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OBERON: LAUNCH AND PERFORMANCE IN WESTERN COTTON

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Abstract

Oberon (spiromesifen) applied by aircraft or ground provided outstanding control of early and mid-season spider mite infestations (*Tetranychus urticae, Tetranychus pacificus*). Oberon performance was compared to other registered materials at ten different locations. Seven locations were applied by ground and three were applied by helicopter or fixed-wing aircraft. Oberon was compared to Zephyr at five locations. Oberon performed better than Zephyr in four of the five locations. At the fifth location, Oberon performed equal to Zephyr. Oberon was compared to Abba (generic abamectin) at two locations. Oberon performed better than Abba at both locations. Oberon was also compared to Kelthane, Zeal and Fujimite each as separate locations. Oberon performed better than Kelthane, Zeal and Fujimite in three separate locations.

Introduction

OBERON is a new insecticide/miticide registered for use in cotton for control of spider mites and whiteflies. The novel mode of action of OBERON is characterized as lipid biosynthesis inhibition (LBI). OBERON interferes with insect/mite lipogenesis by preventing proper biosynthesis of fatty acids and their subsequent biochemical derivatives. OBERON is active against all spider mite development stages including eggs. OBERON is also highly effective against all stages of whitefly, with a significant effect on the otherwise difficult to control pupal stage. Speed of activity with OBERON is intermediate compared to insect growth regulators which are slower and classical chemistries which are faster acting (Table 1).

Web spinning mites are regular pests of cotton produced in the San Joaquin Valley of California. Mites can be found as early as the cotyledon stage however, are typically found just prior to bloom. In the absence of beneficial insects, populations can build very fast, leading to premature defoliation and reduced yield. Aphids were a major pest of California cotton in 2005. Foliar sprays for aphids resulted in low beneficial insect numbers, widespread mite infestations and low numbers of silver-leaf whitefly.

Materials and Methods

All trials were applied with commercial equipment. Materials applied by ground were sprayed at 5 to 35 gallons per acre. Materials applied by helicopter or fixed-wing aircraft were sprayed at 5 to 15 gallons per acre. Test locations generally had plot areas with a minimum of 2 acres and 1 to 4 replicates. Twenty 5th main-stem node leaves were taken from the center of each treatment area to determine the percentage of leaves with live mites.

Results

Early-Season

An early season trial compared Oberon 6 fl oz to Zephyr 4 fl oz, applied by ground at 10 gallons per acre. Both materials were combined with Provado and a crop oil concentrate. Oberon 6 fl oz provided better control of mites than Zephyr 4 fl oz at the 27, 41, 55 day evaluations (Figure 1).

Mid-Season

Several trials were applied comparing Oberon to other registered materials.
The Avenal, CA location compared Oberon 16 fl oz to Abba 8 fl oz, applied with an electrostatic sprayer at 5 gallons per acre. Both materials were combined with a non-ionic spreader. Oberon 16 fl oz provided better control of mites than Abba 8 fl oz at the 42 and 56 days evaluations (Figure 2).

The Fresno, CA location compared Oberon 13 fl oz to Zephyr 8 fl oz, applied by ground at 20 gallons per acre. Both materials were combined with Dimethoate and a non-ionic spreader. Oberon 13 fl oz provided better control of mites than Zephyr 8 fl oz at the 28, 42 and 49 day evaluations (Figure 3).

The Goshen, CA location compared Oberon 16 fl oz to Zephyr 8 fl oz and Fujimite 20 fl oz, applied by ground at 35 gallons per acre. All materials were combined with Centric and a non-ionic spreader. Oberon 16 fl oz provided better control of mites than either Zephyr 8 fl oz or Fujimite 20 fl oz at the 44 day evaluation (Figure 4).
The Tranquility, CA location compared Oberon 16 fl oz to Zephyr 10 fl oz and Kelthane 3 pts, applied by ground at 25 gallons per acre. All materials were combined with a crop oil concentrate. Oberon 16 fl oz provided better control of mites than either Zephyr 10 fl oz or Kelthane 3 pts at the 14 day evaluation. Since Kelthane 3 pt showed little activity, it was over sprayed with Zephyr 10 fl oz at the 14 day evaluation. Oberon 16 fl oz continued to provide better control of mites than Zephyr 10 fl oz through the 42 day evaluation, at which time the Zephyr 10 fl oz was re-treated. Oberon 16 fl oz held the mite population in check out to 56 days at which time this study was terminated (Figure 5).

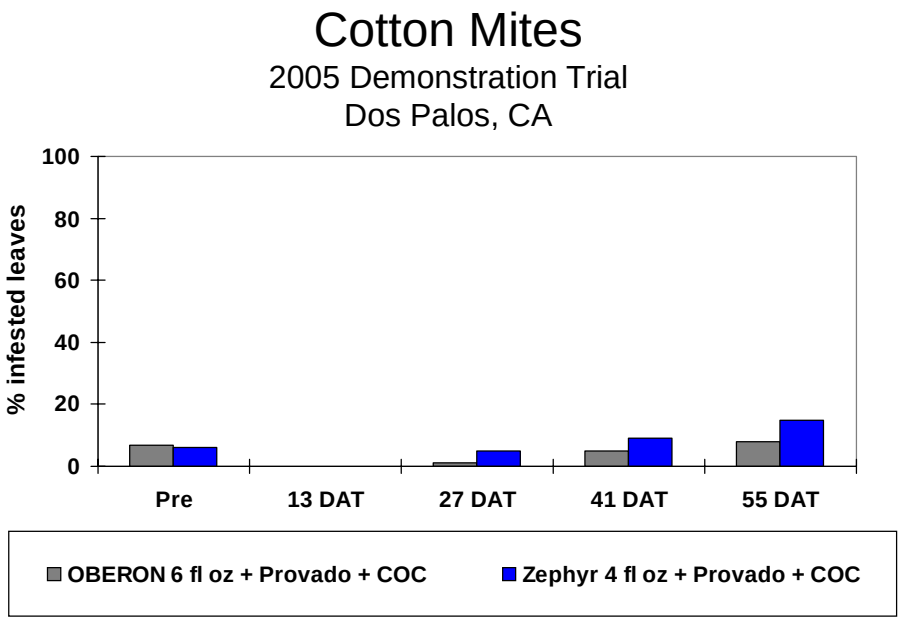
The Bakersfield, CA location compared Oberon 16 fl oz to Zephyr 10 fl oz, applied by helicopter 8.5 gallons per acre. Both materials were combined with a crop oil concentrate. Oberon 16 fl oz provided better control of mites than Zephyr 10 fl oz at the 15, 21, and 28 day evaluations (Figure 6).

The Visalia, CA location compared Oberon 16 fl oz (applied by airplane at 10 gallons per acre) to Zephyr 7 fl oz (applied by ground at 12 gallons per acre). Both materials were combined with a non-ionic spreader. Oberon 16 fl oz by air provided better control than Zephyr 7 fl oz by ground at the 40 day evaluation. However, Zephyr 7 fl oz by ground had slightly fewer infested leaves than Oberon 16 fl oz by air at the 51 day evaluation. (Figure 7).

The Lemoore, CA compared Oberon 12.8 fl oz to Zeal 1 oz, applied by aircraft at 10 gallons per acre. Both materials were combined with a non-ionic spreader. Oberon 12.8 fl oz provided better mite control than Zeal 1 oz at the 14 day evaluation (Figure 8).

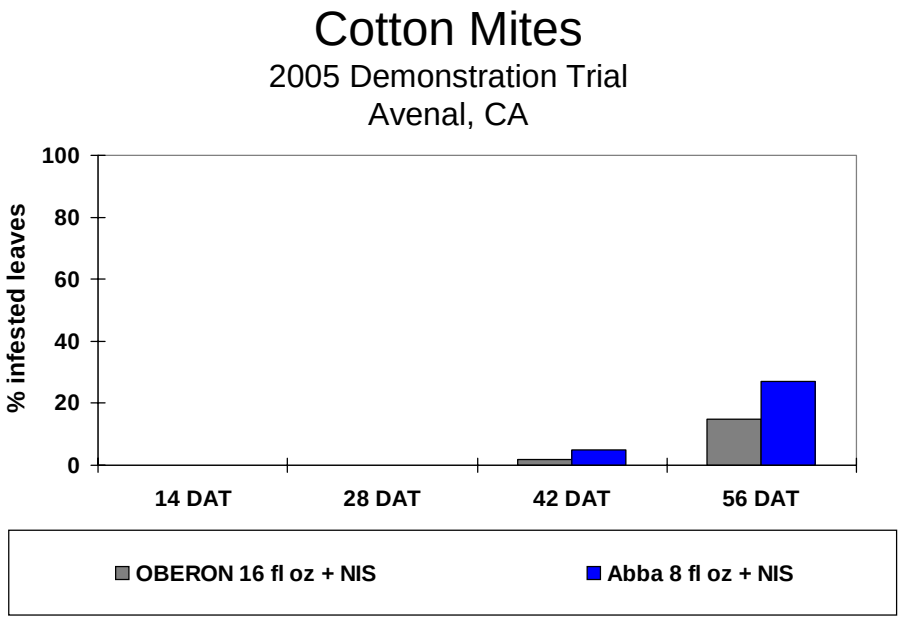
Table 1. Comparison of Oberon's LBI mode of action to IGRs and classical chemistry

	Insect/Mite Growth Regulators (IGR)	Lipid Biosynthesis Inhibitors (LBI) **OBERON**	Classical Chemistry
Life Stages Affected	**Immatures**	**Eggs, Immatures, Female Adults**	**All**
Speed of Activity	**Slow**	**Intermediate**	**Fast**
Resistance Potential	**Intermediate to High**	**Low to Intermediate**	**Intermediate**
IPM Compatibility	**Often Excellent**	**Excellent**	**Often Poor**



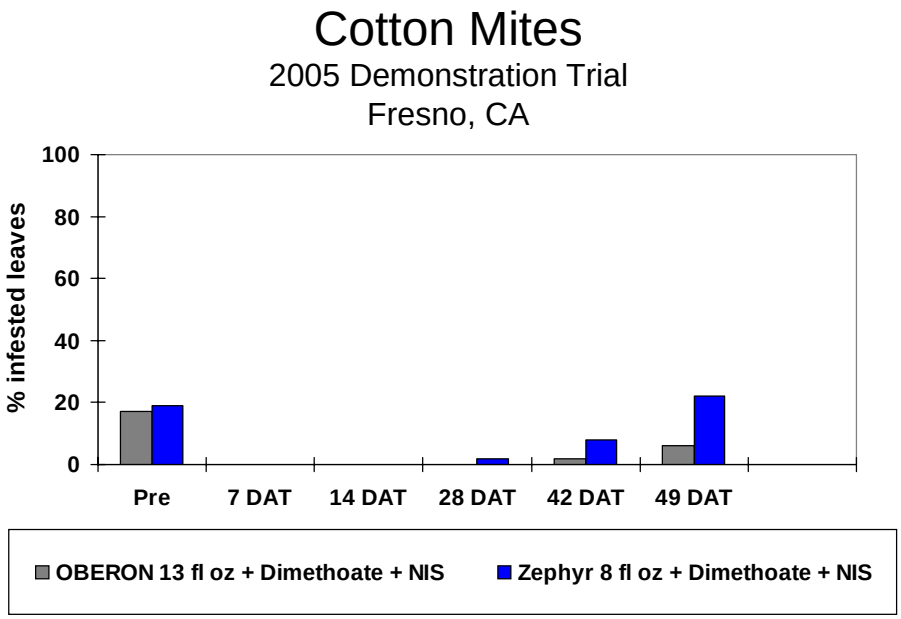
Ground 10 gpa

Figure 1. Early-season spider mite control with Oberon and Zephyr.



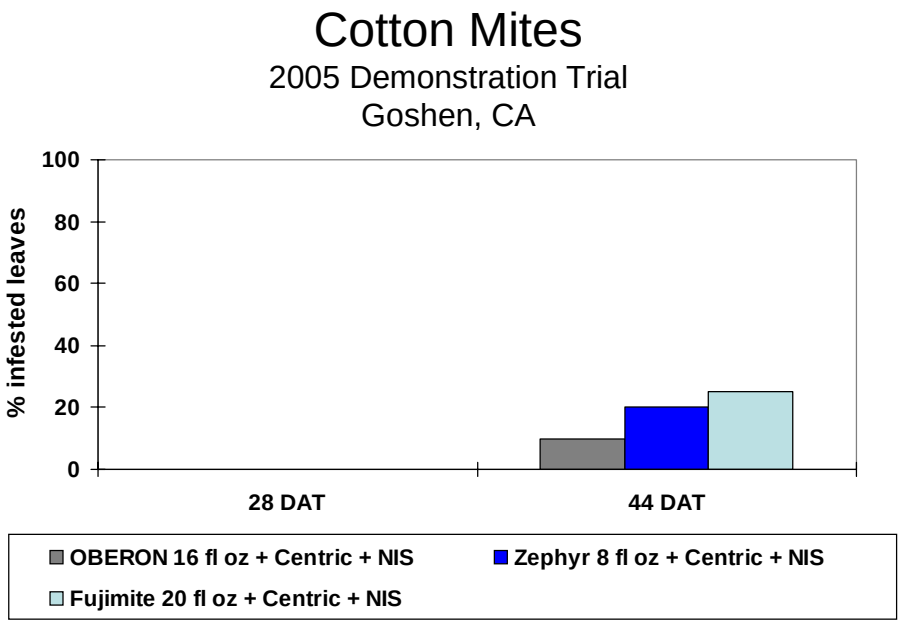
Ground Electro. 5 gpa

Figure 2. Mid-season spider mite control with Oberon and Abba.



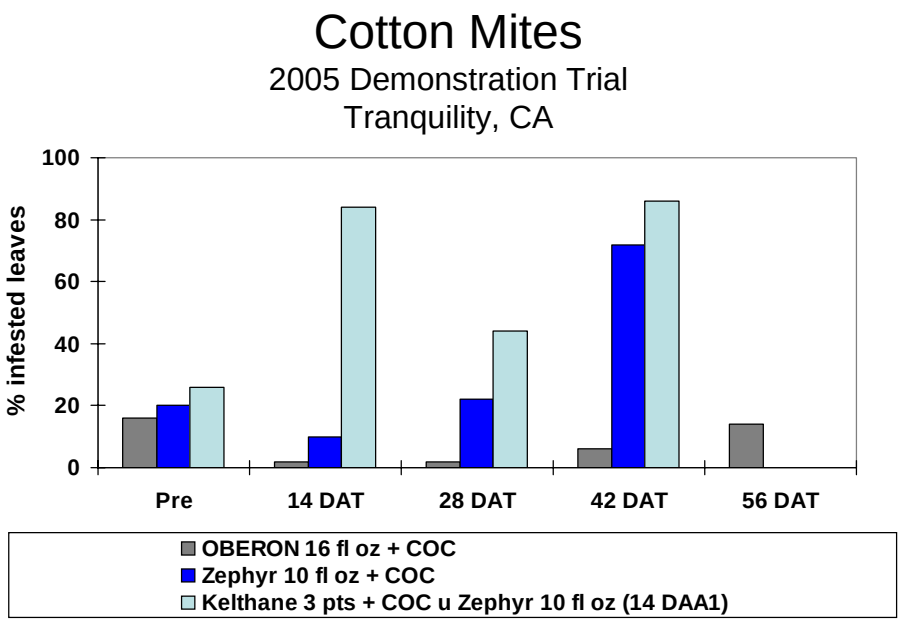
Ground 20 gpa

Figure 3. Mid-season spider mite control with Oberon and Zephyr.



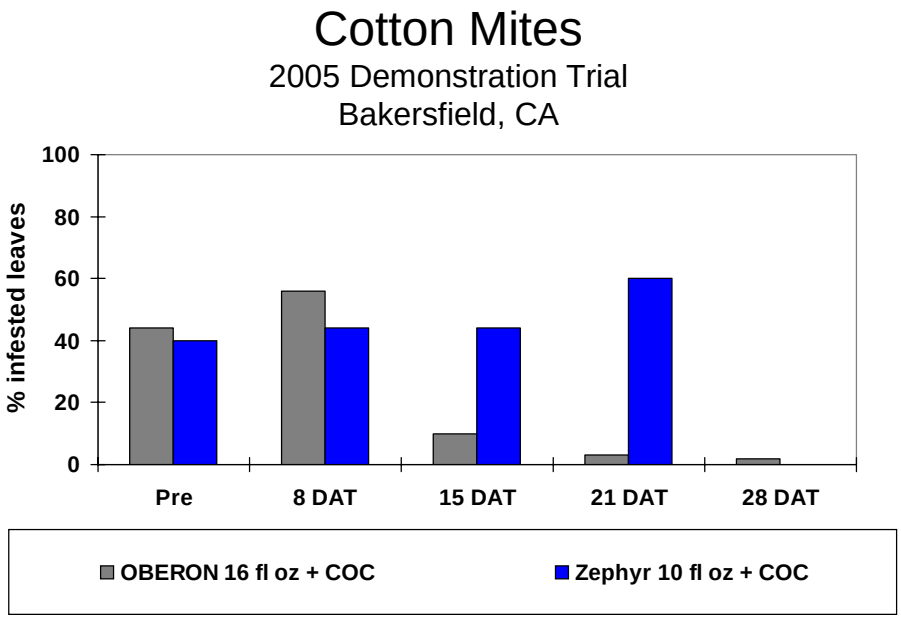
Ground 35 gpa

Figure 4. Mid-season spider mite control with Oberon, Zephyr and Fujimite.



Ground 25 gpa

Figure 5. Mid-season spider mite control with Oberon, Zephyr and Kelthane.



Helicopter 8.5 gpa

Figure 6. Mid-season spider mite control with Oberon, and Zephyr.

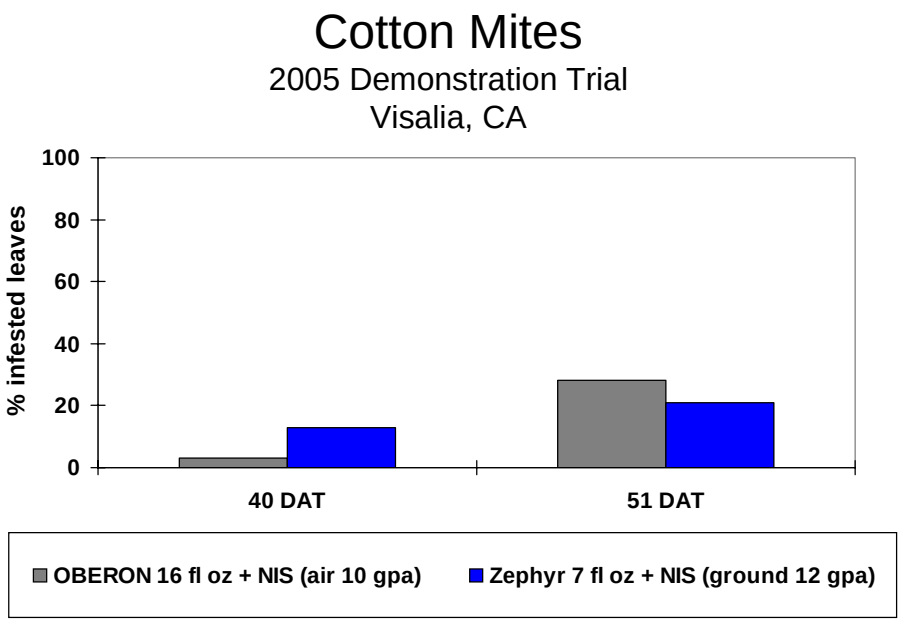
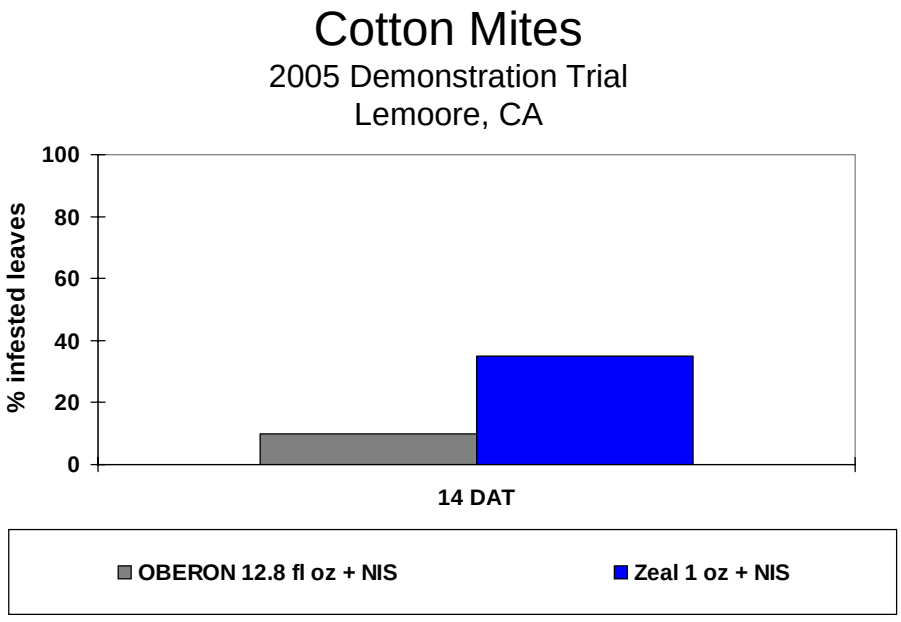


Figure 7. Mid-season spider mite control with Oberon and Zephyr.



Aircraft 10 gpa

Figure 8. Mid-season spider mite control with Oberon and Zeal.