Evaluation of KeyPlex 350 OR for PFD Control on Navel Orange

Clair G Erickson, Kesko Agronomics
Tangerine, FL 32777

This experiment was established on mature navel orange trees in a randomized complete block design using double tree plots and five replications. Two flower clusters with 10-20 blossoms at the pinhead stage were selected per tree and flagged for future reference. KeyPlex 350 OR was applied at 3 quarts per 125 gallons of spray on March 3 and again on March 8, 2008. Application was made using a single nozzle handgun at 100 psi with the entire canopy sprayed to runoff. Topsin M WSB at 2 pounds per 125 gallons was also applied on March 8, 2008, as a grower standard. Trees were also maintained as an untreated check.

Inoculum for *Colletotrichum acutatum* was obtained from University of Florida, IFAS, CREC at Lake Alfred with conidial concentration adjusted to 10^7 per ml and sprayed to run-off with a hand-held applicator on the tagged flower clusters on March 18, 2008. Clusters were covered with plastics bags with wet papers towels inside for 20 hours and then removed.

Symptomatic flowers were counted on March 24 and March 31, 2008 to assess postbloom fruit drop (PFD). The data were expressed as percentage of infected flowers of those present at time of inoculation. The number of persistent calyces and healthy fruit were counted on each tagged flower cluster on April 28, 2008.

While the percentage of infected blossoms increased slightly between 6 and 13 days after inoculation (DAI) the relationship between treatments did not. Topsin M was very effective in controlling symptoms of PFD with only 5% of blossoms infected at 13

DAI. KeyPlex was moderately effective with 34% infected while the untreated check resulted in 81% of blossoms showing symptoms of PFD (See Figure 1). Tukey's HSD ($p=0.05$) indicates significant differences between all three treatments at 6 and 13 DAI with values of 23.195 and 3.901% infected respectively (See Appendix 1).

While Keyplex indicated a significantly higher percentage of blossoms with symptoms, the effect did not persist with retained fruiting bodies. The untreated check retained an average of 8.0 persistent calyces with no fruit. KeyPlex and Topsin had 3.8 and 3.5 retained calyces and 0.2 and 0.3 fruit respectively. These two treatments were not found to be statistically different at 41 DAI. KeyPlex and the untreated control were also not found to be statistically different in the number of fruit developing at 41 DAI (See appendix 2).

From this study it is reasonable to conclude that use of either KeyPlex 350 OR or Topsin M will provide reasonable protection from infection by *Colletotrichum acutatum* and subsequent fruit loss due to PFD.

Figure 1 Per Cent Infected blossoms following treatment with KeyPlex 350 OR and Topsin M and inoculation with *Colletotrichum acutatum*.

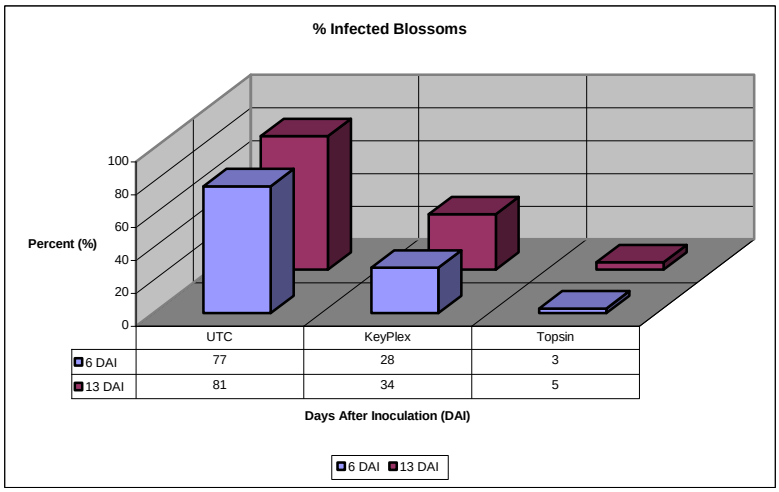
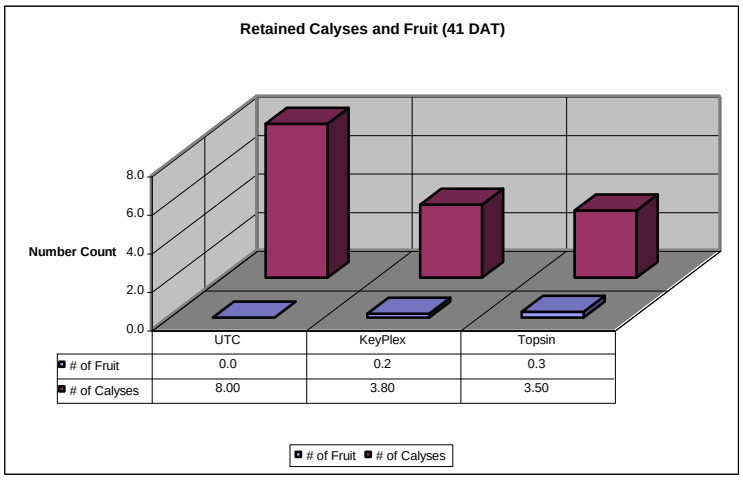


Figure 2 Number of retained calyces and fruit following treatment with KeyPlex 350 OR and Topsin M and inoculation with *Colletotrichum acutatum* at 41 DAI.



Appendix 1 PFD symptom statistics following treatment and inoculation of *Colletotrichum acutatum* at 6 DAI.

% Infected Blossoms
6 Days After Inoculation

ANOVA

	SS	Df	MSS	F	P=.05	P=.01
Total	32366.847	30				
Mean		1				
Reps	1892.563	9	210.285	2.0686676 ns	2.46	3.6
Treatment	28644.543	2	14322.272	140.89474 ***	3.55	6.01
Error	1829.741	18	101.652			

	% infected blossoms
Untreated	77.106a
Keyplex	27.601b
Topsin M	2.769c

Tukey's HSD (P=0.05) = 23.195

% Infected at 13 Days After Inoculation

ANOVA

	SS	df	MSS	F	P=.05	P=.01
Total	31608.783	30				
Mean		1				
Reps	738.507	9	82.056	1.5857573 ns	2.46	3.6
Treatment	29938.851	2	14969.426	289.28755 ***	3.55	6.01
Error	931.425	18	51.746			

	% infected blossoms
Untreated	81.182a
Keyplex	33.635b
Topsin M	4.538c

Tukey's HSD (P=0.05) = 3.901

Appendix 2 Statistical analysis of retained fruit and fruiting bodies following treatment and inoculation of *Colletotrichum acutatum* at 41 DAI.

Persistent Calyces

ANOVA

	SS	df	MSS	F	P=.05	P=.01
Total	682.700	30				
Mean		1				
Reps	220.033	9	24.448	1.3094624 ns	2.46	3.6
Treatment	126.600	2	63.300	3.3903987 ns	3.55	6.01
Error	336.067	18	18.670			

Persistent Calyces		
Untreated	8.00	a
Keyplex	3.80	b
Topsin M	3.50	b

Tukey's HSD (P=0.05) = 2.343

# of Fruit Retained

ANOVA

	SS	df	MSS	F	P=.05	P=.01
Total	4.167	30				
Mean		1				
Reps	0.833	9	0.093	0.5813953 ns	2.46	3.6
Treatment	0.467	2	0.233	1.4651163 ns	3.55	6.01
Error	2.867	18	0.159			

# of Fruit Retained		
Untreated	0.0	a
KeyPlex	0.2	ab
Topsin M	0.3	b

Tukey's HSD (P=0.05) = .216