

General Area Crop Progress

Conditions have gone from dry to wet and with the cooler temperatures and frequent storm fronts, producers are struggling to finish wheat planting and harvest the last of the cotton. Cotton yields have been averaging about a bale to the acre. Fall planted forages: ryegrass, wheat, and oats were slow emerging and grazing has been limited. The weedy ryegrass in cultivated fields has emerged in abundance due to a large seed bank from last year's growing season. Included are control recommendations for ryegrass in wheat from Jim Swart and results of a fallow burndown trial that has been established this year.



Figure 1. Volunteer annual ryegrass from a fallow field in 2019. Photo D.R.Drake

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Ag. Technology Conference December 5, 2019 at TAMU-C

This year's program includes 5 CEUS for Pesticide Applicators and Certified Crop Advisors. The Pesticides CEUS include Laws & Regulations, Drift Minimization, IPM, and the annual **Auxin Specific Training**.

Sessions include:

- Trade show from Sponsors starting in the morning and during the lunch hour.
- Update on Industrial Hemp Laws and Regulations-Dan Hunter Texas Department of Agriculture
- Auxin Specific Training for Application on Transgenic Tolerant Crops—Dr Scott Nolte Extension Weed Specialist Texas A&M AgriLife Extension
- Economics of Crop Production - Dr. Mark Welch, Extension Specialist, Texas A&M AgriLife Extension
- Drift minimization – Dr Scott Nolte Extension Weed Specialist Texas A&M AgriLife Extension
- Weed Identification and Control in Hay and Pastures—Dr. Case Medlin Regional Stewardship and Development Manager– Bayer
- Controlling Plant Disease in Wheat and Other Crop with IPM Practices— Dr David Drake—Texas A&M AgriLife Extension
- Crops Industry Update—Industry
- Range and Pasture Industry Update—Industry

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Annual Ryegrass Management Guidelines by Jim Swart—Executive Director -Cereal Crops Research Inc.

As we approach wheat-planting time this fall, growers should be aware of additional challenges we will be facing this year. Many of the fields intended for planting last fall did not get planted due to prolonged wet soil conditions. Much of the ryegrass that emerged in those fields grew unchecked, and produced a ryegrass seed crop. Consequently, we will all be facing much greater pressure from ryegrass than we have in years past. The following management practices, proven through research over multiple years, have been shown to reduce the threat of annual ryegrass in the northeast Texas wheat crop.

1. Plant the worst ryegrass infested fields last. This will allow the first flush of ryegrass seedlings to emerge early where they can be destroyed with light tillage or an application of glyphosate. Glyphosate has been slipping of late in controlling older ryegrass plants, but it still has been effective on ryegrass seedlings
2. Determine if your ryegrass plants are still susceptible to control from Axial. If they are, plan to make a timely application of Axial to control them. Please note that Axial XL will be replaced with Axial Bold this year but both products have been shown to provide comparable control.
3. If you determine that control from Axial has been “slipping” on some farms in recent years, you likely have herbicide resistant plants establishing on those farms. Your best option then will be to initiate a resistance management program using an alternative herbicide program.
4. The resistance management program that has been used successfully in past years has been 6 oz. Axiom, early post, followed by an application of Axial at the 1-2 tiller stage of ryegrass (we refer to this as the two-step program). Unfortunately, the two-step program has been losing its effectiveness in recent years, especially the wetter ones.
5. That leaves us with just one good option left, the use of pyroxasulfone, sold as Zidua or Anthem Flex. Both of these products have provided consistently excellent ryegrass control over a number of years and growing conditions.
6. Both Zidua and Anthem Flex are labeled to be applied at two different timings: delayed pre-emergence and early post-emergence. When either of these products is applied early post-emergence, it should be tank mixed with metribuzin to control the ryegrass that has already emerged.
7. We have also been looking at a three-way tank mix, including pyroxasulfone, metribuzin, and Axial XL. While the addition of Axial to the mix provides a slight increase in ryegrass control, it has a tendency to cause injury to the wheat crop, reducing yields by up to 10 bushels per acre in our research plots.
8. The most consistent weed control over the past 3 years, both in terms of ryegrass control and crop safety, has been produced by the use of Zidua or Anthem Flex, delayed pre-emergence. The Zidua label defines “delayed pre-emergence” as the stage when 80% of the seeds have a sprout at least 1/2 inch long (see figure 2). Pyroxasulfone acts as a shoot inhibitor, killing the ryegrass seeds as they germinate. This is why it can have the same effect on wheat if it is applied to wheat prior to sprouting.

Figure 2. Germinated wheat seedlings, indicating timing of a delayed pre-emergent application for ryegrass control . Image by Jim Swart.



In summary, the best option for controlling hard to kill ryegrass is to use Zidua or Anthem Flex as a delayed pre-emergence application. Use the high rate of Anthem Flex (3.5 fl. oz.) or Zidua. Note that Zidua will be available in two formulations this fall, a granular and a liquid formulation. The use rate on the older granular formulation should be 2 oz. per acre, and the use rate of the liquid formulation would be 3.2 fl. oz. Timing your delayed pre-emergence application will present challenges. Depending on soil temperatures, expect about a week to elapse between wheat seed germination and seedling emergence. In the event of a heavy rain following planting, you may need to use an airplane to get the herbicide applied before the wheat emerges, but our research shows that it may be money well spent.

If you can't get the Zidua or Anthem Flex applied as a delayed pre-emergence, the fallback position is to use either product as an early post application in combination with metribuzin (2 oz. per acre). This tank mix will still provide excellent ryegrass control, but our research has shown more potential for crop injury and a 5-6 bushel reduction in yield in some of our tests.

19-02: 2018-19 Wheat @ Fairlie, TX
Herbicide Zoo for the Management of ACCase Resistant Ryegrass in SRWW

Table 1 MEAN Comparison Summary

TREATMENTS	Initial Ryegrass Control ¹ (1-10) 2/4/2019	Second Ryegrass Control ² (1-10) 2/25/2019	Third Ryegrass Control (1-10) 4/3/2019	Final Ryegrass Control (1-10) 5/6/2019	Yield (bu/ac)	Test Weight (lb/bu)
Untreated Check	1.0 i	1.0 f	1.0 g	1.0 h	2.4 e	7.0 e
Zidua SC @ 3.2 fl.oz/A (<i>Delayed PRE</i>)	10.0 a	10.0 a	9.8 a	9.9 a	51.9 ab	58.1 ab
Zidua SC @ 3.2 fl.oz/A + Metribuzin 75% @ 2.0 oz/A (<i>Early POST</i>)	2.4 c-f	6.5 bc	8.8 ab	8.7 ab	42.3 abc	56.3 ab
Zidua SC @ 3.2 fl.oz/A + Axial XL @ 16.4 fl.oz/A (<i>Early POST</i>)	1.9 e-h	3.8 e	6.0 de	5.8 ef	21.6 d	53.9 abc
Zidua SC @ 3.2 fl.oz/A + Metribuzin 75% @ 2.0 oz/A + Axial XL @ 16.4 fl.oz/A (<i>Early POST</i>)	3.2 bc	7.3 b	9.1 ab	8.8 ab	40.4 bc	56.9 ab
Zidua SC @ 3.2 fl.oz/A + Metribuzin 75% @ 2.0 oz/A (<i>Early POST</i>) /b Axial XL @ 16.4 fl.oz/A (<i>Mid POST</i>)	2.7 b-e	5.7 cd	7.4 cd	7.5 bcd	36.9 c	55.8 abc
Anthem Flex 4 SE @ 3.5 fl.oz/A (<i>PRE</i>)	9.9 a	10.0 a	9.8 a	9.8 a	54.1 a	58.3 ab
Anthem Flex 4 SE @ 3.5 fl.oz/A (<i>Delayed PRE</i>)	9.7 a	9.8 a	9.4 ab	9.0 ab	49.7 abc	57.4 ab
Anthem Flex 4 SE @ 3.5 fl.oz/A (<i>Early POST</i>)	1.3 hi	3.4 e	4.1 f	3.9 g	16.3 d	46.8 d
Anthem Flex 4 SE @ 3.5 fl.oz/A + Metribuzin 75% @ 2.0 oz/A (<i>Early POST</i>)	2.6 c-f	5.8 cd	6.7 d	6.4 de	39.2 bc	57.6 ab
Anthem Flex 4 SE @ 3.5 fl.oz/A + Axial XL @ 16.4 fl.oz/A (<i>Early POST</i>)	1.5 ghi	3.8 e	3.9 f	3.8 g	21.4 d	51.3 bcd
Anthem Flex 4 SE @ 3.5 fl.oz/A + Metribuzin 75% @ 2.0 oz/A + Axial XL @ 16.4 fl.oz/A (<i>Early POST</i>)	2.9 bcd	6.2 c	7.1 cd	7.2 cde	38.8 bc	56.9 ab
Anthem Flex 4 SE @ 3.5 fl.oz/A + Metribuzin 75% @ 2.0 oz/A (<i>Early POST</i>) /b Axial XL @ 16.4 fl.oz/A (<i>Mid POST</i>)	3.1 bcd	6.5 bc	9.2 ab	9.3 a	42.4 abc	57.6 ab
Oxprey Xtra WG @ 4.75 oz/A + NIS @ 0.5% v/v + UAN @ 4 pt/A (<i>Mid POST</i>)	1.0 i	1.0 f	1.0 g	1.0 h	3.4 e	10.9 e
Axiom DF @ 8.0 oz/A (<i>PRE</i>) /b Oxprey Xtra WG @ 4.75 oz/A + NIS @ 0.5% v/v + UAN @ 4 pt/A (<i>Mid POST</i>)	10.0 a	9.9 a	8.1 bc	8.2 abc	44.2 abc	57.0 ab
Zidua SC @ 3.2 fl.oz/A (<i>PRE</i>) /b Oxprey Xtra WG @ 4.75 oz/A + NIS @ 0.5% v/v + UAN @ 4 pt/A (<i>Mid POST</i>)	10.0 a	10.0 a	9.7 ab	9.9 a	49.2 abc	57.0 ab
Axial XL @ 16.4 fl.oz/A + Zidua 85 WG @ 1.5 oz/A (<i>Early POST</i>)	1.8 f-i	3.8 e	6.4 d	6.5 de	24.6 d	54.1 abc
Axial Bold @ 15.0 fl.oz/A + Axiom DF @ 6.0 oz/A (<i>Early POST</i>)	2.3 d-g	5.2 d	4.2 f	4.0 g	21.7 d	54.6 abc
Axial Bold @ 15.0 fl.oz/A + Zidua 85 WG @ 1.5 oz/A (<i>Early POST</i>)	2.0 e-h	4.0 e	6.1 de	6.2 de	25.5 d	51.9 a-d
Axial Bold @ 15.0 fl.oz/A + Anthem Flex 4 SE @ 3.5 fl.oz/A (<i>Early POST</i>)	2.0 e-h	4.1 e	4.8 ef	4.4 fg	19.2 d	48.9 cd
Axial Bold @ 15.0 fl.oz/A + Metribuzin 75% @ 2.0 oz/A + Zidua 85 WG @ 2.0 oz/A (<i>Early POST</i>)	3.5 b	7.1 b	9.3 ab	9.1 ab	43.9 abc	59.7 a
Axial Bold @ 15.0 fl.oz/A + Metribuzin 75% @ 2.0 oz/A + Anthem Flex 4 SE @ 3.5 fl.oz/A (<i>Early POST</i>)	3.5 b	7.3 b	9.1 ab	8.8 ab	43.5 abc	57.5 ab
Axial Bold @ 15.0 fl.oz/A + Metribuzin 75% @ 4.0 oz/A (<i>Early POST</i>)	3.2 bc	6.5 bc	4.7 ef	4.5 fg	26.9 d	54.0 abc
Axiom @ 6.0 oz/A (<i>Early POST</i>) /b Axial Bold @ 15.0 fl.oz/A (<i>Mid POST</i>)	2.4 c-f	5.3 d	6.1 de	5.7 ef	22.4 d	50.7 bcd
LSD (P = .05)	0.55	0.61	1.06	1.11	8.09	4.42
CV (%)	12.37	8.93	13.78	14.67	21.71	7.94
GRAND MEAN	3.90	5.98	6.73	6.64	32.58	51.24

¹Rating NOTE: Mid POST Treatment had not been applied at initial rating for control assessment

²Rating NOTE: Mid POST Treatment applied same day as second rating for control assessment

Phytotoxicity/Stand Reduction Rating Scale:

- 1 = None, green leaves/No stunting
- 3 = Moderate discoloration of leaves & stunting
- 5 = Extreme discoloration of leaves (severe bleaching) & stunting (dead plants)

Ryegrass Control Rating Scale:

- 1 = No Control
- 10 = 100% Control

Application data

PRE = applied November 27, 2018; WIND: 6.0 mph SE, TEMP: 66°F, RH: 26%, Soil Temp: 58°F @ 3:00 -4:00 pm; Soil surface dry, moisture underneath; Partly sunny, no dew
Delayed PRE = applied December 5, 2018; WIND: 1 mph S, TEMP: 61°F, RH: 42%, Soil Temp: 54°F @ 5:00-5:30 pm; Wheat radicle @ 10"-12"; No dew present, soil surface dry
Early POST = applied January 18, 2019; WIND: 12 mph SW, TEMP: 62°F, RH: 94% @ 4:30 - 6:00 pm; Wheat & Ryegrass @ 2 leaf; Soil damp, dew present; Cloudy, foggy, misty
Mid POST = applied February 25, 2019; WIND: 7 mph SE, TEMP: 61°F, RH: 34% @ 5:30 -6:15 pm; Wheat & Ryegrass @ 3-4 tiller; Soil damp, no dew present; Sunshine

Fall Annual Ryegrass Control in Winter Fallow Fields

Annual ryegrass was plentiful in the fall and winter of 2018-19 and a substantial seed bank has been established. Control of the ryegrass in the fall will be important for next year's crops. A trial was established in Fairlie, TX looking at burndown options with Glyphosate and Paraquat including some residual tank mixes. Below is a table of treatments and control at 3 and 11 days after treatment (DAT). Some of the tank mixes reduced percent control and there are differences in the speed of control among treatments. It is also important to consider the size of the annual ryegrass plants as with all weeds, larger weeds are more difficult to control. Treating larger weeds and using reduced product rates can contribute to herbicide resistance which annual ryegrass is one of the more successful weeds at developing resistant populations.

Table 1. Treatment results for control of 1-3 tiller volunteer annual ryegrass in winter fallow. Fairlie, TX November 2109. Treatments in a column followed by the same letter are not statistically different from another.

Treatment	Percent Control 3 DAT	Percent Control 11 DAT
Untreated	0 d	0 d
RoundUp PowerMax @ 32 fl oz	5.0 d	78.8 b
RoundUp PowerMax @ 32 fl oz + Atrazine @ 32 fl oz + NIS	10.0 d	61.3 c
Gramoxone 3 SL @ 32 fl oz + Atrazine @ 32 fl oz + NIS	67.5 b	99.8 a
Gramoxone 3 SL @ 32 fl oz + NIS	85.0 a	100.0 a
Gramoxone 3 SL @ 32 fl oz + Dual Magnum @ 20 fl oz + NIS	85.0 a	100.0 a
Gramoxone 3 SL @ 32 fl oz + Dual Magnum @ 20 fl oz + Metribuzin @ 4 oz + NIS	32.5 c	100.0 a
Gramoxone 3 SL @ 32 fl oz + Valor @ 2 oz + NIS	78.8 ab	100.0 a
Gramoxone 3 SL @ 32 fl oz + Zidua @ 3.5 fl oz + NIS	82.5 ab	100.0 a
Gramoxone 3 SL @ 32 fl oz + Boundary @ 28.8 fl oz + NIS	35.0 c	100.0 a
Gramoxone 3 SL @ 32 fl oz + Diuron @ 51.2 fl oz + NIS	72.5 ab	100.0 a

Figure 3. Volunteer annual ryegrass control plots 11 days after treatment . Glyphosate treated plot, center left, Paraquat treated plot on center right. Untreated plots on the outside. November 2019 Fairlie, TX



2019 Ag Technology Conference

Thursday December 5, 2019

Rayburn Student Center - TAMUC

*Presented by Texas A&M University-Commerce; Cereal Crops Research Incorporated;
Texas A&M AgriLife Extension and The Agribusiness Industry*

- 8:00 AM - 9:20 AM** **Registration and Visit with Suppliers/Exhibitors**
Morning Section: **Presiding** – Mr. Ben Scholz, President, Cereal Crops Research Incorporated
- 9:25 AM** **Welcome to Texas A&M University-Commerce**
Dr. Randy Harp, Dean and Professor, College of Agricultural Sciences and Natural Resources, Texas A&M University-Commerce
- 9:30 AM – 10:30 AM** **Controlling Plant Disease in Wheat & other Crops with IPM Practices**
Dr. David Drake, IPM Agent, Texas A&M AgriLife Extension
- 10:30 AM – 11:00 AM** **Economics of Crop Production**
Dr. Mark Welch, Extension Specialist, Texas A&M AgriLife Extension
- 11:00 AM – 12:00 PM** **Drift Minimization**
Dr. Scott Nolte, State Extension Weed Specialist, Texas A&M AgriLife Extension
- 12:00 PM – 1:00 PM** **Lunch - Conference Rooms A & B (overflow seating available in Traditions)**
Afternoon Section: **Presiding** – Mr. James Swart, Executive Director, Cereal Crops Research Incorporated and Texas A&M AgriLife Extension, Retired
- 1:00 PM – 2:00 PM** **Auxin Specific Training for Use on Transgenic Herbicide Tolerant Crops**
Dr. Scott Nolte, State Extension Weed Specialist, Texas A&M AgriLife Extension
- Crops Session:* **Presiding** – Mr. Ben Scholz, President, Cereal Crops Research Incorporated
- 2:00 PM – 3:00 PM** **Laws and Regulations of Industrial Hemp Production**
Mr. Dan Hunter, Assistant Commissioner for Water and Rural Affairs, Texas Department of Agriculture
- 3:00 PM – 4:00 PM** **Crops Industry Update: New Pesticide Technology**
*Mr. Eric Castner, Technical Service Manager, FMC Agricultural Solutions
Mr. John Gordy, R&D Scientist, Syngenta Crop Protection
Dr. Adam Hixson, Technical Service Representative, BASF Corporation*
- Range/Pasture Session:* **Presiding** – Mr. James Swart, Executive Director, Cereal Crops Research Incorporated and Texas A&M AgriLife Extension, Retired
- 2:00 PM – 3:00 PM** **Weed Identification and Control in Hay and Pastures**
Dr. Case Medlin, Regional Stewardship and Development Manager, Bayer CropScience
- 3:00 PM – 4:00 PM** **Range and Pasture Industry Update: New Pesticide Technology**
*Dr. Adam Hixson, Technical Service Representative, BASF Corporation
Dr. Chad Cummings, Integrated Field Scientist, Corteva Agriscience*

David R. Drake,
Integrated Pest Management (IPM)



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Calendar

December 5 Ag. Technology Conference-Commerce
December 9 Pesticide Applicator CEU Training-Paris
December 10-11 Texas Plant Protection Conference—Bryan
January 8-10, 2020 Beltwide Cotton Conference-Austin
January 14, 2020 BIG Conference-Waco