

NATURAL RESOURCES CONSERVATION SERVICE  
MONTANA CONSERVATION PRACTICE SPECIFICATION

## RESIDUE MANAGEMENT, SEASONAL (ACRE)

### CODE 344

**DEFINITION:** Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during a specified period of the year, while planting annual crops on a clean-tilled seedbed, or when growing biennial or perennial seed crops.

**PURPOSE:** Seasonal residue management is an essential practice for all land where agricultural crops are grown to reduce erosion, manage snow to increase plant available moisture, reduce off-site transport of sediment, nutrients or pesticides, to provide food and escape cover for wildlife, and to reduce soil erosion from wind and associated airborne particulate matter.

#### CONSERVATION MANAGEMENT SYSTEM

This practice applies to all cropland that uses full-width clean tillage to establish crops. Seasonal residue management includes managing residues of annual crops from harvest until the residue is:

- buried by tillage for seedbed preparation,
- removed by grazing, or
- mechanically removed.

It also includes the management of residues from biennial or perennial seed crops from the time of seed harvest until re-growth begins the next season. As part of a conservation management system, it is important to consider crop rotation, nutrient and pest management, agricultural waste utilization, and other supportive conservation practices when designing a seasonal residue management system.

Harvest equipment that distributes residues over at least 80% of the surface area provides maximum benefit. If harvest equipment is not capable of properly distributing residue, alternative equipment or methods can be used to distribute residues uniformly, i.e., harrow.

When crop residues are to be removed, or low residue crops are grown, protection against erosion may be provided by fall seeding a small grain crop, cover crops, surface roughening, or the addition of residue or manure. Burning of residues is not allowed unless burning is an accepted practice in an Integrated Pest Management (IPM) program developed by Montana State University.

The seasonal management of residue must be based on the amount of straw produced by the crop of cover crop. When small amounts of residue are available after harvest, straw should not be grazed, baled, or burned unless adequate amounts are present to protect against erosion. Alternatives to mechanical weed control may need to be practiced to maximize residue retention.

Subsurface tillage equipment, which includes straight-blade or V-blades, rod weeders, and deep chisel implements, have proven to retain the greatest amount of soil surface residue after each operation.

Tilling at slower speeds retains more crop residue on the soil surface.

Water infiltration rates may increase when high amounts of crop residue are maintained near the soil surface.

Standing stubble over winter will prevent erosion and trap snow for additional soil moisture.

## Specification MT344-2

### WILDLIFE

Properly designed seasonal residue management can also provide food and escape cover for wildlife. Seasonal residue management can enhance wildlife objectives depending on the crop species and management practiced. Consider using species and orientation or residue that can provide food and cover for important wildlife.

**TABLE 1. HARVEST RESIDUE RATIOS**

CROP	LBS. OF RESIDUE PER UNIT OF YIELD <sup>1/</sup>
Spring Wheat	78 lbs./bu.
Winter Wheat	102 lbs./bu.
Durum	80 lbs./bu.
Rye	84 lbs./bu.
Barley	72 lbs. bu.
Oats	64 lbs./bu.
Flax	80 lbs./bu.
Millet	80 lbs./bu.
Triticale	102 lbs./bu.
Sorghum	56 lbs./bu. OR 400 lbs./ton
Corn (grain)	56 lbs./bu.
Corn (silage)	504 lbs./ton
Lentils	1.4 lbs./lb.
Safflower	1.5 lbs./lb.
Sunflower	2.1 lbs./lb.
Mustard	2.0 lbs./lb.
Buckwheat	1.5 lbs./lb. OR 72 lbs./bu.
Beans	1.0 lbs./lb.
Peas	1.0 lbs./lb.
Potatoes	240 lbs./ton
Sugarbeets	200 lbs./ton
Fall Canola	2.0 lbs./lb.
Spring Canola	2.0 lbs./lb.
Camelina	1.4 lbs./lb.

<sup>1/</sup> Residue units are for estimating purposes only and may be significantly different depending on soil fertility, climatic conditions, and variety of crop species.

TABLE 2. RESIDUE REDUCTION BY TILLAGE

IMPLEMENT	PERCENT RESIDUE REMAINING AFTER EACH OPERATION	
	NON-FRAGILE	FRAGILE
Anhydrous Applicator	80	55
Bedder/lister	20	10
Chisel; straight points	70	50
Chisel; sweeps	75	55
Chisel; twisted points	60	35
Cultivator; primary - duckfoot	45	40
Cultivator; primary - sweeps 12-20"	70	65
Cultivator; primary - sweeps 6-12"	60	50
Cultivator; secondary - sweeps 6-12"	75	55
Cultivator; secondary - duckfoot	65	40
Cultivator; secondary - sweep 12-20"	85	65
Culti-packer roller	95	90
Disk harrow-tandem-primary	55	30
Drill; double-disk opener	90	70
Drill; deep furrow	70	65
Drill; hoe opener	65	50
Drill; no-till	90	75
Harrow; spike tooth	80	70
Harrow; spring tooth	85	75
Manure applicator; injector	50	30
Moldboard plow; 8"	5	2
Moldboard plow; 5-7"	10	5
Mulch treader	75	65
Planter; double-disk opener	90	80
Planter; no-till	95	90
Rodweeder; plain	90	60
Subsoiler	75	75
Sweeps; V-blade	90	75

<sup>1/</sup> Residue reduction is for estimation purposes only and may be significantly different depending on speed of operation, climatic conditions, and implement design.