

So, Why Do You Want to Grow Cover Crops?



Joel Gruver

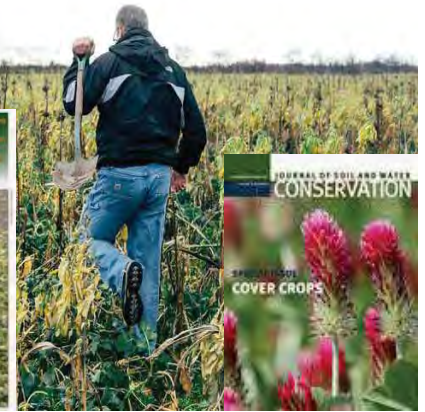
WIU Agriculture

Cover Crops, a Farming Revolution With Deep Roots in the Past

By STEPHANIE STROM FEB. 6, 2016

Did anyone send you this NYT article? 😊

Dan DeSutter - Attica, IN

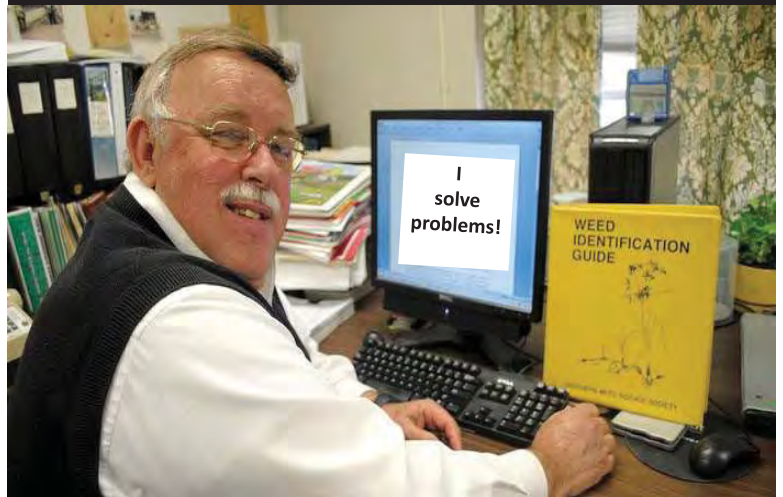


So, Why Do You Want to Grow Cover Crops???

Why is gramps so skeptical?



So, Why Do You Want to Grow Cover Crops???

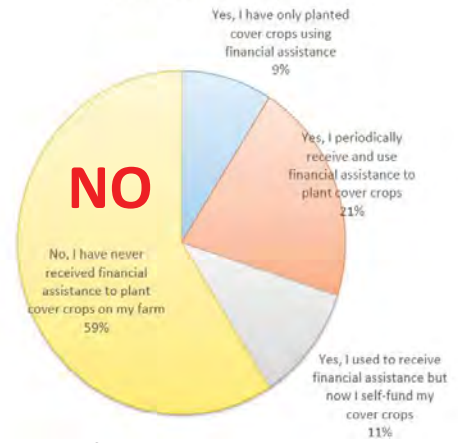


Farmer Objectives for CCs



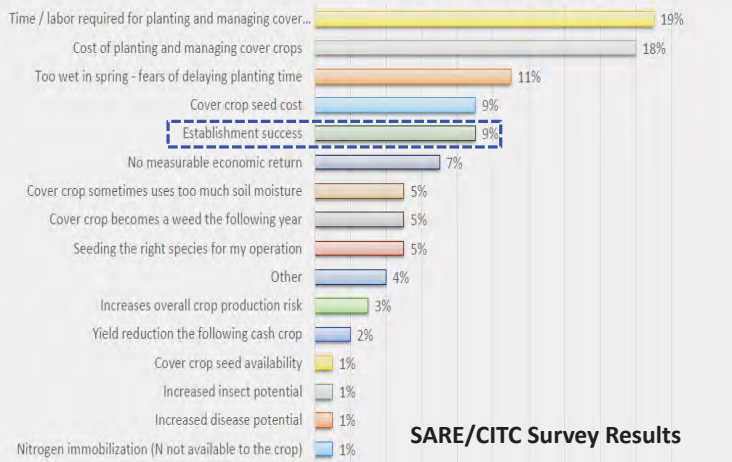
SARE/CITC Survey Results

Have you received cost-share assistance or incentive payments to plant cover crops?



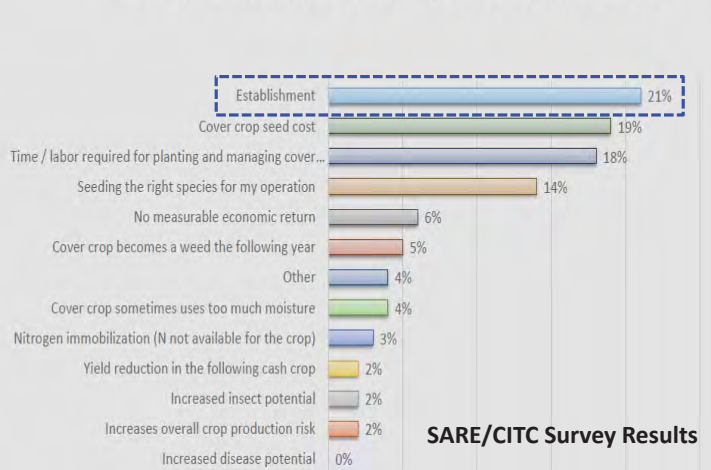
SARE/CITC Survey Results

What are the 3 most important factors that prevent you from using cover crops on your farm? (Cover Crop Non-Users)



SARE/CITC Survey Results

What are your biggest challenges with using cover crops? Please select your top three challenges. Cover Crop Users



SARE/CITC Survey Results

CC objectives must be aligned with realistic establishment options

EARLY SEASON INTERSEEDING
Still experimental, but with good progress being made on techniques and equipment.

Quest for seeding technique options
This diagram shows some of the strategies being used to plant cover crops in conjunction with corn.

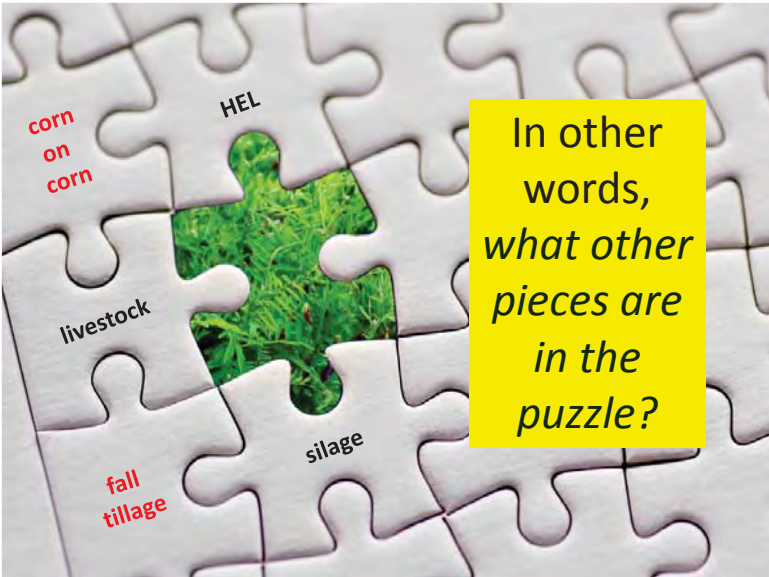
PRE-HARVEST SEEDING
There has been some success with a range of application types when the canopy is thinning allowing light to the surface.

AT-HARVEST, POST-HARVEST
Of all seeding methods listed above, pushing seed in the ground with a drill or planter is the most effective. The planting window may be narrower in some areas than others after harvest and is, of course, weather dependent.

Stage V5 to V7

Stage R4 to R6
50% or more maturity

Broadly speaking, cover crops need 30-45 days of good growing conditions to mature to the degree they will be beneficial to the farmer.



Managing your cash crop to cover crop effectively

Cameron Mills

NoTill Farmer Webinar – 4/7/15

<https://www.youtube.com/watch?v=hFA6oXevOOk>



Who are the people who grow the seed, sell the seed, custom plant the seed, share on-farm experiences w/ you, inspire you, caution you...?

These people are your human resources and they are a key part of YOUR CONTEXT for making sound decisions about CCs!

Visioning Long-Term Sustainability: A Farmer's Perspective

<http://www.leopold.iastate.edu/news/calendar/2012-07-18/iowa-learning-farms-july-webinar-nathan-anderson>

Camera and Voice: July 2012 RLF Webinar, Nathan Anderson.ppt

Our next speaker has a long-term perspective

What else would I like to see?

- * My yield monitor hit 400 bu/a with a CC already planted
 - Fertilizer applications that correspond to plant uptake demands
 - Our farm's organic matter levels to increase
 - Our future children to attend school less than 20 miles away
 - Farms that have an increased demand for labor because of increased diversity and need to hire employees
 - A local lake that I can swim in throughout the summer without health concerns
 - Water bodies that attract people to them, not repel
 - More in-field conservation practices, and edge-of-field ones too
 - Perennial crops on marginal ground
 - More effective and efficient production on high quality ground
 - My neighbor to understand 3 fall tillage passes are not necessary, and 5 total may have something to do with why his corn was the first around to show drought stress...
 - More young farmers.

Midwest Cover Crops Council

Illinois Indiana Iowa Kansas Michigan Minnesota Missouri
Nebraska North Dakota Ohio Ontario South Dakota Wisconsin

<http://www.mccc.msu.edu/>

WHAT ARE COVER CROPS?

Cover crops are plants seeded into agricultural fields, either within or outside of the regular growing season, with the primary purpose of improving or maintaining ecosystem quality.

The goal of the *Midwest Cover Crops Council* (MCCC) is to facilitate widespread adoption of cover crops throughout the Midwest, to improve ecological, economic, and social sustainability.

WHAT DO COVER CROPS DO FOR THE ENVIRONMENT?

- Enhance biodiversity
- Increase soil infiltration, leading to less flooding,

NEWS

2016 MCCC meeting Feb. 23-24, Madison, WI SOLD OUT - Wed. "The Science of Cover Crops," spots still available for the Tues. Working Group meeting

Help the MCCC renovate its website by providing your feedback through a brief [SURVEY](#)

- Home
- Cover Crop Resources
- Cover crop species
- Cover crop selector tools
- Innovator profiles
- Extension material
- Publications
- Multimedia

Location Information | Cash Crop Information | Soil Information | Attribute Information

Location Information Select a state or province

Cash Crop None or Prevented Planting Plant Date: Harvest Date:

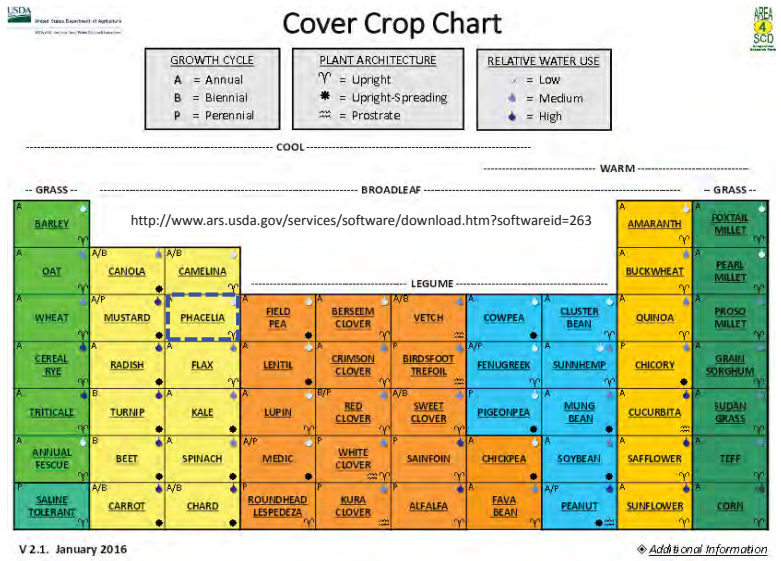
Drainage Information Select a drainage class Flooding No

Goal #1 Select an attribute Goal #2 Select an attribute Goal #3 Select

Select an attribute

- Nitrogen Source
- Nitrogen Scavenger
- Soil Builder
- Erosion Fighter
- Weed Fighter
- Good Grazing
- Quick Growth
- Lasting Residue
- Forage Harvest Value
- Grain/Seed Harvest Value
- Interseed with Cash Crop

Calendar based tool with site specific recommendations



Phacelia (*Phacelia tanacetifolia* Benth.)

- Cool Season, broadleaf
- Annual
- Upright plant architecture
- Low water use
- Low salinity tolerance
- Seeding depth: 1/8 – 1/4 inch
- C:N ratio: 10 – 15
- Forms arbuscular mycorrhizal associations
- Attracts beneficial insects



Back to Cover Crop Chart

Cool Season Broadleaf



Cover Crops to Improve Soil in Prevented Planting Fields

SD-FS-92 http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1187343.pdf July 2013

Prolonged rain and flooding has resulted in many fields that will go unplanted this year. Farmers in this situation need to weigh not only their program and insurance options ("prevented planting"), but should also assess agronomic options to ensure long-term productivity from this difficult situation.

Producers should explore the benefits of planting a cover crop that has the potential to use excess water, fix nitrogen, control weeds, reduce compaction, control erosion, and/or improve soil health and biology during the remainder of the season.

These together can build considerable yield potential for following crops. With the potential "prevented planting" payment and the improved yield potential following a full season "green manure" crop, their economic potential for the whole rotation could be considerable.

Producers are advised to check with USDA's Farm Service Agency (FSA) and Risk Management Agency (RMA) on prevented planting requirements and harvest restrictions



Selecting high bio-mass cover crop mixes will rebuild topsoil. Cover crops, especially if no-tilled, will add organic biomass both above and below ground to rebuild topsoil quicker than if left to grow weeds or especially if left with no cover.

Avoid removing biomass from the field by harvesting for forage or tillage, which will reduce the organic matter benefits. Instead consider

Goal specific CC combos for PP scenarios

(Purpose)	Species	Variety	Seeding rate for mix		
			Full rate	% in mix	Seeding rate for mix
Soil Building	Oat		70.0	10%	7.0
	Flax		20.0	20%	4.0
	Millet	pearl	25.0	20%	5.0
	Rapeseed	Dwarf Essex	5.0	15%	0.8
	Radish	diakon	8.0	15%	1.2
	Sunflower		7.0	10%	0.7
Nitrogen Fixing	Cowpea		30.0	10%	3.0
	Lentil		30.0	20%	6.0
	Common vetch		25.0	25%	6.3
	Cowpea		30.0	15%	4.5
	Radish		8.0	10%	0.8
	Turnip		4.0	15%	0.6
Compaction	Pea	Field	70.0	15%	10.5
	Rapeseed	Dwarf Essex	5.0	40%	2.0
	Radish		8.0	40%	3.2
Erosion Control	Common vetch		25.0	20%	5.0
	Oat		70.0	20%	14.0
	Millet	pearl	25.0	25%	6.3
	Winter rye or wheat	cereal	100.0	15%	15.0
	Radish	oil seed	8.0	20%	1.6
	Alsike clover		3.0	10%	0.3
Common vetch		25.0	10%	2.5	

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1187343.pdf



Hello, Roseville, IL!

Based on your zipcode of 61473, the average annual rainfall is 37.59". For your area, the First Frost is around 10/14, the Last Frost is around 04/22 and the Plant Hardiness Zone (PHZ) is 5b.

Details

Name Your Mix: Acres to Plant: Zipcode:

Bagging Option: Tote 50 applied inches

Seeding Method:

Next Cash Crop:

Your selected growing period will last 229 days.

Goals

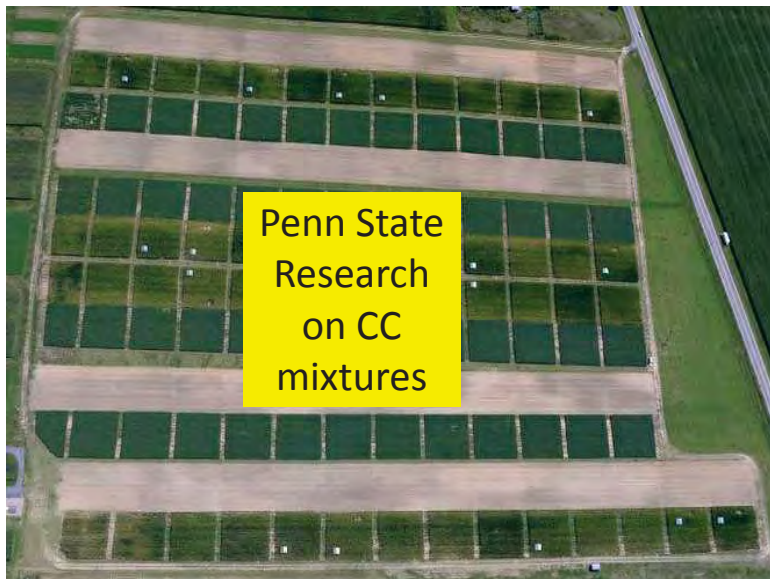
Goal 1 (High Priority) Required:

Goal 3 (Low Priority):

Type	% Full Rate	% Wt	% Seeds	Seeds/lb	Cost/lb	Cost/Acre
Totals: 0% 0% 0% \$0.00						
Woolly Pod Vetch-Namoi 83.5 (sold out)	0%	0%	0%			
Hairy Vetch-Vallana 83.5	0%	0%	0%			
Hairy Vetch-TNT 83.5	0%	0%	0%			
Winter Pea - Austrian 82	0%	0%	0%			
Winter Pea 82	0%	0%	0%			
Clover - Hubam 80	0%	0%	0%			
Clover - Yellow Sweet 77.5	0%	0%	0%			
Chick Pea - Desi 78 (sold out)	0%	0%	0%			
Clover - Arrowleaf 77	0%	0%	0%			
Clover - Balansa 77	0%	0%	0%			
Winter Lentil - Morton 75.5	0%	0%	0%			
Chickling Vetch - AC Greenfix 74.5	0%	0%	0%			
Common Vetch 74.5	0%	0%	0%			
Clover - White Ladino 73.5	0%	0%	0%			
Clover - White LA S1 73.5	0%	0%	0%			

WHAT DO YOU WANT TO ACCOMPLISH?		Specific CCS Products					
FERTILITY	Spring N fixation	○	○	○	○	◐	◑
	Summer N fixation	○	○	○	◐	◑	◑
	Scavenge N in fall	◑	◑	◑	◐	◑	◑
	Scavenge N in spring	○	◑	◑	○	◑	◑
	Fast nutrient release	◐	◑	◑	◑	◑	◑
SOIL BENEFITS	Reduce wind erosion	◑	◑	◑	◑	◑	◑
	Reduce water erosion	◐	◑	◑	◑	◑	◑
	Alleviate compaction	◑	◑	◑	◑	◑	◑
	Add soil organic matter	◑	◑	◑	◑	◑	◑
	Winter survivability	◐	◑	◑	○	◑	◑
	Root knot nematode reduction	○	○	○	◐	○	○
FUNCTIONS	Stands erect	◑	◑	◑	◑	◑	◑
	Length of vegetative stage	◐	◑	◑	◑	◑	◑
	Winter ground cover	◐	◑	◑	○	◑	◑

<http://www.covercropsolutions.com/documents/literature/tillage-radish-resource-guide.pdf>



Making the Most of Mixtures: Considerations for Winter Cover Crops in Temperate Climates

New Penn State report published on-line in May 2015

Authors:

Charles White, Penn State University; Mary Barbercheck, Penn State University; Tianna DuPont, Penn State University; Denise Finney, Penn State University; Abbe Hamilton, Penn State University; Dave Hartman, Penn State University; Mena Hautau, Penn State University; Jermaine Hinds, Penn State University; Mitch Hunter, Penn State University; Jason Kaye, Penn State University; Jim La Chance, Penn State University

Contents

Introduction

Cover crops can provide multiple benefits. For example, they can improve soil health, supply nutrients to cash crops, suppress weeds, help manage insect pests, produce forage, support pollinators and beneficial insects, and reduce water and air pollution. However, not all cover crop species provide the same benefits. How can you best reap the multiple benefits of cover cropping with so many species to choose from? To multiply and diversify your cover crop benefits, plant mixtures.

This article will describe some of the basic concepts to consider when planning a cover crop mixture. Selecting complementary species to meet different farm management objectives, timing planting and management correctly, and using effective establishment and termination methods are all important for successful cover crop mixtures. Information in this article is based on the research and experiences of a multidisciplinary team of researchers, educators, and farmers who have been evaluating cover crop mixtures in the northeastern United States. Most of our experience with cover crop mixtures is in organic feed crop rotations in temperate humid climates where cover crops are used during overwinter fallow periods. Despite the regional and cropping system specificity of our experience, many of the principles described in this article can be applied to a variety of farming systems and climates.

<http://articles.extension.org/pages/72973/making-the-most-of-mixtures-considerations-for-winter-cover-crops-in-temperate-climates#>

Determining seeding rates in mixes

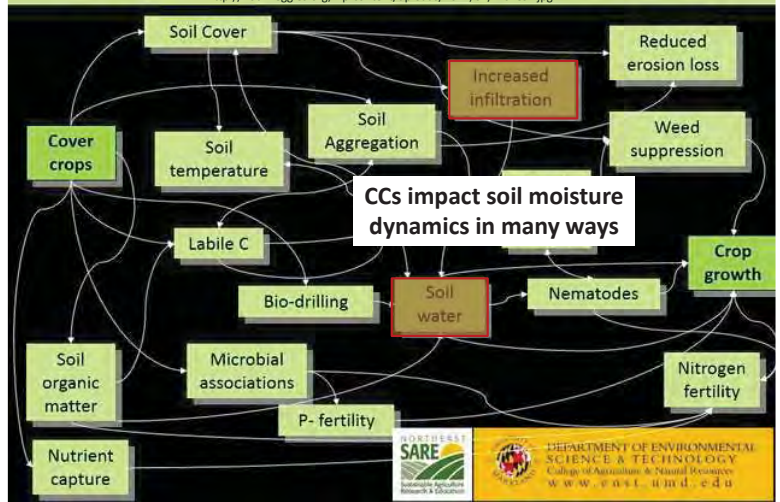
Determining appropriate seeding rates of each species in a mixture can be difficult. Start with the suggestions below, plant a small acreage, observe the results, and then make adjustments as necessary. Be aware that results will vary across fields, years, and climate zones.

Certain species are highly competitive against other species in a mix, including forage radish, canola (*Brassica rapa*), oats, sorghum-sudangrass, and cereal rye. Seeding rates of these species must be dramatically reduced from monoculture seeding rates to prevent them from dominating the mixture. Seeding rates for these species in mixtures should be no more than 2 to 3 lb/A for forage radish, 3 to 4 lb/A for canola, 15 to 20 lb/A for sorghum-sudangrass, and 20 to 30 lb/A for oats or cereal rye.

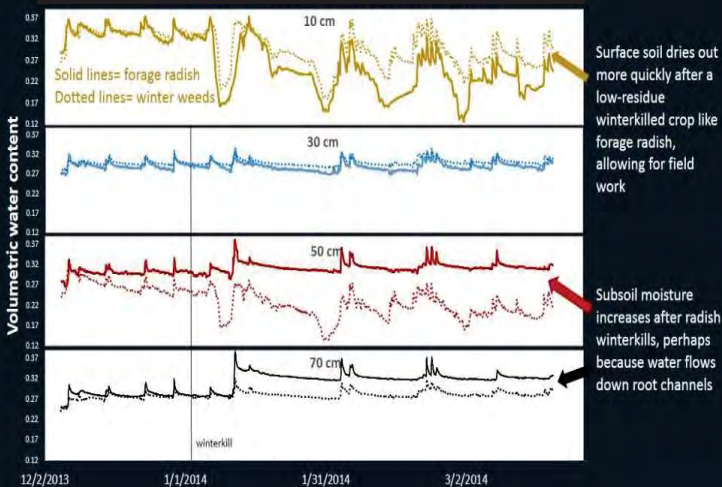
Seeding rates for other grasses in a mixture can safely be reduced to between half and one-quarter of monoculture seeding rates to achieve a balanced stand with legumes and other broadleaf species. Legume components of a mixture, which tend to be weak competitors, are more safely kept near their monoculture rates to ensure establishment in the stand.

Cover crops as management tools

<http://notilveggies.org/wp-content/uploads/2014/01/Niches7.jpg>

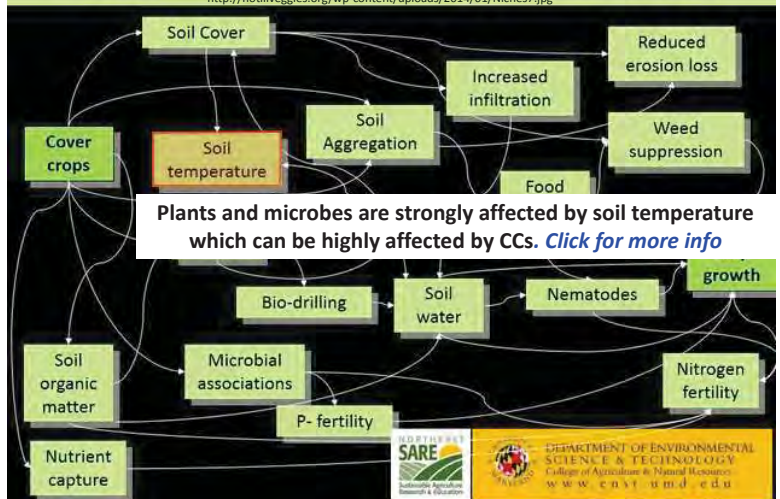


Soil moisture after radish vs. winter weeds



Cover crops as management tools

<http://notilveggies.org/wp-content/uploads/2014/01/Niches7.jpg>



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<http://notillveggies.org/wp-content/uploads/2014/01/Niches7.jpg>

