Evaluation of Herbicides for Yellow and Purple Nutsedge (*Cyperus esculentus* and *C. rotundus*) and Annual Sedges Control (*Cyperus spp.*) in Young Blueberry Fields.

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Progress Report for 2005

INTRODUCTION: Acreage of blueberries, both rabbiteye (*Vaccinium ashei*) and southern highbush(*Vaccinium corymbosum*), have been on the increase in the Southeastern United States. When new blueberry fields are planted the most critical period for weed control is during the first two years of establishment. During this establishment period, many growers throughout the southeast experience heavy infestations of yellow and purple nutsedge (*Cyperus esculentus* and *C. rotundus*), and annual sedges (*Cyperus spp.*). At present, there are no herbicides labeled for selective postemergent sedge control during this establishment period. There are, however, several postemergent herbicides that are known to be safe to plants in the blueberry family (Ericaeae) that control sedges (e.g. halosulfuron and sulfentrazone). The goal of this study was to evaluate the safety of both halosulfuron and sulfentrazone on highbush and rabbiteye blueberries.

PROCEDURE:

Georgia Sites: In Georgia, two sites were chosen for the testing. Site #1 was located in Alma, Georgia. The southern highbush blueberries (*Vaccinium corymbosum* 'Rebelly') were approximately 2 years old, and over the top applications were applied on June 17, 2004. Site #2 was located in Nahunta, Georgia. The rabbiteye blueberries (*Vaccinium ashei* 'Brightwell' and 'Premier') had been established for more than 10 years. Post directed applications were applied on July 23, 2004. Post directed spray did not go more than 24 inches into the plant canopy. At both sites, there was a large variation of sedge species, but the predominate species was yellow nutsedge (*Cyperus esculentus*). Treatments applied to both studies were identical, and consisted of the following:

Treatment #	Treatment	Formulation	Formulation Rate
1	Spartan	75 DF	3.0 oz/A
2	Spartan	75 DF	6.0 oz/A
3	Spartan	75 DF	12.0 oz/A
4	Spartan	75 DF	24.0 oz/A
5	Spartan	4 L	3.0 oz/A
6	Spartan	4 L	6.0 oz/A
7	Spartan	4 L	12.0 oz/A
8	Spartan	4 L	24.0 oz/A
9	Permit	75 DF	0.5 oz/A
10	Permit	75 DF	1.0 oz/A
11	Permit	75 DF	2.0 oz/A

12	Permit	75 DF	4.0 oz/A
13	Control		

All sprays solutions contained the surfactant Kinetic applied at a rate of 0.25% solution volume to volume. Kinetic is 99% active, and contains a blend of nonionic and organosilicone surfactants. In both studies, plot size was approximately 6 x 12, and contained 3 plants per treatment. Test was applied as a randomized complete block with 4 replications. All treatments were applied with a CO^2 backpack sprayer equipped with 8002 flat fan spray tips. Sprayer was calibrated to deliver 20 gallons per acre (GPA).

North Carolina Sites: In North Carolina, two sites were chosen for the testing. Site #1 was located in Castle Hayne, North Carolina. The southern highbush blueberries (*Vaccinium corymbosum* 'Croatan') tested were established March 25, 2004, and over the top applications were applied on May 24, 2004. Site #2 was located in Raleigh, North Carolina. The southern highbush blueberries (*Vaccinium corymbosum* 'O'Neal') tested were established in Spring of 2004, and over the top applications were applied on April 16, 2004. Treatments applied at both studies were identical, and consisted of the following:

Treatment #	Treatment	Formulation	Formulation Rate
1	Control		
2	Spartan	75 DF	3.0 oz/A
3	Permit	75 DF	0.5 oz/A
4	Matrix	25 DF	1.0 oz/A
5	Callisto	4 L	3.0 oz/A
6	Envoke	75 DF	0.15 oz/A

All sprays solutions contained the surfactant Induce applied at a rate of 0.25% solution volume to volume. Induce is 90% active, and contains a blend of crop oil and a organosilicone surfactant. All treats were applied with a CO^2 backpack sprayer calibrated to deliver 20 gallons per acre (GPA). In both studies, plot size was approximately 6 x 12, and contained 3 plants per treatment. Test was applied as a randomized complete block with 4 replications.

RESULTS AND DISCUSSION:

Georgia sites: At site #1, data was taken at 5 and 15 weeks after treatment (WAT). At site #2, data was collected at 7 and 14 WAT. At both sites, no injury was seen to the blueberry plants, and all herbicide treatments provided complete control of sedges during the rating period (Table #1 and 2). Next year, both sites will be rated one additional time for blueberry injury ratings and sedge control.

North Carolina sites: At site one, 16 days after treatment (DAT), significant injury (53.3%) was observed with the Spartan treatment (Table 3). No other significant injury was observed with the other treatments at 16 or 32 DAT. At site two, 12 DAT, significant injury was noted with all but the Envoke treatment (Table 4). At 32 DAT, significant injury was noted with Spartan, Permit, and Matrix. By 54 DAT, only Spartan and Permit were causing significant injury to the O'Neal highbush blueberries (Table 4).

Table #1. Sedge control and highbush blueberry injury (*Vaccinium corymbosum* 'Reveille') injury at site #1 (Alma, Georgia) 2004.

			Sedge Control		Injury to Highbush	
Treatment #	Treatment	Formulation Rate	5 WAT	15 WAT	5 WAT	15 WAT
1	Spartan 75 DF	3.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
2	Spartan 75 DF	6.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
3	Spartan 75 DF	12.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
4	Spartan 75 DF	24.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
5	Spartan 4 L	3.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
6	Spartan 4 L	6.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
7	Spartan 4 L	12.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
8	Spartan 4 L	24.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
9	Permit 75 DF	0.5 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
10	Permit 75 DF	1.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
11	Permit 75 DF	2.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
12	Permit 75 DF	4.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
13	Control		0.0 b	0.0 b	0.0 a	0.0 a
LSD			0.0	0.0	0.0	0.0

Table #2. Sedge control and rabbiteye blueberry injury (*Vaccinium ashei* 'Brightwell' and 'Premier') at site #2 (Nahunta, Georgia) 2004.

			Sedge Control		Injury to Highbush	
Treatment #	Treatment	Formulation Rate	5 WAT	15 WAT	5 WAT	15 WAT
1	Spartan 75 DF	3.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
2	Spartan 75 DF	6.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
3	Spartan 75 DF	12.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
4	Spartan 75 DF	24.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
5	Spartan 4 L	3.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
6	Spartan 4 L	6.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
7	Spartan 4 L	12.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
8	Spartan 4 L	24.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
9	Permit 75 DF	0.5 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
10	Permit 75 DF	1.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
11	Permit 75 DF	2.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
12	Permit 75 DF	4.0 oz/A	100.0 a	100.0 a	0.0 a	0.0 a
13	Control		0.0 b	0.0 b	0.0 a	0.0 a
LSD			0.0	0.0	0.0	0.0

Table #3. Sedge control and highbush blueberry injury (*Vaccinium corymbosum* 'Croatan') injury at site #1 (Castle hayne, North Carolina) 2004.

			Sedge Control		Injury to Highbush	
Treatment #	Treatment	Formulation Rate	12 DAT	32 DAT	12 DAT	32 DAT
1	Control		0.0 b	0.0 a	0.0 a	0.0 d
2	Spartan 75 DF	6.0 oz/A	53.3 a	43.3 a	85.0 ab	75.0 a
3	Permit 75 DF	0.5 oz/A	43.3 ab	23.3 a	93.3 a	85.0 a
4	Matrix 25 DF	1.0 oz/A	20.0 ab	0.0 a	76.7 ab	50.0 b
5	Callisto 4 L	3.0 oz/A	15.0 ab	0.0 a	68.3 b	46.7 b
6	Envoke 75 DF	0.15 oz/A	20.0 ab	1.7 a	51.7 c	23.3 c
LSD			33.53	16.7	14.76	18.19

Table #4. Highbush blueberry injury (*Vaccinium corymbosum* 'O'Neal') injury at site #2 (Raleigh, North Carolina) 2004.

			Injury to Highbush		
Treatment #	Treatment	Formulation Rate	12 DAT	32 DAT	54 DAT
1	Control		0.0 e	0.0 c	0.0 c
2	Spartan 75 DF	6.0 oz/A	83.3 a	23.3 b	28.3 b
3	Permit 75 DF	0.5 oz/A	50.0 b	60.0 a	50.0 a
4	Matrix 25 DF	1.0 oz/A	23.3c	25.0 b	15.0 bc
5	Callisto 4 L	3.0 oz/A	13.3 cd	6.7 c	5.0 c
6	Envoke 75 DF	0.15 oz/A	10.0 de	1.7 c	10.0 c
LSD			11.51	9.49	17.92