UNIVERSITY OF CALIFORNIA • COOPERATIVE EXTENSION • GLENN COUNTY
P.O. Box 697 (821 E. South St.), Orland, CA 95963 • (530)865-1107 • (530)865-1109 FAX • (800)698-4544 (TDD)

Olive News

May 9, 2001
Vol. II, No. 2

IN THIS ISSUE

Bill Krueger
Farm Advisor

Chemical Thinning of Olives

Area olive orchards are beginning to bloom and, in most cases, the bloom is heavy which will most likely lead to a large crop of olives. This is related to the generally light crop that most area growers experienced last year. This variation in cropping is known as alternate bearing. One good thing about alternate bearing is that it allows us to have some idea of what type of crop to expect long before we can actually see it on the tree. For example, given the past history and the bloom which is currently developing on the trees and barring an unforeseen catastrophe, we would expect a large crop this year and a lighter crop next year. It is predictable that only good size fruit will bring good prices this year. If the crop can be controlled so that fruit sizes are good, good returns can be expected this year. This will also allow adequate shoot growth to develop the potential for a good crop next year when a lighter overall crop and better prices can be expected.

Manzanillo is the primary variety which is chemically thinned. Sevillano is said to be non-responsive to chemical thinning with Napthalene Acetic Acid (NAA). Although recent research has shown that a chemical thinning response can be obtained with NAA, the procedure is yet to be worked out. Pruning is the primary method of controlling alternate bearing with this variety and with Ascolano. Ascolano does respond to chemical thinning, but chemical thinning of this variety is not generally done.

Chemical Thinning

Chemical thinning is the most useful tool available to olive growers for crop control. Post-bloom application of naphthalene acetic acid (NAA) can regulate crop size to improve fruit quality and result in shoot growth for return bloom for the next year.

Chemical thinning with NAA has been available for more than 25 years. Widespread adoption has been slow because thinning must be done before the crop load can be accurately judged, the risk of over or under thinning, and increasing chemical costs.

The greatest obstacle connected to chemically thinning olives is the variable thinning response related to temperatures following material application. Thinning response can vary from none with unseasonably cool temperatures to almost complete removal with excessive temperatures. It is no wonder that many growers are reluctant to use this procedure. However, the potential benefits are so great, both for the year of the thinning and the subsequent year, that they cannot be ignored. In a 1999 study on the Manzanillo cultivar, all thinning treatments increased income per acre, after harvest costs were deducted, by an average of nearly $1000 per acre, and more than doubled the return bloom rating (Table 1).

Treatment Timing

Timing of NAA sprays is critical for desired results. Olives are successfully thinned with NAA between 12 and 18 days after full bloom. Earlier or later treatment may result in accordingly excessive or unsatisfactory fruit removal. Two methods can be used to time NAA applications: (1) fruit size, and (2) days after full bloom (DAFB).

Fruit size. This is the most commonly used method. NAA is applied when average fruit size is between 1/8 to 3/16 inch in diameter. Fruit size varies within the orchard and within the tree, so measurements should be made at different locations in the orchard and on the north and south sides of trees to obtain an average. This size is usually reached 12 to 18 days after full bloom, but may be delayed or advanced by cool or warm temperatures respectively.

Days after full bloom (DAFB). To use this method, the date of full bloom must be established for each orchard.

The full-bloom date is determined as follows. As flowers begin to open, a contrast in color between the green leaves and white flowers can be observed in the orchard from a distance. At full bloom, the tree appears to be white: shoots contain 80 to 90 percent open, fresh flowers, with their bright yellow anthers exposed. The remaining flowers include those not yet open and those whose petals have dropped. Pollen release is abundant at full bloom, and it should be possible to collect pollen by shaking bloom into one's hand. Tapping a limb in full bloom should release a puff of yellow pollen and falling petals. These reference points indicate the date to designate as the full-bloom point. Three to four days after full bloom, as the flowers age, the tree develops a yellow-bronze cast. Even if the DAFB method of spray timing is not used, determining and recording the full bloom date by block will be useful for predicting treatment timing. With this method, NAA is 12-18 days after full bloom.

NAA Concentration and Active Ingredient

NAA concentration depends on how spray timing is determined and whether or not a spray oil is used. Traditionally, thinning treatments have been applied as dilute sprays (300 to 500 gallons per acre), using 150 ppm NAA. Research has shown that concentrate sprays (100 GPA or less) can be as effective as dilute sprays, provided adequate active ingredient is applied. Note this concentrated application option is not currently labeled for use in California. Although thinning response can vary dramatically from year to year and is largely determined by temperatures within a few days of application, research has demonstrated that an active ingredient of greater than 72 oz. per acre of the concentrate 200 product is necessary for satisfactory thinning.

Chemical Thinning Precautions

Chemical thinning is a sensitive operation, and under or over thinning can occur. The response to NAA is influenced by environmental conditions (primarily temperature within a few days of application) and tree stress during and after the thinning application. Tree stress tends to

accelerate the thinning response, so growers should avoid stressing trees during and after thinning.

- Only well-watered, healthy trees should be chemically thinned. Young shoot tips may be injured by NAA, but there is no lasting effect.

- ·Avoid applying treatments when warmer or cooler than normal temperatures are predicted for three or four days after treatment.

.

- Do not use oil with NAA when daytime temperatures are 90°F (32.2°C) or higher, or when soil moisture is low. Failure to observe these precautions may result in leaf and shoot burn, defoliation, fruit injury, and excessive thinning.

Table 1 shows the results of a spray thinning trial conducted in Orland during 1999. This turned out to be a particularly good year for chemical thinning. Both in 1997 and 1999, we tested various rates and combinations of chemical thinner including dilute and concentrate sprays, 1% spray oil additive and .25% CS7 spreader in 100 gallons per acre and sequential sprays applied 3 (1999) or 6 (1997) days after the initial treatment. The conclusion from these two studies were:

- Concentrate sprays (100 gpa) are as effective as dilute sprays (300 to 500 gpa).

- Generally, application rates of less than 72 oz. of concentrate 200 resulted in inadequate thinning.

- Neither the spray oil or the spreader improved thinning as they were used in these trials.

- Sequential sprays, 3-6 days after the initial spray result in an additive thinning response.

Table 1. 1999 Olive Thinning Summary

Treatments	Conc 200 (oz/A)	fruit set (per 10 nodes)		Yield Tons/A		Value $/Ton		$/Acre minus harvest cost		Return Bloom (rated 0 - 5)	
Control		14.1	A	8.1	B	$226.89	A	$43.43	A	0.6	A
150 ppm	36	7.5	B	6.2	A	$389.75	B	$1,074.71	B	1.0	ABC
300 ppm	72	6.1	BC	6.6	AB	$443.44	BC	$1,420.07	BCDE	1.4	CD
300 ppm + .25%CS7	72 +CS7	6.2	BC	5.5	A	$442.63	BC	$1,097.66	B	1.0	ABC
300 ppm + 1% 440 Oil	72+oil	6.3	BC	5.9	A	$479.75	CD	$1,484.05	BCDE	0.9	AB
450 ppm	108	7.1	C	5.6	A	$439.60	BC	$1,159.07	BC	1.0	ABC
600ppm	144	6.8	C	5.4	A	$472.02	CD	$1,319.66	BCD	1.3	BCD
150 ppm - dilute	144	5.3	BC	5.5	A	$517.98	DE	$1,633.15	DE	1.4	CD
50% + 50%	54 + 54	3.7	C	5.8	A	$487.09	CDE	$1,476.79	BCDE	1.4	CD
67% + 33%	72 +36	5.1	BC	5.8	A	$546.51	E	$1,822.72	E	1.3	BCD
67% + 83%	72 + 90	5.0	BC	5.1	A	$533.61	DE	$1,578.04	CDE	1.6	D
LSD.05		3.1		1.6		$66.41		$448.55		0.5	

All treatments applied by air mist blower at 100 GPA except the dilute treatment which was applied by handgun at 400 GPA. 7 single tree replicates randomized complete block.

Additive sprays are shown as percent of 108 oz/acre, considered to be standard.

Full Bloom 5-21, 1st Treatment 6-7, 2nd Treatment 6-10.

*Numbers followed by different letters are significantly different at the 5% level using Fischer's LSD test.

EVAPOTRANSPIRATION DATA AVAILABLE

Again this year, our office will be making local Evapotranspiration (ET) data available to interested growers. ET data will be sent out for the previous week each Monday, beginning in May through October. This year the ET data will be calculated for specific crops. The information is gathered through local CIMIS weather stations located on the east and west sides of the Sacramento Valley. Evapotranspiration numbers are valuable tools for planning irrigation.

If you have internet capabilities, you may acquire this information through a link at: **http://cetehama.ucdavis.edu/agriculture.**

If you would like to receive the information each week, please call us at 865-1107.

ELECTRONIC NEWSLETTER SUBSCRIPTIONS

For those of you who have e-mail and would like to receive this newsletter electronically, send your e-mail address to jesamons@ucdavis.edu. The advantages of doing this would be that you would get it sooner and save us some mailing costs. If you elect to receive the newsletter electronically, you would no longer receive it by mail. Our plan is to have this service in effect by July 1st.