

Calculating Soil Loss Based on Volume of “Missing” Soil

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1. Estimate volume “missing” soil in cubic feet:

- a. For gullies: Gully length x avg. depth x avg. width (all in feet) = _____ ft³
- b. For per acre situations, multiply number of square feet in an acre by depth of missing soil in feet:
43,560 ft² x depth of missing soil in feet = _____ ft³
- c. Examples:
 - i. Gully 100 ft long x 5 ft deep x 5 ft wide = 2,500 ft³
 - ii. Whole field with 6 inches of topsoil “missing”: 43,560 ft² x 0.5 ft = 21,780 ft³

2. Calculate pounds of “missing” soil:

- a. Multiply volume of missing soil by 90, which is weight in pounds of a “typical” cubic foot of topsoil.
_____ ft³ of missing soil x 90 lbs per ft³ = _____ lbs of missing soil
- b. Examples:
 - i. 2,500 ft³ of missing soil x 90 lbs per ft³ = 225,000 lbs of missing soil
 - ii. 21,780 ft³ of missing soil x 90 lbs per ft³ = 1,960,200 lbs of missing soil

3. Calculate tons of “missing” soil:

- a. Divide pounds of missing soil by 2,000, which is the number of pounds in a U.S. ton.
_____ lbs of missing soil / 2,000 lbs per ton = _____ tons of missing soil
- b. Examples:
 - i. 225,000 lbs of missing soil / 2,000 lbs per ton = 112.5 tons missing soil
 - ii. 1,960,200 lbs of missing soil per ac / 2,000 lbs per ton = 980 tons missing soil per ac

4. To determine soil loss rate in tons per year:

- a. Divide tons of soil lost by approximate number of years it took for soil to be lost.
_____ tons of missing soil / _____ years to lose soil = _____ tons per year loss rate
- b. Examples:
 - i. 112.5 tons missing soil / 10 years to lose soil = 11.25 tons per year loss rate
 - ii. 980 tons missing soil per ac / 50 years to lose soil = 19.6 tons per year loss rate

5. Chris’ favorite shortcut for per acre calculations:

One acre-furrow-slice (AFS) or 1 acre of soil 6 inches deep weighs about 2,000,000 lbs or 1,000 tons. Determine the missing number of/fraction of acre-furrow-slices and calculate accordingly.