

## Research Note

### OXYFLUORFEN IN 'ESTELA' AND 'ALELA' TANIER'

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In Puerto Rico the use of herbicides and hand weeding are the most common practices for weed control in root crops. Ametryn and paraquat are the only two effective herbicides registered for root crops, but the manufacturer of ametryn does not support its re-registration. Therefore, in the near future weed control in these crops will depend on hand weeding and on the use of paraquat. Because of the high cost of labor for hand weeding it is imperative to conduct screening on potential herbicides as substitutes for ametryn. The objective of this experiment was to generate the efficacy and phytotoxicity data for the registration of oxyfluorfen in 'Alela' and 'Estela' taniers.

The experiment was established at the Agricultural Experiment Station (AES) in Isabela 5 June 1996. Plots consisted of four rows 6.09 m long with ten plants each. The experiment was arranged in a split plot design with four replicates. The main plot were cultivars: Alela and Estela (cultivar recently released by AES). Subplots were four herbicide treatments: oxyfluorfen at 0.56 and 1.12 kg ai/ha, and ametryn at 3.36 and 5.6 kg ai/ha; and a non-treated (control) plot. Herbicides were applied preemergence one day after planting by using a portable CO<sub>2</sub> pressurized backpack sprayer. Weed control was rated and phytotoxicity was evaluated four weeks after treatment (WAT), and hand weeding was done thereafter until harvest.

Johnsongrass (*Sorghum halepense*), morningglory (*Ipomoea* spp.), junglerice (*Echinochloa colona*), purple nutsedge (*Cyperus rotundus*), common purslane (*Portulaca oleracea*), gale of the wind (*Phyllanthus niruri*), and Florida pusley (*Richardia scabra*) were the most common weeds in the non treated plots. Interaction between cultivar and herbicide treatments was not significant for weed density nor for weed control rating; therefore, data were combined over cultivars. The highest weed density was found in the non treated plot with 84,535 plants per hectare, whereas the lowest weed density (1,794 plants per hectare) was obtained at the highest oxyfluorfen rate (Table 1). Both herbicides gave good weed control at all rates. Oxyfluorfen at 0.56 and 1.12 kg ai/ha gave 87 and 96% weed control, respectively. Ametryn at 3.36 and 5.6 kg ai/ha gave 83 and 89% weed control, respectively.

Alela was less tolerant than Estela to the higher rate of both herbicides. Oxyfluorfen at 1.12 kg ai/ha caused 5% phytotoxicity to the Estela cultivar; however, yield was not reduced (data not shown). Oxyfluorfen at 1.12 and ametryn at 5.6 kg ai/ha caused 8 and 11% phytotoxicity, respectively, in Alela. Regardless of the herbicide, Estela yielded more

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TABLE 1.—*Tanier yield and weed control with two herbicides, Isabela 1997.*

	Rate	Marketable cormel weight	Non commercial cormel weight	Non commercial cormel number	Weed density	Weed control <sup>1</sup>
	kg ai/ha	----- kg/ha -----		no/ha	no/ha	%
Control	—	12,589	4,808	41,824	34,535	4
Non-treated						
Oxyfluorfen	0.56	16,616	4,430	33,975	6,503	87
Oxyfluorfen	1.12	17,357	4,411	34,087	1,794	96
Ametryne	3.36	14,065	4,264	38,908	6,391	83
Ametryne	5.60	15,372	3,958	38,236	3,700	89
LSD (0.05)	—	3,011	N.S.	N.S.	2,899	5
Cultivar		—				
Alala		14,156	5,373	47,542	10,271	71
Estela		16,244	3,375	27,269	10,899	72
LSD (0.05)		1,904	664	6,083	N.S.	N.S.

<sup>1</sup>Weed control was rated four weeks after herbicide application. Hand weeding was done thereafter.

marketable corms than Alela (Table 1). Alela yielded more non commercial cormels than Estela. Oxyfluorfen application at 1.12 kg ai/ha resulted in higher yield than ametryn at 3.36 kg ai/ha, and the non treated (control) plots. Apparently the high weed density in the first month caused a significant reduction in the yield. Oxyfluorfen appears to be a promising candidate herbicide for weed control in tanier.