

## Soil Quality Enhancement Activity – SQL04 – Use of cover crop mixes



### Enhancement Description

This enhancement is for the use of cover crop mixes that contain two (2) or more different species of cover crops or cultivars of a single species.

### Land Use Applicability

Cropland

### Benefits

The use of a cover crop mixture that contains two (2) or more species is often more effective than a planting of single species cover crop. Cover crop mixtures adapt to variation in soils, increase biomass production, provide broader spectrum of weed control, have better winter survival and ground cover and attract a range of beneficial insects. Nutrients can be trapped or produced depending on existing soil conditions and plants used. Mixes can be a grass/legume, multiple cultivars of a single species, or a mix containing plants with different growth patterns, e.g. fast and slow, tall and short

### Conditions Where Enhancement Applies

This enhancement applies to all crop land use acres (excluding permanent hayland).

### Criteria

1. Cover crop mixes must contain a minimum of two (2) different plant species or two (2) different cultivars of a single species with differing maturity dates.
2. Cover crop species will be selected from state specific lists. The list of approved cover crops is available at the local NRCS Field Office.
3. Crops planted following cover crop must be no-tilled.
4. Nutrient applications for crops following cover crop should consider nitrogen fixation from leguminous cover crops.

### Adoption Requirements

This enhancement is considered adopted when two different plant species or cultivars of a single species are being grown on the land use acre.

### Documentation Requirements

1. Written documentation for each year describing, in detail, the following items:
  - a. Cover crop species used and dated planted,
  - b. Date and amount of fertilizer applied,
  - c. Method to kill cover crop and date completed, and
  - d. Crop planted after cover crop and method used.
2. A map showing fields where the enhancement is applied.
3. Photographs of a representative number of fields showing cover crop mix.



United States Department of Agriculture  
Natural Resources Conservation Service

2013 Ranking Period 1

**References**

Sainju, U.M., W.F. Whitehead and B.P. Singh. 2005. Biculture Legume–Cereal Cover Crops for Enhanced Biomass Yield and Carbon and Nitrogen. *Agron. J.* 97:1403–1412.

Soil Quality Enhancement Activity – SQL04 – *Use of Cover Crop Mixes*

**Reference:**

- **340 – Cover Crop**
- [Midwest Cover Crops Council Decision Tool](#)
- [Managing Cover Crops Profitably, 3<sup>rd</sup> Edition](#)

**Supplemental Minnesota Criteria**

Note: Cover crop mixes must contain a minimum of 2 different plant species or cultivars of a single species with different maturity dates.

Species	Seeding Rate	Seeding Depth (inches)	Seeding Date	Comments
Annual Ryegrass	15 – 20 lbs/ac	¼ to ½	June 1-July 1 OR Aug 15 – Sept 15	Easily established. Good for use as overseeding row crop. May be seeded after harvest.
Barley	1.5 – 2 bu/ac	½ to 1 ½	Aug 15 - Sept 15	May be overseeded into growing crop or seeded after harvest.
Oats	1 – 2 bu/ac	½ to 1 ½	Aug 15 - Sept 15.	Can be seeded on rough plowed land (usually before Sept. 1) and will not need plowing the following spring
Cereal Rye	1 – 1 ¼ bu/ac	½ to 1 ½	Aug 15 - Sept 15	Easily established. Rapid growth in fall and spring. Has an allelopathic property.

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Cereal Rye	¼ - ½ bu/ac	½ to 1 ½	Aug 15 - Sept 15	Use this rate only for cropland going into sugarbeets the following spring
Winter Wheat	1- 1 ½ bu/ac	½ to 1 ½	Aug 15 - Sept 15	Advantageous if site is seeded after Sept. 1 or under dry soil conditions.
Buckwheat	35 – 60 lbs/ac	½ to 1 ½	June 1 - July 10	Summer smother crop. Residue degrades rapidly.

Sorghum/Sudangrass	25 – 30 lbs/ac	½ to 1	May 15 - July 1	Advantageous to use on well drained and droughty sites.
Turnips	1- 4 lbs/ac		July 15 - Aug 15	Fast growing and tolerate cold temperatures. Broadcast or drilled.
Oilseed Radish	8 – 12 lbs/ac	¼ to ½	June 1 - Sept 15	Drilled or broadcast & incorporated. Best suited: early fall growth after small grain, vegetable, corn silage, early soybean harvest.
Barley	0.75 bu/ac	½ to 1 ½	April 1 - May 15	Broadcast or drilled; kill by using chemicals, row cultivation or both
Spring Wheat	0.75 bu/ac	½ to 1 ½	April 1 - May 15	Broadcast or drilled; kill by using chemicals, row cultivation or both
Oats	1 bu/ac	½ to 1 ½	April 1 - May 15	Broadcast or drilled; kill by using chemicals, row cultivation or both
Berseem Clover	10 – 15 lbs/ac	¼ to ½	Early spring into small grain.	Summer annual. Often mixed with ryegrass or small grains. Heavy N producer, establishes well with an oat nurse crop – excellent cover for sg-c-sb rotations. Winter kills.
Cowpeas	30 – 90	1 to 2	May 15 - July 1	Summer annual adapted to southern MN. Often mixed with

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	lbs/Ac			sorghum-sudangrass or interseeded with corn.
Crimson Clover	10 – 15 lbs/ac	¼ to ½	Early spring into small grain OR Aug 1 - Sept 15	Adapted to southern MN; rapid summer or fall growth; use as a winter killed annual like oats. Provides good groundcover and weed control.
Hairy Vetch	20 – 30 lbs/ac	½ to 1 ½	Aug 1 - Sept 15	Adapted to southern MN; produces plenty of residues to condition soil and supply N. It can provide sufficient N for many vegetable and late planted crops and partially replace N for corn. Smothers spring weeds. Commonly planted with winter cereals.
Medics	10 – 20 lbs/ac	¼ to ½	Aug 1 - Sept 15	Adapted to MN; ideal for long rotations of forages and cash crops. Often used after wheat harvest. May become invasive if allowed to seed out. Hard seed will remain viable in soil for many years.
Medium Red Clover	8 – 10 lbs/ac	¼ to ½	April 15 - June 15 OR Aug 1 - Sept 15	Good on somewhat poorly drained sites and potato fields with moderate pH. Prefers drilling to broadcast.
Sweet Clover	8 – 10 lbs/ac	¼ to ½	Early spring into small grain OR Aug 1 - Sept 15	Advantageous to use on well drained and droughty sites. Prefers drilling to broadcast. May become invasive if allowed to seed out. Hard seed will remain viable in soil for many years.
White Clover	5 – 7 lbs/ac	¼ to ½	Aug 1 - Sept 15	Often mixed with annual rye or red clover. Good when planted between rows of irrigated vegetables or trees.

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