WEED RESPONSE RATINGS FOR WHEAT HERBICIDES

(See Explanation of Ratings Tables on Page 3.)

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.

Herbicide	Replant/Crop Rotation	Time Interval	Precautions
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
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 + halauxifen-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.