

Getting started with cover crops

CROPPING SYSTEMS

BY MARK LIGHT



COVER CROPS ARE being promoted for their benefits in reducing nutrient losses and improving soil health. Research has repeatedly proven these benefits. As a result, interest in cover crop use has risen dramatically over the last decade. However, such interest hasn't led to widespread adoption of cover crops in Iowa.

In 2015 about 500,000 acres of cover crops were planted on Iowa's roughly 23 million acres of row crops. Poor establishment, spring termination, impact on yield,

and timing of seeding and termination are frequently cited as reasons cover crops are not adopted. To help you garner cover crop success, I offer the following tips.

First and foremost, realistically determine your purpose for using cover crops. Then do your homework ahead of planting the cover crops. Cover crops aren't a simple plug-and-play. They require a complete overhaul of your cropping systems—from tillage changes, products and timing of fertility to herbicide program, planter setting and more.

SPECIES SELECTION

Start simple with small grains. Winter cereal rye and oats are inexpensive and versatile. Cereal rye can be aerially seeded, broadcast or drilled. It germinates and grows quickly. Oats can have adequate fall

growth, but like other spring cereal grains, it won't offer spring growth and subsequent benefits. Iowa is far enough north that most falls offer too little time to gain the benefits of radishes and legumes, especially if seeding after cash crop harvest.

Brassicas, legumes and other grasses produce less biomass compared with cereal grains, decreasing desired benefits. Also, cover crop mixes are a bit more complicated, and based on some recent Iowa Learning Farm research, have shown to produce less total biomass in fall and spring compared to a single cereal grain.

TIMING AND METHOD OF SEEDING

Early vegetative, late vegetative or after harvest are the three broad categories for timing of seeding. It's advised to avoid early vegetative seeding due to minimal

research available and higher potential risk for a detrimental effect on cash crops.

Both high-clearance seeders and aerial applicators are widely available for late vegetative seeding; however, seed-to-soil contact isn't ideal, and getting an even distribution of the seed can be problematic. Additionally, late vegetative establishment is greatly affected by the availability of soil moisture, rainfall and light penetration through the canopy. Drawbacks with late vegetative seeding include the need to increase seeding rates, less reliable stand establishment, and fewer species options compared to seeding with a grain drill.

Postharvest cover crop seeding has more options in seeding methods. However, using a drill is recommended because of superior seed-to-soil contact, uniform stand establishment and ability to accommodate a wide range of cover crop species. A major limitation of postharvest seeding is a reduced time frame available from cash crop harvest to fall freeze, especially following a full-season corn crop.

COVER CROP TERMINATION

Termination of winter-hardy cover crops in spring needs to be considered at the onset of deciding to seed and grow cover crops. Timing of termination is critical ahead of corn planting and less critical ahead of soybean planting.

First, read and follow herbicide label instructions. Translocated or nonselective contact herbicides will effectively terminate most cover crops. Glyphosate is often the herbicide of choice. Apply when the cover crop is actively growing, with daytime temperatures above 60 degrees F and nighttime above 40 degrees. Apply before cereal grains are 10 to 12 inches tall.

Tillage to terminate is not advised. It often requires multiple passes followed by dry conditions. If rainfall occurs too soon after tillage, the cover may re-establish.

CASH CROP PLANTER SETTING

Planting corn or soybean after a cover crop isn't business as usual. While the same criteria for planter settings need to

be met regardless of planting conditions and how much residue there is, stand establishment issues for corn planted after cover crops is an issue. Focus on attaining optimal seed depth, make sure the seed furrow remains closed, and reduce risk of compaction from too much row unit down pressure and sidewall smearing. This sounds easy and straight-forward, but oftentimes planting into cover crop residue fails for these reasons.

Sidewall compaction occurs because cover residues reduce soil-water evaporation, increasing drying time after spring rains. Shallow and variable seed depth is due to lack of row-unit down pressure, while too much down pressure creates a compacted zone beneath the depth gauge wheels, potentially resulting in poor root development. Seed furrows reopen as a result of not enough pressure on the closing wheel. Taking time to check soil conditions and planter setting at the onset of planting will increase cash crop establishment following cover crops.

CORN AND SOYBEAN MANAGEMENT

Management following cover crops requires changes, too. Tillage becomes less desirable unless strip tillage is used. Nutrient applications would best be moved to spring preplant or split applications. Adjustments or modifications may be needed to ensure planter units don't cause sidewall compaction or leave the furrow open. While the jury is still out on whether fluted coulters and shark-tooth closing wheels improve stand establishment and early root growth following cover crops, they may be worth considering.

Some evidence finds using starter fertilizer, upping corn seeding rates by 10%, and leaving a cover-free strip for next year's corn row can reduce problems for the corn crop. But these management changes will also result in greater cost of production with little or no return of investment.

Consider how soil residual herbicides used in spring and summer may affect cover crop germination, emergence and growth in the fall. Pay attention to in-

sects that may benefit from spring "green bridge" growth, such as black cutworms and armyworms. Watch for seedling root diseases and use fungicide seed treatments, especially when cover crops and cash crops are closely related.

EASY ENTRY POINTS

Look for "easy" entry points, such as livestock operations that can use the cover crop for grazing or haylage; operations that include seed corn or silage production that can be timely in establishing covers; and following early-maturing crops, such as soybean, winter wheat and oats. These entry points bring economic value and can ease the learning curve associated with cover crop adoption.

Using cover crops takes more than planting and terminating. Start small to reduce risk and time expended. Like anything new, expect a learning curve and do your homework ahead of time.

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