Centaur® WDG insect growth regulator provides highly effective control on a wide range of pests in citrus trees. The active ingredient, buprofezin, is extremely effective against the crawler and nymph stages of scales by inhibiting chitin biosynthesis.

Key Benefits
- Effective against soft and armored scales
- Not disruptive to most beneficial insects including Aphytis
- Short PHI of 3 days
- Unique mode of action makes it an excellent rotational tool for insecticide resistance management
- Vapor activity of Centaur helps the product get to tough insect hiding places
- No known scale resistant populations to Centaur
- Long-lasting residual control

Key Pests Controlled

<table>
<thead>
<tr>
<th>Barnacle scale (wax scale)</th>
<th>Citrus mealybug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black scale</td>
<td>Citrus whitefly</td>
</tr>
<tr>
<td>California red scale</td>
<td>Cottony cushion scale</td>
</tr>
<tr>
<td>Citricola scale</td>
<td>Glassy-winged sharpshooter</td>
</tr>
</tbody>
</table>

Use Recommendations
- 46.0 oz/acre
- Use a minimum of 750 gpa for mature trees.
- Proper coverage is essential for optimum scale control. Tractor speeds of 1.25 mph and higher volumes of water may be necessary to assure better spray coverage.
- Addition of oil or surfactant will enhance control of scales.

Timing of Sampling and Spraying
- **California red scale** – Spray at first or second generation early crawler emergence.
- **Citricola scale crawlers** – Sample females on twigs in May. Spray at crawler emergence in June.
- **Citricola scale nymphs** – Sample nymphs on leaves from July to September. Spray nymphs from July to September.
- **Cottony cushion scale nymphs** – Sample nymphs on leaves in June. Spray nymphs from mid-June to July.

Use Information
- Reentry Interval (REI) – 12 hours
- Preharvest Interval (PHI) – 3 days
- Group 16 Insecticide

For Control of Scales
Control of California Red Scale

### Efficacy of Centaur on Red Scale in Citrus
#### Application Timing - First Generation Crawler

- **Centaur 46 oz**
- **Esteem 16 fl oz**
- **Movento 10 fl oz**
- Untreated

<table>
<thead>
<tr>
<th>% Infested</th>
<th>Scale/Fruit</th>
<th>% &gt;10 Scales/Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Treatments with the same letter do not differ statistically

Spray Volume: 500 gpa
NS 0.25% V/V
LSD P<0.001
Harvest Evaluation in October

**Sawtooth Research, Ivanhoe, CA, 2010**

### Toxicity of Citrus Insecticides to Aphitis Adults in Citrus

- Untreated
- Centaur 46 oz
- Assail 13.3 oz
- Lorsban Adv 12 pt

<table>
<thead>
<tr>
<th>DAT</th>
<th>Untreated</th>
<th>Centaur 46 oz</th>
<th>Assail 13.3 oz</th>
<th>Lorsban Adv 12 pt</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>100</td>
<td>95</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>16</td>
<td>90</td>
<td>80</td>
<td>75</td>
<td>65</td>
</tr>
<tr>
<td>23</td>
<td>80</td>
<td>70</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>29</td>
<td>70</td>
<td>60</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>37</td>
<td>60</td>
<td>50</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>42</td>
<td>50</td>
<td>40</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>49</td>
<td>40</td>
<td>30</td>
<td>25</td>
<td>15</td>
</tr>
</tbody>
</table>

**Grafton-Cardwell, Elizabeth E., University of California Riverside, Lindcove Research and Extension Center, 2010**

### Efficacy of Centaur Against Populations of Citricola Scale in ‘Parent’ Navel Orange Trees

- Pre-Application Counts (8/24/07)
- Final Evaluation (8/20/08)

- Lorsban 4E 12.0 pt
- Centaur 70DF 46 oz + NR 415 oil
- Assail 30 SG 13.3 oz + NR 415 oil

*Mean number of citricola crawlers from 10 leaves per tree
*Mean number of citricola adult females from 5 twigs per tree

Application date: 09/13/07
Treatments were diluted in 500 gallons of water per acre and applied using an air blast sprayer.

**Grafton-Cardwell, Elizabeth E., University of California Riverside, Lindcove Research and Extension Center, 2007**

---

©2015 Nichino America, Inc. All rights reserved. Centaur and Nichino America logo are registered trademarks of Nichino America, Inc. Assail is a registered trademark of Nippon Soda Co., Ltd. Esteem is a registered trademark of Valent U.S.A. Corporation. Lorsban is a registered trademark of Dow AgroSciences. Movento is a registered trademark of Bayer. Always read and follow all label directions. 888-740-7700  www.nichino.net  CEN-CT-1501