Universal Soil Loss Equation

The Universal Soil Loss Equation, or USLE, estimates soil loss from rill erosion. It estimates the average annual erosion over a 20-year span. The goal is to keep the A value as low as possible, but at least to keep it lower than the soil loss tolerance value, also called the T value. In Iowa, all soil series have a T value of 5 tons/acre/year or less, depending on slope of land and thickness of topsoil.

USLE: **A = RKLS(C1\*C2)P**

A = Estimated soil loss (tons/acre/year)

R = rainfall erosion potential

K = soil erodibility

L = Slope length

S = Slope steepness

C1 = crop management factor

C2 = cover crop factor

P = Conservation practices factor

Sample equation using Farmer Profile A as an example:

R value:

 Needs to know county. Hardin County is stated. This is below the line on the graph, so R value is **175.**

K value:

 Need to know soil series. Tama is the stated soil series. Data sheet says Tama value is .**28.**

L x S value:

 Need to know % slope and length. 4% slope at 150’ is stated. Chart says corresponding value is **.5.**

C1 value:

 Need to know crop rotation and management system. RR rotation and chisel plow with 40% cover is stated. Corresponding value is **.15.**

C2 value:

 C2 value must be assigned by the student based on activity 1. Possible values range from .75 to .85. For an example, we will use winter wheat’s value of **.75.**

P value:

 Needs to know slope and if conservation practices are used. In sheet, it says other conservation practices are not used. Default to **1.0**, based on information sheet**.**

**A = 175 x .28 x .5 x .15 x .75 x 1**

**A = 2.76**