

| Foliar Applied Insecticides (active ingredients)                                      | IRAC Class | Registered Use Site(s) | Knock Down | Residual Control (days) | REI  | Whitefly Efficacy           |                             |                     | Life Stage |       |        | Treatment Program |                              |                              |                                  |
|---------------------------------------------------------------------------------------|------------|------------------------|------------|-------------------------|------|-----------------------------|-----------------------------|---------------------|------------|-------|--------|-------------------|------------------------------|------------------------------|----------------------------------|
|                                                                                       |            |                        |            |                         |      | <i>B. tabaci</i> B- Biotype | <i>B. tabaci</i> Q- Biotype | Greenhouse Whitefly | Immatures  | Pupae | Adults | A                 | B                            | C                            | D                                |
|                                                                                       |            |                        |            |                         |      |                             |                             |                     |            |       |        | Aggressive        | Maintenance w/out biological | Maintenance with Biologicals | Maintenance prior to biologicals |
| Adept (diflubenzuron)                                                                 | 15         | G, I, S                | S          | 7                       | 12 h | ?                           | ?                           | ?                   | x          | ?     | ?      | ?                 | B                            | C                            | D                                |
| Aria (flonicamid)                                                                     | 9C         | G, I, N                | M          | 7-14                    | 12 h | F                           | P-E                         | E                   | x          | ?     | x      | ?                 | B                            | C                            | D                                |
| Astro, Permethrin.Pro, etc. (permethrin)                                              | 3A         | G, I                   | F          | 5-7                     | 12 h | ?                           | ?                           | ?                   | x          | ?     | ?      | ?                 | B                            | NO                           | NO                               |
| Avid EC (abamectin)                                                                   | 6          | G, N, S                | F          | Contact<br>7            | 12 h | P-E                         | G-E                         | ?                   | x          | ?     | x      | A                 | B                            | C**                          | D                                |
| Azatin XL, Ornazin, etc. (azadirachtin)                                               | UN         | G, I, N, S             | S          | 7                       | 4 h  | E                           | P                           | ?                   | x          | ?     | ?      | ?                 | ?                            | C                            | D                                |
| BotaniGard, Mycotrol-O, etc. ( <i>Beauveria bassiana</i> )                            | M          | G, I, N, S             | M          | 3                       | 4 h  | P-G                         | P-E                         | ?                   | x          | x     | x      | A                 | B                            | C*                           | D                                |
| Decathlon (cyfluthrin)                                                                | 3A         | G, I, N                | F          | 7                       | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Discus (cyfluthrin+imidacloprid)                                                      | 3 + 4A     | N                      | F          | 5-7                     | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Distance (pyriproxyfen)                                                               | 7D         | G, I, L, S             | S          | ?                       | 12 h | E                           | P-E                         | ?                   | x          | x     |        | A                 | ?                            | C                            | D                                |
| Duraguard, Dursban (chlorpyrifos)                                                     | 1B         | G, N                   | F          | 5-7                     | 24 h | ?                           | P                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Ecotrol (rosemary and peppermint oils)                                                | ?          | G, N                   | ?          | ?                       | -    | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | ?                            | ?                                |
| Endeavor (pymetrozine)                                                                | 9B         | G, I, L, N, S          | M          | 2-4                     | 12 h | P                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | C                            | D                                |
| Enstar AQ (kinoprene)                                                                 | 7A         | G, I, L, S             | S          | 7                       | 4 h  | P                           | ?                           | ?                   | x          | ?     | ?      | A                 | A                            | C                            | D                                |
| Flagship 25WG (thiamethoxam)                                                          | 4A         | G, I, L, N, S          | F          | 7-14 <sup>b</sup>       | 12 h | G-E                         | P-E                         | G                   | x          | ?     | x      | A                 | B                            | NO                           | ? <sup>c</sup>                   |
| Grandevo, MBI-203 DF ( <i>Chromobacterium subtsugae</i> strain PRAA4-1 <sup>T</sup> ) | ?          | G, N                   | S          | ?                       | 4 h  | G                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | ?                            | ?                                |
| Hachi-Hachi EC (tolfenpyrad)                                                          | 21A        | G                      | F          | 7-14                    | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | A                 | B                            | NO                           | ?                                |
| Judo (spiromesifen)                                                                   | 23         | G, N, S                | M          | 7                       | 12 h | G-E                         | G-E                         | G                   | x          | ?     | x      | A                 | B                            | ?                            | ?                                |
| Kontos, BYI-8330 (spirotetramat)                                                      | 23         | G, I, N                | S          | 7-14                    | 24 h | E                           | G-E                         | ?                   | x          | ?     | x      | A                 | B                            | ?                            | ?                                |
| Magus (fenazaquin)                                                                    | 21         | G, I, N, S             | F          | Contact                 | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | C**                          | D                                |
| Malathion                                                                             | 1B         | G, N                   | F          | 5-7                     | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Marathon (imidacloprid)                                                               | 4A         | G, I, N                | F          | 5-7                     | 12 h | F-E                         | P-E                         | G                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Mavrik (fluvalinate)                                                                  | 3A         | G, I, N                | F          | 14                      | 12 h | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Milstop <sup>d</sup> (potassium bicarbonate)                                          | NC         | G, I, L, N, S          | ?          | ?                       | 4 h  | ?                           | ?                           | ?                   | x          | ?     | ?      | ?                 | ?                            | ?                            | ?                                |
| M-Pede, Safer Soap (potassium salts of fatty acids)                                   | ?          | G, I, N                | F          | Contact                 | 12 h | E                           | F-E                         | ?                   | x          | ?     | ?      | A                 | B                            | C**                          | D                                |
| NoFly WP ( <i>Paecilomyces fumosoroseus</i> strain FE 9901)                           | ?          | G                      | M          | 3-7                     | 4 h  | F-E                         | F-E                         | F-E                 | x          | ?     | x      | A                 | B                            | C                            | D                                |
| Orthene T&O, Acephate 97 UP (acephate)                                                | 1B         | G, N                   | F          | 7                       | 24 h | ?                           | ?                           | G                   | x          | ?     | x      | A                 | B                            | NO                           | NO                               |
| Pedestal (novaluron)                                                                  | 15         | G, N, S                | S          | 7-14                    | 12 h | ?                           | P                           | ?                   | x          | ?     | ?      | A                 | B                            | C**                          | D                                |
| Preclude-TR (fenoxycarb)                                                              | 7B         | G                      | S          | 7                       | 12 h | ?                           | ?                           | ?                   | x          | ?     | ?      | ?                 | B                            | ?                            | ?                                |

| Foliar Applied Insecticides (active ingredients)                         | IRAC Class | Registered Use Site(s) | Knock Down | Residual Control (days) | REI   | Whitefly Efficacy           |                             |                     | Life Stage |       |        | Treatment Program |                              |                              |                                  |
|--------------------------------------------------------------------------|------------|------------------------|------------|-------------------------|-------|-----------------------------|-----------------------------|---------------------|------------|-------|--------|-------------------|------------------------------|------------------------------|----------------------------------|
|                                                                          |            |                        |            |                         |       | <i>B. tabaci</i> B- Biotype | <i>B. tabaci</i> Q- Biotype | Greenhouse Whitefly | Immatures  | Pupae | Adults | A                 | B                            | C                            | D                                |
|                                                                          |            |                        |            |                         |       |                             |                             |                     |            |       |        | Aggressive        | Maintenance w/out biological | Maintenance with Biologicals | Maintenance prior to biologicals |
| Preferal, PFR-97 ( <i>Isaria fumosoroseus</i> )                          | ?          | G, L, N, S             | S          | Contact                 | 4 h   | G                           | ?                           | ?                   | x          | ?     | x      | A                 | B                            | C                            | D                                |
| Prentox Pyronyl Crop Spray, Pyrenone Crop Spray, etc. (pyrethrins + PBO) | 3A +       | G, N                   | F          | Contact                 | 12 h  | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Proud 3 (thyme oil)                                                      | ?          | ?                      | ?          | 5-7                     | 0 h   | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | ?                            | ?                                |
| Safari 20SG (dinotefuran)                                                | 4A         | G, N                   | M          | 7                       | 12 h  | E                           | G-E                         | E                   | x          | ?     | x      | A                 | B                            | ?                            | ?                                |
| Sanmite (pyridaben)                                                      | 21         | G                      | M          | Contact                 | 12 h  | P                           | G-E                         | G                   | x          | ?     | x      | A                 | B                            | NO                           | NO                               |
| Scimitar GC (lambda-cyhalothrin)                                         | 3A         | G, N, S                | F          | 7                       | 24 h  | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Sucrashield (sucrose octanoate)                                          | ?          | G, N                   | ?          | Contact                 | 48 h  | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | ?                            | ?                                |
| Sorbishield 90 (sorbitol octanoate)                                      | ?          | G, N                   | ?          | Contact                 | 24 h  | ?                           | ?                           | ?                   | x          | ?     | x      | ?                 | B                            | ?                            | ?                                |
| Talstar (bifenthrin)                                                     | 3A         | G, I, N                | F          | 7                       | 12 h  | ?                           | P                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Talus (buprofezin)                                                       | 16         | G, L, N, S             | S          | 14                      | 12 h  | E                           | P                           | G                   | x          | ?     | ?      | A                 | B                            | C                            | D                                |
| Tame (fenpropathrin)                                                     | 3          | G, I, L, N, S          | F          | 7                       | 24 h  | ?                           | P                           | ?                   | x          | ?     | x      | ?                 | B                            | NO                           | NO                               |
| Triact, Trilogy Neem Oil (extract of neem oil)                           | ?          | G, N                   | S          | 7                       | 4 h   | ?                           | ?                           | ?                   | x          | ?     | ?      | ?                 | ?                            | C                            | D                                |
| TriStar (acetamiprid)                                                    | 4A         | G, L, N, S             | F          | 7                       | 12 h  | E                           | E                           | G                   | x          | ?     | x      | A                 | B                            | NO                           | NO                               |
| Ultra pure oil, SuffOil-X, etc. (paraffinic oil)                         | ?          | G, N                   | F          | Contact                 | 4 h   | E                           | G                           | ?                   | x          | x     | x      | A                 | B                            | C**                          | D                                |
| <b>Experimental Products</b>                                             |            |                        |            |                         |       |                             |                             |                     |            |       |        |                   |                              |                              |                                  |
| Arena, Celero (clothianidin)                                             | 4A         | TBD                    | F          | ?                       | 12 h  | F-G                         | P-E                         | ?                   | x          | ?     | x      | ?                 | B                            | ?                            | ?                                |
| GF-2626 1SC                                                              | ?          | TBD                    | ?          | ?                       | ?     | E                           | ?                           | ?                   | ?          | ?     | ?      | ?                 | ?                            | ?                            | ?                                |
| GF-2860 40WG                                                             | ?          | TBD                    | ?          | ?                       | ?     | E                           | ?                           | ?                   | ?          | ?     | ?      | ?                 | ?                            | ?                            | ?                                |
| Mainspring (cyantraniliprole)                                            | 28         | G, N, S, I             | M          | 7-14                    | 4 h ? | G-E                         | ?                           | ?                   | x          |       |        |                   |                              |                              |                                  |
| MBI-206 ( <i>Burkholderia</i> sp. strain A396)                           | ?          | TBD                    | ?          | ?                       | ?     | G                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | ?                            | ?                                |
| NNI-0101 (pyrifluquinazon)                                               | UN         | TBD                    | ?          | ?                       | ?     | E                           | ?                           | ?                   | x          | ?     | x      | ?                 | ?                            | ?                            | ?                                |

Registered Use Sites: G = Greenhouse; L = Lath House; I = Indoors; N = Nursery; S = Shade House; TBD = To Be Determined

Knockdown: Fast (< 1 day), Medium (1-7 days), Slow (>7 days).

Efficacy: P = Poor (< 70% control); F = Fair (70% to 85% control); G = Good (85% to 95% control), E = Excellent (>95% control) on immatures and/or adults 1 to 3 weeks after first app.

Residual Control taken from product technical and label info, recommendations on earliest application intervals; Whitefly Efficacy taken from latest IR-4 efficacy summary draft; Effect on biological control agents for whiteflies taken from Koppert, Biobest and some extension publications/recommendations.

\* Results of efficacy trials have been variable for entomopathogens and impact on beneficial organisms is presumed to be less than that of traditional pesticide chemistries but the data are sparse.

\*\* This insecticide is toxic to many BCA's but has a short residual and may be suitable for treating hot spots and re-introducing BCA's soon thereafter.

\*\*\*\* Drenches of this product are typically less problematic than foliar applications and can be used in a maintenance program if additional releases are made.

<sup>a</sup> No longer available for testing

<sup>b</sup> Flagship applied as drench can provide over 60 days residual activity.





## Registered and Experimental Products for Whitefly Management

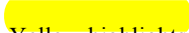
<sup>c</sup> Syngenta comment: It is possible that a 2-3 week wait time after a spray treatment could allow releases to occur later. More info is needed.

<sup>d</sup> Milstop has a New York 2ee recommendation to control whiteflies, aphids, mealybugs, spider mites and stink bugs.

**The highlights were added by Lance S. Osborne. They are not supported by the IR-4 Project and not meant to be an endorsement by them.**

 Green highlights indicate the product is labeled for landscapes and shows efficacy against *Bemisia* species.

 Red highlights indicate the product is not labeled for landscapes.

 Yellow highlights indicate the product might be labeled for landscapes. The label may be ambiguous or we may have reservations about the products use or efficacy in a landscape setting even though data exists demonstrating efficacy in greenhouses.