1992

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Estimating Winter Wheat Residue Cover

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This publication presents the line-transect, calculation, and photo-comparison methods for determining amounts of winter wheat residue. Photographs of standing and flat winter wheat residues are included as an aid in the assessment of residue levels in the field.

The effectiveness of ground cover depends on the amount, distribution, and orientation (standing or flat) of crop residue. Standing residue is more effective in controlling wind erosion than flat residue.

Estimating winter wheat residue is important in planning field operations to control soil erosion. Knowledge of field residue levels insures that adequate residue remains to meet residue requirements for the Food Security Act. Three commonly used methods to estimate crop residues are:

1) the line-transect method
2) the calculation method
3) the photo-comparison method.

The line-transect method is an easy and reliable method to estimate percent cover. This method of measuring the percentage of crop residue ground cover is done with a 50-foot-tape. This tape is stretched perpendicular to the wheat rows.

On a 50-foot-tape there will be 100 points, one every six inches. Percent residue cover is calculated by dividing the number of points hitting residue by 100. A point is over residue if one end of the point touches the residue. The observer needs to use the same side of the tape in counting the points that intersect residue.

This method works very well for measuring winter wheat residue that is randomly distributed and lying flat on the ground. It is difficult, however, to obtain accurate estimates of percent cover in standing winter wheat residue using this method.

The line-transect method is inappropriate for estimating the amount of standing residue in the field. Refer to the following University of Nebraska publications for more information.

Published in cooperation with the USDA Soil Conservation Service

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 11, 1932, by the U.S. Department of Agriculture. Kenneth R. Bolen, Director of the University of Nebraska, Institute of Agriculture and Natural Resources, and Ralph A. Christiansen, Area Resource Conservationist, Soil Conservation Service. It is the policy of the University of Nebraska-Lincoln Institute of Agriculture and Natural Resources not to discriminate on the basis of handicap, race, color, religion, marital status, veteran’s status, national or ethnic origin. Issued in cooperation with the USDA Soil Conservation Service.
Figure 1. Standing winter wheat stubble in the fall before tillage with 25% ground cover and 1,200 pounds of residue per acre.

Figure 2. Standing winter wheat stubble in the fall before tillage with 46% ground cover and 1,200 pounds of residue per acre.

Figure 3. Standing winter wheat stubble in the fall before tillage with 63% ground cover and 1,900 pounds of residue per acre.

Figure 4. Standing winter wheat stubble in the fall before tillage with 73% ground cover and 2,200 pounds of residue per acre.
Figure 5. Standing winter wheat stubble in the fall before tillage with 92% ground cover and 3,700 pounds of residue per acre.

Figure 6. Flat winter wheat residue after spring tillage with 15% ground cover and 50 pounds of residue per acre.

Figure 7. Flat winter wheat residue after spring tillage with 21% ground cover and 90 pounds of residue per acre.

Figure 8. Flat winter wheat residue after spring tillage with 34% ground cover and 290 pounds of residue per acre.
Figure 9. Flat winter wheat residue after spring tillage with 40% ground cover and 260 pounds of residue per acre.

Figure 10. Flat winter wheat residue after spring tillage with 86% ground cover and 950 pounds of residue per acre.