



Suggestions for Managing Weeds in Wheat

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WEED MANAGEMENT IN WHEAT

Weed management in wheat usually is relatively simple compared to other agronomic crops, but it still requires some planning.

The most important aspect of managing weeds in wheat is establishing a good wheat stand. The key to this is timely planting and good seedbed preparation. The optimum time to plant wheat is between Oct. 15 and Nov. 15 in north Louisiana and from Nov. 1 to Nov. 30 in central and south Louisiana.

When possible, seedbeds should be prepared far enough ahead of planting that rainfall can replenish moisture lost during tillage operations. Fall tillage may not be required if a no-till drill is available. Regardless of the tillage system, it is extremely important to completely kill existing vegetation using an appropriate herbicide such as glyphosate or paraquat before wheat emerges.

While using a grain drill is the preferred method of planting, wheat occasionally is planted by broadcasting it on a prepared seedbed and then lightly disking or harrowing to cover the seed. This seeding method works well when drilling wheat is not an option. The most common mistake with this method is the belief that the tillage and/or harrowing operations will destroy existing vegetation. In most cases, weeds are covered by soil and resume growth after the next rain.

Weeds reduce wheat profits by reducing yield, quality (dockage) and harvest efficiency. Some weeds, such as ryegrass, reduce profits by reducing yields and quality. Others, such as wild onion/garlic and vetch, primarily reduce profits by reducing quality, which results in substantial dockage. Losses due to dockage are serious and can equal or exceed the losses associated with reduced yield. This publication is a brief overview of strategies for managing weeds in wheat.

Annual grass management

Annual bluegrass and ryegrass are the two most common grasses infesting wheat in Louisiana. Of the two, ryegrass causes the most economic damage by reducing wheat yield and quality. Annual bluegrass is more widespread than ryegrass but often is suppressed by good wheat stands.

Metribuzin, Hoelon, Axial, Powerflex, Osprey and Finesse are the primary herbicides recommended for grass control in wheat produced in Louisiana.

Metribuzin is excellent at controlling annual bluegrass and suppresses many of the other annual grasses. Metribuzin also is very effective at controlling many broadleaf weeds. Metribuzin at 3 ounces per acre applied to two- to three-leaf wheat has been effective at controlling most weeds in wheat. This rate and timing also suppresses ryegrass and greatly enhances ryegrass management programs. Rates can be increased to 5 ounces per acre when wheat has two to three tillers and 8 ounces per acre on wheat with four tillers. These later applications often are less active on emerged weeds and result in more wheat injury. Injury potential is a concern with

metribuzin. As a result, metribuzin should only be used on tolerant wheat varieties. Even tolerant varieties will be injured when metribuzin applications are followed by conditions that favor rapid growth and then sudden unfavorable growing conditions. For example, the worst years for metribuzin injury are when temperatures drop 20 to 25 degrees in a 24-hour period following extended warm periods.

Hoelon and Axial are ACCase inhibiting herbicides that only control grasses. Both are used primarily to control ryegrass and canary grass and do not control annual bluegrass or little barley. Hoelon was the standard for ryegrass control in Louisiana until the introduction of Axial. Hoelon resistance in ryegrass is common throughout the Delta, and a few unconfirmed cases have been reported in Louisiana. It was not uncommon to see ryegrass control failures with Hoelon even on susceptible populations. Tank-mixing Hoelon with broadleaf herbicides and application errors were the two leading causes of Hoelon failures. Hoelon cannot be tank-mixed with any other herbicide for broadleaf weed control. Also, Hoelon rates have

to be adjusted according to ryegrass size. Hoelon should be applied at 1.33, 2.0, and 2.66 pints per acre, respectively, when ryegrass has one to three leaves, three to four leaves and up to 2 tillers. Unfortunately, ryegrass usually goes unnoticed until it is well past these stages. Axial has quickly become the standard for managing ryegrass in Louisiana. As with Hoelon, there are a limited number of herbicides that can be applied with Axial for broadleaf weed control. The best weed control and highest wheat yields are observed when Hoelon or Axial is applied in January to February following a November to December application of Finesse, metribuzin, Powerflex or Osprey.

Powerflex and Osprey are ALS-inhibiting herbicides that control many annual grasses and broadleaf weeds. Both have a wide application window ranging from the two-leaf stage of wheat until jointing. Both perform more consistently, however, when applied before mid-December. ALS-resistant ryegrass has become a problem in Louisiana, which limits the use of Powerflex and Osprey to control ryegrass. Annual bluegrass is not listed on the Powerflex label. But fall (November to mid-December) applications of Powerflex have done a good job of controlling annual bluegrass and many other annual weeds.

Osprey is better at controlling annual bluegrass than Powerflex but is not as effective on broadleaf weeds. Also, Powerflex is effective at controlling weedy legumes like vetch and white clover. Powerflex and Osprey can be tank-mixed with most wheat herbicides. Powerflex and Osprey are good choices for managing weeds in November and December but will often need to be followed by Hoelon or Axial in January or February to control ryegrass.

Finesse is package-mixed of chlorsulfuron and metsulfuron, both of which are ALS-inhibiting herbicides. When applied pre-plant or pre-emergence, Finesse is very effective at controlling annual bluegrass, henbit and many other annual weeds. Pre-plant and pre-emergence applications of Finesse also can suppress ryegrass, but as with Powerflex and Osprey, ALS resistance limits the usefulness of Finesse in ryegrass management programs. The long residual of Finesse that makes it so effective at controlling weeds in Louisiana also limits its use. Wheat fields treated with Finesse must be fallowed or planted to STS soybeans. Fortunately, there are more good STS soybean varieties to choose from now than in the past.

Broadleaf weed, wild onion and wild garlic management

Although they are present in most fields, winter weeds like henbit, chickweed, swinecress, buttercup and geranium rarely require treatment when wheat is planted on time and to a clean seedbed. Clover, vetch and medic species, as well as curly dock, occasionally are problems but can be controlled easily with 2,4-D, Powerflex or 2,4-D plus dicamba. Curly dock also is controlled by Harmony Extra.

Wild onion and wild garlic are more problematic because they often go unnoticed until late in the season when they are larger and wheat has passed key growth stages, which limits herbicide options. Wild onion and wild garlic may not result in large yield reductions, but they do reduce quality and result in significant dockage. So it is important that they are controlled or at least suppressed.

2,4-D usually is the preferred and most economical herbicide for suppressing both wild onion and wild garlic. Tank-mixes of 2,4-D and dicamba generally are required to control or suppress severe infestations, but this mixture can injure wheat. 2,4-D and dicamba can only be used on wheat that has finished tillering and not begun to joint (stem elongation). Harmony Extra can be applied to wheat between the two-leaf stage and the development of the third node, but it only controls wild garlic. Wild garlic and wild onion are similar in appearance but can be distinguished by looking at a cross section of the leaves. Wild garlic has round, hollow leaves. Wild onion leaves are flat and not hollow.

Table 1. Effectiveness of selected small-grain herbicides four weeks after application¹.

	annual bluegrass	annual ryegrass	canarygrass	little barley	wild garlic	wild onion	henbit	curlydock	swinecress	verch	buttercup	shepherd's purse	bitterress	cutleaf evening primrose	chickweed
Pre-plant															
Finesse	9	7	-	3	5	5	9	8	9	3	9	9	9	9	9
Pre-emergence															
Finesse	9	7	-	3	5	5	9	8	9	3	9	9	9	9	9
Post-emergence															
2,4-D	0	0	0	0	6	8	7	9	8	9	9	9	9	9	8
Dicamba plus 2,4-D	0	0	0	0	8	9	8	9	9	9	9	9	9	9	9
Harmony Extra	0	0	0	0	9	7	8	9	8	8	9	9	9	8	9
Hoelon	0	9 ³	8	5	0	0	0	0	0	0	0	0	0	0	0
Metribuzin	9	7 ⁴	6	7	0	0	9	7	8	3	9	9	9	8	9
Osprey	9	9 ⁵	8	5	5	5	9	7	8	3	9	9	6	6	7
Axial	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0
Powerflex	8 ⁶	9 ⁵	9	3	5	5	9	9	9	9 ⁷	9	9	9	9	9
Prowl H2O2	9	7	8	3	0	0	9	3	-	0	-	-	-	3	-
Finesse	9	7 ⁵	-	0	6	6	9	8	8	3	8	9	9	8	9

¹Not all small grain herbicides are listed. Not all the herbicides or their use patterns are labeled or safe on all small grains. Following is a summary of which crop/use patterns are labeled on small grains grown in Louisiana: Wheat – all herbicides listed are labeled. Barely – do not use Osprey or Powerflex at anytime or Finesse pre-plant or pre-emergence. Oats – only 2, 4-D and Harmony Extra are labeled. Rye – only 2, 4-D is labeled.

²Prowl H₂O will not control emerged weeds. Apply after wheat emerges but before weeds emerge. Use as a residual component with post-emergence herbicides.

³Will not control ACCase-resistant ryegrass.

⁴This rating is based on fall applications made to wheat with two to three leaves before ryegrass emerges. Later applications are not effective.

⁵Will not control ALS-resistant ryegrass.

⁶Not listed on the label, but fall applications have controlled small bluegrass in Louisiana. Spring applications do not consistently control bluegrass.

⁷Expect regrowth four to six weeks after application. Follow-up applications of 2,4-D or Harmony usually are required.

Table 2. Winter wheat response to metribuzin (75 DF) applied at rates of 3 ounces per acre and 6 ounces per acre to two- to three-leaf wheat¹.

Variety	Wheat Yield Reduction (%)		Variety	Wheat Yield Reduction (%)		Variety	Wheat Yield Reduction (%)	
	3 oz/A	6 oz/A		3 oz/A	6 oz/A		3 oz/A	6 oz/A
Excellent tolerance: no injury or yield loss expected²								
USG 3438	0	0						
Good tolerance: injury and/or yield loss possible²								
AGS 2035	0	0	Dixie 454	0	1	Progeny 185	1	0
Coker 9553	0	0	Dyna-Gro Oglethorpe	0	0	Terral LA21	0	0
Croplan 8302	0	0	Magnolia	0	8	Terral TV8861	0	0
Delta King 909	0	2	Pioneer 26R61	0	0	USG 3120	0	0
Delta King 9577	0	0	Progeny 117	0	1	USG 3201	0	0
Fair tolerance: injury probable and yield loss possible²								
AGS 2026	0	0	Delta Grow 8300	0	0	Pioneer 26R87	0	11
AGS 2031	0	5	Delta King 9108	0	2	Progeny 166	0	1
Delta Grow 1600	0	0	Dixie 427	0	0	Terral TV8581	0	0
Delta Grow 5900	0	10	Dyna-Gro Baldwin	0	0			
Poor tolerance: injury and yield loss probable²								
AGS 2060	0	26	Oakes	6	21	USG 3555	7	15
Coker 9700	1	5	Terral LA 841	0	21			
Delta Grow 5000	0	17	UGS 3295	0	9			

¹Data averaged across trials conducted in Alexandria, Winnsboro and Saint Joseph, La.

²Rankings are based on visual ratings recorded one through 13 weeks after application and yield loss. Visual injury and yield loss data following 6 ounces per acre metribuzin were used to determine the level of tolerance.

Table 3. Control strategies for selected weeds¹.

Weed Problem	Suggested Management Strategies
General weed control	The best weed control and wheat yields are observed when weeds are managed during the fall. Fields should be treated with glyphosate or paraquat prior to or at planting to ensure wheat emerges before weeds.
Ryegrass	Two applications usually are required to manage ryegrass. The first application should be in the fall, and the second application should be in the winter (January or February). Metribuzin, Finesse, Osprey and Powerflex are good choices for managing ryegrass during the fall. Metribuzin must be applied at the two- to three-leaf wheat stage before ryegrass emerges. To control ryegrass, Finesse should be applied pre-plant or pre-emergence before wheat and ryegrass emerge. When using Finesse, fields must be fallowed or planted to STS soybeans. Powerflex and Osprey should be applied post-emergence when ryegrass reaches the two- to three-leaf stage. Finesse, Powerflex and Osprey will not control ALS-resistant ryegrass. Hoelon and Axial are the best choices for managing ryegrass in January or February. Hoelon will not control ACCase-resistant ryegrass or ryegrass that has tillered. Axial has been the most consistent herbicide for managing ryegrass in February.
Vetch	Two applications often are required to manage severe infestations. Powerflex and Harmony Extra can be used in the fall for control. In most situations, Powerflex in the fall followed by Harmony Extra in January or February is the best control strategy. 2,4-D also can be used after wheat has finished tillering and before jointing.
Little barley	Start clean and then apply metribuzin as soon as wheat reaches the two- to three-leaf stage. A second application may be required after wheat begins to tiller. Osprey, Powerflex and Axial may provide some suppression but will not control little barley.

¹See next section for more information regarding specific herbicides. Labels and recommendations may change. Always consult the label before using suggested herbicides.

Small Grains (Wheat, Barley, Oats and Rye)¹

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
Pre-plant			
Chlorsulfuron @ 0.016 lb ai/A + Metsulfuron @ 0.003 lb ai/A	Finesse, Report Extra @ 0.4 oz/A	Most common broadleaf weeds and annual bluegrass. Suppresses ryegrass.	Wheat only: Apply before planting. Drill wheat at least 1 inch deep or injury may occur. Do not use if wheat will be broadcast-seeded. Can be mixed with glyphosate to control emerged weeds. Extremely long rotation interval for most crops grown in Louisiana. STS soybeans can be grown six months after application. All other crops can be grown 18 months after application. Do not use an organophosphate insecticide within 60 days of application. Can be applied in a liquid nitrogen solution. No grazing restrictions.
Pre-emergence			
Chlorsulfuron @ 0.0195 lb ai/A + Metsulfuron @ 0.004 lb ai/A	Finesse, Report Extra @ 0.5 oz/A	Most common broadleaf weeds and annual bluegrass. Suppresses ryegrass.	Wheat only: See comments in pre-plant section.
Post-emergence			
2,4-D amine @ 0.5 - 1.0 lb/A	Various @ 1.0 - 2 pt/A*	Dock, plantain, mustard and other broadleaf weeds. Also winter peas and vetch.	Application timing and grazing restrictions may vary; always refer to the label. Most labels allow application after the onset of tillering. Applications are safest after two to three tillers have formed. Do not apply at panicle initiation, panicle differentiation, boot or heading stages. Panicle initiation and differentiation occur around the time the first internode is 0.5 inches long. Choose sunny days for making the application. LVE formulation is more compatible with nitrogen solutions. Do not graze or feed forage from treated fields within two weeks after treatment. Do not exceed these rates or severe injury may occur. If used on oats or rye, make application only after tillering is complete and before jointing.
2,4-D ester @ 0.5 - 1.0 lb/A	Various @ 1.0 - 2 pt/A*		
2,4-D acid @ 0.2 - 0.7 lb/A	Barrage @ 6 -13 oz/A Unison @ 1.0 - 3.25 pt/A	Wild onion or wild garlic: Use the highest labeled rate. Control will not be complete, but aerial bulb formation will be reduced. Less effective on wild garlic than on wild onion.	
	* Based on 4 lb/gal product. See product labels for correct rate.		

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
Post-emergence (continued)			
Dicamba @ 0.125 lb/A + 2,4-D Amine @ 1 lb/A	Clarity/Banvel @ 4 oz/A + 2,4-D amine @ 2.0 pt/A	Most broadleaf weeds, winter peas and vetch. More effective on wild onion and wild garlic than 2,4-D alone.	Wheat and Barley: Do not use unless potential injury is acceptable. Application timing same as for 2,4-D, except that this combination may not be used after jointing.
Thifensulfuron @ 0.009-0.018 lb/A + tribenuron @ 0.0045 - 0.009 lb/A oz/A	Harmony Extra SG, Nimble @ 0.45–0.9 oz/A Apply with NIS @ 1-2 pt/100 gal	Wild garlic and many broadleaf weeds. Use 0.75 to 0.9 oz/A for wild garlic. Does not control wild onion.	Wheat, Barley and Oats: Apply after the two-leaf stage but before the flag leaf emerges. Do not use with nitrogen.
Diclofop @ 0.80–1.5 lb/A	Hoelon @ 2.0–3.33 pt/A	Annual Ryegrass Does not control annual bluegrass.	Wheat and Barley: Apply 2.0 to 2.66 pts/A to ryegrass from emergence until the two-leaf stage. Use 2.66 to 3.33 pt/A from the three-leaf stage to tillering. Do not mix with other herbicides.
Metribuzin @ 0.14 lb/A	various 75DF @ 3.0 oz/A	Annual bluegrass, henbit and chickweed.	Wheat and Barley: Apply between the two-leaf and two-tiller crop stages before weeds emerge. Injury may occur when applications are made to waterlogged soils. Some varieties may be sensitive to metribuzin.
Mesosulfuron-methyl 0.013 lb/A	Osprey @ 4.75 oz/A Apply with MSO @ 1.5 pt/A	Annual bluegrass, limited broadleaf weed control. Good control of non-ALS resistant ryegrass.	Wheat only: Apply when ryegrass is in the one-leaf to two-tiller stages. Can be applied from wheat emergence to jointing. Best results are obtained if applications are made before ryegrass tillers. Some transient leaf burn may occur if applied with nitrogen fertilizers. Can be tank-mixed with some broadleaf herbicides, insecticides and fungicides; consult label. See label for rotation intervals.
Pinoxaden @ 0.054	Axial XL @ 16.4 oz/A	Ryegrass – Will not kill Hoelon-resistant ryegrass. Does not control annual bluegrass.	Wheat and Barley: Apply between the two-leaf and pre-boot stage. For optimum control, apply prior to the three-tiller stage of ryegrass. Can be tank-mixed with some broadleaf herbicides, insecticides and fungicides. Consult label for approved pesticides. Do not graze within 30 days of application or harvest within 60 days of application. Straw can be fed to livestock 60 days after application. Rotation restrictions: 0 days for wheat and barley, 30 days for leafy and root crops and 120 days for all other crops.

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
Post-emergence (continued)			
Pyroxsulam @ 0.016 lb ai/A	Powerflex @ 3.5 oz/A Apply with NIS @ 0.25 to 0.5 % v/v plus 1 to 2 qt/A UAN or 1.5 to 3 lb/A AMS; COC @ 1 to 1.25 % v/v; or MSO @ 1% v/v.	Most common broadleaf weeds, including vetch. Good annual bluegrass control when applied in the fall. Excellent control of non-ALS resistant ryegrass.	Wheat only. Apply anytime between the three-leaf stage and jointing. Best results are obtained when applied in the fall to actively growing weeds. COC or MSO may be required with spring applications, large weeds or under poor growing conditions. COC and MSO increase the risk of injury. Do not apply liquid fertilizer within seven days of an application. Do not graze within seven days or cut hay within 28 days of an application. Do not apply organophosphate insecticides within five days of an application. Cotton, soybeans, grain sorghum and sunflowers can be planted three months after application. Corn can be planted nine months after application. The rotation interval for rice and sweet potatoes is 12 months.
Pendimethalin @ 0.7 to 1.4 lbs ai/A	Prowl H2O: Coarse soil -1 to 2 pts/A Medium soil – 1.5 to 3 pts/A Fine soil- 2 to 3 pts/A In most situations, use 1.5, 2.1, or 2.6 pts/A for coarse, medium or heavy soils, respectively.	Residual/pre-emergence control of many broadleaf weeds and annual grasses. Suppresses ryegrass.	Wheat only. Apply after wheat reaches the one-leaf stage until flag leaf emergence. Wheat should be planted 0.5 to 1 inch deep. Must be applied before weeds emerge. May be applied with any herbicide labeled for wheat. Applications before wheat emerges may result in severe stand reductions. Do not harvest hay within 28 days or forage within days of application. Do not apply within 60 days of harvest.
Chlorsulfuron @ 0.016 lb ai/A + metsulfuron @ 0.003 lb ai/A	Finesse, Report Extra @ 0.4 oz/A Apply with NIS @ 1-2 pt/A	Most common broadleaf weeds and annual bluegrass. Suppresses ryegrass.	Wheat and barley: Apply anytime between the one-leaf and boot stage. Do not apply in any boot or heading stage. Extremely long rotation interval for most crops grown in Louisiana. STS soybeans can be grown six months after application. All other crops can be grown 18 months after application. Do not use an organophosphate insecticide within 60 days of application. Can be applied in a liquid nitrogen solution. No grazing restrictions.

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