Cover Crop Termination

How to Control Annual Ryegrass

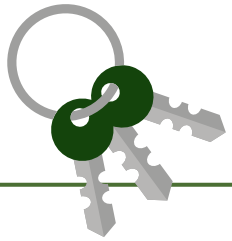
www.growiwm.org

Annual ryegrass is a cool-season cover crop that is often used because its dense root system can improve nitrogen scavenging and water infiltration, while contributing to improved soil structure. Many growers also use annual ryegrass as a dual-purpose spring forage crop, often in mixture with a winter cereal such as triticale.

Annual ryegrass is often called Italian ryegrass. Though they are the same species, cover crop seed may be either Westerworld annual ryegrass, which has been selected and bred to produce annual life cycle traits, or Italian ryegrass, which behaves like a short-lived perennial (or biennial) species and has a vernalization requirement to produce seed.

Volunteer Italian ryegrass has evolved resistance to several herbicide sites-of-action in various production regions, and all annual ryegrass species are generally more tolerant to glyphosate than winter cereals. Annual ryegrass species are wind-pollinated, which means that annual ryegrass cover crops have the potential to be pollinated by weedy types on roadsides or elsewhere in the landscape, which can transfer herbicide resistance. As a result, it is extremely important to optimize burndown herbicide programs to achieve complete control and prevent seed production when using annual ryegrass as a cover crop in your system.

KEYS to annual ryegrass control:



1. Use glyphosate-based programs.

To achieve complete control, it is necessary to use full rates (1.12 – 1.5 lb ae) while also using application BMPs (include AMS, avoid tank-mix antagonism). Reduced control has been observed when atrazine, metribuzin, or flumioxazin is tank-mixed with glyphosate.

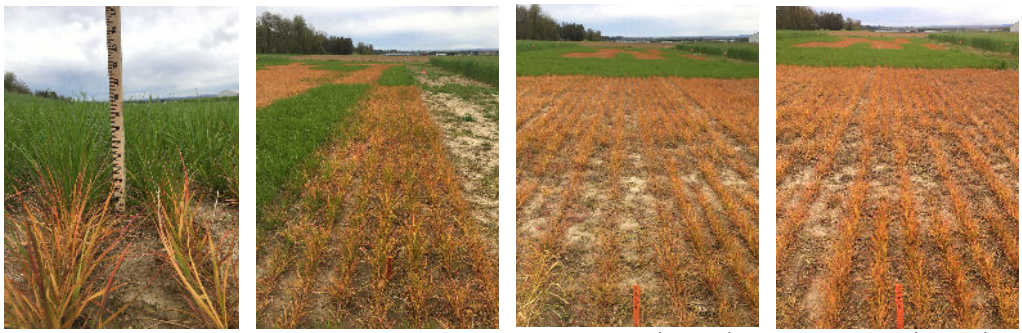
2. The warmer, the better

Warmer conditions often found in late springtime result in greater glyphosate control, likely due to better systemic activity. It is often recommended to terminate annual ryegrass when it is small (< 8" tall), but this growth threshold may coincide with cooler weather conditions in mid-spring. Our studies suggest that weather conditions are of greater importance than size thresholds.

3. Prevent control failures with additional effective sites-of-action

Our research suggests that tank-mixing another herbicide with systemic grass activity (clethodim, Group 1; rimsulfuron, Group 2), improves the consistency of annual ryegrass control in burndown programs (Fig 3 - other side). Clethodim can also be used postemergence in soybeans and rimsulfuron can be used postemergence in corn in combination with glyphosate to target annual ryegrass escapes. Always consult herbicide labels for restrictions.

Figure 3. Annual ryegrass control with different treatments 14 days after treatment.



Applications made in late April on 8" ryegrass. | Roundup PM (36 fl oz) | Roundup PM (36 fl oz) + clethodim (8 oz) + MSO | Roundup PM (36 fl oz) + rimsulfuron (1 oz)

Table 6: Herbicide program recommendations for control of annual ryegrass.

Effectiveness of burndown herbicides and tank-mixtures for control of annual ryegrass 28 days after treatment (DAT) at different timings. Control ratings (1-10) based on Mid-Atlantic field trials. Control ratings of 9 or greater should be selected to optimize control of cover crops.

	Annual ryegrass growth stage	
Glyphosate rates*	**mid-Apr (<12" height)**	**mid-May (>12"height)**
glyphosate (0.75 lb ae) + AMS (2.5% v/v)	< 5	+7
glyphosate (1.12 lb ae) + AMS (2.5% v/v)	7	8
glyphosate (1.25 lb ae) + AMS (2.5% v/v)	+7	**9**
Corn and soybean programs		
glyphosate (1.12 lb ae) + AMS (2.5% v/v) + Sharpen (1 oz) + MSO (1% v/v)	**9+**	**9**
glyphosate (1.12 lb ae) + AMS (2.5% v/v) + 2,4-D LVE (1 pt) + Sharpen (1 oz) + MSO (1% v/v)	**9+**	**9**
Corn only		
glyphosate (1.12 lb ae) + AMS (2.5% v/v) + Select Max (6 fl oz)**	**9+**	**9+**
glyphosate (1.12 lb ae) + AMS (2.5% v/v) + Resolve (1 oz)	**9+**	**9**
Soybean only		
glyphosate (1.12 lb ae) + AMS (2.5% v/v) + Select 2E (8 oz) + MSO (1% v/v)	**9+**	**9+**

*glyphosate at 0.75 lb ae is equivalent to Roundup PowerMax 3 at 19 fl oz; **Select Max can be applied up to 6 days prior to corn planting in Roundup Ready corn using NIS plus AMS; DO NOT use MSO.

Prepared by:

John Wallace (Penn State University), Michael Flessner (Virginia Tech), Dwight Lingenfelter (Penn State University), Vijay Singh (Virginia Tech), Mark VanGessel (University of Delaware), Kurt Vollmer (University of Maryland), Factsheet designed by Emily Unglesbee (GROW), October 2024.