

## Introduction to RUSLE2 Profile Screen

The formula [  $A = RK(LS)CP$  ] is no longer relevant in the Revised Universal Soil Loss Equation, Version 2 (RUSLE2). There are no R factors, K factors, LS factors, C factors, or P factors in RUSLE2 that are direct input values. The separate slope length (L) and slope steepness (S) values are the only numerical values that are needed. The model now uses daily changes in climate, soils, and management to estimate the potential rill and interrill (sheet) erosion.

The planner (NRCS conservationist or technical service provider) selects the following items in the profile portion of the current erosion prediction model:

- 1) Location by county name
- 2) Soil type by major soil component of a map unit
- 3) Slope and length from actual field measurements
- 4) Management decisions of crop rotations and tillage
- 5) Supporting practices including contouring, strips and barriers, diversions and terraces, and subsurface drainage.

Similar entries are needed to complete worksheets and plans within RUSLE2. The worksheet view is an attempt to duplicate the LU&T 3 worksheet common in most of the older case files.

From these selections the RUSLE2 model calculates the following selection for each individual field:

- Soil loss for the conservation plan
- Surface residue cover values
- Soil Conditioning Index
- Soil loss from the eroded portion
- Sediment delivery at the end of the slope segment
- Residue and canopy cover for the rotation period

### RUSLE2 Parameters

- 1) LOCATION – The selection of the appropriate county replaces the R factor entered for each county in RUSLE. The planner merely selects the county name from a drop down listbox.
- 2) SOIL TYPE – The soil list will contain all the soils mapped in the county. The planner will select the soil component that represents the field conditions where dominant critical slope occurs for the field. The soil type will be listed by map symbol (five digit number) and map unit name with components listed from the major to minor soil based on a percentage of the map unit. Select the map unit component that is present on the dominant critical slope.
- 3) SLOPE TOPOGRAPHY - The slope percent (S) and the length along the slope (L) of the dominant critical slope will be manually entered into the model. The values of S

and L for each field shall be determined from actual measurements in the field and properly recorded in the conservation plan.

- 4) **MANAGEMENT** – Various crops and tillage files (management files) will be created by the state agronomist to represent the crops raised in the state. Two crop management zones (CMZ) for Missouri will be used; CMZ 16 will be used in northern Missouri and CMZ 17 will be used in southern Missouri. The planner will select and combine management files to represent the cropping system used on the field. Tillage, planting, and harvest methods and dates or may be selected to fine tune the actual management decisions for the field. The choice of dates, tillage methods, irrigation applications, average yield, residue burial, external residue additions, and rock cover affects the Surface Cover estimates and can affect the erosion prediction.
- 5) **SUPPORTING PRACTICES** – only consider support practices that occur in slope length L.
  - a) **Contouring** – Select the furrow direction from up and down the slope to perfect contouring. Options exist to select actual or relative furrow slopes.
  - b) **Strips and Barriers** – The position and type of strips are selected from a listbox. Strips at the bottom of the field are referred to as filters and are considered in the RUSLE2 evaluation only when they occur in the slope length measurement.
  - c) **Diversions and Terraces, Sediment Basin** – The number and position of terraces or diversions in relation to slope length are available as choices in the listbox. A combination of terraces and sediment basins may also be selected or sediment basins as an individual practice. Make sure to select the terrace position (middle or bottom of the slope) that best represents the field conditions.
  - d) **Subsurface Drainage** – Choices are either “drained” or “undrained”. The drainage system must be extensive enough to effect the entire RUSLE2 slope length. The effect must change the soil properties by one class (the hydrologic soil group) when in the drained phase. If there is no change in the hydrologic soil group, then select the undrained option (the usual choice in Missouri).

#### Additional Parameters

**SURFACE COVER VALUES** – A listbox is displayed to show the anticipated cover after every field operation in the management section. The values for residue cover after planting may be determined from this listing. The values are listed as whole numbers percentages from 0 to 100.

**GENERAL YIELD LEVEL** – The management files are constructed from a combination of crop and operation files. The basis for the crop files is a set yield level for the state. The general yield level allows a quick adjustment in the state yield to meet local conditions and management. Select “set by user” to change average yields. This adjustment will be used only for proven average yields that are truly different from the normal county yield.