QSLWF05-15.rpt Ronald D. Oetting, Georgia
Protocol:

TEST: Efficacy of insecticides against the 'Q' strain of *Bemisia* whitefly

LOCATION: Greenhouse at Georgia Mountain Research and Education Center

APPLICATION DATE: Nov 9 and 22, 2005. *Beauveria bassiana* 4 applications at 4 to 5 days (Nov 9, 14, 18, & 22).

APPLICATION OBJECTIVE: Compare efficacy of insecticides against 'Q'

APPLICATION TEMPERATURE (RELATIVE HUMIDITY): 27 °C, 23 °C

APPLICATION: Applied twice at 13 day (except four times for *Beauveria bassiana* at 4 or 5 day) interval as a foliar spray using a 8003 nozzle applied to full coverage. All plants were sprayed until they were completely wet.

TREATMENTS:	Rate Form./100 gal	Rate/liter
1. Check (water spray)	-	-
2. TriStar 70WSP + Capsil	2.25 oz + 6.0 fl oz	0.17 gm + 0.45 ml
3. Flagship 25WG	3.0 oz	0.225 gm
4. Orthene 97S + Tame	5.33 oz + 12.0 fl oz	0.40 gm + 0.90 ml
5 Naturalis	64.0 fl oz	5.00 ml (2.3×10^7)
6. Botanigard	64.0 fl oz	5.00 ml (2.3×10^{10})

PEST: tobacco whitefly *Bemisia tobaci* strain 'Q'

HOST: Poinsettia (cv. Dynasty Red)

PLOT SIZE: One 6 inch pot.

REPLICATIONS: Eight

EVALUATIONS: Plants were obtained from Olgevee greenhouses as rooted cuttings and potted on Sept 28, 2005. Plants were maintained on raised greenhouse benches. All plants were pinched on Oct 5, 2005. The plants were breaking on Oct 12, had short stems on Oct 19, and small leaves on Oct 26. The plants were kept under light from Sept 28 until Nov 9. The plants were exposed to a population of whiteflies on Oct 12 by bringing in five plants from a greenhouse that had 'Q' whitefly and scattering the adults over the plants. The infested plants were then placed in among the plants and moved at least every other day. The plants were not heavily infested and there was a slow movement of whiteflies to the test plants. The first application was made on Nov 9. Population counts were made at 7 day intervals after the initial application and continued for five weeks. To evaluate population levels three leaves from each plant were carefully turned and the number of adult and immature whiteflies counted. The plants were observed for signs of phytotoxicity and any damage rated and recorded. Data analyzed

using ANOVA and mean separation.

RESULTS: The objective of this experiment was to look at a selected group of insecticides to determine efficacy against the 'Q' strain of *Bemisia* whitefly. This whitefly was recently introduced to the United States and is reported to more difficult to control than the 'B' strain of *Bemisia* that has been a nemesis for greenhouse growers since 1986. Most of the compounds tested are proven efficacious insecticides against the 'B' strain. In this experiment all treatments were applied as foliar sprays but there were two different application schedules. In this trial we utilized a late planting of poinsettias so we could complete our 'B' strain trials before we started the 'Q'. In addition we wanted to wait until cooler weather and utilize an isolated greenhouse on the GA Mountain Research and Education Center in Blairsville for our trials. The 'Q' strain was obtained from a commercial greenhouse in Georgia and confirmed as the "Q' strain by Dr. Frank Byrne, University of California-Riverside. The sample of over 10 specimens was 100% 'Q'. A repeat sample was checked as the experiment started and the 5 specimens tested were all 'Q'.

At the start of the experiment we had a well established population of whiteflies and a very even distribution of adults over the different treatments. However, the immature distribution was not as even as desired. We had a range of 8 to 19.5 immatures per sample for the precount. We obtained a pretty good knockdown of immatures after the first and second spray but did see some difference in population levels among the treatments on week two. There was also a good knockdown after the second application in most treatments. The best overall performance was in the TriStar, *Beauveria bassiana*, and experimental compound A treatments. The TriStar treatment looked the best for adults too but the *Beauveria bassiana* treatments held up good until week four and this is not unusual because we do not expect much residual activity from these compounds. Flagship and Orthene/Tame would not be efficacious on their own and another treatment would have to be rotated into the management program. Experimental compound B is also questionable but we need more data on this treatment.

We observed some phytotoxicity during this experiment. On week 2 we first observed plant damage on the Botanigard and Experimental B with marginal and tip burn on the Botanigard treated plants and necrotic spots on the Experimental B treatment. On week 3 we also had some tip burn on the Naturalis treatment, some wilting on the Experimental A treatment, and the spots expanded somewhat on the experimental B treatment. The burn on the Botanigard plants was more severe. Applications were complete so we did not get anymore phytotoxicity but the damage ended up being: Naturalis slight tip burn that would not effect marketability; Botanigard wilting after the first spray, marginal and tip burn that would effect marketability, followed by leaf drop on some plants; Experimental A wilting after second application that recovered, and Experimental B damage to new growth, wilting and spots after the first spray, the spots turned into chlorotic spots on leaves as they matured, did not seem to have an impact on plant health but the chlorosis remained. Phytotoxicity tests are needed to make sure these treatments are safe. Our applications were heavy and may be excessive compared to grower applications.

In the following three tables the data for mean number of nymphs, pupal cases, or adults are presented. Each value on the table represents the population as a mean for three leaves from

each pot, two pots per plot. Means were determined and the standard error calculated. Data were analyzed using ANOVA and mean separation by LSD. All letters following numbers within a column, that are different, are significantly different at the <0.05 level.

Table 1. Mean number of adult whiteflies "Q" on three leaves.

Treatment	Precount	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Check	3.5a	5.6a	8.1a	4.9ab	11.9a	14.1ab	30.3a
TriStar	3.8a	1.0cd	2.1bcd	0.6bc	0.4c	4.1b	1.5d
Flagship	2.5a	2.9bcd	4.4b	7.6a	13.5a	20.0a	20.3ab
Orthene/Tame	4.9a	2.0bcd	3.0bc	3.8abc	7.9ab	11.0ab	6.4cd
Naturalis B	3.5a	0.1d	0.0d	0.4c	4.1bc	7.0b	7.0cd
Botanigard	2.4a	0.1d	0.5cd	4.9ab	14.5a	17.6a	13.9bcd

Table 2. Mean number of immature whiteflies "Q" on three leaves.

Treatment	Precount	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Check	9.6c	6.0a	14.5a	27.3a	28.0a	101.8a	93.3a
TriStar	7.9c	2.1a	2.4c	0.5b	0.0c	0.6c	0.0b
Flagship	21.1a	9.7a	22.4a	5.1b	6.5bc	42.9b	24.6b
Orthene/Tame	19.5ab	12.3a	14.0ab	6.9b	11.4b	19.3bc	20.1b
Naturalis B	12.8abc	7.1a	4.8bc	3.5b	4.4bc	3.6c	0.0b
Botanigard	16.4abc	2.4a	0.7c	0.9b	1.8bc	0.9c	6.4b

Table 3. Mean number of emply pupal cases of whiteflies "Q" on three leaves.

Treatment	Precount	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Check	0.0a	0.0a	1.5a	0.9a	0.8b	38.6a	39.4a
TriStar	0.0a	0.0a	0.0b	0.0a	0.0b	1.5c	0.0b
Flagship	0.0a	0.0a	0.0b	0.0a	7.0a	14.4b	7.0b
Orthene/Tame	0.0a	0.5a	0.3b	1.3a	0.8b	4.8bc	4.1b
Naturalis B	0.0a	0.0a	0.0b	0.0a	0.0b	0.4c	0.0b
Botanigard	0.0a	0.0a	0.0b	0.0a	0.0b	2.5bc	0.0b