

D

PEPPER (Jalapeño): *Capsicum annuum* L. 'Milta'

CONTROL OF PEPPER WEEVILS IN PEPPER WITH VARIOUS INSECTICIDES, 2004

P. A. Stansly and J. M. Conner  
University of Florida/IFAS  
Southwest Florida Res. and Ed. Center  
2686 State Road 29 North  
Immokalee, Florida 34142-9515  
Phone: (239) 658-3427  
Fax: (239) 658-3470  
Email: [pstansly@ufl.edu](mailto:pstansly@ufl.edu)

Pepper weevil *Anthonomus eugeni* (Cano)

Pepper weevil is the key pest of all pepper varieties grown in south Florida as well as Texas, New Mexico and California. Insecticidal control is problematic because of the inaccessibility of all immature stages within the fruit. For this trial, greenhouse-raised pepper plants were transplanted on 31 Mar at 10 inch spacing in single rows on 4 sets of 3 beds 240 ft in length and covered with polyethylene film mulch. Water and fertilizer were provided through Netafim® drip tape with 12-inch emitter spacing. The center bed in each set of 3 was left untreated to serve as the untreated control and a source of weevils. Each treated bed was divided into plots 30 ft long to which treatments were assigned in an RCB design with 4 replications. Applications were made using a high clearance sprayer operating at 200 psi. Spray was delivered through two vertical booms, each fitted with 2 ceramic yellow Albus® hollow cone nozzles for a total of 44 gpa until 25 May when 1 nozzle was added to each boom for an output of 66 gpa . Fallen fruit was collected weekly under 27 plants per plot by fixing wooden lathing to the beds to prevent fruit from rolling to the ground. All marketable fruit was harvested 8 Jun. Weight of marketable fruit was determined by dissecting a random sample of 50 harvested fruit per plot if available, to obtain a percentage infested with weevils and adjusting the marketable weight accordingly. Significant reduction of fallen peppers was observed for all treatments except 2 through 5 and 9,

i.e. all treatments including Dimilin, Assail without oil or Provado. Fewest fallen fruit were observed from plants treated with 2% Ultrafine oil plus either Vydate or Actara, although differences with the remaining treatments were not significant. Fewest infested fruit were observed from plants treated with 2% PureSpray Green Oil plus either Vydate or Actara, although differences with the other treatments except for the control were not significant. Most marketable fruit were harvested from plants treated with 0.5% PureSpray Green Oil plus either Vydate or Actara, although differences were not significant compared to plants treated with Novaluron and Vydate, Assail 70WP + 0.5% oil and Vydate, Cryolite @ 12 lb + Actara and Vydate, Calypso and Vydate, or any rate of oil mixed with Actara or Vydate. Thus, the addition of PureSpray Green Oil to the standard Actara/Vydate alternation seemed to provide additional control of pepper weevil, and it appeared that Novaluron could serve as an alternative to this standard alternation.

Spray dates and products applied<sup>1</sup>

| Treatment/ formulation                   | Rate amt<br>form/acre | Spray dates and products applied <sup>1</sup> |          |           |                                   |                              |                              |                              |                    |
|--|-----------------------|---|----------|-----------|-----------------------------------|------------------------------|------------------------------|------------------------------|--------------------|
|  |                       | 14 Apr  | 21 Apr   | 28 Apr    | 4 May                             | 11 May                       | 18 May                       | 25 May                       | 1 Jun <sup>2</sup> |
| 1. Novaluron 0.83EC                      | 12 oz                 |   |          | Novaluron | Vydate <sup>1</sup>               | Novaluron                    | Vydate <sup>1</sup>          | Novaluron                    | Vydate             |
| 2. Dimilin 25 WP                         | 6 oz                  |   |          | Dimilin   | Vydate <sup>1</sup>               | Dimilin                      | Vydate <sup>1</sup>          | Dimilin                      | Vydate             |
| 3. TD-2472-01                            | 4 oz                  |   |          |           | Vydate <sup>1</sup>               | TD-2472-01                   | Vydate <sup>1</sup>          | TD-2472-01                   | Vydate             |
| 4. Assail 70 WP                          | 1.2oz                 |   |          |           | Vydate <sup>1</sup>               | Assail                       | Vydate <sup>1</sup>          | Assail                       | Vydate             |
| 5. Assail 70 WP                          | 1.7 oz                |   |          |           | Vydate <sup>1</sup>               | Assail                       | Vydate <sup>1</sup>          | Assail                       | Vydate             |
| 6. Assail 70 WP +<br>PureSpray Green Oil | 1.2 oz +<br>1.0 % v/v |   |          |           | Vydate <sup>1</sup>               | Assail +<br>Oil              | Vydate <sup>1</sup>          | Assail +<br>Oil              | Vydate             |
| 7. Prokil Cryolite 96                    | 8 lb                  |   | Cryolite | Cryolite  | Cryolite +<br>Vydate <sup>1</sup> | Actara <sup>1</sup>          | Vydate <sup>1</sup>          | Actara <sup>1</sup>          | Vydate             |
| 8. Prokil Cryolite 96                    | 12 lb                 |   |          | Cryolite  | Cryolite +<br>Vydate <sup>1</sup> | Actara <sup>1</sup>          | Vydate <sup>1</sup>          | Actara <sup>1</sup>          | Vydate             |
| 9. Provado 1.6F                          | 7 oz                  |   |          |           | Vydate <sup>1</sup>               | Provado                      | Vydate <sup>1</sup>          | Provado                      | Vydate             |
| 10. Calypso 2EC                          | 4.5 oz                |   |          |           | Vydate <sup>1</sup>               | Calypso                      | Vydate <sup>1</sup>          | Calypso                      | Vydate             |
| 11. PureSpray Green<br>Oil               | 0.25 % v/v            | Oil   | Oil      | Oil       | Oil +<br>Vydate <sup>1</sup>      | Oil +<br>Actara <sup>1</sup> | Oil +<br>Vydate <sup>1</sup> | Oil +<br>Actara <sup>1</sup> | Oil +<br>Vydate    |

|                     |           |     |     |     |                     |                     |                     |                     |        |
|---------------------|-----------|-----|-----|-----|---------------------|---------------------|---------------------|---------------------|--------|
| 12. PureSpray Green | 0.5 % v/v | Oil | Oil | Oil | Oil +               | Oil +               | Oil +               | Oil +               | Oil +  |
| Oil                 |           |     |     |     | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate |
| 13. PureSpray Green | 1.0 % v/v | Oil | Oil | Oil | Oil +               | Oil +               | Oil +               | Oil +               | Oil +  |
| Oil                 |           |     |     |     | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate |
| 14. PureSpray Green | 2.0 % v/v | Oil | Oil | Oil | Oil +               | Oil +               | Oil +               | Oil +               | Oil +  |
| Oil                 |           |     |     |     | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate |
| 15. Sunspray        | 2.0 % v/v | Oil | Oil | Oil | Oil +               | Oil +               | Oil +               | Oil +               | Oil +  |
| Ultrafine Oil       |           |     |     |     | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate |
| 16. Actara 25 WG    | 4 oz      |     |     |     | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate <sup>1</sup> | Actara <sup>1</sup> | Vydate |
| 17. Untreated check |           |     |     |     |                     |                     |                     |                     |        |

---

<sup>1</sup>Actara applied at 4 oz /acre and Vydate at 3 pt/acre

<sup>2</sup>Fruit harvested 8 Jun

| Treatment | Fallen Pepper <sup>1</sup> | Infested <sup>2</sup> | Marketable <sup>3</sup> |
|-----------|----------------------------|-----------------------|-------------------------|
|           | 3 Jun                      | fruit (%)             | fruit (lb)              |
| 1         | 16.3cd                     | 1.5bc                 | 33.0abc                 |
| 2         | 39.3abcd                   | 10.5b                 | 24.1d                   |
| 3         | 34.5abcd                   | 8.0bc                 | 26.7bcd                 |
| 4         | 50.0ab                     | 8.5bc                 | 28.7abcd                |
| 5         | 30.5abcd                   | 8.5bc                 | 26.1cd                  |
| 6         | 25.5bcd                    | 2.0bc                 | 33.3abc                 |
| 7         | 13.8cd                     | 2.5bc                 | 34.0ab                  |
| 8         | 11.3cd                     | 5.5bc                 | 33.4abc                 |
| 9         | 45.5abc                    | 7.5bc                 | 24.7d                   |
| 10        | 12.8cd                     | 6.0bc                 | 30.1abcd                |
| 11        | 13.0cd                     | 3.0bc                 | 30.0abcd                |
| 12        | 13.8cd                     | 3.0bc                 | 34.5a                   |
| 13        | 10.8cd                     | 2.0bc                 | 32.2abc                 |
| 14        | 21.0bcd                    | 0.0c                  | 30.6abcd                |
| 15        | 7.5d                       | 1.0c                  | 32.9abc                 |
| 16        | 10.8cd                     | 7.0bc                 | 33.5abc                 |
| 17        | 57.3a                      | 26.5a                 | 15.9e                   |

Means in columns followed by the same letter are not significantly different (LSD, P<0.05)

<sup>1</sup>Fallen peppers from 27 plants per plot, also checked on 21 and 28 Jun with no significant difference between treatments

<sup>2</sup>Percentage of harvested peppers infested with weevil larva

<sup>3</sup>Mean of total weight of fruit harvested from 27 plants minus the infested fruit

