

2022 Weed Control

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YWTG and Allied Industry

Overview

- Economics of weed control
- Rotational approach to weed control
- PRE/PPI options
- Layby options
- Post emerge strategies for glyphosate resistant weeds
- Other Best Management Practices (BMP's)

Economics of Weed Control in Sugarbeet

- Weed control is vital to maximizing on-farm profit
 - 5% yield reduction with 2 kochia plants per 100 ft of row
 - 1.5 ton/acre yield reduction on 30-ton crop
 - 16% yield reduction with 8 red root pigweed per 100 ft of row
 - 4.8 ton/acre yield reduction for 30-ton crop
- Can only control glyphosate resistant kochia & waterhemp economically with soil applied herbicides
 - Pre-Emerge (PRE) or Pre-Plant Incorporation (PPI) for early season control
 - Layby herbicide applications for waterhemp control until sugar beet row closure
- Post emergent control of waterhemp and kochia are losing battles
 - Limited rescue treatments often with poor results
 - Hand weeding is expensive and only treats large plants

Crop Rotation Approach to Weed Control

- Effective weed control in sugarbeet requires a rotational approach in the presence of glyphosate resistant weeds
 - Compared to other crops there are few herbicides labelled for sugarbeet to control resistant weeds
- The goal is to reduce the weed "seed bank"
- Liberty, 2,4-D, and dicamba traits are important to change MOA and slow resistance development
- Small grains in rotation are a proven way to slow weed resistance and reduce the weed seed bank
- Soil applied herbicides also give alternative MOA and early season control

PRE/PPI Control Options

Herbicide	Rate	Crop Injury Risk	Notes
Ethofumesate	3 – 4.5 pt/A	Low	<ul style="list-style-type: none"> • Good waterhemp control up to 4 weeks • Fair kochia control for non-resistant biotypes but inadequate for resistant kochia • Poor-Fair lambsquarter control • Needs ¾" rain to activate if used as PRE • Quicker activation with PPI application • May reduce cover crop stands
	5 – 7.5pt/A	<ul style="list-style-type: none"> • Low for fine textured soils with high organic matter • Greater risk over 5 pt/A on course texture soils 	<ul style="list-style-type: none"> • Good waterhemp control for 8 – 10 weeks • Minimum of 5pt/A for resistant kochia • Poor-Fair lambsquarter control • Needs ¾" rain to activate if used as PRE • Quicker activation with PPI application • Significant injury to cover crop • Next year's crop should not be a grass
Dual Magnum	0.5-0.75pt/A	Low	<ul style="list-style-type: none"> • 2 – 3 weeks waterhemp control • Fair lambsquarter control • Poor kochia control • Needs ½" rainfall to activate • Do not recommend PPI application • Safe for cover crops • Must sign indemnity label • Only branded Dual Magnum is labeled
Dual Magnum + Ethofumesate	0.5 pt/A DM + 2-3 pt/A Etho	Low	<ul style="list-style-type: none"> • Combines attributes of both herbicides • Provides 3-4 weeks of good waterhemp control but little kochia control • Activates with ½" of rainfall • Should only be applied as a PRE • Reduced cover crop injury risk

Layby Control Options

Herbicide	Rate	Injury Risk	Notes
<p><u>Outlook</u> or generic <u>dimethenamid</u></p>	<p>Single - 18oz application</p> <p>Split application 12 oz fb 12oz</p>	<p>Higher for single app</p> <p>Low for Split</p>	<ul style="list-style-type: none"> • Good waterhemp control • Good lambsquarters control • No kochia control • Cannot replant to sugarbeet • Shortest residual control length of any layby • Injury greater on small beets and course soil types • Very little moisture needed for activation $\approx \frac{1}{4}$" • 60 day PHI 2-8 leaf
<p><u>Dual Magnum</u> or generic <u>S-metolachlor</u></p>	<p>Single – 1.3pt/A course texture soil or up to 1.6pt/A fine texture soil</p> <p>Split application 1pt/A fb 1pt/A</p>	<p>Higher for single app</p> <p>Low for Split</p>	<ul style="list-style-type: none"> • Good waterhemp control • Fair lambsquarters control • Poor kochia control • Can replant to sugarbeet • Moderate residual activity length • Only use S-metolachlor formulations • Needs $\frac{1}{2}$" rainfall to activate • 60 day PHI
<p><u>Warrant</u> or generic <u>aceto chlor</u></p>	<p>Single 1.5-2 quarts/A</p> <p>Split 2.5pint-3pint fb 2.5pint -3pint/A</p>	<p>Higher for single app</p> <p>Low for Split</p>	<ul style="list-style-type: none"> • Good waterhemp control • Fair lambsquarter control • Poor kochia control • Cannot replant to sugarbeet • Longest residual of any of the layby options • Needs minimum of $\frac{3}{4}$" of rainfall to activate • 70 day PHI

Post-emerge Strategies

- Spray timing is important
 - Best to spray small weeds < 2" tall
- Use full rates and correct water volumes
- Glyphosate continues to be the best control method for weeds in sugarbeet
 - Use max product rates and AMS
 - Small waterhemp control \approx 76%
- High rates of Stinger (3-4oz) or Stinger HL (1.8-2.4oz) per application for ragweed
- Betamix can help with small waterhemp and kochia if applied timely
 - Results highly variable
 - Multiple applications are needed



Roundup Powermax 3

- New formulation for 2022
- Maximum single application from emergence to 8 leaf is 30 ounces
- Total for all applications made up to 8 leaf is 50 ounces
- Maximum single application rate between 8 leaf and canopy closure is 20 ounces
- Total for all applications made between 8 leaf and canopy closure is 40 ounces
- Total combined application of this product from crop emergence to 30 days PHI is 90 oz/acre

Ultra Blazer

- Approved for emergency use in 2021 in ND and MN. Reapplying for use in 2022
 - Single 16oz application per season
 - 45-day PHI
 - Must be 6 leaf or larger
 - Ultra Blazer is the only acifluorfen product approved in sugarbeet
 - Use at least 15 gallons of water
 - ONLY mix with glyphosate and AMS
 - No application after August 1st
- Mixed results in 2021 with regards to injury and weed control
- Environmental conditions are key to limiting injury and good weed control
 - Do not apply in temperatures above 80°F
 - Do not apply early in the day if forecasted temperature is to be above 80°F
 - Wait until late afternoon/early evening, when temperatures start to decrease, to make Ultra Blazer application
 - Do not make applications after 1 a.m. if next day temperatures are forecasted to be over 80°F
 - Maintain a 3-day interval before and after Ultra Blazer application to apply other pesticides to sugarbeet

Ultra Blazer Results



Ultra Blazer - 17 days after application



Some injury and good control of waterhemp.
Sprayed with 16oz Ultra Blazer and 28oz Powermax



Some injury but poor control of waterhemp
just 10ft away from area with good control.

Other Important Weed Control Best Management Practices

- Only use Upbeet for volunteer canola or if weed population doesn't have ALS resistance
- Electric weeders only control weeds after yield loss has occurred
 - Weeds must be above canopy
 - Considered rescue treatment
 - Multiple passes needed
 - 80% effective on waterhemp
 - 76% effective with kochia



Field Border Shelterbelt & Ditch Management

- Key areas to manage to slow weed resistance progression
 - One of the largest sources of weed seed
 - Mowing, tillage, and/or herbicide is needed for season long control
 - Share A/B headings with neighboring growers



Field Border Shelterbelt & Ditch Management

- Tillage too far into a ditch kills grasses which are a good defense against weeds
- Exposes weeds to small rates of herbicides
- Weed resistance to dicamba, 2,4-D, and glyphosate GMO traits are increased by low volume drift



Summary

- Rotational crop weed control is vital to clean sugarbeet fields
- Soil applied herbicides used PRE/PPI and Layby are the best defense against glyphosate resistant waterhemp and kochia
- Use max rates of herbicides
- Spray weeds when they are small
- High rates of Stinger or Stinger HL are needed for resistant ragweed
- Controlling border areas and ditches is very important to reducing weed resistance levels and seed banks

Additional Resources/Links

- [American Crystal Sugar Gold Standards Weed Control](#)
 - [PRE/PPI Options](#)
 - [Layby Options](#)
 - [Pesticide Use Chart](#)
 - [RR Resistance Management](#)
 - [Glyphosate Formulation](#)
 - [Other Crop RR Resistance Management](#)
- [2022 NDSU Weed Guide](#)
- [2022 Sugarbeet Production Guide](#)
- [Ultra Blazer in Sugarbeet – Dr. Tom Peters](#)

Questions?