

Residue and Tillage Management for Wildlife

Conservation Practice Job Sheet

Codes 329 & 345



Definition

In addition to reducing erosion on crop fields and adding organic matter back into the soil, many species of wildlife utilize the waste grains and residues from crop fields as supplementary food sources.

This practice should be applied as part of a conservation management system to also:

- Reduce sheet and rill erosion.
- Improve soil organic matter content.
- Reduce CO₂ losses from the soil.
- Reduce soil particulate emissions.
- Reduce energy use.
- Increase plant-available moisture.
- Provide food and escape cover for wildlife.

It applies to all cropland and other land where crops are grown and includes residue management methods practiced during the part of the year from harvest until residue is buried by tillage for spring seedbed preparation.

General Criteria

The residue should be distributed evenly throughout the field.

The amount of residue needed to reduce erosion within acceptable soil loss is determined using current approved erosion prediction technology. Contact the local NRCS field office to determine the amount of residue necessary for your operation and objectives. You should obtain a Soil Tillage Intensity Rating (STIR) from the local NRCS office. This value should be no greater than 30.

The partial removal of residue by means such as baling or grazing must be limited to retain the

amount needed. The remaining residue should be maintained on the surface.

In general, any tillage that occurs during the management period should be limited to methods which leave a minimum of 40% of soil surface covered by residue evenly distributed on the surface between harvest and spring planting. (See Table 1)

Any tillage that occurs should be limited to methods which leave residue on the surface and maintain the planned cover conditions

FOOD AND COVER FOR TERRESTRIAL WILDLIFE

Small grain fields and waste grains provide excellent bobwhite quail brood rearing and feeding areas. For quail management, a target of 30-45% residue remaining on the surface is desirable. Quail utilize these areas because it remains more open at ground level to enable their movement. As much as 70% of any brood-rearing cover can be open, bare ground.

Crop fields of corn, sorghum, oats, wheat and barley stubble are extremely important for nesting, loafing and food sources for a variety of wildlife. The residue from these fields may be left in the form of stubble. The height of the stubble remaining on the field may be important for some species of wildlife. As a general rule, cut at the highest possible height or use a stripper header. If possible, depending on the crop delay the cutting until after primary nesting months (May 15 - Aug 1).

Standing rows of grain or other crops left unharvested may also be valuable to wildlife. Leave several standing rows of unharvested crops along the edges of crop fields and use conservation tillage to leave waste grain on the surface following harvest.

Residues from grain and seed crops are further enhanced by being located in close proximity to frequently disturbed grasslands, old field communities, weedy field borders, legume plantings, and other good brood-rearing cover.

Residue management for wildlife works best in conjunction with other practices including field borders, native warm season grass establishment and other practices that establish early successional habitat and/or edge. Contact the local NRCS field office to assist you with planning this practice in

conjunction with other wildlife management practices.

POLLINATOR NESTING SITES

Most ground nesting bees nests are located 0.5 to 3 feet below ground. Bees that nest close to cropland or on the edges of row crops are vulnerable to nest destruction by farm tillage operations. An example is the squash bee which is important for pollination of members of the gourd family including pumpkins.

This practice should be utilized primarily to protect established nest sites in vegetable crop settings.

Protect pollinator nesting sites by leaving standing crop residue to protect bees that are nesting in the ground at the base of the plants they pollinate (i.e., squash). A minimum of one row of un-harvested or 5 feet of undisturbed refugia along edges of fields is required to provide nesting sites for ground nesting bees. If this is not feasible, minimize soil disturbance in nesting areas. Disturbance should not exceed 3 inches in depth in these areas.

To provide nesting sites conversion from conventional tillage to no-till is required to provide nesting opportunities for native pollinators. Tillage digs up these nests or blocks emergence of new adult bees the preceding year.

Operation and Maintenance

It is preferable to leave residues on the soil surface. Mowers or shredders help to distribute and reduce stem size, which leads to a more rapid decomposition. A shallow, light disking will hasten decomposition even more. Disking residues from vegetables and other low-residue-producing crops may not leave a sufficient amount of residue for ground cover.

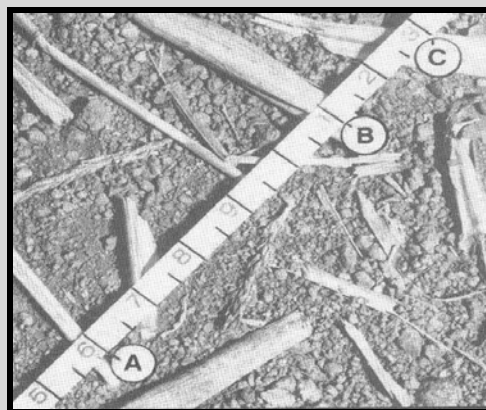
Residue should be maintained throughout winter to provide the benefits of its intended use.

Residue should not be burned, indiscriminately grazed or otherwise removed.

ESTIMATING PERCENT RESIDUE COVER

Use a tape measure line for direct field measurement. Use one foot marks on a 100-foot tape, laying the tape diagonally across rows.

Walk directly over the line, viewing it from the same angle, and count each mark that touches crop residue. Always use the same side of the tape.



In the picture above, using the **left** edge of the tape, points A and B touch residue. However, C touches residue only on the **right** side of the tape and should not be counted. The total number of points touching residue will represent the percent cover. Residue measurements for estimating soil erosion should always be taken after planting.

The table below illustrates the reduction in crop residue left on soil surface after each pass over the field with tillage or planting equipment.

IMPLEMENT	PERCENT REDUCTION IN SOIL SURFACE RESIDUE
Moldboard Plow	>90
Offset disk 24-inch disk blades	60-80
Chisel plow with twisted shanks	50-60
Chisel plow with straight points	30-50
Tandem disk	40-50
Field Cultivator	30
V-Ripper or subsoiler	20-30
Paraplow	20-30
Ridge Till Planter	20-30
No-till Planter	>10

Table 1. Guidelines for Estimating the Reduction in Crop Residue

Specifications

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Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the KY NRCS Field Office Technical Guide. Information listed in this job sheet is considered to be part of the conservation plan.

Client:		Farm #:
Planner:	Date:	Tract #:

Purpose (check all that apply)		
<input type="checkbox"/> Pollinator habitat	<input type="checkbox"/> Reduce sheet and rill erosion.	<input type="checkbox"/> Reduce soil particulate emissions.
<input type="checkbox"/> General wildlife	<input type="checkbox"/> Increase plant-available moisture.	<input type="checkbox"/> Reduce energy use.
<input type="checkbox"/> Other _____	<input type="checkbox"/> Improve soil organic matter content.	<input type="checkbox"/> Reduce CO ₂ losses from the soil.

Layout (complete as required)	Field _____	Field _____
Tillage Type, Machinery, Equipment, or Implement(s) Used		
Crop or Rotation		
Dates of planned tillage		
Percent Residue Cover Required		
Residue Type		
Duration or Critical Period(s) ¹		
Soil Conditioning Index (SCI) ²		
Stubble Height (if applicable)		
Highly Erodible Lands		
Acceptable Grazing Periods (if applicable)		
Soil Tillage Intensity Rating (STIR) ³		
Depth of Tillage (if applicable)		
Amount of un-harvested crop for wildlife (rows, acres, etc) (if applicable)		

¹ Identify the period to leave residue for the intended purpose. For wildlife, the critical period will be identified by the KWHEP or the Kentucky Pollinator Handbook and appropriate standards.

² SCI provides an indication of the soil condition trend based on planned management. Positive values indicate an upward trend. Negative values indicate a downward trend. The values are based on how crops and management affect soil organic matter content.

³ Soil Tillage Intensity Rating (STIR) is a rating given based on a number of factors including the type of implement, soil type, crop and a number of other factors. STIR ratings should not be greater than 30. Contact the local NRCS for more information.

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If needed, an aerial view, map or a sketch of the practice can be shown below for clarity. Other relevant information, complementary practices and measures, and additional specifications may be included.

Additional Specifications and Notes: (i.e. additional notes, operation and maintenance specifics, etc.)

Residue will be maintained as described in the section entitled "Operation and Maintenance". **Additional Notes:**

Certifications			
Job Sheet	Prepared by:	Title:	Date:
	Approved by:	Title:	Date:
Installation	Meets NRCS Standards and Specifications		
	Certification by:	Title:	Date:

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