2006 Chemigation Evaluations with Kerb on Lettuce in the Salinas Valley

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Summary: These trials indicate that Kerb chemigated on to lettuce provides equivalent weed control to ground applications. In three of the four trials the ground application was a mixture of Kerb + Prefar while the chemigated treatments were only Kerb. In spite of this difference the two application techniques still gave equivalent weed control. In one trial Kerb chemigation provided significantly better control of hairy nightshade and higher yield.

Methods: ***Trial No. 1*** Was conducted in a 14.2 acre field of romaine planted on double row 40-inch beds in Gonzales. The field was divided in two and on May 9 the south 6.8 acres of the field were treated by ground rig with 2.0 lbs Kerb/A applied on two 5 inch bands over the seedlines. Anti crustant was applied to the ground application side of the field, but not to the chemigated side. The irrigation water was initiated on May 10 and the north 7.4 acres were chemigated with Kerb on May 15 just before seedling emergence. 3.0 lbs of Kerb were chemigated on this day according to the following schedule: 50 minutes (0.21 inch) of water were run, the Kerb was injected in the next 25 minutes (0.10 inch) and one hour (0.25 inch) of additional water was then applied. Yield was measured by box counts from commercial harvest from each side of the field. The soil type was Chualar sandy loam.

Trial No. 2 Was conducted in a 19.9 acre field of romaine planted on six seedline 80-inch beds west of Chualar. The field was divided into two and on July 2 the field was seeded and the south side was treated at planting by a ground application of 2.0 lbs of Kerb plus 0.5 gallon of Prefar/A applied to the bedtop and shoulders of the beds. The germination water was initiated on July 3 and the north side was chemigated with 2.5 lbs of Kerb/A on July 7. No water was applied prior and Kerb was injected for the first 60 minutes (0.25 inch) of the irrigation and then an additional 60 minutes (0.25 inch) of water was applied following the injection. Yield was measured by box counts from commercial harvest from each side of the field. The soil type was Metz loamy sand and the variety was Caesar's. See tables for evaluation dates.

Trial No. 3 Was conducted in San Juan Valley in San Benito County on an 8.6 acre block of baby lettuce (various varieties). The field was planted on August 11 and the north half was sprayed by ground with 3.0 lbs Kerb + 5 pints of Prefar/A. The germination water was started on August 12. The lettuce was just emerging on August 15 when 3.0 lbs Kerb/A were injected through the sprinkler to the south half of the field. The Kerb was placed into an injection rig with vigorous agitation to keep the material in suspension (an antifoaming agent was added). Sufficient Kerb for 4.28 acres was added to 175 gallons of water in the injection rig and was applied over 55 minutes (0.23 inch). Cleanout water was applied for an additional 45 minutes (0.19 inch). Yield was estimated by harvesting seven replicates of one-square meter areas from the same variety of red leaf lettuce in the two Kerb application treatments.

Trial No. 4 Was conducted on the same ranch as trial no. 3 on an 8.6 acre block of baby lettuce (various varieties). The field was planted on September 14 and the north half was sprayed by ground with 3.0 lbs Kerb + 4 quarts of Prefar/A on September 15. The germination water was started on September 16. The lettuce was just emerging on September 19 when 3.3 lbs Kerb/A were injected through the sprinkler to the south half of the field. The Kerb was injected as described for trial no. 3. The material was injected for 45 minutes (0.19 inch) and the water run for an additional 45 minutes (0.19 inch) to clean out the system.

Results: ***Trial No. 1:*** Both ground applied and chemigated Kerb reduced the number of weeds relative to the untreated check, but there were no statistical differences between the two Kerb application treatments (Table 1). The stand of the chemigated and ground applied Kerb treatments were both significantly less than the untreated check (Table 2) prior to thinning. The chemigated treatment had small plants at thinning and a lower commercial yield; it is unclear if this effect was due to the lack of anticrustant on the chemigated treatment at this site or due to the chemigation itself.

Trial No. 2: Both ground applied and chemigated Kerb reduced the number of weeds relative to the untreated check on two dates, but there were no statistical differences between the two Kerb application treatments (Table 3). The ground applied Kerb treatment had a lower stand count than the untreated. There was low yield in this trial due to *Sclerotinia* infection.

Trial No. 3: Both ground applied and chemigated Kerb reduced the number of weeds relative to the untreated check on the August 30 evaluation date (Table 4). The chemigation treatment had significantly less nightshade (mostly hairy nightshade) than the ground application and higher yield. Both application techniques reduce time to weed.

Trial No. 4: Both ground applied and chemigated Kerb reduced the number of weeds relative to the untreated check on both evaluation dates (Table 5). No yield evaluations were possible in this trial because the ground and chemigated treatments occurred in lettuce varieties with different growth rates.

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Table 1. Trial No. 1. Weed counts on two dates

Treatment	Weeds/1 m^2				
May 25	Nightshade	Shepherds Purse	Sow Thistle	Chenopods	Total Weeds
Chemigation	0.11	0.00	0.07	0.07	0.30
Ground	0.48	0.06	0.05	0.02	0.70
Untreated	1.07	0.02	0.01	0.16	1.34
LSD (0.05)	0.58	n.s.	n.s.	0.20	0.63
May 30					
Chemigation	0.22	0.00	0.06	0.11	0.64
Ground	0.49	0.17	0.17	0.22	1.26
Untreated	1.55	0.43	0.07	0.59	3.04
LSD (0.05)	1.31	0.43	n.s.	0.46	1.65

Table 2. Trial No. 1. Stand and biomass on May 30 and yield of lettuce on July 14.

Treatment	Stand Plants/50 feet	Dry Biomass Grams/30 plants	Yield Boxes/A
Chemigation	471.3	16.6	546
Ground	456.0	19.4	675
Untreated	517.0	----	----
LSD (0.05)	44.0	2.0	----

Table 3. Trial No. 2. Weed counts on two dates, stand count on 28 and yield.

Treatment	Weeds/1 m^2								Stand Count	Yield Boxes/A
July 20	Shepherds Purse	Nettle	Purslane	Sow Thistle	Malva	Night-shade	Other Weeds	Total Weeds		
Chemigation	0.11	0.02	0.05	0.09	0.00	0.00	0.09	0.37	252.3	---
Ground	0.25	0.00	0.02	0.29	0.10	0.12	0.00	0.78	244.6	---
Untreated	1.37	0.80	0.92	0.29	0.07	0.21	0.07	3.72	257.5	---
LSD (0.05)	1.00	0.27	0.45	n.s.	0.10	0.14	n.s.	1.40	8.8	---
July 25										
Chemigation	0.25	0.09	0.37	0.18	0.00	0.03	0.16	1.08	---	410*
Ground	0.50	0.04	0.03	0.34	0.07	0.18	0.06	1.22	---	313*
Untreated	2.08	0.72	3.42	0.29	0.04	0.21	0.13	6.89	---	----
LSD (0.05)	1.71	0.19	2.01	n.s.	n.s.	n.s.	n.s.	3.36	---	----

* - The yield was affected by infection by Sclerotinia minor

Table 4. Trial No. 3. Weed counts on two dates (weeds per 150 ft^2) and time to weed and yield On September 7.

Treatment	Malva	Hairy Nightshade	Total Weeds	Weed Time	Yield
August 22				Hrs/A	Lbs/A
Chemigation	1.40	0.00	1.40	----	----
Ground	0.71	1.28	2.01	----	----
Untreated	2.20	2.09	4.30	----	----
LSD (0.05)	1.47	1.18	2.36	----	----
August 30					
Chemigation	33.9	7.4	42.0	7.0	4,149.8
Ground	14.9	51.1	70.4	10.4	3,530.5
Untreated	68.0	80.8	152.5	20.3	----
LSD (0.05)	39.5	28.0	58.5	8.8	433.6

Table 5. Trial No. 4. Weed counts on two dates (weeds per 150 ft^2)

Treatment September 27	Hairy Nightshade	Shepherds Purse	Sow Thistle	Total Weeds
Chemigation	1.5	0.6	0.5	5.5
Ground	3.0	4.0	0.3	7.6
Untreated	7.0	9.8	4.3	24.5
LSD (0.05)	5.3	9.0	n.s.	12.8
October 4				
Chemigation	1.5	0.5	2.0	4.5
Ground	4.9	5.8	0.3	10.9
Untreated	14.5	25.3	12.3	53.3
LSD (0.05)	8.9	22.5	9.1	31.7