CONTROL OF Q-BIOTYPE *BEMISIA TABACI* WHITEFLY ON POINSETTIA WITH FOLIAR SPRAYS

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Introduction

Foliar sprays with several insecticides were compared for control of Q-biotype *Bemisa tabaci* whitefly infesting poinsettia in a greenhouse study. Treatments included Flagship 25WG (thiamethoxam, Syngenta), Marathon II 2F (imidacloprid, OHP), Judo 4F (spiromesifen, OHP), Safari 20SG (dinotefuran, Valent Professional Products), Distance 0.86EC (pyriproxyfen, Valent Professional Products) and an unsprayed control.

Materials and Methods

Rooted 'Freedom Red' poinsettia cuttings were planted singly in 6.5" pots on 7/22/05 using a commercial peat-based media (Pro-Mix) and maintained in a greenhouse with ebb-and-flood irrigation at 150 ppm N (Peter's 15-5-15 Cal-Mag) for the duration of the trial. Plants were pinched on 8/10/05 and infested on 8/12/05 with *Bemisia tabaci* adult whiteflies collected from a population where presence of Q-biotype had been confirmed by two investigators (Dr. F. Byrne: six tested using esterase analysis, all Q-biotype; Dr. J. Brown: five tested, all Q-biotype based on mitochondria cytochrome oxidase I gene, pers. comm.) The population was found in a poinsettia production range where applications with various insecticides (imidacloprid, pyriproxyfen, endosulfan) were not controlling the infestation as expected. Eight single-plant replicates were randomly assigned to each treatment listed in Table 1. Treatments were applied on 9/26/05, 10/6/05 and 10/25/05 as foliar sprays using a CO2-powered backpack sprayer fitted with a TeeJet 8006 VS twinfan nozzle operating at 30 psi. Applications were made to drip, taking care to obtain thorough coverage including leaf undersides. Treatments were replicated eight times (single plant replicates) and plants were arranged in a completely randomized design in the greenhouse and maintained as before on 75F:65F day:night temperatures. Supplemental lighting was used during late September to delay flower initiation slightly. Treatments were evaluated on 9/20/05 prior to first applications and on 10/6/05, 10/17/05 and 11/1/05 by randomly selecting eight fully expanded leaves per plant and tallying the number of live immature whiteflies found. ANOVA and multiple comparisons among treatments were performed on raw or transformed treatment means using a statistical multiple comparison procedure (SuperAnova v. 1.1, Abacus Concepts). Results are shown in Table 1.

Results and Discussion

Judo and Safari appeared to be the most effective treatments in this study, with the lowest number of immature whiteflies on plants after the second application and through the end of the trial. Flagship appeared to significantly suppress the whitefly population. Distance and Marathon showed little suppression and differences were not statistically significant. There was slight phytoxicity (chlorotic mottling) to bracts and upper leaves of plants treated with Distance at the end of the trial, but the final trial spray was made well after color appeared and labels prohibit applications after bract color in poinsettia. There was no phytotoxicity in any other treatment and foliar and bract spray residue appeared to be minimal in all treatments.

Immature whitefly samples from each treatment were sent again for esterase analysis after the conclusion of the trial. The results from each treatment follow and indicate that the population, although mixed, was dominated at the conclusion by Q-biotype whiteflies: Flagship: 12 tested; ten Q biotype, two B biotype; Marathon: eleven tested, all Q biotype; Judo: four tested, all Q biotype; Safari: ten tested, all Q biotype; Distance: 12 tested, 11 Q biotype, one B biotype; unsprayed controls: ten tested, eight Q biotype and two B biotype.

Table 1. Control of Q-Biotype Whitefly on 'Freedom Red' Poinsettia with Foliar Insecticides, Riverhead, NY, 2005.

Treatment & formulation	Rate/100 gal. (form.)	Sample Date 9/20	10/6**	10/17**	11/1*
		immature whiteflies/8 leaves			
Flagship 25WG	2 oz	16.3ns	33.4 ab	69.4 b	43.8 c
Marathon II 2F	1.7 fl oz	19.5ns	56.8 ab	123.1 c	67.0 d
Judo 4F	4 fl oz	16.6ns	27.1 a	9.4 a	0.5 a
Safari 20SG	8 oz	19.5ns	41.3 ab	15.1 a	3.5 b
Distance 0.86EC	8 fl oz	18.4ns	70.9 b	113.3 c	88.5 d
Unsprayed Control		16.5ns	50.0 ab	134.6 c	117.3 d

Means within columns followed by the same letter are not significantly different at p=0.05 (Fisher's LSD).
*Data were transformed prior to analysis using ln(y+1)
**Data were transformed prior to analysis using sqrt(y)

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