



# Build a better soil

- Think of this as a compost you grow in place
- Cover crops, also called green manures, have a ton of benefits.
  - Reduce soil compaction
  - Prevent erosion
  - Add nitrogen to soils
  - Add organic matter
  - Attract beneficial insects



Photo by Dr. Erin Haramoto, University of Kentucky

# Improving Soil Health

- Soil microbes convert decomposing cover crop into organic matter
- Regular use of cover crops will raise the organic matter level in soil
  - Increase activity of soil organisms
  - Improves soil structure and tilth
    - Helps root development
- Organic matter is continually decomposing and cannot be built up permanently in the soil. Soil building is a continual process in the garden

# Lots of Choices

- Legumes
- Non-legumes
- You don't have to choose just one!
  - Many seed catalogs sell mixes
  - A lot of benefit to planting a legume and a non-legume together



Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Legumes

- Able to fix atmospheric gas into nitrogen plants can use
  - Nitrogen available in soil after legumes have been killed
- Flowers good for pollinators
- May want to inoculate seeds prior to planting
  - species-specific rhizobacteria
- Examples
  - Clovers
  - Hairy vetch
  - Field peas
  - Alfalfa

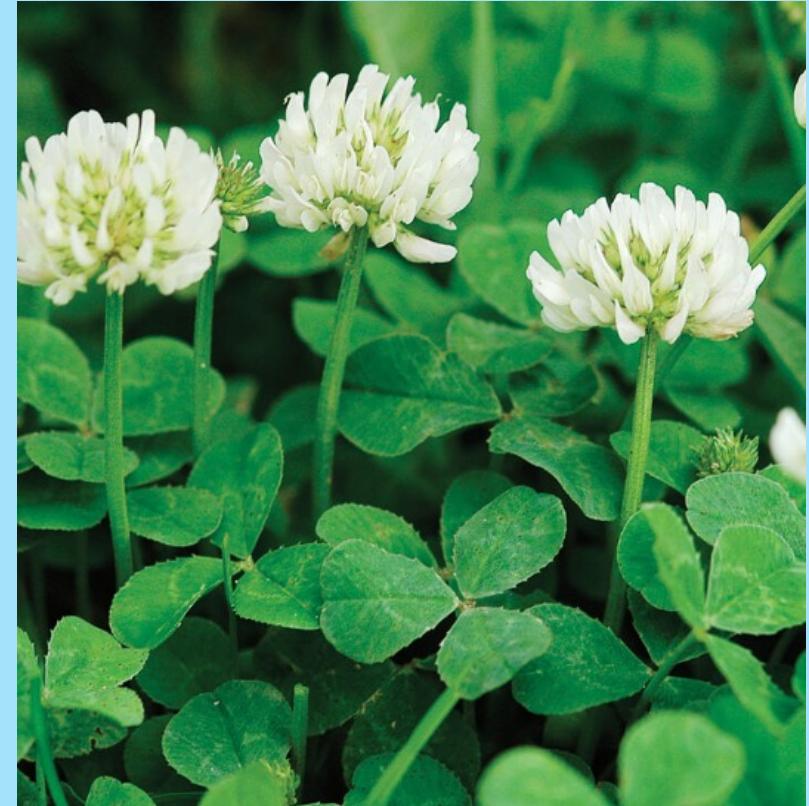


Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Non-legumes

- Cereal, grass or brassicas
- Add biomass which improves structure and water holding capacity
- Examples
  - Rye
  - Wheat
  - Oats
  - Turnips
  - Oilseed radish
  - Buckwheat



Photos from [johnnyseeds.com](http://johnnyseeds.com)

# Planting and Care

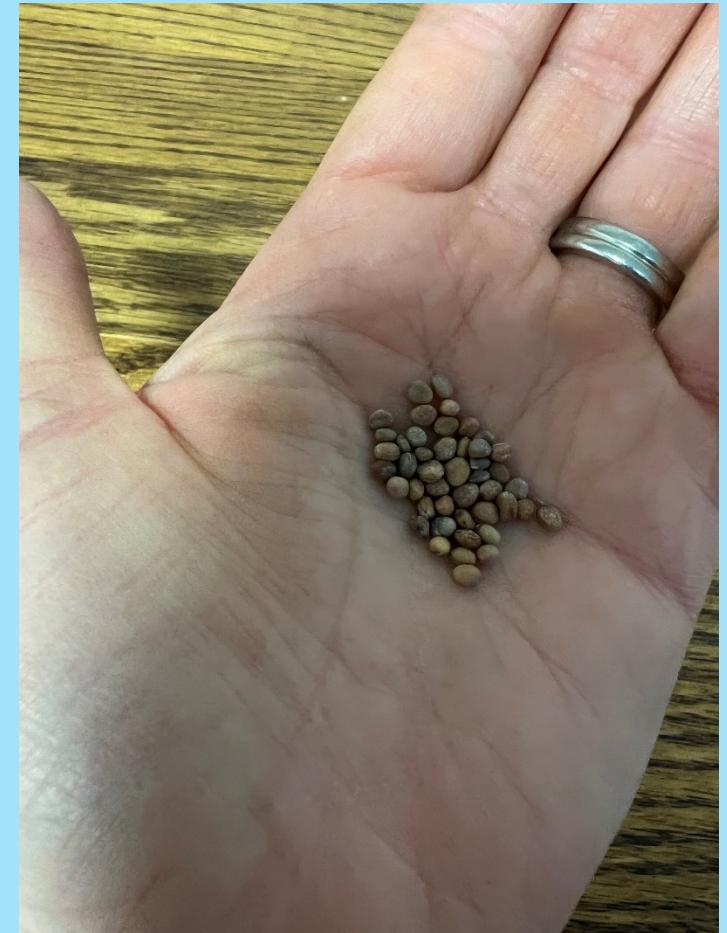
- Many are planted in the fall (some in spring or summer)
  - Around mid August to November
  - Growth before the first frost and again in spring if winter hardy
- You do not have to wait until all plants are gone from garden to plant cover crop
  - Remove any mulch that is around plant
  - Walk way areas can be planted
  - Rake the areas smooth to create a good seed bed



Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Planting and Care

- Before planting in fall, clean up the garden area if it was in a previous crop
- Work up the ground
- Sow seed by hand for small areas
- Cover lightly by raking to ensure good seed to soil contact



# Planting and Care

- As soon as soil is workable in spring, terminate the cover crop (unless it died in the winter on its own)
- Do not allow to go to seed!
- If using chemicals to kill, do not wait until plants are flowering



Photo from [agrilife.org](http://agrilife.org)

# Once Terminated...

- Can be left on the surface of soil to decompose (no till)
  - Plants will need to be crimped or mowed prior to planting
- Can be tilled into the soil
  - Allow time for organic matter to decompose
    - At least two to three weeks
  - Turn over with rototiller or by hand
- Remember there is a biomass/equipment ratio
  - Don't grow more plant material than your equipment can handle



Photo from Dr. Erin Haramoto, University of Kentucky

# Choosing the Cover Crop For You

- What's your goal?

# Compaction problems

- Tillage Radish
- Cereal Rye
- Winter wheat
- Turnips



Photo from Mathieu Ngouadio

# Erosion Control

- Fibrous root system
  - Winter wheat
  - Cereal rye
- Cowpeas
- Barley
- Oats



Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Attracting Beneficial Insects

- Buckwheat
- Crimson clover

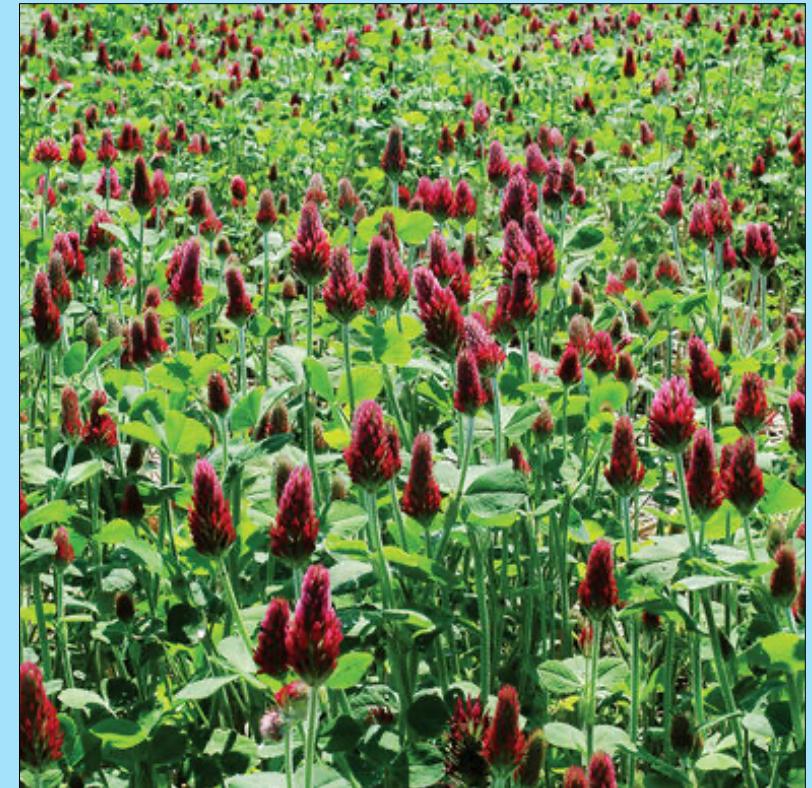


Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Loosen Topsoil

- Hairy vetch
- Buckwheat



Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Weed Suppression

- Oats
- Buckwheat
- Hairy vetch
- Barley
- Cereal rye
- Wheat



Photo from johnnyseeds.com

# A lot of Biomass

- Oats
- Cereal rye
- Wheat



Photo from [johnnyseeds.com](http://johnnyseeds.com)

# Nematode Suppression

- Mustard



Photo from [johnnyseeds.com](http://johnnyseeds.com)



## Cover Crop Decision Support Tools

September 9, 2022

COVER CROP EXPLORER

SPECIES SELECTOR TOOL

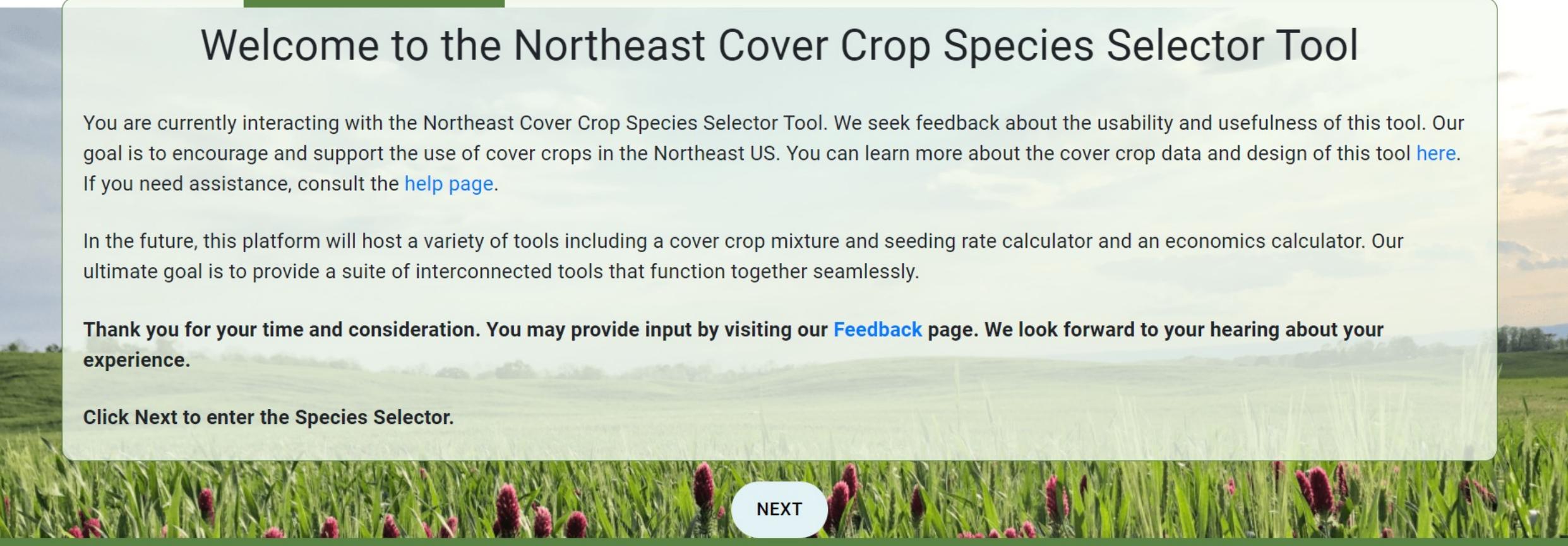
# Welcome to the Northeast Cover Crop Species Selector Tool

You are currently interacting with the Northeast Cover Crop Species Selector Tool. We seek feedback about the usability and usefulness of this tool. Our goal is to encourage and support the use of cover crops in the Northeast US. You can learn more about the cover crop data and design of this tool [here](#). If you need assistance, consult the [help page](#).

In the future, this platform will host a variety of tools including a cover crop mixture and seeding rate calculator and an economics calculator. Our ultimate goal is to provide a suite of interconnected tools that function together seamlessly.

**Thank you for your time and consideration. You may provide input by visiting our [Feedback](#) page. We look forward to your hearing about your experience.**

Click **Next** to enter the Species Selector.



NEXT

<https://covercrop.tools/species-selector>

# Where is your field located?

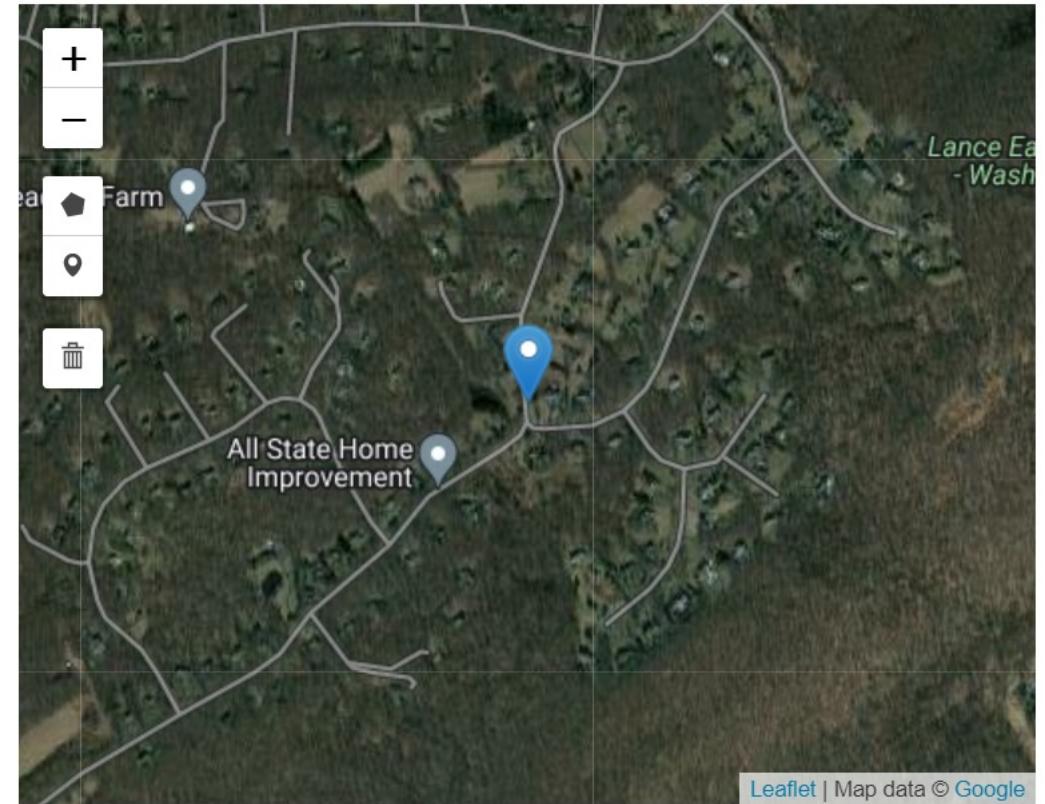
Enter your USDA plant hardiness zone, address, or zip code and hit  to determine your location.

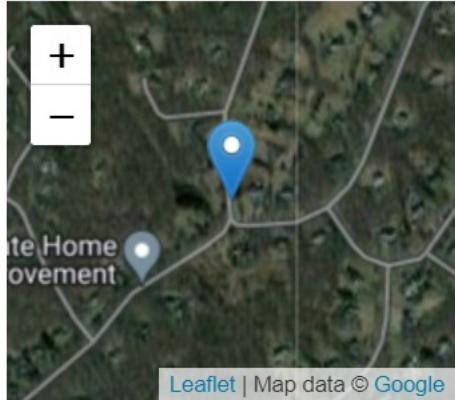
FIND YOUR LOCATION

▼

PLANT HARDINESS ZONE

Zone 6





## Location Details

Your cover crop recommendations will come from the Plant Hardiness Zone 6 NECCC dataset.

**Long Valley, New York**  
City...

Disclaimer: Cover crop recommendations are based on expert opinions. Your cover crop performance and seeding rates will vary based on location, management, cultivars, and many other variables. Consult your local [NRCS Service Center](#), [Cooperative Extension Service office](#), or [Conservation District](#) for detailed guidance. Cover crop incentive programs may dictate seeding rate ranges and methods, and planting and termination dates. Consult your program contact to ensure your plans comply.

## Soil Conditions?

### ▲ SOILS COMPOSITION i

**Califon loam**

### ☒ DRAINAGE CLASS i

Very Poorly Drained

Poorly Drained

Somewhat Poorly Drained

Moderately Well Drained

Well Drained

Somewhat Excessively Drained

Excessively Drained

### 〰️ FLOODING FREQUENCY i

None

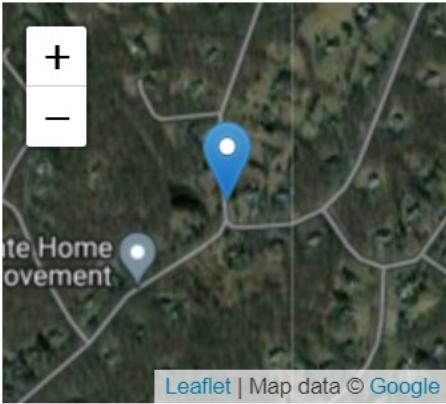
Very Rare

Rare

Occasional

Frequent

Very Frequent



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## Climate Conditions?

CLICK TO EDIT

💧 **AVERAGE PRECIPITATION**  ⓘ

SEPTEMBER: 3.6 inches  
Annual: 43 inches

✳️ **AVERAGE FROST DATES**  ⓘ

First Frost Date: October 21  
Last Frost Date: April 20

☀️ **AVERAGE FROST FREE DAYS**  ⓘ

Frost Free Days: 173

# What are your cover cropping goals?

Select up to three. Hover for more information

FORAGE HARVEST VALUE

GOOD GRAZING

IMPROVE SOIL ORGANIC MATTER

INCREASE SOIL AGGREGATION

LASTING RESIDUE

NITROGEN FIXATION

NITROGEN SCAVENGING

OUTCOMPETES SUMMER ANNUAL WEEDS

PENETRATES PLOW PAN

1 POLLINATOR FOOD

PREVENT FALL SOIL EROSION

PREVENT SPRING SOIL EROSION

2 REDUCES SURFACE COMPACTION

RESIDUE SUPPRESSES SUMMER ANNUAL WEEDS

SUPPRESSES WINTER ANNUAL WEEDS

COVER CROPS	GROWTH TRAITS	GOAL 1	GOAL 2	PLANTING WINDOW		
	<b>Phacelia</b> <i>Phacelia tanacetifolia</i> BROADLEAF	DRY MATTER: 2000-6000 lbs/A/y DURATION: ANNUAL			 Jan Dec	<a href="#">ADD</a> <a href="#">VIEW</a>
	<b>Hairy Vetch</b> <i>Vicia villosa</i> LEGUME	TOTAL N: 90-180 lbs/A/y DRY MATTER: 1800-4000 lbs/A/y DURATION: ANNUAL			 Jan Dec	<a href="#">ADD</a> <a href="#">VIEW</a>
	<b>Buckwheat</b> <i>Fagopyrum esculentum</i> BROADLEAF	DRY MATTER: 1500-2500 lbs/A/y DURATION: ANNUAL			 Jan Dec	<a href="#">ADD</a> <a href="#">VIEW</a>
	<b>Red Clover</b> <i>Trifolium pratense</i> LEGUME	TOTAL N: 70-150 lbs/A/y DRY MATTER: 2000-5000 lbs/A/y DURATION: PERENNIAL			 Jan Dec	<a href="#">ADD</a> <a href="#">VIEW</a>
	<b>Sunn Hemp</b> <i>Crotalaria juncea</i>	TOTAL N: 60-120 lbs/A/y DRY MATTER: 1000-8000 lbs/A/y				

# Sources

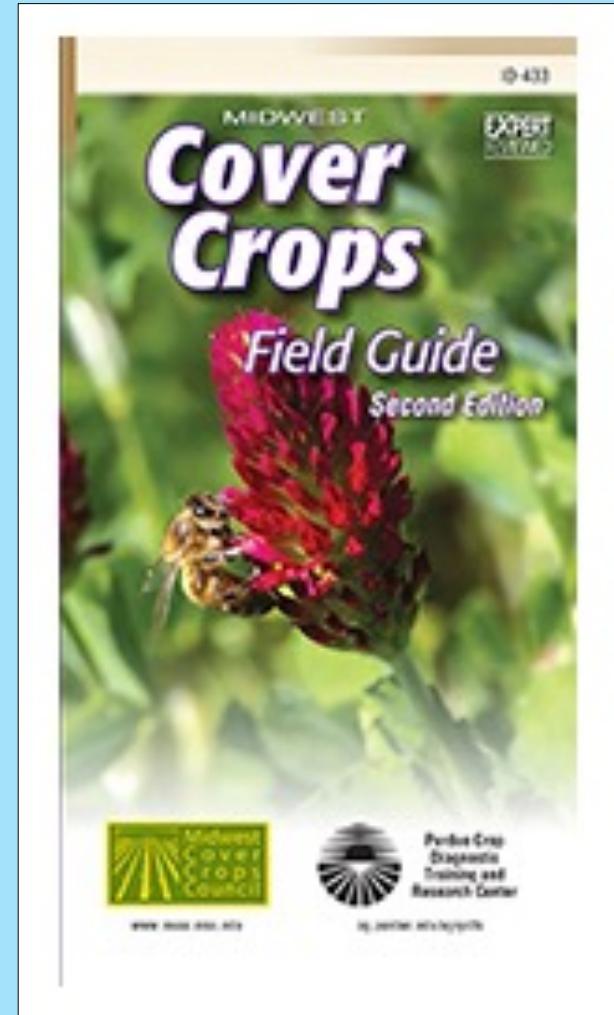
- Johnny's Selected Seed
  - <https://www.johnnyseeds.com/>
- Welter Seed Company
  - <https://welterseed.com/>
- Byron Seeds
  - <http://byronseeds.net/>
- Petcher Seeds
  - <https://petcherseeds.com/>
- Hancock Seed Company
  - <https://hancockseed.com/>
- Local farm and hardware stores

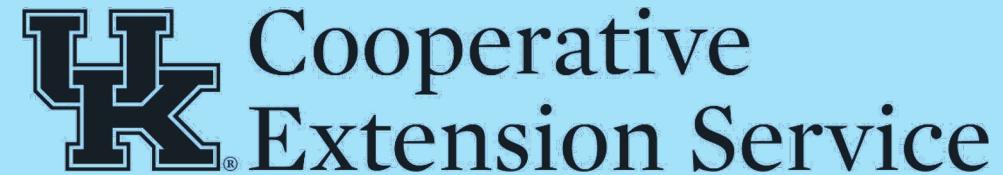


Photo from johnnyseeds.com

# Sources

- Cover Crops, Clemson Cooperative Extension
- <https://hgic.clemson.edu/factsheet/cover-crops/>
- Cover Crop Fundamentals
- <https://ohioline.osu.edu/factsheet/agf-142>
- Winter Cover Crops for Kentucky Garden and Fields, University of Kentucky Extension,
- <http://www2.ca.uky.edu/agcomm/pubs/id/id113/id113.pdf>





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