

# TABLE 7A – Chemical Weed Control in Sugar Beets

## Sugar Beets – Preplant Incorporated

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual grasses	cycloate ( <i>Ro-Neet</i> )	3	2 qt 6L	<ul style="list-style-type: none"> <li>Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>Incorporate immediately to 2-3 inches.</li> <li>May be followed preemergence by <i>Pyramin</i>.</li> <li>DO NOT apply <i>Nortron</i> preemergence.</li> <li>Injury may occur when <i>Betamix</i> or <i>Betanex</i> or <i>Progress</i> is applied postemergence before the 6-true-leaf stage.</li> <li>Use reduced rates of postemergence herbicides in split or micro-rate applications to reduce the risk of injury.</li> <li><i>Ro-Neet</i> provides good velvetleaf suppression.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Sugar Beets – Preemergence

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual broadleaves	pyrazon ( <i>Pyramin</i> )	4	6.2 lb 67DF	<ul style="list-style-type: none"> <li>Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>DO NOT use <i>Pyramin</i> on sands or loamy sands — crop injury may occur.</li> <li>Reduce the <i>Pyramin</i> rate to 4.65 lb/A of DF on a sandy loam soil and/or if soil organic matter is less than 3%.</li> <li>If soils are high in clay and/or organic matter and velvetleaf is a problem, apply 7.8 lb/A of <i>Pyramin</i> DF.</li> <li>To control annual grasses, preplant incorporate <i>Ro-Neet</i> OR apply <i>Poast</i>, <i>Assure II</i> or <i>Select</i> postemergence. <i>Nortron</i> preemergence will suppress grasses.</li> <li><i>Pyramin</i> plus <i>Nortron</i> provides better velvetleaf suppression than either herbicide alone. These herbicides are not as effective as <i>Ro-Neet</i> preplant incorporated followed by <i>Pyramin</i> preemergence or <i>UpBeet</i> postemergence.</li> <li>To approach 100% weed control, it will in most cases be necessary to follow with a postemergence application.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	pyrazon ( <i>Pyramin</i> )	3	4.7 lb 67DF	<ul style="list-style-type: none"> <li>Refer to Table 7B for weed control and crop tolerance ratings.</li> </ul>
	+ ethofumesate ( <i>Nortron</i> )	+ 1.5	+ 3 pt 4SC	<ul style="list-style-type: none"> <li>See all remarks for <i>Pyramin</i>.</li> <li><i>Nortron</i> will provide some suppression of annual grasses, such as foxtail.</li> <li><i>Pyramin</i> plus <i>Nortron</i> provides better velvetleaf suppression than either herbicide alone. These herbicides are not as effective as <i>Ro-Neet</i> preplant incorporated followed by <i>Pyramin</i> preemergence or <i>UpBeet</i> postemergence.</li> <li>Increase <i>Nortron</i> rate to 4 pt/A of SC on clay soils if weed pressure is heavy.</li> <li>Rotation restrictions are based on the amount of ethofumesate applied. Restrictions are shorter when less than 0.375 lb a.i. is used.</li> <li>Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

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## Sugar Beets – Micro-Rate Postemergence

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual broadleaves</b>	desmedipham + phenmedipham <i>(Betamix)</i>	0.08	8 oz 1.3L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Micro-rate applications may be applied to sugar beets at any growth stage. TIME THE FIRST MICRO-RATE application when weeds are less than 0.125 inch tall. This can be as early as 14 days after sugar beet planting.</li> <li>• Make the second micro-rate application when emerging weeds are less than 0.125 inch tall. This will be 5-14 days later, depending on temperature and moisture.</li> <li>• Continue TIMELY micro-rate applications (usually every 7 days) as needed until beet canopy closure.</li> <li>• Reduce the number of micro-rate applications and minimize sugar beet injury by timing micro-rate applications using growing degree-days. See the next section on <i>TIMING MICRO-RATE APPLICATIONS USING GROWING DEGREE-DAYS (GDD)</i>.</li> <li>• The <i>Betamix</i> rate may be increased up to 12 oz/A when sugarbeets are in the cotyledon to 4-leaf growth stage and up to 16 oz/A if the smallest sugar beet plants in the field are in the 4-true leaf stage. Use caution when using higher rates on sugarbeets in the early 2-leaf stage or injury may occur.</li> <li>• IF WEEDS EXCEED 0.25 inch, return to standard herbicide application rates.</li> <li>• <i>Select/Arrow</i> at 2 oz/A, <i>Assure II/Targa</i> at 4 oz/A, or <i>Poast</i> at 5.3 oz/A can be <i>added to each</i> micro-rate application OR wait until grasses reach 2–3 inches tall and add one of these herbicides <i>at standard rates to one of the</i> micro-rate applications.</li> <li>• Apply micro-rates in 10–12 gal. water/A. The methylated seed oil concentration must be a minimum of 1 pt/A in spray volumes of 4–8 gal. water/A.</li> <li>• Micro-rates can be applied at any time of day.</li> <li>• DO NOT tank mix micro-rates with BOTH fungicides and insecticides.</li> <li>• DO NOT tank mix micro-rates with <i>Quadris</i> or <i>Amistar</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+	+	+	
	triflurosulfuron methyl <i>(UpBeet)</i>	0.0039	0.125 oz 50DG	
	+	+	+	
	clopyralid <i>(Stinger)</i>	0.0235	1 oz 3L	
+	+	+	+	
	methylated seed oil		1.5%	
		AND REPEAT		
	desmedipham + phenmedipham ethofumesame <i>(Progress)</i>	0.08	5.7 oz 1.8L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• SEE ALL REMARKS IN THE <i>BETAMIX</i> MICRO-RATE SECTION.</li> <li>• Reduce the number of micro-rate applications and minimize sugar beet injury by timing micro-rate applications using growing degree-days. See the next section on <i>TIMING MICRO-RATE APPLICATIONS USING GROWING DEGREE-DAYS (GDD)</i>.</li> <li>• Redroot pigweed will not be controlled by <i>Progress</i> micro-rate applications if pigweed exceeds 0.25 inch at the time of application. <i>Betamix</i> micro-rate applications will provide more consistent pigweed control.</li> <li>• The <i>Progress</i> rate may be increased up to 8.7 oz/A when sugarbeets are in the cotyledon to 4-leaf growth stage and up to 11.6 oz/A if the smallest sugar beet plants in the field are in the 4-true leaf stage. Use caution when using higher rates on sugarbeets in the early 2-leaf stage or injury may occur.</li> <li>• DO NOT tank mix micro-rates with <i>Quadris</i> or <i>Amistar</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
+	+	+		
triflurosulfuron methyl <i>(UpBeet)</i>	0.0039	0.125 oz 50DG		
+	+	+		
	clopyralid <i>(Stinger)</i>	0.0235	1 oz 3L	
+	+	+	+	
	methylated seed oil		1.5%	
		AND REPEAT		

## Sugar beets - Timing Micro-Rate Applications Using Growing Degree Days (GDD)

$$\text{GDD Formula} = \frac{(\text{High Temp.} + \text{Low Temp.})}{2} - 34^{\circ}\text{F}$$

EXAMPLE CALCULATION:

$$\text{Day 1} = (75 + 55) / 2 - 34^{\circ}\text{F} = 31 \text{ GDD}$$

$$\text{Day 2} = (80 + 60) / 2 - 34^{\circ}\text{F} = 36 \text{ GDD}$$

$$\text{Two-day accumulation} = 67 \text{ GDD}$$

- Timing micro-rate applications on GDD may reduce the number of herbicide applications during periods of cool weather.

### GENERAL GUIDELINES:

- After the first micro-rate application, apply a micro-rate when 225 GDD have accumulated for average weed pressures on most soils. REPEAT.
- If soils are sandy, have high weed pressure, or are high in organic matter, adjust application timings to 175 GDD, particularly when pigweed is the target weed.
- Early in the season, when lambsquarters is the predominant species, micro-rate timings may be extended to 275 GDD. However, when pigweeds start to emerge, switch to 175 or 225 GDD.
- Delayed applications will result in reduced weed control.

## Sugar Beets – Early Postemergence

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual broadleaves	desmedipham + phenmedipham ( <i>Betamix</i> )	0.5	3 pt 1.3L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Split low-rate applications of <i>Betamix</i> + <i>UpBeet</i> may be applied to sugar beets at early growth stages (less than the 4-true-leaf stage) to control weed seedlings at the cotyledon stage. Weeds not completely controlled by the first treatment will be checked and controlled by the second application.</li> <li>• The second application MUST BE MADE AT LEAST 7 days but not more than 10 days AFTER the first application.</li> <li>• The rate of <i>Betamix</i> in the second application can be increased to 4.6 pt/A.</li> <li>• Add surfactant at 0.25% v/v (2 pt in 100 gal. water) to ONLY THE SECOND APPLICATION.</li> <li>• DISPERSE <i>UpBeet</i> thoroughly in the tank before adding other herbicides.</li> <li>• Apply in 10 gal. water/A at 20-40 psi.</li> <li>• The maximum amount of <i>UpBeet</i> that can be applied in one year is 2.5 oz/A.</li> <li>• Rainfall within 6 hours of application may reduce control.</li> <li>• Adding <i>UpBeet</i> to <i>Betamix</i> results in velvetleaf control and more consistent lambsquarters, pigweed, smartweed and buckwheat control.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+	+	+	
	triflurosulfuron methyl ( <i>UpBeet</i> )	0.0156	0.5 oz 50DG	
	FOLLOWED BY:			
	desmedipham + phenmedipham ( <i>Betamix</i> )	0.5	3 pt 1.3L	
	+	+	+	
	triflurosulfuron methyl ( <i>UpBeet</i> )	0.0156	0.5 oz 50DG	

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## Sugar Beets – Early Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations	
<i>(continued)</i>					
<b>Annual broadleaves</b>	desmedipham phenmedipham <i>(Betamix)</i>	0.5	3 pt 1.3L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Split low rates of <i>Betamix</i> + <i>UpBeet</i> followed by <i>Betamix</i> + <i>UpBeet</i> + <i>Stinger</i> may be applied to sugar beets at early growth stages (less than the 4- true-leaf stage) to control weed seedlings at the cotyledon stage. Weeds not completely controlled by the first treatment will be checked and controlled by the second application.</li> <li>• The second application MUST BE MADE AT LEAST 7 days but not more than 10 days AFTER the first application.</li> <li>• The rate of <i>Betamix</i> in the second application can be increased to 4.6 pt/A.</li> <li>• Adding <i>Stinger</i> to the second application will control cocklebur and common and giant ragweed and improve lambsquarters control.</li> <li>• Add surfactant at 0.25% v/v (2 pt in 100 gal. water) to ONLY THE SECOND APPLICATION.</li> <li>• DISPERSE <i>UpBeet</i> thoroughly in the tank before adding other herbicides.</li> <li>• Apply in 10 gal. water/A at 20-40 psi.</li> <li>• DO NOT apply <i>Stinger</i> on sandy soils where water tables are shallow.</li> <li>• The maximum amount of <i>UpBeet</i> that can be applied in one year is 2.5 oz/A.</li> <li>• Rainfall within 6 hours of application may reduce control.</li> <li>• DO NOT plant dry beans for 18 months if organic matter is less than 2%.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>	
	+	+	+		
	triflurosulfuron methyl <i>(UpBeet)</i>	0.0156	0.5 oz 50DG		
	FOLLOWED BY:				
	desmedipham + phenmedipham <i>(Betamix)</i>	0.5	3 pt 1.3L		
	+	+	+		
	triflurosulfuron methyl <i>(UpBeet)</i>	0.0156	0.5 oz 50DG		
	+	+	+		
	clopyralid <i>(Stinger)</i>	0.094	0.25 pt 3L		
	desmedipham + phenmedipham + ethofumesate <i>(Progress)</i>	0.25	1.13 pt 1.8L		<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• DISPERSE <i>UpBeet</i> thoroughly in the tank before adding other herbicides.</li> <li>• DO NOT add crop oil concentrate or surfactant.</li> <li>• Split (low-rate) applications of <i>Progress</i> plus <i>UpBeet</i> may be applied to sugar beets at early growth stages (cotyledon to 4-true-leaf stage) to control weed seedlings at the cotyledon stage.</li> <li>• The second application MUST BE MADE AT LEAST 7 days but not more than 10 days AFTER the first application.</li> <li>• The rate of <i>Progress</i> in the second application can be increased to 2 pt/A if sugar beets are at 2-leaf pairs or larger.</li> <li>• Adding <i>UpBeet</i> to <i>Progress</i> results in velvetleaf control and provides more consistent control of pigweed, mustard, smartweed and wild buckwheat.</li> <li>• <i>Stinger</i> can be added to the second application for control of cocklebur and common and giant ragweed.</li> <li>• Apply in a minimum of 10 gal. water/A at 20-40 psi.</li> <li>• The maximum amount of <i>UpBeet</i> that can be applied in 1 year is 2.5 oz/A.</li> <li>• Allow at least 60 days between <i>UpBeet</i> application and sugar beet harvest.</li> <li>• Rainfall within 6 hours of application may reduce control.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
+	+	+			
triflurosulfuron methyl <i>(UpBeet)</i>	0.0156	0.5 oz 50DG			
FOLLOWED BY:					
desmedipham + phenmedipham + ethofumesate <i>(Progress)</i>	0.33	1.5 pt 1.8L			
+	+	+			
triflurosulfuron methyl <i>(UpBeet)</i>	0.0156	0.5 oz 50DG			

## Sugar Beets – Postemergence

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual grasses, Yellow nutsedge, Pigweed, E.B. nightshade</b>	s-metolachlor ( <i>Dual Magnum</i> )	1.27	1.33 pt 7.62 EC	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• <i>Dual Magnum</i> should be applied to sugar beets after they have <b>2 true leaves</b>.</li> <li>• Sugarbeets <b>MUST HAVE</b> 2-fully expanded true leaves before application; applications prior to this stage will result in significant crop injury and possible stand reduction.</li> <li>• Crop safety is greater when <i>Dual Magnum</i> applications are made after beets reach the 4-leaf stage.</li> <li>• <i>Dual Magnum</i> may be tank-mixed with micro-rate or standard-split herbicide applications.</li> <li>• <i>Dual Magnum</i> will not control emerged weeds, but will provide residual control of annual grasses and some broadleaf weeds.</li> <li>• MSU <b>does not</b> recommend preplant incorporated or preemergence applications of <i>Dual Magnum</i> — severe stand reductions can occur.</li> <li>• More than one postemergence application can be made, but the total should not exceed 2.6 pt/A.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	dimethenamid-P ( <i>Outlook</i> )	0.75	16 oz 6L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Sugarbeets <b>MUST HAVE</b> 2-fully expanded true leaves before application; applications prior to this stage will result in significant crop injury and possible stand reduction.</li> <li>• Crop safety is greater when <i>Outlook</i> applications are made after beets reach the 4-leaf stage.</li> <li>• Apply <i>Outlook</i> before sugarbeets exceed the 8-leaf stage.</li> <li>• <i>Outlook</i> may be tank-mixed with micro-rate or standard-split herbicide applications.</li> <li>• <i>Outlook</i> will not control emerged weeds, but will provide residual control of annual grasses and some broadleaf weeds.</li> <li>• More than one application of <i>Outlook</i> can be made; maintain a minimum of 14 days between applications, and the total should not exceed 21 oz/A.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Sugar Beets – Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Velvetleaf</b>	triflusaluron methyl ( <i>UpBeet</i> ) + surfactant	0.0156	0.5 oz 50DG  + 0.25%	<ul style="list-style-type: none"> <li>• SEE TABLE 7C, "Guidelines for Velvetleaf Control with <i>UpBeet</i>."</li> <li>• <i>UpBeet</i> provides better velvetleaf control than <i>Pyramin</i> postemergence.</li> <li>• DISPERSE <i>UpBeet</i> thoroughly in the tank before adding surfactant.</li> <li>• A MINIMUM OF TWO APPLICATIONS ARE NEEDED FOR VELVETLEAF CONTROL.</li> <li>• Apply to velvetleaf at the 1-true-leaf stage. REPEAT application 7-10 days later.</li> <li>• Add 2 qt/A 28% liquid nitrogen in addition to surfactant if velvetleaf plants have 1 to 2 true leaves and beets are at 2-leaf-pair stage.</li> <li>• A third application of 0.5 oz/A of <i>UpBeet</i> + surfactant can be made.</li> <li>• The maximum amount of <i>UpBeet</i> that can be applied in 1 year is 2.5 oz/A.</li> <li>• <i>UpBeet</i> can be tank mixed with <i>Betamix</i> or <i>Progress</i>. Never add surfactant with <i>Progress</i> unless you are applying micro-rates. Add surfactant with <i>UpBeet</i> + <i>Betamix</i> if beets are at the 2-leaf-pair stage or larger for improved velvetleaf control.</li> <li>• Apply <i>UpBeet</i> in a minimum of 10 gal. water/A at 20-40 psi.</li> <li>• Rainfall within 6 hours of application may reduce control.</li> <li>• Allow at least 60 days between <i>UpBeet</i> application and sugar beet harvest.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
		AND REPEAT		
	pyrazon ( <i>Pyramin</i> ) + methylated seed oil	1	1.55 lb 67DF  + 24 oz	<ul style="list-style-type: none"> <li>• TWO APPLICATIONS ARE NEEDED FOR BEST VELVETLEAF CONTROL. MAKE SECOND APPLICATION 5-7 DAYS FOLLOWING INITIAL TREATMENT.</li> <li>• Make first application when velvetleaf has cotyledonary leaves and one true leaf.</li> <li>• Application to velvetleaf at 2-true-leaf stage will NOT provide consistent control.</li> <li>• DO NOT TANK MIX with <i>Betamix</i> or <i>Progress</i> — crop injury may occur.</li> <li>• <i>UpBeet</i> will provide better control than <i>Pyramin DF</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
		AND REPEAT		

## Sugar Beets – Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Cocklebur, Giant ragweed, Common ragweed, Jimsonweed, Volunteer sweet clover, Volunteer alfalfa</b>	clopyralid ( <i>Stinger</i> ) + crop oil concentrate	0.094	0.25 pt 3L  + 1 qt	<ul style="list-style-type: none"> <li>• DO NOT use on sands, loamy sands, or permeable soils where water tables are shallow because of potential groundwater contamination.</li> <li>• Increase rate to 0.5 pt under drought conditions or dense weed infestations.</li> <li>• Controls cocklebur, giant ragweed, volunteer alfalfa, and sweet clover up to 6-leaf-stage, common ragweed, up to 5-leaf-stage.</li> <li>• 0.25 pt/A will suppress smartweed, wild buckwheat and nightshade if less than 3 leaf.</li> <li>• DO NOT cultivate for 7 days following application.</li> <li>• Tank mix with other postemergence herbicides such as <i>Betamix</i> or <i>Progress</i> to control other broadleaf weeds.</li> <li>• Allow 105 days between application and sugar beet harvest.</li> <li>• DO NOT plant dry beans for 18 months if organic matter is less than 2%.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
<b>Perennial sowthistle</b>	clopyralid ( <i>Stinger</i> ) + crop oil concentrate OR ammonium sulfate	0.188	0.5 pt 3L  + 1 qt OR 2.5 lb	<ul style="list-style-type: none"> <li>• DO NOT use on sands or loamy sands or permeable soils where water tables are shallow because of potential groundwater contamination.</li> <li>• Increase rate to 0.67 pt under drought conditions.</li> <li>• Apply after sugar beets have reached the third leaf pair AND before thistles have reached the flowering stage.</li> <li>• DO NOT cultivate before OR for a minimum of 14 days after application.</li> <li>• DO NOT tank mix with other herbicides when applying for perennial sowthistle control.</li> <li>• Banded applications are NOT recommended. Instead, make a broadcast application over the thistle-infested area.</li> <li>• Allow 105 days between application and sugar beet harvest.</li> <li>• DO NOT plant dry beans for 18 months if soil organic matter is less than 2%.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
<b>Canada thistle</b>	clopyralid ( <i>Stinger</i> ) + crop oil concentrate OR ammonium sulfate	0.125	0.33 pt 3L  + 1 qt OR 2.5 lb	<ul style="list-style-type: none"> <li>• DO NOT use on sands or loamy sands or permeable soils where water tables are shallow because of potential groundwater contamination.</li> <li>• Increase rate to 0.5 pt under drought conditions.</li> <li>• Apply after sugar beets have reached the third leaf pair AND before thistles have reached the flowering stage.</li> <li>• DO NOT cultivate before OR for a minimum of 14 days after application.</li> <li>• Add COC when tank mixing 0.33 pt of <i>Stinger</i> with <i>Betamix</i>. COC is not necessary when 0.5 pt/A of <i>Stinger</i> is applied.</li> <li>• Banded applications are NOT recommended. Instead make a broadcast application over the thistle-infested area.</li> <li>• Allow 105 days between application and sugar beet harvest.</li> <li>• DO NOT plant dry beans for 18 months if soil organic matter is less than 2%.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Sugar Beets – Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual grasses</b>	sethoxydim ( <i>Poast</i> )	0.19	1 pt 1.5SC	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Treat actively growing foxtails, fall panicum and barnyard-grass up to 8 inches and crabgrass up to 4 inches.</li> <li>• <i>Poast</i> can be reduced to 0.75 pt/A for 1-4 inch barnyard-grass, green and giant foxtails, and fall panicum.</li> <li>• Ammonium sulfate or 28% liquid nitrogen (urea ammonium nitrate) can be added at 2.5 lb/A to enhance crabgrass control.</li> <li>• DO NOT apply <i>Betamix</i> or <i>Progress</i> or <i>UpBeet</i> within 5 days prior to applying <i>Poast</i> — reduced grass control may occur.</li> <li>• No soil activity from <i>Poast</i>. Controls only grasses present when sprayed.</li> <li>• Use a minimum of 5 gal. of water/A at 40 psi.</li> <li>• Rainfall within 1 hour of application will reduce control.</li> <li>• DO NOT apply <i>Poast</i> within 60 days of beet harvest.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate OR methylated seed oil		1 qt OR 24 oz	
	clethodim ( <i>Select/Arrow</i> )	0.094	6 oz 2EC	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Treat actively growing foxtails, fall panicum, and barnyard-grass up to 8 inches and crabgrass up to 4 inches tall.</li> <li>• <i>Select/Arrow</i> can be reduced to 4-5 oz/A for 1- to 4-inch grasses of some species.</li> <li>• DO NOT apply <i>Betamix</i> or <i>Progress</i> or <i>UpBeet</i> within 5 days prior to applying <i>Select /Arrow</i> — reduced grass control may occur.</li> <li>• No soil activity from <i>Select/Arrow</i>. Controls only grasses present when sprayed.</li> <li>• Apply in 5-40 gal of water/A at 30-60 psi.</li> <li>• Rainfall within 1 hour of application will reduce control.</li> <li>• DO NOT apply <i>Select</i> within 100 days of beet harvest.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate		1%	
	quizalofop-P-methyl ( <i>Assure II/Targa</i> )	0.044	7 oz 0.88L	<ul style="list-style-type: none"> <li>• Refer to Table 7B for weed control and crop tolerance ratings.</li> <li>• Treat actively growing grasses up to 4 inches tall.</li> <li>• 8 oz/A required for barnyardgrass and crabgrass control.</li> <li>• DO NOT apply <i>Betamix</i> or <i>Progress</i> or <i>UpBeet</i> within 5 days prior to applying <i>Assure II/Targa</i> — reduced grass control may occur.</li> <li>• DO NOT cultivate for 7 days before or 7 days after treatment.</li> <li>• No soil activity from <i>Assure II/Targa</i>. Controls only grasses present when sprayed.</li> <li>• Apply in 10-20 gal. water/A with standard flat fan or hollow cone nozzles.</li> <li>• Rainfall within 1 hour of application will reduce control.</li> <li>• DO NOT apply <i>Assure II/Targa</i> within 45 days of beet harvest.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	crop oil concentrate OR surfactant		1% OR 0.25%	
<b>Annual grasses, Annual broadleaves</b>	sethoxydim ( <i>Poast</i> )	0.29	1.5 pt 1.5SC	<ul style="list-style-type: none"> <li>• Treat actively growing barnyardgrass or foxtails up to 2 inches tall.</li> <li>• DO NOT ADD CROP OIL CONCENTRATE OR OTHER ADDITIVES.</li> <li>• Adjust <i>Betamix</i> rate to size of broadleaf weeds.</li> <li>• No soil activity. Controls only grasses present when sprayed.</li> </ul>
	+		+	
	desmedipham + phenmedipham ( <i>Betamix</i> )	0.5-1	3-6 pt 1.3L	

## Sugar Beets – Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Volunteer corn</b>	quizalofop-P-ethyl ( <i>Assure II/Targa</i> )	0.031	5 oz 0.88L	<ul style="list-style-type: none"> <li>• For volunteer corn up to 18 inches tall.</li> <li>• Rainfall within 1 hour of application will reduce control.</li> <li>• <i>Assure II/Targa</i> is more effective than <i>Poast</i>.</li> </ul>
	+		+	
	crop oil concentrate OR surfactant		1% OR 0.25%	
<b>Volunteer corn</b>	sethoxydim ( <i>Poast</i> )	0.19	1 pt 1.5SC	<ul style="list-style-type: none"> <li>• For volunteer corn up to 20 inches tall.</li> <li>• If the volunteer corn is less than 12 inches, the application rate may be reduced.</li> <li>• Rainfall within 1 hour of application will reduce control.</li> </ul>
	+		+	
	crop oil concentrate OR methylated seed oil		1 qt OR 24 oz	
	+		+	
	ammonium sulfate OR 28% liquid nitrogen		2.5 lb OR 1 gal	
	clethodim ( <i>Select/Arrow</i> )		0.096	
+	+			
crop oil concentrate	1%			
<b>Small grains</b>	quizalofop-P-ethyl ( <i>Assure II/Targa</i> )	0.0625	10 oz 0.88L	<ul style="list-style-type: none"> <li>• Apply at 8 oz/A if cereals are less than 4 inches tall.</li> <li>• Spring-seeded cereals only. Control is less effective on fall-seeded cereals. Keep application rate at 10 oz/A.</li> <li>• <i>Assure II/Targa</i> is more effective than <i>Poast</i>.</li> </ul>
	+		+	
	crop oil concentrate OR surfactant		1% OR 0.25%	
<b>Small grains</b>	sethoxydim ( <i>Poast</i> )	0.29	1.5 pt 1.5SC	<ul style="list-style-type: none"> <li>• Apply before tillering (up to 4 inches tall).</li> <li>• Spring-seeded cereals only.</li> </ul>
	+		+	
	crop oil concentrate OR methylated seed oil		1 qt OR 24 oz	
	+		+	
	ammonium sulfate OR 28% liquid nitrogen		2.5 lb OR 1 gal	
	clethodim ( <i>Select/Arrow</i> )		0.125–0.25	
+	+			
crop oil concentrate +	1% +			
ammonium sulfate OR 28% liquid nitrogen	2.5 lb OR 2.5%			

## Sugar Beets – Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Quackgrass</b>	quizalofop-P-ethyl ( <i>Assure II/Targa</i> )	0.0625	10 oz 0.88L	<ul style="list-style-type: none"> <li>• Make application when quackgrass is 6-8 inches tall.</li> <li>• Two applications may be needed for best quackgrass control. Make a second application of 7 oz/A 14-21 days later when quackgrass has reached 4-8 inches tall. Cultivation may replace second application.</li> <li>• DO NOT TANK MIX. Reduced quackgrass control and/or crop injury may occur.</li> <li>• Use 10-20 gal water/A using standard flat fan or hollow cone nozzles.</li> <li>• Avoid drift onto corn, small grains, or turf.</li> <li>• DO NOT apply <i>Assure II/Targa</i> within 45 days of beet harvest.</li> </ul>
	+		+	
	crop oil concentrate OR surfactant		1% OR 0.25%	
	sethoxydim ( <i>Poast</i> )	0.29 + 0.19	1.5 pt + 1 pt 1.5SC	<ul style="list-style-type: none"> <li>• Two applications are needed for best quackgrass control. Make second application 14-21 days following initial treatment. Cultivation may replace second application.</li> <li>• DO NOT TANK MIX. Crop injury or reduced quackgrass control may occur, especially with nitrogen additives.</li> <li>• Addition of ammonium sulfate or liquid nitrogen is required.</li> <li>• Treat actively growing quackgrass 6-8 inches tall.</li> <li>• Use a minimum of 5 gal water/A at 40 psi.</li> <li>• Avoid drift onto corn, small grains, or turf.</li> <li>• Rainfall within 1 hr of application will reduce control.</li> <li>• DO NOT apply <i>Poast</i> within 60 days of beet harvest.</li> </ul>
+		+		
crop oil concentrate OR		1 qt + 1 qt OR		
methylated seed oil +		24 oz + 24 oz +		
ammonium sulfate OR 28% liquid nitrogen		2.5 lb + 2.5 lb OR 1 gal + 1 gal		
	clethodim ( <i>Select/Arrow</i> )	0.125-0.25+ 0.125	8-16 oz+ 8 oz 2EC	<ul style="list-style-type: none"> <li>• Make application when quackgrass is 4-12 inches tall. Use high rate when grasses are stressed or at maximum height.</li> <li>• Two applications may be needed for control. Make a second application of 17 oz/A 14-21 days later.</li> <li>• Cultivation may replace the second application.</li> <li>• DO NOT TANK MIX. Crop injury or reduced quackgrass control may occur.</li> <li>• Use 5-40 gal water/A at 30-60 psi.</li> <li>• Avoid drift onto corn, small grains or turf.</li> <li>• DO NOT apply <i>Select/Arrow</i> within 100 days of beet harvest.</li> </ul>
+		+		
crop oil concentrate +		1% + 1% +		
ammonium sulfate OR		2.5 lb + 2.5 lb OR		
28% liquid nitrogen		2.5% + 2.5%		

# TABLE 7B – Weed Response to Herbicides in Sugar Beets\*

	SITE OF ACTION	CROP RESPONSE	ANNUAL BROADLEAVES										ANNUAL GRASSES						PERENNIALS								
			COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	NIGHTSHADE (BLACK)	PIGWEEED	RAGWEED (COMMON)	SMARTWEED	VELVETLEAF	WILD MUSTARD	WILD BUCKWHEAT	BARNYARDGRASS	CRABGRASS	GIANT FOXTAIL	GREEN FOXTAIL	YELLOW FOXTAIL	FALL PANICUM	WITCHGRASS	BINDWEED (FIELD)	BINDWEED (HEDGE)	CANADA THISTLE	PERENNIAL-SOWTHISTLE	QUACKGRASS	YELLOW NUTSEDEGE		
<i>Preplant Incorporated</i>																											
RO-NEET	O	2	P	P	F	F	<b>G</b>	F	P	<b>G</b>	P	F	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	N	N	N	N	F	<b>G</b>	
<i>Preemergence</i>																											
NORTRON	O	2	F	F	<b>G</b>	<b>G</b>	<b>G</b>	P	<b>G</b>	F	<b>G</b>	<b>G</b>	P	F	<b>G</b>	F	F	P	P	N	N	N	N	N	P		
PYRAMIN	O	2	P	P	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	F	<b>G</b>	<b>G</b>	P	P	P	P	P	P	P	N	N	N	N	N	N		
<i>Postemergence</i>																											
BETAMIX	O	2	F	F	<b>E</b>	F	<b>G</b>	<b>G</b>	F	P	<b>G</b>	F	P	P	F	F	F	P	P	N	N	N	N	N	N		
BETANEX	O	2	F	F	<b>G</b>	F	<b>E</b>	F	F	P	<b>G</b>	P	P	P	P	P	P	P	P	N	N	N	N	N	N		
DUAL MAGNUM	O	2	N	N	P	F	<b>G</b>	P	P	N	P	N	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	N	N	N	N	N	P		
OUTLOOK	O	2	N	N	P	<b>G</b>	<b>G</b>	P	P	N	P	P	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	N	N	N	N	N	P		
NORTRON	O	2	P	P	F	<b>G</b>	F	P	<b>G</b>	P	<b>G</b>	<b>G</b>	P	P	F	F	F	P	P	N	N	N	N	N	P		
UPBEET	B	2	F	-	P	F	F	F	F	<b>G</b>	<b>E</b>	F	P	P	F	F	F	P	P	N	N	P	N	N	P		
PROGRESS	O/O	2	F	F	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>	P	<b>G</b>	<b>G</b>	P	P	F	F	F	P	P	N	N	N	N	N	P		
BETAMIX + UPBEET	O/B	2	F	F	<b>E</b>	F	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	P	P	<b>G</b>	F	F	P	P	N	N	P	P	N	P		
BETAMIX + STINGER	O/O	2	<b>E</b>	<b>G</b>	<b>E</b>	F	<b>G</b>	<b>E</b>	<b>G</b>	P	<b>G</b>	<b>G</b>	P	P	F	F	F	P	P	N	N	F	F	N	N		
BETAMIX + UPBEET + STINGER	O/B/O	2	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	P	P	<b>G</b>	F	F	P	P	N	N	F	F	N	P		
PROGRESS + UPBEET	O/B	3	F	F	<b>E</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>G</b>	P	P	<b>G</b>	F	F	P	P	N	N	P	P	N	P		
PROGRESS + STINGER	O/O/O	3	<b>E</b>	<b>G</b>	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	P	<b>G</b>	<b>G</b>	P	P	F	F	F	P	P	N	N	F	F	N	P		
PROGRESS + UPBEET + STINGER	O/B/O	3	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	P	P	<b>G</b>	F	F	P	P	N	N	F	F	N	P		
POAST	A	1	N	N	N	N	N	N	N	N	N	N	N	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	N	F	N		
SELECT/ARROW	A	1	N	N	N	N	N	N	N	N	N	N	N	<b>E</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	N	N	N	N	<b>G</b>	N		
ASSURE II/TARGA	A	1	N	N	N	N	N	N	N	N	N	N	N	<b>G</b>	<b>G</b>	<b>E</b>	<b>E</b>	<b>G</b>	<b>E</b>	N	N	N	N	<b>E</b>	N		
PYRAMIN	O	1	P	P	F	P	F	F	F	F	F	F	P	P	P	P	P	P	P	N	N	N	N	N	N		
STINGER	O	1	<b>E</b>	<b>G</b>	P	F	P	<b>E</b>	F	P	P	F	N	N	N	N	N	N	N	P	P	<b>G</b>	<b>G</b>	N	N		

Herbicide Site of Action: A = ACCase inhibitor; B = ALS inhibitor; C = Photosynthesis inhibitor; O = Other.

P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None

Crop Tolerance: 1 = Minimal risk of crop injury; 2 = Crop injury can occur under certain conditions (soil applied — cold, wet; foliar applied — hot, humid); 3 = Severe crop injury can occur. Follow precautions under Remarks and Limitations and on the label; 4 = Risk of severe crop injury is high. Recommended only in rescue situations.

\*The above ratings are a relative comparison of herbicide effectiveness. Weather conditions greatly influence the herbicide's effectiveness, and weed control may be better under favorable conditions or poorer under unfavorable conditions.

# TABLE 7C – Guidelines for Velvetleaf Control with UpBeet

Beet Size	Velvetleaf Size	Other Weeds?	UpBeet Application*
cotyledon	coty — 1st true leaf	No	UpBeet + NIS
> cotyledon	coty — 2nd true leaf	No	UpBeet + 28% N + NIS
coty — 1st leaf pair	coty — 1st true leaf	Yes	UpBeet + Betamix
coty — 1st leaf pair	coty — 1st true leaf	Yes	UpBeet + Progress <sup>a</sup>
≥ 2nd leaf pair	coty — 1st true leaf	Yes	UpBeet + Betamix + NIS
≥ 2nd leaf pair	coty — 1st true leaf	Yes	UpBeet + Progress <sup>a</sup>

\*UpBeet at 0.5 oz/A. NIS—nonionic surfactant.

<sup>a</sup>DO NOT use if RoNeet was applied.