

Picture Your Residue



30% or 550 lb/ac
wheat residue

Look down, not out across the field, for an accurate estimate of ground cover.

To get an idea of the amount of crop residue on your fields, it can be helpful to make a visual estimate.

Use these photographs to get a mental picture of various levels of small grain residue. Take this with you to your fields to compare your levels of residue with these pictures.

The effectiveness of ground cover depends on both the amount of crop residue and its distribution. Evenly distributed provides the best protection.

It's easy to over-estimate residue levels by looking out across a field. From that perspective, residue appears to cover most of the ground.

For a true picture, look straight down at the field, as was done with these pictures. Ask yourself what percent of the ground is covered with residue.

You'll develop confidence in your ability to visually estimate residue levels by using these photographs and measuring residues a number of times.



40% or 790 lb/ac
wheat residue



10% or 160 lb/ac
wheat residue



50% or 1080 lb/ac
wheat residue



15% or 250 lb/ac
wheat residue



60% or 1420 lb/ac
wheat residue



20% or 350 lb/ac
wheat residue



70% or 1870 lb/ac
wheat residue

Can you pass the residue test?

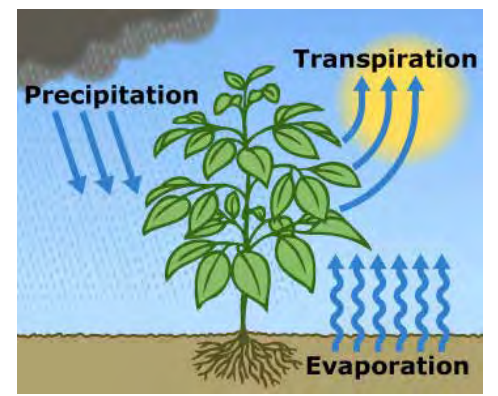


60% or 1420 lb/ac
wheat residue

Do you keep the soil covered?

Keep a minimum 60% residue from high-carbon crops such as small grains, especially over the winter and early spring.

Residue is the dead plant material left on the surface of the soil after harvest. It acts as armor to physically protect against soil erosion and as a mulch to reduce soil moisture evaporation and increase drought resilience. Crop rotation and residue management are the main ways to increase residue cover on a field.



Source: USGS public domain.

Can your drill seed into high amounts of residue?



Field seeded with double disc drill into stripper stubble.

In contrast, hoe-drills can cause up to 100% soil surface disturbance and cannot operate in tall stubble without plugging up around the shank. Hoe drills do not meet the NRCS criteria for no-till management (Conservation Practice Standard 329), even with stealth openers.



Hoe drill.

No-till and Residue

The key to stopping soil erosion is maintaining adequate residue and vegetation cover on the soil. Proper no-till management helps maintain residue by minimizing disturbance. Single- and double-disc drills cause minimal disturbance and can cut through thick residue layers for good seed to soil contact. Disc drills can also successfully seed into tall standing residue.



Single disc drill.



Field seeded with hoe drill into canola stubble.



Double disc drill.

No-till residue management starts at harvest. Cut the crop as tall as possible and evenly distribute residue to allow for proper seedling emergence of the next crop. Do not burn or bale residue on dryland fields. Residue is more valuable left on a dryland field than removed for short-term profit.

Use a crop rotation with half to three quarters of the crop years in high residue crops (grasses). Make sure all low-residue crops (broadleaves) and fallow years are preceded and followed by a high-residue crop.



Do you measure your ground cover?

Measuring residue cover in the field is a way to verify you are leaving enough residue on the field. When residues are randomly distributed, the line-transect method is one of the easiest field sampling procedures to estimate percent residue on the surface.

- Use any line that is equally divided into 100 parts. Use either a 50-ft nylon rope with 100 knots, six inches apart or a 50-foot tape measure using the 6-inch and foot marks.

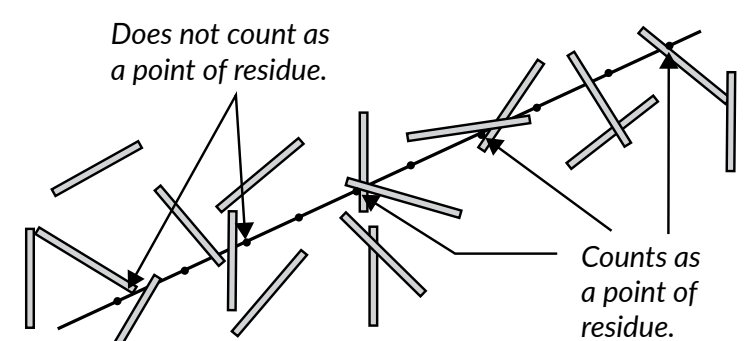
Use photo comparison as an alternative way to measure residue.

While not as accurate as the line-transect method, photo comparison can be used as a rapid visual assessment of residue cover. Look down, not across a point in the field, take a photo, and compare that photo with the residue photos on this poster. Take these comparison photos at three representative locations in the field and average the estimate.

Contact your local USDA Natural Resources Conservation Service (NRCS) office for more information about estimating residue, developing crop rotations, or other topics related to soil erosion, cropping, and conservation. Get contact details at nrcs.usda.gov/contact. Visit nrcs.usda.gov/montana or scan QR code for more information.



- Stretch the line diagonally across the field and seeding direction. Walk back along the line and count the number of times a flat piece of residue lies under one edge of a mark or standing residue touches a mark. Look directly over each dot for consistency.



- It is important to use the same point on each mark for accuracy. Consider vertically dropping a long wire such as a utility flag at the same point on each mark to help with counting. Don't count residue smaller than 1/8 inch in diameter and 1/4 inch in length.

- Walk the entire length of the string, rope, or tape making 100 total observations. The total number of marks with residue under them is the percent cover for the field.

- The best estimate of residue cover can be obtained by averaging at least three representative locations in the field. Avoid measuring areas not representative of the whole field, such as end rows, field edges, or areas of tillage overlap.

Leave It Standing

Standing residue is **three times** more effective at controlling wind erosion than flat residue, as it reduces wind energy at the soil surface. Standing residue is also more effective than flat residue at holding over-winter snow and keeping it on the field. NRCS Montana recommends keeping standing residue a minimum height of 10 inches, and taller if possible. Maximize standing stubble height and soil moisture conservation with the use of use stripper headers for dryland small grain harvest.



Stripper header.

If you answered "yes" to these questions, YOU PASS!

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