

## DRAFT 6

### Efficacy of Management Tools for *Bemisia Q* Biotype.

**Ornamental Protocol Number: 06-012**

**Objective:** Determine efficacy of various management tools on Bemisia Q biotype.

**Experimental Design:**

**Plot Size:** Must be adequate to reflect actual use conditions.

**Replicates:** Minimum of 4 replications

**Application Instructions:** TBD. See below for methods used so far.

**TRIALS AGAINST NYMPHS (SPRAYS AND DRENCHES)**

On day (0), 10 adult whiteflies were caged to the abaxial surface of leaf no. 5 (counting from top leaf, of about 1cm<sup>2</sup> area, down). To mark the spot of exposure, a circle was drawn around the edge of the cage (2.5 cm diam clip cage) using a permanent marker. Twenty-four hours later the adult whiteflies were removed from the cage. After egg eclosion (8-10 days) the number of early first and second instars within the circle was recorded.

Post treatment counts of empty pupal cases at approximately 21 days post-treatment were conducted. Percent mortality is calculated as the original pre-treatment count minus the emerged adults divided by the original pre-treatment count. (Total - Emerged)/Total

For drench treatment, utilize actively growing plant materials of intermediate age.

**TRIALS AGAINST ADULTS (SPRAYS)**

Treatments were applied first.

Twenty-four hours after treatment, 10 adults are caged on the abaxial surface of treated leaves. Twenty-four hours after exposure, the number of live and dead adults was recorded, and a percent mortality was calculated per replicate. New adults were caged weekly for four weeks to determine efficacy over time.

**TRIALS AGAINST ADULTS (DRENCHES)**

Treatments were applied first.

Four days after treatment, 10 adults are caged on the abaxial leaf surface of treated plants. Twenty-four hours after exposure, the number of live and dead adults was recorded, and a percent mortality was calculated per replicate. Arcsine transformation of proportions, ANOVA and Fisher's LSD for analysis.

**Target Species:** Bemisia tabaci/argentifolia Q Biotype.

**Plant Hosts:** Poinsettia or other suitable crop.

**Use Site:** Greenhouse only until found in field production.

**Evaluations:** See attached protocol

**Recordkeeping:** Keep detailed records of weather conditions including temperature and precipitation, soil-type or soil-less media, application equipment, application volume per acre, irrigation, pot/liner size, plant height & width, and plant growth stage at application and data collection dates.

**Treatments:**

See tables on the following pages.

**Reports:**

Reports must include:

Results summary (no more than one page)

Summary table with appropriate statistical analyses

Experimental design and materials and methods

Appendices: raw data and recordkeeping information as listed above

If pictures were taken, please include them.

A report submitted electronically is preferred but not required. If the report is provided electronically, the basic report can be sent in MS Word or WordPerfect, the recordkeeping information as pdf or other electronic documents, and the raw data in MS Excel or other suitable program such as ARM.

**Please direct questions to:** Cristi Palmer, IR-4 HQ, Rutgers University, 681 US Hwy 1 S, North Brunswick, NJ 08902-3390, Phone 732-932-9575 x629, [palmer@aesop.rutgers.edu](mailto:palmer@aesop.rutgers.edu) **OR** Ely Vea, 308 Aston Forest Lane, Crownsville, MD 21032, Phone & FAX#: 410-923-4880, E-mail: [evvea@comcast.net](mailto:evvea@comcast.net).

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Revised By: CLP

Suggested Treatments List with rates, special application instructions, and contact information to obtain product and any suitable adjuvant needed.

Round of Testing (See footnotes)	# Add'l Trials Needed	Product	Rates	Special Application Instructions	Contact Information to obtain materials and any needed adjuvants
2	3	Adept (dimilin)			Crompton, Kevin Donovan, 203-573-2028, <a href="mailto:kevin.donovan@chemtura.com">kevin.donovan@chemtura.com</a>
2	3	Allectus (bifenthrin + imidacloprid)	21.3 fl oz per 100 gal	Two foliar applications, 14 d interval	Bayer, Mike Gorrell, , <a href="mailto:mike.gorrell@bayercropscience.com">mike.gorrell@bayercropscience.com</a>
*/** - some suppressive activity – need to verify in non-poinsettia host	3	Aria 50SG (flonicamid)	90 – 120 g per 100 gal	Note: suppression only.	FMC, Bobby Walls, 919-735-3862, <a href="mailto:bobby_walls@fmc.com">bobby_walls@fmc.com</a>
*	2	Avid (abamectin)	8 fl oz / 100 gal		Syngenta, Dave Ross, 336-632-6411, <a href="mailto:david.ross@syngenta.com">david.ross@syngenta.com</a>
1	3	Avid + Scimitar Avid + Tame	See product labels for use rate and directions – use maximum label rate		
2	3	Azatin XL (azadirachtin)	16 fl oz per 100 gal	Two sprays 7 days apart include a wetting agent	OHP, Jeff Dobbs, 770.992.0121, <a href="mailto:jdobbs@ohp.com">jdobbs@ohp.com</a>
2 (possible phyto issues)	3	BemiStop			Arysta, Doug Houseworth, 904-321-0795, <a href="mailto:LHouse9@aol.com">LHouse9@aol.com</a>
*	2	BotaniGard 22WP	See product label for use rate and directions – use maximum label rate		Laverlam International Corp.,
1	3	BYI-8330	1.7 fl oz (50 ml) per 100 gal		Bayer, Mike Gorrell, , <a href="mailto:mike.gorrell@bayercropscience.com">mike.gorrell@bayercropscience.com</a>
*** - quite variable control in current trials – need at least one site to verify level of activity	1	Distance (pyriproxifen)	8 oz per 100 gal	Single foliar application. In “Trials against adults”, record % of eggs produced by adults that hatch. Will not kill adults.	Valent, Joe Chamberlin, 770-985-0303, <a href="mailto:jcham@valent.com">jcham@valent.com</a>
** - poor control in one trial – need to verify level of efficacy	2	DPX-E2Y45	19 fl oz /100 gal		DuPont, Chuck Silcox, 302-999-5953, <a href="mailto:charles.a.silcox@usa.dupont.com">charles.a.silcox@usa.dupont.com</a>
1	2	Dursban	50 fl oz per 100 gal	Foliar application	Dow AgroSciences, Mike Melichar,

Round of Testing (See footnotes)	# Add'l Trials Needed	Product	Rates	Special Application Instructions	Contact Information to obtain materials and any needed adjuvants
		(chlorpyrifos)			317-337-4982, <a href="mailto:mwmelichar@dow.com">mwmelichar@dow.com</a>
1	3	Dursban + Talstar	See product labels for use rate and directions – use maximum label rate		
		Dursban + Scimitar			
		Dursban + Tame			
		Dursban / Talstar			
		Dursban / Scimitar			
		Dursban / Tame			
2	3	E-RASE (jojoba oil)			IJO Products, Dennis Dunbar, (559)907-1017, <a href="mailto:drdnbr@aol.com">drdnbr@aol.com</a>
2	3	EcoTrol T&O (rosemary oil)	10 oz per 100 gal	Spray every 7 days	EcoSmart, Ramon Georgis, 209-534-5836, <a href="mailto:rgeorgis@ecosmart.com">rgeorgis@ecosmart.com</a>
***	2	Endeavor (pymetrozine)	See product label for use rate and directions – use maximum label rate		Syngenta, Dave Ross, 336-632-6411, <a href="mailto:david.ross@syngenta.com">david.ross@syngenta.com</a>
2	3	M-pede Insecticidal Soap			Dow AgroSciences, Mike Melichar, 317-337-4982, <a href="mailto:mwmelichar@dow.com">mwmelichar@dow.com</a>
*	2	Naturalis	See product label for use rate and directions – use maximum label rate		
2	3	Organocide			
1	3	Pedestal (novaluron)	8 floz/100 gal	Product is an IGR, effective on only immature stages. Activity may not be observed until 7 days after applications; multiple applications / rotation with other chemistry may be required for optimum results	Chemtura, Kevin Donovan, 203-573-2028, <a href="mailto:kevin.donovan@chemtura.com">kevin.donovan@chemtura.com</a>
2	3	Prescription Treatment Horticultural Oil			Whitmire
*	2	Sanmite (pyridaben)	6 oz per 100 gal	Foliar application	BASF, Kathie Kalmowitz, 919-785-9659, <a href="mailto:kalmowk@basf-corp.com">kalmowk@basf-corp.com</a>
2	3	Stylet Oil			
2	3	Stoeller's Cotton Seed Oil			
Select one treatment from below: products with known efficacy					
*	1	Avid (abamectin) + Talstar (bifenthrin)	Avid @ 8oz + Talstar @ 20 oz /100 gal	Single foliar application	Syngenta, Dave Ross, 336-632-6411, <a href="mailto:david.ross@syngenta.com">david.ross@syngenta.com</a>

Round of Testing (See footnotes)	# Add'l Trials Needed	Product	Rates	Special Application Instructions	Contact Information to obtain materials and any needed adjuvants
					FMC, Bobby Walls, 919-735-3862, <a href="mailto:bobby_walls@fmc.com">bobby_walls@fmc.com</a>
*	1	Celero 16WSG (clothianadin)	Contact manufacturer for rate and use directions		Arysta, Doug Houseworth, 904-321-0795, <a href="mailto:LlHouse9@aol.com">LlHouse9@aol.com</a>
*	1	Flagship 25WG (thiamethoxam)	Foliar: 4 oz /100 gal	Two foliar applications at 10 to 14 day interval	Syngenta, Dave Ross, 336-632-6411, <a href="mailto:david.ross@syngenta.com">david.ross@syngenta.com</a>
			Drench: 4 oz/100 gal	For Drench apply 2 oz soln/ 4 inch pot	
*	1	Judo (spiromesifen)	120 ml/100 gal	Single foliar application	OHP, Jeff Dobbs, 770.992.0121, <a href="mailto:jdobbs@ohp.com">jdobbs@ohp.com</a>
*	1	Safari (dinotefuron)	8 oz/ 100 gal (foliar spray) 24 oz/ 100 gal (soil drench)	Soil drench: apply 4 floz dilute solution/ 6" pot	Valent, Joe Chamberlin, 770-985-0303, <a href="mailto:jcham@valent.com">jcham@valent.com</a>
*	3	TriStar (acetamiprid)	96 g per 100 gal	Two sprays 14 days apart include a wetting agent such as Capsil	Cleary Chemical, Rick Fletcher, 732-329-8399, <a href="mailto:rick.fletcher@clearychemical.com">rick.fletcher@clearychemical.com</a>
Select one treatment from below: products with known lack of activity					
**		Decathlon (cyfluthrin)	1.9 oz per 100 gal	Two apps 7 days apart; use a wetting agent	OHP, Jeff Dobbs, 770.992.0121, <a href="mailto:jdobbs@ohp.com">jdobbs@ohp.com</a>
**		Discus (imidacloprid + cyfluthrin)	Foliar: 50 oz per 100 gal Drench: 13 fl oz per X number pots	Foliar: two applications 14 days Drench: See label.	OHP, Jeff Dobbs, 770.992.0121, <a href="mailto:jdobbs@ohp.com">jdobbs@ohp.com</a>
**		Talus 40SC (buprofezin)	9 fl oz per 100 gal	For nymphs and suppression of oviposition/ egg viability; 2 apps spaced 28 days apart	SePRO, Todd Bunnell, 317-216-5667, <a href="mailto:toddb@sepro.com">toddb@sepro.com</a>
**		Talstar (bifenthrin)	40 fl oz per 100 gal	Foliar application	FMC, Bobby Walls, 919-735-3862, <a href="mailto:bobby_walls@fmc.com">bobby_walls@fmc.com</a>
		Untreated	--	--	

\* = tests so far indicate that Q-biotype whiteflies are sensitive to this treatment, including suppression

\*\* = tests so far indicate that Q-biotype whiteflies are not sensitive to this treatment

\*\*\* = tests so far indicate that Q-biotype whiteflies may need to be carried out to the adult stage to determine efficacy

1 = higher priority – have more likely chance of being viable control products

2 = lower priority – have less likely chance of being viable control products.