

## WEED RESISTANCE TO HERBICIDES

In Louisiana and surrounding states, examples of weeds that have been documented as resistant to herbicides include: barnyardgrass resistance to propanil, Facet, and Command; common cocklebur resistance to MSMA, Scepter, and Classic; giant ragweed, horseweed, and Palmer amaranth resistance to glyphosate; itchgrass resistance to Fusliade; johnsongrass resistance to glyphosate, Select, and Fusliade; pigweed resistance to Scepter and Classic; and ryegrass resistance to Hoelon, Osprey, and Oust.

<b>Things That Promote Resistance</b>	<b>Examples of Herbicides Having Same Mode of Action and Weeds That Are Resistant to Them in Louisiana and locations in the United States.</b>	
<b>General Resistance Management Programs</b>	<b>Mode of Action/Herbicides</b>	<b>Weeds Resistant to This Mode of Action in Louisiana</b>
<ol style="list-style-type: none"> <li>1 Overdependence on single herbicides.</li> <li>2 Relying on a single mode of action every year.</li> <li>3 Sequential applications of the same herbicides with a year.</li> </ol> <p>In order to manage herbicide-resistant weeds and to prevent development of resistance, the LSU AgCenter recommendations are as follows:</p>	<ol style="list-style-type: none"> <li>1 <b>EPSPS inhibitor:</b> glyphosate (numerous formulations)</li> </ol>	<p>none confirmed, but suspect ryegrass</p>
<ol style="list-style-type: none"> <li>1 Rotate crops.</li> <li>2 Use tillage, cultivation, or other cultural practices such as rotation when possible</li> <li>3 Rotate herbicides using different modes of action.</li> <li>4 Use tank-mixtures at effective rates, with different modes of action.</li> <li>5 Avoid using sequential applications of the same single herbicide over and over again.</li> <li>6 Control weeds on fallow ground or set aside to prevent spreading of documented or suspected resistant weeds.</li> <li>7 <b>If you suspect resistance after a herbicide application: Attempt to eradicate escapes with alternative herbicides or cultural methods. DO NOT ALLOW THE WEEDS TO GO TO SEED. If they go to seed, collect a seed sample from suspect plants and take them to your county Extension agent who will have them screened by LSU AgCenter scientist or inform you if resistant populations have been identified.</b></li> </ol>	<ol style="list-style-type: none"> <li>2 <b>ACCase inhibitor herbicide:</b> Hoelon, Axial XL, Select, Fusliade, Clincher, Assure II, Poast</li> </ol>	<p>annual ryegrass, johnsongrass, itchgrass</p>
	<ol style="list-style-type: none"> <li>3 <b>ALS inhibitor herbicide:</b> Classic, Newpath, Pursuit, Staple LX, FirstRate, Scepter, Synchrony XP, FirstShot, Harmony, Oust, Regiment, Permit, Finesse</li> </ol>	<p>annual ryegrass, pigweed, common cocklebur</p>
	<ol style="list-style-type: none"> <li>4 <b>Arsenicals:</b> MSMA</li> </ol>	<p>common cocklebur</p>
	<ol style="list-style-type: none"> <li>5 <b>Ureas and Amides:</b> Propanil (numerous formulations)</li> </ol>	<p>barnyardgrass</p>
	<ol style="list-style-type: none"> <li>6 <b>Pigment inhibitors:</b> Command</li> </ol>	<p>none</p>
	<ol style="list-style-type: none"> <li>7 <b>Pigment inhibitors:</b> Facet</li> </ol>	<p>barnyardgrass</p>
	<ol style="list-style-type: none"> <li>8 <b>DNA herbicides:</b> Prowl H2O, Treflan, Sonolan, Barricade, PendiMax, Trilin</li> </ol>	<p>none</p>
	<ol style="list-style-type: none"> <li>9 <b>Acetamide herbicides:</b> Dual, Lasso, Degree, Outlook, Parrlay</li> </ol>	<p>none</p>
	<ol style="list-style-type: none"> <li>10 <b>Photosynthesis inhibitors:</b> Atrazine, Sencor, Meturon, Lorox, Karmex, Cotoran</li> </ol>	<p>none</p>
	<ol style="list-style-type: none"> <li>11 <b>PPO inhibitors:</b> Valor, Flexstar, Ultra Blazer, Reflex</li> </ol>	<p>none</p>

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## MODE OF ACTION OF SELECTED HERBICIDES USED IN LOUISIANA

Herbicide Active Ingredient	Herbicide Trade Name	Mode of Action
glyphosate	numerous other formulations	EPSPS-inhibitor
chlorimuron	Classic	ALS-inhibitor
pyrithiobac	Staple LX	
trifloxysulfuron-sodium	Envoke	
imazethapyr	Pursuit, Newpath	
imazaquin	Scepter	
nicosulfuron	Accent	
cloransulam-methyl	FirstRate	
Fluazifop-P	Fusliade	ACCase-inhibitor
sethoxydim	Poast	
quizalofop	Assure II	
clethodim	Select, Arrow	
fenoxaprop	Fusion	
diclofop	Hoelon	
atrazine	Aatrex	Photosynthetic inhibitor
metribuzin	Sencor	
diuron	Diruon, Karmex	
fluometuron	Cotoran, Meturon	
prometryn	Caporal	
propanil	Stam, SuperWham	
MSMA	MSMA (numerous formulations)	no completely understood
pendimethalin	Prowl H2O, Pendimax	Cell division inhibitor
trifluralin	Treflan, Trilin	
prodiamine	Barricade	
mesotrione	Callisto	HPPD-inhibitor
tembotrione	Laudis	
fomesafen	Reflex, Flexstar	PPO-inhibitor
acifluofen	Ultra Blazer	
flumioxazin	Valor	
oxyfluofen	Goal	
carfentrazone	Aim	