NRCS Natural Resources Conservation Service

MT344-JS1

Residue Management, Seasonal

Montana Conservation Practice Job Sheet 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

As part of a conservation management system, 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, and to provide food and escape cover for wildlife**.**

Where used

This practice applies to all cropland and other land where crops are grown. Seasonal residue management includes managing residues of annual crops from harvest until 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 regrowth begins the next season.

Resource management system

Seasonal residue management is established as part of a conservation management system to address the soil, water, air, plant, animal, and human needs as related to the owner's goals and objectives. 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.

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.

Specifications

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Cover Crop, code 340.

Table 1. Harvest Residue Ratios

Crop	Lbs. of Residue Per Unit of Yield[1]
Spring Wheat	78 lbs./bu
Winter Wheat	108 lbs./bu
Durum	80 lbs./bu
Rye	75 lbs./bu
Barley	72 lbs./bu.
Oats	60 lbs./bu
Flax	90 lbs./bu
Millet	80 lbs./bu
Triticale	90 lbs./bu
Sorghum	1.0 lbs./lb
Corn (grain)	1.0 lbs./lb
Lentils	1.1 lbs./lb
Safflower	1.5 lbs./lb
Sunflower	2.0 lbs./lb
Mustard	1.5 lbs./lb
Buckwheat	1.5 lbs./lb
Beans	1.0 lbs./lb
Peas	0.9 lbs./lb
Potatoes	125 lbs./ton
Sugar beets	140 lbs./ton
Fall Canola	2.5 lbs./lb
Spring Canola	1.6 lbs./lb

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

Residue Management, Seasonal – Job Sheet

Landowner_____ Tract number_____

Purpose (check all that apply)	
☐ Reduce sheet and rill erosion	☐ Reduce soil erosion from wind
☐ Reduce off-site transport of sediment, nutrients or pesticides	☐ Manage snow to increase plant available moisture
☐ Provide food and escape cover for wildlife	☐ Other:

Predicting soil loss from wind and water must meet the planned soil loss objective for the key planning soil in a field or treatment unit. The following identifies residue amounts, timing, and orientation required to be maintained seasonally to meet the objectives of the producer. Use Table 1 to estimate percent residue remaining based on tillage information.

Field No.	Crop	Soil Loss	Orientation (standing/flat)	Critical Period	Pounds of Residue		Percent Residue	
					Planned	Applied	Planned	Applied

Table 2. Estimating Crop Residue

1 Crop	2 Harvest Units[1]	3 Yield	4 Lbs. Residue/ Unit Yield[2]	5 Estimated Residue/ac. (3 x 4)	6 Operation	7 Percent Residue Retained	8 Lbs. Residue Remaining (5 x 7)	9 Percent Residue Remaining[4]

[1] Bushels, pounds, or tons per acre
[2] From Table 2, Harvest Residue Ratios
[3] From Table 3, Residue Reduction by Tillage
[4] From Conversion Chart, FOTG Section I, Erosion Prediction, Page C-43

The following are guidelines for estimating dry weight of growing wheat seedlings:

One week after emergence - 30 lbs/ac. Wheat is in 1 - 2 leaf stage, about 3-5 inches tall.

Two weeks after emergence - 70 lbs/ac. Plants are in 2 - 3 leaf stage, erect, about 5-6 inches tall.

Three weeks after emergence - 120 lbs/ac. Leaves are less erect, increase is due to stooling, no increase in leaf length.

Five weeks after emergence - 250 lbs/ac. Plants are well stooled with leaves mostly prostrate.

Eight weeks after emergence - 400 lbs/ac. Growth is completely prostrate.

The following are guidelines for estimating residues of **corn** after harvest:

6	300	600	750	900	1050
5	250	500	625	750	875
4	200	400	500	600	700
3	150	300	375	450	525
2	100	200	250	300	350
	10,000	20,000	25,000	30,000	35,000

The following are guidelines for estimating residues of **sorghum** after harvest:

6	240	480	600	720	840
5	200	400	500	600	700
4	160	320	400	480	560
3	120	240	300	360	420
2	80	160	200	240	280
	10,000	20,000	25,000	30,000	35,000

Table 3. Residue Reduction by Tillage.

Implement	% Residue Remaining After Each Operation[1]	
	Non-fragile	Fragile
Anhydrous Applicator	80	55
Bedder/lister	20	10
Chisel; str. Points	70	50
Chisel; sweeps	75	55
Chisel; twisted points	60	35
Cult; primary - duckfoot	45	40
Cult; primary - swp 12-20"	70	65
Cult; primary - swp 6-12"	60	50
Cult; secdry - swp 6-12"	75	55
Cult; secdry - duckfoot	65	40
Cult; secdry - swp 12-20"	85	65
Cultipacker 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 applic; injector	50	30
Moldboard plow; 8"	5	2
Moldboard plow; 5-7"	10	5
Mulch treader	75	65
Planter; dbl disk opener	90	80
Planter; no-till	95	90
Rodweeder; plain	90	60
Subsoiler	75	75
Sweeps; v-blade	90	75

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

Approvals:

_____ _____ _____

Planner/designer Job Class Date

Certification:

I hereby certify that this practice has been installed in accordance with NRCS standards and specification**s.**

_____ _____ _____

Producer Job Class Date