

# COVER CROP GUIDE



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## Resources

Cover Crops USA | [covercropsusa.com](http://covercropsusa.com) • N-Vest® | [ciscoseeds.com/nvest.php](http://ciscoseeds.com/nvest.php) • CISCO Farm Seed Blog | [ciscofarmseed.com](http://ciscofarmseed.com)  
 NRCS | [nrcs.usda.gov](http://nrcs.usda.gov) • Midwest Cover Crop Council | <http://mccc.msu.edu/>  
 Indiana Conservation Cropping Systems Initiative | [ccsin.iaswcd.org](http://ccsin.iaswcd.org) • SoilHealth.Net | [soilhealth.net](http://soilhealth.net)  
 Conservation Technology Information Center | [ctic.purdue.edu](http://ctic.purdue.edu) • Soil Health Partnership | [soilhealthpartnership.org](http://soilhealthpartnership.org)

## IT'S ALL ABOUT YOUR HEALTH—SOIL HEALTH

Pick up any farm newspaper in the last five years and it would be hard not to find an article regarding soil health issues. Modern cropping systems over the last 50 years, all minds agree, have taken their toll on productivity. With the advent of modern fertility and herbicide practices we have arguably taken the easy route in managing these very important crop inputs. Economics dictate that we cannot go back in time to a corn, soybean, wheat and clover rotation. However, incorporating a well thought out cover crop management program will help the soil function as a living ecosystem and have it derive all the benefits that we are presenting in CISCO's N-Vest® Cover Crop Guide. We hope that the information in this guide will help you make some of those important management decisions.



### Cover Crop Benefits

- Protect the soil surface from erosion & improve water infiltration
- Elevate water holding capacity of the soil
- Suppress weeds
- Guard the soil surface from extreme temperatures, rain, and wind
- Improve soil structure & reduce compaction
- Increase yield potential
- Raise soil organic matter levels and improve soil physical properties
- Mineralize, reposition, and scavenge nutrients in the soil and utilize them for the next crop
- Enhance soil biological activity and health
- Produce forage, reducing feed costs
- Potentially reduce nutrient costs



## COVER CROP BENEFITS

Northside of road after 2.8" of rain. Cover crop system used on this farm.



Southside of road after 2.8" of rain. No cover crops being used.



### Soil Surface Protection

There are many reasons to adopt cover crops into your farming operation. Cover crops protect the soil surface from water and wind erosion, allowing you to keep your soil on your farm. Cover crops form a canopy to shield the soil surface from extreme temperatures and heavy, pounding rains. Cover crops also give us the ability to keep water on the farm by allowing water enough time to soak into the soil, preventing run off.

### Soil Structure

Over time, a living cover crop, along with earthworms, will change the soil structure on your farm. Cash crop roots will penetrate the soil with greater ease, more oxygen will enter the system, more chemical reactions will take place, and a larger microbial population will grow. Reaching a 25% air to 25% water ratio will optimize plant nutrient availability. As cover crops grow and die, resilience is brought back to the soil, particles stick together (flocculate), and compaction is reduced.

### Decreasing Undesirables

Cover crops suppress weeds in two ways – by direct competition and by shading the soil. In some cropping systems, using a cover crop as a companion to the primary crop (growing between rows or underneath the canopy) will help out-compete weeds. Cover crops, like cereal rye, release allelopathic compounds that deter weed germination. Other cereal grains like oats, barley, millet, sunflowers, buckwheat and sorghum sudan are very good in weed suppression as well.

### Organic Matter

Organic matter percentage of soil volume expands as the cycle continues. More nutrients are securely stored in more humus as it develops over time. Measuring organic matter increases is a multi-year process, but not a lifetime process, as we used to believe. The short term soil structure improvements give us physical evidence of organic matter increase.

## PLANT SEED–NOT GRAIN

With the N-Vest® brand there are never any compromises when it comes to seed quality. N-Vest® cover crop seed offers the following advantages:

- Seed fields are monitored from planting, throughout the growing season, and at harvest to make sure there are no issues with potential weed problems or varietal purity.
- Seed is professionally conditioned, cleaned, and packaged.
- Every lot of seed is tested at harvest and after conditioning by laboratories approved by and standards set up by the Association of Official Seed Analysts.
- Any mixing is done in our facility, by our people, with our equipment, which is designed to gently handle seed.

**Do not take the chance of introducing new and potentially invasive (and glyphosate resistant) weeds to your farm by buying “cheap” seed.**

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### A Word About “Dormant” Seed

Certain species of seeds that are utilized for cover crops have shown a portion of dormant seed present. “Dormant” seed contains properties that inhibit germination right away. This is nature’s way of making sure the species continues. For example, if a disease eliminated every radish on Earth, next year there would be approximately 4% of radishes that would emerge, as that is a normal level of dormancy for that species.

Dormancy also occurs in annual ryegrass and crimson clover. There have been examples of fields planted in the fall to annual ryegrass and radish and the next fall having a better stand than the previous fall when it was planted. The stand was established from dormant seed leftover from the initial planting.

We are working to determine normal dormancies, but it is very inconsistent as it depends on seed production growing conditions and the age of the seed. The point is to be aware that this can happen, and it is normally not a production detriment.



Most annual ryegrass we sell is the previous year’s crop, so dormant seed is not an issue.

## N-VEST® CRIMSON COVER-ALL MIX



Crimson clover



Repositioning nutrients  
from sub soil



Produces nitrogen with  
fibrous root system

- Improved crimson clover and Scav-N-Ger® radish
- Nitrogen producer (legume) plus a nutrient scavenger (brassica)
- Crimson clover has a fine, fibrous root system
- Crimson clover can produce anywhere from 70 -140 lbs of nitrogen/acre
- Great for building soil tilth and structure
- Best planted after wheat; excellent choice before corn
- Crimson clover usually overwinters; the radishes will winterkill below 22°F
- Plant at least six weeks before killing freeze

### **Planting tips:**

Planting Rate: 17-20 lbs/acre

Planting Depth: 1/4-1/2"

Planting Time: Summer/Fall

## N-VEST® GROUNDBREAKER MIX

- Austrian winter peas and Scav-N-Ger® radish mixture
- Great nitrogen producer plus a scavenger
- Huge biomass builder
- Fast nodulating peas can produce up to 90-150 lbs. of nitrogen/acre
- Great for helping suppress weeds
- Quick source of available nitrogen as peas break down rapidly in the spring
- Peas can survive down to 10° F or overwinter if there is adequate snow cover
- This mixture works best when drilled and peas inoculated
- Radish will winterkill below 22° F
- Plant at least six weeks before killing frost

### Planting tips:

Planting Rate: 35 lbs/acre  
Planting Depth: 1/2-3/4"  
Planting Time: Summer/Fall

Scavenging nutrients,  
producing nitrogen,  
& multiplying earthworms



Weed suppression



Overwintering peas  
provide living mulch



Mulch inhibits weeds and  
preserves moisture



## N-VEST® OAT-RADISH MIX

- Great for novice cover cropper or the most experienced
- High quality oat seed plus proven Scav-N-Ger® radish
- Soil tilth builder and nutrient scavenger
- Winterkills for easy management
- Great for biomass and erosion control
- Plant at least six weeks before killing freeze
- 50lbs/A minimum rate, 80-100lbs when applying manure before planting

Excellent cover for  
weed suppression



Provides prolific forage



Vegetation self  
terminates and creates  
a cover that biodegrades  
by springtime

Scavenges nutrients  
from manure



### **Planting tips:**

**Planting Rate: 50-80 lbs/acre**

**Planting Depth: 1/2-3/4"**

**Planting Time: Summer/Fall**

## N-VEST® NUTRIBUILDER MIX

- Three way mixture of winterhardy annual ryegrass, improved crimson clover, and Scav-N-Ger® radish
- More diverse mixture improves soil health
- Nitrogen producer plus two scavengers
- Great for improving earthworm populations
- Crimson clover usually overwinters, radishes will winterkill, and the annual ryegrass will need to be terminated in the spring
- Plant at least six weeks before killing frost



Excellent weed suppression



Ground application



High boy ground application

### Planting tips:

Planting Rate: 25 lbs/acre  
Planting Depth: 1/2-3/4"  
Planting Time: Summer/Fall



## N-VEST® FORAGER MIX

- Grazers' choice for cover crop
- Oats, cereal rye, plus forage turnips
- Oats and turnips can be grazed in the fall
- Cereal rye can be grazed in the spring
- Great for additional grazing acres while utilizing a cover crop
- Turnip leaves are high in protein
- Great with manure application
- Plant at least four weeks before killing frost
- 100lbs/acre recommended for average grazing demand



Ready to be grazed in 60 days



Adds diversity to soil health



Balanced ration for cattle

### **Planting tips:**

Planting Rate: 100-120 lbs/acre

Planting Depth: 1/2-3/4"

Planting Time: Summer/Fall

## N-VEST® WINTER HAWK ANNUAL RYEGRASS

- Very durable, winterhardy annual ryegrass
- Number one in winterhardiness at The Ohio State University cover crop trials
- Breaks dormancy evenly in the spring
- Deepest root system of any cover crop
- Huge biomass builder and soil tilth improvement
- Overwinters very well; easily killed
- Roots have been found over 40" deep
- Great forage
- No dormant seed
- Drilled is always best

### Planting tips:

Planting Rate: 10-20 lbs/acre  
Planting Depth: 1/4"  
Planting Time: Fall



Quick establishment & quick cover



Good biomass producer



Thick cover gives good weed suppression



Deep, fibrous root structure

## N-VEST® SUMMER SOIL ENHANCER MIX

### **Planting tips:**

Planting Rate: 25 lbs/acre

Planting Depth: 1/4-1/2"

Planting Time: Summer

- A mix of sorghum sudangrass and buckwheat
- Excellent choice for soil improvement
- Feeds soil microbiology during the summer months
- Helps suppress weed growth
- May also be utilized as a forage

## N-VEST® SUMMER SOIL & FORAGE MIX

- A mix of sorghum sudangrass, pearl millet, and crimson clover
- Excellent choice for soil improvement
- Feeds soil microbiology during the summer months with added benefit of spring greenup
- Crimson clover fixes nitrogen for following year's cash crop
- Can be used as spring feed

### **Planting tips:**

Planting Rate: 25 lbs/acre

Planting Depth: 1/4-1/2"

Planting Time: Summer

## GRAZE KING 90

Article published by: [www.cisconfarmseed.com](http://www.cisconfarmseed.com)

### What is Graze King 90?

Graze King 90 is a fall planted cereal grain that can be used as a forage in the following spring. Planting dates range from September to late November, depending on your latitude and growing conditions. Cereal rye is very adaptable because of its ability to be planted very late in the fall yet have outstanding winterhardiness.

Graze King 90 has been selected for improved forage yields and quality due to increased tillering and leafiness. Dry matter yields can range from 2 to 4 tons/acre plus. Graze King 90 can be grazed in the fall as long as 4" of leaf area is left on the plant. It can be mixed with oats and turnips/radishes for improved fall grazing.

### Soil Health Benefits of Fall Planted Cereal Rye

Don't forget to think about the soil health benefits of using cereal rye in the fall. It has a wonderful fibrous root system that is only out-performed by annual ryegrass. Cereal rye roots have been shown to reach over 40" in depth. It is a great scavenger of excess nitrogen (N) and other nutrients found in the soil profile. Consider adding a couple pounds of Scav-N-ger® Radishes to the cereal rye when it is being planted.

### Fertilizing Graze King 90

Fertility management for Graze King 90 is very similar to wheat. It requires about 30 lbs/acre of nitrogen in the fall, whether it is from manure, legume nitrogen credits such as soybeans, or commercial fertilizer. In the spring, cereal rye performs optimally with 60-70 lbs/acre of nitrogen. This can be applied at the same time wheat is being topdressed. Excess nitrogen can cause lodging and nitrogen runoff.

### Planting and Harvesting Times for Graze King 90

Graze King 90 works well after corn silage, soybeans, or a summer annual crop such as Sweet Six BMR sorghum sudangrass. In the fall it will remain vegetative. The overwintering process will promote vernalization and the cereal rye will begin its reproductive life cycle in the spring.

Harvest in the Midwest usually occurs in late April or early May. Optimal harvest is at the flag leaf stage. Once heading occurs, forage quality begins to drop, with crude protein (CP) decreasing and NDF and ADF increasing. Realize that the more growing degree days (GDD), the more rapidly cereal rye can mature.

If the temperature is in the 70's in late April, cereal rye can go from vegetative to headed out in only a few days. Pay attention as the crop matures to the weather and the plants. Cereal rye can be grazed, hayed, chopped, or wet wrapped.



**Early Spring**

## The Same Field One Month Later

Most of the cereal rye grew to 18" in height and responded well to the nitrogen fertilizer.

Each plant has two joints located on the stem and a flower located about 10" up the stalk.

The crop should be ready to harvest in 10-14 days. This is assuming normal spring heat and moisture.



## Harvest Time

Below are pictures of what the field looked like when harvested on May 5.



# COVER CROP KEY ATTRIBUTES

warm  
season

cool season

mixes

crop	variety	species	forage	planting
60/40 Ryegrass Clover	Mix	Grass/legume	✓	Fall
Crimson Cover-All Mix	Mix	Legume/brassica	✓	Fall
Forager Mix	Mix	Grass/brassica	✓	Fall
Groundbreaker Mix	Mix	Legume/brassica	✓	Fall
NutriBuilder Mix	Mix	Grass/legume/ brassica	✓	Fall
Alsike Clover	VNS	Legume	✓	Spring/Fall
Annual Ryegrass	Winterhawk	Grass	✓	Fall
Balansa Clover	Fixation	Legume	✓	Fall
Barley, Winter	Valor	Grass	✓	Fall
Berseem Clover	Frosty	Legume	✓	Summer
Cereal rye	Elbon, VNS	Grass	✓	Fall
Crimson clover	Dixie	Legume	✓	Fall
Mustard, White	VNS	Brassica		Fall
Oats, Spring	VNS, Haywire	Grass	✓	Spring, Fall
Oats-Radish Mix	Mix	Grass/brassica	✓	Fall
Peas, Forage	Icicle	Legume	✓	Spring, Fall
Peas, Spring	Stockade	Legume	✓	Spring
Peas, Winter	Austrian, Frostmaster	Legume	✓	Fall
Phacelia	VNS	Broadleaf	✓	Spring/Fall
Radish	Scav-N-Ger®	Brassica	✓	Fall
Rape, Dwarf Essex	VNS	Brassica	✓	Fall
Red Clover, Mammoth	VNS	Legume	✓	Spring, Fall
Red Clover, Medium	Gallant, VNS	Legume	✓	Spring, Fall
Sweet Clover	VNS	Legume		Spring, Fall
Triticale, Fall	Flex 719	Grass	✓	Fall
Triticale, Spring	Elevator	Grass	✓	Spring
Turnips, Forage	Appin, Pasja	Brassica	✓	Fall, Summer
Vetch, Hairy	Vallana, Amoreiras	Legume	✓	Fall
Wheat, Winter	VNS	Grass	✓	Fall
Buckwheat	VNS	Broadleaf	✓	Summer
Cowpeas	VNS	Legume	✓	Summer
Pearl Millet	Sweet Summer BMR	Grass	✓	Summer
Sorghum Sudangrass	Sweet Forever	Grass	✓	Summer
Sorghum, Forage	GW-400	Grass	✓	Summer
Sunn Hemp	VNS	Legume	✓	Summer
Teff Grass	Summer Delight	Grass	✓	Summer

All seeds listed above are available through CISCO.

termination	days to germination	CC drill lbs/ac*	drill depth	attributes	scavenger or producer
Overwinter	7-10	20	1/4"	Improve soil tilth	Both
Overwinter	7-10	20	1/4-1/2"	Quality forage	Both
Overwinter	7-10	35-50	1/4-3/4"	Fibrous roots	Scavenger
Can overwinter	7-10	35	1/2-3/4"	Improve soil tilth	Both
Overwinter	7-10	20	1/2-3/4"	Great soil improver	Both
Overwinter	7-10	2-3	1/4"	Dual purpose	Producer
Overwinter	7	10	1/4"	Improve soil tilth	Scavenger
Overwinter	7	2-6	1/4"	Great before corn	Producer
Overwinter	7	25-50	1/2-1"	Early maturity	Scavenger
Overwinter	7	8-12	1/4"	Biomass builder	Producer
Overwinter	7	30-60	1/2-1"	Great feed	Scavenger
Overwinter	7-10	8	1/4"	Phosphorus	Producer
Overwinter	7	1	1/4"	Deep taproot	Scavenger
20-22 F	7-10	15-50	1/2-1"	Good biomass	Scavenger
20-22 F	2-10	30-50	1/4-3/4"	Tolerates poor soil	Scavenger
Can overwinter	7-10	10-25	1/2-1"	Root exudates	Producer
20-22 F	7-10	10-25	1/2-1"	Good N producer	Producer
Can overwinter	7-10	10-25	1/2-1"	Fibrous root system	Producer
20 F	7-10	1	1/4"	Soil structure	Scavenger
20-22 F	2-7	2-5	1/4"	Earthworm magnet	Scavenger
Overwinter	5-7	1-3	1/4"	Late seeding	Scavenger
Overwinter	7-10	7-10	1/4"	Weed suppression	Producer
Overwinter	7-10	7-10	1/4"	Deep root mass	Producer
Overwinter	7-10	6-8	1/4"	Shallow fiber roots	Producer
Overwinter	10	35-50	1/2-1"	Biomass builder	Scavenger
20-22 F	10	35-50	1/2-1"	Fast growing	Scavenger
15 F	5-7	2-4	1/4"	Drought tolerant	Scavenger
Overwinter	7	1-6	1/4"	Great N source	Producer
Overwinter	7-10	25-60	1/2-1"	Shallow fiber roots	Scavenger
32 F	7-10	7-10	1/4-1/2"	Soil enhancer	Scavenger
32 F	7-10	15-60	1/2-1"	Quick biomass	Producer
32 F	2-10	2-10	1/4"	Deep taproot	Scavenger
32 F	7	15-25	1/2"	Great forage	Scavenger
32 F	4-5	1-5	1/2"	Legume nurse crop	Scavenger
32 F	7	15-20	1/2-1"	Quality forage	Producer
32 F	3-5	5-10	1/8-1/4"	Drought tolerant	Scavenger

\*Seeding rates vary depending on if it is a pure stand or a mixture. Aerial application 20% above drill rates; forage 100% above drill rates.

## FIXATION BALANSA CLOVER

Balansa clover is relatively new in the cover crop world. It is an annual clover that is generally fall seeded and can be seeded later than crimson clover. It has been selected for winterhardiness, nitrogen production as well as a great biomass production in the spring. The picture below shows corn being no-till planted into a thick crop of balansa clover. Fixation balansa clover can produce up to 200 lbs/A of nitrogen.

Balansa clover can be mixed with small grains such as Graze King 90 cereal rye to use for livestock feed. Don't be dismayed with the amount of fall top growth out of Fixation, but take a shovel and look at the root system. The roots are where Fixation really shines. Fixation balansa clover is well suited for being part of your diverse cover crop program.





## NITROGEN PRODUCERS—SPRING SEEDED



### Medium Red Clover

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- Works well when spring frost seeded into winter small grain crops such as wheat
- Can produce 75-150 lbs of nitrogen/acre
- Deep tap roots complement the roots of the companion grass crop for soil health improvement
- Many producers will take one or two harvests of red clover for forage



### Mammoth Red Clover

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- Frost seed in the spring with a winter small grain crop
- Good for biomass production and improved soil tilth
- Matures later than medium red clover
- Can produce 65-110 lbs of nitrogen/acre
- Deep tap root



### Yellow Blossom Sweet Clover

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- Frost seed in the spring into winter small grain crop
- Great pollinator
- Exceptional ability to restore depleted mineralized soils
- Large tap root with vigorous growth
- Great for biomass production, but not recommended for forage
- Mixes well with other clovers



### Alsike Clover

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- Frost seed in the spring into a winter small grain crop or drill into a spring seeded small grain crop
- Tolerates wet and/or acidic soils
- Shallow root system compared to other clovers
- Can produce 40-60 lbs of nitrogen/acre as well as provide good forage for ruminant livestock
- Perennial clover that tillers profusely from the crown

## NITROGEN PRODUCERS—SUMMER SEEDED



### Cowpeas

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- Warm-season legume that can produce 100-150 lbs of nitrogen/acre
- Rapid summer growth with adequate moisture, but also drought tolerant
- Terminates with a frost
- Outcompetes and smothers weeds with large amounts of biomass
- Mixes well with sorghum sudangrass and many other summer annuals as a forage



### Sunn Hemp

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- Warm-season legume that can produce up to 100 lbs of nitrogen/acre
- Resistant to nematodes
- Mixes well with other summer annuals (4-5 lbs/acre sunn hemp) for soil building
- High seeding rates produce large amounts biomass, increased organic matter levels, and increased soil fungi populations
- Can reach 6 feet tall in 60 days



### Frosty Berseem Clover

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- Cool-season annual clover that does not cause bloat in livestock
- Survives in the fall to 5°F
- Rapid summer growth that can be hayed or grazed multiple times
- Good nitrogen producer with 100-180 lbs of nitrogen/acre available in the plant's total biomass
- Works best following wheat harvest

## NITROGEN PRODUCERS—FALL SEEDED



### Fixation Balansa Clover

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- Annual clover with a deep tap root that can produce up to 200 lbs of nitrogen/acre
- Vigorous root growth in the fall with abundant top growth in the spring
- Great choice for high yielding spring harvested forage crop
- Can be seeded later than any other clover
- Matches well with cereal rye and fall triticale
- Hollow stem improves hay drying rates

## NITROGEN PRODUCERS—FALL SEEDED



### Hairy Vetch

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- Top nitrogen producer, excellent for phosphorous scavenging, and soil improvement
- Needs 5-6 weeks of growth in the fall to overwinter
- The variety Vallana produces almost no hard seed and is very winter hardy
- Beneficial cover crop alone or in a multi species mixture
- Great forage when mixed with small grains or annual ryegrass



### Crimson Clover

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- Excellent nitrogen producer when planted early, i.e. a month after wheat harvest
- Generally, overwinters in northern climates
- Performs very well in mixes, especially with annual ryegrass and radishes
- Can produce 60-100 lbs of nitrogen/acre
- Easy to terminate in the spring
- Needs 6 weeks of growth in the fall before a killing frost



### Austrian Winter Peas

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- Fall seeded field pea that can produce 90-150 lbs nitrogen/acre
- Can winterkill below 20°
- Works very well with Scav-N-Ger® radish
- Most effective with 6-8 weeks of growth in the fall
- Mixes well with oats or spring triticale as a forage



### Frostmaster Winter (Forage) Peas

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- Low tannin (white flowers) forage type winter pea
- Great for a dual-purpose forage/cover crop
- Produces more biomass than Austrian winter peas
- Very sweet taste to livestock
- Cold tolerant

## NUTRIENT SCAVENGERS—SUMMER SEEDED



### Buckwheat

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- Fast growth broadleaf with a very fine, fibrous root system
- Great for improving soil tilth and mineralizing phosphorous
- Can flower within 35 days of emergence
- Terminates with first frost
- Great pollinator



### Forage Sorghum

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- High biomass producer
- Drought tolerant, water efficient
- Plant a BMR variety for livestock use
- Low seeding rates
- Outstanding root system
- Please reference the CISCO Forage Guide for more information



### Pearl Millet

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- Summer annual crop that is very drought tolerant
- Performs well in low fertility and pH situations
- Use a BMR for grazing or hay; no prussic acid issues
- Low seeding rate
- Performs well in cover crop mixtures



### Sorghum Sudangrass

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- Great in a mix or solid stand
- Use a BMR variety for livestock
- Very water efficient and/or drought tolerant
- Great double crop option after wheat
- Please reference the CISCO Forage Guide for more information

## NUTRIENT SCAVENGERS—SUMMER SEEDED



### Phacelia

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- Wonderful pollinator
- Fine, fibrous root system
- Plants can reach 4' in height
- Most economical use in a mixture



### Sunflower

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- Deep rooted broadleaf
- Rapid summer growth with a lot of biomass
- Performs well in cover crop mix
- Terminates with a freeze



### Teff

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- Fine stemmed with soft leaves, rapid growth summer annual grass
- Extensive root system for nutrient scavenging
- Tolerates wet soil
- Requires a very firm seedbed
- Good for dry hay production and high forage quality

# NUTRIENT SCAVENGERS—FALL SEEDED SMALL GRAINS



## Cereal Rye

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- Fall seeded cereal grain that is very winter hardy
- Most common and economical fall seeded cover crop
- Known for weed suppression with allelopathy
- Huge soil tilth builder and nutrient scavenger because of its immense root system
- Graze King 90 cereal rye well suited for forage production



## Spring Triticale

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- Spring annual that will winterkill
- Great forage, especially when mixed with Frostmaster peas
- Can produce higher yields and forage quality than oats



## Fall Triticale

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- Cross between Durham wheat and cereal rye
- Yield and cover crop benefits of cereal rye with improved forage quality
- Easier to control than cereal rye in a rotation where volunteer plants are unwanted
- For an outstanding dual-purpose forage/cover crop, use TriCal Flex 719



## Winter Barley

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- Valor winter barley is the most winterhardy variety in the Midwest
- High forage quality with early maturity
- Excellent standability and straw production
- Needs to be planted earlier than other small grains

## NUTRIENT SCAVENGERS—FALL SEEDED SMALL GRAINS



### Spring Oats

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- Quick fall growth, great soil builder, excellent for capturing nutrients
- Can be used as a forage; consider Haywire forage oats
- Terminates at 22°F, generally does not overwinter in the Midwest
- Excellent choice for erosion control and ease of use



### Black Oats

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- Rapid growth in the summer or early fall
- Allelopathic effect on weeds
- Good for forage
- Will winterkill



### Cover Crop Wheat

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- Good fall growth with fibrous roots
- Shallowest root system of small grain crops
- Good winter survivability
- Easy to terminate in the spring
- Inexpensive cover crop option

## NUTRIENT SCAVENGERS—FALL SEEDED BRASSICAS



### Dwarf Essex Rape

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- Fibrous root system
- Overwinters
- Good for grazing cattle
- Can be very difficult to terminate in the spring if allowed to go to seed

## NUTRIENT SCAVENGERS—FALL SEEDED BRASSICAS



### Kale

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- Highly palatable as a forage
- Thick canopy protects the soil surface
- Works well in mixtures



### Mustard

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- Cool-season spring annual
- Very deep taproot
- Suppress weeds with rapid growth and canopy
- Adds diversity to cover crop mixtures



### Scav-N-Ger® Radish

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- Daikon type radish
- Great nutrient scavenger with deep tap root and fine root hairs
- Can help reposition nutrients in the soil profile
- Mixes well with small grains, either for cover crops or forage
- Generally winterkills



### Turnips

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- Great forage for ruminant livestock
- Can overwinter, but are easy to terminate in the spring
- No smell in the spring like radishes
- Works well with forage oats

## RADISH SIZE-IS BIGGER BETTER?



Do not be dismayed if the radishes in your field don't look like prize-sized radishes that are as big as your forearm. The reality is that cover crop radishes do a great deal of good for your soil after approximately 6-7 weeks of growth. The benefits of 6-7 weeks of radish growth are as follows:

- Excellent for reducing soil compaction - University of Maryland researchers found that radish roots can penetrate plow pans and other layers of compacted soil
- Although the upper part of the taproot may be 6-12", the lower part can extend 20" or more (this is the part you always break off when pulling them out to admire)
- The radish creates a root channel after winter killing for subsequent crop's roots and water infiltration & holding capacity
- Radishes can scavenge nitrate and make it available to the subsequent crop
- The forage of radishes is known to attract and feed earthworm populations
- Very compatible with seed oats
- Can be aerial applied
- It takes several nights of temperatures in the low 20's to winterkill radishes, therefore resulting in decent growth into November

## NOW WITH PINNACLE QUICKSTART COATING!

Expect the following from Pinnacle Quickstart:

- Increases seed & seedling survival
- Establishes a microenvironment for stimulating vigorous growth in young seedlings
- Achieves better seed to soil contact to aid germination
- Hygroscopic nature of the coating pulls & holds moisture to the seed, aiding germination
- Encapsulates each seed in a carefully formulated mix of minerals & selected nutrients
- Specifically formulated micronutrient package of Fe, Mg, & Zn
- Coating disguises seed for less bird predation
- Colorant on the seed improves monitoring of area seeded & seeding rate
- Increases stand & survival under adverse conditions
- Added weight from coating material:
  - Makes seed larger & easier to handle & distribute evenly
  - Less puddling of seed – seed stays put in over-watering conditions
  - Penetrates stubble or thatch for better seed to soil contact
  - Increases spread width up to 40%

Get better, more consistent stands with Pinnacle QuickStart.

Pinnacle QuickStart coating is available on GroundHog radish and Scav-N-Ger® radish.



## GRAZING DIVERSE COVER CROPS

Combining grazing with cover crops is like  $1+1 = 3$ . You start with the animals and the cover crop (forage), but then you end up with so much more.

**First**, there is the benefit of the cover crop and manure for soil health. Nutrients are being cycled. Approximately 66% of the phosphorous and 90% of the potassium that is in a plant when grazed are returned to the soil in the form of manure (The Ohio State University research). Organic matter is also being produced which, in turn, improves nutrient cycling and water holding capacity.

**Second**, you benefit from the weight gain on the animals. And all of this without high quantities of stored feed. Diverse mixtures tend to be high in forage quality, palatability, and can often provide high average daily rates of gain.

**Finally**, the farm ground is being utilized in a time where it is not productively producing row crops. It is important to utilize farm ground throughout the year, not only from an economic point of view, but also from a soil biology point of view.



Remember that cover crop diversity improves animal gains and soil health. CISCO sells a full line of cover crops that will help you maximize the profit potential on your acres.

In a recent article in *Successful Farming*, Mary Drewnoski, Extension Beef Systems Specialist at the University of Nebraska-Lincoln (UNL), walks us through several different options for maximizing land use with the addition of a fall cover crop. Why let those acres go to waste?

First, she notes that there are options. You can choose a cool-season or a warm-season species, depending on what your goals are and how early you can get in the field. Second, she notes the variability that can occur with the date you plant. Often, the earlier you can get in the field, the more tonnage you can harvest. Finally, you must determine when you want to graze these crops. If you're after fall forage, you may choose a crop like oats for its fast growth, even though it will winterkill. If you're after spring grazing, you may choose a crop like cereal rye or triticale.



## INTERSEEDING COVERS AT V3 CORN - A QUICK GUIDE

*Dan Perkins: Certified Crop Advisor and Dan Towery: Ag Conservation Solutions, LLC*

Interseeding cover crops into corn at the V3-V6 stages has been working very well north of I-80 but results between I-80 & I-70 have been more inconsistent.



Here is the basic idea when interseeding cover crops. Seed them between V3 & V6. The covers will grow approximately 6 inches tall. At that point the corn will shade them, stopping their growth, and they go "dormant," using just enough water and nutrients to stay alive. Once the corn starts to dry down and sunlight gets to the covers, they start growing again. Corn is harvested, and the covers really start growing. There has been no change in corn yields over multiple years and a slight increase in some years.

Request to join the closed Facebook group "Interseeding V3-V6 Corn" to join a progressive group of Midwest farmers sharing information.

Interseeding was very common back in the 1920's & 1930's when legumes were seeded at the same time of last cultivation, but then again row spacing and plant populations were very different then too.

We are unsure of how far south it will work. Central Indiana seems to be pushing the limits . . . more testing is occurring.

### Key Variables

- Choose a corn hybrid with upright leaves or flex ears = less total shading period during August. Hybrids tend to be shorter north of I-80 and day lengths are longer, resulting in more sunlight getting to the covers.
- Choose a corn hybrid that is shorter than 7 feet because there is less shade time.
- Plant at less than 36K populations. 34K is ideal.
- Seed cover crop at V3 stage, which is typically 6 weeks after planting.
- Count the number of collars. Do not judge the corn while driving by at 55 mph. It may be growing rapidly, and the covers may not obtain sufficient growth before shading occurs (resulting in loss of cover crops stand).

### Herbicide Selection is Key

Residual herbicides need a “light” footprint as one will be seeding a cover crop 3-4 weeks after planting corn. Verdict, Sharpen, Harness, and Outlook are some of the short residual herbicides that can be used. Rate, timing, and type of cover crop is also important (cool season grass, brassica, or legume).

Planting Roundup Ready® Corn and applying glyphosate just before interseeding is a popular option. The additional competition of the covers typically helps with weed control.

Go to [www.interseedingcovers.com](http://www.interseedingcovers.com) for guidance.

### Species to Seed

Many covers can work, such as annual ryegrass, crimson clover, red clover, kale, berseem clover, hairy vetch, daikon radish, Austrian winter peas, cowpeas, sunn hemp, and buckwheat. Cereal rye and oats have only worked in the northern part of North Dakota or Minnesota (can't tolerate too much shade). A cover crop mixture also works well. Use the same seeding rates as in the fall. Large seeds must be drilled or incorporated.

### Seeding Options

- Incorporating seed (drill, sidedress, rotary hoe, cultivate, etc.) of some kind is best as the goal is to get fast emergence and good establishment before corn canopies.
- Broadcast can work if rain comes.

### What About Soybeans

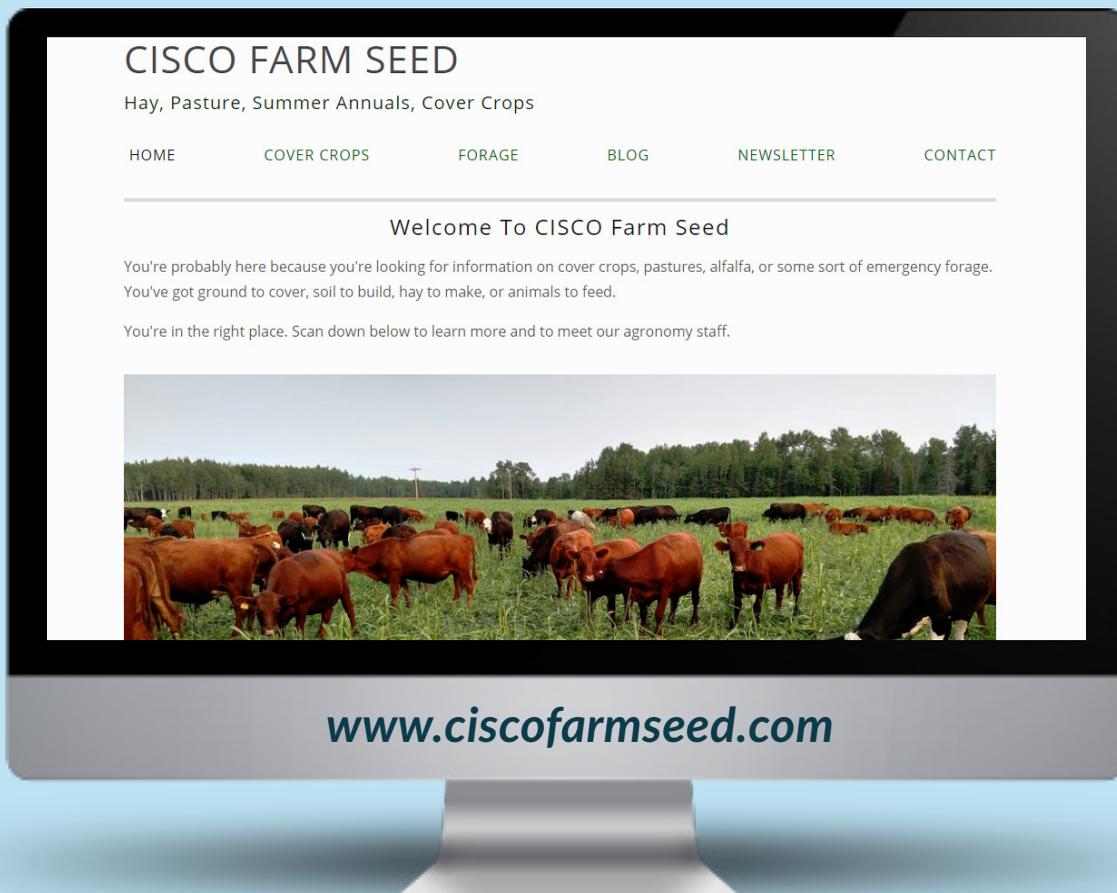
Although interseeding into soybeans has been tried, success has been very inconsistent due to too much shade from the soybeans and/or too dry of conditions. However, it has been successful if done into double crop soybeans after wheat. The rowed soybeans are planted too late to fully canopy.

As with anything new, try it on 10-20 acres and see how it works. You may be pleasantly surprised.



## CISCO FARM SEED

Hay, Pasture, Summer Annuals, Cover Crops



For the latest information from CISCO Farm Seed, visit our website at [www.cisconfarmseed.com](http://www.cisconfarmseed.com) and sign up for newsletters and notifications.



Your farmland is truly your most precious commodity - don't let its true potential slip through your fingers. To help you get the most out of it, *CISCO* Seeds has developed a line of premium cover crop seed products. These products will help rejuvenate your land and improve soil tilth by holding on to expensive nutrients, breaking up soil compaction and increasing overall biodiversity which is critical for improved crop production. N-VEST cover crop mixtures have been evaluated on farms, in trial plots, and in conjunction with many universities and Soil & Water Conservation Districts.

**N-VEST in your precious commodity - choose  
N-VEST cover crop seed.**

