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October 5, 2004

NEW MEXICO AGRONOMY TECHNICAL NOTE NO.28 REVISED

SUBJECT: ECS REVISED UNIVERSAL SOIL LOSS EQUATION Version 2

Purpose: To distribute a revision to Agronomy Technical Note No. 28.

Effective Date: When contents have been noted.

Filing Instructions: Discard when noted.

This is a complete rewrite of this note because the change from RUSLE version 1 (paper version) use up to the end of FY 2004 is a completely different model. The old version used a simple five factor multiplication. RUSLE 2 has been fully implemented in NM and must be run on a computer with the NM databases.

NM generally does not have sheet and rill water erosion rate that exceed T. However, the new model can be used to estimate sediment delivery to the bottom of a given slope. There may be a need to use it for water quality purposes.

The new model **must be run** to establish a Soil Condition Index. This is required to establish a complete resource management system on cropland and hayland.

KENNETH B. LEITING
State Resource Conservationist

Attachment

Dist:
AC (4)
DC (37)
Ecological Sciences Division, Washington, DC (2)
Adjoining States — UT, CO, TX, OK, AZ (1 each)
Technical Services (1 file)

AGRONOMY TECHNICAL NOTE

US DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE
AGRONOMY - 28 Albuquerque, NM
Revised October, 2004

REVISED UNIVERSAL SOIL LOSS EQUATION Version 2

Preface

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Executable Program

The program can be down loaded from the national website at: ftp://fargo.nserl.purdue.edu/pub/RUSLE2/RUSLE2_Program_File/ NRCS staff will not need to down load the program from the site.

There are other useful information listed on the above site.

New Mexico RUSLE 2 Database

NRCS FOs will have a statewide database held on the FOs server in the S:\\RUSLE 2 directory. Staff is reminded that they will need to be sure they "open alternate" and navigate to the FO database. FOs will have permissions to save management files to the "c. Other" directory. Non NRCS staff should use the current database held on the NM NRCS website http://www.nm.nrcs.usda.gov/technical/tech-notes/agro.html

Any questions on file management, crops, and operations should be directed to the State Agronomist. State database management and model management will be done remotely when possible.

About RUSLE 2

RUSLE2 was developed primarily to guide conservation planning, inventory erosion rates and estimate sediment delivery. Values computed by RUSLE2 are supported by accepted scientific knowledge and technical judgment, are consistent with sound principles of conservation planning, and result in good conservation plans. RUSLE2 is also based on additional analysis and knowledge that were not available when RUSLE1 was developed. RUSLE2 is based on science and judgment that is superior to that of RUSLE1. Lessons learned from using RUSLE1 are incorporated into RUSLE2.

RUSLE2 has evolved from a series of previous erosion prediction technologies. The USLE was entirely an empirically based equation and was limited in its application to conditions where experimental data were available for deriving factor values. A major advancement in RUSLE1 was the use of subfactor relationships to compute C factor values from basic features of cover-management systems. While RUSLE1 retained the basic structure of the USLE, process-based relationships were added where empirical data and relationships were inadequate, such as computing the effect of strip cropping for modern conservation tillage systems.

RUSLE2 is another major advancement over RUSLE1. While RUSLE2 uses the USLE basic formulation of the unit plot, the mathematics of RUSLE2 are on a daily basis. Improved cover-management subfactor relationships are used in RUSLE2, a new ridge subfactor has been added, and the deposition equations have been extended to consider sediment characteristics and how deposition changes these characteristics. It includes new relationships for handling residue, including resurfacing of residue by implements like field cultivators.

The major visible change in RUSLE2 is its new, modern graphical user interface. It makes the model easy to use, but is extremely powerful in the information that it displays and the types of situations that it can represent. RUSLE2 is a very powerful model yet it uses very simple, easy to obtain inputs.