



# Cover Crop (Code 340)

## Conservation Practice Job Sheet

**Description** - This practice establishes close-growing grasses, legumes or small grain crops to provide seasonal protection. Cover crops help improve soil and water quality by reducing soil erosion, increasing organic matter and capturing and recycling nutrients in the soil profile. Cover crops can also be used to fix atmospheric nitrogen, reduce soil compaction, manage soil moisture and provide supplemental forage for livestock.

**Purposes** (check all that apply)

- Reduce erosion from wind and water
- Maintain or increase soil health and organic matter content
- Reduce water quality degradation by utilizing excessive soil nutrients
- Suppress excessive weed pressures and break pest cycles
- Improve soil moisture use efficiency
- Minimize soil compaction



**Requirements:**

1. Plant species, seeding rates, seeding dates, seeding depths, and planting methods will be consistent with the Appendix-A (cover crop) (Ohio eFOTG Section IV, D. Appendices) or the table on the next page.
2. The cover crop species selected will be compatible with other components of the cropping system and address all applicable purposes as indicated above. For the purpose of "Reduce water quality degradation by utilizing excessive soil nutrients" select cover crop species that will result in some plant growth (at least 1/2 of the proportional seeding rate) for the entire fallow period. For example if the cover crop is to be grown between corn and soybean a cover crop specie(s) that will over winter must be used or used in a cover crop mix.
3. Cover crops will be terminated by frost, mowing, tillage, crimping, and/or herbicides singularly or in combination in preparation for the subsequent crop and if applicable compliant with NRCS Cover Crop Termination Guidelines (Attached).
4. Herbicides used with cover crops must be compatible with the subsequent crop and before species selection consider past herbicide use; herbicide carryover may cause injury to the cover crop. Consult your crop consultant or herbicide retailer if any questions arise about herbicide carryover and possible effect on specific cover crop species. Be sure to follow herbicide labels.
5. Do not use species that are on the state's noxious weed or invasive species lists.
6. Cover crop residue will not be burned.

### Seed Quality

The quality of seed used in conservation practices can have a dramatic effect on the success of the practice. The seeding rate for cover crops used by NRCS in this document assumes a level of seed quality. As a result there may be an adjustment that needs to be added to the minimum seeding rate to account for the site specific seed quality being used if the seed quality does not meet the criteria assumed in the calculation. Additionally, NRCS is committed to preventing the spread of noxious, invasive and herbicide resistant weed species. Therefore all seed used in conservation practices must have a seed tag or be tested for seed quality and percent weed seed prior to use. The use of "bin run" seed is allowed in NRCS conservation practices as long as the seed has been tested, the seeding rate has been adjusted for seed quality if needed and the seed meets the minimum quality as specified in all applicable laws.

**Seed Testing**

Producers wishing to use uncertified seed sources (bin run, client harvest, or bulk seed sources) for NRCS practices **must** have that seed tested by a reputable lab that reports the following:

1. Purity
2. Germination
3. % weed seeds

For additional information on seed testing contact:

**Ohio Department of Agriculture  
Division of Plant Health  
Grain, Feed, & Seed Section  
8995 E. Main St**



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**Additional Seed Quality Adjustment Factor<sup>1</sup>**

		<b>Germination</b>									
		98%	96%	94%	92%	90%	88%	86%	84%	82%	80%
Purity	98%	-	-	-	-	-	-	1.02	1.04	1.07	1.11
	96%	-	-	-	-	-	1.01	1.04	1.07	1.10	1.13
	94%	-	-	-	-	1.01	1.04	1.07	1.10	1.13	1.16
	92%	-	-	-	1.01	1.04	1.07	1.09	1.12	1.16	1.19
	90%	-	-	1.01	1.04	1.06	1.09	1.12	1.15	1.19	1.22
	88%	-	1.01	1.04	1.07	1.09	1.12	1.15	1.18	1.22	1.25
	86%	1.02	1.04	1.07	1.09	1.12	1.15	1.18	1.21	1.25	1.28
	84%	1.04	1.07	1.10	1.12	1.15	1.18	1.21	1.25	1.28	1.32
	82%	1.07	1.10	1.13	1.16	1.19	1.22	1.25	1.28	1.32	1.35
	80%	1.11	1.13	1.16	1.19	1.22	1.25	1.28	1.32	1.35	1.39

1. The "additional seed quality adjustment factor" is to be used only if the percent germination and percent purity is lower than the assumed value. Combinations with out numbers (-) do not need an adjustment of the listed seeding rate.

All seeding rates in Appendix-A (cover crop) fig 1, and this job sheet are reported as an actual seeding rate. This seeding rate is based on the assumption of high quality seed with higher levels of germination and purity. The Seed Quality Adjustment Factor table should be used if the seed quality is lower than the assumed value. The equation below is to be used to adjust the seeding rate to account for the site specific seed quality. If an adjustment factor is not listed in the table for the germination and purity then the specific quality of the seed is equal to or greater than the assumed level and no adjustment is needed.

$$\text{Pure Live Seed (PLS)} \times \text{Adjustment Factor} = \text{Seeding rate}$$

For additional information on seeding rate calculations see Ohio Appendix-A (cover crop) located on the eFOTG under Section IV, D.

### Cover Crop Seeding Methods

The method of cover crop establishment can also have a dramatic effect on the success of the practice. When selecting the cover crop seeding method one should consider the advantages and disadvantages of each available method before implementation. Drilling, narrow row planting, harrow seeding and broadcast seeding before light tillage (rotary harrows, vertical tillage) will result in greater soil/seed contact and improved depth control as compared to broadcast seeding and aerial applications. For this document all seeding rates are assumed to be seeded with some seed depth control; if a method is used that does not have seed depth control such as broadcast or aerial seeding a 20% increase in the seeding rate should be included to account for increased risk of poor emergence.



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Fig 1. Cover crop seeding dates, seeding rates and seeding depths for common cover crop species used in Ohio for complete list see Appendix A (cover crop) located on the eFOTG under Section IV, D.

Plant Species	Life cycle <sup>3</sup>	Seeding rate (lb/ac) <sup>1</sup>						Seeding depth (in)	Planting Date Range <sup>2</sup>	
		Pure Stand	¾	½	⅓	¼	Forage Stand		Northern	Southern
<b>Cool-Season Growth</b>										
<b>Non-Legumes</b>										
<b>Winter Rye</b> ( <i>Secale cereale</i> )	nwk	53	40	26	17	13	88	¾ to 1 ½	8-1 to 11-1	8-15 to 11-15
<b>Winter Wheat<sup>5</sup></b> ( <i>Triticum aestivum</i> )	nwk	64	48	32	21	16	94	¾ to 1 ½	9-22 to 10-22	9-30 to 11-1
<b>Winter Triticale</b> (x <i>Triticosecale</i> )	nwk	59	44	29	19	15	94	¾ to 1 ½	8-1 to 10-22	8-15 to 11-1
<b>Annual Ryegrass</b> ( <i>Lolium multiflorum</i> )	nwk <sup>4</sup>	18	13	9	6	4	28	¼ to ½	7-20 to 9-15 or 3-15 to 5-1	8-1 to 9-25 or 3-1 to 4-20
<b>Oats</b> ( <i>Avena sativa</i> )	wk	41	31	20	14	10	88	½ to 1 ½	8-1 to 9-15 or 3-15 to 4-30	8-1 to 9-30 or 3-1 to 4-15
<b>Oilseed Radish</b> ( <i>Raphanus sativus</i> )	wk	6	4	3	2	1.5	12	¼ to ¾	8-1 to 9-5 or 3-15 to 4-30	8-15 to 9-15 or 3-1 to 4-15
<b>Rapeseed/Canola/Kale</b> ( <i>Brassica napus</i> )	nwk <sup>6</sup>	4	3	2	1.5	1	8	¼ to ½	8-1 to 9-5 or 3-15 to 4-30	8-15 to 9-15 or 3-1 to 4-15
<b>Legumes</b>										
<b>Red Clover</b> ( <i>Trifolium pretense</i> )	nwk	9	7	5	3	2	-	¼ to ½	7-20 to 8-30 or 2-1 to 5-1	8-1 to 9-15 or 2-1 to 4-15
<b>Crimson Clover</b> ( <i>Trifolium incarnatum</i> )	nwk	12	9	6	4	3	-	¼ to ½	6-15 to 9-1	6-1 to 9-15
<b>Hairy Vetch</b> ( <i>Vicia villosa</i> )	nwk	14	11	7	5	4	-	½ to 1 ½	8-1 to 9-15 or 3-10 to 4-30	8-1 to 10-1 or 3-1 to 4-20

1. Seeding rates are listed as “pure stand” with the assumption to be seeded with some seed depth control; if a method is used that does not have seed depth control such as broadcast or aerial seeding a 20% increase in the seeding rate should be included to account for increased risk of poor emergence. The ¾, ½, ⅓ and ¼ seeding rates are to be used in creating mixes. The forage stand rate are to be used if the cover crop is to also serve as a livestock forage. If a rate is not listed (-) the seeding selected is generally not recommended.
2. Northern Ohio is generally north of I70 and Southern Ohio is generally south of I70.
3. wk = winter killed cover crops; nwk = non-winter killed cover crops
4. Non-winter killed only when planted during the fall dates.
5. Do not plant until after the Hessian fly free date
6. Fall planted varieties planted in the fall are “non-winter killed”; spring planted varieties planted in the fall or spring are winter killed.



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<b>Producer:</b>	<b>Tract:</b>
<b>Fields</b>	<b>After the Following Crops</b>

**Purpose/Addressed resource concerns** (check all that apply):

- Reduce erosion   
  Maintain or increase soil health   
  Reduce water quality degradation   
  Weed/pest suppression  
 Soil Moisture efficiency   
  Minimize soil compaction   
  Other \_\_\_\_\_

Herbicide carryover issues has been discussed for this project.

Fields	Species	Method of Seeding D = Drill/planted B = Broadcast/ Aerial	Seeding Date Range <sup>/1</sup>	Seeding Rate <sup>/2</sup> (adjusted for seed quality and seeding method if needed)	Date or Stage and Method of Cover Crop Termination <sup>/3</sup>

<sup>/1</sup> where mixes are used that have differing seeding deadlines, use the earliest planting date.

<sup>/2</sup> Adjust seeding rate from the listed seeding rate in Fig. 1 based on seed quality and seeding method. If selected seeding method is "Broadcast or Aerial" with little seed depth placement multiply the seeding rate by 1.2, all other seeding methods do not need a seeding method adjustment.

<sup>/3</sup> see attached cover crop termination guidelines for crop insurance requirements

For Questions Regarding the Application and Management of Cover Crops Contact:

\_\_\_\_\_ @ Phone \_\_\_\_\_



Cover crops on a field in Black Hawk County, Iowa.

Photo: Lynn Betts, NRCS

# NRCS Cover Crop Termination Guidelines

December 2013

## Background:

To ensure that USDA policies are coordinated and up to date with evolving cover crop practices, the administrators of the Natural Resources Conservation Service (NRCS), Risk Management Agency (RMA) and Farm Service Agency (FSA) organized an interagency workgroup to develop consistent, simple and flexible policy across the three agencies. National and local experts, along with multiple stakeholders, were involved in the process. Research literature, plant growth and soil hydrology models, and input from national/local experts in cover crop management provided the basis for developing cover crop termination guidelines to achieve their conservation benefits while minimizing risk of reducing yield to the following crop due to soil water use.

The guidelines apply to non-irrigated cropland, including systems that contain a fallow period. Termination of cover crops utilized in an irrigated cropping system is not restricted to a given cover crop termination zone. Cover Crops in irrigated cropping systems should be terminated based on the crop system and conservation purpose, but before the planted crop emerges.

*\*See map on page 2.*

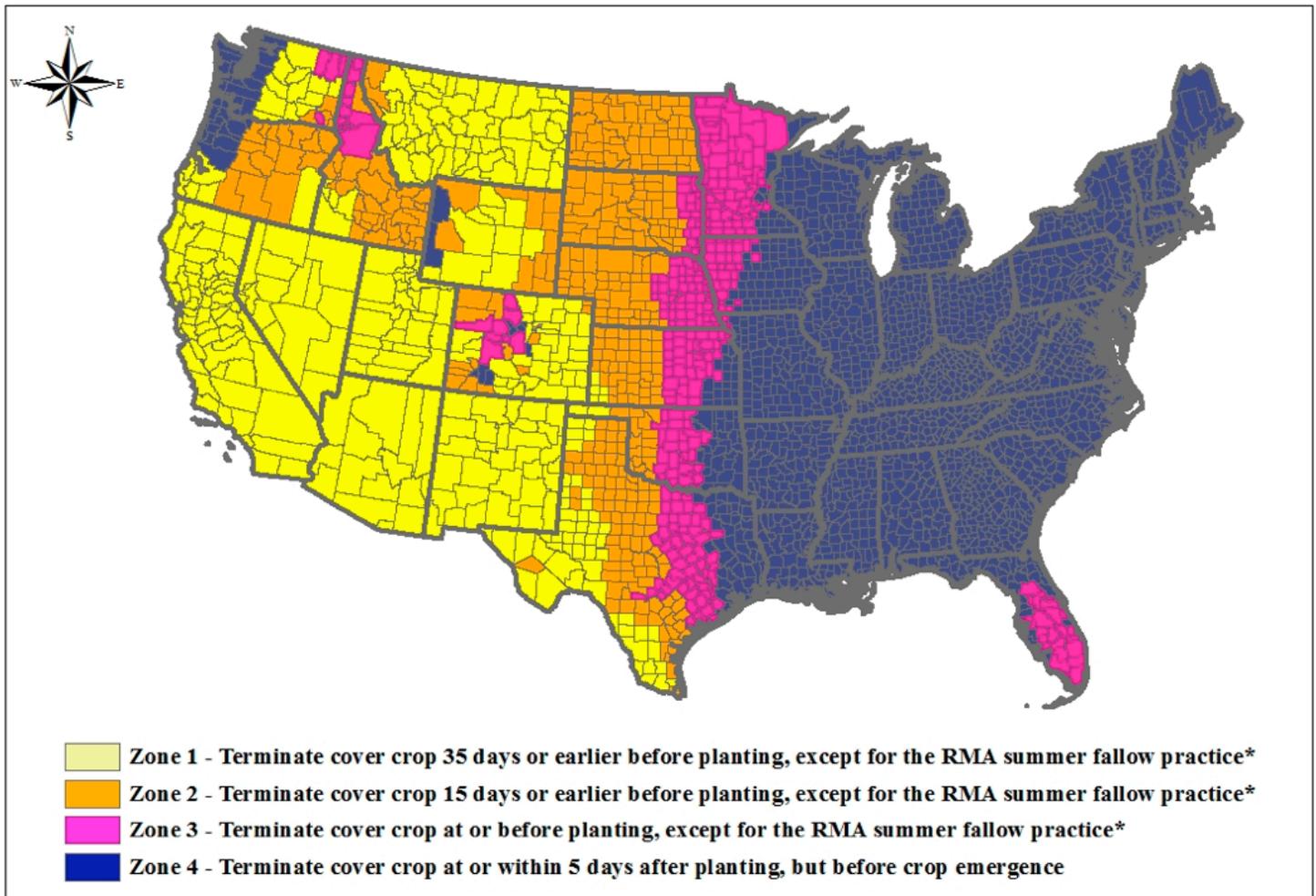
## NRCS Cover Crop Termination Guidelines for Management Zones

Zone 1 - See Map	Zone 2 - See Map	Zone 3 - See Map	Zone 4 - See Map
NRCS Cover Crop Termination Period Guidance - Non-Irrigated Cropland:			
<p><b>For Late Spring to Fall Seeded Crops -</b> Terminate cover crops 35 days or earlier prior to planting the crop.</p> <p><b>For Early Spring Seeded Crops -</b> Terminate cover crops as soon as practical prior to planting the crop. (Additional Cover Crop Termination Considerations 4 and 8)</p>	<p><b>For Late Spring to Fall Seeded Crops -</b> Terminate cover crops 15 days or earlier prior to planting the crop.</p> <p><b>For Early Spring Seeded Crops</b> Terminate cover crops as soon as practical prior to planting the crop. (Additional Cover Crop Termination Considerations 4 and 8)</p>	<p>Terminate cover crop at or before planting the crop.</p>	<p>Terminate cover crop at or within 5 days after planting, but before crop emergence.</p>
<p><b>RMA Designated Summer Fallow Practice</b></p> <ul style="list-style-type: none"> <li>* For summer seeded or fall seeded crops terminate the cover crop at least 90 days prior to planting.</li> <li>* For early spring seeded crops terminate the cover crop either in late fall or as early as possible in the spring prior to planting.</li> </ul>	<p><b>RMA Designated Summer Fallow Practice</b></p> <ul style="list-style-type: none"> <li>* For summer seeded or fall seeded crops terminate the cover crop at least 90 days prior to planting.</li> <li>* For early spring seeded crops terminate the cover crop either in late fall or as early as possible in the spring prior to planting.</li> </ul>	<p><b>RMA Designated Summer Fallow Practice</b></p> <ul style="list-style-type: none"> <li>* For summer seeded or fall seeded crops terminate the cover crop at least 90 days prior to planting.</li> <li>* For early spring seeded crops terminate the cover crop either in late fall or as early as possible in the spring prior to planting.</li> </ul>	

Note: These guidelines can be used as a stand alone document, if needed.

# \* Cover Crop Termination Zones

Produced by: NRCS | ESD  
December 2013



\*See guidelines for details on the RMA summer fallow practice.

## Additional Cover Crop Termination Considerations:

1. If the season is drier than normal nearing cover crop termination time, consider an earlier termination to conserve soil moisture.
2. If the spring season is wetter than normal at cover crop termination time, consider a later termination to use excess soil moisture and improve seedbed condition.
3. If the cover crop is part of a no-till system, termination can be delayed up to 7 days from the above termination period guideline, but terminated prior to crop emergence for all zones and systems.
4. In zones 1 and 2, fall seeded cover crops will have limited growth in the spring prior to “early” spring seeded crops (e.g., spring wheat, sugar beets, corn), and therefore the cover crop may be terminated at or just prior to planting.



Photo: Justin Fritsher, NRCS



Cover crops in an orchard reduce soil erosion.

Photo: Gary Kramer

## Additional Cover Crop Termination Considerations (Continued):

5. Cover crop termination zones 1 and 2, in the largely mountainous regions in the Western U.S. (from Montana south to New Mexico and west to California), were refined by NRCS and other local university experts to identify proper cover crop management due to wide variability in climate and cropping systems in those areas.
6. Early vs. Later Spring Seeded Crops - Crops planted as early as possible after the spring thaw are considered early spring crops (e.g., spring wheat, spring barley, sugar beets, corn). Later spring crops include such crops as dry beans and soybeans.
7. New Technology - Where new technology has at least three years of satisfactory performance (achieves historical yield) based on farm records and the written approval of two "agricultural experts" as defined by RMA, the cover crop may be terminated closer to planting, if recommended by the experts.
8. Cover Crop Grazing or Forage Harvest – In all areas, except for the RMA summer fallow practice in Zones 1, 2 and 3, cover crops may be grazed or harvested as hay or silage as long as the planned amount of biomass is available at the time of termination to meet the conservation purpose. For the RMA designated summer fallow practice, cover crops should not be hayed or grazed. A cover crop harvested for grain or seed will not be considered to have been planted for conservation purposes, and will be considered a "crop".
9. Herbaceous Wind Barriers - There are specific cropping situations when seasonal cover is needed to protect young seedlings from wind erosion abrasion. The typical seasonal covers may include such crops as wheat, rye, or oats that are planted in rows, e.g., 20 feet apart (single or double row of small grain). These seasonal covers fall under the [NRCS Conservation Practice Code 603 – Herbaceous Wind Barriers](#). These barriers are not considered cover crops.
10. Short Season Cover Crops – There are specific cropping situations where the producer will plant the intended crop, plus a short term seasonal cover crop ([NRCS Conservation Practice Code 340 – Cover Crop](#)) prior to or at the same time as planting the main or insured crop. In this case the seasonal cover emerges first and provides short term wind erosion protection until the main crop becomes established. The seasonal covers used for the purpose of early crop establishment must be appropriate species for the area and the planned purpose.
11. Early Crop Planting – When earlier than normal planting occurs due to favorable weather or soil conditions, cover crop termination will naturally occur closer to planting. For example, in zone 2, if planting occurs 2 weeks earlier than normal, the cover crop termination period may be 2 weeks closer to planting.



Stripcropping with Cover Crops, Lancaster County, PA.

Photo: Bob Nichols

## Additional Cover Crop Termination Considerations (Continued):

12. Multiple Climates Within a County – Some counties may have multiple climate areas. In these situations, producers may request a different cover crop termination zone management or timeframe due to unique geographical and topographical features that reflect a different climate. Producers should contact either Extension or the local NRCS for management guidance. If the guidance includes practices other than indicated by the zones in this document, the producer must inform FSA and their crop insurance agent, as appropriate, and provide copies of the recommended management practice(s).

### Definitions:

1. Over-Seeding/Interseeding – Both terms can be defined as planting one or more cover crop species into an existing or established crop. Common uses that involve over-seeding or interseeding include: (1) over-seeding a grass and/or legume cover crop into an existing stand of small grain at an appropriate time for the cover and germination, or (2) seeding a cover crop into an existing crop of corn or soybeans about the time of physiological maturity (leaves beginning to yellow) to get the cover crop started a few weeks earlier. Neither of these examples of over-seeding/interseeding would interfere with harvest of the main crop.
2. Interplanted – This involves multiple crop species grown together, with no distinct row pattern and does not permit separate agronomic maintenance or management. For RMA purposes, this means if a cover crop and cash crop are planted in a way that does not permit separate agronomic maintenance or management, then RMA will not insure the cash crop. This would also apply to cover crops if interplanted into the main crop and the cover crop interfered with the agronomic management and harvest of the main crop.
3. Relay Cropping – The practice of interseeding a second crop into the first crop well before it is harvested. The relay cropping strategy is used to enable production of a second crop in areas where time seeding the second crop following harvest of the first is considered inadequate for double cropping. This is not considered a cover cropping practice, but a method of double cropping and may fall under the RMA 1st / 2nd crop rules.
4. Double-Cropping – RMA and NRCS term: Harvesting at least 2 crops from the same land in the same year. This does not include cover crops.
5. Cover Crop - Crops including grasses, legumes and forbs for seasonal cover and other conservation purposes. A cover crop managed and terminated according to these guidelines is not considered a “crop”.
6. Good Farming Practice – RMA term - The production methods utilized to produce the insured crop and allow it to make normal progress toward maturity and produce at least the yield used to determine the for late planted acreage, which are: (1) for conventional or sustainable farming practices, those generally recognized by agricultural experts for the area; or (2) for organic farming practices, those generally recognized by organic agricultural experts for the area or contained in the organic plan.
7. Late Planting Period – RMA term - The period of time following the date considered as the final planting date for an insured crop. The late planting period may vary from a week up to a few weeks.
8. Prevented Planting – RMA term - Failure to plant the insured crop by the final planting date designated in the Special Provisions for the insured crop in the county, or within any applicable late planting period, due to an insured cause of loss that is general to the surrounding area and that prevents other producers from planting acreage with similar characteristics.
9. Continuous Cropping – RMA Term – A practice of growing crops annually in a rainfall limited area (where summer fallow is also a practice).