Termination of Winter Rye and Annual Ryegrass Using Glyphosate

Daniel H. Smith, Nutrient and Pest Management Program
Mark Renz, Weed Science Extension Specialist, Department of Agronomy, University of Wisconsin-Madison

Termination of winter rye and annual ryegrass using glyphosate can be a challenge. A recent study at Arlington Agriculture Research Station evaluated glyphosate rates and timings for terminating winter rye and annual ryegrass. A second study was done to evaluate termination using forage harvest techniques. As farmers and agronomists terminate these cover crops, please refer to the end of the newsletter to read the full article detailing the study with termination recommendations.

Considerations for Downy Mildew Control in Wisconsin Hop Production, 2016

Amanda J. Gevens, Extension Plant Pathologist, University of Wisconsin-Madison
Contact info: gevens@wisc.edu, cell phone: 608-575-3029; and Michelle E. Marks, Graduate Research Assistant, University of Wisconsin-Madison Plant Pathology.

Downy mildew has been detected in Pepin County on April 20, 2016. Pale green, malformed spikes were observed with pathogen sporulation on leaf undersides in a commercial hop yards. This pathogen is likely systemic in many hop yards, meaning that the pathogen is inside the rhizomes and can 'awaken' when spikes emerge in the spring. As such, fungicides are important for early season control of this pathogen so as to limit the amount of initial inoculum that can become available to the developing crop as the season progresses. To view the full article about downy mildew control, please follow the link below:


Vegetable Crop Update April 22, 2016

Amanda J. Gevens, Associate Professor & Extension Vegetable Plant Pathologist

The 4th issue of the Vegetable Crop Update is now available. Click on the link below to view this update:

UW-Madison/Extension Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Sean Toporek, and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from April 16, 2016 through April 22, 2016.

**Plant/Sample Type, Disease/Disorder, Pathogen, County**

**Soil**
Soybean Soil, Soybean Cyst Nematode, *Heterodera glycines*, Dane

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

Wisconsin Pest Bulletin: Volume 61 Number 1 April 28, 2016

This Week’s Weather & Pests

Wisconsin Department of Agriculture, Trade & Consumer Protection

Brisk, showery weather prevailed across the state during the final week of April. After last week’s warm spell, temperatures on April 25 declined abruptly and chilly conditions persisted throughout the week. Highs ranged from the lower 40s to upper 50s, about 5-10 degrees below normal for this time of year. Lows were in the upper 20s to lower 40s. Seasonal showers provided timely precipitation for corn planting and maintained mostly adequate soil moisture levels, but fieldwork stalled as the cold snap and periods of light rain slowed planting progress made last week. Corn planting was 10% complete by April 24, three days ahead of last year, and four days ahead of the five-year average. Despite the unfavorable weather, Wisconsin growers are optimistic about prospects for the 2016 growing season after a mild winter and an unusually warm March. Significant planting of corn, oats and potatoes is expected once spring temperatures moderate next week. To view the full issue, please follow the link below:

http://datcpservices.wisconsin.gov/pb/index.jsp
Termination of winter rye and annual ryegrass using glyphosate

Daniel H. Smith, Nutrient and Pest Management Program and Mark Renz, Weed Science Extension Specialist, Department of Agronomy, University of Wisconsin-Madison

Farmers and agronomists agree that terminating cover crops with glyphosate can be challenging. When termination fails, the cover crop becomes a weed that can reduce quality and yield in the following crop. Due to these concerns, experiments were established to evaluate the termination of the most common cover crops — annual ryegrass and winter rye — using two glyphosate rates and three timings.

Wisconsin dairy farms also use winter rye and annual ryegrass as a forage crop and terminate with glyphosate following harvest. See the other side of this page for a second study that evaluates the termination of winter rye and annual ryegrass utilized as a spring forage crop.

Wisconsin research trial

Field experiments were conducted at the University of Wisconsin Arlington Agricultural Research Station from 2013-15. Plots were planted into corn after silage harvest in early September. The cover crops were no-till seeded perpendicular to the harvested corn rows in the second week of September. In the spring, percent cover estimates and dry biomass weights were collected two weeks after treatments were applied.

Cover crop varieties planted

- ‘Guardian’ winter rye — seeding rate of 120 lb/acre @ 1” deep
- ‘Gulf’ annual ryegrass
- ‘Bruiser’ annual ryegrass
- ‘King’ annual ryegrass

Termination timing

- mid-May ..........ryegrass (9 inches) ...........winter rye (Feekes 9) 8 days
- late May ..........ryegrass (12 inches) .........winter rye (Feekes 10) 6 days
- early June ........ryegrass (22 inches) ..........winter rye (Feekes 10.5.2)

Termination treatments

All applications occurred under dry, active growing conditions in the mid- to late afternoon, with mid- to full sun, 70-86°F air temperatures and 1-7.5 mph wind speeds.

- glyphosate 16 fl oz @ 4.5 lb acid equivalent per gallon of glyphosate with ammonium sulfate @ 17 lb /100 gallons of spray solution applied @ 15 gallons/acre
- glyphosate 32 fl oz
- non-treated control
Results

annual ryegrass

2013 plantings results are reported, the 2014’s planting winter-killed.

- All three timings had successful termination on the three varieties.
  Although differences were detected among varieties, they were all considered successfully terminated (>95% reduction in green cover).

- Both glyphosate rates resulted in termination.
  Table 1 shows that both treatments had greater than 95% reductions, indicating successful termination two weeks after treatment. Visual assessment three weeks after applications confirmed successful termination (100% reduction in green cover) of all annual ryegrass populations.

winter rye

- Termination in late May (Feekes 10) and early June (Feekes 10.5.2) were both successful two weeks following treatment.
- Mid-May (Feekes 9) termination did not occur two weeks after application. However, visual assessment three weeks after application confirmed 100% termination, indicating there may be a delay in termination for this timing.
  Table 2 shows results over two years for termination. Mid-May termination takes more time for 100% results when compared to late May and early June, respectively.

Take home message

- Recommended glyphosate rates (16 or 32 fl oz/ gallon @ 4.5 lb acid equivalent per gallon) were effective in terminating both cover crop species at all timings.
- Application timing and glyphosate rate should both be considered when estimating crop planting date.
  Note that in these trials, all herbicide applications were conducted under optimal conditions — sub-optimal conditions may influence results.

- *Always consult herbicide labels for rotation restrictions and crop insurance guidelines prior to termination. The label is the law.*

Termination of winter rye and annual ryegrass utilized as a spring forage crop

A similar experiment was also conducted to assess termination methods for these crops when used as spring forages.

Two varieties:

- ‘King’ annual ryegrass
- ‘Guardian’ winter rye

Three termination treatments:

- glyphosate only*
- harvesting only
- harvesting followed by glyphosate (same day)

Two termination timings [applied 13 days apart in 2014 and 8 days apart in 2015]:

- mid-May......ryegrass (9 inches)..... winter rye (Feekes 9)
- early June......ryegrass (22 inches) . winter rye (Feekes 10.5.2)

* Treatment used for comparison purposes only, glyphosate application prior to forage harvest is illegal.

Results

- Glyphosate provided successful termination of both species in both mid-May and early June.
- Harvesting followed by glyphosate (same day) provides successful termination of both species.
- Harvesting only:
  For winter rye, the harvesting only treatment was effective, however, the winter rye did slowly regrow but was not competitive.

Annual ryegrass regrew quickly from the harvesting only treatment, suggesting that additional management is needed for termination.