

NATURAL RESOURCES CONSERVATION SERVICE
MONTANA CONSERVATION PRACTICE SPECIFICATION

COVER CROP (ACRE)

CODE 340

SCOPE: Cover Crops are grown to protect and improve the soil. Cover crops can improve soil tilth, control erosion and weeds, as a secondary benefit provide supplemental forage, and maintain or improve organic matter. They can reduce compaction and increase water infiltration while utilizing nitrogen in the root zone, decreasing leaching of water soluble nutrients. Cover crops retain and recycle plant nutrients, provide habitat for beneficial microorganisms, and increase plant diversity. This specification provides guidelines for establishment and maintenance of cover crops.

Cover crops are annually seeded primarily to protect and improve the soil resource, not to harvest except as a secondary forage resource when abundant vegetation allows for a small amount of grazing or haying. Cover crops also retain and recycle plant nutrients, especially nitrogen, provide habitat beneficial to microorganisms and wildlife, and increase plant diversity.

There are many ways to use cover crops in a production cycle including:

- As a companion crop or living mulch. The cover is planted between rows of a cash crop.
- As a “catch” crop for nutrients, planted after harvest of the main crop or between the rows of the cash crop to reduce leaching of nutrients.
- As an off-season crop grown to protect the soil during critical erosion periods.
- As an off-season crop grown to add soil nutrients and organic matter to the soil for subsequent crops.

Cover crops must be correctly selected and managed. There are many possible cover crops, each differing in potential benefits and in adaptability to particular climates and rotational schemes. The most commonly used cover crops are **annual** grasses and legumes. Perennial species may be seeded but are required to be utilized as an annual, i.e., green manure crop, or plow down after critical erosion period.

When managing for soil nutrient additions, the best time to incorporate leguminous cover crops is the period just before or at full bloom. This ensures decomposition and nutrient release over a longer period of time (versus termination prior to bloom). To eliminate potential insect or disease infestations associated with growing green tissue (the green bridge) cover crops should be terminated at least two-three weeks prior to planting the next crop.

Weeds are suppressed with cover crops during germination and establishment, while the cover is growing, and following desiccation and termination. Cover such as small grains that germinate and emerge quickly before weeds grow will suppress the greatest percentage of weeds. Mixtures of cereals and legumes will reduce weed growth and potential infestations more effectively compared to legumes alone.

The time of planting somewhat defines the choice of cover crops. For example, buckwheat is killed by light frosts and can only be planted in the summer. Brassicas and spring grains are all killed during winter. Grains and grasses can all be planted in late summer to early fall (if adequate moisture is available). This will allow enough time to grow and take up nutrients, but not enough time to set seed. Fall rye can be planted into the autumn.

Specification MT340-2

The following is a list of effective cover crops and their associated seeding rates.

TABLE 1. COVER CROP FOR EROSION CONTROL ^{1/}

Cool Season Broadleaves	Warm Season Broadleaves	Cool Season Grasses	Warm Season Grasses
Alfalfa ^{2/} Sweet Clover Red Clover Hairy Vetch Lentils Field Peas Faba Beans Buckwheat	Cowpeas	Barley Oats Winter Wheat Rye (annual)	Sudangrass Foxtail Millet Sorghum

^{1/} Cover crop species can have a wide range of seeding dates ranging from spring to fall depending on specific use and climatic conditions. Generally soil moisture must be apparent within the top 2 inches of soil to ensure planting success.

^{2/} Alfalfa species designed for annual growth only.

TABLE 2. COVER CROPS FOR SOIL HEALTH ^{1/}

Cool Season Broadleaves	Warm Season Broadleaves	Cool Season Grasses	Warm Season Grasses
Alfalfa Sweet Clover Clover (red, white, Alsike) Hairy Vetch Lentils Field Peas Faba Beans Buckwheat Winter Canola Rape Radishes Turnips Sugar beets Crambe Flax Camelina	Soybeans Cowpeas Sunflower	Barley Oats Winter Wheat Sorghum Rye (annual) Triticale Wheatgrass	Sudangrass Foxtail Millet Sorghum

^{1/} Addition of organic matter is essential for improved health. To maximize OM additions, vegetation should not be removed by haying or grazing.

TABLE 3. SEEDING RATES FOR COVER CROPS

SPECIES	DRILLED SEEDING RATES (lb./ac. PLS)	
	Dryland	Irrigated
Alfalfa	5	6
Soybeans	45	55
Barley	15	20
Sudangrass	10	15
Sweet Clover	5	8
Cowpeas	20	25
Oats	20	30
Foxtail Millet	7	12
Clover (red, white, Alsike)	4	6
Sunflower	4	5
Winter Wheat	20	30
Sorghum	10	20
Hairy Vetch	30	40
Rye (annual)	10	15
Lentils	15	20
Triticale	15	20
Field Peas	20	30
Wheatgrass	4	8
Faba Beans	40	50
Buckwheat	15	20
Winter Canola	2	4
Rape	2	3
Radishes (Forage)	8	10
Turnips	8	10
Sugar beets	.5	1
Crambe	7	10
Flax	20	25
Camelina	2	3

PLANTING METHODS: Seedbed preparation and planting will follow guidelines found in the [Montana Plant Materials Technical Note MT-58](#). Establish stand of vegetation according to recommended seeding rates (see Table 3). Control pests according to the Field Office Technical Guide (FOTG), Section IV, Practice Standard for Pest Management (Code 595). If nutrients are applied, guidelines will follow the Field Office Technical Guide (FOTG), Section IV, Practice Standard for Nutrient Management (Code 590).

OPERATION AND MAINTENANCE: Perform all seedbed preparation and planting operations in a manner that will minimize erosion until cover establishment. Control weeds in the cover crop by mowing or herbicide application. Annually terminate cover crop as late as possible in summer or fall to maximize plant growth while retaining adequate soil moisture for the subsequent crop. To avoid potential insect or disease infestations associated with green tissue, terminate cover crop at least two-three weeks prior to planting the next crop.