UGA Programs for Controlling Ryegrass and Wild Radish in 2022/2023 Wheat

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Ryegrass is the greatest weedy threat to grain production in Georgia. Most ryegrass escapes are a result of 1) planting into fields already infested with emerged ryegrass and/or 2) making herbicide applications after the ryegrass is too large to control. However, herbicide-resistant ryegrass is spreading rapidly with populations resistant to Osprey, PowerFlex, Axial XL, and Hoelon. Aggressive resistance management programs must be implemented or this weed will eliminate grain production in a field. Proper management includes planting into a weed-free seedbed, growing a healthy vigorous crop, applying a residual herbicide and treating emerged ryegrass early. Additionally, sustainable programs require deep turning when feasible and rotating to crops where other management approaches can be used to control this pest.

Growers must avoid treating fields two years in a row with the same or similar herbicide chemistry.

Hoelon, Axial XL, Axial Bold
Similar Chemistry

Osprey & PowerFlex
Same Chemistry

Fierce, Zidua, Anthem Flex
Contain Same Chemistry

Table 1. Herbicide options and stages of wheat growth for controlling ryegrass

Scenario and Stage of Wheat Growth	Control Options	Comments
Emerged ryegrass before planting	Tillage or Roundup followed by Gramoxone	Apply Roundup 5 or more days before planting, follow with Gramoxone at planting. Deep turning is also effective when erosion is not a concern.
After planting when 80% of the wheat seeds have germinated with shoots at least ½" long. Must be activated before ryegrass emerges for residual control.	Zidua 85 WG: 0.75-1.25 oz/A Zidua 4.17 SC: 1.25-2.2 fl oz/A Anthem Flex SC: 2.0-2.73 fl oz	Labels prohibit true PRE. Plant wheat seed at least 0.75" deep; do not apply to broadcast seeded wheat. Zidua at 1.0 oz/A (85 WG) or 1.75 fl oz/A (4.17 SC) is ideal for most soils; higher rates can be used for medium textured soils or for POST applications. No GA research has occurred with Anthem Flex.
After planting when 95% of the wheat is in the spike to 2-leaf stage. Apply before ryegrass is ¼" with activation needed for residual control. *Injury should be expected!*	Fierce 76 WDG: 1.5 oz/A Fierce 3.04 EZ: label expected in 2023 at 3 fl oz/A	Apply in water to wheat planted at least 1" deep; do not apply to broadcast seedings. *Critical tool for fields infested with populations resistant to POST herbicides. Avoid sands.* Do not apply Fierce EZ until labeled.
Wheat between 3-leaf and jointing; ryegrass before tiller. Resistant populations are present in fields across the state.	Axial Bold: 15 oz/A, PowerFlex HL: 2.0 oz/A, or Osprey: 4.75 oz/A	Axial Bold does not require an adjuvant. Powerflex requires crop oil concentrate at 1% v/v. Osprey requires nonionic surfactant 2 qt/A + approved ammonium nitrogen fertilizer at 1-2 qt/A.

Table 2. Suggested programs for fields infested with ryegrass

1. ABSOLUTELY NO ryegrass emerged when planting; use tillage or non-selective herbicides to remove all plants.
2. Apply either Zidua or Fierce after planting; Fierce is slightly more effective while Zidua has less injury concern. Zidua must be activated prior to ryegrass emergence; Fierce must be activated prior to ryegrass reaching ½ inch.
3. Apply postemergence herbicides Axial Bold, PowerFlex, or Osprey before ryegrass tillers which **should occur around Christmas**. If you treated a field with PowerFlex or Osprey last year, apply Axial this year and vice versa.
4. Suggest not mixing ryegrass herbicide(s) with 2,4-D, MCPA, Quelex, or NITROGEN as antagonism can occur!!!
5. *Note: Anthem Flex has a use pattern similar to that of Zidua; no Georgia research is available on this product which is a mixture of pyroxasulfone (same as Zidua) and carfentrazone (same as Aim). For the same amount of pyroxasuflone, Zidua 4.17 SC at 1.75 fl oz/A = 1.94 fl oz of Anthem Flex.*

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating.
N. Place, Dean and Director

Wild radish is the most problematic broadleaf weed infesting nearly every Georgia wheat field (pictures above). Its seedpods often contaminate harvested grain thereby reducing profits. The seedpod usually does not shatter, but instead, dries down and fragments into small sections. These seedpod sections are very close in size and shape to wheat seed and are difficult to remove in cleaning (right). Managing wild radish in wheat is not difficult if timely control decisions are implemented.

Table 3. Herbicide options and stages of wheat growth for controlling radish

Scenario and Stage of Wheat Growth	Control Options	Comments
Emerged broadleaf weeds, including radish, before planting.	Tillage or Roundup mixtures	Quelex or Harmony Extra TS plus Roundup applied before planting controls most weeds, including radish, without plantback concerns.
Wheat between 2-tiller and full tiller. Radish < 8" diameter, henbit, chickweed, most other broadleaf weeds.	MCPA (16 oz/A) + Harmony Extra TS ***OR*** Quelex 0.75 oz/A	MCPA rate based on 3.8 lb ae/gal. 2,4-D could replace MCPA at full tiller wheat. Many Harmony type products are available; see label and Table 5.
Early flush of broadleaf weeds when the initial herbicide application is needed before 2-tiller wheat.	Harmony Extra TS ***OR*** Quelex 0.75 oz/A (2-leaf - 2 tiller wheat) ***followed by*** MCPA 16-20 oz (2-tiller – full tiller wheat)	Sequential applications may be needed to control early emerging intense populations. 2,4-D could replace MCPA at full tiller wheat. Many Harmony type products are available; see label and Table 5.

Table 4. Postemergence control of both ryegrass and wild radish

Scenario and Stage of Wheat Growth	Herbicide Option	Comments
Wheat between 3-leaf and jointing; radish < 6" diameter and ryegrass prior to tillering.	PowerFlex HL 2.0 oz/A	Add crop oil concentrate at 1% v/v. Harmony Extra TS can be added to broaden the control of other broadleaf weeds.
Wheat between 3-leaf and pre-boot, apply Axial Bold to control ryegrass. Follow up with a broadleaf treatment between 2-tiller and full-tiller.	Axial Bold 15 oz/A ***followed by*** MCPA + Harmony Extra TS ***OR*** Quelex	Wait at least 7 days between applications. No adjuvant required with Axial Bold. Ideal rate for MCPA = 16 oz/A; Quelex = 0.75 oz/A; Harmony Extra TS = see table 5.

Table 5. Critical Thinking Points for Broadleaf Weed Control

1. For normal developing wheat, postemergence broadleaf herbicides **should be applied around Christmas**.
2. Harmony Extra Total Sol rate ranges from 0.45 to 0.9 oz/A; 0.75 oz/A ideal usually. Other formulations exist.
3. 2,4-D is better than MCPA on larger weeds but MCPA poses less crop injury potential, so be timely and use MCPA.
4. MCPA offers 2 to 3X more residual radish control (only about 10 days though) when compared to Quelex or 2,4-D