**Vegetable Crop Tolerance to PRE and POST herbicides.**

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**Methods**

Two trials were conducted in 2018 on a silty clay loam soil at the OSU Vegetable Research Farm near Corvallis. Experiment 1 was seeded on 14-Jun and Exp. 2 was seeded on 1-Aug. Crops were seeded in single rows with a Gaspardo vacuum seeder, and herbicides applied in strips perpendicular to the rows. Herbicides were applied with a 6-nozzle boom fixed on 20-inch centers to plots that were 15 ft wide. This provided an approximately 4 ft check plot between each treatment. All herbicides were applied at 20 GPA, at 25 PSI, and with XR-8002 nozzles. Activated charcoal was applied in 2-inch band over the seed row for three treatments: sulfentrazone, linuron, and prometryn (Exp 1 only). Charcoal was applied at an effective per area rate of 300 lb/a mixed in 100 gal water/a. After the PRE herbicides were applied, plots were irrigated with approximately ½ in of water to activate the herbicides. Emergence was evaluated visually as a percent of the check plots, phytotoxicity on a scale of 0 to 10 (10 highest rating or near plant death), and growth as a percent of the check.

**Results and Highlights**

**Ex**p I Highlights for Brassicaceous crops **(**Tables 1 to 3)

* Many brassicas were tolerant to tolpyralate (Shieldex) PRE, but weed control was poor (60%).
* None of the crops survived pendimethalin (Prowl)
* All crops except broccoli tolerated s-metolachlor (Dual Magnum) at the 8 oz/a rate.
* Clomazone (Command) caused excessive phyto on all crops.
* Sulfentrazone (Spartan) severely damaged all crops except radish.
* Sulfentrazone applied over a 2 inch band of activated charcoal applied over the seed row adequately protected all crops and still provided better than 90% weed control.
* Prometryn (Caparol) applied with or without activated charcoal delayed-PRE caused excessive injury.
* Activated charcoal protected seedlings from linuron (Lorox) injury, but not as well as when used with sulfentrazone.

**Exp. II** (Tables 4 to 7)

* Cilantro was tolerant of Dual Magnum
* A 2-inch band of activated charcoal that was applied directly over the seed row adequately protected broccoli, Chinese cabbage, radish, and cilantro from sulfentrazone.
* Cucumber and squash were tolerant of bicyclopyrone, tolpyralate, and tembotrione.
* Bensulide (Prefar) killed chard.
* Ethalfluralin (Sonalan) had no effect on cilantro or radish at both rates.

**Table. 1.** Brassicaceous vegetable crop tolerance to PRE and POST herbicides on 2-Jul (18 DAT), Corvallis, 2018.

| **Treatment** | | **Product rate** | | **AI rate** | **Timing** | **Emerge** | **Phyto** | **Growth rating** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | *#/A* | | *Lb ai/A* |  | *% of check* | *0-10* | *% of the check* |
| **Arugula (serrated leaf)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 37 | 0.3 | 12 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 83 | 7.0 | 18 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 97 | 1.7 | 83 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 48 | 0.0 | 3 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 93 | 2.3 | 23 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 90 | 0.7 | 87 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 97 | 0.0 | 100 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 77 | 1.0 | 28 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 100 | 0.0 | 97 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 60 | 1.0 | 17 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 100 | 0.3 | 90 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 1.0 | 83 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 100 | 10.0 | 0 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 7 | 1.0 | 21 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 0 | 0.0 | 5 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 97 | 4.7 | 60 |
| **17** | Oxyfluorfen | 2 | oz | 0.06 | POST 4 lf | 80 | 7.3 | 57 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 93 | 8.3 | 17 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 90 | 0.7 | 73 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.0 | 93 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 97 | 1.0 | 73 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 100 | 0.0 | 90 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 97 | 2.0 | 57 |
| **24** | Check |  |  |  |  | 100 | 0.3 | 100 |
| **Broccoli (Var. Cascadia)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 42 | 0.3 | 22 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 100 | 5.0 | 67 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 48 | 0.0 | 52 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 22 | 0.0 | 3 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 0 | 10.0 | 0 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 78 | 0.0 | 67 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 97 | 0.0 | 93 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 37 | 0.0 | 20 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 87 | 0.0 | 100 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 60 | 1.3 | 43 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 63 | 0.0 | 53 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 90 | 0.3 | 67 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 63 | 9.3 | 3 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 17 | 2.0 | 8 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 20 | 2.0 | 3 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 90 | 4.3 | 63 |
| **17** | Oxyfluorfen | 2 | oz | 0.06 | POST 4 lf | 90 | 2.7 | 83 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 60 | 6.7 | 43 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 60 | 0.7 | 93 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 85 | 0.0 | 100 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 90 | 0.0 | 75 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 87 | 0.0 | 97 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 75 | 1.5 | 30 |
| **24** | Check |  |  |  |  | 97 | 0.3 | 100 |
| **Chinese cabbage (var. CCF20)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 20 | 0.0 | 35 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 93 | 3.7 | 87 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 93 | 0.0 | 100 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 23 | 5.0 | 3 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 0 | 10.0 | 0 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 97 | 0.0 | 80 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 97 | 0.0 | 97 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 37 | 2.0 | 13 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 100 | 0.0 | 93 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 50 | 0.0 | 30 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 93 | 0.0 | 83 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 1.3 | 90 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 100 | 9.7 | 2 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 83 | 6.7 | 40 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 50 | 1.0 | 22 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 87 | 4.7 | 38 |
| **17** | Oxyfluorfen | 2 | oz | 0.06 | POST 4 lf | 83 | 8.0 | 35 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 100 | 7.7 | 27 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 100 | 5.0 | 47 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.0 | 100 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 97 | 3.0 | 82 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 97 | 0.0 | 100 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 87 | 2.3 | 67 |
| **24** | Check |  |  |  |  | 93 | 0.7 | 97 |
|  |  |  |  |  |  |  |  |  |
| **Chinese cabbage (var CCF 35)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 60 | 2.7 | 15 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 90 | 2.0 | 80 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 100 | 0.0 | 100 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 43 | 4.3 | 10 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 7 | 0.0 | 3 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 97 | 0.0 | 87 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 97 | 0.0 | 100 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 63 | 0.0 | 23 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 97 | 0.0 | 100 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 47 | 0.0 | 30 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 90 | 0.0 | 80 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 0.7 | 93 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 97 | 9.0 | 5 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 100 | 4.0 | 28 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 50 | 0.5 | 25 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 80 | 3.0 | 70 |
| **17** | Oxyfluorfen | 2 | oz | 0.06 | POST 4 lf | 83 | 7.7 | 37 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 97 | 7.3 | 28 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 97 | 4.3 | 53 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.0 | 100 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 100 | 2.3 | 77 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 93 | 0.0 | 100 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 93 | 2.0 | 78 |
| **24** | Check |  |  |  |  | 100 | 0.7 | 97 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Indian Mustard** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 0 | 0.0 | 0 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 100 | 5.7 | 42 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 97 | 0.0 | 87 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 13 | 0.0 | 5 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 90 | 3.3 | 10 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 100 | 1.0 | 80 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 100 | 0.0 | 93 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 97 | 1.0 | 47 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 100 | 0.0 | 100 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 80 | 2.0 | 37 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 100 | 0.0 | 97 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 1.3 | 87 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 100 | 10.0 | 0 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 80 | 1.0 | 38 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 97 | 2.0 | 12 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 100 | 5.0 | 70 |
| **17** | Oxyflourfen | 2 | oz | 0.06 | POST 4 lf | 100 | 7.0 | 63 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 100 | 8.0 | 32 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 100 | 5.7 | 47 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.3 | 97 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 100 | 3.0 | 70 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 100 | 0.7 | 97 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 100 | 2.0 | 72 |
| **24** | Check |  |  |  |  | 100 | 1.0 | 97 |
|  |  |  |  |  |  |  |  |  |
| **Kale (var Red 40)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 2 | 5.0 | 2 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 100 | 3.3 | 70 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 93 | 0.0 | 87 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 78 | 0.0 | 27 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 5 | 4.5 | 2 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 93 | 0.0 | 73 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 97 | 0.0 | 97 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 57 | 0.0 | 37 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 97 | 0.0 | 87 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 67 | 0.3 | 62 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 100 | 0.0 | 97 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 0.0 | 93 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 100 | 10.0 | 0 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 70 | 1.0 | 32 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 33 | 1.0 | 3 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 100 | 4.0 | 68 |
| **17** | Oxyflourfen | 2 | oz | 0.06 | POST 4 lf | 100 | 5.0 | 63 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 100 | 8.7 | 12 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 100 | 0.0 | 95 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 95 | 0.0 | 95 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 100 | 0.3 | 87 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 100 | 0.0 | 100 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 100 | 1.0 | 60 |
| **24** | Check |  |  |  |  | 97 | 0.3 | 100 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Pak choi (var. 4357)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 2 | 0.0 | 2 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 83 | 5.0 | 40 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 80 | 0.0 | 93 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 68 | 3.3 | 8 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 8 | 5.0 | 2 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 80 | 1.7 | 97 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 77 | 0.0 | 73 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 47 | 0.0 | 13 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 93 | 0.0 | 93 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 35 | 0.5 | 17 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 97 | 0.0 | 97 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 93 | 0.0 | 90 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 93 | 9.7 | 2 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 12 | 0.0 | 18 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 12 | 1.0 | 2 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 77 | 2.7 | 53 |
| **17** | Oxyflourfen | 2 | oz | 0.06 | POST 4 lf | 73 | 6.7 | 43 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 87 | 8.0 | 22 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 90 | 2.7 | 63 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 87 | 0.0 | 97 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 90 | 1.3 | 87 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 87 | 0.3 | 93 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 90 | 1.0 | 73 |
| **24** | Check |  |  |  |  | 93 | 0.3 | 100 |
| **Red Radish (var 401EZ)** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 100 | 1.7 | 87 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 100 | 8.0 | 23 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 100 | 1.7 | 97 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 100 | 0.7 | 93 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 97 | 1.7 | 58 |
| **6** | Ethalfluralin | 1.5 | pts | 0.56 | PRE | 100 | 0.7 | 93 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 100 | 0.0 | 100 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 100 | 0.3 | 83 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 100 | 0.3 | 93 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 100 | 1.0 | 90 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 100 | 0.0 | 100 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 0.0 | 100 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 100 | 5.7 | 32 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 100 | 0.7 | 90 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 100 | 2.0 | 50 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 100 | 3.0 | 80 |
| **17** | Oxyflourfen | 2 | oz | 0.06 | POST 4 lf | 97 | 7.3 | 70 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 97 | 7.7 | 30 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 100 | 1.0 | 97 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.0 | 100 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 100 | 0.0 | 100 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 100 | 0.3 | 100 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 100 | 0.0 | 93 |
| **24** | Check |  |  |  |  | 100 | 0.3 | 100 |
|  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Rutabaga** | |  |  |  |  |  |  |  |
| **1** | Bicyclopyrone | 0.9 | oz | 0.01 | PRE | 3 | 2.5 | 3 |
| **2** | Clomazone | 0.4 | pt | 0.15 | PRE | 100 | 2.7 | 83 |
| **3** | S-metolachlor | 8 | oz | 0.49 | PRE | 97 | 0.0 | 93 |
| **4** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE | 93 | 0.0 | 12 |
| **5** | Pyroxasulfone | 0.75 | oz | 0.04 | PRE | 20 | 3.3 | 3 |
| **6** | Ethalfluralin, | 1.5 | pts | 0.56 | PRE | 97 | 0.0 | 90 |
| **7** | Tolpyralate | 0.50 | oz | 0.01 | PRE | 100 | 0.0 | 100 |
| **8** | Sulfentrazone | 3 | oz | 0.09 | PRE | 55 | 0.0 | 17 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 0.09 | PRE | 100 | 0.0 | 90 |
| **10** | Linuron | 8 | oz | 0.25 | PRE | 90 | 1.0 | 57 |
| **11** | Linuron + activated charcoal | 8 | oz | 0.25 | PRE | 90 | 0.0 | 93 |
| **12** | Dimethenamid-P | 0.5 | pt | 0.38 | PRE Coty | 100 | 0.0 | 90 |
| **13** | Pendimethalin | 2 | pt | 0.95 | PRE-delayed | 93 | 9.0 | 3 |
| **14** | Prometryn | 1 | pt | 0.50 | PRE-delayed | 63 | 1.0 | 28 |
| **15** | Prometryn + activated charcoal | 8 | oz | 0.25 | PRE-delayed | 60 | 1.0 | 7 |
| **16** | Fluroxypyr | 4 | oz | 0.09 | POST 2 f | 100 | 4.0 | 70 |
| **17** | Oxyflourfen | 2 | oz | 0.06 | POST 4 lf | 100 | 5.7 | 72 |
| **18** | Pyridate | 15.04 | oz | 0.47 | POST 2 lf | 87 | 8.3 | 15 |
| **19** | 2,4-DB | 0.8 | pt | 0.18 | POST 2 lf | 100 | 5.0 | 43 |
| **20** | Clopyralid | 4 | oz | 0.06 | POST 4 lf | 100 | 0.0 | 100 |
| **21** | Clethodim | 16 | oz | 0.35 | POST 4 lf | 100 | 1.7 | 73 |
| **22** | Quinclorac | 12 | oz | 0.36 | POST 4 lf | 97 | 0.0 | 100 |
| **23** | Asulam | 1.5 | pts | 0.63 | POST 4 lf | 97 | 1.7 | 57 |
| **24** | Check |  |  |  |  | 100 | 0.3 | 100 |

**Table 2.** Weed control ratings in Exp 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Herbicide | Product rate | | Hairy nightshade | Pigweed |
|  |  | *#/acre* | | *---------%--------* | |
| **1** | Bicyclopyrone | 0.9 | oz | 93 | 92 |
| **2** | Clomazone | 0.4 | pt | 84 | 98 |
| **3** | S-metolachlor | 8 | oz | 89 | 95 |
| **4** | Dimethenamid-P | 0.5 | pt | 100 | 100 |
| **5** | Pyroxasulfone | 0.75 | oz | 98 | 98 |
| **6** | Ethalfluralin, | 1.5 | pts | 65 | 93 |
| **7** | Tolpyralate | 0.50 | oz | 43 | 62 |
| **8** | Sulfentrazone | 3 | oz | 99 | 100 |
| **9** | Sulfentrazone+ activated charcoal | 3 | oz | 92 | 92 |
| **10** | Linuron | 8 | oz | 55 | 55 |
| **11** | Linuron + activated charcoal | 8 | oz | 63 | 63 |
| **12** | Dimethenamid-P | 0.5 | pt | 40 | 42 |
| **13** | Pendimethalin | 2 | pt | 100 | 100 |
| **14** | Prometryn | 1 | pt | 97 | 100 |
| **15** | Prometryn + activated charcoal | 8 | oz | 94 | 94 |
| **16** | Fluroxypyr | 4 | oz | 70 | 68 |
| **17** | Oxyflourfen | 2 | oz | 67 | 93 |
| **18** | Pyridate | 15.04 | oz | 98 | 27 |
| **19** | 2,4-DB | 0.8 | pt | 40 | 13 |
| **20** | Clopyralid | 4 | oz | 17 | 3 |
| **21** | Clethodim | 16 | oz | 0 | 0 |
| **22** | Quinclorac | 12 | oz | 7 | 0 |
| **23** | Asulam | 1.5 | pts | 37 | 7 |
| **24** | Check | 0.9 | oz | 0 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 3.** Herbicide application data for Experiment 1. | | | |
|  | 1 | 2 | 3 |
| Date | Friday, June 15, 2018 | Monday, June 18, 2018 | Sunday, June 24, 2018 |
| Crop stage | PRE | Germinated |  |
| Herbicide/App. timing | PRE | Delayed-Pre | Outlook Coty |
| Start/end time | 11-12:15 | 7-7:45 | 6:45-7 AM |
| Air temp/soil temp (2")/surface | 67/75/85 | 68/68/68 | 65/65/68 |
| Rel humidity | 57% | 74% | 70% |
| Wind direction/velocity | NE 2-4 | S 1-3 | 0 |
| Cloud cover | 50% | 0% | 0% |
| Soil moisture | Dry | Moist from irrigation | Moist from irrigation |
| Plant moisture | - |  | Dew |
| Sprayer/PSI | BP/25 PSI | BP/25 PSI | BP/25 PSI |
| Mix size | 2100 3 plots | 2100 3 plots | 2100 3 plots |
| Gallons H20/acre | 20 | 20 | 20 |
| Nozzle type | 6-XR8002 | 6-XR8002 | 6-XR8002 |
| Nozzle spacing and height | 20/22 | 20/22 | 20/22 |
| Soil inc. method/implement | Irrigation on 6-15 immediately after application | | - |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4.** Vegetable crop emergence after PRE and POST herbicides (Exp 2), 4 WAP, Corvallis, 2018. | | | | | | | | | | | | | | | | | | |
|  | **Herbicide** | **Timing** | **Rate** |  | **Vegetable Crop** | | | | | | | | | | | | |
|  |  |  |  |  | Broccoli | Chinese cabbage | Radish |  | Cilantro | Carrot |  | Chard |  | Cucumber | Squash |  | Spinach | | |
|  |  |  |  |  | *---------------------------------------% emergence compared to untreated plots -------------------------------------------* | | | | | | | | | | | | |
| **1** | Bicyclopyrone | PRE | 0.0114 |  | 97 | 80 | 100 |  | 90 | 80 |  | 18 |  | 70 | 50 |  | 17 | | |
| **2** | Tolpyralate | PRE | 0.013 |  | 87 | 90 | 100 |  | 93 | 83 |  | 17 |  | 100 | 100 |  | 83 | | |
| **3** | Tembotrione | PRE | 0.013 |  | 97 | 93 | 100 |  | 100 | 67 |  | 52 |  | 100 | 100 |  | 60 | | |
| **4** | Topramezone | PRE | 0.011 |  | 87 | 97 | 100 |  | 83 | 97 |  | 70 |  | 100 | 100 |  | 50 | | |
| **5** | Clomazone 3 ME | PRE | 0.15 |  | 70 | 97 | 87 |  | 93 | 100 |  | 75 |  | 97 | 100 |  | 100 | | |
| **6** | S-metolachlor | PRE | 0.4875 |  | 100 | 100 | 90 |  | 93 | 93 |  | 90 |  | 100 | 100 |  | 97 | | |
| **7** | Dimethenamid-P | PRE | 0.375 |  | 67 | 63 | 100 |  | 58 | 37 |  | 77 |  | 83 | 100 |  | 90 | | |
| **8** | Dimethenamid-P | EPOST-Coty | 0.375 |  | 93 | 87 | 100 |  | 63 | 25 |  | 75 |  | 100 | 100 |  | 83 | | |
| **9** | Ethalfluralin | PRE | 0.5625 |  | 97 | 100 | 97 |  | 100 | 100 |  | 50 |  | 100 | 100 |  | 93 | | |
| **10** | Ethalfluralin | PRE | 1.125 |  | 67 | 77 | 100 |  | 83 | 90 |  | 20 |  | 100 | 83 |  | 90 | | |
| **11** | Sulfentrazone | PRE | 0.0938 |  | 93 | 83 | 97 |  | 23 | 97 |  | 0 |  | 73 | 100 |  | 2 | | |
| **12** | *Sulf + Act charcoal* | PRE | 0.0938 |  | 93 | 93 | 100 |  | 70 | 93 |  | 80 |  | 100 | 100 |  | 100 | | |
| **13** | Linuron | PRE | 0.250 |  | 37 | 73 | 70 |  | 93 | 80 |  | 45 |  | 100 | 55 |  | 90 | | |
| **14** | *Linuron + Act charcoal* | PRE | 0.250 |  | 93 | 87 | 100 |  | 93 | 100 |  | 100 |  | 100 | 100 |  | 93 | | |
| **15** | Fluroxypyr | POST | 0.088 |  | 67 | 80 | 100 |  | 100 | 80 |  | 67 |  | 100 | 100 |  | 100 | | |
| **16** | Oxyfluorfen | POST | 0.125 |  | 37 | 70 | 97 |  | 93 | 90 |  | 73 |  | 93 | 100 |  | 63 | | |
| **17** | Asulox | POST | 0.6263 |  | 100 | 100 | 100 |  | 80 | 100 |  | 73 |  | 100 | 100 |  | 97 | | |
| **18** | 2,4-DB | POST | 0.175 |  | 100 | 80 | 97 |  | 93 | 100 |  | 60 |  | 100 | 100 |  | 100 | | |
| **19** | Clopyralid | POST | 0.063 |  | 83 | 97 | 97 |  | 93 | 100 |  | 75 |  | 100 | 100 |  | 93 | | |
| **20** | Clethodim | POST | 0.350 |  | 100 | 60 | 100 |  | 100 | 90 |  | 83 |  | 100 | 100 |  | 97 | | |
| **21** | Quinclorac | POST | 0.356 |  | 100 | 77 | 93 |  | 90 | 100 |  | 100 |  | 100 | 80 |  | 97 | | |
| **22** | Ethametsulfuron-methyl | POST | 0.0178 |  | 67 | 65 | 87 |  | 77 | 70 |  | 47 |  | 83 | 100 |  | 83 | | |
| **23** | Bensulide | PRE | 1 |  | 90 | 87 | 100 |  | 97 | 87 |  | 0 |  | 100 | 100 |  | 67 | | |
| **24** | Fomesafen | PRE | 0.125 |  | 0 | 0 | 0 |  | 3 | 53 |  | 3 |  | 100 | 87 |  | 47 | | |
|  | FPLSD (0.05) |  |  |  | 37 | 10 | 31 |  | 31 | 33 |  | 53 |  | 19 | 53 |  | 37 | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 5.** Vegetable crop tolerance **growth response** to PRE and POST herbicides (Exp 2), 4 WAP, Corvallis, 2018. | | | | | | | | | | | | | | | | | |
|  | **Herbicide** | **Timing** | **Rate** |  | **Vegetable Crop** | | | | | | | | | | | | |
|  |  |  |  |  | Broccoli | Chinese cabbage | Radish |  | Cilantro | Carrot |  | Chard |  | Cucumber | Squash |  | Spinach | |
|  |  |  |  |  | *----------------------------------------------------- % of normal growth ----------------------------------------------------------* | | | | | | | | | | | | |
| **1** | Bicyclopyrone | PRE | 0.0114 |  | 87 | 80 | 100 |  | 70 | 43 |  | 83 |  | 70 | 50 |  | 18 | |
| **2** | Tolpyralate | PRE | 0.013 |  | 80 | 77 | 97 |  | 83 | 77 |  | 8 |  | 100 | 100 |  | 57 | |
| **3** | Tembotrione | PRE | 0.013 |  | 100 | 100 | 100 |  | 67 | 87 |  | 63 |  | 100 | 90 |  | 33 | |
| **4** | Topramezone | PRE | 0.011 |  | 87 | 93 | 100 |  | 90 | 80 |  | 93 |  | 100 | 100 |  | 47 | |
| **5** | Clomazone 3 ME | PRE | 0.15 |  | 77 | 90 | 30 |  | 80 | 83 |  | 45 |  | 83 | 85 |  | 83 | |
| **6** | S-metolachlor | PRE | 0.4875 |  | 87 | 97 | 93 |  | 87 | 90 |  | 90 |  | 100 | 90 |  | 93 | |
| **7** | Dimethenamid-P | PRE | 0.375 |  | 53 | 47 | 93 |  | 60 | 33 |  | 87 |  | 67 | 87 |  | 47 | |
| **8** | Dimethenamid-P | EPOST-Coty | 0.375 |  | 100 | 67 | 93 |  | 33 | 4 |  | 75 |  | 70 | 85 |  | 47 | |
| **9** | Ethalfluralin | PRE | 0.5625 |  | 87 | 93 | 100 |  | 100 | 100 |  | 35 |  | 77 | 100 |  | 67 | |
| **10** | Ethalfluralin | PRE | 1.125 |  | 80 | 80 | 97 |  | 87 | 90 |  | 30 |  | 100 | 83 |  | 77 | |
| **11** | Sulfentrazone | PRE | 0.0938 |  | 67 | 70 | 90 |  | 43 | 70 |  | 0 |  | 20 | 90 |  | 7 | |
| **12** | *Sulf + Act charcoal* | PRE | 0.0938 |  | 83 | 93 | 93 |  | 97 | 90 |  | 60 |  | 83 | 80 |  | 73 | |
| **13** | Linuron | PRE | 0.250 |  | 53 | 53 | 60 |  | 87 | 83 |  | 60 |  | 80 | 65 |  | 73 | |
| **14** | *Linuron + Act charcoal* | PRE | 0.250 |  | 100 | 93 | 93 |  | 87 | 77 |  | 100 |  | 100 | 90 |  | 97 | |
| **15** | Fluroxypyr | POST | 0.088 |  | 63 | 63 | 90 |  | 77 | 70 |  | 60 |  | 70 | 80 |  | 63 | |
| **16** | Oxyfluorfen | POST | 0.125 |  | 33 | 17 | 37 |  | 50 | 70 |  | 5 |  | 27 | 33 |  | 7 | |
| **17** | Asulox | POST | 0.6263 |  | 63 | 63 | 93 |  | 77 | 90 |  | 67 |  | 100 | 80 |  | 70 | |
| **18** | 2,4-DB | POST | 0.175 |  | 97 | 57 | 83 |  | 83 | 100 |  | 55 |  | 87 | 80 |  | 67 | |
| **19** | Clopyralid | POST | 0.063 |  | 100 | 87 | 93 |  | 37 | 43 |  | 90 |  | 80 | 93 |  | 77 | |
| **20** | Clethodim | POST | 0.350 |  | 97 | 83 | 100 |  | 87 | 87 |  | 83 |  | 60 | 100 |  | 73 | |
| **21** | Quinclorac | POST | 0.356 |  | 83 | 67 | 97 |  | 43 | 57 |  | 100 |  | 83 | 100 |  | 70 | |
| **22** | Ethametsulfuron-methyl | POST | 0.0178 |  | 60 | 58 | 53 |  | 47 | 60 |  | 17 |  | 40 | 25 |  | 30 | |
| **23** | Bensulide | PRE | 1 |  | 90 | 83 | 100 |  | 90 | 93 |  | 0 |  | 90 | 83 |  | 53 | |
| **24** | Fomesafen | PRE | 0.125 |  | 0 | 0 | 0 |  | 7 | 50 |  | 15 |  | 73 | 83 |  | 23 | |
|  | FPLSD (0.05) |  |  |  | 41 | 34 | 19 |  | 34 | 41 |  | 40 |  | 29 | 51 |  | 37 | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 6.** Vegetable crop phyto after PRE and POST herbicides (Exp 2), 4 WAP, Corvallis, 2018. | | | | | | | | | | | | | | | | | | |
|  | **Herbicide** | **Timing** | **Rate** |  | **Vegetable Crop** | | | | | | | | | | | | |
|  |  |  |  |  | Broccoli | Chinese cabbage | Radish |  | Cilantro | Carrot |  | Chard |  | Cucumber | Squash |  | Spinach | |
|  |  |  |  |  | *-----------------------------------------------------phyto 0-10 (dead) --------------------------------------------* | | | | | | | | | | | | |
| **1** | Bicyclopyrone | PRE | 0.0114 |  | 0.0 | 0.0 | 0.0 |  | 0.7 | 3.3 |  | 0.0 |  | 0.0 | 0.0 |  | 4.0 | |
| **2** | Tolpyralate | PRE | 0.013 |  | 0.7 | 0.0 | 0.7 |  | 0.0 | 0.0 |  | 0.0 |  | 0.0 | 0.0 |  | 0.7 | |
| **3** | Tembotrione | PRE | 0.013 |  | 0.0 | 0.0 | 0.0 |  | 1.7 | 1.0 |  | 0.7 |  | 0.0 | 0.0 |  | 2.5 | |
| **4** | Topramezone | PRE | 0.011 |  | 0.0 | 0.0 | 0.0 |  | 0.3 | 0.3 |  | 0.0 |  | 0.0 | 0.0 |  | 0.0 | |
| **5** | Clomazone 3 ME | PRE | 0.15 |  | 1.7 | 0.3 | 7.3 |  | 0.3 | 2.3 |  | 6.5 |  | 0.0 | 0.0 |  | 0.0 | |
| **6** | S-metolachlor | PRE | 0.4875 |  | 0.7 | 0.0 | 0.3 |  | 0.3 | 0.0 |  | 0.0 |  | 0.0 | 0.0 |  | 0.0 | |
| **7** | Dimethenamid-P | PRE | 0.375 |  | 0.0 | 0.0 | 0.3 |  | 0.0 | 0.3 |  | 0.3 |  | 0.0 | 0.0 |  | 0.0 | |
| **8** | Dimethenamid-P | EPOST-Coty | 0.375 |  | 0.0 | 0.0 | 0.0 |  | 0.7 | 1.0 |  | 0.0 |  | 0.3 | 0.0 |  | 0.3 | |
| **9** | Ethalfluralin | PRE | 0.5625 |  | 0.0 | 0.0 | 0.3 |  | 0.0 | 0.0 |  | 0.0 |  | 0.3 | 0.0 |  | 0.0 | |
| **10** | Ethalfluralin | PRE | 1.125 |  | 0.0 | 0.3 | 0.0 |  | 0.7 | 0.3 |  | 1.7 |  | 0.0 | 0.0 |  | 0.0 | |
| **11** | Sulfentrazone | PRE | 0.0938 |  | 0.0 | 0.0 | 0.3 |  | 4.0 | 0.3 |  | -a |  | 0.0 | 0.0 |  | 2.0 | |
| **12** | *Sulf + Act charcoal* | PRE | 0.0938 |  | 0.0 | 0.0 | 0.0 |  | 0.0 | 0.0 |  | 4.0 |  | 1.3 | 0.0 |  | 1.3 | |
| **13** | Linuron | PRE | 0.250 |  | 0.0 | 0.0 | 0.7 |  | 0.3 | 0.3 |  | 0.5 |  | 0.0 | 3.5 |  | 0.0 | |
| **14** | *Linuron + Act charcoal* | PRE | 0.250 |  | 0.0 | 0.0 | 0.0 |  | 1.3 | 1.0 |  | 0.0 |  | 0.0 | 1.0 |  | 0.0 | |
| **15** | Fluroxypyr | POST | 0.088 |  | 4.0 | 1.7 | 1.3 |  | 5.3 | 5.3 |  | 8.0 |  | 4.0 | 1.5 |  | 3.3 | |
| **16** | Oxyfluorfen | POST | 0.125 |  | 5.7 | 8.3 | 9.0 |  | 6.7 | 1.7 |  | 9.0 |  | 8.0 | 8.0 |  | 9.0 | |
| **17** | Asulox | POST | 0.6263 |  | 2.3 | 3.0 | 0.0 |  | 1.7 | 0.3 |  | 4.3 |  | 0.0 | 4.0 |  | 1.3 | |
| **18** | 2,4-DB | POST | 0.175 |  | 0.0 | 4.3 | 0.3 |  | 2.3 | 0.0 |  | 6.5 |  | 3.0 | 1.0 |  | 3.0 | |
| **19** | Clopyralid | POST | 0.063 |  | 0.0 | 0.0 | 0.0 |  | 7.7 | 7.0 |  | 1.5 |  | 4.7 | 6.0 |  | 1.7 | |
| **20** | Clethodim | POST | 0.350 |  | 0.7 | 0.0 | 0.3 |  | 0.7 | 0.0 |  | 0.7 |  | 3.3 | 0.0 |  | 0.7 | |
| **21** | Quinclorac | POST | 0.356 |  | 0.3 | 1.7 | 0.3 |  | 6.3 | 5.7 |  | 0.0 |  | 2.7 | 1.0 |  | 0.3 | |
| **22** | Ethametsulfuron-methyl | POST | 0.0178 |  | 0.0 | 0.3 | 5.0 |  | 4.3 | 2.3 |  | 8.5 |  | 6.7 | 5.3 |  | 7.7 | |
| **23** | Bensulide | PRE | 1 |  | 0.0 | 0.0 | 0.0 |  | 0.3 | 0.0 |  | 0 |  | 0.7 | 0.0 |  | 0.0 | |
| **24** | Fomesafen | PRE | 0.125 |  | - | - | - |  | 1.0 | 3.0 |  | 1.0 |  | 0 | 1.0 |  | 2.5 | |
|  | FPLSD (0.05) |  |  |  | 1.2 | 1.0 | 1.2 |  | 2.0 | 2.5 |  | 2.6 |  | 1.5 | 3.0 |  | 2.8 | |

a **-** no observations because no seedlings emerged.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 5.** Herbicide site and application data for Exp 2. | | | |
| **Soil test** | silt loam; pH 6.3, OM (LOI) 1%, CEC 18.5 meq 100 gr soil; | | |
|  |  |  |  |
| **Herbicides applied** | 1 | 2 | 3 |
| Date | Wednesday, August 1, 2018 | Wednesday, August 8, 2018 | Wednesday, August 22, 2018 |
| Weeds and growth stage |  |  |  |
| Ch cab | - | 100% coty | 5-6 lf |
| Kale | - | none | 2-3 lf |
| Radish | - | 100% coty | 5-6 lf |
| Swiss chard | - | 50% coty | 3-4 lf |
| Squash | - | very few emerged | 2-3 lf |
| Cucumber | - | 0% | 2-3 lf |
| Spinach Hy 'W' | - | 0% | 4 lf |
| Coriander | - | 0-10 % coty | 2 lf |
| Carrot | - | germinated | 1 lf |
|  |  |  |  |
| Herbicide/treatment | PRE | Coty PRE Outlook | All post |
| Application timing |  |  |  |
| Start/end time | 10 am to 1:30 pm | 8:45-9 AM | 9:30-10:30 |
| Air temp/soil temp (2")/soil 1" | 85/84/101 | 74/70/73 | 81/76/86 |
| Rel humidity | 37% | 58% | 42% |
| Wind direction/velocity | SW 1.8 | S 0-0.3 | 0 |
| Cloud cover | 0% | 25%, smoky | 25% smoky |
| Soil moisture | Dry | Damp | Mostly dry, some damp areas |
| Plant moisture | - | Dew | Dry |
| Sprayer/PSI | BP 20 | BP 20 | BP 25 |
| Mix size (mls) | 2100 | 2100 | 2100 |
| Gallons H20/acre | 20 | 20 | 20 |
| Nozzle type | 6-XR8002 | 6-XR8002 | 6-XR8002 |
| Nozzle spacing and height | 24/20 | 24/20 | 24/20 |
| Soil inc. method/implement | irrigation 1 hr on 8-2 | irrigation 1 hr on 8-9 | irrigation 2 hr on 8-23 |