

STEBEN SOIL & WATER CONSERVATION DISTRICT

If you have questions, or would like someone to come to your operation to talk about cover crops or other conservation farming practices, please contact:



Steuben County SWCD

Peachtree Plaza 200
1220 N 200 W, Suite L
Angola, IN 46703
Phone: 260-665-3211 x 3
www.steubenswcd.org

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Cover Crops

When, Why, and Where?



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What are cover crops?

Cover crops are beneficial plants grown during the offseason when cash crops are not being produced.

Benefits of Cover Crops

- **Improve soil structure**
 - Increase organic matter, beneficial soil microorganisms, and
 - Improve soil aggregation, aeration, soil water holding capacity
 - Reduce soil compaction, erosion, and soil crusting
- **Improve soil fertility**
 - Improve on-site nutrient cycling
 - Increase nitrogen fixation
 - Enhance phosphorus availability
 - Improve pH buffering
 - Increased nutrient source and energy for all soil organisms
- **Manage pests**
 - Provide habitat for beneficial insects
 - Suppress weeds
 - Control nematodes
- **Improve environmental quality**
 - Reduce soil loss
 - Improve water quality
 - Reduce erosion and nitrogen leaching

CROPS IN INDIANA

Opportunity and various

A/I after corn
A/I after soybeans
after seed corn
after silage corn
after vegetable crops

ed

after wheat

after early veg crops

	June	July	August	Sept.	Oct.	Nov.	Dec-Feb.
			N	IN	IN	IN	S-3
IN	IN	IN	IN	IN	R		
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IN	IN	IN	M	S-3			
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IN	IN	M	M	M	IN	IN	S-3
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IN	M	M	M	M	IN	IN	S-3
			N	IN	IN	IN	R
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			M	IN	IN	IN	R
			M	IN	IN	IN	S-3
			N	IN	IN	IN	S-3
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IN	IN	IN	IN	IN	IN-3	S-3	
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IN	IN	M	M	S-3			
			N	IN	IN	IN	IN
		M	IN	IN	IN	IN	R
			IN	IN	IN	IN	S
					N	IN	S-3



Legend

- IN Suitable seeding dates for all of Indiana
- S Additional suitable seeding dates for Southern IN (~South of I-70)
- N Additional suitable seeding dates for north Northern IN (~North of I-70)
- R Riskier Establishment (Season/Weather/Variety Dependent)
- F Frost/Dormant Seeding

SEEDING WINDOWS FOR COVER CROPS

NOTE: Northern and southern Indiana seeding dates for the tables below are divided on a general line along US 36 from Illinois to Indianapolis and US 40 from Indianapolis to Ohio.

Best window of opportunity for greatest benefit for cropping scenarios

 After harvest
 Aerial or interseeding


Plant Species	March		April		May	
Barley, Winter						
Buckwheat					S	IN
Clover, Balansa	R-2	IN	IN			
Clover, Berseem						
Clover, Crimson					S	IN
Clover, Red	R-2	S	IN	IN	IN	
Collards		R	S	IN	IN	IN
Cowpea/Soybeans					S	IN
Flax		R	IN	IN		
Kale		R	S	IN	IN	IN
Millet, Japanese/Pearl					S	IN
Oats, (Spring & Black)	R-2	S	IN	IN	IN	IN
Pea, (Field/Spring/Winter)	R-2	S	IN	IN	N	
Phacelia		R	IN			
Radish, Oil Seed						
Rapeseed						
Rye, Winter Cereal	R-2					
Ryegrass, Annual	R-2	S	IN	IN	IN	N
Sorghum-Sudangrass /Sudangrass /Milo						IN
Soybean, (Forage & Field)					S	IN
Sunflowers				S	IN	IN
Sunn Hemp					S	IN
Teff (Coated Seed)					S	IN
Triticale, Winter						
Turnips/Pasja	S-4	IN-4	IN-4			
Vetch, Hairy		S	IN			
Wheat, (Winter & Spelt)						

^{1/} Risk for Hessian Fly-Free Dates Recommended

^{2/} Dormant/Frost/Early seeding from December thru March. Increase seeding rates by 25%.

^{3/} Expect lower biomass and production (dwindling quantity)

^{4/} Bolting risk

 Only with sufficient moisture



Types of Cover Crops

Cereal Grains and Grasses

- Cereal rye
- Annual rye
- Wheat
- Triticale
- Oats
- Sudangrass

Legumes

- Hairy vetch
- Field peas
- Red clover
- Crimson clover
- Cow peas

Other

- Oilseed radish
- Turnips
- Buckwheat

*from the Natural Resources Conservation Service (NRCS), Field Office Technical Guide

CEREAL RYE

FALL



- Germinates quickly
- Most winter hardy of small grains
- Can be used as supplemental forage for livestock
- Extensive deep root system

Overwintering	Yes
Planting rates	Drilled: 50-80 lb/ac Broadcast: 80-120 lb/ac
Seeding depth	1 inch or less
Planting dates	August 1–October 31
Planting recommendations	<ul style="list-style-type: none"> • If broadcast, incorporate with harrow or packer to improve seed to soil contact and stand establishment • When planting later use higher planting rates

JMMMARY TABLE

	Oats	Sorghum sudan	Hairy vetch	Field peas	Red clover	Crimson clover	Cowpeas	Oilseed radish	Turnips	Buckwheat
(
	x									
		x	x	x	x	x				
(		x	x	x	x		x	x		
	x					x			x	
		x	x	x	x	x				
(	x	x	x	x	x	x	x	x	x	x
(		x			x					
(					x		x			

COVER CROP SU

ANNUAL RYE

FALL



	Cereal rye	Annual rye	Wheat	Triticale
Cereal grain	x		x	x
Grass		x		
Legume				
Fall cover crop	x	x	x	x
Summer cover crop				
Fixes nitrogen				
Winter hardy	Excellent	Good	Excellent	Excellent
Deep root system	Good	Excellent	Good	Good
Plant after wheat harvest	x	x	x	x
Plant after corn harvest				
Plant after bean harvest	x	x	x	x
Interseed into standing corn or beans	x	x	x	x

Key

Excellent

Good

Poor

- Germinates quickly
- Most winter hardy of small grains
- Can be used as supplemental forage for livestock
- Extensive deep root system

Overwintering	Yes
Planting rates	Drilled: 12-15 lb/ac Broadcast: 20 lb/ac Aerial: 25 lb/ac
Seeding depth	1/2 inch or less
Planting dates	End of August—October 1
Planting recommendations	<ul style="list-style-type: none"> • If broadcast, incorporate with harrow or packer to improve establishment • When planting later use higher rates • If aerial applied, seed before leaf drop

WHEAT

FALL



- Germinates quickly
- Winter hardy, but survives best if well established
- Good supplemental forage for livestock

Overwintering	Yes
Planting rates	Drilled or broadcast 60-90 lb/ac
Seeding depth	3/4—1 1/2"
Planting dates	August 1—October 31
Planting recommendations	<ul style="list-style-type: none"> • If broadcast, incorporate with harrow or packer to improve seed to soil contact and stand establishment • When planting later use higher planting rates

MORE INFORMATION

- Midwest Cover Crop Council
 - www.midwestcovercrops.org
 - Cover crop selector tool
- Purdue Extension
 - ag.purdue.edu/departments/agry/agry-extension/cover-crops
- Conservation Cropping Systems Initiative (CCSI)
 - www.ccsin.org
 - Podcast
- Michigan State University Extension
 - www.canr.msu.edu/cover_crops/
 - Cover crop podcast
 - Cover crop selection tool
- A new edition of the SARE Managing Cover Crops Profitably book is available as an online pdf version at no charge at: <http://sare.org/publications/covercrops.htm>
- Crop Consultant
- Your local USDA Service Center office
 - Soil and Water Conservation District (SWCD)
 - Natural Resources Conservation Service (NRCS)
- Your local Extension Office
- A local farmer using cover crops



MANAGING COVER CROPS

When using cover crops there are many things to consider:

- Which cover crops fit best in your crop rotation
- How and when to get the cover crop planted
- How and when to terminate the cover crop
- Choosing the best chemical program that will work with both your cover crop and cash crop
- How to manage extra crop residue

Using cover crops has many benefits that improve soil health and water quality. When planning, it is also important to consider all aspects of cover crop planting, management, termination, and cost in a cost-benefit analysis so that it works for your individual farming operation.

TRITICALE

FALL



- Germinates quickly
- Winter hardy, but survives best if well established
- Good supplemental forage for livestock
- Cross between wheat and rye

Overwintering	Yes
Planting rates	Drilled or broadcast 60-90 lb/ac
Seeding depth	3/4—1 1/2"
Planting dates	August 1—October 31
Planting recommendations	<ul style="list-style-type: none">• If broadcast, incorporate with harrow or packer to improve seed to soil contact and stand establishment• When planting later use higher planting rates



OATS

FALL



- Used as a companion with other cover crop species
 - Radish, etc.
- Good supplemental forage for livestock

Overwintering	No
Planting rates	Drilled or broadcast: 30-50 lb/ac
Seeding depth	1/2—1 1/2"
Planting dates	August 1—mid-September
Planting recommendations	<ul style="list-style-type: none">• If broadcast, incorporate with harrow or packer to improve seed to soil contact and establishment

BUCKWHEAT

SUMMER



- Used as a companion with other cover crop species
 - Cowpeas, oats, sudangrass and sorghum
- Good fit for vegetable and organic farms

Overwintering	No
Planting rates	Drilled or broadcast: 30-60 lb/ac
Seeding depth	1/2—1"
Planting dates	mid-May through August
Planting recommendations	<ul style="list-style-type: none">• If broadcast, needs to be incorporated to improve stand establishment

FORAGE TURNIPS

FALL



- Fast growth provides quick ground cover
- Usually planted as a companion with other cover crop species
 - Oats, annual rye, or cereal rye
- Scavenges nitrate

Overwintering	No
Planting rates	Drilled or broadcast: 4-8 lb/ac
Seeding depth	1/4—3/4"
Planting dates	August 1—September 30
Planting recommendations	<ul style="list-style-type: none">• If broadcast, incorporate with harrow or packer to improve stand establishment

SORGHUM & SUDANGRASS

SUMMER



- Prussic acid toxicity potential in livestock during frosty weather
- Used as a companion with other cover crop species
 - Cowpeas, buckwheat
- Good supplemental forage for livestock

Overwintering	No
Planting rates	Drilled or broadcast: 20-40 lb/ac
Seeding depth	1/2—1 1/2"
Planting dates	mid-May through July
Planting recommendations	<ul style="list-style-type: none">• If broadcast, incorporate with harrow or packer to improve establishment

HAIRY VETCH

FALL



- Fixes nitrogen, amount depends on fall growth
- Usually planted as a companion with other cover crop species
 - Oats, annual rye, wheat, etc.
- Good fit for vegetable and organic farms
- Good supplemental forage for livestock
- Legume—requires specific vetch inoculum applied to seed before planting

OILSEED RADISH

FALL



- Fast growth proves quick ground cover
- Usually planted as a companion with other cover crop species
 - Oats, annual rye, or cereal rye

Overwintering	Yes, but sometimes dies back due to other reasons
Planting rates	Drilled or broadcast: 20-30 lb/ac
Seeding depth	1/2—1 1/2"
Planting dates	Late July—early September
Planting recommendations	<ul style="list-style-type: none"> • The earlier the better • If broadcast, incorporate with harrow or packer to improve stand establishment

Overwintering	No
Planting rates	Drilled or broadcast: 10-12 lb/ac
Seeding depth	1/4—3/4"
Planting dates	August 1—September 30
Planting recommendations	<ul style="list-style-type: none"> • If broadcast, incorporate with harrow or packer to improve stand establishment

COWPEAS

SUMMER



- Similar to soybeans, with more extensive and deeper root system
- Fixes nitrogen, amount depends on fall growth
- Usually planted as a companion with other cover crops species
 - Oats, annual rye, wheat, etc.
- Good supplemental forage for livestock
- Good fit for vegetable and organic farms
- Legume—requires specific vetch inoculum applied to seed before planting

Overwintering	No
Planting rates	Drilled or broadcast: 10-20 lb/ac
Seeding depth	1/2—1 1/2"
Planting dates	July 1—early September
Planting recommendations	<ul style="list-style-type: none"> • The earlier the better • If broadcast, incorporate with harrow or packer to improve stand establishment

FIELD PEAS

FALL



- Usually planted as a companion with other cover crop species
 - Oats, annual rye, wheat, etc.
- Good supplemental forage for livestock
- Good fit for vegetable and organic farms
- Legume—requires specific vetch inoculum applied to seed before planting

Overwintering	Yes, but sometimes dies back for other reasons
Planting rates	Drilled: 40-50 lb/ac Broadcast: 70-90 lb/ac
Seeding depth	1/2—1 1/2"
Planting dates	August 1—early September
Planting recommendations	<ul style="list-style-type: none"> • The earlier the better • If broadcast, incorporate with harrow or packer to improve stand establishment

CRIMSON CLOVER

FALL



- Does best drilled in after wheat harvest
- Fixes nitrogen, amount depends on fall growth
- Can be planted as a companion with other cover crop species
- Good supplemental forage for livestock
- Good fit for vegetable and organic farms
- Legume—requires specific vetch inoculum applied to seed before planting

Overwintering	No
Planting rates	Drilled: 10-12 lb/ac Broadcast: 12-20 lb/ac
Seeding depth	1/4—1/2"
Planting dates	mid-May through early September
Planting recommendations	<ul style="list-style-type: none">• Does best drilled in after wheat harvest

RED CLOVER

SPRING/FALL



- Usually planted as a companion with other cover crop species
 - Oats, annual rye, wheat, etc.
- Good supplemental forage for livestock
- Good fit for vegetable and organic farms
- Legume—requires specific vetch inoculum applied to seed before planting

Overwintering	Yes
Planting rates	Drilled or broadcast: 5-12 lb/ac
Seeding depth	1/4—1/2"
Planting dates	April to mid-May
Planting recommendations	<ul style="list-style-type: none">• Can be frost seeded into wheat