Project No. 90-ZD1 - Control of Suckers on Walnuts and Almonds
Final Report

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Problem and Its Significance:

Control of suckers is a major problem on young non-bearing trees. Physically removing the sprouts is costly, time consuming, can result in an increase of suckering and can cause wounds that may be invaded by pathogens such as bacterial crown gall. A simpler non-pathogenic inducing method is needed for control.

Objectives:

Develop a simple non-injurious method of sucker control for both walnuts and almonds. Experiment with a commonly used fertilizer (Ammonium nitrate-Urea) to determine efficacy for sucker control.

Plans and Procedures:

The use of liquid Ammonium nitrate-Urea fertilizer had been tried by the P.I. on a limited observation basis with positive results. The material is used in both almonds and walnuts as a fertilizer but currently cannot be legally used for sucker control. Additional efficacy data needs to be collected before possible registration. It is highly unlikely that any manufacturer will want to submit or label the materials because of limited increased sales potential on an inexpensive chemical (approximately $1.50 per gallon).

Requests for funding were directed at both the Almond Board and Walnut Board. The Walnut Board funding was denied so the total project was scaled back to provide information on sucker control of Marianna 2624 rootstock in almonds with no trials on sucker

control in walnuts as originally proposed and submitted to both Boards.

Experiments were conducted in two different orchards (Peerless/Marianna 2624 and Price/Marianna 2624). Suckers were sprayed with 1/2 strength and full strength Ammonium nitrate-Urea sprays at less than 12 inch and 12 to 18 inch height.

Experiments were conducted on two different ranches. Trials were designed so that there were at least 20 suckers per individual plot. Treatments were replicated 4 times. The June 5 and July 9 treatments were applied on resprouted suckers that had been pruned after the May evaluation.

Most suckers were killed back to the ground when treated with the undiluted material. Evaluation occurred about 1 month following application. Those shoots exhibiting regrowth were considered as not killed. The shoots evaluated as killed had no regrowth showing one month following the spray application.

Results:

Treatments were applied on April 2, April 13, June 5, and July 9 to suckers that had not previously been sprayed. The last to dates represented shoots that had been cut and then resprouted. Table 1 lists the percentage suckers that were killed when sprayed with the Ammonium nitrate-Urea liquid. As show in April 2 - Treatment 4, diluting the spray with water caused the control to be ineffective. All other treatments were conducted at full strength Ammonium nitrate-Urea solution.

Control varied from 15% on April 2 to a high of 69.8% on April 14 with considerable variation between treatments. The temperature when the spray was applied is also listed and appeared to contribute to the effectiveness of the treatment. High

temperature (90° F) in April at the time of application appeared to provide better control than the treatment was applied at a temperature (70°F).

Mid summer treatments provided 41 to 44.2% control on suckers less than 12 and 14 inches whereas only 20.6% and 32.4% were achieved when applied to taller suckers with woody stems.

Conclusion:

Some control of Marianna 2624 root suckers on almond trees is possible with a full coverage spray undiluted Ammonium nitrate-Urea. Control was better when the treatment occurred during hot rather than mild weather. Control as evaluated by the number of shoots resprouting varied from 15 to 69.8%. While this control is fair it was not good as originally expected. Another chemical (N.A.A.) is currently being advanced by the IR-4 Program for registration. Tests conducted several years ago showed it to be more efficacious and probably less weather dependent thus providing a more dependable product. To register a chemical through IR-4, no other product is supposed to be available for use. It was felt by this researcher that N.A.A. provided a much more dependable product to register. If, however, registration of N.A.A. stumbles continued evaluation of Ammonia nitrate-Urea might be justified.

Table 1. Percent of Suckers of Marianna 2624 Plum Rootstock That Were Killed on Young Almond Trees After a Full Coverage Spray Using Ammonium Nitrate-Urea

Date Sprayed	4/2	4/13	6/5	7/9
Treatment 1	15% A	61.2 A		41% A
Treatment 2		69.8 A		44.2% A
Treatment 3			20.6 A	
Treatment 4	1% B			
Untreated	0% B	0% B	0% B	0% B

Temperature at Time of Application

4/2	70°F
4/13	90°F
6/5	90°F
7/9	95°F

Treatments:

1 - Suckers not over 12 inches long - succulent growth

2 - Some suckers 12 to 14 inches long but most shorter - succulent growth

3 - Some suckers up to 18 inches long with some of the stems becoming woody

4 - Suckers not over 12 inches long - succulent growth - Ammonium nitrate-Urea spray dilute to 1/2 strength with water