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Estimating Residue: Line Transect Method

Nyle Wollenhaupt
Department of Agronomy

Missouri producers have chosen conservation tillage as part of their conservation compliance plans. Conservation tillage means leaving 30 percent or more of the ground surface covered with residue — measured immediately after planting.

The line transect method is a quick and effective method to estimate the amount of residue present on the soil surface. All that is necessary is a 100-foot measuring tape (options using 50-foot tape are also provided in this publication).

The basic steps in determining the residue cover of a field by the line transect method are:

Step one

Lay out the 100-foot tape measure across the crop rows at a 45-degree diagonal to the row direction (Figure 1). Both ends should be anchored in a row.

Step two

Walk along the measuring tape and look straight down at each 1-foot mark. As you look down, always choose the same side of the tape, to be consistent.

Count the number of times that a piece of crop residue intersects the tape measure at the 1-foot mark (Figure 1).



Figure 1
Lay out a 100-foot tape measure across crop rows at a 45-degree diagonal. Anchor both ends in a row. Look straight down at each 1-foot mark, always choosing the same side of the tape. Count the number of times that a piece of crop residue intersects the tape measure at one of the 1-foot marks. Example: the 1-, 3-, 8- and 9-foot markers have residue, while the 2-, 4-, 5-, 6-, 7- and 10-foot markers do not have residue.

This will require some judgment calls. To decide whether the residue intersects the mark, ask yourself this: If a raindrop falls at this point on the tape, will it hit crop residue or bare soil? If you have any doubt whether the point intersects residue, or if the piece of residue looks too small to intercept a raindrop, don't count it.

Step three

The total number of intersections you found equals the percentage of surface covered by residue. If 44 out of 100 foot-marks intersect residue, then you have 44 percent residue coverage in this area of the field.

Step four

Repeat the measuring procedure five times in each field and average the results to arrive at an estimate of soil cover for the entire field.

Measurement options

If a 50-foot tape is used, there are two ways to calculate residue:

- Count the times residue intersects each 6-inch interval.
- If more or less than 100 points are counted, calculate percent residue by:

$$\text{percent cover} = \frac{\text{(Number of points intersecting residue)}}{\text{(Total number of points)}} \times 100$$

For example, if 12 out of a total of 50 points are intersected by residue:

$$\text{percent cover} = \frac{12}{50} \times 100 = 0.24 \times 100 = 24 \text{ percent}$$