

Investigation of New Herbicide Options for Processing Onions

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Herbicide Update

- EPA banned Dacthal for all uses ☹️
- Weeds are the most problematic pest for most onion growers
 - What are herbicide alternatives to Dacthal?
 - Are there ways we can make current herbicides work better?
 - Preemergent herbicides vs Postemergent herbicides



Current alternatives to Dacthal

- Pendimethalin (Prowl H20)
- Ethofumesate (Ethotron SC)
- Trifluralin (Drexel Trifluralin)
- Ethalfluralin (Sonalan HFP)
 - Glyphosate (before emergence)
 - Oxyfluorfen (1.5 leaf)
 - Bromoxynil (2 leaf)
 - Flumioxazin (3 leaf)
 - Dimethenamid-P (2 leaf)
 - S-metolachlor (2-leaf)
 - Pyroxasulfone (2-leaf)
 - Grass herbicides



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2023 Weed Research

Trt #	Onion Preemergent herbicide trial treatments	timing
1	Untreated (normal post-program)	postplant
2	Prowl H2O at 1.5 pt/A	postplant
3	Prowl H2O at 2 pt/A	postplant
4	Prowl H2O at 3 pt/A	postplant
5	Dacthal 3 pt/A	postplant
6	Prowl H2O at 1.5 pt/A + Dacthal at 3 pt/A	postplant
7	Sonalan at 2 pt/A	postplant
8	Zidua 2.75 fl oz/A	postplant
9	Chateau 2 oz/A	postplant

- Herbicide applied immediately after planting before 1st irrigation
- Herbicides were applied over carbon bands sprayed over seed row or bare soil
- Grower field with sandy loam soil in cooperation with Macy's flying service

Are there safeners we can use with herbicides with marginal crop safety?

- Carbon banding
 - Used in grass seed industry
 - Apply after planting but before herbicide application and water incorporation
 - Many downsides including:
 - Susceptible to wind erosion before irrigation
 - Bands need to be narrow as herbicides will be tied up when they contact the carbon
 - Do carbon bands influence pesticides applied later in the season





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		3-leaf stage onion stand plants/ 10 ft bed	1-leaf stage	5-leaf stage
			Total weeds	Onion vigor
Post-Plant Pre herbicide treatments	Carbon band		#/10ft bed	1-10 10=best
Untreated (normal post-program)	Carbon	201 ab	21	8
Prowl H20 at 1.5 pt/A	Carbon	194 ab	9	8
Prowl H20 at 2 pt/A	Carbon	157 b	10	7.3
Prowl H20 at 3 pt/A	Carbon	163 ab	5.3	7.7
Dacthal 3 pt/A	Carbon	191 ab	8	8
Prowl H20 at 1.5 pt/A + Dacthal at 3 pt/A	Carbon	180 ab	19.3	7.3
Sonalan at 2 pt/A	Carbon	187 ab	48.7	7.6
Zidua 2.75 fl oz/A	Carbon	174 ab	21	6.6
Chateau 2 oz/A	Carbon	146 bc	3	6.3
Untreated (normal post-program)	No Carbon	154 bc	15.3	7.6
Prowl H20 at 1.5 pt/A	No Carbon	215 a	8.3	8
Prowl H20 at 2 pt/A	No Carbon	187 ab	7	7.3
Prowl H20 at 3 pt/A	No Carbon	188 ab	4	7
Dacthal 3 pt/A	No Carbon	161 ab	11	7.3
Prowl H20 at 1.5 pt/A + Dacthal at 3 pt/A	No Carbon	178 ab	14.7	7.6
Sonalan at 2 pt/A	No Carbon	191 ab	22	7.3
Zidua 2.75 fl oz/A	No Carbon	69 d	4	4.3
Chateau 2 oz/A	No Carbon	97 cd	4	3.6
Carbon (averaged across trts)	Carbon	177 a	16.2	7.4
No Carbon (averaged across trts)	No Carbon	160 a	10	6.7

Weeds included filaree, nightshade, mallow, pigweed, and volunteer wheat

Prowl at 1.5 pint at 3 leaf stage



Dacthal and Prowl at 3 leaf stage



Zidua with carbon at 3-leaf



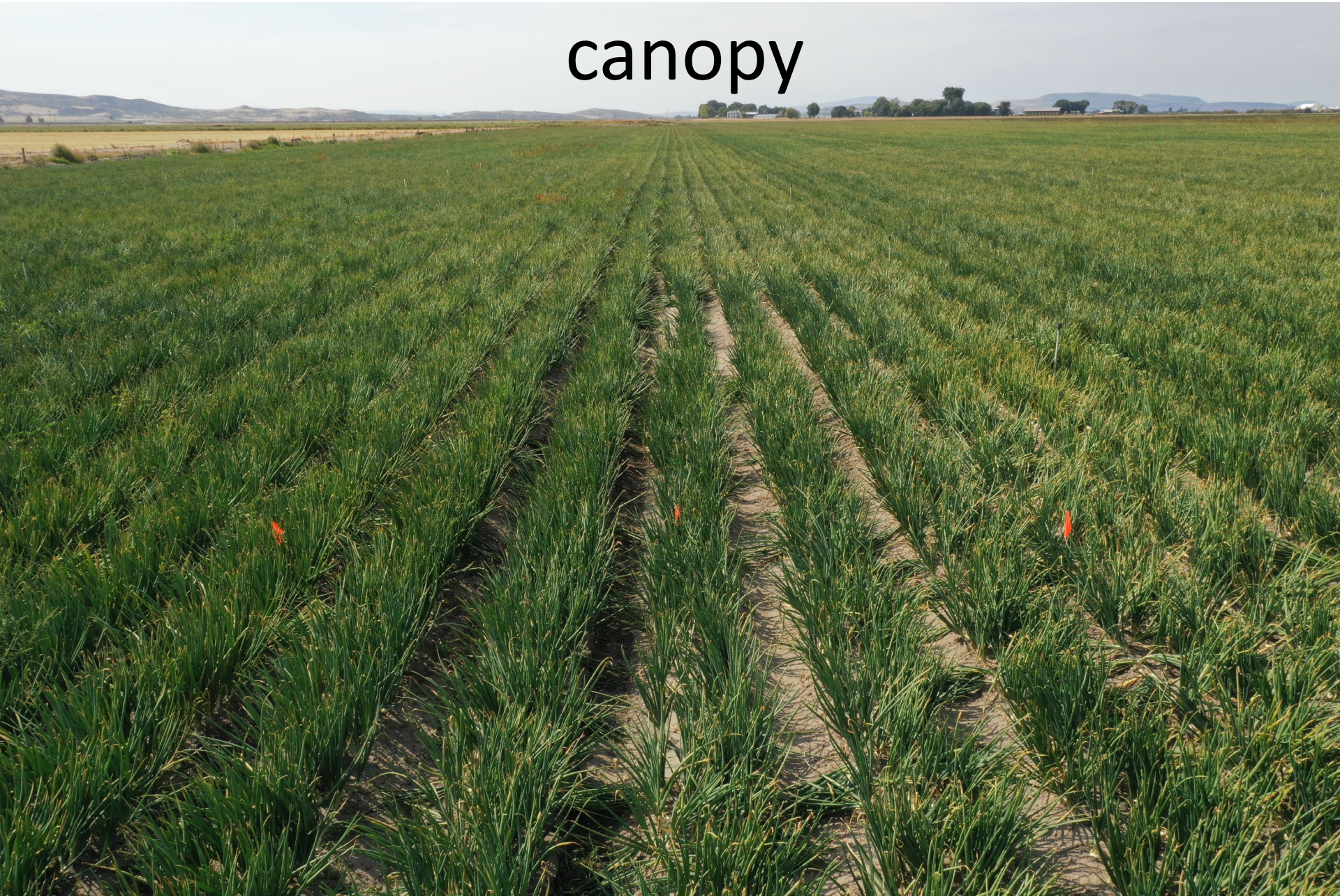
Zidua without carbon at 3-leaf



Chateau without carbon at 3-leaf stage



Chateau without carbon at full canopy



2024 Weed Research at IREC



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Herbicide Thoughts for 2024

- Consider applying Prowl and/or Dacthal after planting in weedy fields
- Broadcast applications with ground rig before 1st or 2nd irrigation will provide best uniformity of herbicide across the field
- Prowl at 1.5 pt/A and Dacthal up to 5 pt/A showed good safety on all soil types in previous testing

