

## 2017 RoNeet Timing Trials

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**Background:** Trials were conducted to evaluate the efficacy of delayed incorporation of RoNeet (cycloate) into the soil with sprinkler irrigation. RoNeet is a key preemergent herbicide for use on spinach. There is a 48-hour reentry interval following application. Given the volatility of this herbicide (vapor pressure =  $8.2 \times 10^{-1}$  Pa), there are questions regarding what is the effect on weed control of delaying incorporation of the material into the soil with the first irrigation water for 48 hours. There was also some discussion about a new regulation that would require a 96-hour reentry interval for RoNeet. We conducted two trials to evaluate the impact on weed control of waiting up to 96 hours before incorporating RoNeet sprayed onto the soil surface with the first germination irrigation.

**Methods:** Two trials were conducted at the Spence USDA Research Station. The first trial was conducted in the late spring when weather and soil were cooler and the second trial was conducted in the summer. RoNeet was applied to shaped beds and each plot was one 40-inch wide bed by 10 feet long and randomized in a complete block design with four replications. Treatments were made according to the schedule in Table 1. The first irrigations were applied on the date of the 0 hours treatment. The site had a good population of purslane, nettleleaf goosefoot and hairy nightshade. Applications were made with a CO<sub>2</sub> powered backpack sprayer using a wand with one 8008EVS nozzle making two passes over each plot. The applications were applied in the equivalent of 87 gallons of water per acre. The plots were irrigated with sufficient water to germinate up a flush of weeds. When the weeds were germinated and big enough to recognize, all weeds in a 0.5 m<sup>2</sup> quadrat were counted.

**Results: Trial 1:** The lowest number of weeds occurred in the 3.0 pints/A treatment at 0 hours timing (Table 2). Weed control declined as the number of hours that the herbicide remained on the soil surface increased prior to the first irrigation was applied. The increase in weeds was greater in the 2.0 pint/A treatment. **Trial 2:** Although the data is a bit more erratic, the same pattern observed in trial 1 was observed in trial 2 (Table 3).

These data confirm the suspicion that the longer that RoNeet remains on the soil surface, the lower that level of weed control that can be expected. Increasing the application rate can offset the impact of delayed incorporation of the material into the soil to some degree.

Table 1. Application timing and dates for trials 1 and 2.

Hours before 1 <sup>st</sup> water	Rate pints	Trial 1 Date of app.	Trial 2 Date of app.	Hours before 1 <sup>st</sup> water	Rate pints	Trial 1 Date of app.	Trial 2 Date of app.
96	2.0	May 22	July 3	24	2.0	May 25	July 6
96	2.5	May 22	July 3	24	2.5	May 25	July 6
96	3.0	May 22	July 3	24	3.0	May 25	July 6
48	2.0	May 24	July 5	0	2.0	May 26	July 7
48	2.5	May 24	July 5	0	2.5	May 26	July 7
48	3.0	May 24	July 5	0	3.0	May 26	July 7

Table 2. Trial No. 1. Weed counts (No./0.5 m<sup>2</sup>) on June 14.

Hours before 1st water	Material/A pints	Purslane	Night- shade	Nettleleaf goosefoot	Total weeds
96	2.0	3.0	5.5	1.8	10.3
96	2.5	1.8	1.0	1.5	4.3
96	3.0	0.8	1.3	0.8	2.8
48	2.0	1.8	1.5	2.8	6.0
48	2.5	1.5	1.5	1.3	4.3
48	3.0	0.5	1.0	0.8	2.3
24	2.0	2.8	1.3	1.0	5.0
24	2.5	1.0	0.8	0.5	2.3
24	3.0	0.3	0.5	0.8	1.5
0	2.0	1.3	1.5	1.3	4.0
0	2.5	0.5	0.5	1.0	2.0
0	3.0	0.0	0.3	0.3	0.5
---	untreated	19.0	20.8	1.3	41.0
	Pr>F	<0.0001	<0.0001	0.2557	<0.0001
	LSD <sub>0.05</sub>	4.6	2.4	ns	4.9

Table 3. Trial No. 2. Weed counts (No./0.5 m<sup>2</sup>) on July 28.

Hours before 1st water	Material/A pints	Purslane	Night- shade	Nettleleaf goosefoot	Shepherd's purse	Total weeds
96	2.0	5.0	2.3	0.0	0.0	7.3
96	2.5	6.7	0.0	0.0	0.0	6.7
96	3.0	1.3	1.0	1.3	0.0	3.7
48	2.0	4.7	1.7	0.0	0.0	6.3
48	2.5	4.3	0.3	0.0	0.3	5.0
48	3.0	2.0	0.0	0.3	0.0	2.3
24	2.0	2.7	0.7	0.0	0.0	3.3
24	2.5	2.3	0.0	0.3	0.3	3.0
24	3.0	2.3	0.7	0.0	0.0	3.0
0	2.0	4.3	0.7	0.0	0.0	5.0
0	2.5	1.0	0.0	0.0	0.0	1.0
0	3.0	0.7	0.0	0.0	0.3	1.0
---	untreated	26.0	8.7	0.0	2.3	37.0
	Pr>F	0.0014	<0.0001	<0.0001	0.0115	0.0001
	LSD <sub>0.05</sub>	9.3	3.6	0.4	1.1	11.1