OBJECTIVE IV

Screening Abscission Compounds for Black Ripe Table Olives: 2009 Season

INTRODUCTION of OBJECTIVE IV

Due to extremely poor fruit set at Lindcove Field Station olive abscission compound screening trials were conducted at only Nickels Soils Laboratory, Arbuckle. Trials were conducted from 9 – 24 September 2009. The objective of this trial was to continue olive screening with compounds from the Florida citrus fruit abscission agent library. The long-term goal of this project is to adapt table olives to mechanical harvesting. Identification of a suitable abscission agent is viewed as a key to industry adoption of mechanical harvesting, because mechanical harvesting could be performed less aggressively and fruit damage could be minimized.

PROCEDURES of OBJECTIVE IV

Nickels Soils Laboratory trial. A trial was initiated on 9 September 2009 in a block of olive trees located in Nickels Soils Laboratory on Greenbay Ave in Colusa County, CA. Five uniform 'Manzanillo' trees with good fruit load were selected, and one replicate branch on each tree was tagged for each treatment. Thus, treatments were replicated five times. Each branch contained at least eight fruit and 25 leaves. Fruit number was recorded. All treatments were randomly assigned to the branches on each tree. Abscission compounds were dissolved in water containing 0.05% Activator-90 and applied between 9:00 AM and 2:30 PM with a hand-held 1.5L pressurized sprayer until run-off. A water control containing adjuvant was included in all trials. Maximum, minimum, and average temperatures on the day of application were 36, 19, and 28ºC, respectively. Fruit detachment force (FRF) in grams-force was measured 10 days after application using an Imada DPS-11 digital force gauge.

RESULTS of OBJECTIVE IV

Maximum, minimum, and average temperatures for the duration of the trial were 33, 15, and 25ºC, respectively. No fruit or leaf drop occurred at the time of measurement (data not shown). The analyzed data in **Table 4.1** below demonstrates there were no significant difference among the eight treatments and only 5000 ppm Ethrel and 10ppm Sumagic significantly decreased FRF relative to the control.

CONCLUSIONS of OBJECTIVE IV

1. Eight abscission compounds or combinations were screened.
2. Only 5000 ppm Ethephon and 10 ppm Sumagic significantly decreased FRF when compared with the control treatment, but were not significantly different from the other six treatments.

Table 4.1. Evaluation of four compounds at two different concentrations each on the decrease in FRF, and fruit and leaf drop of Manzanillo table olives.

Treatments	#Fruit dropped		FRF 10/9		Change in FRF 10/24		#leaves dropped	
T1: Ethrel (23% a.i.) 2000 ppm- 0.87 mL	0.6	b	477.0	ab	104.6	ab	1.8	ab
T2: Ethrel (23% a.i.) 5000 ppm- 2.2 mL	4	c	445.2	a	136.4	b	2.6	b
T3: Profile (21.8% a.i.) 1000 ppm 0.46 mL	0	a	497.9	ab	83.7	ab	1	a
T4: Profile (21.8% a.i.) 2000 ppm 0.92 mL	0	a	486.5	ab	95.1	ab	1	a
T5: Sumagic 10 ppm - 2 mL	0	a	453.4	a	128.2	b	1	a
T6: Sumagic 100 ppm - 20 mL	0	a	483.3	ab	98.4	ab	1	a
T7: Embarck 1000 ppm - 0.36 mL	0	a	476.4	ab	105.2	ab	1	a
T8: Embarck 2000 ppm - 0.72 mL	0.2	ab	507.7	ab	73.9	ab	1	a
T9: Control	0.2	ab	562.0	b	19.6	a	1	a

Four successive years of screening potential abscission compounds have not identified any potential abscission agents for table olives. It appears a more considered approach to decreasing FRF is needed.

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