

Drip Germination of Lettuce with Surface-Applied Kerb

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Background: In the summer of 2019 there was an incidence of suspected phytotoxicity caused by a surface application of 4.5 pints of Kerb in a commercial lettuce field that was germinated with drip tape buried 3 inches deep. This incident raised the question, can the movement of Kerb with germination water applied by drip irrigation caused a high concentration of Kerb next to the germinating seed. These trials were conducted to better understand if there might be a safety concern using a high rate of Kerb with drip germination of lettuce. No phytotoxicity was observed in either trial with rates of Kerb up to 7.5 pints/A (2.5 pints/A over the registered rate) on a sandy soil. These results do not completely answer the question whether the movement of Kerb with the drip germination water might result in a high concentration next to the lettuce seed; however, it does give some indication that even high rates of Kerb (7.5 pints/A), can be used safely with drip germinated lettuce.

Methods: Two trial were conducted at the Spence research station on a site with Chualar loam soil. Trial No. 1 was seeded with romaine lettuce on July 31; weed counts and phytotoxicity ratings were made on August 16. Trial No. 2 was seeded on August 16 and weed counts and phytotoxicity ratings were made on August 30. In both trials Kerb was applied post planting and then the drip irrigation was run for 8 hours to wet the soil out to the seedline. Each trial used a randomized complete block design with four replications. The trials were run to the first evaluation and then terminated.

Results: No phytotoxicity was observed in either trial with rates of Kerb up to 7.5 pints/A (2.5 pints/A over the registered rate) on a sandy soil. These results do not completely answer the question whether the movement of Kerb with the drip germination water might result in a high concentration next to the lettuce seed; however, it does give some indication that even high rates of Kerb (7.5 pints/A), can be used safely with drip germinated lettuce. The weed population at this site was high and variable. No significant differences in weed control were observed.

Table 1. Trial No. 1. Phytotoxicity ratings and weed counts (no./2.8 ft²) on August 16

Material	Rate	Phyto	Purslane	Nettle	Shep. purse	Pig weed	Sow thistle	Total weeds
Kerb	2.5 pts	0.0	0.7	1.7	6.0	1.7	0.7	11.3
Kerb	5.0 pts	0.0	0.3	1.0	5.7	1.0	0.7	9.0
Kerb	7.5 pts	0.0	0.0	1.0	2.7	0.0	2.0	5.7
Untreated	---	0.0	2.3	2.7	6.3	1.3	0.0	14.7
Pr>F treat		---	0.0444	0.3814	0.6040	0.3400	0.2958	0.2889
LSD _{0.05}		ns	1.6	ns	ns	ns	ns	ns

Table 2. Trial No. 2. Phytotoxicity ratings and weed counts (no./2.8 ft²) on August 30

Material	Rate	Phyto	Purslane	Nettle	Shep. purse	Pig weed	Sow thistle	Total weeds
Kerb	2.5 pts	0.0	0.3	6.5	0.5	0.5	0.0	8.3
Kerb	5.0 pts	0.0	0.8	7.0	1.8	1.0	0.0	10.5
Kerb	7.5 pts	0.0	0.0	3.8	0.3	1.0	0.0	5.3
Prefar	4.0 qts	0.0	1.5	6.0	2.0	1.0	0.5	11.8
Untreated	---	0.0	0.8	11.5	1.3	1.0	0.0	14.8
Pr>F treat		---	0.1100	0.1295	0.5609	0.9815	0.0625	0.1638
LSD _{0.05}		ns	ns	ns	ns	ns	0.4	ns