Getting Started

Your management goals will play an important role in helping you decide which cover crop to use and how you manage it. For example:

- Grasses utilize more soil nitrogen.
- Legumes use both nitrogen and phosphorus.
- Deep rooted species provide maximum nutrient recovery.
- Species like rye will produce high volumes of organic matter if allowed to grow longer in the spring.
- To maximize weed suppression, leave cover crop residues on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.
- Select species (i.e. oilseed, radish) that have a large tap root to help alleviate compaction problems.

Because each cover crop performs differently you may want to consider mixtures of two or more species.

Establishment

Establish cover crop according to the specified species, seeding rate, date, and methods outlined in this publication. Seeding dates are especially critical to allow for adequate growth to provide the intended benefit.

If seeding prior to harvest (prior to leaf drop and/or near crop maturity), broadcast seed using a method allowing good coverage and for fewer damages to the standing crop. These methods would include seeding by air or high clearance applicator. No seedbed preparation is necessary. When broadcast seeding prior to harvest it is important to have good soil moisture near the surface.

If seeding after harvest, seed may be either no-till planted or broadcast seeded into existing residue cover. Immediately roll or cultipack if the seed is broadcast on a prepared seedbed to ensure good seed-to-soil contact. Some producers mix seed in the fertilizer application to reduce the number of trips over the field.

Managing Cover Crops

Termination or killing of the cover crop can be critical for success of the spring planted crop. Killing cover crops as late as feasible will maximize plant growth and residual nutrient accumulation, while allowing sufficient time for the cover crop to decompose, release nutrients, and recharge soil moisture. Producers can be terminate cover crops by harvest, crimpers, frost, mowing, tillage, and/or herbicides compatible with the following crop. When terminating cover crop consider the following:

- Spring termination not required for cover crops that do not over winter.
- Terminate cover crop at least two weeks prior to planting the main crop to minimize the risk of reducing corn yields.
- Over wintering cover crops should be terminated when they start to regrow, if the spring is exceptionally dry or the long-range forecast predicts dry conditions.
- Small grains can reduce corn yields similar to continuous corn. Plant chemicals (called allelochemicals) released into the soil can inhibit growth of corn and some weed species. This is why terminating the small grain cover crop two weeks prior to corn planting is critical.
- Consider increasing seeding rates for no-till corn by 10 percent when preceded by small grain cover crop. This is because the increased surface residue can interfere with planter operations and seed placement and the increased seedling mortality due to the allelopathic effects.
- Consider using a starter fertilizer (with nitrogen) to help microbes decompose organic matter.

Cover Crops:

A guide for Iowa Producers

NRCS Natural Resources Conservation Service

Cover crops, planted in the fall between harvest and planting of spring crops, reduce soil erosion, limit nitrogen leaching, suppress weeds, increase soil organic matter and improve overall soil quality. Small grain cover crops increase surface cover, anchor corn and soybean residues, increase water infiltration and reduce erosion.

Common cover crops used in Iowa include winter hardy plants like rye and wheat. Other less common, but also effective, cover crops include oats, spring wheat, hairy vetch, red clover, sweet clover, turnips, rapeseed, radishes and triticale.

In addition to the environmental and soil quality benefits, several cover crops are suitable for grazing by livestock and/or wildlife.

Using cover crops may reduce the total energy demands of the farm, by capturing nutrients that would be lost to leaching thus reducing the farm's requirement for high energy inputs.

Like most farm management issues, timing is a critical concern for cover crop management. Producers must plant early enough in the fall to allow for good establishment before winter, but also must kill winter hardy cover crops soon enough to prevent yield losses in the following crop.

Inside is some detailed "how-to" information on seeding, establishment, uses and management of cover crops.

Cover Crop	Seeding Dates	Seeding Rates	Seeding Depth	Establishment	Best Use	Management Information
Winter Hardy Grains • Cereal Rye • Winter Wheat • Triticale (cereal rye and winter wheat cross)	Aug. 15 - Oct. 15	1-2 bu/acre	.5 inch to 1 inch	Drilled, No-till, Broadcast with incorporation; Broadcast at leaf drop (bean)	Good fit following corn silage, before beans harvest and grazing forage for livestock (avoid compaction in wet springs)	• Minimum of 8 inches of growth recommended before spring kill to ensure adequate residue. • With the additional spring growth, rye will produce four times the dry matter as oats. • Kill rye two weeks prior to planting corn to minimize allelopathic effect. • Timing of kill not as critical when planting beans. • Triticale not as winter hardy. • Aerial application in standing corn not recommended. • Seed slots may not close if rye cover crop is still green at planting. • Excellent weed control. • Need N at planting of intended crop to offset the effect of soil microorganism N tieup.
Winter Killed Grains • Oats • Spring Wheat	Aug. 15 - Sept. 15	2-3 bu/acre	.5 inch to 1 inch	Drilled, No-till, Broadcast with incorporation; Broadcast at leaf drop (bean)	Fallow or prevented planting acres; corn silage	• Spring kill not required for oats. • Oats produce no allelopathic affect for following corn crop in the spring. • Minimum of 6 inches of growth needed before winter to ensure adequate residue for erosion control. • Less nitrogen scavenging than winter grains. • In dry years, less chance of using up available moisture for intended crop. • Need N at planting of intended crop to offset the effect of soil microorganism N tieup.
Winter Hardy Legumes • Hairy Vetch • Red Clover • Sweet Clover	Aug.. 1 - Sept. 15	8 to 15 pounds/ acre	.25 inch to .5 inch	Drilled, No-till, Broadcast with incorporation; Broadcast at leaf drop (beans)	Good fit after corn silage in a corn on corn rotation; fallow or prevented planting going to corn; in beans at leaf drop	• No allelopathic effect for corn. • Potential N source for following crop. • Sweet clover has the greatest potential for N fixation. • Kill timing not as critical when going back to corn. • Not recommended prior to planting beans. • Less winter hardy if planted late in fal.l
Forage Covers (winter killed) • Turnips • Rapeseed • Radishes	Aug. 15 - Sept. 15	5 to 15 pounds/ acre	.25 inch to .5 inch	Drilled, No-till, Broadcast with incorporation; Broadcast at leaf drop (bean)	Grazing forage for cattle or deer	• Good at suppressing nematodes and weeds. • Good N scavengers. • Excellent fall/winter forage for domestic livestock and wildlife. • Good at reducing compaction.
Forage Covers • Turnips • Rapeseed • Radishes	Aug. 15 - Sept. 15	5 to 15 pounds/ acre	.25 inch to .5 inch	Drilled, No-till, Broadcast with incorporation; Broadcast at leaf drop (bean)	Grazing forage for cattle and deer	• Good suppressing of nematodes and weeds. • Good N scavengers. • Excellent wildlife winter forage area. • Good at reducing compaction.