Erosion Prediction (USLE)
Used for HEL, NRI, and other Designated Programs
THIS IS NOT CURRENT EROSION PREDICTION TECHNOLOGY

Index Section I - (USLE) Erosion Prediction

Estimating Soil Loss Resulting From Water Erosion (Sheet and Rill)

The Universal Soil Loss Equation (USLE) enables planners to predict the average rate of soil erosion for each feasible alternative combination of crop system and management practices in association with a specific soil type, rainfall pattern, and topography. When these predicted losses are compared with given soil loss tolerances, the USLE provides specific guidelines for effecting erosion control. The equation is expressed as follows:

A = R K L S C P

A = is the computed soil loss per unit area, expressed in the units selected for K and for the period selected for R. In practice, these are usually so selected that they compute A in tons per acre per year.

R = the rainfall and runoff factor, is the number of rainfall erosion index units in an average year's rainfall. "R" values in Iowa are 150 and 175. See Rainfall "R" Factor map (Figure 2), Page 27.

K = the soil-erodibility factor is the soil loss rate per erosion index unit for a specified soil as measured on a unit plot, which is defined as a 72.6 ft. length of uniform 9 percent slope continuously in clean tilled fallow. See Table VI.

L = the slope length factor is the ratio of soil loss from the field slope length to that from a 72.6 foot length under identical conditions.

S = the slope-gradient factor is the ratio of soil loss from the field slope gradient to that from a 9 percent slope under otherwise identical conditions. The slope length and steepness factors are combined into a common factor referred to as the LS factor when using this formula. Obtain "LS" factor from Table II, Page 13.

C = the cover and management factor is the ratio of soil loss from an area with specified cover and management to that from an identical area in tilled continuous fallow. See Table IV a-e, Pages 18-22.

P = the support practice factor P in USLE describes the effect of contour or cross-slope tillage practices on sheet and rill erosion. This factor also considers the effect of other supporting practices including buffer strips, stripcropping, and terracing. See Table III a-d, Pages 14-15.

T = the soil tolerance expressed in tons per acre per year.

Reference: Agriculture Handbook 537, TSC –Technical Note.

The USLE is designed to predict longtime-averages soil losses for specified conditions. To compute the average annual soil loss from a particular field slope, refer to the appropriate charts and tables and select the values of R, K, LS, C, and P that apply to the specific conditions.

The C factor can be obtained from Table IV a-e, Pages 18-22. The P factor can be calculated for contouring and cross-slope farming and modified for stripcropping, terraces, or contour buffer strips.

Table I is calculated to give the predicted average annual soil loss for a given soil, slope, and rainfall factor under a fallow condition. The product of the factors RKLS (C and P factor omitted) gives predicted soil loss without the effect of a growing crop, crop residues, or practice factor.

The predicted average annual soil loss is found by multiplying a CP factor by a fallow soil loss amount from Table I.

"T" is not a part of the Universal Soil Loss Equation. It is a limit of the average annual loss that an acre of the soil of defined characteristics can tolerate per year and still permit a high level of crop productivity to be sustained economically and indefinitely. T factors are listed in Table VI.

DETAILED INSTRUCTIONS – USLE FACTORS

I. RAINFALL AND RUNOFF FACTORS (R)

The numerical value used for R is the soil loss equation quantifies the raindrop impact effect and provides relative information on the amount and rate of runoff likely to be associated with the rain. This factor reflects long term averages over a period of 20 years. The local value of this index may be obtained directly from the map, Figure 2.

II. SOIL ERODIBILITY FACTOR (K)

The soil erodibility factor, K, in the USLE is a quantitative value experimentally determined. Table VI provides a county specific list of K factors.

III. SLOPE LENGTH (L)

Slope length is defined as the distance from the point of origin of overland flow to the point where either the slope gradient decreases enough that deposition begins, or the runoff water enters a ephemeral gully, classical gully, permanent or man made channel considered part of the drainage network. A change in land cover or a substantial change in gradient along a slope does not begin a new slope length for purposes of soil loss estimation.

IV. SLOPE STEEPNESS (S)

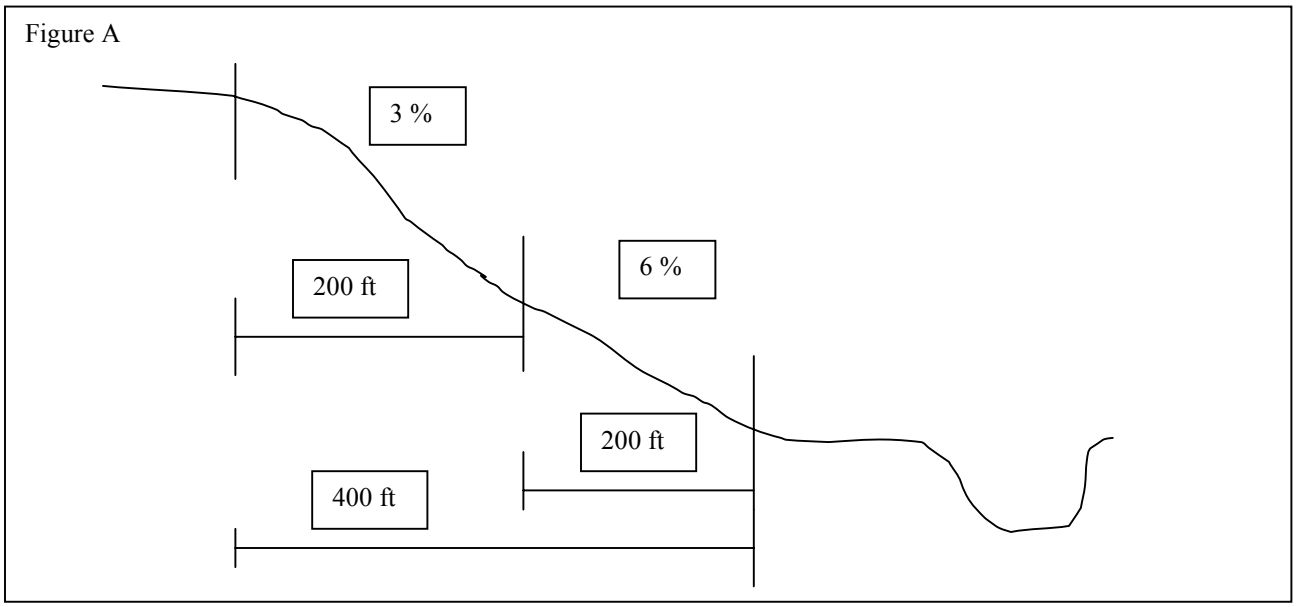
Determine the appropriate percent slope for the slope length being considered. Use this value in the equation. For push up grassed back slope terraces only, reduce the slope steepness by 25 percent. For push up narrow base terraces, reduce the slope steepness by 20 percent. <u>If the terrace is not constructed from borrow immediately below the terraces, do not use these reduction factors</u>.

Determine Slope Length and Steepness

Not all measured slopes will have the same gradient, i.e., from point of origin to point of deposition.

When the lower end of the slope is steeper than the upper end, the gradient of the steeper segment should be used with the overall slope length to plan and apply erosion control practices.

Figure A



In Figure A, the soil loss and treatment needed to reduce soil loss to the T-factor will be based on the entire length of 400 feet with a slope of 6 percent.

Figure B

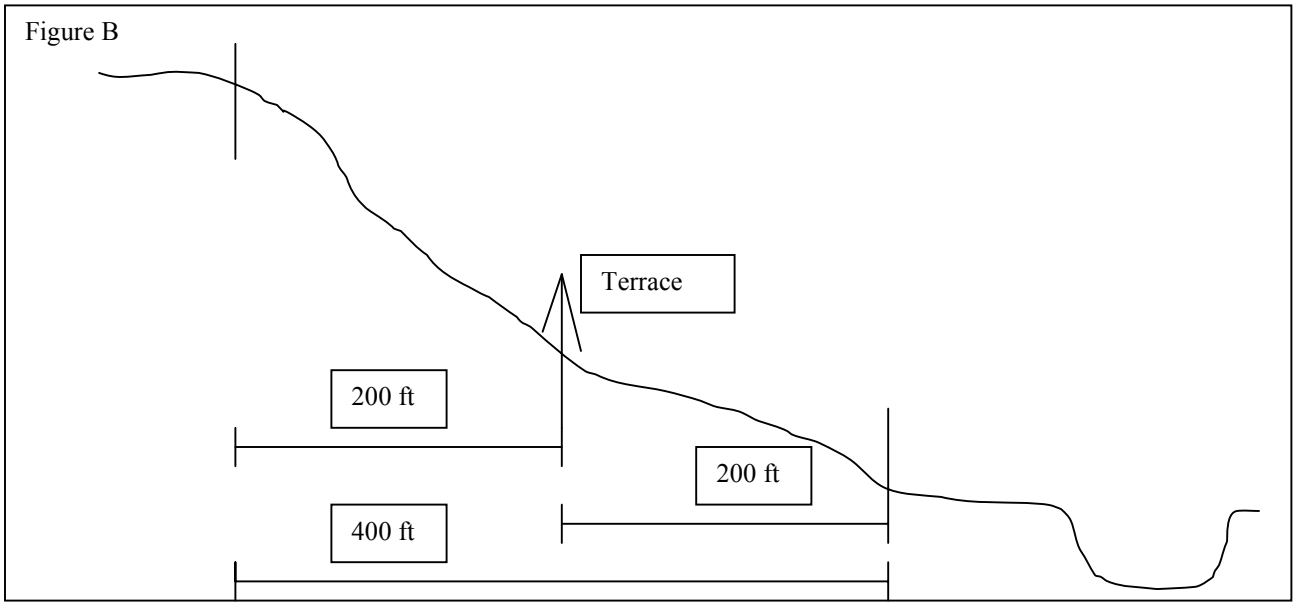


Figure B shows how long slope is reduced to shorter slopes by terracing. The point of origin for the lower 200 foot slope becomes the terrace ridge.

To calculate soil loss on irregular slopes, and changes in soil types on slopes, see instructions on page 16 of Agricultural Handbook Number 537. Once the slope length and steepness have been determined for the area, refer to Table II for the LS ratio to be used in the equation.

V. SUPPORTING PRACTICES FACTOR (P)

The supporting Practice Factor (P) in USLE describes the effect of contour or cross-slope tillage practices on sheet and rill erosion. The factor is based on ridge height, row grade, field slope, and storm intensity (EI). Stripcropping, terraces, and buffer strips annual practice must be calculated by crop and averaged over the years of the rotation where a change in ridge height and row direction occurs.

CONTOURING AND CROSS-SLOPE FARMING

The following method for determining contour P factors can be applied to both contour farming and cross-slope farming. However, the use of the procedure with cross-slope farming should involve careful judgment. The planner should ensure that both the row grade and the downhill slope values accurately describe the predominant critical area used to plan the field or treatment unit.

The predominant critical area is that landscape unit which is the most erosive significant landscape area in the field. Areas in insignificant size, which are eroding at rates exceeding that of the predominant critical area, may be ignored. The planner management system is designed to treat the predominant critical area.

The contour P factor procedure should be used where a significant attempt has been made to contour the field or where a majority of the field is farmed at or near the contour. Where highly dissected slopes or complex topography occur, row grades may differ significantly resulting in a wide range of P values on the various USLE slopes in the field. In these situations, the P factor procedure should not be used, and a P value of 1.0 is appropriate.

A. A contour P Factor can be determined for contour farming as well as cross-slope farming using the following procedure:

1. Determine the 10-year storm EI value for the field location from Figure 1.

2. Using the Contour P Factor Table IIIe for that 10-year storm EI, select the appropriate ridge or oriented roughness height. Guidelines for this selection are:

   a. Low Ridge or Oriented Roughness – Roughness height is 1-3 inches created by tillage and planting equipment as with small grain crops, no-till planting, etc.
   b. Moderate Ridge or Oriented Roughness – Ridge height is 3-5 inches created by tillage, planting, and cultivation equipment as with some row crops.
   c. Ridge System – Ridge height is greater than 5 inches as with ridge-till systems for row crops.

3. Select an appropriate downhill slope L and S and row grade. Read the contour P Factor from Table IIIe.

4. In some crop production systems partial-year contouring credit may be applied for that portion of the year when ridges created by tillage, planting, and/or cultivation are contour or cross-slope.

5. For crop rotation that include ridge or oriented roughness for different height develop a CP value for each crop, calculate the rotation average annual CP, and apply that value in USLE computations. (Example F)

6. Allowable slope length limits as shown in Table IIIa are applicable for contouring, stripcropping, and buffer strips.

Buffer strips, stripcropping, and terraces all modify the P factor. Use the appropriate subfactor listed in Tables IIIb, IIIc, and IIId and make appropriate modification.

BUFFER STRIPS

Buffer strips consist of narrow strips of perennial grasses and legumes. Buffer strips are generally considered permanent but may be moved or rotated when the vegetative stand deteriorates. Credit for buffer strips is accounted for by multiplying the Contour P Factor by the appropriate subfactor listed in Table IIIb. The following formula will be used to calculate buffer strips width:

$$SW = \frac{(\%\ SW)\ (CS)}{1 - \%\ SW}$$

Where SW = buffer strip width
% SW = Percent of slope in grass
and CS = cultivated strip width

STRIPCROPPING

Stripcropping consists of alternating near equal-width strips of row crops with strips of close grown crops or rotation hay. Credit for stripcropping is accounted for by multiplying the Contour P Factor by the appropriate subfactor listed in Table IIIc.

TERRACES

Credit for terraces is accounted for by multiplying the Contour P Factor by the appropriate subfactor listed in Table IIId. Credit for buffer strips or stripcropping may also be applied when these practices are applied within the cropped portion of the individual terrace interval. For stripcropping credit, at least two strips within the terrace interval must be present.

EXAMPLES:

A. Field is in continuous corn and on a contour system that meets 330 Standard. Field slope is 6%, row grade is 0%, and ridge height is moderate. From Table IIIe, Contour P Factor is 0.40.

   This field also has 25 ft. wide buffer strips every 100-ft. (20% of field in buffer strips). Obtain the buffer strip sub-factor from Table IIIb. The Contour P Factor is 0.40 X 0.8 = 0.32.

B. Field is in a corn-soybean-oats rotation. Field slope is 6%, row grade is 2%, and ridge height is moderate. From Table IIIe, P Factor is 0.75.

C. Field is in a conventional tillage corn-soybean-oats rotation and contour system meets 330 Standard. Field slope is 10%, row grade is 0%, and ridge height is low for small grain and moderate for row crops. Contour CP factor for rotation is calculated as follows:

Crop	C	P	CP
Corn	0.36	0.50	0.18
Soybeans	0.27	0.50	0.135
Oats	0.15	0.75	0.1125
			0.5275/3 = 0.17

When the "P" factors varies depending on crop, a weighted CP must be calculated as in examples C and F.

D. Field is in a corn-soybean rotation on a ridge-till system. Field slope is 8% and row grade is 3%. Planting is on May 1 for corn and May 15 for soybeans reducing ridge height to 3 inches. A ridge in excess of 5 inches is rebuilt with cultivation by June 15 for corn and July 1 for soybeans and is maintained until planting the next crop. Refer to Table V for the Percent of Annual Erosion Index Value for EI area #14. P Factor is calculated as follows:

Crop	Dates	Ridge Ht.	Season P	% Annual EI	P x EI
Corn	5/1-6/15	3 inches	0.80	0.17	0.14
	6/15-5/15	6 inches	0.65	0.83	0.54
Soybeans	5/15-7/1	3 inches	0.80	0.26	0.21
	7/1-5/1	5 inches	0.65	0.74	0.48
					1.38/2 = 0.69

E. Field with 10% slope is in continuous corn. Field is fall chisel plowed and spring disked up and down hill. Field is planted May 1st cross slope with 1% row grade. P Factor is calculated as follows:

Crop	Dates	Ridge Ht.	Season P	% Annual EI	P x EI
Corn	11/1-5/1	6 inches	1.0	0.12	0.12
	5/1-11/1	3 inches	0.65	0.88	0.57
					0.69

F. Field is in a Corn-Corn-Small Grain-Hay-Hay-Hay rotation. Field slope is 10%, row grade is 0%, and ridge height is low for small grain and moderate for row crop. Contour CP Factor for rotation is calculated as follows:

Crop	C	P	CP
Corn	0.17	0.50	0.85
Corn	0.30	0.50	0.15
Small Grain	0.10	0.75	0.075
Hay	0.02	1.00	0.02
Hay	0.02	1.00	0.02
Hay	0.02	1.00	0.02
			0.37/6 = 0.06

If this field is contour stripcropping with 50% of the slope in alternate hay strips, Contour CP Factor is 0.06 x 0.5 = 0.03.

G. Field is in a continuous corn rotation and is terraced with broadbase, graded terraces with open outlets. Terrace interval is 120 feet and overall grade including 300 feet at outlet is 0.5%. Field slope is 4% and ridge height is moderate. Contour P Factor is 0.60 x 0.8 = 0.48

H. Field in a corn-soybean rotation is terraced with narrow-based closed outlet terraces. Terrace interval is 150 feet. Field slope is 8%, row grade is 0.5%, and ridge height is moderate. Contour P Factor is 0.60 x 0.7 = 0.42.

VI. COVER AND MANAGEMENT FACTOR (C)

The cover and management factor "C" measures the combined effect of all interrelated cover and management factors.

Tables IVa – IVe can be used to determine annual "C" values based on percent of residue cover, type of tillage, and crop.

Table IVf – IVh can be used to determine "C" values for permanent pasture, idle land, grazed woodland or undisturbed woodland.

Procedure for measuring ground cover and crop residue cover

1. Use any line equally divided and marked into 100 equal parts. Fifty-foot cable transects lines (CAM lines) have been supplied to all offices and are suggested for this purpose.
2. Stretch the line diagonally across the crop rows.
3. Count the number of points that have any residue under them when sighting from directly above one end of the mark. It is important that the same point on each mark be used to insure statistical accuracy. A flag wire may assist in uniform sighting where the soil is ridged.
4. The number of points counted with residue equals percent cover on that field.
5. The same procedure should be repeated at randomly selected spots within the field and data averaged to obtain a representative sample. At least three measurements should be taken.
6. When measuring ground cover on pastureland or woodland, place the line across slope or as nearly on the contour as possible and proceed as in cropland acres.

TABLE 1
RKLS Values
Average Annual Soil Loss from Continuous Fallow
R = 150
Non – Contoured

Slope Length	Slope %	K Values								
		.10	.15	.17	.20	.24	.28	.32	.37	.43
100	2	3.0	4.5	5.1	6.0	7.2	8.4	9.6	11.1	12.9
	3	4.3	6.5	7.3	8.6	10.3	12.0	13.8	15.9	18.5
	4	6.0	9.0	10.2	12.0	14.4	16.8	19.2	22.2	25.8
	5	8.0	12.0	13.6	16.0	19.3	22.5	25.7	29.7	34.5
	6	10.1	15.1	17.1	20.2	24.2	28.2	32.3	37.3	43.4
	7	12.4	18.5	21.0	24.7	29.7	34.6	39.6	45.7	53.4
	8	14.9	22.3	25.3	29.7	35.7	41.6	47.6	55.0	63.9
	9	17.6	26.4	29.9	35.2	42.2	49.3	56.3	65.1	75.6
	10	20.5	30.8	34.9	41.1	49.3	57.5	65.7	76.0	88.3
	11	23.7	35.5	40.3	47.4	56.9	66.3	75.8	87.6	101.9
	12	27.1	40.6	46.0	54.1	64.9	75.8	86.6	100.1	116.3
	13	30.6	45.9	52.1	61.3	73.5	85.8	98.0	113.3	131.7
	14	34.4	51.6	58.5	68.8	82.6	96.3	110.1	127.3	148.0
	15	38.4	57.6	65.3	76.8	92.1	107.5	122.9	142.0	165.1
	16	42.6	63.9	72.4	85.1	102.2	119.2	136.2	157.5	183.1
	17	46.9	70.4	79.8	93.9	112.7	131.4	150.2	173.7	201.9
	18	51.5	77.3	87.6	103.0	123.6	144.2	164.8	190.6	221.5
	19	56.2	84.4	95.6	112.5	135.0	157.5	180.0	208.1	241.9
	20	61.2	91.8	104.0	122.4	146.8	171.3	195.8	226.4	263.1
150	2	3.4	5.1	5.8	6.8	8.2	9.5	10.9	12.6	14.6
	3	4.9	7.3	8.3	9.7	11.7	13.6	15.5	18.0	20.9
	4	7.1	10.6	12.0	14.1	16.9	19.7	22.6	26.1	30.3
	5	9.8	14.7	16.7	19.7	23.6	27.5	31.5	36.4	42.3
	6	12.3	18.5	21.0	24.7	29.6	34.6	39.5	45.7	53.1
	7	15.1	22.7	25.7	30.3	36.3	42.4	48.5	56.0	65.1
	8	18.2	27.3	31.0	36.4	43.7	51.0	58.3	67.4	78.3
	9	21.5	32.3	36.6	43.1	51.7	60.3	68.9	79.7	92.6
	10	25.1	37.7	42.8	50.3	60.4	70.4	80.5	93.0	108.1
	11	29.0	43.5	49.3	58.0	69.6	81.2	92.8	107.3	124.8
	12	33.1	49.7	56.3	66.3	79.5	92.8	106.0	122.6	142.5
	13	37.5	56.3	63.8	75.0	90.0	105.0	120.0	138.8	161.3
	14	42.1	63.2	71.6	84.3	101.1	118.0	134.9	155.9	181.2
	15	47.0	70.5	79.9	94.0	112.8	131.7	150.5	174.0	202.2
	16	52.1	78.2	88.6	104.3	125.1	146.0	166.8	192.9	224.2
	17	57.5	86.2	97.7	115.0	138.0	131.0	184.0	212.7	247.2
	18	63.1	94.6	107.2	126.2	151.4	176.6	201.9	233.4	271.2
	19	68.9	103.3	117.1	137.8	165.3	192.9	220.5	254.9	296.2
	20	74.9	112.4	127.4	149.9	179.8	209.8	239.8	277.2	322.2

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		.10	.15	.17	.20	.24	.28	.32	.37	.43
200	2	3.7	5.6	6.3	7.4	8.9	10.4	11.9	13.7	15.9
	3	5.3	7.9	9.0	10.6	12.7	14.8	16.9	19.6	22.8
	4	7.9	11.9	13.5	15.8	19.0	22.2	25.3	29.3	34.0
	5	11.3	17.0	19.3	22.7	27.2	31.8	36.3	42.0	48.8
	6	14.3	21.4	24.2	28.5	34.2	39.9	45.6	52.8	61.3
	7	17.5	26.2	29.7	35.0	42.0	49.0	56.0	64.7	75.2
	8	21.0	31.5	35.7	42.1	50.5	58.9	67.3	77.8	90.4
	9	24.9	37.3	42.3	49.8	59.7	69.7	79.6	92.1	107.0
	10	29.0	43.6	49.4	58.1	69.7	81.3	92.9	107.4	124.9
	11	33.5	50.3	57.0	67.0	80.4	93.8	107.2	124.0	144.1
	12	38.3	57.4	65.0	76.5	91.8	107.1	122.4	141.6	164.5
	13	43.3	65.0	73.6	86.6	104.0	121.3	138.6	160.3	186.3
	14	48.7	73.0	82.7	97.3	116.8	136.3	155.7	180.1	209.3
	15	54.3	81.4	92.3	108.6	130.3	152.0	173.7	200.9	233.5
	16	60.2	90.3	102.3	120.4	144.5	168.6	192.6	222.8	258.9
	17	66.4	99.6	112.9	132.8	159.3	185.9	212.4	245.6	285.5
	18	72.8	109.3	123.8	145.7	174.8	203.9	233.1	269.5	313.2
	19	79.5	119.3	135.2	159.1	190.9	2222.7	254.6	294.3	342.1
	20	86.5	129.8	147.1	173.0	207.6	242.2	276.9	320.1	372.0
250	2	4.0	5.9	6.7	7.9	9.5	11.1	12.7	14.7	17.0
	3	5.7	8.5	9.6	11.3	13.6	15.9	18.1	21.0	24.4
	4	8.7	13.0	14.7	17.3	20.8	24.2	27.7	32.0	37.2
	5	12.7	19.0	21.6	25.4	30.5	35.5	40.6	46.9	54.6
	6	15.9	23.9	27.1	31.9	38.3	44.6	51.0	59.0	68.6
	7	19.6	29.3	33.2	39.1	46.9	54.7	62.6	72.3	84.1
	8	23.5	35.3	40.0	47.0	56.4	65.8	75.2	87.0	101.1
	9	27.8	41.7	47.3	55.6	66.8	77.9	89.0	102.9	119.6
	10	32.5	48.7	55.2	64.9	77.9	90.9	103.9	120.1	139.6
	11	37.5	56.2	63.7	74.9	89.9	104.9	119.9	138.6	161.1
	12	42.8	64.2	72.7	85.6	102.7	119.8	136.9	158.3	183.9
	13	48.4	72.6	82.3	96.9	116.2	135.6	155.0	179.2	208.3
	14	54.4	81.6	92.5	108.8	130.6	152.3	174.1	201.3	234.0
	15	60.7	91.1	103.2	121.4	145.7	170.0	194.2	224.6	261.0
	16	67.3	101.0	114.4	134.6	161.5	188.5	215.4	249.0	289.4
	17	74.2	111.3	126.2	148.4	178.1	207.8	237.5	274.6	319.2
	18	81.4	122.2	138.4	162.9	195.4	228.0	260.6	301.3	350.2
	19	88.9	133.4	151.2	177.9	213.5	249.0	284.6	329.1	382.4
	20	96.7	145.1	164.4	193.5	232.1	270.8	309.5	357.9	415.9

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		.10	.15	.17	.20	.24	.28	.32	.37	.43
300	2	4.2	6.3	7.1	8.4	10.0	11.7	13.4	15.5	18.0
	3	6.0	9.0	10.2	12.0	14.4	16.7	19.1	22.1	25.7
	4	9.3	14.0	15.8	18.6	22.3	26.1	29.8	34.4	40.0
	5	13.9	20.8	23.6	27.8	33.4	38.9	44.5	51.4	59.8
	6	17.5	26.2	29.7	34.9	41.9	48.9	55.9	64.6	75.1
	7	21.4	32.1	26.4	42.8	51.4	60.0	68.5	79.2	92.1
	8	25.8	38.6	43.8	51.5	61.8	72.1	82.4	95.3	110.7
	9	30.5	45.7	51.8	60.9	73.1	85.3	97.5	112.7	131.0
	10	35.6	53.3	60.5	71.1	85.4	99.6	113.8	131.6	152.9
	11	41.0	61.5	69.8	82.1	98.5	114.9	131.3	151.8	176.4
	12	46.9	70.3	79.7	93.7	112.5	131.2	150.0	173.4	201.5
	13	53.1	79.6	90.2	106.1	127.3	148.5	169.8	196.3	228.1
	14	59.6	89.4	101.3	119.2	143.0	166.9	190.7	220.5	256.3
	15	66.5	99.7	113.0	133.0	159.6	186.2	212.8	246.0	285.9
	16	73.7	110.6	125.3	147.5	177.0	206.5	235.9	272.8	317.1
	17	81.3	122.0	138.2	162.6	195.1	227.7	260.2	300.8	349.6
	18	89.2	133.8	151.7	178.4	214.1	249.8	285.5	330.1	383.6
	19	97.4	146.1	135.6	194.9	233.8	272.8	311.8	360.5	418.9
	20	106.0	158.9	180.1	211.9	254.3	296.7	339.1	392.1	455.6
400	2	4.6	6.8	7.8	9.1	11.0	12.8	14.6	16.9	19.6
	3	6.5	9.8	11.1	13.0	15.7	18.3	20.9	24.1	28.0
	4	10.4	15.7	17.8	20.9	25.1	29.2	33.4	38.6	44.9
	5	16.0	24.1	27.3	32.1	38.5	44.9	51.4	59.4	69.0
	6	20.2	30.2	34.3	40.3	48.4	56.5	64.5	74.6	86.7
	7	24.7	37.1	42.0	49.5	59.4	69.2	79.1	91.5	106.3
	8	29.7	44.6	50.6	59.5	71.4	83.3	95.2	110.0	127.9
	9	35.2	52.8	59.8	70.4	84.4	98.5	112.6	130.2	151.3
	10	41.1	61.6	69.8	82.1	98.6	115.0	131.4	151.9	176.6
	11	47.4	71.1	80.5	94.8	113.7	132.7	151.6	175.3	203.7
	12	54.1	81.2	92.0	108.2	129.9	151.5	173.2	200.2	232.7
	13	61.3	91.9	104.1	122.5	147.0	171.5	196.0	226.7	263.4
	14	68.8	103.2	117.0	137.6	165.2	192.7	220.2	254.6	295.9
	15	76.8	115.2	130.5	153.6	184.3	215.0	245.7	284.1	330.2
	16	85.1	127.7	144.7	170.3	204.3	238.4	272.4	315.0	366.1
	17	93.9	140.8	159.6	187.8	225.3	262.9	300.4	347.4	403.7
	18	103.0	154.5	175.1	206.0	247.2	288.4	329.6	381.1	442.9
	19	112.5	168.7	191.2	225.0	270.0	315.0	360.0	416.2	483.7
	20	122.4	183.5	208.0	244.7	293.6	342.6	391.5	452.7	526.1

TABLE 1
RKLS Values
Average Annual Soil Loss from Continuous Fallow
R = 175
Non – Contoured

Slope Length	Slope %	K Values								
		.10	.15	.17	.20	.24	.28	.32	.37	.43
100	2	3.5	5.3	6.0	7.0	8.4	9.8	11.2	13.0	15.1
	3	5.0	7.5	8.5	10.0	12.0	14.1	16.1	18.6	21.6
	4	7.0	10.5	11.9	14.0	16.8	19.6	22.4	25.9	30.1
	5	9.4	14.0	15.9	18.7	22.5	26.2	30.0	34.6	40.3
	6	11.8	17.6	20.0	23.5	28.2	32.9	37.6	43.5	50.6
	7	14.4	21.6	24.5	28.9	34.6	40.4	46.2	53.4	62.0
	8	17.3	26.0	29.5	34.7	41.6	48.6	55.5	64.2	74.6
	9	20.5	30.8	34.9	41.0	49.3	57.5	65.7	75.9	88.3
	10	24.0	35.9	40.7	47.9	57.5	67.1	76.7	88.6	103.0
	11	27.6	41.5	47.0	55.3	66.3	77.4	88.4	102.3	118.8
	12	31.6	47.3	53.7	63.1	75.8	88.4	101.0	116.8	135.7
	13	35.7	53.6	60.7	71.5	85.8	10.1	114.4	132.2	153.7
	14	40.1	60.2	68.2	80.3	96.3	112.4	128.5	148.5	172.6
	15	44.8	67.2	76.1	89.6	107.5	125.4	143.3	165.7	192.6
	16	49.7	74.5	84.4	99.3	119.2	139.1	158.9	183.8	213.6
	17	54.8	82.1	93.1	109.5	131.4	153.3	175.3	202.6	235.5
	18	60.1	90.1	102.1	120.2	144.2	168.2	192.3	2222.3	258.4
	19	65.6	98.4	111.6	131.2	157.5	183.7	210.0	242.8	282.2
	20	71.4	107.1	121.3	142.7	171.3	199.8	228.4	264.1	306.9
150	2	4.0	6.0	6.7	7.9	9.5	11.1	12.7	14.7	17.1
	3	5.7	8.5	9.6	11.3	13.6	15.9	18.1	21.0	24.4
	4	8.2	12.3	14.0	16.5	19.7	23.0	26.3	30.4	35.4
	5	11.5	17.2	19.5	22.9	27.5	32.1	36.7	42.4	49.3
	6	14.4	21.6	24.5	28.8	34.6	40.3	46.1	53.3	62.0
	7	17.7	26.5	30.0	35.3	42.4	49.5	56.5	65.4	76.0
	8	21.2	31.9	36.1	42.5	21.0	59.5	68.0	78.6	91.4
	9	25.1	37.7	42.7	50.3	60.3	70.4	80.4	93.0	108.1
	10	29.3	44.0	49.9	58.7	70.4	82.1	93.9	108.6	126.2
	11	33.8	50.8	57.5	67.7	81.2	94.8	108.3	125.2	145.5
	12	38.7	58.0	65.7	77.3	92.8	108.2	123.7	143.0	166.2
	13	43.8	65.6	74.4	87.5	105.0	122.5	140.1	161.9	188.2
	14	49.2	73.8	83.6	98.3	118.0	137.7	157.3	181.9	211.4
	15	54.9	82.3	93.3	109.7	131.7	153.6	175.5	203.0	235.9
	16	60.8	91.2	103.4	121.7	146.0	170.3	194.6	225.1	261.6
	17	67.1	100.6	114.0	134.1	161.0	187.8	214.6	248.2	288.4
	18	73.6	110.4	125.1	147.2	176.6	206.1	235.5	272.3	316.4
	19	80.4	120.6	136.6	160.7	192.9	225.0	257.2	297.4	345.6
	20	87.4	131.1	148.6	174.8	209.8	244.8	279.7	323.4	375.9

TABLE 1
RKLS Values
Average Annual Soil Loss from Continuous Fallow
R = 175
Non – Contoured

Slope Length	Slope %	K Values								
		.10	.15	.17	.20	.24	.28	.32	.37	.43
200	2	4.3	6.5	7.4	8.6	10.4	12.1	13.8	16.0	18.6
	3	602	9.3	10.5	12.4	14.8	17.3	19.8	22.9	26.6
	4	9.2	13.8	15.7	18.5	22.2	25.8	29.5	34.2	39.7
	5	13.2	19.9	22.5	26.5	31.8	37.1	42.4	49.0	56.9
	6	16.6	25.0	28.3	33.3	39.9	46.6	53.2	61.6	71.5
	7	20.4	30.6	34.7	40.8	49.0	57.1	65.3	75.5	87.7
	8	34.5	36.8	41.7	49.1	58.9	68.7	78.5	90.8	105.5
	9	29.0	43.5	49.3	58.1	69.7	81.3	92.9	107.4	124.8
	10	33.9	50.8	57.6	67.8	81.3	94.9	108.4	125.3	145.7
	11	39.1	58.6	66.4	78.2	93.8	109.4	125.1	144.6	168.1
	12	44.6	67.0	75.9	89.3	107.1	125.0	142.8	165.2	191.9
	13	50.5	75.8	85.9	101.1	121.3	141.5	161.7	187.0	217.3
	14	56.8	85.2	96.5	113.5	136.3	159.0	181.7	210.1	244.1
	15	63.3	95.0	107.7	126.7	152.0	177.4	202.7	234.4	272.4
	16	70.2	105.4	119.4	140.5	168.6	196.7	224.8	259.9	302.0
	17	77.5	116.2	131.7	154.9	185.9	216.9	247.8	286.6	333.0
	18	85.0	127.5	144.5	170.0	203.9	237.9	271.9	314.4	365.4
	19	92.8	139.2	157.8	185.6	222.7	259.9	297.0	343.4	399.1
	20	100.9	151.4	171.6	201.9	242.2	282.6	323.0	373.5	434.0
250	2	4.6	6.9	7.9	9.2	11.1	12.9	14.8	17.1	19.9
	3	6.6	9.9	11.2	13.2	15.9	18.5	21.1	24.4	28.4
	4	10.1	15.1	17.2	20.2	24.2	28.3	32.3	37.3	43.4
	5	14.8	22.2	25.2	29.6	35.5	41.4	47.4	54.8	63.7
	6	18.6	27.9	31.6	37.2	44.6	52.1	59.5	68.6	80.0
	7	22.8	34.2	38.8	45.6	54.7	63.9	73.0	84.4	98.1
	8	27.4	41.1	46.6	54.9	65.8	76.8	87.8	101.5	117.9
	9	32.5	48.7	55.2	64.9	77.9	90.9	103.8	120.1	139.5
	10	37.9	56.8	64.4	75.8	90.9	106.1	121.2	140.1	162.9
	11	43.7	65.5	74.3	87.4	104.9	122.4	139.8	161.7	187.9
	12	49.9	74.9	94.8	99.8	119.8	139.7	159.7	184.7	214.6
	13	56.5	84.8	96.1	113.0	135.6	158.2	180.8	209.1	243.0
	14	63.5	95.2	107.9	127.0	152.3	177.7	203.1	234.9	272.9
	15	70.8	106.2	120.4	141.6	170.0	198.3	226.6	262.0	304.5
	16	78.5	117.8	133.5	157.1	188.5	219.9	251.3	290.6	337.7
	17	86.6	129.9	147.2	173.2	207.8	242.5	277.1	320.4	372.3
	18	95.0	142.5	161.5	190.0	228.0	266.0	304.0	351.5	408.5
	19	103.8	155.6	176.4	207.5	249.0	290.5	332.0	383.9	446.2
	20	112.9	169.3	191.8	225.7	270.8	316.0	361.1	417.5	485.3

TABLE 1
RKLS Values
Average Annual Soil Loss from Continuous Fallow
R = 175
Non – Contoured

Slope Length	Slope %	K Values								
		.10	.15	.17	.20	.24	.28	.32	.37	.43
300	2	4.9	7.3	8.3	9.8	11.7	13.7	15.6	18.1	21.0
	3	7.0	10.5	11.9	14.0	16.7	19.5	22.3	25.8	30.0
	4	10.9	16.3	18.5	21.7	26.1	30.4	34.7	40.2	46.7
	5	16.2	24.3	27.6	32.4	38.9	45.4	51.9	60.0	69.7
	6	20.4	30.6	34.6	40.7	48.9	57.0	65.2	75.4	87.6
	7	25.0	37.5	42.5	50.0	60.0	70.0	80.0	92.4	107.4
	8	30.0	45.1	51.1	60.1	72.1	84.1	96.1	111.2	129.2
	9	35.5	53.3	60.4	71.1	85.3	99.5	113.8	131.5	152.9
	10	41.5	62.2	70.5	83.0	99.6	116.2	132.8	153.5	178.4
	11	47.9	71.8	81.4	95.7	114.9	134.0	153.2	177.1	205.8
	12	54.7	82.0	92.9	109.3	131.2	153.1	174.9	202.3	235.1
	13	61.9	92.8	105.2	123.8	148.5	173.3	198.1	229.0	266.1
	14	69.5	104.3	118.2	139.1	166.9	194.7	222.5	257.3	299.0
	15	77.6	116.4	131.9	155.2	186.2	217.2	248.3	287.0	333.6
	16	86.0	129.0	146.2	172.0	206.5	240.9	275.3	318.3	369.9
	17	94.9	142.3	161.3	189.7	227.7	265.6	303.5	351.0	407.9
	18	104.1	156.1	176.9	208.1	249.8	291.4	333.0	385.1	447.5
	19	113.7	170.5	193.2	227.3	272.8	318.3	363.7	420.6	488.8
	20	123.6	185.4	210.2	247.2	296.7	346.1	395.6	457.4	531.6
400	2	5.3	8.0	9.1	10.6	12.8	14.9	17.0	19.7	22.9
	3	7.6	11.4	12.9	15.2	18.3	21.3	24.3	28.1	32.7
	4	12.2	18.3	20.7	24.4	29.2	34.1	39.0	45.1	52.4
	5	18.7	28.1	31.8	37.4	44.9	52.4	59.9	69.3	80.5
	6	23.5	35.3	40.0	47.1	56.5	65.9	75.3	87.0	101.2
	7	28.9	43.3	49.0	57.7	69.2	80.8	92.3	106.7	124.1
	8	34.7	52.0	59.0	69.4	83.3	97.1	111.0	128.4	149.2
	9	41.0	61.6	69.8	82.1	98.5	114.9	131.4	151.9	176.5
	10	47.9	71.9	81.4	95.8	115.0	134.1	153.3	177.3	206.0
	11	55.3	82.9	94.0	110.5	132.7	154.8	176.9	204.5	237.7
	12	63.1	94.7	107.3	126.3	151.5	176.8	202.0	233.6	271.5
	13	71.5	107.2	121.5	142.9	171.5	200.1	228.7	264.4	307.3
	14	80.3	120.4	136.5	160.6	192.7	224.8	256.9	297.4	345.2
	15	89.6	134.4	152.3	179.2	215.0	250.8	286.7	331.4	385.2
	16	99.3	149.0	168.9	198.7	238.4	278.1	317.9	367.5	427.1
	17	109.5	164.3	186.2	219.1	262.9	306.7	350.5	405.3	471.0
	18	120.2	180.3	204.3	240.3	288.4	336.5	384.6	444.6	516.8
	19	131.2	196.9	223.1	262.5	315.0	367.5	420.0	485.6	564.4
	20	142.7	214.1	242.7	285.5	342.6	399.7	456.8	528.2	613.8

Table II – Universal Soil Loss Equation
Values of the Topographic Factor, LS, for Specific Combinations of Slope Length and Steepness

Slope Length (Feet)	Percent of Slope																				
	.2	.5	.8	1.0	2.0	3	4	5	6	8	10	12	14	16	18	20	25	30	40	50	60
25	.06	.07	.09	.09	.13	.19	.23	.27	.34	.50	.68	.90	1.15	1.42	1.72	2.04	2.94	3.98	6.33	8.91	11.58
50	.07	.08	.10	.10	.16	.23	.30	.38	.48	.70	.97	1.28	1.62	2.01	2.43	2.88	4.16	5.62	8.95	12.60	16.37
75	.07	.09	.11	.12	.18	.26	.36	.46	.58	.86	1.19	1.56	1.99	2.46	2.97	3.53	5.10	6.89	10.96	15.44	20.05
100	.08	.10	.11	.13	.20	.29	.40	.53	.67	.99	1.37	1.80	2.29	2.84	3.43	4.08	5.89	7.95	12.65	17.82	23.15
125	.08	.10	.12	.14	.21	.31	.44	.60	.75	1.11	1.53	2.02	2.56	3.17	3.84	4.56	6.59	8.89	14.15	19.93	25.88
150	.09	.10	.12	.15	.23	.32	.47	.66	.82	1.21	1.68	2.21	2.81	3.48	4.21	5.00	7.21	9.74	15.50	21.83	28.35
175	.09	.11	.13	.15	.24	.34	.50	.71	.89	1.31	1.81	2.39	3.03	3.75	4.54	5.40	7.79	10.52	16.74	23.58	30.63
200	.09	.11	.13	.16	.25	.35	.53	.76	.95	1.40	1.94	2.55	3.24	4.01	4.86	5.77	8.33	11.25	17.89	25.21	32.74
225	.09	.11	.13	.16	.26	.37	.55	.80	1.01	1.49	2.05	2.71	3.44	4.26	5.15	6.12	8.83	11.93	18.98	26.73	34.73
250	.10	.11	.14	.17	.26	.38	.58	.85	1.06	1.57	2.16	2.85	3.63	4.49	5.43	6.45	9.31	12.57	20.01	28.18	36.60
275	.10	.12	.14	.17	.27	.39	.60	.89	1.11	1.64	2.27	2.99	3.80	4.71	5.69	6.76	9.77	13.19	20.98	29.56	38.39
300	.10	.12	.14	.18	.28	.40	.62	.93	1.16	1.72	2.37	3.12	3.97	4.92	5.95	7.06	10.20	13.77	21.91	30.87	40.10
350	.10	.12	.14	.19	.29	.42	.66	1.00	1.26	1.85	2.56	3.37	4.29	5.31	6.42	7.63	11.02	14.88	23.67	33.34	43.31
400	.10	.13	.15	.20	.30	.43	.70	1.07	1.34	1.98	2.74	3.61	4.59	5.68	6.87	8.16	11.78	15.91	25.30	35.65	46.30
500	.11	.13	.16	.21	.33	.46	.76	1.20	1.50	2.22	3.06	4.03	5.13	6.35	7.68	9.12	13.17	17.78	28.29	39.85	51.77
600	.11	.14	.16	.22	.34	.49	.82	1.31	1.65	2.43	3.35	4.42	5.62	6.95	8.41	9.99	14.43	19.48	30.99	43.66	56.71
700	.12	.14	.17	.23	.36	.51	.87	1.42	1.78	2.62	3.62	4.77	6.07	7.51	9.08	10.79	15.58	21.04	33.48	47.16	61.25
800	.12	.14	.17	.24	.37	.54	.92	1.51	1.90	2.80	3.87	5.10	6.49	8.03	9.71	11.54	16.66	22.49	35.79	50.41	65.48
900	.12	.15	.17	.25	.39	.55	.96	1.60	2.02	2.97	4.11	5.41	6.88	8.51	10.30	12.24	17.67	23.86	37.96	53.47	69.45
1000	.13	.15	.18	.26	.40	.57	1.00	1.69	2.13	3.13	4.33	5.70	7.25	8.97	10.86	12.90	18.63	25.15	40.01	56.36	73.21
1100	.13	.15	.18	.26	.41	.59	1.04	1.77	2.23	3.29	4.54	5.98	7.61	9.41	11.39	13.53	19.53	26.38	41.96	59.11	76.78
1200	.13	.16	.19	.27	.42	.60	1.08	1.85	2.33	3.43	4.74	6.25	7.95	9.83	11.89	14.13	20.40	27.55	43.83	61.74	80.20

1/ LS values for slopes greater than 20 percent and/or slopes exceeding 1000 feet are speculative.

Table IIIa - Slope Length Limits

		Stripcropping and Buffer Strips	
% Slope	Contouring [1, 3]	Strip Width [2]	Total Land Slope [1, 3]
1 – 2 %	400 ft	130 ft	800 ft
3 - 5 %	300 ft	100 ft	600 ft
6 – 8 %	200 ft	100 ft	400 ft
9 – 12 %	120 ft	80 ft	240 ft
13 – 16 %	80 ft	80 ft	160 ft
17 – 20 %	60 ft	60 ft	120 ft
21 – 25 %	50 ft	50 ft	100 ft

[1/] Limit may be increased by 25% if residue cover after planting is 50% or greater.
[2/] Limits width of row cropped strip for stripcropping and buffer strips.
[3/] Where allowable slope length values are exceeded adjust the P factor as follows:

$$\text{Adjusted P} = \frac{(\text{allowable slope length} \times P) + (\text{slope length} > \text{allowable} \times 1)}{\text{Total Slope Length}}$$

Table IIIb – Buffer Strips P Subfactor

% of Slope in Grass	Subfactor
10	0.9
20	0.8
30	0.7
40	0.6
50	0.5

Table IIIc – Stripcropping P Subfactors

% Rotation in Meadow	Subfactor
50%	0.50
33%	0.67
25%	0.75
0%	1.00

Table IIId – Terrace P Subfactors

		Open Outlets with Channel Grade [2/]		
Horizontal Interval in Feet	**Closed Outlet [1/]**	**0.1 – 0.3**	**0.4 – 0.7**	**0.8**
Less than 100	0.5	0.6	0.7	1.0
100 – 140	0.6	0.7	0.8	1.0
140 – 180	0.7	0.8	0.9	1.0
180 – 225	0.8	0.8	0.9	1.0
225 – 300	0.9	0.9	1.0	1.0
Over 300	1.0	1.0	1.0	1.0

[1/] Subfactor for closed outlet terraces also applies to terraces with underground outlets and level terraces with open outlets.

[2/] The channel grade is measured on the 300 feet of terrace or the one-third of total terrace length closest to the outlet, whichever distance is less.

10 Year EI - 80 "P" Factor Tables IIIe

Table 1 **Contour P Factor Values** **Low (1-3") Ridge or oriented roughness height**

10 year EI = 80 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.85	0.90	0.95	0.95	1.00												
4	0.75	0.85	0.90	0.90	0.95	0.95	0.95	1.00									
6	0.70	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	0.95	1.00						
8	0.70	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00					
10	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00			
12	0.80	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00		
14	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00		
16	1.00																

Table 2 **Contour P Factor Values** **Moderate (3-5") Ridge or oriented roughness height**

10 year EI = 80 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.50	0.75	0.85	0.95	1.00													
4	0.40	0.60	0.70	0.75	0.80	0.85	0.90	0.95	1.00									
6	0.40	0.55	0.65	0.70	0.75	0.80	0.80	0.85	0.90	0.95	1.00							
8	0.45	0.60	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.90	0.90	0.95	1.00					
10	0.50	0.60	0.65	0.70	0.70	0.75	0.75	0.80	0.80	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.50	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.90	0.90	0.95	0.95	1.00		
14	0.55	0.65	0.65	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	1.00	
16	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.95	0.95	1.00
18	0.65	0.70	0.75	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00
20	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00
22	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
24	1.00																	

Table 3 Contour P Factor Values Ridge Systems with ridge height > = 6”

10 year EI = 80

Downhill Slope	Row Grade (Percent)																	
	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.35	0.70	0.80	0.90	1.00													
4	0.20	0.50	0.60	0.70	0.75	0.85	0.90	1.00										
6	0.15	0.40	0.50	0.60	0.65	0.70	0.75	0.85	0.90	1.00								
8	0.15	0.35	0.45	0.50	0.60	0.65	0.65	0.75	0.80	0.90	1.00							
10	0.20	0.35	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.20	0.35	0.40	0.50	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.95	1.00					
14	0.20	0.35	0.40	0.45	0.50	0.55	0.55	0.65	0.70	0.70	0.80	0.85	0.95	1.00				
16	0.25	0.35	0.45	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.85	0.90	0.95	1.00			
18	0.30	0.40	0.45	0.50	0.50	0.55	0.60	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00		
20	0.35	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0.95	1.00	
22	0.45	0.50	0.55	0.60	0.60	0.60	0.65	0.65	0.70	0.75	0.75	0.80	0.85	0.90	0.90	0.95	0.95	1.00
24	0.55	0.60	0.60	0.65	0.65	0.70	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
30	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95
33	1.00																	

10 Year EI - 100 "P" Factor Tables IIIe

Table 1 **Contour P Factor Values** **Low (1-3") Ridge or oriented roughness height**

10 year EI = 100 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
0	1.00																
2	0.90	0.95	0.95	1.00													
4	0.85	0.90	0.90	0.95	0.95	0.95	0.95	1.00									
6	0.80	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00							
8	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00					
10	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.00				
12	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
14	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00				
16	1.00																

Table 2 **Contour P Factor Values** **Moderate (3-5") Ridge or oriented roughness height**

10 year EI = 100 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	18.00
0	1.00																	
2	0.60	0.80	0.90	0.95	1.00													
4	0.45	0.65	0.75	0.80	0.85	0.90	0.90	0.95	1.00									
6	0.45	0.60	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.95	1.00							
8	0.50	0.65	0.70	0.70	0.75	0.80	0.80	0.85	0.85	0.90	0.95	0.95	1.00					
10	0.55	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00			
12	0.60	0.70	0.70	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00		
14	0.60	0.70	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00	
16	0.65	0.70	0.75	0.75	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	1.00
18	0.75	0.75	0.80	0.80	0.80	0.85	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	1.00
20	0.85	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	1.00
22	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00			
24	1.00																	

Table 3 **Contour P Factor Values** **Ridge Systems with ridge height > = 6”**

10 year EI = 100 Row Grade (Percent)

Downhill Slope	0.00	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	24.00
0	1.00																	
2	0.45	0.75	0.85	0.90	1.00													
4	0.25	0.50	0.60	0.70	0.80	0.85	0.90	1.00										
6	0.20	0.45	0.50	0.60	0.65	0.70	0.75	0.85	0.95	1.00								
8	0.20	0.40	0.50	0.55	0.60	0.65	0.70	0.75	0.85	0.90	1.00							
10	0.20	0.40	0.50	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90	1.00						
12	0.25	0.40	0.45	0.50	0.55	0.60	0.60	0.65	0.75	0.75	0.85	0.95	1.00					
14	0.25	0.40	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00				
16	0.30	0.40	0.45	0.50	0.55	0.55	0.60	0.65	0.70	0.70	0.80	0.85	0.90	0.95	1.00			
18	0.35	0.45	0.50	0.55	0.55	0.60	0.60	0.65	0.70	0.70	0.80	0.85	0.90	0.90	0.95	1.00		
20	0.40	0.50	0.55	0.60	0.60	0.60	0.65	0.70	0.70	0.75	0.80	0.85	0.85	0.90	0.95	0.95	1.00	
22	0.50	0.60	0.60	0.65	0.65	0.65	0.70	0.70	0.75	0.75	0.80	0.85	0.85	0.90	0.90	0.95	0.95	1.00
24	0.60	0.65	0.70	0.70	0.70	0.75	0.75	0.75	0.80	0.80	0.85	0.85	0.90	0.90	0.90	0.95	0.95	1.00
30	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00
33	1.00																	

Table IVa – C Factors for Cropland (Single Year)
Mulch tillage (Fall Primary Tillage)
E.I. Curve - #14

Crop Sequence	% Cover After Planting					
	20	30	40	50	60	70
Alfalfa (clear seeded) after:						
Corn	.18	.16	.14	.12	---	---
Soybean	.27	.23	.21	---	---	---
CORN after:						
Corn	.21	.18	.15	.12	.09	08
Corn silage	.37	----	----	----	----	----
Soybeans	.34	.29	.24	----	----	----
Small grain	.20	.18	.15	.13	----	----
Meadow (1st year) [1/]	.12	.11	.09	.07	----	----
Meadow (2nd year) [1/]	.19	.16	.13	.10	----	----
Corn Silage after:						
Corn	----	.25	----	----	----	----
Small grain (winter) after:						
Corn silage [2/]	.12	----	----	----	----	----
Soybeans	.14	.13	.09	----	----	----
Small grain	.11	.10	.09	.07	----	----
Small grain (spring) after:						
Corn [3/]	.08	.07	.06	.05	----	----
Corn (Silage) [2/]	.10	----	----	----	----	----
Soybeans	.09	.08	.07	.06	----	----
Small grain	----	----	----	----	----	----
SOYBEANS: (narrow row < 20 in) after:						
Corn	.18	.16	.13	.12	.11	.10
Corn 2 yrs after meadow	.16	.13	.11	.10	----	----
Soybeans	.31	.29	.24	----	----	----
Small grain	.21	.17	.14	.12	----	----
Meadow (1st year) [1/]	.09	.08	.06	.05	----	----
SOYBEANS: (wide row > 20 in) after:						
Corn	.23	.19	.16	.14	.12	.11
Corn 2 yrs after meadow	.18	.15	.12	.11	----	----
Soybeans	.36	.32	.25	----	----	----
Small grain	.24	.20	.17	.14	----	----
Meadow (1st year) [1/]	.12	.08	.07	.06	----	----

Table IVb – C Factors for Cropland (Single Year) Strip, Ridge, and Mulch tillage (Spring Primary Tillage) E.I. Curve - #14						
Crop Sequence	% Cover After Planting					
	20	30	40	50	60	70
Alfalfa (clear seeded) after:						
Corn	.16	.14	.13	.11	----	----
Soybean	.24	.21	.19	----	----	----
CORN after:						
Corn	.19	.16	.13	.11	.08	.07
Corn silage	.33	---	---	---	---	---
Soybeans	.31	.26	.22	---	---	---
Small grain	.18	.16	.13	.12	---	---
Meadow (1st year) 1/	.11	.10	.08	.06	---	---
Meadow (2nd year) 1/	.17	.14	.12	.09	---	---
Corn Silage after:						
Corn	---	.23	---	---	---	---
Small grain (winter) after:						
Corn silage 2/	.11	---	---	---	---	---
Soybeans	.13	.12	.08	---	---	---
Small grain	.10	.09	.08	.06	---	---
Small grain (spring) after:						
Corn 3/	.07	.06	.05	.04	----	----
Corn (Silage) 2/	.09	----	----	----	----	----
Soybeans	.08	.07	.06	.05	----	----
Small grain	----	----	----	----	----	----
SOYBEANS: (narrow row < 20 in) after:						
Corn	.16	.14	.12	.11	.10	.09
Corn 2 yrs after meadow	.14	.12	.10	.09	----	----
Soybeans	.28	.26	.22	----	----	----
Small grain	.19	.15	.13	.11	----	----
Meadow (1st year) 1/	.08	.07	.05	.04	----	----
SOYBEANS: (wide row > 20 in) after:						
Corn	.21	.17	.14	.13	.11	.10
Corn 2 yrs after meadow	.16	.13	.11	.10	----	----
Soybeans	.32	.30	.23	----	----	----
Small grain	.22	.18	.15	.13	----	----
Meadow (1st year) 1/	.11	.07	.06	.05	----	----

Table IVc – C Factors for Cropland (Single Year)
No - Tillage
E.I. Curve - #14

Crop Sequence	% Cover After Planting							
	20	30	40	50	60	70	80	90
Alfalfa (clear seeded) after:								
Corn	----	----	----	.11	.09	.07	.06	----
Soybean	.20	.17	.15	.12	----	----	----	----
CORN after:								
Corn	----	----	----	.06	.05	.04	.03	----
Soybeans	.24	.18	.14	.13	.12	.10	----	----
Soybeans w/cover crop	----	----	----	---	---	---	.08	.07
Small grain	----	----	----	.10	.09	.06	.04	----
Meadow (1st year) [1/]	----	----	----	.03	.03	.02	.01	----
Meadow (2nd year) [1/]	----	----	----	.06	.05	.04	.03	----
Corn Silage after:								
Corn	---	---	---	---	---	.09	---	---
Small grain (winter) after:								
Corn silage [2/]	.11	---	----	---	---	---	---	---
Soybeans	.07	.06	.05	---	---	---	---	---
Small grain	----	----	----	.05	.05	.04	.04	---
Small grain (spring) after:								
Corn [3/]	----	----	----	.06	.05	.04	.03	----
Corn (Silage) [2/]	.10	----	----	----	----	----	----	----
Soybeans	.08	.07	.06	----	----	----	----	----
SOYBEANS: (narrow row < 20 in) after:								
Corn	----	----	----	.11	.10	.08	.05	----
Corn 2 yrs after meadow	----	----	----	.09	.08	.07	.05	----
Soybeans	.21	.18	.15	----	----	----	----	----
Small grain	----	----	----	.12	.10	.07	.05	----
Meadow (1st year) [1/]	----	----	----	.04	.03	.02	.02	----
SOYBEANS: (wide row > 20 in) after:								
Corn	----	----	----	.12	.11	.08	.05	----
Corn 2 yrs after meadow	----	----	----	.09	.08	.07	.05	----
Soybeans	.25	.20	.16	----	----	----	----	----
Small grain	----	----	----	.13	.12	.08	.05	----
Meadow (1st year) [1/]	----	----	----	.04	.03	.02	.02	----
SOYBEANS: w/cover crop after:								
Corn	----	----	----	----	.06	.05	.04	----
Soybeans w/cover crop (< 20 inch row)	----	----	.13	.11	.10	.09	----	----
Soybeans w/cover crop (> 20 inch row)	----	----	.14	.12	.10	.09	----	----

Table IVd – C Factors for Cropland (Single Year) Plow E.I. Curve - #14		
Crop Sequence	% Cover After Planting	
	Fall	Spring
Alfalfa (clear seeded) after:		
Corn	.26	.23
Soybean	.36	.31
CORN after:		
Corn	.33	.29
Corn silage	.43	.36
Soybeans	.40	.36
Small grain	.36	.30
Meadow (1st year) 1/	.17	.13
Meadow (2nd year) 1/	.30	.24
Small grain (winter) after:		
Soybeans	.19	----
Small grain	.19	----
Small grain (spring) after:		
Corn 3/	.10	.09
Corn (Silage) 2/	.14	.13
Soybeans	.15	.10
Small grain	----	----
SOYBEANS: (narrow row < 20 in) after:		
Corn	.27	.24
Corn 2 yrs after meadow	.25	.20
Soybeans	.36	.32
Small grain	.34	.24
Meadow (1st year) 1/	.14	.10
SOYBEANS: (wide row > 20 in) after:		
Corn	.35	.30
Corn 2 yrs after meadow	.31	.25
Soybeans	.44	.39
Small grain	.43	.32
Meadow (1st year) 1/	.17	.13

Table IVe – C Factors for Cropland Wheat/Soybean Double Crop E.I. Curve - #14				
Wheat	Soybeans			
		Plow	Disk	No-till
	Plow	.26	.15	.10
	Disk	.22	.10	.05
	No-till	.20	.09	.04

Table IVf – C Factors for Meadow (Full Year – Established) E.I. Curve - #14	
Grass – Legume	.004
Legume Only	.02

FOOTNOTES FOR "C" FACTOR TABLES IVa – IVd

1/ Values are based on meadow with at least 50% grass. If meadows are primarily legumes, multiply factor by 1.2 for conservation tillage systems.

2/ Factors with no residues on surface after planting.

3/ Factors are the same with or without meadow seeding.

All values are based on high production with minimum yields of:

Corn – 100 Bu.
Soybeans – 40 Bu.
Oats – 60 Bu.
Wheat – 45 Bu.
Meadow – 3 tons per acre

For lower levels of management multiply factors by 1.2.

Table IVg – "C" Factors for Permanent Pasture, Idle Land, or Grazed Woodland [1/]								
Type and Height of Raised Canopy [2/]	**Canopy Cover [3/] Percent**	**Type [4/]**	**Percent Ground Cover [5/]**					
			0	**20**	**40**	**60**	**80**	**95-100**
No appreciable canopy		G	.45	.20	.10	.042	.013	.003
		W	.45	.24	.15	.091	.043	.011
Canopy of tall grasses or bushes with average drop [height of 3 ft. or less]	25	G	.36	.17	.09	.038	.013	.033
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes with average drop height of 6 ½ ft.	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees but no appreciable low brush with average drop height of 13 ft. or more	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.033
		W	.36	.20	.13	.084	.041	.011

1/ The listed "C" values assumes that the vegetation and mulch are randomly distributed over the entire area. For grazed woodland with high buildup of organic matter in the topsoil under permanent forest conditions, multiply the table values by 0.7.

2/ Canopy height is measured as the average fall height of water drops falling from the canopy to ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 feet.

3/ Portion of total area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

4/ G: Cover at surface is grass, grass-like plants, or duff.
W: Cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or litter, or both.

5/ The portion of a grass or weed cover that contacts the soil surface during a rainstorm and interferes with water flow over the soil surface is included in "Cover at the surface." The remainder is included in canopy cover.

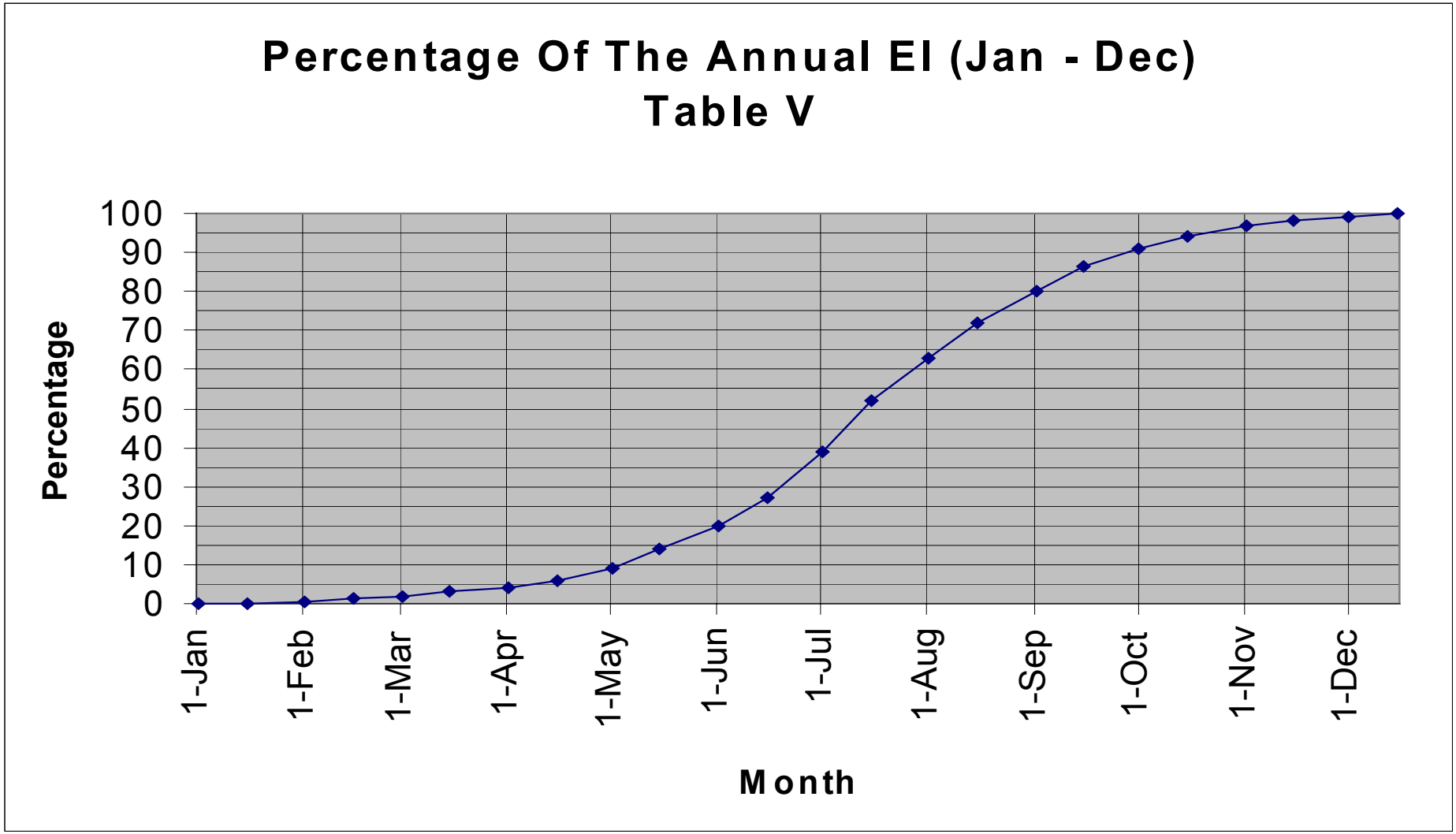
Examples: A tall fescue pasture with an excellent stand of grass would have no appreciable raised canopy, the type of cover that contacts the surface is grass "G" and the percent ground cover is 95-100 percent. The "C" factor is .003.

A poorly managed bluegrass pasture having a 25 percent canopy cover of 3 feet or less and a 60 percent grass cover "G" that contacts the surface. The "C" factor would be .038.

Table IVh – "C" Factors for Undisturbed Forestland [1]/

Percent of Area Covered by Canopy of Trees and Undergrowth	Percent of Area Covered by Duff	Factor C
100 – 75	100 – 90	.0001 - .001
70 – 45	85 – 75	.002 - .004
40 – 20	70 – 40	.003 - .009

[1]/ Where effective duff cover is less than 40 percent or canopy cover is less than 20 percent, use Table IVd.



EI Curve Number 14

EI Values For P Factor

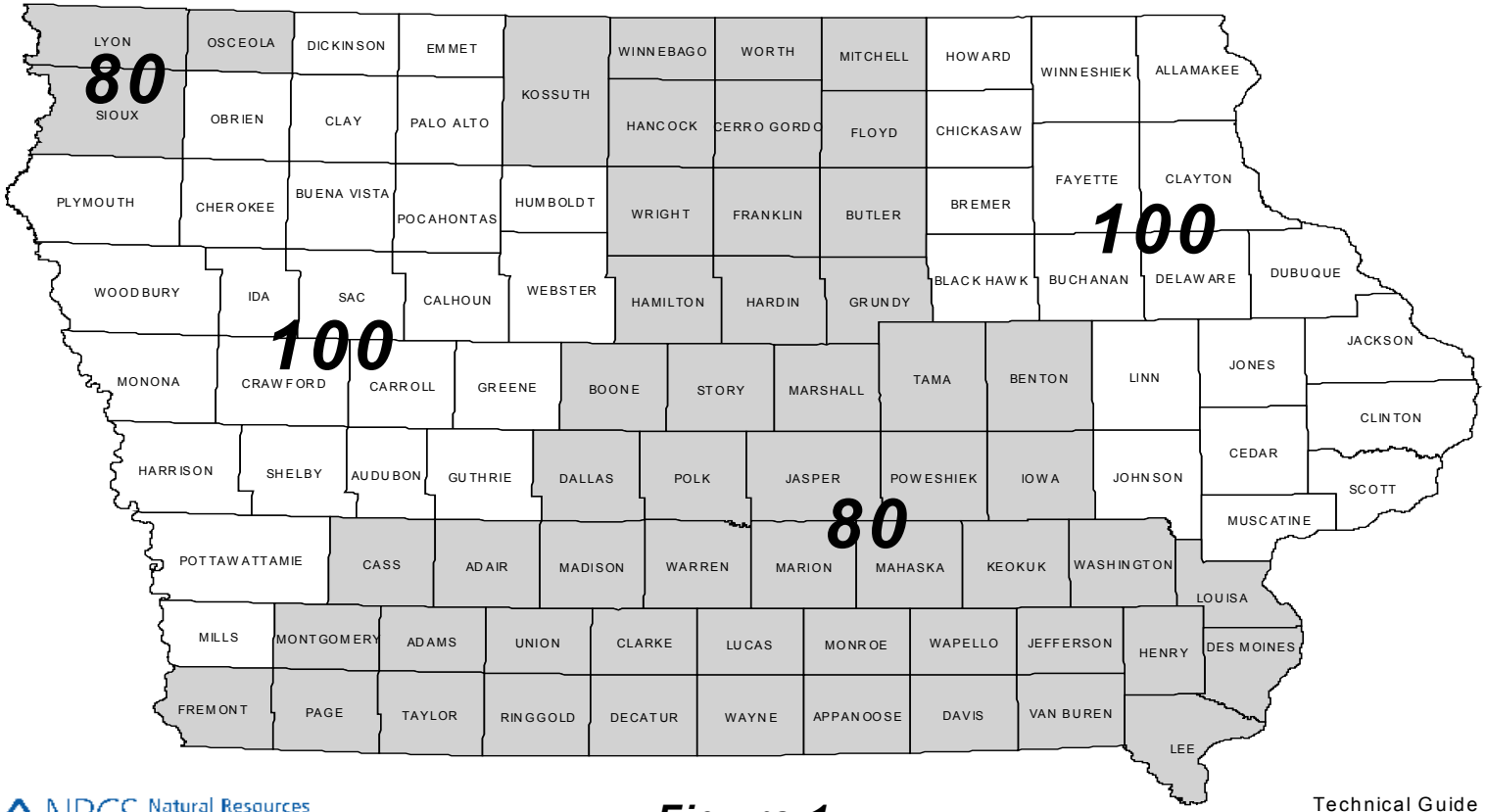


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Figure 1

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Rainfall Factors

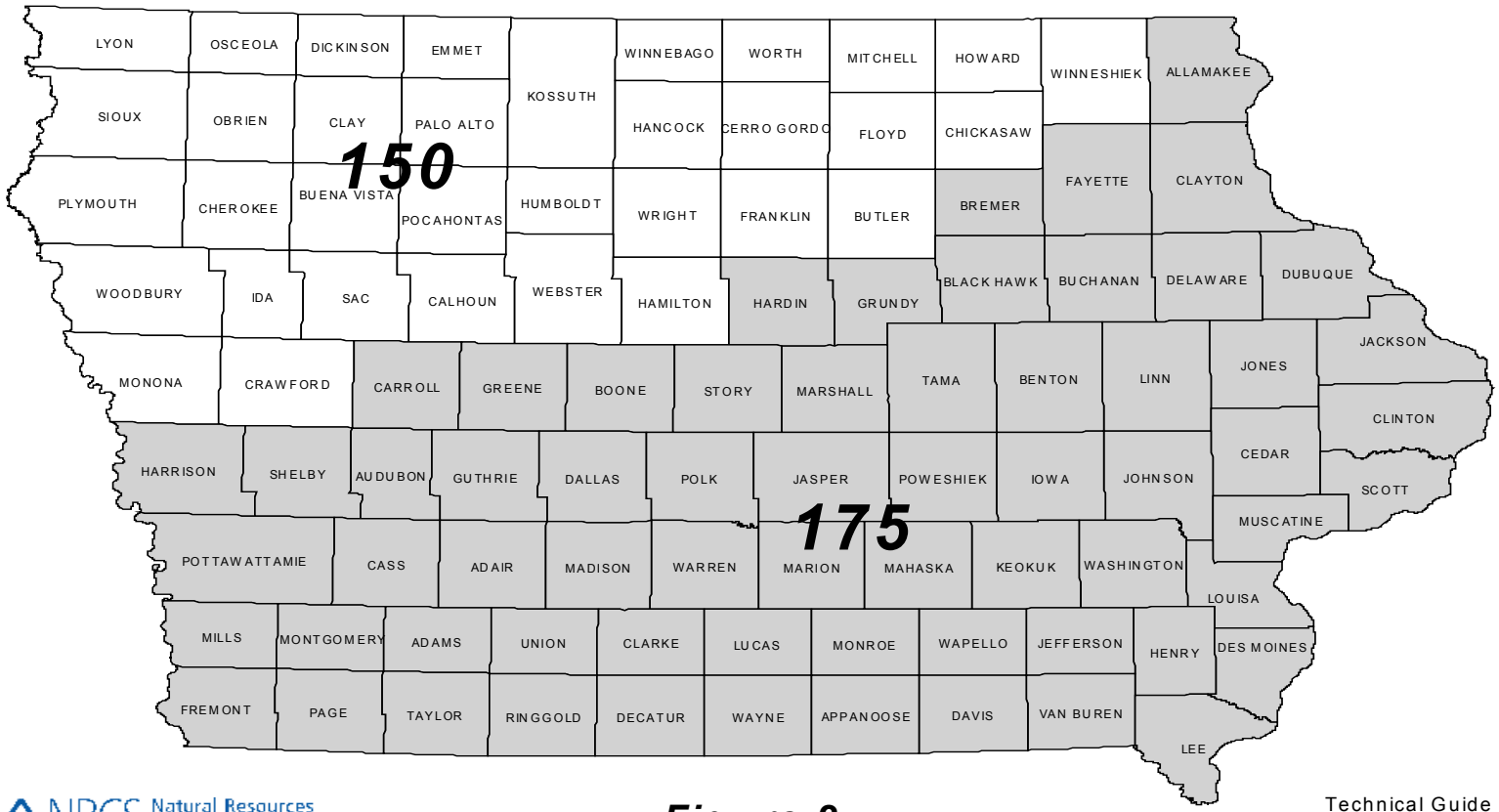

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Figure 2

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