Olive sucker management – Spray efficacy

Ryan J Hill, UCCE Tehama, Shasta, Glenn Counties

Materials and Methods:

Two trials were established in a 5-year-old Manzanilla olive orchard in Richfield, CA to evaluate Suppress and other conventional herbicides for sucker management. Treatment details are shown in tables from the results section. All conventional treatments included ammonium sulfate at 2% and a non-ionic surfactant at 0.05%. Suppress treatments (Organic herbicide) included 4 fl oz/A Xena spreader and 1% Biolink acidifier. Suppress treatments were applied twice (at the initiation date and 14 days after) and conventional treatments were only applied at the initial application timing. Both trials were treated when suckers were between 5 and 11 inches tall with a CO2 backpack sprayer calibrated to apply 30 gallons per acre with two Teejet XR8002 nozzles. The boom was angled slightly so treatments covered the lower 24 inches of the tree trunk and all suckers that were growing there. Application details are listed on the table below:

Table 1: Application details

	Spring trial	Summer trial
Initial application dates	4/14/25	6/3/25
Time and temp at application	10:22 AM; 68° F	7:00 AM; 76° F
High/Low Temp	85/47° F	100/65° F
Sucker age	Prior season's growth	Current season’s growth

Both trials were organized as a randomized complete block design with four replicates. Each plot consisted of one olive tree. Evaluations were performed weekly until 6 weeks after treatment. Percent control and sucker height were rated weekly, and sucker biomass was collected at trial termination. Percent control was visually evaluated, determined by what portion of the treated suckers were affected. Sucker height was measured in inches with a ruler. A single value was recorded per tree that was representative of the total collection of suckers at that tree. Biomass was collected and weighed immediately, rounding to the nearest gram.

Results:

Spring.

Two plots from the untreated control treatments in this trial were compromised in this trial so the displayed averages are based only on two plots. Suppress, Venue, and Tre-Hold treatments in April neither effectively reduced sucker height nor exhibited adequate sucker control. Rely280 treatments were very effective in this trial, reducing sucker biomass by 95% relative to the 3% Suppress treatment. Shark had only moderate effects on reducing sucker biomass. Tank mixes did not improve on the high control provided by Rely280 alone. No crop injury was observed in this trial.

Table 2: Spring trial results, initial application was on 4/14/25**.**

		Sucker height (in)						Sucker control %						Fresh biomass (g)	
Treatment	**Rate**	**5/14/2025**		**5/19/2025**		**5/29/2025**		**5/14/2025**		**5/19/2025**		**5/29/2025**		**5/29/2025**	
Untreated*		16	abc	20	bcde	21	abcd	0	a	0	a	0	a	73	abc
Hand-Cut		6	ab	8	ab	12	abcd	0	a	0	a	0	a	37	ab
Shark	2 fl oz/A	8	abc	10	abcd	13	abcd	48	cd	40	bc	24	a	46	ab
Venue	4 fl oz/A	7	abc	10	abcd	15	abcd	28	c	15	b	0	a	134	ab
Rely 280	56 fl oz/A	4	ab	6	a	7	a	83	e	70	c	50	b	20	a
Trehold	0.5%	10	abc	14	abcde	18	abcd	10	ab	5	a	0	a	151	ab
Trehold	1%	15	bc	14	abcde	20	abcd	5	a	5	a	0	a	398	bc
Shark+Rely		4	a	5	a	8	ab	89	de	76	c	48	b	25	a
Shark+Trehold		7	abc	8	abc	11	abc	55	cd	50	bc	38	b	78	ab
Rely+Trehold		4	ab	7	ab	9	ab	81	de	73	c	48	b	23	a
Suppress	3%	17	c	22	e	25	d	14	bc	0	a	3	a	518	c
Suppress	6%	13	abc	18	de	24	cd	30	c	25	a	20	a	303	abc
Suppress	9%	14	abc	18	cde	21	bcd	10	ab	5	a	0	a	143	ab

*Untreated control averages are based on only two trees

Summer.

Rely280 was similarly effective in this trial but Suppress and TreHold were more effective in Summer than in the Spring trial. Shark was not as effective in this trial, with sucker height and biomass being similar to the untreated control. Venue was slightly more effective, but still not impressive. The most significant change was that all rates of Suppress exhibited good control of suckers, but 6% and 9% rates were more effective than 3%. This was reflected in sucker biomass measurements at the end of the trial. TreHold did not suppress sucker height through the end of the study, but sucker biomass was greatly reduced, particularly from the 1% rate. Rely treatments averaged 7-27 grams of fresh sucker biomass per tree while Suppress treatments averaged 31 to 81 grams of fresh biomass per tree. Differences between Suppress and Rely in sucker height, control, and biomass were not statistically significant but the numerical differences suggest Suppress provides slightly inferior control, relative to Rely. No crop injury was observed in this trial. Results are shown in Table 3.

Summary and Discussion:

The clear winner in these trials was **Rely280**, and I expect other glufosinate herbicides will perform similarly. The concern with Rely is that trunk injury has been reported from applications of this herbicide in olive orchards, so care ought to be taken when using it. Avoiding contact of this herbicide with tender bark, particularly on younger trees, will reduce the risk of injury. Trunk injury is also often a result of many compounding stresses, so the risk of trunk injury may be reduced if the treated trees are well watered and unstressed.

Suppress also performed well in the summer trial when applied to fresh sucker growth, but not when applied in the spring to suckers grown from the prior season. There is also a possibility that inadequate agitation reduced efficacy in the spring trial, as this can be an issue with Suppress mixtures. Suppress out-performed several common conventional products in the summer trial.

Tre-Hold treatments were effective at reducing sucker biomass and occasionally reducing height when applied to current-season suckers, but not old, hardened growth. The 1% rate was slightly better than the 0.5% rate when applied to current-season growth in the summer, resulting in higher control ratings and a numerical (not statistically significant) reduction in sucker biomass. Tre-hold is a plant growth regulator that does not exhibit typical control symptoms, so a direct comparison is difficult. From biomass and sucker height data it seems that Suppress and Trehold are similarly effective at both spring and summer timings at reducing sucker growth.

Venue was relatively ineffective in both trials. Venue is best used with crop oil concentrate, and I did not add this adjuvant in this trial. Addition of crop oil concentrate may have made a big difference for Venue efficacy. **Shark** was more effective in my spring trial than summer, which was the opposite of what I expected. Both Venue and Shark can also be used for spot treatment, and they were only broadcast in this trial. Spot treatment of suckers, with a spray-to-wet

application type, would certainly result in greater control than was seen here. I think both herbicides deserve a second look.

Generally, I attribute the differences in control between spring and summer timings to the age of the suckers, but it should also be stated that though temperatures and humidity at time of application was similar, the high temperature on the day of each application was across a 15-degree F difference. This difference may have affected control as well.

Table 3: Summer trial results. Initial application was on 6/3/25.

		Sucker height (in)						Sucker control %						Fresh biomass (g)	
Treatment	**Rate**	**7/2/2025**		**7/10/2025**		**7/17/2025**		**7/2/2025**		**7/10/2025**		**7/17/2025**		**7/17/2025**	
Untreated		28	b	29	c	29	d	8	a	5	a	10	a	501	b
Hand-Cut		7	a	7	ab	9	abc	0	a	0	a	0	a	34	a
Shark	2 fl oz/A	17	ab	19	bc	19	bcd	25	bcd	23	ab	15	ab	210	ab
Venue	4 fl oz/A	16	ab	18	abc	19	bcd	14	ab	5	a	3	a	128	a
Rely 280	56 fl oz/A	6	a	6	ab	6	ab	89	efg	88	cde	82	c	7	a
Trehold	0.50%	16	ab	19	bc	19	cd	10	bc	5	a	10	a	107	a
Trehold	1%	16	ab	14	ab	15	abcd	23	bcd	25	bc	38	bc	74	a
Shark+Rely		6	a	4	a	4	a	92	g	84	e	81	c	27	a
Shark+Trehold		14	ab	13	ab	14	abc	50	cde	38	bcd	41	c	102	a
Rely+Trehold		7	a	6	ab	8	abc	91	efg	83	cde	78	c	18	a
Suppress	3%	13	a	11	ab	13	abc	64	def	51	cde	45	c	81	a
Suppress	6%	7	a	10	ab	9	abc	87	fg	70	de	71	c	31	a
Suppress	9%	5	a	8	ab	9	abc	87	fg	70	cde	73	c	43	a

Figure 1: Sucker control 1 month after treatment in the spring trial (2 weeks after application B). The leftmost image is the treatment with the greatest sucker biomass and the succeeding images are the three most effective treatments at reducing sucker biomass.

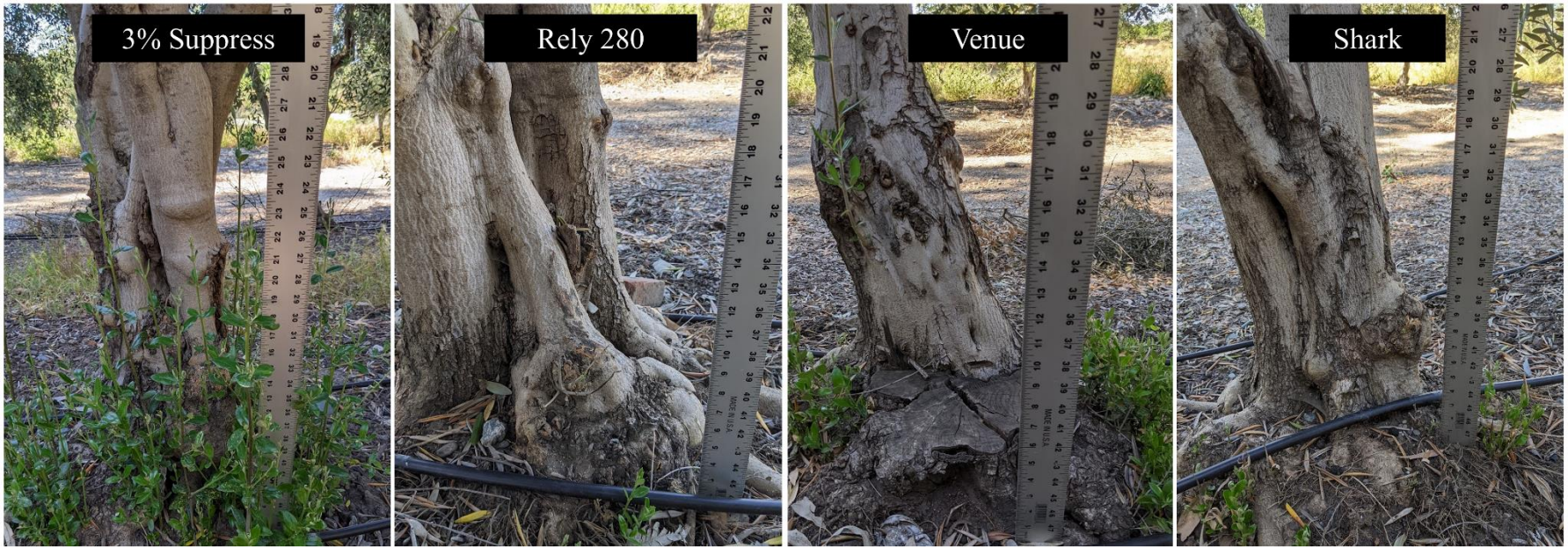

Figure 2: Sucker control 1 month after treatment in the summer trial (2 weeks after application B). The leftmost image is the treatment with the greatest sucker biomass and the succeeding images are the three most effective treatments at reducing sucker biomass.