

## MANAGING COVER CROPS PRIOR TO PLANTING CORN

Cover crops can provide many benefits including the reduction of soil erosion, improvement of soil quality, and, depending on the species of cover crop, provide nitrogen for subsequent crops. Cover crops include grasses, legumes, brassicas, and even mixtures of all three. However, cover crops that compete with growth of the primary crop, like corn, defeat their purpose. Effective control or termination of the cover crop generally is necessary before emergence of the primary crop. Commonly used methods include:

- Tillage
- Mowing
- Herbicides
- Selection of species that winterkill or have a short life cycle.

### What advantage does tillage have to terminate cover crops?

Tillage not only terminates most cover crops, but also incorporates them into the soil, allowing them to break down quickly and add nutrients for the corn crop. Chisel plowing often is necessary if large amounts of cover crop biomass are present. Chisel plowing followed by disking may be inadequate for certain cover crops such as cereal rye if large amounts of residue are present. Terminating cereal rye early is critical for managing the amount of residue to incorporate with tillage.

### Can mowing be effective in terminating cover crops prior to planting corn?

Mowing can be used to successfully terminate certain cover crops prior to planting the primary corn crop. Producers should mow hairy vetch when the first purple flowers are visible. Mowing vetch prior to flowering can fail to provide adequate control and can result in both crop competition and the production of vetch seed if allowed to flower after regrowth, which could affect future crop production. Mowing vetch after pod formation may result in seeds deposited into the soil, which may impact subsequent crops.

Where cereal grain plants are used for cover crops, producers should mow after heading to ensure successful termination. Mowing prior to head emergence will likely result in regrowth from tillers. Regrowth from cereal grains harvested for forage in boot stage of growth is a common problem for producers who do not use an appropriate herbicide program or tillage.

### Which cover crop plants can be either mechanically incorporated or mowed prior to planting corn?

Certain cereal crops, such as oats, wheat, and triticale, can be either mechanically incorporated, mowed after heading, or used as a forage crop.

### Can herbicides be used to successfully terminate cover crops prior to planting corn?

Herbicide use for terminating cover crops prior to planting corn should be determined by the cover crop being used, any weed species present, and the stage of growth of both the cover crop and weeds. Large plants that are bolting, jointing, or in the reproductive stage of growth may need greater rates of the herbicide or additional control methods.

Non-selective herbicides and systemic herbicides are the primary classes of herbicides that should be used for best control. Actively growing crops under warm temperatures have higher metabolic rates that move systemic herbicides to their site of action more quickly. Applications should be made after three to four days of daytime temperatures in the high 50° to 60° F range and nighttime temperatures greater than 40° F.

When using herbicides for terminating cover crops, use the correct rate. With certain herbicides the addition of ammonium sulfate (AMS) will help the activity of the herbicide. If broadleaf weeds are present, consider a tank mixture with a growth regulator at the recommended rate. To ensure good coverage, spray volumes should be 10 to 15 gallons per acre, with nozzles that produce medium to coarse droplets. Additional herbicides may be necessary if weed species are present; herbicides used to terminate cover crops should be selected to avoid carryover to emerging corn plants. Check with your local university extension service for specific herbicide recommendations and treatment rates for your area.

### What is the best control measure for terminating annual ryegrass?

Glyphosate should be used at a full labeled rate for ryegrass control. Cereal rye and annual ryegrass are commonly used as cover crops; each species has distinct characteristics. Both species have nitrogen

scavenging abilities; annual ryegrass may take up and store more nitrogen compared to cereal rye. Generally, cereal rye is more sensitive to glyphosate compared to annual ryegrass. Avoid tank mixes of glyphosate with atrazine or HPPD inhibitor herbicides. Termination of annual ryegrass is most effective when herbicides are applied prior to formation of the first node/joint and the plant is actively growing. Once the third node/joint appears, control is reduced because of limited translocation as active growth within the plant goes toward reproduction/seed formation. Growers should scout fields to confirm complete death of all plants and to demine if additional control methods are needed. An additional herbicide application with an alternative site of action, such as a tank-mix of paraquat and atrazine for fields going to corn, should be considered. Avoid applications of systemic herbicides three to four hours before sunset.

## Which cover crops are controlled by winter kill?

Winter kill can be an effective termination method but is only possible in more northern climates. Certain cover crops that are susceptible to the first hard frost (temperatures below 25°F) can be terminated by winter kill. Examples of cover crops that will winter kill are turnips and radish.

## What other considerations are there for controlling cover crops prior to planting corn.

USDA agencies (Farm Service Agency (FSA), Natural Resources Conservation Service (NRCS), Risk Management Agency (RMA)) have updated their cover crop termination requirements. To maintain farm program eligibility for federal crop insurance on spring planted crops and other programs, check with you local FSA for specific cover crop termination dates for your area.

## Sources

<sup>1</sup>2013 – 2014 Cover crop survey report. Conservation Technology Information Center and North Central Sustainable Agriculture Research and Education. [www.ctic.org](http://www.ctic.org)

<sup>2</sup>Clark A., Bowman, G., Cramer, C., and Shirley, F. 2007. Managing cover crops profitably. Third edition, Handbook series book 9. Sustainable Agriculture Network. [www.mccc.msu.edu](http://www.mccc.msu.edu).

<sup>3</sup>Legleiter, T. and Gibson, K. 2012. Successful cover crop termination with herbicides. WS-50-W. Purdue University. [www.extension.purdue.edu](http://www.extension.purdue.edu).

<sup>4</sup>Loux, M. 2007. Burndown herbicide activity-can we kill anything when it's this cold? C.O.R.N. Newsletter 2007-08. The Ohio State University. <http://agcrops.osu.edu/newsletters/2007/08>.

<sup>5</sup>Schomberg, H. and Balkcom, K. 2009. Cover crops. Soil quality for environmental health. [http://soilquality.org/practices/cover\\_crops.html](http://soilquality.org/practices/cover_crops.html).

<sup>6</sup>Plumer, M. 2013. Personal comunicación. 2014. NCRS cover crop termination guidelines. USDA <http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=36437.wba>.

<sup>7</sup>Cover crop species. Midwest cover crop council. [www.mccc.msu.edu](http://www.mccc.msu.edu)

<sup>8</sup>Cover Crops for Conservation Tillage Systems, <https://extension.psu.edu/cover-crops-for-conservation-tillage-systems>

Web sources verified 11/12/2019

## Legal Statement

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

Tank mixtures: The applicable labeling for each product must be in the possession of the user at the time of application. Follow applicable use instructions, including application rates, precautions and restrictions of each product used in the tank mixture. Not all tank mix product formulations have been tested for compatibility or performance other than specifically listed by brand name. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance. ©2019 Bayer Group. All rights reserved. 2012\_Q5