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EFFICACY OF SELECTED COMPOUNDS FOR TWO-SPOTTED SPIDER MITE (*TETRANYCHUS URTICAE*) CONTROL IN ARKANSAS 2005

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Abstract

The two-spotted spider mite, *Tetranychus urticae*, is an economic threat to cotton acreage in Arkansas. Frequent evaluation of the performance of commercial miticides is necessary for two-spotted spider mite suppression. Arkansas 2003 yield loss estimates for spider mites, accountable for 3% yield loss, the seventh most economically damaging pest in cotton (Williams 2003). The study was conducted in Poinsett County, Arkansas during the 2005 growing season.

Introduction

The two-spotted spider mite, *Tetranycus urticae*, is an economical threat to cotton acreage in Arkansas (Reaper 2001). Spider mites usually feed on the underside of leaves, removing vital chlorophyll that causes the reduction in photosynthetic activity (Steinkraus et al. 2003).
Continual evaluation of the performance of commercial miticides is necessary for two-spotted spider mite suppression. Selected use of these miticides can prevent resistance and result in effective management of the two-spotted spider mite.

Materials and Methods

Test one was conducted on Harris Farms, Poinsett County, Arkansas on a typical grower field planted to DPL 444. Plot size was four rows by 50 feet with two rows of buffer between each plot. Plots were sprayed with a hand boom at 10 GPA using compressed air on 1 June, 14 June (Capture and Oberon only) and 29 June (all treatments). Observations were made on 6 June (5 DAT), 9 June (8 DAT), 13 June (12 DAT), 17 June (16/3 DAT), 20 June (19/6 DAT), 24 June (23/10 DAT), 27 June (26/13 DAT), and July 5 (6 DAT) Five leafs from the upper canopy (5th Node) were randomly selected in the middle two rows from each plot and the number of spider mite nymph and adults occurring at the base of the petiole were counted with a 1in. X 1in. hand lens.

Results and Discussion

Observation at 5, 8 and 12 DAT demonstrated untreated check and Capture at 5.12 OZ/A had statistically more two-spotted spider mites than all other treatments.
Selected treatments of Capture and Capture+Oberon were reapplied on 14 June. Evaluations on 17 June were 16 days after initial treatment except for Capture and Capture+Oberon which were 3 days after second

application (16/3). All treatments at this date had statistically more control than untreated check and Capture alone plots, however population in Capture alone were statistically higher than the untreated check. At 19/6 DAT Zephyr had fewer spider mites than Capture alone. At 23/10 and 26/13 DAT the untreated check and capture alone had statistically more spider mite pressure than all other treatments.
A second application to all treatments was applied on 29 June. The trial was rated on 5 July (6 DAT), all treatments were statistically similar and provided better control than untreated check and Capture alone.

Acknowledgements

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References

Jack Reaper, John D. Hopkins, Donald R. Johnson and Gus M. Lorenz. 2001 Two-Spotted Spider Mite Management In Cotton, *IN* Proceedings Beltwide Cotton Conferences

Micheal R Williams, *Cotton Insect Loss Estimates -2003 IN* Proceedings Beltwide Cotton Conferences

Steinkraus, D., J. Zawislak, G. Lorenz, B. Layton, and R. Leonard. 2003. Spider Mites on Cotton in the Midsouth.. Cotton Inc./ UA. 8 pp

Table 1 Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

Average Two-Spotted Spider Mites Per 5 Leaf Samples										
Treatment Name	**Rate**	**Rate Unit**	**5 DAT**	**8 DAT**	**12 DAT**	**16/3 DAT**	**19/6 DAT**	**23/10 DAT**	**26/13 DAT**	**6 DAT**
Untreated Check			82 a	95 a	63 a	58 b	60 ab	103 a	156 a	53 a
Oberon	8	OZ/A	13 b	15 b	22 b	23 c	55 ab	36 b	92 b	15 c
Oberon	12	OZ/A	14 b	10 b	10 b	22 c	42 ab	22 b	86 b	16 c
Oberon	16	OZ/A	8 b	16 b	7 b	18 c	39 ab	59 ab	75 b	13 c
abamectin	6	OZ/A	27 b	25 b	16 b	27 c	42 ab	37 b	79 b	26 bc
abamectin	8	OZ/A	22 b	13 b	18 b	20 c	27 ab	24 b	70 b	22 bc
KELTHANE MF	1	QT/A	19 b	14 b	9 b	13 c	51 ab	51 b	84 b	20 c
KELTHANE MF	1.5	QT/A	10 b	8 b	17 b	19 c	36 ab	34 b	34 b	14 c
CAPTURE	5.12	OZ/A	82 a	108 a	79 a	78 a	72 a	101 a	174 a	42 ab
CAPTURE Oberon	3.8 8	OZ/A OZ/A	37 b	52 b	37 b	37 c	34 ab	60 ab	72 b	11 c
zephyr	6	OZ/A	54 ab	28 b	17 b	19 c	23 b	36 b	77 b	25 bc
zephyr	8	OZ/A	33 b	14 b	13 b	24 c	33 ab	40 b	70 b	25 bc

Chart 1. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (5 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

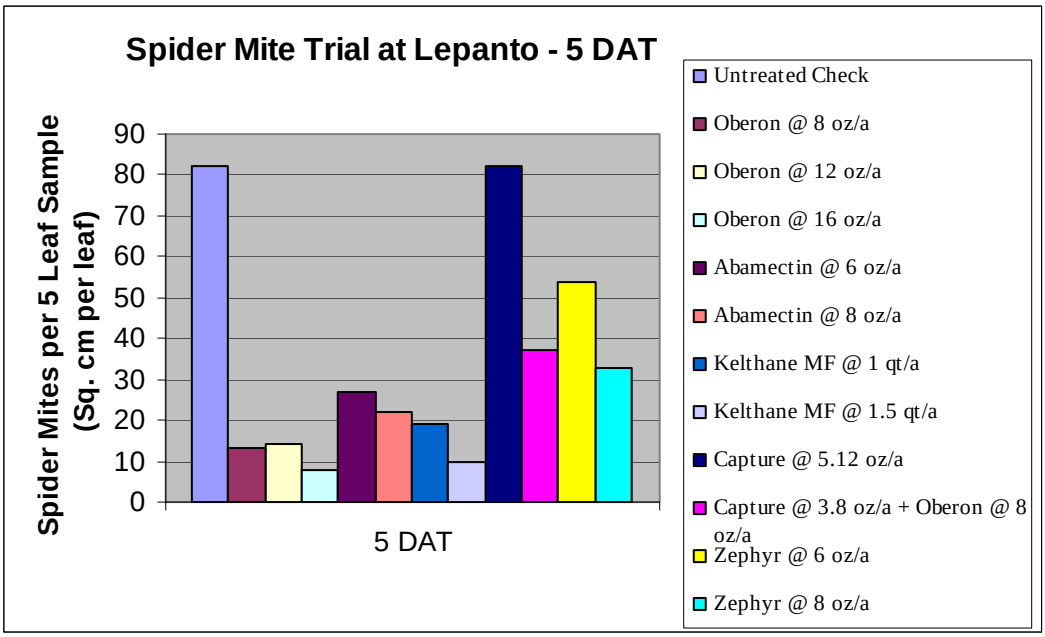

Chart 2. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (8 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

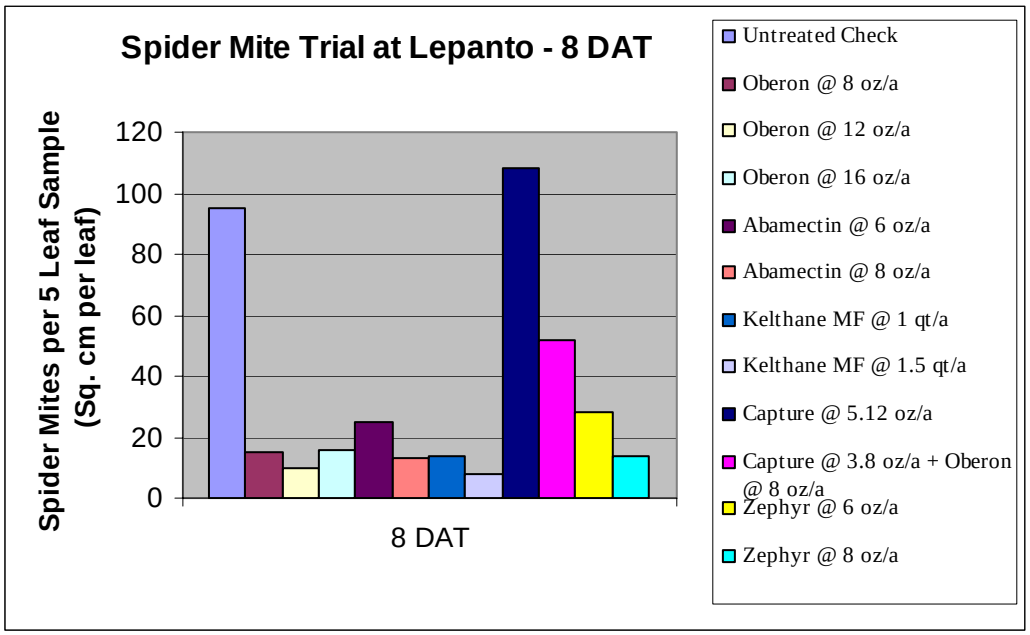

Chart 3. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (12 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

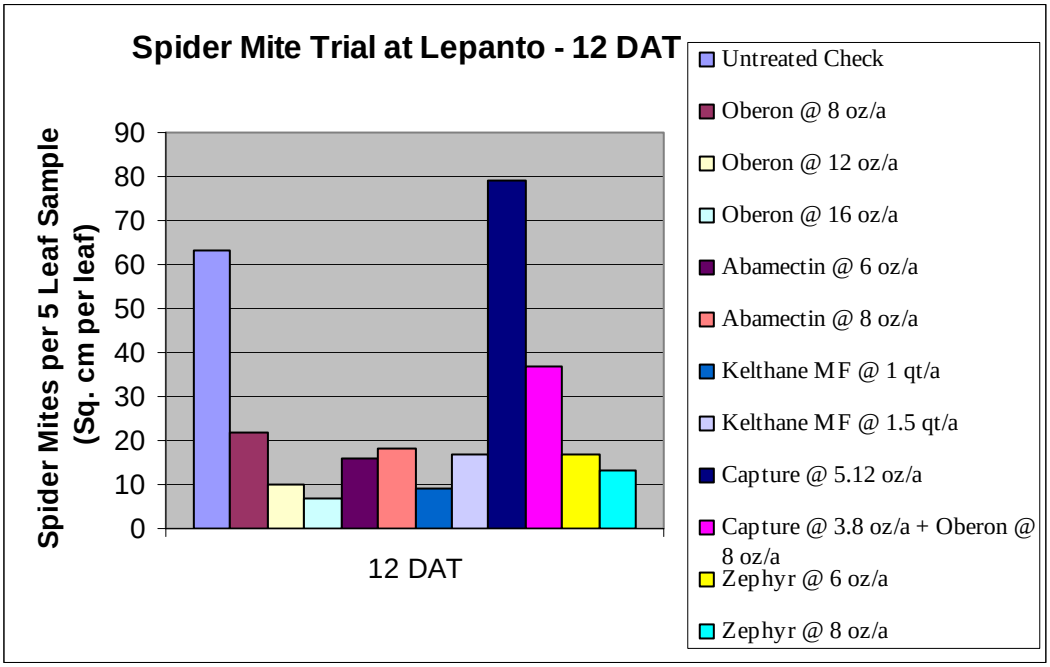

Chart 4. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (16/3 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

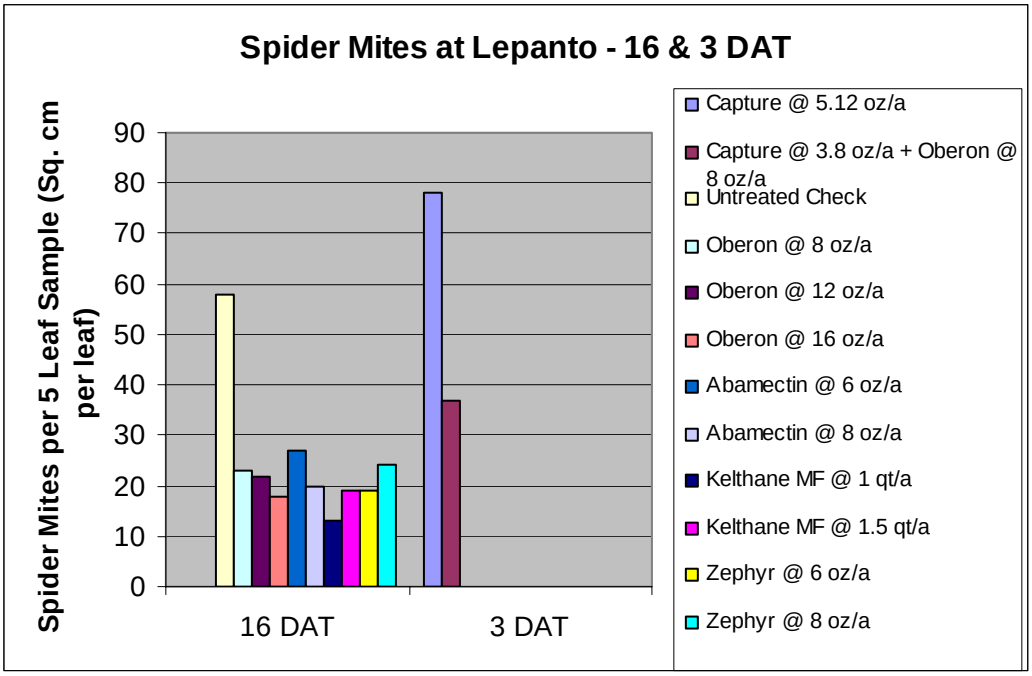

Chart 5. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (19/6 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

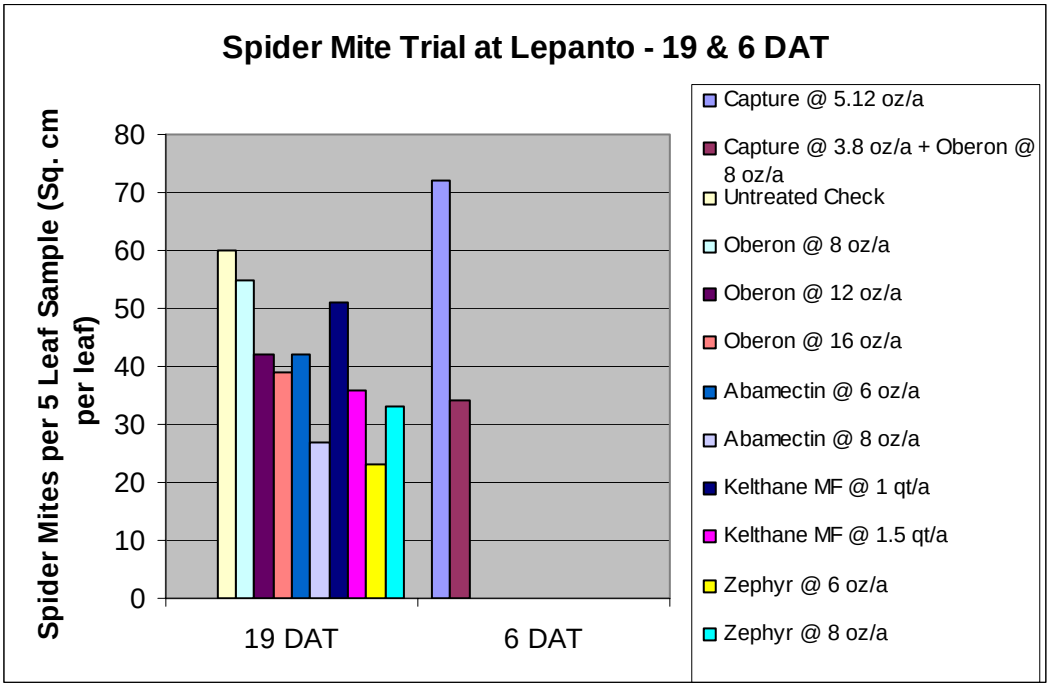

Chart 6. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (23/10 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

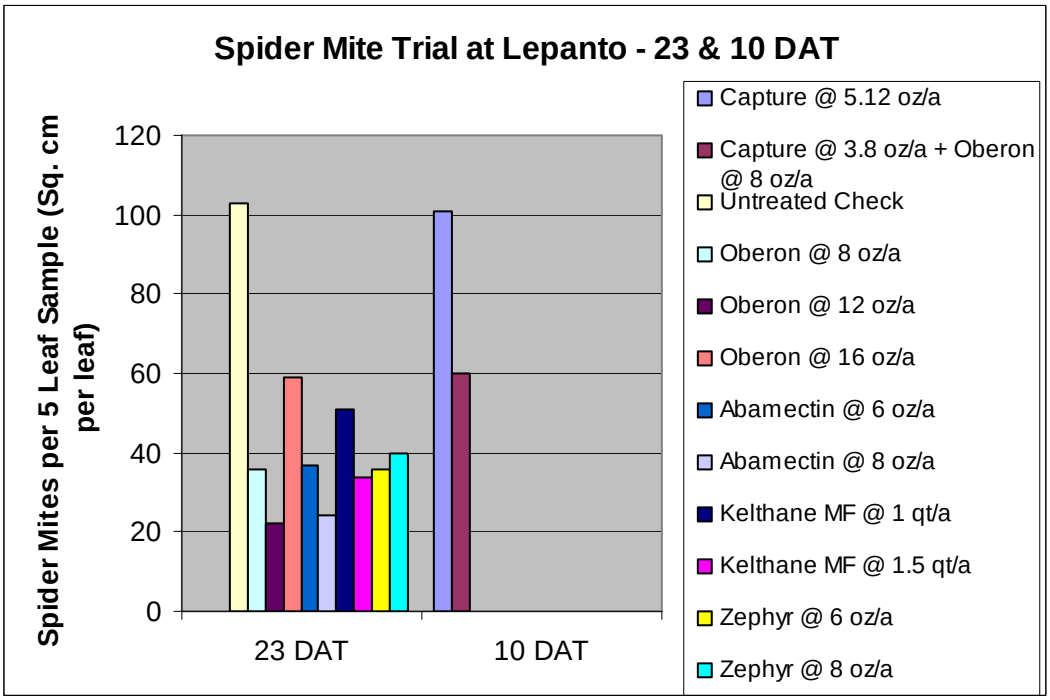

Chart 7. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (26/13 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

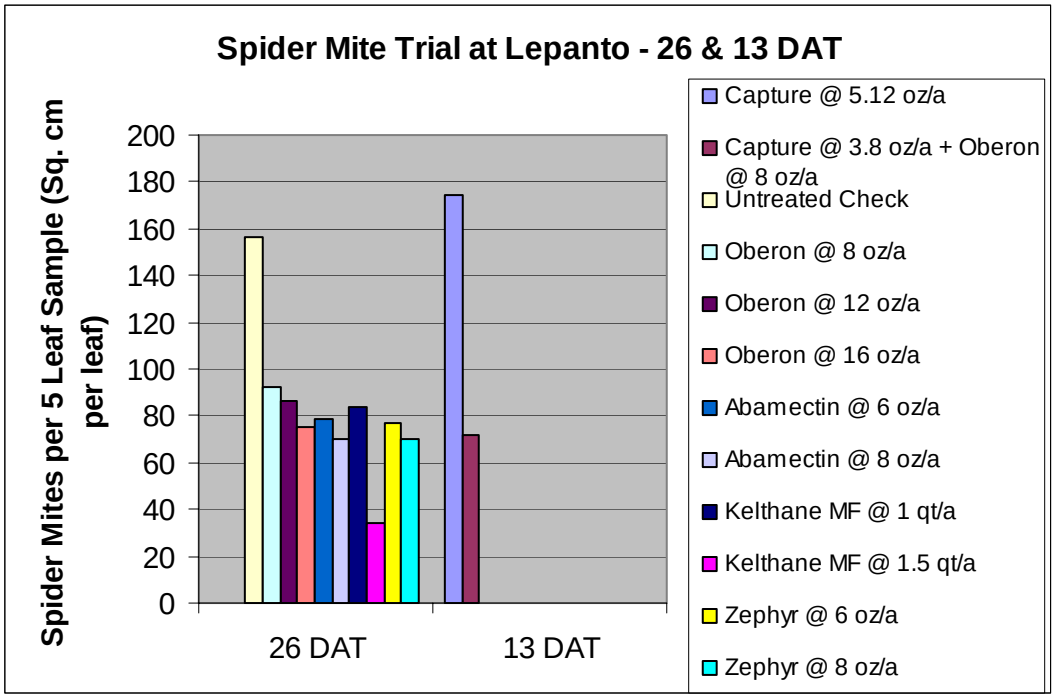

Chart 8. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite (6 DAT)
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)

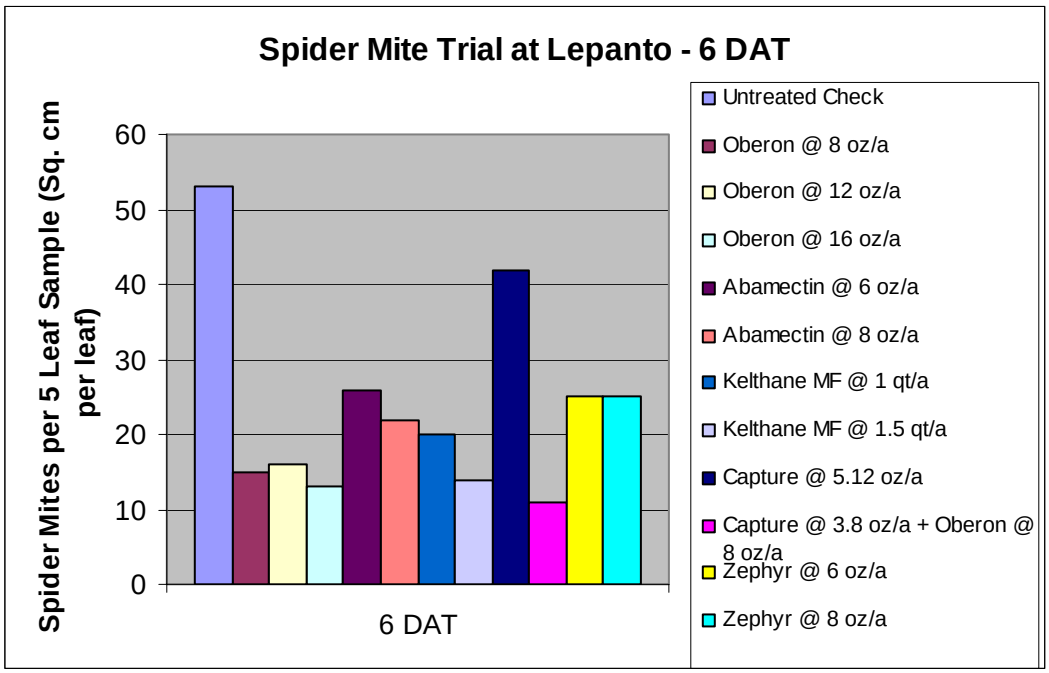

Chart 9. Efficacy of Various Insecticides for Control of the Two-Spotted Spider Mite Season Total
Application Date: June 1, June 14(Capture and Oberon only), July 29, 2005
Evaluation Date: June 6 (5 DAT), June 9 (8 DAT), June 13 (12 DAT), June 17 (16/3 DAT), June 20 (19/6 DAT), June 24 (23/10 DAT), June 27 (26/13 DAT), and July 5 (6 DAT)