REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE)

RUSLE FACTORS
A=RKLSCP
A = Average annual soil loss (tons/acre year)

FACTORS

R = RAIN FALL - RUNOFF EROSIVITY
K = SOIL ERODIBILITY
L = SLOPE LENGTH
S = SLOPE STEEPNESS
C = COVER MANAGEMENT
P = SUPPORTING PRACTICES

* use P=1 until we can issue RUSLE P instructions as per Tim Dodge 5/26/95

COMPILED BY: TIMOTHY DODGE
RESOURCE CONSERVATIONIST
USDA - NRCS
STORRS, CONNECTICUT

REFERENCE: RENARD, K.G., G.R. FOSTER, G.A. WEESIES, D.K. McCOOL, AND D.C. YODER, COORDINATORS. PREDICTING SOIL EROSION BY WATER: A GUIDE TO CONSERVATION PLANNING WITH THE REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE). U.S. DEPARTMENT OF AGRICULTURE, AGRICULTURE HANDBOOK XXX, PP.

RUSLE
RAINFALL FACTOR
R VALUES

CONNECTICUT COUNTIES

FAIRFIELD	155
HARTFORD	140
LITCHFIELD	135
MIDDLESEX	150
NEW HAVEN	155
NEW LONDON	150
TOLLAND	140
WINDHAM	135

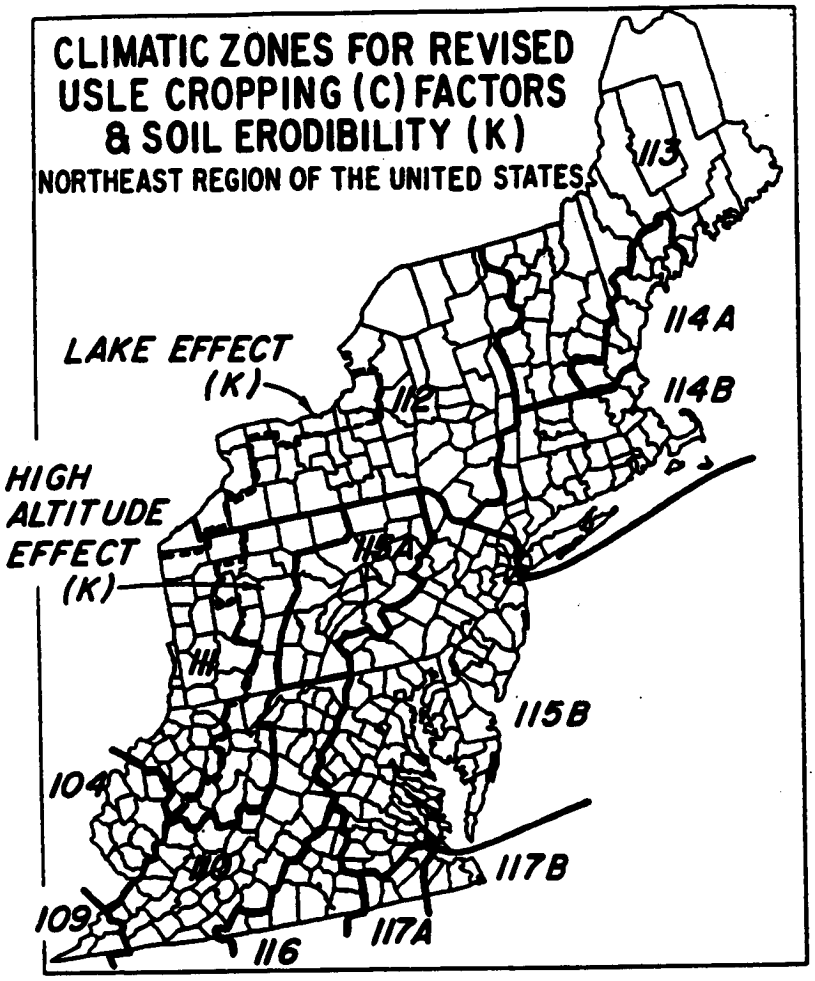
RHODE ISLAND COUNTIES

BRISTOL	135
KENT	140
NEWPORT	140
PROVIDENCE	130
WASHINGTON	150

REFERENCE: NNTC BULLETIN NO. N190-4-9, DATED 9/8/94

RUSLE
EI DISTRIBUTION ZONE

ALL CONNECTICUT AND RHODE ISLAND COUNTIES ARE WITHIN THE EI DISTRIBUTION ZONE OF 114B.



LEGEND

Solid Line - Cropping Factor and Soil Erodibility Climatic Zone

Dashed Line - Soil Erodibility Climatic Zone change

REFERENCE: NNTC BULLETIN NO. N190-5-4, DATED 12/5/94

RUSLE
AVERAGE ANNUAL K FACTORS

EI DISTRIBUTION ZONE: 114B

K	AVERAGE ANNUAL K
.02	.02
.05	.05
.10	.08
.15	.12
.17	.15
.20	.17
.24	.20
.28	.24
.32	.28
.37	.32
.43	.37
.49	.43
.55	.46
.64	.55

PROCEDURE:

1. OBTAIN K FOR EACH SOIL FROM THE K FACTOR COLUMN IN THE INTERPRETIVE GROUPINGS TABLE IN SECTION II OF THE FOTG.

2. FROM THE TABLE ABOVE, READ THE AVERAGE ANNUAL K THAT CORRESPONDS TO THE K FACTOR OBTAINED IN STEP 1. THIS IS THE K VALUE TO USE IN RUSLE.

REFERENCE: NNTC BULLETIN 190-5-4, DATED 12/5/94

RUSLE

LENGTH, SLOPE TABLE FOR ROW CROP CROPLAND

Values for topographic factor, LS, for moderate ratio of rill to interrill erosion.[1]

	Horizontal slope length (ft)													
Slope %	<3	6	9	12	15	25	50	75	100	150	200	250	300	400
0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
0.5	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.10
1.0	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.14	0.14	0.15	0.16	0.17	0.17	0.18
2.0	0.17	0.17	0.17	0.17	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35	0.37
3.0	0.22	0.22	0.22	0.22	0.22	0.25	0.32	0.36	0.39	0.44	0.48	0.52	0.55	0.60
4.0	0.26	0.26	0.26	0.26	0.26	0.31	0.40	0.47	0.52	0.60	0.67	0.72	0.77	0.86
5.0	0.30	0.30	0.30	0.30	0.30	0.37	0.49	0.58	0.65	0.76	0.85	0.93	1.01	1.13
6.0	0.34	0.34	0.34	0.34	0.34	0.43	0.58	0.69	0.78	0.93	1.05	1.16	1.25	1.42
8.0	0.42	0.42	0.42	0.42	0.42	0.53	0.74	0.91	1.04	1.26	1.45	1.62	1.77	2.03
10.0	0.46	0.48	0.50	0.51	0.52	0.67	0.97	1.19	1.38	1.71	1.98	2.22	2.44	2.84
12.0	0.47	0.53	0.58	0.61	0.64	0.84	1.23	1.53	1.79	2.23	2.61	2.95	3.26	3.81
14.0	0.48	0.58	0.65	0.70	0.75	1.00	1.48	1.86	2.19	2.76	3.25	3.69	4.09	4.82
16.0	0.49	0.63	0.72	0.79	0.85	1.15	1.73	2.20	2.60	3.30	3.90	4.45	4.95	5.86
20.0	0.52	0.71	0.85	0.96	1.06	1.45	2.22	2.85	3.40	4.36	5.21	5.97	6.68	7.97
25.0	0.56	0.80	1.00	1.16	1.30	1.81	2.82	3.65	4.39	5.69	6.83	7.88	8.86	10.65
30.0	0.59	0.89	1.13	1.34	1.53	2.15	3.39	4.42	5.34	6.98	8.43	9.76	11.01	13.30
40.0	0.65	1.05	1.38	1.68	1.95	2.77	4.45	5.87	7.14	9.43	11.47	13.37	15.14	18.43
50.0	0.71	1.18	1.59	1.97	2.32	3.32	5.40	7.17	8.78	11.66	14.26	16.67	18.94	23.17
60.0	0.76	1.30	1.78	2.23	2.65	3.81	6.24	8.33	10.23	13.65	16.76	19.64	22.36	27.45

1 Such as for row-cropped agricultural and other moderately consolidated soil conditions with little-to-moderate cover (not applicable to thawing soil)
Reference: Agriculture Handbook No. xxx, Chapter 4, p.128

RUSLE

LENGTH, SLOPE TABLE FOR PASTURE AND HAYLAND

Values for topographic factor, LS, for low ratio of rill to interrill erosion.[1]

	Horizontal slope length (ft)													
Slope %	<3	6	9	12	15	25	50	75	100	150	200	250	300	400
0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
0.5	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09
1.0	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.15	0.15	0.16
2.0	0.20	0.20	0.20	0.20	0.20	0.21	0.23	0.25	0.26	0.27	0.28	0.29	0.30	0.31
3.0	0.26	0.26	0.26	0.26	0.26	0.29	0.33	0.36	0.38	0.40	0.43	0.44	0.46	0.48
4.0	0.33	0.33	0.33	0.33	0.33	0.36	0.43	0.46	0.50	0.54	0.58	0.61	0.63	0.67
5.0	0.38	0.38	0.38	0.38	0.38	0.44	0.52	0.57	0.62	0.68	0.73	0.78	0.81	0.87
6.0	0.44	0.44	0.44	0.44	0.44	0.50	0.61	0.68	0.74	0.83	0.90	0.95	1.00	1.08
8.0	0.54	0.54	0.54	0.54	0.54	0.64	0.79	0.90	0.99	1.12	1.23	1.32	1.40	1.53
10.0	0.60	0.63	0.65	0.66	0.68	0.81	1.03	1.19	1.31	1.51	1.67	1.80	1.92	2.13
12.0	0.61	0.70	0.75	0.80	0.83	1.01	1.31	1.52	1.69	1.97	2.20	2.39	2.56	2.85
14.0	0.63	0.76	0.85	0.92	0.98	1.20	1.58	1.85	2.08	2.44	2.73	2.99	3.21	3.60
16.0	0.65	0.82	0.94	1.04	1.12	1.38	1.85	2.18	2.46	2.91	3.28	3.60	3.88	4.37
20.0	0.68	0.93	1.11	1.26	1.39	1.74	2.37	2.84	3.22	3.85	4.38	4.83	5.24	5.95
25.0	0.73	1.05	1.30	1.51	1.70	2.17	3.00	3.63	4.16	5.03	5.76	6.39	6.96	7.97
30.0	0.77	1.16	1.48	1.75	2.00	2.57	3.60	4.40	5.06	6.18	7.11	7.94	8.68	9.99
40.0	0.85	1.36	1.79	2.17	2.53	3.30	4.73	5.84	6.78	8.37	9.71	10.91	11.99	13.92
50.0	0.91	1.52	2.06	2.54	3.00	3.95	5.74	7.14	8.33	10.37	12.11	13.65	15.06	17.59
60.0	0.97	1.67	2.29	2.86	3.41	4.52	6.63	8.29	9.72	12.16	14.26	16.13	17.84	20.92

1 Such as for pastureland and other consolidated soil conditions with cover (applicable to thawing soil where both interrill and rill erosion are significant).
Reference: Agriculture Handbook No. xxx, Chapter 4, p.127

RUSLE "C" VALUES FOR EI DISTRIBUTION ZONE 114B

REFERS TO CURRENT CROP →	Previous Crop										
	Small Grain				*Row Crops*					*Hay*	
	SP	FP	10%	30%	SP	FP	10%	30%	MA	SP	FP
CURRENT CROP											
BEANS & W/C	.25 —	.30 —	— —	— —	.33 .30	.44 .36	— —	— —	— —	.24 —	.29 —
GRAIN CORN	.20	.32	.16	.08	.17	.27	.11	.08	.12	.10	.20
SILAGE CORN & W/C	.32 .27	.36 —	.26 —	.15 —	.33 .28	.36 —	.26 —	.22 —	.26 .18	.22 .21	.27 —
POTATOES & W/C	.42 .32	.32 —	.44 —	.22 —	.50 .34	.49 —	.44 —	— —	— —	.21 .21	.33 .28

1. Average annual "C" values or rotations are determined by adding individual "C" values and dividing by number of years in rotation For example: The average annual "C" value for a rotation of potatoes, oats, underseeded with 10% cover left after planting potatoes is .44 + .08 = .52 ÷ 2 = .26 .

2. Manure assumes 2-3 ton/acre dry matter applied in spring

Corn Silage "intercropped" with ryegrass following corn silage	.20
Corn Silage "intercropped" with ryegrass following corn silage intercroped with rye grass	.14
Corn Silage "intercropped" with ryegrass following small grain	.18
Corn Silage "intercropped" with ryegrass following Corn silage intercropped with ryegrass with manure	.11
Corn Silage No-Till planted into winter cover	.14

Small grain (following HRC)RR	.15
Small grain (following HRC)	.09
Small grain (s) (following HRC)	.04
Small grain (following LRC)RR	.16
Small grain (following LRC)	.15
Small grain (s) (following LRC)	.08
Broccoli	.27
Broccoli (with tillage after harvest 50% ground	.34

Mixed vegetables	.54
Mixed vegetables with winter cover	.43
Early sweet corn residue mowed and left on surface after harvest	.20
Late sweet corn residue mowed and left on surface after harvest	.27
Early sweet corn stalks left up after harvest	.32
Late sweet corn stalks left up after harvest	.34
Early sweet corn with winter cover	.19
Late sweet corn with winter cover	.16
Early sweet corn after sod	.12
Late sweet corn after sod	.13
Late sweet corn after sod with W/C	.12
Early sweet corn after sod with W/C	.15

Codes: (s) = Underseeded; W/C = Winter cover; 10% and 30% refer to % cover after planting, MA = Manure applied.HRC = High residue crop (grain corn, hay). LRC = Low residue crop (corn silage, potatoes). SP = Spring Plow, FP = Fall Plow. RR = Residue Removed.

Small grain assumes straw left and spring tillage unless indicated differently.
For beans following row crops it is assumed the row crop is a LRC.

"C" Developed with RUSLE SWCS DOS 1.04, 5/94 Orono, Maine
Reviewed and revised 1/95 by James Cropper, NNTC

RUSLE

NO-TILL SILAGE CORN "C"
EI DISTRIBUTION ZONE 114B

CORN SILAGE - No Till Into Well Established Sod	**.09**
CORN SILAGE - No Till Second Year Sod	**.20**
CORN SILAGE - No Till Third Year Or Greater	**.21**

Assumes previous crop for second and third year or greater of no-tilll corn silage is no-till corn silage.

No-till means no-tillage is done including cultivation.

Consolidation of the soil is the major factor that keeps these "C" factors low, not percent ground cover.

REFERENCE: "C" DEVELOPED WITH RUSLE VERSION SWCS 1.04 PRE 0 FEBRUARY, 1995 BY JAMES CROPPER, NNTC CHESTER, PA, AND CHRISTOPHER JONES, NRCS, BANGOR, ME.