 weeks following the first mesotrione application using a scale of 0 to 9, with 9 equal to dead turf.

RESULTS

Bentgrass

It was interesting to note the ranking of the cultivars in reference to the highest and lowest phytotoxicity ratings. Of the five highest average

phytotoxicity ratings for bentgrass, 'Seaside' was ranked as number 5, and was the only creeping bentgrass of those five. In the rank for five lowest average phytotoxicity ratings for bentgrass, all were creeping bentgrass, including 'Alpha,' 'T-1,' and 'Declaration' (Table 3). Colonial bentgrass recovery generally began at seven weeks after first treatment; creeping bentgrass generally began recovery at six weeks after treatment (Table 1).

Fineleaf fescue

The five highest average phytotoxicity ratings for fineleaf fescue were held by two species. Four strong creeping fescue cultivars held the four highest phytotoxicity averages, and the fifth spot was held by a cultivar of slender creeping fescue. Among the fineleaf fescue species that had the lowest average phytotoxicity ratings, there were no apparent trends (Table 4). Twenty-eight percent of all fine leaf fescue cultivars fully recovered by 10 weeks after first treatment. Seventy percent of fineleaf fescue cultivars had average phytotoxicity values of 1.0 or less 10 weeks after first treatment. Full recovery for fineleaf fescue cultivars was observed as early as seven weeks after first treatment, and recovery typically began at five weeks after first treatment (Table 2).

Overall

Generally, the highest phytotoxicity was seen at 3 to 5 weeks after the first application (1-3 weeks after second application) for all species and cultivars included in the studies. All bentgrass cultivars had average phytotoxicity ratings higher than the fineleaf fescues (Tables 1 and 2). It was also found that colonial bentgrass had significantly higher average phytotoxicity ratings than creeping bentgrass (Table 1). In the fineleaf fescues the range for species (hard, sheep, strong creeping, slender creeping, and chewings) was 1.3 - 1.9, indicating small differences among fescue species, although the strong creeping fescues had the highest average phytotoxicity (Table 2).

Table 1. Phytotoxicity of mesotrione on NTEP bentgrass species and cultivars.

	Mesotrione rate	NIS Rate	Cultivar	Bentgrass	Overall	Phytotoxicity (Rated 0-9; 9=dead)									
Treatment	(g ai/ha)	(% v/v)	Name	Species	Average	1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT	9 WAT	10 WAT
Mesotrione + NIS	280 + 280 *	0.25% v/v	PST-9NBC	colonial	6.5 **	6.5 bcd ***	6.0 ab	7.0 ab	7.7 a	7.7 ab	8.0 a	6.7 a	6.3 a	5.3 a	4.7 a
Mesotrione + NIS	280 + 280	0.25% v/v	SR 7150	colonial	6.5	6.5 ab	5.0 cde	7.0 ab	7.0 b	8.0 a	8.0 a	6.7 a	6.3 a	5.7 a	5.0 a
Mesotrione + NIS	280 + 280	0.25% v/v	PST-9VN	colonial	6.2	5.0 cd	6.0 ab	7.0 ab	7.0 b	7.7 ab	7.7 ab	5.3 abcde	6.3 a	5.0 a	5.0 a
Mesotrione + NIS	280 + 280	0.25% v/v	Tiger II	colonial	6.1	6.1 abc	6.3 a	7.0 ab	7.0 b	7.7 ab	7.3 abc	6.3 ab	5.7 ab	4.0 abcd	4.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	EWTR	colonial	5.9	5.9 d	6.0 ab	7.0 ab	7.0 b	8.0 a	7.3 abc	5.7 abcd	5.7 ab	4.7 ab	3.3 abc
Mesotrione + NIS	280 + 280	0.25% v/v	IS-AT 7	colonial	5.7	5.3 bcd	6.0 ab	7.0 ab	7.7 a	8.0 a	7.7 ab	5.3 abcde	4.0 bcd	3.0 bcde	2.7 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	Bardot	colonial	5.1	5.1 ab	6.0 ab	7.0 ab	7.0 b	7.7 ab	6.3 bcde	4.3 bcdef	3.3 cdef	2.3 defg	1.0 defg
			Colonial bent Cv. Avg.		6.0 {a} ****	6.0 (a) *****	5.9 (a)	7.0 (a)	7.1 (a)	7.8 (a)	7.4 (a)	5.9 (a)	5.5 (a)	4.4 (a)	3.6 (a)
Mesotrione + NIS	280 + 280	0.25% v/v	Seaside	creeping	6.0	6.0 cd	5.3 bcd	7.7 a	7.7 a	7.7 ab	7.7 ab	6.0 abc	5.0 abc	4.3 abc	4.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	Penneagle II	creeping	5.2	5.2 abc	5.3 bcd	6.7 bc	7.3 ab	7.0 bc	6.7 abcd	4.7 abcdef	3.7 cde	2.7 cdef	2.3 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	Pennlinks II	creeping	5.0	5.0 ab	5.0 cde	6.7 bc	7.0 b	7.0 bc	6.3 bcde	4.0 cdefg	3.7 cde	2.0 efgh	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Princeville	creeping	4.8	4.8 abc	5.3 bcd	7.0 ab	7.0 b	7.0 bc	6.0 cde	3.7 defgh	2.7 defgh	1.7 efghi	1.7 cdefg
Mesotrione + NIS	280 + 280	0.25% v/v	PST-OEB	creeping	4.7	4.7 ab	5.0 cde	6.3 bc	7.0 b	6.3 cde	5.3 de	3.7 defgh	3.0 defg	2.3 defg	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 1GPD	creeping	4.7	4.7 bcd	5.7 abc	6.0 c	7.0 b	6.7 cd	5.7 de	3.3 efgh	2.7 defgh	2.3 defg	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	9200	creeping	4.7	4.6 bcd	5.7 abc	7.0 ab	7.3 ab	7.0 bc	5.7 de	3.3 efgh	2.3 defghi	1.7 efghi	1.3 defg
Mesotrione + NIS	280 + 280	0.25% v/v	Penncross	creeping	4.6	4.6 bcd	5.7 abc	7.0 ab	7.0 b	7.0 bc	6.0 cde	3.0 fghi	2.0 efghij	1.7 efghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	L-93	creeping	4.4	4.4 ab	5.3 bcd	6.7 bc	7.0 b	7.0 bc	5.3 de	2.7 fghij	1.7 fghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	LS-44	creeping	4.4	4.4 abc	5.7 abc	6.7 bc	7.0 b	7.0 bc	5.0 ef	2.7 fghij	1.7 fghij	1.3 efghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	13-M	creeping	4.1	4.1 abc	5.3 bcd	7.0 ab	7.3 ab	6.7 cd	3.7 fg	2.0 ghijk	1.7 fghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	235050	creeping	4.0	4.0 a	6.3 a	7.0 ab	7.0 b	6.0 def	2.7 ghi	1.7 hijk	1.3 ghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 1PDH	creeping	3.8	3.8 ab	5.3 bcd	7.0 ab	7.0 b	6.0 def	2.7 ghi	2.0 ghijk	1.0 hij	1.0 fghi	0.3 fg
Mesotrione + NIS	280 + 280	0.25% v/v	Bengal	creeping	3.8	3.8 ab	5.3 bcd	6.7 bc	7.0 b	6.0 def	2.7 ghi	1.7 hijk	1.0 hij	1.0 fghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	23R	creeping	3.8	3.8 ab	5.7 abc	6.3 bc	7.0 b	6.0 def	3.0 gh	1.7 hijk	1.0 hij	0.7 ghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	SR 1119	creeping	3.8	3.8 ab	5.0 cde	7.0 ab	7.0 b	5.0 g	2.7 ghi	1.7 hijk	1.3 ghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	Alpha	creeping	3.6	3.6 ab	4.3 e	6.7 bc	7.0 b	6.0 def	3.0 gh	1.7 hijk	0.7 ij	0.3 hi	0.3 fg
Mesotrione + NIS	280 + 280	0.25% v/v	IS-AP 14	creeping	3.6	3.6 ab	5.3 bcd	6.7 bc	7.0 b	5.7 efg	2.0 hi	1.0 ijk	0.7 ij	0.7 ghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	Independence	creeping	3.4	3.4 ab	5.3 bcd	7.0 ab	7.0 b	6.0 def	2.0 hi	0.3 k	0.3 j	0.3 hi	0.0 g
Mesotrione + NIS	280 + 280	0.25% v/v	T-1	creeping	3.4	3.4 ab	4.7 de	7.0 ab	7.3 ab	5.7 efg	2.7 ghi	0.3 k	0.3 j	0.0 i	0.0 g
Mesotrione + NIS	280 + 280	0.25% v/v	Declaration	creeping	3.3	3.3 ab	4.3 e	6.3 bc	7.0 b	5.3 fg	1.3 i	0.7 jk	0.7 ij	0.7 ghi	0.3 fg
			Creeping bent Cv. Avg.		4.2 {b}	4.2 (b)	5.3 (b)	6.7 (a)	7.0 (a)	6.4 (b)	4.0 (b)	2.3 (b)	1.7 (b)	1.1 (b)	1.0 (b)

* Applications made on May 26, 2006 and June 12, 2006 (0 WAT and 2 WAT)

** Average phytotoxicity across all weeks for the given cultivar.

*** Values within a column followed by the same letter are not significantly different. LSD *P*= 0.05.

**** Values within a column followed by the same letter held in { } are not significantly different. LSD *P* =0.05.

Table 2. Phytotoxicity of mesotrione on NTEP fine leaf fescue species and cultivars in Pullman, WA.

	Mesotrione rate	NIS Rate	Cultivar	Fescue	Overall	Phytotoxicity (Rated 0-9; 9=dead)									
Treatment	(g ai/ha)	(% v/v)	Name	Species	Average	1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT	9 WAT	10 WAT
Mesotrione + NIS	280 + 280 *	0.25% v/v	Jamestown 5	chewings	2.1 **	3.0 ab ***	3.7 ab	3.7 abcd	4.0 abc	1.3 cdef	1.3 efgh	1.3 defgh	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	ACF 188	chewings	1.8	2.0 bcde	3.0 abcd	2.7 bcdef	3.3 bcde	2.3 cdef	2.0 cdefgh	1.3 defgh	1.0 cdef	0.7 def	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Longfellow II	chewings	1.8	2.7 abc	2.7 abcde	3.0 abcdef	3.7 bcd	2.0 cdef	1.7 defgh	0.7 fgh	0.3 ef	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRC 17	chewings	1.8	2.3 bcd	3.3 abc	3.7 abcd	3.7 bcd	2.0 cdef	1.3 efgh	0.3 gh	0.7 def	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9886	chewings	1.7	3.0 ab	4.0 a	3.3 abcde	3.0 bcde	1.0 def	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Cascade	chewings	1.7	3.0 ab	4.0 a	3.3 abcde	3.0 bcde	1.3 cdef	1.3 efgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	7 Seas	chewings	1.5	2.7 abc	4.0 a	3.0 abcdef	3.3 bcde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	PST-4TZ	chewings	1.4	2.3 bcd	3.0 abcd	3.0 abcdef	3.0 bcde	0.7 ef	0.7 gh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	ACF 174	chewings	1.2	2.3 bcd	2.0 cde	1.7 ef	2.0 de	0.7 ef	0.7 gh	0.3 gh	0.7 def	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 51G	chewings	1.2	2.3 bcd	2.7 abcde	2.3 cdef	2.3 cde	1.3 cdef	1.0 fgh	0.3 gh	0.3 ef	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	BUR 4601	chewings	1.0	1.7 cde	2.3 bcde	1.7 ef	2.3 cde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9885	chewings	1.0	2.7 abc	2.3 bcde	1.7 ef	2.0 de	1.0 def	1.0 fgh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Ambassador	chewings	0.9	1.3 de	1.7 de	1.7 ef	2.0 de	1.0 def	1.0 fgh	0.3 gh	0.0 f	0.0 f	0.0 f
				Chewings Fescue Cv. Avg.	1.5	2.4 {a}****	3.0 {a}	2.7 {a}	2.8 ******	1.3 {b}	1.1 {b}	0.4 {b}	0.4 {b}	0.3 {b}	0.2 {b}
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FL 28	hard	2.2	1.7 cde	2.3 bcde	2.7 bcdef	2.3 cde	1.0 def	0.7 gh	0.3 gh	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	SR 3000	hard	1.8	2.3 bcd	2.7 abcde	3.0 abcdef	2.3 cde	1.0 def	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Berkshire	hard	1.6	1.3 de	3.0 abcd	2.7 bcdef	2.3 cde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Predator	hard	1.6	1.0 e	2.3 bcde	1.3 f	1.7 e	0.7 ef	0.7 gh	0.3 gh	0.3 ef	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Pick HF #2	hard	1.4	1.3 de	3.0 abcd	3.3 abcde	3.0 bcde	1.0 def	1.0 fgh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Oxford	hard	1.3	1.7 cde	3.3 abc	3.0 abcdef	2.7 bcde	1.3 cdef	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Scaldis	hard	1.0	1.3 de	2.7 abcde	2.7 bcdef	2.7 bcde	0.3 f	0.7 gh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	A01630Rel	hard	0.9	1.0 e	2.7 abcde	2.3 cdef	1.7 e	0.7 ef	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	SPM	hard	0.8	1.0 e	2.0 cde	2.0 def	1.7 e	0.3 f	0.3 h	0.3 gh	0.3 ef	0.3 ef	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 3K	hard	0.8	1.7 cde	3.3 abc	3.3 abcde	2.7 bcde	1.0 def	1.0 fgh	0.0 h	0.3 ef	0.3 ef	0.0 f
				Hard Fescue Cv. Avg	1.3	1.4 {b}	2.7 {a}	2.6 {a}	2.5	0.8 {b}	0.8 {b}	0.2 {b}	0.2 {b}	0.2 {b}	0.1 {b}
Mesotrione + NIS	280 + 280	0.25% v/v	Quatro	sheep	1.9	1.0 e {b}	2.7 abcde {a}	3.3 abcde {a}	3.7 bcd	1.7 cdef {ab}	1.7 defgh {ab}	1.0 efgh {ab}	0.7 def {ab}	0.7 def {ab}	0.3 ef {ab}
Mesotrione + NIS	280 + 280	0.25% v/v	Seabreeze	slender creeping	2.5	2.0 bcde	3.0 abcd	3.3 abcde	3.7 bcd	1.0 def	1.3 efgh	1.3 defgh	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	Dawson E	slender creeping	1.3	1.7 cde	2.7 abcde	3.0 abcdef	3.3 bcde	1.3 cdef	1.3 efgh	1.0 efgh	0.7 def	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 55R	slender creeping	0.8	1.0 e	1.3 e	1.3 f	1.7 e	1.0 def	1.3 efgh	0.7 fgh	0.7 def	0.0 f	0.0 f
				Slender Creeping Cv. Avg	1.5	1.6 {b}	2.3 {a}	2.6 {a}	2.8	1.1 {b}	1.3 {b}	1.0 {b}	0.9 {ab}	0.4 {b}	0.3 {b}
Mesotrione + NIS	280 + 280	0.25% v/v	Pick CRF 1-03	strong creeping	3.7	2.0 bcde	3.7 ab	4.0 abc	4.0 abc	2.3 cdef	2.3 cdefg	2.0 cdef	1.3 bcdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	BMXC-S02	strong creeping	3.6	2.0 bcde	3.3 abc	3.3 abcde	3.3 bcde	2.3 cdef	2.7 bcdef	2.3 bcde	2.0 bcd	1.7 bcde	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	Boreal	strong creeping	3.6	3.7 a	4.0 a	4.0 abc	3.7 bcd	4.0 ab	4.3 ab	3.7 ab	3.7 a	4.0 a	3.7 a
Mesotrione + NIS	280 + 280	0.25% v/v	TL1	strong creeping	2.6	1.7 cde	3.0 abcd	3.3 abcde	3.3 bcde	2.3 cdef	2.0 cdefgh	2.0 cdef	1.7 bcde	1.7 bcde	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 30	strong creeping	2.4	1.3 de	2.3 bcde	2.3 cdef	3.3 bcde	2.3 cdef	2.0 cdefgh	2.0 cdef	2.0 bcd	1.7 bcde	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	DLF-RCM	strong creeping	2.2	1.3 de	3.0 abcd	3.0 abcdef	3.3 bcde	2.3 cdef	2.7 bcdef	2.7 bcd	2.7 ab	2.0 bcd	2.0 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	Shademaster	strong creeping	2.2	1.7 cde	3.0 abcd	3.3 abcde	3.7 bcd	2.0 cdef	2.0 cdefgh	2.0 cdef	1.7 bcde	1.7 bcde	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 23	strong creeping	2.1	2.0 bcde	2.7 abcde	2.7 bcdef	3.3 bcde	2.3 cdef	3.3 bcd	2.7 bcd	1.7 bcde	2.0 bcd	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 29	strong creeping	2.1	1.3 de	2.0 cde	2.0 def	2.0 de	1.3 cdef	1.7 defgh	1.0 efgh	1.0 cdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9360	strong creeping	1.9	2.0 bcde	4.0 a	4.7 a	5.7 a	5.3 a	5.3 a	4.3 a	3.7 a	4.0 a	3.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9578	strong creeping	1.9	1.0 e	2.3 bcde	2.3 cdef	2.3 cde	1.3 cdef	1.3 efgh	1.0 efgh	1.3 bcdef	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	C03-4676	strong creeping	1.7	1.3 de	3.0 abcd	3.0 abcdef	3.3 bcde	3.0 bc	3.7 abc	2.0 cdef	1.7 bcde	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9579	strong creeping	1.6	1.0 e	3.0 abcd	2.7 bcdef	3.3 bcde	2.0 cdef	2.3 cdefg	2.3 bcde	2.7 ab	2.7 ab	2.3 abc
Mesotrione + NIS	280 + 280	0.25% v/v	C-SMX	strong creeping	1.5	2.0 bcde	3.7 ab	3.0 abcdef	3.3 bcde	1.3 cdef	1.7 defgh	1.3 defgh	1.0 cdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	Pathfinder	strong creeping	1.5	2.0 bcde	3.3 abc	2.7 bcdef	3.3 bcde	2.7 bcd	3.0 bcde	2.3 bcde	2.3 abc	2.3 bc	2.0 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	Jasper II	strong creeping	1.5	2.7 abc	3.3 abc	2.7 bcdef	3.3 bcde	1.7 cdef	1.3 efgh	0.3 gh	0.3 ef	1.0 cdef	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Razor	strong creeping	1.5	2.0 bcde	3.7 ab	4.3 ab	4.3 ab	2.7 bcd	3.0 bcde	2.3 bcde	2.3 abc	2.0 bcd	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	C03-RCE	strong creeping	1.5	1.0 e	2.0 cde	1.3 f	2.0 de	1.7 cdef	2.0 cdefgh	1.7 cdefg	1.0 cdef	1.0 cdef	1.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	TL 53	strong creeping	1.4	1.0 e	2.0 cde	1.7 ef	2.3 cde	2.0 cdef	2.0 cdefgh	1.7 cdefg	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	ASC 245	strong creeping	1.2	1.3 de	3.3 abc	3.3 abcde	3.7 bcd	3.0 bc	3.7 abc	3.0 abc	2.3 abc	2.3 bc	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	5001	strong creeping	1.2	2.3 bcd	3.3 abc	3.7 abcd	4.3 ab	3.0 bc	3.0 bcde	2.7 bcd	1.3 bcdef	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Audubon	strong creeping	1.2	2.0 bcde	2.3 bcde	2.0 def	2.7 bcde	1.3 cdef	1.3 efgh	1.0 efgh	0.7 def	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	PST-8000	strong creeping	1.2	1.3 de	2.0 cde	2.0 def	2.7 bcde	1.3 cdef	1.7 defgh	0.3 gh	0.3 ef	0.7 def	0.3
Mesotrione + NIS	280 + 280	0.25% v/v	Celestial	strong creeping	1.1	1.3 de	1.7 de	1.7 ef	2.0 de	1.0 def	1.0 fgh	1.0 efgh	0.7 def	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Musica	strong creeping	1.1	2.3 bcd	3.7 ab	3.3 abcde	3.3 bcde	2.0 cdef	1.3 efgh	0.7 fgh	0.7 def	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Oracle	strong creeping	0.9	2.3 bcd	3.3 abc	3.0 abcdef	3.0 bcde	2.0 cdef	2.3 cdefg	2.3 bcde	2.3 abc	2.0 bcd	1.7 bcde
				Strong Creeping Cv. avg	1.9	1.8 {b}	3.0 {a}	2.9 {a}	3.1	2.3 {a}	2.4 {a}	1.9 {a}	1.7 {a}	1.6 {a}	1.3 {a}

* Applications made on May 26, 2006 and June 12, 2006 (0 WAT and 2 WAT)

** Average across all weeks for the given cultivar.

*** Values within a column followed by the same letter are not significantly different. LSD *P*= 0.05.

**** Values within a column followed by the same letter held in { } are not significantly different. LSD *P* =0.05.

***** 4 WAT data could not be compared pairwise due to the pattern of significant differences.

Table 3. Ranking of mean phytotoxicity of mesotrione on colonial and creeping bentgrass.

	Mesotrione Rate	NIS Rate	Cultivar	Bentgrass	Overall	Phytotoxicity (Rated 0-9; 9=dead)									
Treatment	(g ai/ha)	(% v/v)	Name	Species	Average	1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT	9 WAT	10 WAT
Mesotrione + NIS *	280 + 280 **	0.25% v/v	PST-9NBC	colonial	6.5	6.5 bcd ***	6.0 ab	7.0 ab	7.7 a	7.7 ab	8.0 a	6.7 a	6.3 a	5.3 a	4.7 a
Mesotrione + NIS	280 + 280	0.25% v/v	SR 7150	colonial	6.5	6.5 ab	5.0 cde	7.0 ab	7.0 b	8.0 a	8.0 a	6.7 a	6.3 a	5.7 a	5.0 a
Mesotrione + NIS	280 + 280	0.25% v/v	PST-9VN	colonial	6.2	5 cd	6.0 ab	7.0 ab	7.0 b	7.7 ab	7.7 ab	5.3 abcde	6.3 a	5.0 a	5.0 a
Mesotrione + NIS	280 + 280	0.25% v/v	Tiger II	colonial	6.1	6.1 abc	6.3 a	7.0 ab	7.0 b	7.7 ab	7.3 abc	6.3 ab	5.7 ab	4.0 abcd	4.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	Seaside	creeping	6.0	6.0 cd	5.3 bcd	7.7 a	7.7 a	7.7 ab	7.7 ab	6.0 abc	5.0 abc	4.3 abc	4.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	EWTR	colonial	5.9	5.9 d	6.0 ab	7.0 ab	7.0 b	8.0 a	7.3 abc	5.7 abcd	5.7 ab	4.7 ab	3.3 abc
Mesotrione + NIS	280 + 280	0.25% v/v	IS-AT 7	colonial	5.7	5.3 bcd	6.0 ab	7.0 ab	7.7 a	8.0 a	7.7 ab	5.3 abcde	4.0 bcd	3.0 bcde	2.7 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	Penneagle II	creeping	5.2	5.2 abc	5.3 bcd	6.7 bc	7.3 ab	7.0 bc	6.7 abcd	4.7 abcdef	3.7 cde	2.7 cdef	2.3 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	Bardot	colonial	5.1	5.1 ab	6.0 ab	7.0 ab	7.0 b	7.7 ab	6.3 bcde	4.3 bcdef	3.3 cdef	2.3 defg	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	Pennlinks II	creeping	5.0	5.0 ab	5.0 cde	6.7 bc	7.0 b	7.0 bc	6.3 bcde	4.0 cdefg	3.7 cde	2.0 efgh	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Princeville	creeping	4.8	4.8 abc	5.3 bcd	7.0 ab	7.0 b	7.0 bc	6.0 cde	3.7 defgh	2.7 defgh	1.7 efghi	1.7 cdefg
Mesotrione + NIS	280 + 280	0.25% v/v	PST-OEB	creeping	4.7	4.7 ab	5.0 cde	6.3 bc	7.0 b	6.3 cde	5.3 de	3.7 defgh	3.0 defg	2.3 defg	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 1GPD	creeping	4.7	4.7 bcd	5.7 abc	6.0 c	7.0 b	6.7 cd	5.7 de	3.3 efgh	2.7 defgh	2.3 defg	2.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	9200	creeping	4.7	4.6 bcd	5.7 abc	7.0 ab	7.3 ab	7.0 bc	5.7 de	3.3 efgh	2.3 defghi	1.7 efghi	1.3 defg
Mesotrione + NIS	280 + 280	0.25% v/v	Penncross	creeping	4.6	4.6 bcd	5.7 abc	7.0 ab	7.0 b	7.0 bc	6.0 cde	3.0 fghi	2.0 efghij	1.7 efghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	L-93	creeping	4.4	4.4 ab	5.3 bcd	6.7 bc	7.0 b	7.0 bc	5.3 de	2.7 fghij	1.7 fghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	LS-44	creeping	4.4	4.4 abc	5.7 abc	6.7 bc	7.0 b	7.0 bc	5.0 ef	2.7 fghij	1.7 fghij	1.3 efghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	13-M	creeping	4.1	4.1 abc	5.3 bcd	7.0 ab	7.3 ab	6.7 cd	3.7 fg	2.0 ghijk	1.7 fghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	235050	creeping	4.0	4.0 a	6.3 a	7.0 ab	7.0 b	6.0 def	2.7 ghi	1.7 hijk	1.3 ghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 1PDH	creeping	3.8	3.8 ab	5.3 bcd	7.0 ab	7.0 b	6.0 def	2.7 ghi	2.0 ghijk	1.0 hij	1.0 fghi	0.3 fg
Mesotrione + NIS	280 + 280	0.25% v/v	Bengal	creeping	3.8	3.8 ab	5.3 bcd	6.7 bc	7.0 b	6.0 def	2.7 ghi	1.7 hijk	1.0 hij	1.0 fghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	23R	creeping	3.8	3.8 ab	5.7 abc	6.3 bc	7.0 b	6.0 def	3.0 gh	1.7 hijk	1.0 hij	0.7 ghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	SR 1119	creeping	3.8	3.8 ab	5.0 cde	7.0 ab	7.0 b	5.0 g	2.7 ghi	1.7 hijk	1.3 ghij	1.0 fghi	1.0 defg
Mesotrione + NIS	280 + 280	0.25% v/v	Alpha	creeping	3.6	3.6 ab	4.3 e	6.7 bc	7.0 b	6.0 def	3.0 gh	1.7 hijk	0.7 ij	0.3 hi	0.3 fg
Mesotrione + NIS	280 + 280	0.25% v/v	IS-AP 14	creeping	3.6	3.6 ab	5.3 bcd	6.7 bc	7.0 b	5.7 efg	2.0 hi	1.0 ijk	0.7 ij	0.7 ghi	0.7 efg
Mesotrione + NIS	280 + 280	0.25% v/v	Independence	creeping	3.4	3.4 ab	5.3 bcd	7.0 ab	7.0 b	6.0 def	2.0 hi	0.3 k	0.3 j	0.3 hi	0.0 g
Mesotrione + NIS	280 + 280	0.25% v/v	T-1	creeping	3.4	3.4 ab	4.7 de	7.0 ab	7.3 ab	5.7 efg	2.7 ghi	0.3 k	0.3 j	0.0 i	0.0 g
Mesotrione + NIS	280 + 280	0.25% v/v	Declaration	creeping	3.3	3.3 ab	4.3 e	6.3 bc	7.0 b	5.3 fg	1.3 i	0.7 jk	0.7 ij	0.7 ghi	0.3 fg

* Cells highlighted in yellow represent the highest and lowest average phytotoxicity values.

** Applications made on May 26, 2006 and June 12, 2006 (0 WAT and 2 WAT)

*** Values within a column followed by the same letter are not significantly different. LSD *P*= 0.05.

Table 4. Ranking of mean phytotoxicity of mesotrione on five species of fine leaf fescue.

	Mesotrione rate	NIS Rate	Cultivar	Fescue	Overall	Phytotoxicity (Rated 0-9; 9=dead)									
Treatment	(g ai/ha)	(% v/v)	Name	Species	Average	1 WAT	2 WAT *	3 WAT	4 WAT	5 WAT	6 WAT	7 WAT	8 WAT	9 WAT	10 WAT
Mesotrione + NIS *	280 + 280 **	0.25% v/v	Pick CRF 1-03	strong creeping	3.7	2.0 bcde ***	3.7 ab	4.0 abc	4.0 abc	2.3 cdef	2.3 cdefg	2.0 cdef	1.3 bcdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	BMXC-S02	strong creeping	3.6	2.0 bcde	3.3 abc	3.3 abcde	3.3 bcde	2.3 cdef	2.7 bcdef	2.3 bcde	2.0 bcd	1.7 bcde	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	Boreal	strong creeping	3.6	3.7 a	4.0 a	4.0 abc	3.7 bcd	4.0 ab	4.3 ab	3.7 ab	3.7 a	4.0 a	3.7 a
Mesotrione + NIS	280 + 280	0.25% v/v	TL1	strong creeping	2.6	1.7 cde	3.0 abcd	3.3 abcde	3.3 bcde	2.3 cdef	2.0 cdefgh	2.0 cdef	1.7 bcde	1.7 bcde	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Seabreeze	slender creeping	2.5	2.0 bcde	3.0 abcd	3.3 abcde	3.7 bcd	1.0 def	1.3 efgh	1.3 defgh	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 30	strong creeping	2.4	1.3 de	2.3 bcde	2.3 cdef	3.3 bcde	2.3 cdef	2.0 cdefgh	2.0 cdef	2.0 bcd	1.7 bcde	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	DLF-RCM	strong creeping	2.2	1.3 de	3.0 abcd	3.0 abcdef	3.3 bcde	2.3 cdef	2.7 bcdef	2.7 bcd	2.7 ab	2.0 bcd	2.0 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FL 28	hard	2.2	1.7 cde	2.3 bcde	2.7 bcdef	2.3 cde	1.0 def	0.7 gh	0.3 gh	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Shademaster	strong creeping	2.2	1.7 cde	3.0 abcd	3.3 abcde	3.7 bcd	2.0 cdef	2.0 cdefgh	2.0 cdef	1.7 bcde	1.7 bcde	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 23	strong creeping	2.1	2.0 bcde	2.7 abcde	2.7 bcdef	3.3 bcde	2.3 cdef	3.3 bcd	2.7 bcd	1.7 bcde	2.0 bcd	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Jamestown 5	chewings	2.1	3.0 ab	3.7 ab	3.7 abcd	4.0 abc	1.3 cdef	1.3 efgh	1.3 defgh	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRR 29	strong creeping	2.1	1.3 de	2.0 cde	2.0 def	2.0 de	1.3 cdef	1.7 defgh	1.0 efgh	1.0 cdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9360	strong creeping	1.9	2.0 bcde	4.0 a	4.7 a	5.7 a	5.3 a	5.3 a	4.3 a	3.7 a	4.0 a	3.0 ab
Mesotrione + NIS	280 + 280	0.25% v/v	Quatro	sheep	1.9	1.0 e	2.7 abcde	3.3 abcde	3.7 bcd	1.7 cdef	1.7 defgh	1.0 efgh	0.7 def	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9578	strong creeping	1.9	1.0 e	2.3 bcde	2.3 cdef	2.3 cde	1.3 cdef	1.3 efgh	1.0 efgh	1.3 bcdef	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	ACF 188	chewings	1.8	2.0 bcde	3.0 abcd	2.7 bcdef	3.3 bcde	2.3 cdef	2.0 cdefgh	1.3 defgh	1.0 cdef	0.7 def	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Longfellow II	chewings	1.8	2.7 abc	2.7 abcde	3.0 abcdef	3.7 bcd	2.0 cdef	1.7 defgh	0.7 fgh	0.3 ef	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	IS-FRC 17	chewings	1.8	2.3 bcd	3.3 abc	3.7 abcd	3.7 bcd	2.0 cdef	1.3 efgh	0.3 gh	0.7 def	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	SR 3000	hard	1.8	2.3 bcd	2.7 abcde	3.0 abcdef	2.3 cde	1.0 def	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9886	chewings	1.7	3.0 ab	4.0 a	3.3 abcde	3.0 bcde	1.0 def	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Cascade	chewings	1.7	3.0 ab	4.0 a	3.3 abcde	3.0 bcde	1.3 cdef	1.3 efgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	C03-4676	strong creeping	1.7	1.3 de	3.0 abcd	3.0 abcdef	3.3 bcde	3.0 bc	3.7 abc	2.0 cdef	1.7 bcde	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Berkshire	hard	1.6	1.3 de	3.0 abcd	2.7 bcdef	2.3 cde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9579	strong creeping	1.6	1.0 e	3.0 abcd	2.7 bcdef	3.3 bcde	2.0 cdef	2.3 cdefg	2.3 bcde	2.7 ab	2.7 ab	2.3 abc
Mesotrione + NIS	280 + 280	0.25% v/v	Predator	hard	1.6	1.0 e	2.3 bcde	1.3 f	1.7 e	0.7 ef	0.7 gh	0.3 gh	0.3 ef	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	C-SMX	strong creeping	1.5	2.0 bcde	3.7 ab	3.0 abcdef	3.3 bcde	1.3 cdef	1.7 defgh	1.3 defgh	1.0 cdef	1.0 cdef	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	Pathfinder	strong creeping	1.5	2.0 bcde	3.3 abc	2.7 bcdef	3.3 bcde	2.7 bcd	3.0 bcde	2.3 bcde	2.3 abc	2.3 bc	2.0 bcd
Mesotrione + NIS	280 + 280	0.25% v/v	Jasper II	strong creeping	1.5	2.7 abc	3.3 abc	2.7 bcdef	3.3 bcde	1.7 cdef	1.3 efgh	0.3 gh	0.3 ef	1.0 cdef	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Razor	strong creeping	1.5	2.0 bcde	3.7 ab	4.3 ab	4.3 ab	2.7 bcd	3.0 bcde	2.3 bcde	2.3 abc	2.0 bcd	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	C03-RCE	strong creeping	1.5	1.0 e	2.0 cde	1.3 f	2.0 de	1.7 cdef	2.0 cdefgh	1.7 cdefg	1.0 cdef	1.0 cdef	1.0 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	7 Seas	chewings	1.5	2.7 abc	4.0 a	3.0 abcdef	3.3 bcde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	PST-4TZ	chewings	1.4	2.3 bcd	3.0 abcd	3.0 abcdef	3.0 bcde	0.7 ef	0.7 gh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Pick HF #2	hard	1.4	1.3 de	3.0 abcd	3.3 abcde	3.0 bcde	1.0 def	1.0 fgh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	TL 53	strong creeping	1.4	1.0 e	2.0 cde	1.7 ef	2.3 cde	2.0 cdef	2.0 cdefgh	1.7 cdefg	1.3 bcdef	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	Oxford	hard	1.3	1.7 cde	3.3 abc	3.0 abcdef	2.7 bcde	1.3 cdef	1.0 fgh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Dawson E	slender creeping	1.3	1.7 cde	2.7 abcde	3.0 abcdef	3.3 bcde	1.3 cdef	1.3 efgh	1.0 efgh	0.7 def	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	ACF 174	chewings	1.2	2.3 bcd	2.0 cde	1.7 ef	2.0 de	0.7 ef	0.7 gh	0.3 gh	0.7 def	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 51G	chewings	1.2	2.3 bcd	2.7 abcde	2.3 cdef	2.3 cde	1.3 cdef	1.0 fgh	0.3 gh	0.3 ef	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	ASC 245	strong creeping	1.2	1.3 de	3.3 abc	3.3 abcde	3.7 bcd	3.0 bc	3.7 abc	3.0 abc	2.3 abc	2.3 bc	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	5001	strong creeping	1.2	2.3 bcd	3.3 abc	3.7 abcd	4.3 ab	3.0 bc	3.0 bcde	2.7 bcd	1.3 bcdef	1.3 bcdef	1.3 cdef
Mesotrione + NIS	280 + 280	0.25% v/v	Audubon	strong creeping	1.2	2.0 bcde	2.3 bcde	2.0 def	2.7 bcde	1.3 cdef	1.3 efgh	1.0 efgh	0.7 def	0.7 def	0.7 def
Mesotrione + NIS	280 + 280	0.25% v/v	PST-8000	strong creeping	1.2	1.3 de	2.0 cde	2.0 def	2.7 bcde	1.3 cdef	1.7 defgh	0.3 gh	0.3 ef	0.7 def	0.3
Mesotrione + NIS	280 + 280	0.25% v/v	Celestial	strong creeping	1.1	1.3 de	1.7 de	1.7 ef	2.0 de	1.0 def	1.0 fgh	1.0 efgh	0.7 def	0.7 def	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Musica	strong creeping	1.1	2.3 bcd	3.7 ab	3.3 abcde	3.3 bcde	2.0 cdef	1.3 efgh	0.7 fgh	0.7 def	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	BUR 4601	chewings	1.0	1.7 cde	2.3 bcde	1.7 ef	2.3 cde	1.0 def	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	DP 77-9885	chewings	1.0	2.7 abc	2.3 bcde	1.7 ef	2.0 de	1.0 def	1.0 fgh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Scaldis	hard	1.0	1.3 de	2.7 abcde	2.7 bcdef	2.7 bcde	0.3 f	0.7 gh	0.3 gh	0.3 ef	0.3 ef	0.3 ef
Mesotrione + NIS	280 + 280	0.25% v/v	Ambassador	chewings	0.9	1.3 de	1.7 de	1.7 ef	2.0 de	1.0 def	1.0 fgh	0.3 gh	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	A01630Rel	hard	0.9	1.0 e	2.7 abcde	2.3 cdef	1.7 e	0.7 ef	0.7 gh	0.0 h	0.0 f	0.0 f	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	Oracle	strong creeping	0.9	2.3 bcd	3.3 abc	3.0 abcdef	3.0 bcde	2.0 cdef	2.3 cdefg	2.3 bcde	2.3 abc	2.0 bcd	1.7 bcde
Mesotrione + NIS	280 + 280	0.25% v/v	SPM	hard	0.8	1.0 e	2.0 cde	2.0 def	1.7 e	0.3 f	0.3 h	0.3 gh	0.3 ef	0.3 ef	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 3K	hard	0.8	1.7 cde	3.3 abc	3.3 abcde	2.7 bcde	1.0 def	1.0 fgh	0.0 h	0.3 ef	0.3 ef	0.0 f
Mesotrione + NIS	280 + 280	0.25% v/v	SRX 55R	slender creeping	0.8	1.0 e	1.3 e	1.3 f	1.7 e	1.0 def	1.3 efgh	0.7 fgh	0.7 def	0.0 f	0.0 f

* Cells highlighted in yellow represent the highest and lowest average phytotoxicity values.

** Applications made on May 26, 2006 and June 12, 2006 (0 WAT and 2 WAT)

*** Values within a column followed by the same letter are not significantly different. LSD $P=0.05$.