

## Soil Quality Enhancement Activity - SQL02 – Continuous cover crops



### Enhancement Description

Growing continuous *seasonal* cover crops of grasses, legumes or forbs following all annual crops during all the non-crop production periods of the rotation. Continuous cover cropping is applicable to conventional, specialty and organic crop production systems.

### Land Use Applicability

Cropland.

### Benefits

Growing seasonal cover crops during all non-crop periods between annual crops reduces wind and water erosion. Cover crops also restore and maintain soil productivity and soil quality over a wide range of climates and crop species. They do so by increasing organic matter, improving soil fertility, breaking pest cycles and providing habitat for soil macro-fauna, such as earthworms.

### Criteria

Implementation of this enhancement requires continuous cover crops during the non-crop production period of the rotation. The cover crops must meet 2 or more of the following criteria:

1. High bio-mass cover crops for erosion control and increased soil organic matter improvement.
  - a. Plant a cover crop with a growth potential to produce a minimum of 2,000 lbs/acre (dry weight) above ground bio-mass when terminated by harvest, frost, mowing, tillage, crimping, and/or herbicides in preparation for the following crop.
2. Legume cover crops for biological nitrogen fixation.
  - a. Plant a leguminous cover crop between two primary crops in the rotation, or plant a leguminous crop that replaces one of the primary crops. This enhancement does not apply to legumes that are normally part of the crop rotation. It shall be seeded at a rate recommended by the NRCS Field Office technical Guide. Estimate nitrogen credits from the leguminous crop and base any additional N applications according to the guidelines of the Land Grant University.
3. Non-leguminous cover crops to capture and recycle residual nitrogen.
  - a. Plant a cover crop with a growth rate and rooting depth sufficient to scavenge excess nitrogen from the root zone of the previous crop. Seed the cover crop at the rate recommended by the NRCS Field Office Technical Guide. Reduce the nitrogen recommendation for the following crop by the amount of nitrogen estimated to have been scavenged and recycled by this cover crop.



*This enhancement does not apply to the same acres on which a leguminous cover crop is applied.*

4. Cover crops for weed suppression.
  - a. Plant a cover crop with the chemical and physical characteristics necessary to suppress or compete with the identified target weed species. Leave cover crop residues on the soil surface to maximize the allelopathic (chemical) and mulching (physical) effects. Select cover crops as recommended in the NRCS Field Office Technical Guide or from the Land Grant University as appropriate.
5. Biodiversity improvement with cover crops.
  - a. Plant cover crop species with the characteristics to attract beneficial insects such as pollinators and/or predator insects, serve as trap crops for damaging insects, and/or provide natural bio-fumigation for soil dwelling pests. Select cover crops to meet the planned objective as recommended in the NRCS Field Office Technical Guide or from the Land Grant University as appropriate.

#### **Documentation Requirements**

1. Crop rotation records, including rotation length in years, crops and cover crops planted.
2. Sequence and description of operations for each crop and cover crop including harvest, tillage, nutrient placement and planting/seeding

SOIL QUALITY ENHANCEMENT ACTIVITY

**SQL02 – OR      Continuous Cover Crops**

**General**

Growing seasonal cover crops during all the non-crop production periods of the rotation reduces erosion, and maintains/improves soil quality by increasing organic matter, improving fertility, breaking pest cycles, and improving soil macro-fauna.

Prior to selection of this enhancement, you should determine if a cover crop is appropriate for your area. Several areas in Oregon do not receive enough precipitation to make cover cropping feasible. Read over the individual Fact Sheets (attached/linked here) for precipitation requirements or contact the NRCS State Agronomist for more information.

This list is not comprehensive. Other species may be practical and feasible for your location. Contact the NRCS State Agronomist for prior approval.

**Oregon Criteria**

1. To determine above ground biomass at the time of cover crop termination, see individual *Oregon Cover Crop Factsheets*. These are available in each NRCS Field Office, or online: <http://extension.oregonstate.edu/catalog/details.php?sortnum=0124&name=Cover+Crops>
2. To determine nitrogen credits from the legume cover crop see individual *Oregon Cover Crop Factsheets*. These are available in each NRCS Field Office, or online: <http://extension.oregonstate.edu/catalog/details.php?sortnum=0124&name=Cover+Crops>
3. Please see OSU publication *Nitrogen Scavenging: Using Cover Crops to Reduce Nitrate Leaching in Western Oregon*, EM8728: <http://extension.oregonstate.edu/catalog/html/em/em8728/>. Also see individual *Oregon Cover Crop Factsheets* as indicated above.
4. For further information on cover crop weed suppression capabilities, please see *Cover Crop Weed Suppression in Annual Rotations*, EM8725: <http://extension.oregonstate.edu/catalog/html/em/em8725/> and individual *Oregon Cover Crop Factsheets* as indicated above.
5. For more information on using cover crops for biodiversity improvement, see individual *Oregon Cover Crop Factsheets* as indicated above.

**Documenting the Enhancement**

- Indicate the Criteria addressed with implementation of the Enhancement:
  - \_\_ Erosion Control/Soil Organic Matter Improvement
  - \_\_ Biological Nitrogen Fixation
  - \_\_ Capture/Recycle Residual Nitrogen
  - \_\_ Weed Suppression
  - \_\_ Biodiversity Improvement

- Aerial photo or map showing where the cover crop(s) was/were planted
- Crop Rotation: \_\_\_\_\_
- Rotation Length in Years: \_\_\_\_
- Cover Crops Planted: \_\_\_\_\_
- Percent Pure Live Seed: \_\_\_\_\_
- Seeding Rate/Acre: \_\_\_\_\_ Date Planted: \_\_\_\_\_
- Date Cover Crop Terminated: \_\_\_\_\_
- Method of Termination: \_\_\_\_\_ Tillage \_\_\_\_\_ Chemical
- Date and Description of Field Operations for each Crop and Cover Crop (including tillage, nutrient application, planting/seeding, and harvest):

<u>Date</u>	<u>Field Operation</u>	<u>Crop/Cover Crop</u>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

### East of the Cascades-Cover Crops

(See USDA Plant Hardiness Zone [PHZ] Map on back page and Reference publication for species-specific location information)

<u>Common Name</u>	<u>Rate (Lbs/Ac)</u>	<u>Criteria</u>	<u>Considerations</u>	<u>Reference</u>
Annual ryegrass	20	1,3,4	PHZ >=6	<a href="#">EM8691</a>
Barley, Oats, Triticale, Wheat	80	1,3,4	PHZ Varies	<a href="#">EM8692</a>
Cereal rye	80	1,3,4,5	PHZ >=3	<a href="#">EM8694</a>
Crimson clover	20	1,2,5	PHZ>=6	<a href="#">EM8696</a>
Field pea (Austrian winter pea)	80	1,2,4,5	PHZ>=4	<a href="#">EM8698</a>
Hairy vetch	30	1,2,4,5	PHZ>=4	<a href="#">EM8699</a>
Mountain brome	20	1,3	See Distribution/Adaptation	<a href="#">BRMA4</a>
Rapeseed (canola, summer turnip)	8	1,3,4,5	PHZ>=7	<a href="#">EM8700</a>
Red clover (birdsfoot trefoil)	20	1,2,4,5	PHZ>=4	<a href="#">EM8701</a>
Slender wheatgrass	20	1,3,	See Distribution/Adaptation	<a href="#">ELTR7</a>
Subterranean clover	20	1,2,4,5	PHZ>=7	<a href="#">EM8702</a>
Yellow sweet clover	15	1,2,5	See Adaptation	<a href="#">YWhtSwtClvr</a>

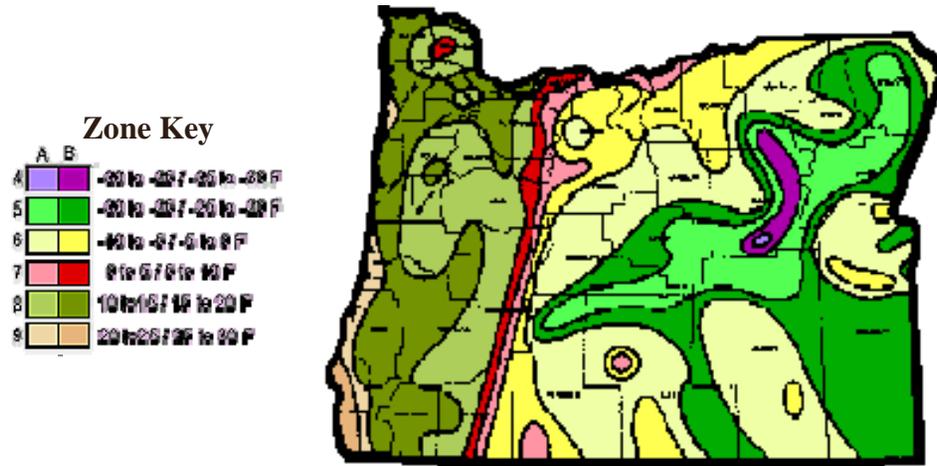
### West of the Cascades-Cover Crops

(See USDA Plant Hardiness Zone Map on back page and Reference publication for species-specific location information)

<u>Common Name</u>	<u>Rate (Lbs/Ac)</u>	<u>Criteria</u>	<u>Considerations</u>	<u>Reference</u>
Annual ryegrass	20	1,3,4	PHZ >=6	<a href="#">EM8691</a>
Barley, Oats, Triticale, Wheat	80	1,3,4	PHZ Varies	<a href="#">EM8692</a>
Buckwheat	40	4,5	PHZ>=10/Not winter hardy in OR	<a href="#">EM8693</a>
Cereal rye	80	1,3,4,5	PHZ >=3	<a href="#">EM8694</a>
Common Vetch	60	1,2,4	PHZ>=8	<a href="#">EM8695</a>
Crimson clover	20	1,2,5	PHZ>=6	<a href="#">EM8696</a>
Fava Bean	100	1,2,5	PHZ>=8	<a href="#">EM8697</a>
Field pea (Austrian winter pea)	80	1,2,4,5	PHZ>=4	<a href="#">EM8698</a>
Hairy vetch	30	1,2,4,5	PHZ>=4	<a href="#">EM8699</a>
Pine lupine	20	1,2,5	See Adaptation	<a href="#">LUAL3</a>
Rapeseed (canola, summer turnip)	8	1,3,4,5	PHZ>=7	<a href="#">EM8700</a>
Red clover (birdsfoot trefoil)	20	1,2,4,5	PHZ>=4	<a href="#">EM8701</a>
Subterranean clover	20	1,2,4,5	PHZ>=7	<a href="#">EM8702</a>
Sudangrass (inc. hybrids)	40	1,3,4,5	PHZ>=10/Not winter hardy in OR	<a href="#">EM8703</a>

\*For cover crop species information not included here, contact the Oregon NRCS Conservation Agronomist for prior approval.

## OREGON USDA Hardiness Zone Map



fava beans



sudan grass



field peas