

# TABLE 5A – Chemical Weed Control in Dry Edible Beans

## Dry Edible Beans — Preplant Incorporated Only

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual grasses</b> (including lambsquarters)	EPTC ( <i>Eptam</i> )	2.25	1.25 qt 7EC	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Incorporate immediately after application.</li> <li>• <i>Eptam</i> suppresses common ragweed and wild mustard.</li> <li>• <b>Prowl (pendimethalin), trifluralin, or Sonalan</b> should be <b>tank mixed</b> with <i>Eptam</i> for additional broadleaf control, including lambsquarters.</li> <li>• <i>Pursuit 70DG</i> (0.72 oz) can be added to tank mixes with <i>Prowl</i>, <i>trifluralin</i>, or <i>Sonalan</i> for nightshade control. See remarks for <i>Pursuit</i>.</li> <li>• <i>Pursuit 70DG</i> (0.72 oz) may also be applied preemergence after preplant incorporated applications of <i>Eptam</i> tank mixed with <i>Prowl</i>, <i>trifluralin</i>, or <i>Sonalan</i>. See remarks for <i>Pursuit</i>.</li> <li>• A postemergence application of <i>Basagran</i>, <i>Pursuit</i> or <i>Raptor</i> may be necessary for additional broadleaf control. See remarks for these herbicides.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
<b>Annual grasses, Annual broadleaves</b> (some exceptions)	trifluralin (commercial product)	0.5	1 pt 4EC	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Incorporate immediately after application.</li> <li>• <i>Trifluralin</i> provides better pigweed control than <i>Prowl</i> or <i>Sonalan</i>.</li> <li>• <b>Trifluralin</b> should be <b>tank mixed</b> with <i>Eptam</i>. Other measures may need to be taken for additional broadleaf control. See remarks for <i>Eptam</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	pendimethalin ( <i>Prowl</i> , <i>Pendimax</i> ) OR ( <i>Prowl H<sub>2</sub>O</i> )	0.75	1.8 pt 3.3EC OR 1.6 pt 3.8ACS	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Incorporate immediately after application.</li> <li>• <i>Prowl</i> provides better velvetleaf control than <i>trifluralin</i> or <i>Sonalan</i>.</li> <li>• <b>Prowl</b> should be <b>tank mixed</b> with <i>Eptam</i>. Other measures may need to be taken for additional broadleaf control. See remarks for <i>Eptam</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	ethalfluralin ( <i>Sonalan</i> )	0.75	2 pt 3EC	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Incorporate immediately after application.</li> <li>• <b>Sonalan</b> should be <b>tank mixed</b> with <i>Eptam</i>. Other measures may need to be taken for additional broadleaf control. See remarks for <i>Eptam</i>.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

(Continued on next page)

## Dry Edible Beans — Preplant Incorporated Only (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Annual grasses, Annual broadleaves</b> (some exceptions)	imazethapyr + pendimethalin ( <i>Pursuit Plus</i> )	0.47	20 oz 2.9 EC	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• DO NOT use on sands or loamy sand soils.</li> <li>• DO NOT use in the Upper Peninsula of Michigan.</li> <li>• DO NOT apply <i>Pursuit Plus</i> if cold and/or wet conditions are present or predicted to occur within one week of application.</li> <li>• Delayed maturity may result from applications of <i>Pursuit Plus</i>. DO NOT apply if planting is delayed and frost is likely to occur prior to maturity.</li> <li>• 20 oz of <i>Pursuit Plus</i> contains 1.1 pt of <i>Prowl</i> 3.3EC, which may not be adequate grass control under heavy infestations.</li> <li>• On heavy soils with greater than 2% organic matter and heavy weed pressure, 30 oz of <i>Pursuit Plus</i> may be applied.</li> <li>• Dry bean varieties vary in their sensitivity to <i>Pursuit Plus</i>. Use ONLY on navy, black turtle, pinto, kidney and cranberry beans. DO NOT use on DOMINO black or OLATHE pinto beans.</li> <li>• DO NOT apply within 60 days of harvest.</li> <li>• DO NOT use if SUGAR BEETS, CUCUMBERS, CANOLA or TOMATOES are in the rotation; requires 40 months and a soil bioassay.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	alachlor ( <i>IntRRo</i> ) OR ( <i>Micro-Tech</i> )	2	2 qt 4EC OR 2 qt 4ME	<ul style="list-style-type: none"> <li>• <b>Apply preplant incorporated only.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Alachlor should be incorporated in the top 2 inches of soil to minimize the danger of bean injury.</li> <li>• DO NOT use on sands or sandy loam soils - injury can occur.</li> <li>• Alachlor provides better nightshade and pigweed control than metolachlor products.</li> <li>• <i>Prowl</i>, <i>trifluralin</i> or <i>Sonalan</i> can be tank-mixed for lambsquarters control.</li> <li>• <i>Pursuit 70DG</i> (0.72 oz) can be tank mixed for nightshade and additional broadleaf control. See remarks for <i>Pursuit</i>.</li> <li>• A postemergence application of <i>Basagran</i>, <i>Pursuit</i> or <i>Raptor</i> may be necessary for additional broadleaf control. See remarks for these herbicides.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Dry Edible Beans — Soil Applied

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual grasses Yellow nutsedge	s-metolachlor ( <i>Dual Magnum</i> , <i>Dual II Magnum</i> )	1.27	1.33 pt 7.64EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant incorporated or preemergence.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• PREPLANT INCORPORATED <i>Dual Magnum</i> minimizes the danger of bean injury.</li> <li>• DO NOT apply if soil is cracking and beans are in the crook stage.</li> <li>• Reduce <i>Dual Magnum</i> rate to 1 pt/A on coarse-textured soils with low organic matter.</li> <li>• Preemergence applications require rainfall for incorporation. Rotary hoe if no rainfall occurs within 7 days.</li> <li>• <i>Dual Magnum</i> provides better yellow nutsedge control than <i>alachlor</i> or <i>Outlook</i>.</li> <li>• <i>Prowl</i>, <i>trifluralin</i> or <i>Sonalan</i> can be tank mixed preplant incorporated for lambsquarters control.</li> <li>• <i>Pursuit 70DG</i> (0.72 oz) can be tank mixed for nightshade and additional broadleaf control. See remarks for <i>Pursuit</i>.</li> <li>• A postemergence application of <i>Basagran</i>, <i>Pursuit</i> or <i>Raptor</i> may be necessary for additional broadleaf control. See remarks for these herbicides.</li> <li>• DO NOT apply <i>Dual Magnum</i> within 60 days of harvest.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	metolachlor ( <i>Parallel</i> , <i>Parallel PCS</i> , <i>Stalwart</i> )	2.0	2 pt 7.8EC 2 pt 8EC	<ul style="list-style-type: none"> <li>• <b>May be applied preplant incorporated or preemergence.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Metolachlor at 2.0 lb a.i./A should provide similar control to s-metolachlor at 1.27 lb a.i. /A.</li> <li>• See remarks and limitations for <i>Dual Magnum</i>.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	dimethenamid-P ( <i>Outlook</i> )	0.66	14 oz 6L	<ul style="list-style-type: none"> <li>• <b>May be applied preplant incorporated or preemergence.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• PREPLANT INCORPORATED <i>Outlook</i> minimizes the danger of bean injury.</li> <li>• DO NOT apply if soil is cracking and beans are in the crook stage.</li> <li>• Reduce <i>Outlook</i> rate to 12 oz/A on coarse-textured soils with low organic matter.</li> <li>• Navy and black beans are more sensitive to <i>Outlook</i> applications than to <i>Dual Magnum</i>.</li> <li>• Preemergence applications require rainfall for incorporation. Rotary hoe if no rainfall occurs within 7 days.</li> <li>• <i>Outlook</i> provides better pigweed and nightshade control than <i>Dual Magnum</i>.</li> <li>• <i>Prowl</i>, <i>trifluralin</i>, or <i>Sonalan</i> can be tank mixed preplant incorporated for lambsquarters control.</li> <li>• <i>Pursuit 70DG</i> (0.72 oz) can be tank mixed for nightshade and additional broadleaf control. See remarks for <i>Pursuit</i>.</li> <li>• A postemergence application of <i>Basagran</i>, <i>Pursuit</i>, or <i>Raptor</i> may be necessary for additional broadleaf control. See remarks for these herbicides.</li> <li>• DO NOT apply <i>Outlook</i> within 70 days of harvest.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Dry Edible Beans — Soil Applied

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
Annual broadleaves	imazethapyr ( <i>Pursuit</i> )	0.031	0.72 oz 70DG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant incorporated or preemergence.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• DO NOT use on sands or loamy sand soils.</li> <li>• DO NOT use in the Upper Peninsula of Michigan.</li> <li>• DO NOT apply <i>Pursuit</i> if cold and/or wet conditions are present or predicted to occur within 1 week of application.</li> <li>• Delayed maturity may result from applications of <i>Pursuit</i>. DO NOT apply if planting is delayed and frost is likely to occur prior to maturity.</li> <li>• On heavy soils with greater than 2% organic matter and heavy weed pressure, 1.0 oz of <i>Pursuit</i> 70DG may be applied.</li> <li>• <i>Pursuit</i> can be tank mixed and applied preplant incorporated with <i>Eptam</i> plus <i>trifluralin</i>, <i>Prowl</i>, or <i>Sonalan</i>; or <i>alachlor</i>, <i>Dual Magnum</i> or <i>Outlook</i>; or preemergence with <i>Dual Magnum</i> or <i>Outlook</i>. <i>Pursuit</i> in these mixes will control eastern black nightshade.</li> <li>• Preemergence applications require rainfall for incorporation. Rotary hoe if no rainfall occurs within 7 days.</li> <li>• <i>Pursuit</i> will NOT control common ragweed.</li> <li>• Dry bean varieties vary in their sensitivity to <i>Pursuit</i>. Use ONLY on navy, black turtle, pinto, kidney, and cranberry beans. DO NOT use on DOMINO black or OLATHE pinto beans.</li> <li>• DO NOT apply within 60 days of harvest.</li> <li>• DO NOT use if SUGAR BEETS, CUCUMBERS, CANOLA or TOMATOES are in the rotation; requires 40 months and a soil bioassay.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	halosulfuron ( <i>Permit/Sandea</i> )	0.023	0.67 oz 75DG	<ul style="list-style-type: none"> <li>• <b>May be applied preplant incorporated or preemergence.</b></li> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Reduce the rate of <i>Permit/Sandea</i> to 0.5 oz/A on lighter textured soils with low organic matter.</li> <li>• <i>Permit/Sandea</i> can cause injury under cool and wet growing conditions.</li> <li>• Delayed maturity may result from applications of <i>Permit/Sandea</i>.</li> <li>• Dry bean varieties and classes vary in their tolerance to <i>Permit/Sandea</i>. From MSU research, CAUTION should be taken when applying <i>Permit/Sandea</i> to kidney and black beans.</li> <li>• <i>Permit/Sandea</i> can be tank mixed with <i>Eptam</i> for grass and additional lambsquarters control.</li> <li>• <i>Permit/Sandea</i> can be tank mixed with <i>metolachlor</i> products or <i>Outlook</i> for annual grass control.</li> <li>• <i>Permit/Sandea</i> will not control ALS-resistant weed species.</li> <li>• DO NOT plant SUGAR BEETS within 21 months of a <i>Sandea</i> application.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Dry Edible Beans — Postemergence

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Annual broadleaves</b> (including cocklebur, velvetleaf, and jimsonweed)	bentazon ( <i>Basagran</i> ) + crop oil concentrate	0.75	1.25 pt 4L + 1 qt	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Most effective on small weeds. Check <i>Basagran</i> dry bean label for specific rate and proper weed growth stage.</li> <li>• Beans MUST HAVE one fully expanded trifoliolate before application.</li> <li>• Use a minimum of 20 gal. water/A for adequate coverage.</li> <li>• DO NOT apply if dry beans are under stress from herbicide injury, cold or dry weather, or hail damage.</li> <li>• For improved velvetleaf control 28% liquid nitrogen (2-4 qt/A) or ammonium sulfate (2.5 lb/A) can be used INSTEAD OF crop oil concentrate. However, if common ragweed and common lambsquarters are present, a crop oil concentrate must also be included.</li> <li>• Split applications of <i>Basagran</i> (1 pt + 1 pt) plus crop oil concentrate (1 pt + 1 pt) can be used for more consistent common ragweed and lambsquarters control. Make the first application when weeds are less than 1 inch tall, and make second application 10-14 days later.</li> <li>• For CANADA THISTLE and YELLOW NUTSEDGE control, apply sequential applications of <i>Basagran</i> (1.5 pt + 1.5 pt) plus crop oil concentrate (1 qt + 1 qt) when Canada thistle is 6-8 inches tall and yellow nutsedge is 4-6 inches. Make second application 7-10 days later.</li> <li>• Allow 30 days between <i>Basagran</i> application and dry bean harvest.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
<b>Pigweed, E.B. nightshade, Wild mustard</b>	imazethapyr ( <i>Pursuit</i> ) + surfactant	0.031	0.72 oz 70 DG + 0.25%	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Most effective on small weeds (less than 2 inches).</li> <li>• Beans MUST HAVE one fully expanded trifoliolate before application.</li> <li>• DO NOT apply if dry beans have begun to flower.</li> <li>• Apply <i>Pursuit</i> with non-ionic surfactant (0.25% v/v).</li> <li>• DO NOT add 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (2.5 lb/A) unless at least 8 oz of <i>Basagran</i> is added to "safen" this application.</li> <li>• Increase the rate of <i>Basagran</i> (16 oz) when tank mixed with <i>Pursuit</i> to control common cocklebur and jimsonweed.</li> <li>• Delayed maturity may result from applications of <i>Pursuit</i>. DO NOT apply if planting is delayed and frost is likely to occur prior to maturity.</li> <li>• Dry bean varieties vary in their sensitivity to <i>Pursuit</i>. Use ONLY on navy, black turtle, pinto, kidney, and cranberry beans. DO NOT use on DOMINO black or OLATHE pinto beans.</li> <li>• DO NOT apply within 60 days of harvest.</li> <li>• DO NOT use if SUGAR BEETS, CUCUMBERS, CANOLA, or TOMATOES are in the rotation; requires 40 months and a soil bioassay.</li> <li>• DO NOT use on adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

(Continued on next page)

## Dry Edible Beans — Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Pigweed, E. B. nightshade, Wild mustard</b>	imazamox ( <i>Raptor</i> )	0.032	4 oz 1L	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Most effective on small weeds (less than 2 inches).</li> <li>• Beans MUST HAVE one fully expanded trifoliolate before application.</li> <li>• DO NOT apply if dry beans have begun to flower.</li> <li>• DO NOT apply if planting is delayed and frost is likely to occur prior to maturity.</li> <li>• Apply <i>Raptor</i> with crop oil concentrate (1% v/v) or a non-ionic surfactant (0.25% v/v).</li> <li>• At least 8 fl oz of <i>Basagran</i> <b>must</b> be tank-mixed with <i>Raptor</i>, if ammonium sulfate (12-15 lb/100 gal) or 28% liquid nitrogen (2.5% v/v) are added. <i>Basagran</i> “safens” this application.</li> <li>• Increase the rate of <i>Basagran</i> (16 oz) when tank mixed with <i>Raptor</i> to control common cocklebur and jimsonweed, and to provide good control of common lambsquarters (less than 2 inch tall).</li> <li>• DO NOT tank-mix with <i>Poast</i>, <i>Select/Arrow</i>, or <i>Assure II/Targa</i> — grass antagonism will occur.</li> <li>• DO NOT apply within 60 days of harvest.</li> <li>• DO NOT use the combination of <i>Raptor</i> + <i>Basagran</i> on adzuki beans. <i>Basagran</i> causes significant injury to adzuki beans.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	+		+	
	bentazon ( <i>Basagran</i> )	0.25	8 oz 4L	
	+		1%	
	crop oil concentrate		+	
+	ammonium sulfate		12–15 lb/100 gal	
<b>Grasses</b>	sethoxydim ( <i>Poast</i> )	0.19	1 pt 1.5SC	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Treat actively growing grasses (annual grasses up to 8 inches and crabgrass up to 6 inches).</li> <li>• Reduced rates of <i>Poast</i> (12 oz/A) may be used when barn yardgrass, green and giant foxtail, and fall panicum are less than 4 inches tall and the target species.</li> <li>• DO NOT apply to grasses under stress — poor weed control will result.</li> <li>• DO NOT cultivate within 5 days prior to and 7 days following application.</li> <li>• Allow 30 days between <i>Poast</i> application and dry bean harvest.</li> <li>• <i>Poast</i> is generally less effective than other postemergence grass herbicides for perennial grass control. Sequential applications of <i>Poast</i> (1.5 pt + 1 pt) plus crop oil concentrate (1 qt + 1 qt) plus 28% liquid nitrogen (1 gal + 1 gal) or ammonium sulfate (2.5 lb + 2.5 lb), 14 to 21 days apart are most effective for controlling quackgrass. Make the first application when quackgrass is 6-8 inches tall.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
+	crop oil concentrate		+	

*(Continued on next page)*

## Dry Edible Beans — Postemergence (continued)

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<i>(continued)</i>				
<b>Grasses</b>	clethodim ( <i>Select/Arrow</i> ) + crop oil concentrate	0.094	6 oz 2EC  + 1%	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Treat actively growing grasses (annual grasses up to 6 inches).</li> <li>• Reduced rates of <i>Select/Arrow</i> (4-5 oz/A) may be used when some grass species are small.</li> <li>• DO NOT apply to grasses under stress — poor weed control will result.</li> <li>• DO NOT cultivate within 7 days prior to and 7 days following application.</li> <li>• Allow 30 days between <i>Select/Arrow</i> application and dry bean harvest.</li> <li>• <i>Select/Arrow</i> can be tank mixed with <i>Basagran</i>. Increase the <i>Select/Arrow</i> rate to 8-10 oz/A.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• <i>Select/Arrow</i> (8-16 oz/A) plus crop oil concentrate (1% v/v) plus 28% liquid nitrogen (2.5% v/v) or ammonium sulfate (2.5 lb/A) will control quackgrass 4-12 inches tall. A sequential application of 8 oz/A may be needed 14-21 days later.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>
	quiazalofop-P-ethyl ( <i>Assure II/Targa</i> ) + crop oil concentrate OR surfactant	0.044	7 oz 0.88L  + 1% OR 0.25%	<ul style="list-style-type: none"> <li>• Refer to Table 5C for weed control and crop tolerance ratings.</li> <li>• Treat actively growing grasses (annual grasses up to 4 inches).</li> <li>• DO NOT apply to grasses under stress — poor weed control will result.</li> <li>• DO NOT cultivate within 5 days prior to and 7 days following application.</li> <li>• Allow 30 days between <i>Assure II/Targa</i> application and dry bean harvest.</li> <li>• <i>Assure II/Targa</i> can be tank mixed with <i>Basagran</i> for foxtails and barnyardgrass. Increase the <i>Assure II/Targa</i> rate by 2 oz.</li> <li>• Tank mixes with <i>Pursuit</i> and <i>Raptor</i> are not recommended — grass antagonism will occur.</li> <li>• <i>Assure II/Targa</i> (10 oz/A) plus crop oil concentrate (1% v/v) or nonionic surfactant (0.25% v/v) will control quackgrass 6-10 inches tall. A sequential application of 7 oz/A may be needed 14-21 days later.</li> <li>• Refer to label and Table 12 for crop rotation restrictions.</li> </ul>

## Table 5B - Preharvest Treatments in Dry Edible Beans

Weed Controlled	Herbicide	Rate lb/A a.i.	Formulation/A	Remarks and Limitations
<b>Preharvest</b>	glyphosate <i>(Roundup WeatherMax)</i> OR <i>(Roundup OriginalMax)</i> + ammonim sulfate	0.75 lb a.e.	22 oz 5.5L OR 22 oz 5.5L + 17 lb/100gal	<ul style="list-style-type: none"> <li>• Glyphosate should ONLY be used to control weeds that hinder harvest.</li> <li>• <b>DO NOT</b> use glyphosate for <b>vine desiccation</b> — residues of glyphosate have been found in harvested beans if applications are made too early.</li> <li>• If vine desiccation is needed, use <i>Gramoxone Max</i>.</li> <li>• Glyphosate should be applied when beans are in the <b>hard dough stage (30% moisture or less)</b>.</li> <li>• Glyphosate applications should be made at least 7 days before harvest.</li> <li>• ONLY one application should be made per year.</li> <li>• DO NOT apply glyphosate to beans grown for seed.</li> <li>• DO NOT feed treated vines and hay from these crops to livestock.</li> </ul>
<b>Preharvest Vine desiccation</b>	paraquat <i>(Gramoxone Max)</i> OR <i>(Gramoxone Inteon)</i> + non-ionic surfactant	0.31-0.47	0.8–1.3 pt 3SL OR 1.2–2 pt 2SL + 0.25%	<ul style="list-style-type: none"> <li>• <i>Gramoxone Max</i> is a restricted-use pesticide.</li> <li>• Apply when crop is mature, at least 80% of the pods are yellowing and mostly ripe and no more than 40% (bush-type beans) or 30% (vine-type beans) of the leaves are still green.</li> <li>• Apply by air in 5 gal water/A or by ground in 20-40 gal of water/A.</li> <li>• If growth is lush and vigorous, make either single applications of the higher rates of <i>Gramoxone Max</i> or <i>Gramoxone Inteon</i>; or split applications of these products at lower rates. Split applications may improve vine coverage. DO NOT exceed 1.3 pt/A of <i>Gramoxone Max</i> or 2.0 pt/A of <i>Gramoxone Inteon</i>.</li> <li>• Do not harvest within 7 days of application.</li> </ul>

## TABLE 5C – Weed Response to Herbicides in Dry Edible Beans\*

	SITE OF ACTION	CROP TOLERANCE	ANNUAL BROADLEAVES										ANNUAL GRASSES							PERENNIALS					
			COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	NIGHTSHADE (E. BLACK)	PIGWEED	RAGWEED (COMMON)	SMARTWEED	VELVETLEAF	WILD MUSTARD	BARNYARDGRASS	CRABGRASS	GIANT FOXTAIL	GREEN FOXTAIL	YELLOW FOXTAIL	FALL PANICUM	WITCHGRASS	SANDBUR	BINDWEED (FIELD)	BINDWEED (HEDGE)	CANADA THISTLE	QUACKGRASS	YELLOW NUTSEDGE	
<b>Preplant Incorporated</b>																									
DUAL MAGNUM/PARALLEL/STALWART	O	2	N	N	P	F	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	F	N	N	N	N	<b>G</b>	
EPTAM	O	2	P	P	<b>G</b>	F	F	F	F	F	F	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	N	N	N	F	F	
OUTLOOK	O	3 <sup>a</sup>	N	N	P	<b>G</b>	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	P	N	N	N	N	F	
INTRRO	O	3	N	N	P	<b>G</b>	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	F	N	N	N	N	F	
PROWL	O	1	N	N	<b>G</b>	P	F	P	P	F	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	N	N	N	N	N	
PURSUIT	B	3	F	F	P	<b>E</b>	<b>E</b>	P	F	F	<b>G</b>	P	P	F	F	F	P	P	P	N	N	N	N	F	
SONALAN	O	1	N	N	<b>G</b>	F	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	N	N	N	N	N	
TRIFLURALIN	O	1	N	N	<b>G</b>	N	<b>G</b>	N	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	N	N	N	N	N	
PURSUIT PLUS	O/B	3	F	F	<b>G</b>	<b>E</b>	<b>E</b>	P	F	<b>G</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	N	N	N	N	F	
<b>Preemergence</b>																									
OUTLOOK	O	3 <sup>a</sup>	N	N	P	<b>G</b>	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	P	N	N	N	N	F	
DUAL MAGNUM/PARALLEL/STALWART	O	2	N	N	P	F	<b>G</b>	P	P	N	P	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	F	N	N	N	N	F	
PURSUIT	B	3	P	P	P	<b>E</b>	<b>E</b>	P	F	P	<b>G</b>	P	P	F	F	F	P	P	P	N	N	P	N	F	
PERMIT/SANDEA	B	3	F	F	F	P	<b>E</b>	<b>G</b>	P	<b>G</b>	<b>E</b>	N	N	N	N	N	N	N	N	N	N	N	N	F	
<b>Postemergence</b>																									
BASAGRAN <sup>b</sup>	O	2	<b>E</b>	<b>G</b>	F	P	P	F	<b>E</b>	<b>G</b>	<b>E</b>	N	N	N	N	N	N	N	N	N	N	<b>G</b>	N	<b>G</b>	
POAST	A	1	N	N	N	N	N	N	N	N	N	<b>F</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	N	N	N	F	N	
SELECT/ARROW	A	1	N	N	N	N	N	N	N	N	N	<b>F</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	N	N	N	<b>G</b>	N	
ASSURE II/TARGA	A	1	N	N	N	N	N	N	N	N	N	<b>G</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>F</b>	N	N	N	<b>E</b>	N	
PURSUIT <sup>c</sup>	B	3	F	P	P	<b>F</b>	<b>F</b>	P	F	F	<b>F</b>	P	P	F	P	P	P	P	P	N	N	P	N	F	
PURSUIT <sup>c</sup> + BASAGRAN	O/B	2	<b>F</b>	<b>G</b>	F	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>G</b>	<b>F</b>	P	P	F	P	P	P	P	P	N	N	<b>G</b>	N	<b>G</b>	
RAPTOR <sup>c</sup>	B	3	F	F	F	<b>F</b>	<b>F</b>	P	F	<b>G</b>	<b>F</b>	F	P	F	P	P	P	P	P	N	N	P	N	P	
RAPTOR <sup>c</sup> + BASAGRAN (8 oz)	O/B	2	<b>G</b>	<b>F</b>	F/ <b>G</b>	<b>F</b>	<b>F</b>	F	<b>G</b>	<b>G</b>	<b>F</b>	F	P	F	P	P	P	P	P	N	N	F	N	F	
RAPTOR <sup>cd</sup> + BASAGRAN (16 oz)	O/B	2	<b>F</b>	<b>G</b>	<b>G</b>	<b>F</b>	<b>F</b>	F	<b>F</b>	<b>G</b>	<b>F</b>	P	P	F	P	P	P	P	P	N	N	<b>G</b>	N	F	

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.

<sup>a</sup> Crop tolerance for navy and black beans = 3. For other bean classes, crop tolerance = 2. Preplant incorporation will increase tolerance of navy and black beans to *Outlook*.

<sup>b</sup> Control of **hairy nightshade** with *Basagran* is good.

<sup>c</sup> Control of **hairy nightshade** with *Pursuit* and *Raptor* is excellent.

<sup>d</sup> **Common lambsquarters** will be controlled with this tank mixture *if* the weeds are less than 2 inches tall and *not* under drought stress.