

Rock Cover in RUSLE2

Erosion from the typical cropland field in Missouri is not affected by surface rock cover. However, there are crop and pasture fields in the southern part of the state that could have significant rock on the surface. Be aware - if you use rock cover once to qualify for any federal or state conservation program, you will be expected to use rock cover in all future applications within the county.

The RUSLE2 model considers rock cover as permanent residue cover on the site to absorb the raindrop impact and impede water movement across the surface. Therefore, rock cover will be estimated using a line-transect method and documented in the case file on a field by field basis following the process explained in the National Agronomy Manual (190-V-NAM, 4th Ed, February 2011), Subpart 503.51 Estimating Crop Residue Cover on page 503-126 through 503-127.

The process is as follows:

- 1) Use a 50 to 100 foot long cable, tape measure, or any other line that has 100 equally spaced beads, knots, or gradation (marks).
- 2) Select the dominant critical slope segment as the area to be sampled for rock cover. Stretch the line taut oriented perpendicular to the crop rows or in a direction that is at least 45 degrees off of the row direction.
- 3) Walk along the line, stopping at each mark. Position the eye directly over the mark and look down upon it. When sighting, do not look at the entire mark or bead. Rather look at a single point or spot on each mark.
- 4) A point has an area about like the point on a sharp pencil. The knots, beads, and other marks often have much larger areas than the end of a pencil. A “hit” is not based on whether or not some portion of a mark is over the rock. It is based on whether or not a specific point associated with the mark is over rock. Therefore, select a point of reference such as where the bead or knot begins and use the same point with all gradations on the line.
- 5) Determine the percent rock cover by counting the number of points at each mark along the line under which a rock is noted. Count only from one side of the line and do not move the line while counting.
- 6) Count only the rocks that are large enough to intercept raindrops. This size is equal to or larger than 10 mm (0.3937 inches or about 2/5 inch).
- 7) When using a line with 100 marks, the percent rock cover is equal to the number of “hits” under which a rock meeting the minimum size definition is counted.
- 8) Three to five transects will be completed in each field. If three different transects are counted and all the results are within 20 % of the average, the three transects will be acceptable and must be documented in the case file. If all three transects are not within 20 percent of the average, complete an additional two more transects and document the results in the case file.

Missouri RUSLE2 Instructions 2014

Compare management alternatives for a single hillslope profile

Location: T value, t/ac/yr:

Soil: Slope length (along slope):

Avg. slope steepness:

Management alternative table											
Temp. scenario	Management	Yield values	Residue values	Contouring	Diversion/terraces, sediment basin	Strips / barriers	Rock cover, %	Cons. plan. soil loss, t/ac/yr	Sed. delivery, t/ac/yr		
<input type="checkbox"/> Profile	...c.Other Local Mgt Records\Com No Till w NH3 - Soybeans NT Dbl Disk Opener	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	4.06	4.06	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...cords\Com No Till w NH3 - Soybeans NT Dbl Disk Opener - Rye cover crop NT	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	5.52	5.52	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...om No Till w NH3 - Soybeans NT Dbl Disk Opener - Rye cover crop Aerial Seed	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	3.55	3.55	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...6c.Other Local Mgt Records\Com FC Disk Fld Cult- Soybeans FC Disk Fld Cult	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	13.0	13.0	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...t Records\Com SC Disk Fld Cult- Soybeans FC Disk Fld Cult-Rye cover crop NT	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	9.79	9.79	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...gt Records\Com Sp Fld Cult- Soybeans SC Disk FCult-Soybeans SC Disk FCult	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	14.3	14.3	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Profile	...Soybeans SC Disk FCult- Rye Cover NT-Soybeans SC Disk FCult-Rye Cover NT	<input type="checkbox"/> Yields	<input type="checkbox"/> ... inputs	<input type="checkbox"/> ...nt of slope grade	(none)	(none)	0	11.2	11.2	<input type="checkbox"/>	<input type="checkbox"/>

- 9) Enter the average rock cover as a percentage value from all transects in the appropriate part of Step 4c of the **Profile Screen** in RUSLE2 - "Rock cover, %". On the **Worksheet Screen** of RUSLE2, the average rock cover will be entered in all lines of the column titled "Rock cover, %".