

TANK-MIX COMBINATIONS OF VALOR AND COMMAND IN SWEETPOTATO

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ABSTRACT: A trial was conducted in 2004 at the Alcorn State University Demonstration and Technology Transfer Farm in Mound Bayou, Mississippi to evaluate the use of Valor 51WDG (flumioxazin) herbicide in sweetpotato. Treatments were applied on June 7 and immediately following transplant using a CO₂ tractor sprayer. Pre-transplant (PRE) treatments included; Valor at 0, 2, and 3 oz/ac, Valor at 0, 2, and 3 oz/ac plus 1.66 pt/ac Command 3ME (clomazone), Valor at 0, 2, and 3 oz/ac plus 2 pt/ac Command and Valor at 0, 2, and 3 oz/ac plus 2.66 pt/ac Command. Post-transplant (POST) treatments included Valor at 2 and 3 oz/ac and Valor at 2 and 3 oz/ac plus 1.66 pt/ac Command. Plant injury at 3 weeks after treatment (WAT) was at least 45% for all treatments with Valor POST. In addition, plant injury was higher for the 3 oz/ac rate of Valor than the 2 oz/ac rate for PRE and POST applications. Morningglory control was at least 63% 3 WAT for all treatments that included Valor and control increased in all treatments throughout the growing season. Grass control was at least 87% for all treatments with an application of Command at 9 WAT. US No. 1 yield ranged from 199 to 465 boxes/ac for the untreated check and Valor at 2 oz/ac + Command at 1.66 pt/ac treatments, respectively. Total marketable yield was also highest with Valor at 2 oz/ac + Command at 1.66 pt/ac, which yielded 803 boxes/ac.

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KEYWORDS: Sweetpotato, *Ipomoea batatas*, storage roots, horticultural crops, flumioxazin, vegetable crops.

MATERIALS AND METHODS: A trial was conducted at the Alcorn State University Demonstration and Technology Transfer Farm in Mound Bayou, Mississippi to evaluate the use of Valor 51WDG (flumioxazin) herbicide in sweetpotato. The experimental design was a randomized complete block design with four replications. Plots size was 10 X 25 ft with three rows spaced 40-in and plants spaced 12-in apart within the row. Trial area was prepared by disk cultivation, do-all, and bedding in the early spring of 2004. Fertilizer and lime were applied in the spring according to Mississippi State Soil Testing Laboratory recommendations. An application of glyphosate was applied prior to planting to eliminate existing weeds.

Pre-transplant treatments were applied on June 7 using a CO₂ tractor mounted sprayer. Sprayer settings were 15 gal/ac at 27 psi. The boom was 10 ft long with 6 flat fan 8002 nozzles spaced 20-in apart and a boom height of 18-in. Field grown 'Beauregard B-63' slips were transplanted using a mechanical transplanter on June 8. Post-transplant treatments were applied immediately after transplanting. Visual ratings of injury and weed control were taken at 2, 3, 4, and 9 WAT.

Pre-transplant PRE treatments included: Valor at 0, 2, and 3 oz/ac, Valor at 0, 2, and 3 oz/ac plus 1.66 pt/ac Command 3ME, Valor at 0, 2, and 3 oz/ac plus 2 pt/ac Command and Valor at 0, 2, and 3 oz/ac plus 2.66 pt/ac Command. POST treatments included Valor at 2 and 3 oz/ac and Valor at 2 and 3 oz/ac plus 1.66 pt/ac Command.

Roots were harvested on October 22 for a total of 136 growing days. Roots were graded into US No.1, Canner, Jumbo and Cull grades using National Sweetpotato Collaborator's standards and weighed. Analysis of variance was carried out on weed control, plant injury, and yield and means were separated using Fisher's protected LSD ($\alpha=0.10$).

RESULTS AND DISCUSSION: Plant injury at 3 WAT was at least 45% for all treatments with a POST application of Valor. This was higher than all PRE applications, which had plant injury of less than 24% (Table 1). In addition, plant injury was higher with Valor at 3 oz/ac compared to 2 oz/ac for PRE and POST applications. Morningglory control was at least 90% with treatments that included a POST application of Valor. Morningglory control was at least 63% at 3 WAT for all treatments that included Valor. Morningglory control increased in all treatments throughout the observation period. Grass control was at least 87% for all treatments with an application of Command at 9 WAT.

US No. 1 yield ranged from 199 to 465 boxes/ac for the untreated and Valor at 2 oz/ac + Command at 1.66 pt/ac, respectively (Table 2). Total marketable yield was also highest with Valor at 2 oz/ac + Command at 1.66 pt/ac, which yielded 803 boxes/ac. Yield was improved with the addition of Command as a tank-mix partner compared to Valor alone.

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Table 1. Mean sweetpotato stand counts, plant injury, and grass and morningglory control at 3 and 9 weeks after transplanting for treatments in a weed control study at Mound Bayou, MS in 2004.

Treatment			Stand Count	Plant Injury	Morningglory Control		Grass Control	
Valor oz/A	Command pt/A	Application Pre or Post	plants/25 ft	3 WAT ¹	3 WAT	9 WAT	3 WAT	9 WAT
				-----Percent-----				
0	0	NA	21.8	0.0	0.0	0.0	0.0	0.0
2	0	Pre	21.5	12.5	63.8	83.3	56.3	71.7
3	0	Pre	21.5	15.0	72.5	86.3	88.3	46.7
0	1.66	Pre	20.5	13.8	45.0	55.0	85.0	87.5
2	1.66	Pre	22.0	11.3	81.3	87.5	92.5	89.8
3	1.66	Pre	20.8	16.3	70.0	92.5	92.5	93.8
0	2	Pre	20.8	7.5	52.5	75.0	95.0	93.8
2	2	Pre	23.0	8.8	72.5	83.3	90.0	94.5
3	2	Pre	22.5	12.5	77.5	72.5	95.0	98.3
0	2.66	Pre	20.5	20.0	42.5	52.5	95.0	97.3
2	2.66	Pre	21.3	16.3	70.0	85.0	87.5	97.5
3	2.66	Pre	20.0	23.8	70.0	88.3	91.3	95.0
2	0	Post	16.5	45.0	90.0	92.3	97.5	96.3
3	0	Post	18.3	55.0	96.3	98.8	98.8	98.8
2	1.66	Post	18.3	46.3	93.8	98.5	100	100
3	1.66	Post	14.5	65.0	93.8	96.3	100	97.5
LSD (0.10)			2.76	16.2	13.7	8.7	3.9	11.7

¹ WAT= Weeks After Transplanting

Table 2. Mean sweetpotato yield for treatments in a sweetpotato weed control study at Mound Bayou, MS in 2004.

Treatment			Yield Grades				
Valor	Command	Application	US No. 1	Canner	Cull	Jumbo	Total Marketable
oz/A	pt/A	Pre or Post	-----No. 40 lb box /ac -----				
0	0	Pre	199.6	102.5	192.9	69.4	371.5
2	0	Pre	238.4	61.9	177.5	146.0	446.3
3	0	Pre	321.4	56.5	269.8	212.7	590.6
0	1.66	Pre	252.1	55.2	175.1	24.6	331.9
2	1.66	Pre	465.9	63.9	171.2	273.4	803.3
3	1.66	Pre	444.0	58.9	131.9	159.8	662.7
0	2	Pre	252.8	84.7	124.4	100.9	438.4
2	2	Pre	357.6	84.7	211.6	201.0	643.2
3	2	Pre	345.4	73.0	98.7	332.2	680.4
0	2.66	Pre	315.9	69.6	132.7	139.9	525.4
2	2.66	Pre	411.4	76.6	143.3	205.0	693.0
3	2.66	Pre	398.6	81.3	150.1	122.6	558.8
2	0	Post	378.7	60.4	166.3	268.6	707.7
3	0	Post	249.6	65.1	241.3	251.7	566.4
2	1.66	Post	367.7	50.7	178.4	223.7	642.1
3	1.66	Post	282.5	50.2	114.0	181.4	514.1
LSD (0.10)			125.9	39.3	128.7	182.6	182.6