DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Chapter 6

Weed Control in Wheat

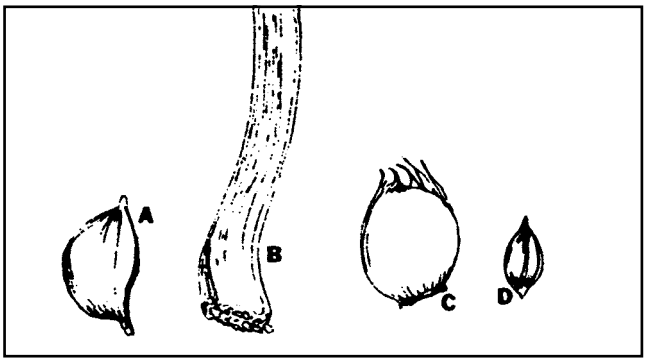
Bob Scott - Extension Weed Scientist, Dr. Tom Barber - Extension Weed Scientist, Jason Norsworthy - Distinguished Professor and Elms Farming Chair of Weed Science

Common Problems in Wheat

Wild Garlic

Wild garlic is a weed of major economic importance in Arkansas. The primary economic loss to the farmer occurs at the grain elevator. Dockage as high as $2 per bushel has been reported, and in some cases wheat has been rejected. The only market for rejected garlicky wheat is for animal feed. Millers and foreign buyers do not want it. If wheat farming is to be profitable, wild garlic must be controlled.

To better understand the wild garlic problem and what is involved in its control, one must understand the plant itself. Many people are confused about wild garlic and wild onion. The problem in Arkansas is wild garlic although it is often called onion. Wild garlic has a round hollow leaf, whereas the leaf of wild onion is flat and solid. Wild onion produces only a central bulb or stem. In contrast, wild garlic produces a central bulb, hard shell bulbs, soft shell bulbs and aerial bulblets.



A typical wild garlic plant showing: (a) hard shell bulb, (b) central stem bulb, (c) soft offset bulb, (d) aerial bulblet

The underground bulbs make the wild garlic plant very difficult to eradicate. Most of the soft bulbs will germinate and grow within one year. However, the hard shell bulbs may remain dormant in the soil for five or six years. The aerial bulblets form in clusters or heads. These mature about the same time as the wheat and are normally about the same height. A single cluster may have as many as 300 bulblets. These aerial bulblets are about the same size as wheat seed and are the primary reason for the dockage or discounts. Some heads will flower and produce aerial bulblets in addition to the bulblets. The heads vary widely in size and shape, and some years the plants may not produce a head at all. This may explain why in some years a dense infestation of garlic in the fall disappears by wheat harvest time. Since the aerial bulblets are primarily responsible for both the discounts and also the spread of the plant, most of our attention should focus upon controlling or preventing head formation. However, we should make efforts to control the underground bulbs or the problem will appear year after year.

Control

Where possible, plant wheat only on land not infested with wild garlic. If the field has a history of wild garlic, a successful control program should begin in the fall. A uniform vigorous stand of wheat will allow it to better compete with garlic. Good seedbed preparation, adequate seeding rate, proper drainage and a good fertility program all contribute to a vigorous wheat stand. Do not seed wheat into soybean canopy if garlic is a problem.

Tillage will give some control of wild garlic, but most tillage simply moves the bulbs and bulblets to new positions in the soil. Tillage is most effective when the garlic plants are growing. They will begin to emerge in late August or early September and emerge as late as March. Therefore, intense spring

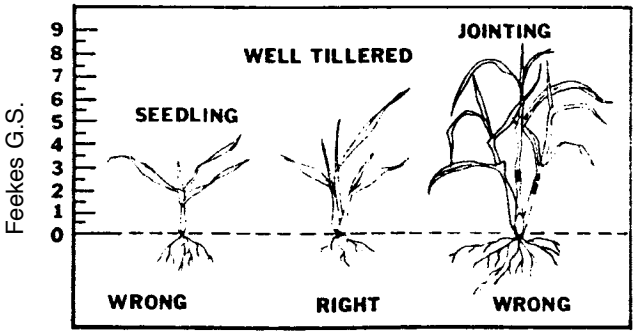
tillage and cultivation in crops such as cotton, soybeans, or grain sorghum for several years will help reduce the level of infestation. Two applications of Gramoxone Extra at 1 pint per acre or two applications of Roundup at 1 quart per acre applied in December and March have been very effective treatments on fallow land. Single applications have been almost as effective as split applications. Spray between March 1 and March 15 if only one application is to be made. Apply during periods of sunny, relatively warm weather when the garlic is actively growing. Because coverage is important in garlic control, use at least 10 gallons of water per acre and add 2 quarts of nonionic surfactant per 100 gallons of water.

Garlic infestation in wheat

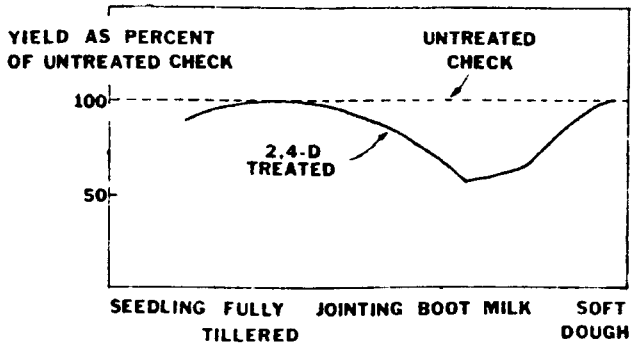
In no-till systems containing emerged wild garlic, use a preemergence burndown treatment of Roundup in a tank mix with Peak or Harmony Extra.

POST Timing of Application

2,4-D is an effective treatment for wild garlic. The timing of application for 2,4-D is very critical. The application should be made in the spring after the wheat plants have tillered (stooled) and are 4 to 8 inches high but before the joint begins to elongate.



The proper time for application is illustrated above. A graph below shows the effect of 2,4-D on wheat yield. Note the risk of injury increases from the fully tillered to boot stages, growth stages 5 through 8. A tank-mix with Harmony Extra will achieve optimum garlic and broadleaf control.



Temperature and soil moisture play a very important role in the effectiveness of 2,4-D and Harmony Extra. Apply when the temperature is above 60°F, during the warm part of the day, for several days. Little control will be achieved under drought conditions and may likely injure wheat under extremely wet conditions.

Liquid Nitrogen

Since the time for maximum effectiveness of 2,4-D is later than optimum time for one fertilizer application, the practice of applying the herbicide in liquid nitrogen solution is not recommended. However, if the spring nitrogen is split into two applications and the joints are not moving, the timing of the second application may be compatible with the 2,4-D application. In this case they can be mixed at the grower's risk. Only the LV ester formulation is compatible with liquid N.

Combining and Cleaning

If you have wild garlic in wheat at harvest, several steps may be taken to reduce the contamination by the bulblets. First, carefully adjust the combine to remove as many of the bulblets as possible. Often the garlic plants will be more concentrated around field borders and areas of thin stands. Combine these areas last, even if it means higher discounts on one or two loads. Never dump a hopper loaded with garlicky wheat into a truck or bin of otherwise clean wheat. That usually results in the complete load or bin being docked.

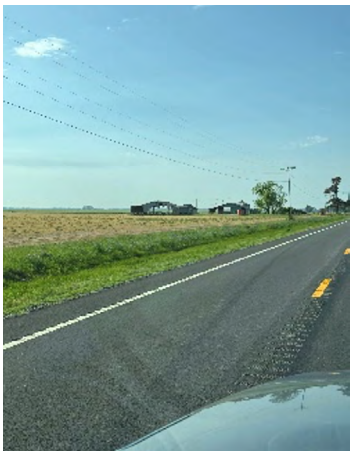
Although some wild garlic bulblets are about the same size as wheat, many that are smaller or larger can be removed by cleaning. Clean wheat before storing. If the wheat will be dried or stored for a period of 6 to 8 months, many additional garlic bulblets may be removed by cleaning. Drying changes the size and density of the bulblets, allowing easier removal.

Annual Ryegrass

Annual ryegrass is the most significant weed in wheat in Arkansas in terms of yield loss. Resistance has currently been documented in at three herbicide modes of action, including Rounudp as a burndown herbicide. Uniform infestations of ryegrass in wheat have caused yield losses of 50 percent or greater. Available competition data indicates populations of 9 to 12 ryegrass plants per square foot reduce yields 9 to 18 percent. Populations above 4 plants per square foot warrant treatment. Best control is obtained with fall herbicide applications. Refer to the Arkansas Recommended Chemicals for Weed and Brush Control (MP44) below for the latest herbicide recommendations.

Ryegrass in tillering stage

The most effective ryegrass control options today are residual applications made at planting. Zidua or Anthem Flex applied at planting can provide significant control of Italian ryegrass if activated by rainfall. Another option is Axiom plus Prowl applied to spiking wheat, however this treatment is generally less effective. Some wheat varieties are sensitive to metribuzin (one of the ingredients in Axiom). These treatments are also effective for bluegrass control.



Ryegrass should be controlled along field edges, turnrows and ditches to prevent infestations from spreading into fields.

Ryegrass Identification

1. Ryegrass tillers earlier and more profusely than wheat.
2. Ryegrass is darker green, the leaves are narrower, and the undersides of the leaves are more shiny than the undersides of wheat leaves. The ryegrass plant is reddish at the base.
3. Ryegrass has no noticeable hairs while wheat has distinct white hairs on the leaf margins near the collar.
4. Margins of the youngest leaf of ryegrass do not overlap where wheat is distinctly rolled in the bud.

Mayweed

Mayweed infests a growing percentage of wheat acreage and is a severe problem where it occurs. It is easily identified by the flowers with white petals and a yellow center. The seedling stages closely resemble bitter sneezeweed in the fern-like appearance of the leaves. Harmony Extra has been the most effective herbicide for mayweed control. However,

Young mayweed in wheat (www.smallgrains.wsu.edu)

ALS-resistant populations of this weed are spreading throughout Arkansas. Quelex is a good option for ALS-resistant populations.

Curly Dock

Dock is reported to infest slightly more than 10 percent of wheat acreage and can be a serious problem on heavy clay soils. Spring applications of both 2,4-D and Harmony Extra have provided excellent control.

Large Curly Dock

Miscellaneous Annual Broadleaf Weeds

Mustards, buttercups, vetches, henbit and chickweeds can occasionally infest wheat at levels that require control. However, if the wheat stand is good, it takes a severe infestation to reduce wheat yields. Vetches must often be controlled to prevent foreign matter dockage. Refer to the Arkansas Recommended Chemicals for Weed and Brush Control (MP44) for the response ratings for registered herbicides.

Horseweed (Marestail)

Like smartweed, marestail can be a severe problem interfering with harvest and doublecropped soybeans. Applications of Harmony Extra, Quelex and 2,4-D have provided effective control.

Horseweed in-season

Horseweed after harvest in wheat

WEED RESPONSE RATINGS FOR WHEAT HERBICIDES

HERBICIDES	WSSA GROUP #	WEEDS																	
		Annual Bluegrass	An. Mustard sp.	Buttercup	Carolina Foxtail	Cheat	Chickweed	Coreopsis	Curly Dock	Cutleaf Eveningprimrose	Henbit	Horseweed	Little Barley	Mayweed[1]	Ryegrass[1]	Shepherdspurse	Vetch	V. Pepperweed	Wild Garlic
Axial Bold	1	0	0	0	3	4	0	0	0	0	0	0	0	0	8	0	0	0	0
Beyond Xtra	2	7	5	0	5	8	5	-	2	0	7	3	8	6	8	8	0	-	0
Express	2	0	6	8	0	0	8	-	8	7	7	5	0	9	0	7	7	-	5
Finesse	2	6	8	8	8	6	8	8	8	8	8	7	5	9	7	8	7	8	7
Harmony Extra	2	0	9	9	0	0	8	6	8	6	7	8	0	9	0	9	6	8	8
Osprey	2	9	5	7	9	3	6	-	0	0	5	4	5	3	9	7	7	-	0
Peak	2	4	6	8	0	0	8	-	8	8	8	7	0	8	0	7	8	-	8
PowerFlex HL	2	5	9	8	8	8	9	8	7	0	9	3	5	9	9	8	8	8	0
Prowl H_2O	3	3	8	8	6	3	8	2	0	4	8	5	3	0	6	8	0	-	0
2,4-D	4	0	8	9	0	0	4	8	6	9	4	9	0	6	0	7	9	9	7
Quelex	2, 4	0	9	7	0	0	8	6	5	5	9	9	0	8	0	9	8	-	0
Metribuzin	5	9	7	8	6	7	9	6	0	0	7	8	7	5	3	4	0	9	0
Axiom	5, 14	9	9	8	0	5	8	-	2	2	8	9	2	-	6	8	5	-	0
Zidua/Anthem Flex	15	9	-	-	9	9	-	-	-	-	-	8	9	-	9	-	0	-	0

[1]Some ryegrass and mayweed populations in Arkansas have been found to be resistant to ALS herbicides (Finesse, Osprey, PowerFlex).

Forage, Feed and Grazing Restrictions for Wheat Herbicides

Herbicide	Restrictions
2,4-D	Do not permit dairy animals or meat animals being finished for slaughter to forage treated grain fields within 2 weeks after treatment. Do not feed treated straw to livestock if a preharvest or emergency treatment is used. See label.
Anthem Flex	Do not harvest or graze for 7 days.
Axial Bold	Do not graze treated fields for 50 days following application.
Axiom	Do not graze wheat within 14 days following application.
Banvel	Do not graze or harvest for livestock feed prior to crop maturity.
Beyond Xtra	Do not graze for 30 days following application.
Express	Do not graze for 7 days following application.
Finesse Cereal and Fallow	No grazing, forage or hay restrictions.
Harmony Extra	Do not graze for 7 days following application.
Metribuzin	Do not graze wheat within 14 days following application.
Osprey	Do not apply within 30 days of harvesting forage or 60 days for hay, grain or straw.
Paraquat	Do not graze or harvest for feed.
Peak	Do not graze within 30 days following application.
PowerFlex HL	Do not graze for 7 days; do not cut for hay for 28 days.
Prowl H_2O	Do not apply Prowl within 60 days of wheat harvest, 28 days for hay, and 11 days for wheat forage.
Zidua	Do not harvest or graze for 7 days.

Restrictions are listed as worded on the labels. Feeding and application restrictions for herbicides are generally based on residue tolerances allowed for animal feeding. The restrictions are generally not due to acute toxicity (poisoning) problems. Livestock that are accidentally fed treated crops earlier than allowed may not be harmed, but may have illegal pesticide residues in their meat or milk. If you have fed livestock treated crops within the restricted period, refer to the label, your dealer, or herbicide company representative for more information.

Wheat Herbicide Compatibility with Fertilizers as Application Carriers

Herbicide	Fertilizer	
	Fluid	Dry
2,4-D amine	N	N
2,4-D ester	Y	N
Anthem Flex	Y	Y
Axial Bold	N	N
Axiom	N	N
Banvel	Y	N
Beyond Xtra	N	N
Finesse	Y	N
Harmony Extra or Express	Y	N
Metribuzin	N	N
Osprey	N	N
PowerFlex	Y	N
Prowl H_2O	Y	Y
Zidua	Y	Y

Y = Yes, N = No

There are many specific fertilizer incompatibilities and restrictions with most herbicides. Be sure to read the herbicide label for specific mixing or impregnation instructions. Compatibility agents are required for many mixes. A typical compatibility test procedure for mixing herbicides in fluid fertilizers is given on page 4. NOTE: Compatibility with dry fertilizer is listed here from a labeling standpoint. The University of Arkansas only recommends herbicide application on dry fertilizer as a third alternative to spraying in water or in liquid fertilizer.

Crop Replant and Rotation Guide for Wheat Herbicides

Herbicide	Replant/Crop Rotation	Time Interval	Precautions
2,4-D	All	90 days	90 days or until dissipated.
Anthem Flex	C, CT, S, W P, SF R, SG All	I 4 months 10-11 months 18 months	
Axial Bold	W All others	I 4 months	
Axiom	S† AL, C, FG, W, B CT, R All (except root crops)†† Root crops	I 4 months 8 months 12 months 18 months	† Waiting period for replanting soybean depends on the rate of metribuzin used. See specific label for more information. Add 2 months to time intervals if pH of soil is above 7.5. †† Cover crops may be planted anytime, but stand reductions may occur.
Beyond Xtra	S A, W C, GS, CT, SF All others	I 3 months 9 months 18 months	For CL wheat only.
Express	W, O CA All	I 60 days 45 days	
Finesse	Follow only with STS or BOLT soybean the next year.		
Harmony Extra	W, O CA All	I 60 days 45 days	
Metribuzin	S† AL, C, FG, W, B CT, R All (except root crops)†† Root crops	I 4 months 8 months 12 months 18 months	† Waiting period for replanting soybean depends on the rate of metribuzin used. See specific label for more information. Add 2 months to time intervals if pH of soil is above 7.5. †† Cover crops may be planted anytime, but stand reductions may occur.
Osprey	W B, SF S, CT, R, P C All others	7 days 30 days 90 days 12 months 10 months	Under cold temperature or drought, degradation may be slower.
Peak	W C, GS R, S, CT All others	I 1 month 10 months 18 months	Apply to soils below pH 7.8 if rice, soybean or cotton in rotation.
PowerFlex HL	S, CT W C, O, GS, CA, SF, P R	90 days 1 month 9 months 12 months	
Prowl H_2O	CT, S W, B All	I 4 months FY	Do not rework soil deeper than treated zone.
Quelex	W, B C, SG, CT, S, SF, R Peanut	I 3 months 9 months	
Zidua	C, S CT P, SF R W	I 2 months 4 months 12 months 30 days	

KEY

Crop

All = All crops not specified
B = Barley
C = Corn
CA = Canola
CT = Cotton
FG = Forage Grasses
GS = Grain Sorghum
O = Oat
P = Peanut
R = Rice
S = Soybean
SF = Sunflower
SG = Small Grains
W = Wheat

Timing

I = Immediately
FY = Following year (usually spring)

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
WHEAT				
chlorsulfuron + metsulfuron @ 0.020 + 0.004 lb/A	Mustards, henbit, chickweed, mayweed, buttercup, coreopsis, primrose, dock, and suppression of ryegrass, cheat and garlic.	**Finesse 75 DF** 0.5 oz/A.	Immediately after planting. Add glyphosate or paraquat if emerged vegetation present.	**Note: May only be followed with STS soybean in spring if pH is 7.5 or less. Carryover will injure non-STS soybean varieties.**
pyroxasulfone + carfentrazone @ 0.058 + 0.004 to 0.133 + 0.009 lb/A	Ryegrass, other grass weeds, and some small-seeded broadleaves.	**Anthem Flex 4 SE** 2 to 4.55 oz/A. Rate depends on soil type.	Apply from delayed PRE to early POST.	Do not apply delayed PRE until wheat has germinated.
pyroxasulfone @ 0.038 to 0.15 lb/A	Ryegrass, other grass weeds, and some small-seeded broadleaf weeds.	**Zidua 4.17 SC** 1.25 to 4 oz/A. Rate depends on soil type and timing.	Apply from delayed PRE to early POST.	Do not apply delayed PRE until wheat has germinated.
flufenacet + metribuzin @ 0.204 + 0.051 to 0.340 + 0.085 lb/A	Annual bluegrass and broadleaf weeds. Ryegrass suppression.	**Axiom 68 DF** 6 to 10 oz/A. See label for soil type restrictions.	Spike to 2-leaf wheat.	Apply early. Some varieties may be injured by metribuzin. Will suppress ryegrass, but must follow with POST application of Axial Bold, Osprey or PowerFlex (Osprey and PowerFlex will only work on ALS-susceptible ryegrass).
pinoxaden + fenoxaprop-pethyl @ 0.053 + 0.027 lb/A	Ryegrass, ALS-inhibitor-resistant ryegrass, other selected grass weeds.	**Axial Bold 0.69 EC** 15 oz/A.	Apply to 1-leaf to 2-tiller ryegrass. Apply from 2-leaf wheat to pre-boot. 70 day PHI.	Do not use on oats. Do not tank-mix with 2,4-D.
mesosulfuron-methyl @ 0.013 lb/A	Ryegrass (ALS-susceptible), wild oat, and annual bluegrass.	**Osprey 4.5 WDG** 4.75 oz/A. Follow label recommendation for adjuvant and fertilizer carrier.	Apply to winter wheat only from emergence up to joint stage. Do not apply more than 4.75 oz/A on one wheat crop.	Apply to small actively growing ryegrass in the 4-leaf to 2-tiller growth stage. Osprey will control larger ryegrass under good conditions as a salvage treatment, but significant yield loss from ryegrass competition will occur if it is not controlled early. Rainfast in 4 hours. Cold weather following an application may reduce effectiveness. For spring applications, avoid simultaneous activation of topdress nitrogen and Osprey. See label for nitrogen restrictions.

FOR SEVERE RYEGRASS INFESTATIONS/ALS/ACCase-RESISTANT RYEGRASS (WSSA Group 1 & 2)

Where ryegrass populations are most severe, especially resistant ryegrass, it may be necessary to take a program approach. This may include a full tillage program following the first "flush" of ryegrass followed by a post-applied herbicide prior to planting (glyphosate or paraquat) followed by a sequential program of Axiom (or Axiom plus Prowl or Zidua/Anthem Flex) in the fall (1- to 2-leaf wheat), followed by a spring application of Axial. In addition, one year of fallowing a field and not allowing ryegrass to go to seed will typically eliminate 95% of ryegrass seed in the soil seed bank.

Cereal Rye Control in Wheat

Cereal rye and wheat are very similar and therefore cereal rye is difficult to control in wheat. Zidua applied delayed PRE followed by an early-POST application of Axial Bold will provide suppression of Cereal rye.

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
WHEAT [cont.]				
pendimethalin @ 1.0 lb/A	Residual only. Suppression of ryegrass. Good control of small-seeded winter annual weeds.	**Prowl H_2O 3.8 CS** 2.1 pt/A.	After wheat has 1 leaf, until 4 tillers. Prior to weed germination.	Emerged weeds will not be controlled. University testing has shown good crop safety both pre and delayed PRE (in cases of poor stand) as long as seed is covered by at least 0.5-inch of soil. Prowl H_20 can be tank mixed with Axial Bold, PowerFlex or Osprey to provide around 30 days of residual ryegrass control.
pyroxsulam @ 0.016 lb/A	Ryegrass (ALS-susceptible), henbit, vetch, chickweed, curly dock and others.	**PowerFlex HL 13 DG** 2 oz/A. Add 0.5% nonionic surfactant or 1 to 1.25% crop oil concentrate or 1% MSO.	Apply from 3-leaf to joint, after ryegrass has emerged.	Do not apply more than 2 oz/A per year. Do not use on oats. Do not harvest within 60 days. See label for nitrogen restrictions.
metribuzin @ 0.094 to 0.141 lb/A	Cheat, bluegrass and little barley.	**Metribuzin 75 DF** 2 to 3 oz/A.	After wheat plants have 2 leaves and 1-inch secondary roots.	**Do not use on oats.** Best cheat control with fall application. Avoid use on sandy soils. Some wheat varieties may be injured by metribuzin.
2,4-D amine or LV esters @ 0.5 to 0.75 lb/A	Mustard, thistles, buttercup, dock seedlings, horseweed seedlings, vetch and winter peas.	**2,4-D amine or LV esters** 1 to 1.5 pt/A of 4 lb/gal 2,4-D.	In spring after the wheat plants have tillered and are 4 to 8 inches tall to the time the joint begins to elongate. (Growth stages 3 to 5.)	Apply when temperature is above 60°F and when no rain is expected for 12 hrs. Do not graze lactating dairy animals until 7 days after application. AVOID DRIFT.
2,4-D LV esters @ 0.75 to 1 lb/A	Wild onion or garlic.	**2,4-D LV esters** 1½ to 2 pt/A of 4 lb/gal formulation. Add a surfactant. Use 2 pt rate only if severe infestations and if some injury can be tolerated. See right column for addition of **dicamba**.	In spring after the wheat plants have tillered and are 4 to 8 inches tall to the time the joint begins to elongate. (Growth stages 3 to 5.) The LV esters can be applied in liquid N **if** the optimum timing for the two applications coincide.	Prevents seed and aerial bulblets but will not completely control. Do not graze lactating dairy animals until 14 days after application. AVOID DRIFT. Dicamba can be added at the rate of 4 oz/A of 4 lb/gal or 8 oz/A of 2 lb/gal dicamba. This may increase garlic suppression. It is less selective and should not be used unless some injury can be tolerated. Do not add dicamba if any joint movement has occurred in wheat.
halauxifen-methyl + florasulam @ 0.075 + 0.075 lb/A	Henbit, mustards, horseweed, shepherdspurse.	**Quelex 20 DF** 0.75 oz/A.	Apply from 2 leaf to flag leaf emergence.	60-day PHI. Do not apply more than one application per year. Do not apply less than 21 days prior to cutting for hay, 7-day grazing restriction.
thifensulfuron + tribenuron @ 0.016 to 0.019 + 0.008 to 0.009 lb/A	Wild garlic, buttercup, mayweed, dock, chickweed, primrose, and suppression of vetch.	**Harmony Extra 50 SG** 0.75 to 0.9 oz/A. Surfactant required for both water and liquid N carriers.	In early to mid-March when wild garlic is 6" to 12" tall.	Apply to actively growing weeds. May be tank mixed with liquid N if slurried in water first. Thorough spray coverage is necessary; coarse spray is not recommended. May be used on oats after 3-leaf but prior to jointing.

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
WHEAT [cont.]				
thifensulfuron + tribenuron + 2,4-D @ 0.016 + 0.008 + 0.75 lb/A	Horseweed.	**Harmony Extra 50 SG + 2,4-D LV ester** 0.75 oz/A + 1.5 pt/A of 4 lb/gal formulations. Add surfactant.	See 2,4-D above.	For severe horseweed infestations, add 4 oz of dicamba. Effective treatment when intentions are to plant soybean after harvest.
thifensulfuron + tribenuron + halauxi-fen-methyl + florasulam @ 0.016 + 0.008 + 0.075 + 0.075 lb/A	Horseweed, wild garlic, and other broadleaves.	**Harmony Extra 50 SG + Quelex 20 DF** 0.75 oz/A + 0.75 oz/A.	Apply before flag leaf emergence.	Same as above.
tribenuron @ 0.008 to 0.016 lb/A	Buttercup, mayweed, chickweed. Suppression of vetch and curly dock.	**Express 50 SG** 0.25 to 0.50 oz/A. Surfactant required for both water and liquid N carriers.	Apply before flag leaf emergence.	Same as above.
prosulfuron @ 0.009 to 0.018 lb/A	Wild garlic, vetch, chickweed, henbit.	**Peak 57 WG** 0.25 to 0.5 oz/A. Add a surfactant.	After wheat plants have developed 3 leaves and before second node is detectable.	**Expect slow results. Use high rate for garlic. (10-month minimum plant back interval for soybean, regardless if STS/BOLT or not.)**
Preharvest				
glyphosate @ 1 lb/A	Annual broadleaf and grass weeds and johnsongrass.	**Glyphosate** (4 lb/gal formulations) 2 pt/A.	Timing after hard dough stage (30% or less moisture) and at least 7 days prior to harvest.	Apply in spray volume of 3 to 10 GPA. Not recommended for use on wheat grown for seed because reduction in germination and vigor can occur.
carfentrazone @ 0.0312 lb/A	Morningglory desiccation.	**Aim 2 EC** 2.0 oz/A. Add 1% crop oil concentrate.	7 days prior to harvest.	Good coverage is critical to Aim activity. 10 GPA is recommended.