P = The Factor for Support Practices

A series of tables and charts are required to determine the appropriate "P" factor to credit the support practices (contour farming, cross-slope farming, buffer strips, stripcropping, and terraces) planned or applied to the field.

The "P" factor value used in the RUSLE equation is a combination of subfactors that represents the actual field conditions. After determining the contour on-grade "P" factor, adjustments with subfactors are made. These adjustments may increase "P" due to ridge/furrow grade and/or when the actual field slope length exceeds the critical slope length for effectiveness of contouring. Stripcropping, buffer strip, and terrace "P" subfactors reduce the "P" factor for on-grade contouring or as adjusted for ridge/furrow grade.

Determine the appropriate "P" factor using the instructions and tables presented in this section.

"P" Subfactor Values for Contouring

The following information is required:

Identify the hydrologic soil group for the soil map unit(s) on the selected landscape profile.

Determine the slope length "L" and slope steepness "S" of the landscape profile, and grade along the ridges/furrows that result from tillage, planting, and/or row cultivation operations.

Identify the 10-year storm erosivity (10-yr. " EI ") value for the site from the map in Figure P-1.

Select the cover-management condition from Table P-1.

Select the appropriate ridge height using the guidelines shown in Table P-2.

Step 1 - Determine the "P" subfactor for contouring on-grade.

a. Using the 10-year " EI " value, ridge height, hydrologic soil group, and cover-management condition, select the appropriate section of Table P-8.

b. Select the value that represents the hydrologic soil group for the % slope being evaluated. This value is the "P" subfactor value for contouring on-grade.

Step 2 - Adjust contouring "P" subfactor for ridge/furrow grade.

a. Calculate the ratio of the field average ridge/furrow grade to the landscape profile slope used to describe the field topographic factor, (divide the % ridge/furrow grade by the slope % and round to the nearest 0.1.) For ratio values <0.05, go to Step 4 as no adjustment is required for off-grade contouring.

b. For ratio values of >0.05, go to Table P-3.

c. In the left column of Table P-3, locate the "P" value for on-grade contouring obtained from Step 2 above. If the "P" factor value is an odd number, round up or down to the nearest even number. Round in the opposite direction from that used when rounding the ridge/furrow grade to landscape profile slope ratio to the nearest 0.1.

d. On the located row, move right to the column for the appropriate ratio of ridge/furrow grade to slope steepness of the landscape profile. This value is the "P" subfactor value for off-grade contouring where the slope is less than the critical slope. Beyond the critical slope length, the practice effectiveness decreases quickly with increasing slope length.

Step 3 - Determine the critical slope length.

a. In Kansas, exceeding the critical slope length is <u>usually</u> only a concern with cover management codes 5, 6, or 7.

b. Refer to Figure P-3 and select the applicable figure for the hydrologic soil group and cover-management condition.

c. Enter the selected figure at the landscape profile slope percent on the horizontal axis and project a vertical line up to intersect the 10-year EI value for the site. From that intersection point, project a horizontal line to the left and read the critical slope length. This is the critical slope length or the maximum slope length for which the previously determined "P" subfactor value applies. If the landscape profile slope length for the site is less than the critical slope length, use the previously determined "P" subfactor

d. Stripcropping increases the effectiveness of contouring. If stripcropping is being used in conjunction with contouring, increase the critical slope length by multiplying by 1.5.

Step 4 - Adjust the contouring "P" subfactor where the landscape profile exceeds the critical slope length.

a. When landscape profile slope length exceeds the critical slope length, calculate the ratio by dividing the landscape profile slope length by the critical slope length (increase the critical slope length before making this calculation if stripcropping applies).

b. Go to Figure P-4. Select the appropriate figure for the land use and the site slope steepness.

c. From the actual slope length/critical slope length ratio on the horizontal axis of the selected figure, project a vertical line to intersect the "P" subfactor value determined in step 2 or 3 above. From that intersection, project a horizontal line to the left and read the effective "P" subfactor value. This subfactor value is the corrected "P" subfactor value for contouring and applies to the entire landscape profile slope length.

Step 5 - Compute rotational contouring "P" subfactor where cover-management conditions and/or ridge heights change from year to year during the life of a crop rotation.

a. Calculate the contour "P" subfactor for each year in the crop rotation following the appropriate Steps 1 to 4 above.

b. Add the contour "P" subfactor values for all years in the rotation and divide by the total years in the rotation to determine a weighted average annual contour "P" subfactor value.

"P" Subfactor Values for Stripcropping

The following information is required:

Note: Some of the information is the same as used for evaluating contouring.

a. Identify the hydrologic soil group for the soil map unit(s) on the selected landscape profile.

b. Determine the slope length "L" and slope steepness "S" of the landscape profile and grade along the ridges/furrows that result from tillage, planting, and/or row cultivation operations.

c. Identify the 10-year storm erosivity (10-year " EI ") value for the site from the map in Figure P-1.

d. Determine the number of strips that can be laid across the landscape profile slope length "L." A minimum of two full strip widths must fit on the slope.

e. For a strip pair, select the cover-management conditions that will be opposite each other during the life of the crop rotation using Table P-1. For sod-based rotations, it is also important whether or not hay is established by direct seeding or seeding is done with a nurse crop. The seeding year with a nurse crop introduces a third cover-management condition.

Determine whether the support practice is one of the following:

A contour stripcropping layout with strip boundaries as close to level as possible - Sediment retarding strips and erosion-prone strips on contour layouts switch positions on the landscape profile during the crop rotation.

A field stricropping layout with strip boundaries markedly off-contour - Sediment retarding strips and erosion prone strips on field stripcropping layouts switch positions on the landscape profile during the life of the crop rotation.

A buffer strip layout with narrow sod cross slope strips alternating with wider tilled strips - Sod strips are maintained in a permanent location.

g. For buffer strip layout using Figure P-2, determine the percentage of landscape profile to be occupied by buffer strips at least 15 feet wide. Table P-6 is set up for 10 and 20 percent of the landscape profile. Table P-6 presents these as crop strip to buffer strip ratios of 9:1 and 4:1 respectively. Note from Table P-6 that there is little to be gained by going to 20 percent from a sheet and rill erosion standpoint. The minimum landscape profile length that can benefit from buffer strips is 150 feet.

Step 1 - Determine the "P" subfactor for stripcropping.

a. Determine the type of stripcropping layout, number of strips on the slope length "L," cover-management condition pairings, and (for buffer strips) the percent of slope length "L" occupied by buffer strips. Select the appropriate table:

Table P-4 for contour stripcropping subfactors

Table P-5 for field stripcropping subfactors

Table P-6 for buffer strip subfactors

b. Locate the stripcropping subfactor value at the intersection of the number of strips and the cover-management conditions of the strips. For buffer strips, enter the correct column for ratio of cultivated crop strip to buffer strip. The value is the stripcropping "P" subfactor for slopes where the landscape profile slope length does not exceed the critical slope length.

Step 2 - Determine critical slope length.

a. Refer to Figure P-3 and select the applicable figure for the hydrologic soil group and cover-management condition

b Use the most erosive cover-management condition of the opposing strip pairs on the slope to determine the critical slope length for stripcropping.

c. Enter the selected figure at the profile slope on the horizontal axis and project a vertical line up to intersect the 10-year " EI " value for the site. From that intersection, project a horizontal line to the left and read the critical length. Stripcropping increases the effectiveness of the contouring. Therefore, adjust the critical slope length from the figure by multiplying the value by 1.5.

d. The adjusted critical length is the maximum slope length for which the previously determined stripcropping "P" subfactor value applies. Use the previously determined stripcropping "P" subfactor value where the landscape slope is equal to or less than the adjusted critical slope length.

Step 3 - Adjust the stripcropping "P" subfactor where the landscape profile exceeds the critical slope length.

a Where landscape profile slope length exceeds the critical slope length, calculate the slope actual length to critical slope length ratio by dividing the landscape profile slope length by the critical slope length. Increase the critical slope length before making this calculation for stripcropping.

b. Use the same rill/interrill ratio as previously used in determining the topographic "LS" factor at the site. Use medium for cultivated cropland and other land uses with moderately consolidated soil conditions.

c. From Figure P-4, select the appropriate figure for the land use rill/interrill ratio and the site slope steepness.

d From the actual slope length/critical slope length ratio on the horizontal axis of the selected figure, project a vertical line to intersect the "P" subfactor value determined in Step 2 above. From that intersection, project a horizontal line to the left and read the effective "P" subfactor value. This subfactor value is the corrected "P" subfactor value for stripcropping and applies to the entire landscape profile slope length.

Step 4 - Multiply the contour "P" subfactor times the stripcropping "P" subfactor to get the composite "P" factor for the sheet and rill erosion conservation management subsystem.

a. When the critical slope is not exceeded for stripcropping, use the unadjusted "L" for slope length contour "P" subfactor value determined earlier using the contour "P" subfactor instructions. Take the "P" subfactor for stripcropping times the contour "P" subfactor to get the composite "P" factor for the conservation management subsystem.

b. When the critical slope is exceeded for stripcropping, adjust the contour "P" subfactor value using the ratio determined by dividing the total slope length by the critical slope length for stripcropping. From Figure P-4, enter appropriate figure with this ratio and determine adjusted contour "P" subfactor. Take this adjusted contour "P" subfactor times the adjusted "P" subfactor for stripcropping to get the composite "P" factor for the conservation management subsystem.

RUSLE "P" Subfactor Values for Terracing

The following information is required:

a. Determine the slope steepness of the landscape profile. Will it change with construction of terrace? If yes, determine new slope steepness.

b. Determine what supporting conservation practice will accompany the terraces, contouring, cross-slope farming, buffer strips, or contour stripcropping.

c. Decide whether terrace will have an open or closed outlet.

d If the terrace has an open outlet, determine the channel grade of terrace at outlet end. The terrace outlet for this determination is defined as the lesser of the 300 feet or 1/3 of the terrace closest to the outlet. If channel grade is 0.8 or greater, the practice factor equals 1.0. In this case, skip Step 2 below and proceed with Step 3 below.

Step 1 - Determine terrace "P" subfactor.

From Table P-7, select the appropriate horizontal spacing interval. Read across the row to the selected outlet type. If an open outlet is used, then select the terrace channel grade range column that describes the design terrace channel grade. Read the "P" subfactor value at the row-column intersection.

Step 2 - If terrace horizontal spacing interval is less than landscape profile slope length, recalculate the "LS" value to reflect a shorter sheet and rill erosion flow length.

a. If significant earthmoving will cause a change in landscape profile slope, recompute landscape profile slope steepness and length and record for use in Step 2.

b. Determine new "LS" value from appropriate "LS" table. For cropped agricultural land, use Table LS-1.

Step 3 - Determine composite "P" factor for terracing when used in combination with contouring alone or with contouring and stripcropping.

a. When terraces are used in conjunction with contouring or cross-slope farming, multiply terrace "P" subfactor times the previously determined contouring "P" subfactor to get the composite "P" factor.

b. When terraces are used in conjunction with contouring, buffer strips, or stripcropping, multiply all applicable "P" subfactors together to get the composite "P" factor.

Example A: Contour "P" Factor Determination

Step 1 - Gather information.

a. Hydrologic Soil Group B

b. Landscape profile slope steepness = 6 percent, slope length = 250 feet, and ridge/furrow grade = 1 percent

c The 10-year " EI " = 100 from Figure P

d. The crop rotation is continuous corn using conventional clean tillage. From Table P-1 this is Cover-Management Condition 6.

e Ridges and furrows created during corn planting are 2 to 3 inches in depth or low ridges from Table P-2.

Step 2 - Determine the "P" subfactor for contouring on-grade.

a From Table P-8, 10-year " EI " = 100 and Cover-Management Condition 6, select the table for low ridge height (2- to 3-inch ridges).

b. Find the row for Hydrologic Soil Group B and the value in the intersect column for six percent slope. Read the "P" subfactor value of 0.53 for on-grade contouring.

Step 3 - Adjust contouring "P" subfactor for ridge/furrow grade.

a. The ridge/furrow to field slope steepness ratio is calculated by dividing 1% by 6% = 0.167 rounded up to 0.2.

b. Go to Table P-3 as ridge/furrow to field slope ratio >0.05 indicates a correction applies.

c Since Table P-3 does not have an on-grade contour line for 0.53, round the value up or down to 0.52 or 0.54. Since the ridge/furrow to slope grade ratio was rounded up, round down this time to 0.52.

d. Enter Table P-2 with the on-grade contouring "P" subfactor value of 0.52 and read across to the ridge/furrow to slope grade ratio of 0.2. The value is 0.73. This is the "P" subfactor value for off-grade contouring where the slope is less than the critical slope.

Step 4 - Determine the critical slope length.

From Figure P-7 for Hydrologic Soil Group B, Cover-Management Condition 6, at the 6 percent slope " EI "-10 = 100 intersect, read a critical length of 300 feet. The critical slope exceeds the 250-foot slope length at the site so the "P" subfactor value of 0.73 applies to the entire landscape profile slope length.

Step 5 - Determine the critical slope length.

a. Select from Figure P-3 Hydrologic Soil Group C and Cover-Management Condition 6

b. Enter with the 6 percent slope, read up to the intersection of 10-year "EI" = 80 and across to find a critical length of 300 feet. The new profile slope length of 150 feet with terraces does not exceed the critical slope length so no adjustment of the "P" subfactor is needed.

Step 6 - Determine composite "P" factor.

Multiply terrace "P" subfactor 0.77 times off-contour "P" subfactor 0.67. The composite "P" factor = 0.52.

Example B: Contour "P" Factor Determination When Actual Slope Length Exceeds Critical Slope Length

Step 1. Gather information.

Hydrologic Soil Group C

b. Landscape profile slope = 6 percent, slope length = 450 feet, and ridge/furrow grade = 1 percent.

c. The 10-year " EI " = 80 from Figure P-1

d. The crop rotation is corn-soybeans produced using conventional clean tillage. From Table P-1 this is Cover-Management Condition 6.

e. A ridge height of 2 to 3 inches is formed by tillage and planting equipment on this soil. From Table P-2 this is a low ridge.

Step 2 - Determine the "P" subfactor for contouring on-grade.

a. In Table P-8, " EI " = 80 and Condition 6, select the table for low ridge height (2- to 3-inch ridges).

b. Find the row for Hydrologic Soil Group C and the value in the intersect column for 6 percent slope. Read the "P" subfactor value of 0.53.

Step 3 - Adjust contouring "P" subfactor for ridge/furrow grade.

a Calculate the ridge/furrow to field slope steepness ratio by dividing 1% by 6% = 0.167. Round to 0.2.

b. Go to Table P-3 as ridge/furrow to field slope ratio >0.05 indicates a correction applies.

c. Since Table P-3 does not have a line for 0.53, round the value up or down to 0.52 or 0.53. Since the ridge/furrow to slope grade ratio was rounded up, round down this time to 0.52. Enter Table P-3 with the on-grade contouring "P" subfactor value of 0.52 and read across to the ridge/furrow to slope grade ratio of 0.2. The value is 0.73. This is the "P" subfactor value for off-grade contouring where the slope is less than the critical slope.

Step 4 - Determine the critical slope length.

a. Select Figure P-3 Hydrologic Soil Group C and Cover-Management Condition 6.

b. Enter with the 6 percent slope, read up to intersection of " EI "-10 = 80 and across to find a critical length of 300 feet. The profile slope length of 450 feet exceeds the critical slope length so adjust the "P" subfactor value of 0.73.

Example C: Contour "P" Factor Determination for a Crop Rotation with Varying Ridge Height

Step 1 - Assemble information about the crop rotation. Include the crops grown, ridge height as applicable, and the cover management condition for each year in the rotation. Select ridge height and cover management condition based on those conditions during the seedbed and planting period.

a Crop rotation is six years (Cg-Cg-Og-H H-H).

b. Crops and tillage practices are moldboard plow corn after hay; mulch till corn after corn, 50 percent cover; mulch till oats after corn, 30 percent cover; followed by three years of alfalfa-intermediate wheatgrass hay production. Corn after hay is row cultivated within 30 days of planting.

c Landscape profile is 10 percent slope steepness, slope length = 400 feet, ridge/furrow grade = 1 percent, 10-year

"EI" = 90, and Hydrologic Soil Group is B.

d. Ridge height = 3 to 4 inches for corn after hay, 2 to 3 inches for mulch till corn after corn, 0.5 to 2 inches for oats after corn, and 3 years of alfalfa-wheatgrass hay = no ridges.

e. Cover management condition of corn after hay = 6, corn after corn = 4, oats after corn = 5, and alfalfa-wheatgrass hay/haylage = 2.

Step 2 - Calculate the "P" subfactor for each year where cover management condition or ridge height change. Make adjustments as needed when actual slope length exceeds the critical slope length.

a. Ridge/furrow to profile grade = 1% divided by 10% = 0.1 for all annual crops where ridges are formed.

b. Corn after hay, on-grade "P" = 0.37 from Table P-8. Off-grade "P" = 0.56 from Table P-3. Critical slope length = 190 feet from the graphs in Figure P-3. Corrected contour "P" subfactor = 0.85 from Figure P-4 for exceeding critical slope length where actual slope length/critical slope length is 400 divided by 190 = 2.1.

c. Corn after corn, on-grade "P" = 0.46 from Table P-8. Off-grade "P" = 0.63 from Table P-3. From the graphs in Figure P-3, the critical slope length = >1000 feet. Thus, no adjustment for exceeding critical slope length is required.

d. Oats after corn, on-grade "P" = 0.70 from Table P-8. Off-grade "P" = 0.79 from Table P-3. From the graphs in Figure P-3, the critical slope length = 420 feet. No adjustment for exceeding critical slope length is required.

e. Alfalfa-intermediate wheatgrass hay, no ridges present, contour "P" subfactor = 1.0.

Step 3 - Calculate the weighted average annual contour "P" subfactor for the rotation.

a. Add the values in Step 2 and divide by the number of years in the crop rotation. The result is the weighted average annual contour "P" subfactor for the crop rotation.

b. + 0.63 + 0.79 + 1.0 + 1.0 + 1.0 = 5.27/6 years = 0.88

Example D: Stripcropping "P" Factor Determination

Step 1 - Gather required information.

a. Landscape profile = 10 percent slope steepness, slope length = 400 feet, 10-year "EI" = 90, Hydrologic Soil Group is B, and strip boundary grade = 1 percent.

b. Four contour strips are planned with alternating Cover-Management Condition 2 for established hay that was seeded with a nurse crop and Cover-Management Condition 6 for clean-tilled corn. Acreage of corn and hay is nearly equal in every year of the crop rotation.

Step 2 - Determine stripcropping "P" subfactor.

a. From Table P-4, select the contour stripcropping practice "P" subfactor table for sod-based rotations and hay established with a nurse crop. This table has a ridge/furrow grade of 0.5 percent (close to the 1 percent actual row grade).

b. Locate the intersection of four strips and Cover-Management Condition Pairings = 2-(6,5). The value of 0.69 is the stripcropping "P" subfactor that applies for slopes less than or equal to the critical slope length.

Step 3 - Determine critical slope length.

a. From Figure P-7 for 10-year "EI" = 90, Cover-Management Condition 6, Hydrologic Soil Group B, and the 10 percent slope, the critical length is 190 feet.

b. Multiply 1.5 times 190 to calculate the stripcropping critical length of 285 feet. The 400-foot slope length at the site is greater than the critical length.

Step 4 - Adjust the stripcropping "P" subfactor for critical slope length.

Actual slope length/critical slope length is 400/285 = 1.4. From Figure P-4 the corrected stripcropping "P" subfactor for exceeding the critical slope length is 0.83.

Step 5 - Multiply contour "P" subfactor times stripcropping "P" Subfactor to get composite "P" factor.

a. From Example C, the contouring "P" subfactor was determined to be 0.56 + 0.63 = 0.60. This is an average of the contour "P" subfactors for the two corn years of the crop rotation.

   Note: This is the contour "P" subfactor for the corn with appropriate cover-management condition before adjustment for critical slope and not a weighted average "P" subfactor for corn and hay cover-management conditions. Corn cover management conditions are present on the field profile a majority of the time and alternate positionally back and forth between strip pairs.

b. From this example, the contour stripcropping "P" subfactor was 0.83.

c. Multiply the two subfactors together, 0.60 times 0.83 = 0.50. The "P" factor for this field's contour stripcropping system is 0.50.

Example E: Terrace "P" Factor Determination

Step 1 - Gather required information.

a. Landscape profile = 6 percent slope steepness, slope length = 450 feet, 10-year " EI " = 80, and Hydrologic Soil Group is C.

b. The crop rotation is corn-soybeans produced using conventional clean tillage. This is Cover-Management Condition 6 from Table P-1. A ridge height of 2 to 3 inches is formed by tillage and planting equipment on this soil. This is a "low ridge" from Table P-2. Contouring will be used. Row grades will parallel terrace channel.

c. Landscape profile (slope steepness) will not change with terrace construction.

d. Horizontal spacing interval selected is 150 feet to split original landscape profile slope length (450 feet) into thirds.

e. Open outlet design with terrace channel grade at 0.4 percent.

Step 2 - Determine "P" subfactor for terracing.

In Table P-7 find Horizontal Interval range (terrace spacing) of 150 feet and read across to Open Outlets, with percent grade of 0.4. Read the terrace "P" subfactor value of 0.77.

Step 3 - Adjust "LS" value.

a. Slope length after terrace installation is 150 feet. Adjust "LS" factor value and re-enter new value into the general RUSLE equation.

b. From Table LS-1, find the column for 150 feet of slope length and the value in the intersected row for 6 percent slope. Read the new "LS" value of 0.93. Enter this new value into the general RUSLE equation.

Step 4 - Adjust contouring "P" subfactor for ridge/furrow grade.

Contour "P" subfactor is based on a low ridge (2 to 3 inches high), 6 percent slope, 10-year " EI " = 80, and Hydrologic Soil Group of C. On-grade "P" = 0.53.

b. For 0.4 percent row grade, calculate the ridge/furrow to field slope steepness ratio by dividing 0.4% by 6% = 0.066. Round to 0.1. Go to Table P-3 as ridge/furrow to field slope ratio >0.05 indicates a correction applies.

c. Since Table P-3 does not have a line for 0.53, round the value up or down to 0.52 or 0.54. Since the ridge/furrow to slope grade ratio was rounded up, round down this time to 0.52. Enter Table P-3 with the on-grade contouring "P" subfactor value of 0.52 and read across to the ridge/furrow to slope grade ratio of 0.1. The adjusted "P" subfactor value is 0.67. This is the "P" subfactor value for off-grade contouring where the slope is less than the critical slope.

Step 5 - Determine the critical slope length.

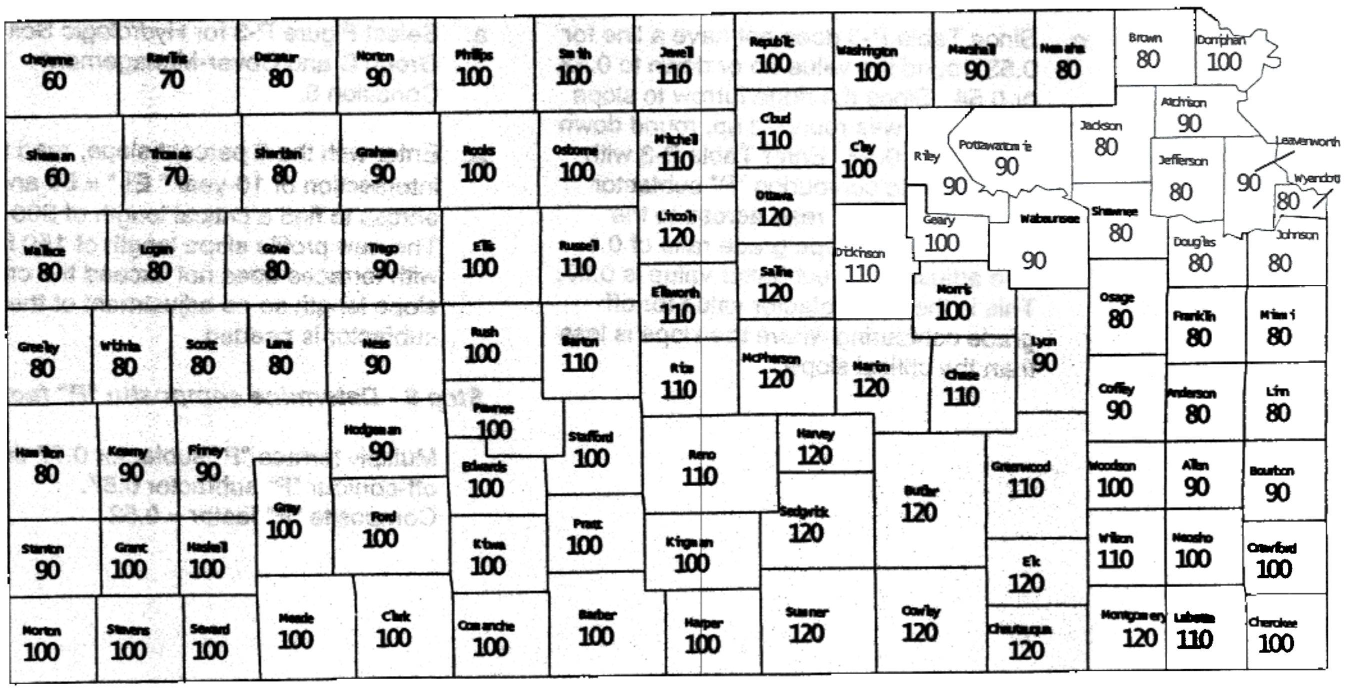
a. Select Figure P-3 for Hydrologic Soil Group C and Cover-Management Condition 6.

b. Enter with the 6 percent slope, read up to intersection of 10-year " EI " = 80 and across to find a critical length of 300 feet. The new profile slope length of 150 feet with terraces does not exceed the critical slope length so no adjustment of the "P" subfactor is needed.

Step 6 - Determine composite "P" factor.

Multiply terrace "P" subfactor 0.77 times off-contour "P" subfactor 0.67. Composite "P" factor = 0.52.

Figure P-1 - 10-Year Frequency, Single Storm EI Map



"EI" is an abbreviation for "energy times intensity" and equals the total storm energy times the maximum 30-minute intensity. Storm energy indicates the volume of rainfall and runoff; a long, slow rain may have the same E value as a shorter rain at a much higher intensity. The energy of a rainstorm is a function of the amount of rain and of all the storm's component intensities.

Table P-1 - Cover Management Conditions

Select the cover management condition that best describes the land surface conditions during spring seedbed preparation and planting when rainfall and runoff are most erosive and the soil is most susceptible to erosion. Use the following descriptions of cropland cover-management conditions for estimating "P" factor values.

Cover-Management Conditions	Description
Code 1. Established grass/legume cover	The grass cover is dense and runoff is very slow--the slowest under any vegetative condition. When mowed and baled, this condition is Code 2.
Code 2. Established hay under harvest management	Hay is a mixture of grass and legume just before cutting. The vegetation is a good grass/legume stand and is harvested for hay. When harvested, this cover condition becomes a Code 4 until regrowth occurs.
Code 3. Heavy cover and/or very rough	Ground cover for this condition is about 65 to 95 percent as with no-till planting. Roughness depressions would have the appearance of being 7 inches deep and deeper.
Code 4. Moderate cover and/or rough	The ground cover for this condition is about 40 to 65 percent. Roughness depressions would have the appearance of being about 4 to 6 inches deep.
Code 5. Light cover and/or rough	Ground surface cover is between 10 to 40 percent. Roughness depressions would have the appearance of being on the order of 2 to 3 inches deep.
Code 6. No cover and/or minimal roughness	This condition is very much like the condition typically found in row-cropped fields after the field has been planted and exposed to a moderately intense rainfall. Ground cover is less than about 10 percent and the roughness characteristic of a good seedbed for corn or soybeans. The surface is rougher than that of a finely pulverized seedbed for seeding vegetables or grass.
Code 7. Clean-tilled, smooth fallow	This condition is essentially bare with a cover of 5 percent or less. The soil has not had a crop grown on it in the last 6 months or more. Many residual effects of previous cropping have disappeared. The surface is smooth, much like the surface that develops on a finely pulverized seedbed exposed to several intense rainfalls. This condition is found in fallow and vegetable fields or in newly seeded lawns.

Table P-2 - Guidelines for Selecting Ridge Heights

Select the ridge height that best describes the condition during the spring seedbed preparation and planting when rainfall and runoff are most erosive, and the soil is most susceptible to erosion.

1.	**Very Low (0.5- to 2-inch) Ridges**
	-Plants not closely spaced but with a slight ridge height -No-till planted row crops -Fields that have been rolled, pressed, or dragged after planting -Spring planted conventionally drilled crops -Direct seeded forage crops that leave a very low ridge
2.	**Low (2- to 3-inch) Ridges**
	-No-till drilled crops -Mulch tilled row crops -Clean tilled row crops with no row cultivation -Transplanted crops, widely spaced
3.	**Moderate (3- to 4-inch) Ridges**
	-Clean tilled row crops with row cultivation -High yielding winter small grain crops when erosive rains are concentrated in the late spring after plants have developed a stiff, upright stem -Transplanted crops that are closely spaced and/or in narrow rows
4.	**High (4- to 6-inch) Ridges**
	-Ridge tilled crops with high (4-6") ridges during periods of erosive rain
5.	**Very High (Greater than 6-inch) Ridges**
	-Ridge tilled crops with very high (6+") ridges during periods of erosive rains -Hipping, bedding, or ridging with very high ridges during periods of erosive rains

Table P-3 - Contouring "P" Subfactor Value Adjusted for Ridge/Furrow Grade

On-Grade Contouring "P" Subfactor Value	Ratio of Furrow Grade to Profile Grade									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.04	0.34	0.47	0.57	0.65	0.72	0.78	0.84	0.90	0.95	1.00
0.06	0.36	0.48	0.57	0.65	0.72	0.79	0.85	0.90	0.95	1.00
0.08	0.37	0.49	0.58	0.66	0.73	0.79	0.85	0.90	0.95	1.00
0.10	0.38	0.50	0.59	0.67	0.74	0.80	0.85	0.90	0.95	1.00
0.12	0.40	0.51	0.60	0.68	0.74	0.80	0.86	0.91	0.95	1.00
0.14	0.41	0.52	0.61	0.68	0.75	0.81	0.86	0.91	0.96	1.00
0.16	0.43	0.54	0.62	0.69	0.75	0.81	0.86	0.91	0.96	1.00
0.18	0.44	0.55	0.63	0.70	0.76	0.82	0.87	0.91	0.96	1.00
0.20	0.45	0.56	0.64	0.71	0.77	0.82	0.87	0.92	0.96	1.00
0.22	0.47	0.57	0.65	0.71	0.77	0.82	0.87	0.92	0.96	1.00
0.24	0.48	0.58	0.66	0.72	0.78	0.83	0.88	0.92	0.96	1.00
0.26	0.49	0.59	0.67	0.73	0.78	0.83	0.88	0.92	0.96	1.00
0.28	0.51	0.60	0.67	0.74	0.79	0.84	0.88	0.92	0.96	1.00
0.30	0.52	0.61	0.68	0.74	0.79	0.84	0.89	0.93	0.96	1.00
0.32	0.54	0.62	0.69	0.75	0.80	0.85	0.89	0.93	0.97	1.00
0.34	0.55	0.64	0.70	0.76	0.81	0.85	0.89	0.93	0.97	1.00
0.36	0.56	0.65	0.71	0.76	0.81	0.86	0.90	0.93	0.97	1.00
0.38	0.58	0.66	0.72	0.77	0.82	0.86	0.90	0.93	0.97	1.00
0.40	0.59	0.67	0.73	0.78	0.82	0.86	0.90	0.94	0.97	1.00
0.42	0.60	0.68	0.74	0.79	0.83	0.87	0.91	0.94	0.97	1.00
0.44	0.62	0.69	0.75	0.79	0.84	0.87	0.91	0.94	0.97	1.00
0.44	0.63	0.70	0.76	0.80	0.84	0.88	0.91	0.94	0.97	1.00
0.48	0.64	0.71	0.76	0.81	0.85	0.88	0.92	0.95	0.97	1.00
0.50	0.66	0.72	0.77	0.82	0.85	0.89	0.92	0.95	0.97	1.00
0.52	0.67	0.73	0.78	0.82	0.86	0.89	0.92	0.95	0.98	1.00
0.54	0.69	0.75	0.79	0.83	0.87	0.90	0.92	0.95	0.98	1.00
0.56	0.70	0.76	0.80	0.84	0.87	0.90	0.93	0.95	0.98	1.00
0.58	0.71	0.77	0.81	0.85	0.88	0.91	0.93	0.96	0.98	1.00
0.60	0.73	0.78	0.82	0.85	0.88	0.91	0.93	0.96	0.98	1.00
0.62	0.74	0.79	0.83	0.86	0.89	0.91	0.94	0.96	0.98	1.00
0.64	0.75	0.80	0.84	0.87	0.89	0.92	0.94	0.96	0.98	1.00
0.66	0.77	0.81	0.85	0.88	0.90	0.92	0.94	0.96	0.98	1.00
0.68	0.78	0.82	0.86	0.88	0.91	0.93	0.95	0.97	0.98	1.00
0.70	0.79	0.83	0.86	0.89	0.91	0.93	0.95	0.97	0.98	1.00
0.72	0.81	0.85	0.87	0.90	0.92	0.94	0.95	0.97	0.99	1.00
0.74	0.82	0.86	0.88	0.90	0.92	0.94	0.96	0.97	0.99	1.00
0.76	0.84	0.87	0.89	0.91	0.93	0.95	0.96	0.97	0.99	1.00
0.78	0.85	0.88	0.90	0.92	0.94	0.95	0.96	0.98	0.99	1.00
0.80	0.86	0.89	0.91	0.93	0.94	0.95	0.97	0.98	0.99	1.00

Table P-3 - Contouring "P" Subfactor Value Adjusted for Ridge/Furrow Grade (continued)

On-Grade Contouring "P" Subfactor Value	Ratio of Furrow Grade to Profile Grade									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.82	0.88	0.90	0.92	0.93	0.95	0.96	0.97	0.98	0.99	1.00
0.84	0.89	0.91	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00
0.86	0.90	0.92	0.94	0.95	0.96	0.97	0.98	0.99	0.99	1.00
0.88	0.92	0.93	0.95	0.96	0.96	0.97	0.98	0.99	0.99	1.00
0.90	0.93	0.94	0.95	0.96	0.97	0.98	0.98	0.99	0.99	1.00
0.92	0.95	0.96	0.96	0.97	0.98	0.98	0.99	0.99	1.00	1.00
0.94	0.96	0.97	0.97	0.98	0.98	0.99	0.99	0.99	1.00	1.00
0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	1.00	1.00	1.00
0.98	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table P-4 - Contour Stripcropping Practice "P" Subfactor

Number of Strips	Cover Management Condition Pairings, Sod-Based Rotations 1/								
	——Clear, Spring-Seeded Hay 2/——					—With Small Grain Seeding 3/—			
	2-3	2-4	2-5	2-6	2-7	2-(4,5)	2-(5,5)	2-(6,5)	2-(7,5)
2	1.0	.86	.82	.78	.77	.84	.81	.79	.77
4	1.0	.81	.72	.69	.66	.77	.71	.69	.67

Number of Strips	Cover Management Condition Pairings, Residue-Surface Roughness or Small Grain-Based Rotations 4/								
	High Res., ——Very Rough Fallow 5/——				Mod., Res., Rough Fallow and ——Small Grain 6/——				
	3-4	3-5	3-6	3-7	4-5	4-6	4-7	5-6	5-7
2	.97	.87	.81	.79	.92	.85	.81	.91	.86
4	.95	.83	.75	.70	.88	.78	.73	.87	.80

This table is based on an average row gradient of 0.5 percent, low ridge height (2 to 3 inches), 12 percent RUSLE slope gradient with the number of strips listed spanning 100 percent of the RUSLE slope length, and only 2 cover-management conditions being on the RUSLE slope at any given time.

1/ Rotations where cross-slope sod strips are alternated with cross-slope cultivated strips down the slope - Sediment deposition is induced by the sod.

2/ Sod-based rotations where hay crop is established in the spring without a nurse or companion crop of small grain - Half of the strips are always in hay, which is condition 2.

3/ Sod-based rotations where a companion crop of small grain is sown with hay seed, or hay crop is sown in stubble after small grain harvest - Half of the strips are always in hay.

4/ Rotations where cross-slope strips of contrasting residue amounts or surface roughness are alternated down the slope or strips of small grain alternate with clean-tilled row crops - Sediment deposition is induced by a strip that is either rougher surfaced or more residue-covered or has standing small grain or small grain stubble. Seasonal shifts in location of the sediment trapping versus sediment-producing strip during the cropping year are acceptable as long as the contrasting cover strip types alternate at all times.

5/ Rotations where strips with greater than 75 percent residue cover or roughness depressions 7 inches or deeper alternate with strips of lesser cover or shallower tillage depressions at all times

6/ Rotations where strips with greater than 40 percent but less than 75 percent residue cover or surface roughness depressions, 4 to 6 inches deep, or strips of growing small grain or small grain stubble, alternate with strips of lesser cover or shallower tillage depressions at all times

Table P-5 - Field Stripcropping Practice "P" Subfactor

Number of Strips	Cover Management Condition Pairings, Sod-Based Rotations 1/								
	------Clear, Spring-Seeded Hay 2/------					--With Small Grain Seeding 3/--			
	2-3	2-4	2-5	2-6	2-7	2-(4,5)	2-(5,5)	2-(6,5)	2-(7,5)
2	1.0	.91	.88	.86	.85	.89	.87	.87	.86
4	1.0	.83	.81	.80	.79	.82	.81	.80	.79

Number of Strips	Cover Management Condition Pairings, Small Grain-Based Rotations 4/								
	High Res., ------Very Rough Fallow 5/------				Mod., Res., Rough Fallow and ------Small Grain 6/------				
	3-4	3-5	3-6	3-7	4-5	4-6	4-7	5-6	5-7
2	.97	.92	.88	.87	.95	.90	.89	.94	.92
4	.95	.88	.84	.82	.91	.86	.84	.92	.89

This table is based on an average row gradient of 3.0 percent, low ridge height (2 to 3 inches), 12 percent RUSLE slope gradient with the number of strips listed spanning 100 percent of the RUSLE slope length, and only 2 cover-management conditions being on the RUSLE slope at any given time.

1/ Rotations where cross-slope sod strips are alternated with cross-slope cultivated strips down the slope - Sediment deposition is induced by the sod.

2/ Sod-based rotations where hay crop is established in the spring without a nurse or companion crop of small grain - Half of the strips are always in hay, which is condition 2.

3/ Sod-based rotations where a companion crop of small grain is sown with hay seed, or hay crop is sown in stubble after small grain harvest - Half of the strips are always in hay.

4/ Rotations where cross-slope strips of contrasting residue amounts or surface roughness are alternated down the slope or strips of small grain alternate with clean-tilled row crops - Sediment deposition is induced by a strip that is either rougher surfaced or more residue-covered or has standing small grain or small grain stubble. Seasonal shifts in location of the sediment trapping versus sediment-producing strip during the cropping year are acceptable as long as the contrasting cover strip types alternate at all times.

5/ Rotations where strips with greater than 75 percent residue cover or roughness depressions 7 inches or deeper alternate with strips of lesser cover or shallower tillage depressions at all times

6/ Rotations where strips with greater than 40 percent but less than 75 percent residue cover or surface roughness depressions, 4 to 6 inches deep, or strips of growing small grain or small grain stubble, alternate with strips of lesser cover or shallower tillage depressions at all times

Table P-6 - Buffer Stripcropping Practice "P" Subfactor

Number of Strips	Cover Management Condition Pairings, Unharvested Buffers — Crop Buffer Strip Ratios [1/]									
	3-1		4-1		5-1		6-1		7-1	
	9:1	4:1	9:1	4:1	9:1	4:1	9:1	4:1	9:1	4:1
2	.90	.77	.89	.77	.90	.77	.90	.78	.92	.79
3	.72	.70	.72	.70	.72	.70	.73	.70	.75	.70
4	.74	.64	.71	.64	.73	.64	.71	.65	.80	.67
5	.65	.64	.65	.64	.65	.64	.68	.64	.73	.64

Number of Strips	Cover Management Condition Pairings, Harvested Buffers — Crop Buffer Strip Ratios [1/]									
	3-2		4-2		5-2		6-2		7-2	
	9:1	4:1	9:1	4:1	9:1	4:1	9:1	4:1	9:1	4:1
2	.99	.99	.93	.86	.92	.82	.92	.80	.94	.82
3	.98	.98	.82	.82	.78	.77	.76	.74	.78	.73
4	.98	.98	.81	.76	.79	.72	.78	.70	.83	.72
5	.98	.98	.75	.73	.74	.70	.73	.69	.77	.70

This table is based on an average row gradient of 0.5 percent, low ridge height (2 to 3 inches), 12 percent RUSLE slope gradient with the number of strips listed spanning 100 percent of the RUSLE slope length, a continuous cover-management condition on all cultivated crop strips, and the position of the buffer/crop strips on the slope as shown below. Use the upper portions of this table for buffer strips that are left in an unharvested condition. Use the lower portion of this table for buffer strips that are mowed and/or harvested for forage.

1/ Ratio of cultivated crop strip to perennial sod (buffer) strip - A ratio of 9:1 means 10 percent of the RUSLE slope length is in buffer strip(s). A ratio of 4:1 is 20 percent of the RUSLE slope length in buffer strip(s).

Figure P-2 - Buffer Strip Systems

TWO-STRIP SYSTEM

'SITION OF STRIPS ON RUSLE SLOPE

(TOP OF SLOPE)

CROP

BUFFER

(BOTTOM OF SLOPE

****

THREE-STRIP SYSTEM

POSITION OF STRIPS ON RUSLE .OPE

(TOP (SLOPE

CROP

BUFFER

CROF

3OTTOM F SL PE

*********** ******

FOUR-STRIP SYSTEM

POSITION OF STRIPS ON RUSLE SLOPE

(TOP OF SLO

CROF

BUFFER

CROP

BUFFER

(BOTTOM OF SLOPE

****

FIVE-STRIP SYSTEM

POSITION OF STRIPS ON RUSLE SLOPE

(TOP OF SLOPE

CROP

BUFFER

BUFFER

ROP

(BOTTOM OF SLOPE

****

rela itior strips here be expe and we

Table P-7 - Terrace "P" Subfactor

Horizontal Interval 1/ (ft)	Closed outlets 2/	Open Outlets, With Percent Grade of 3/					
		0.1	0.2	0.4	0.6	0.8	>0.8
<100	.48	.52	.54	.61	.72	.90	1.00
105	.51	.55	.57	.63	.73	.91	1.00
120	.58	.62	.63	.69	.77	.92	1.00
135	.64	.67	.69	.73	.81	.94	1.00
150	.70	.72	.74	.77	.84	.94	1.00
180	.78	.80	.81	.84	.88	.96	1.00
210	.84	.86	.86	.88	.92	.97	1.00
240	.89	.90	.90	.92	.94	.98	1.00
270	.92	.93	.93	.94	.96	.99	1.00
300	.94	.95	.95	.96	.97	.99	1.00
400	.98	.98	.98	.99	.99	1.00	1.00
500	.99	.99	.99	1.00	1.00	1.00	1.00

1/ Refer to the Standard for Terrace - Code 600 in FOTG Section IV for horizontal interval.

2/ Applies to terraces with underground outlets, to level terraces with open outlets, and to water and sediment control basins. (Sediment control basins that do not have a contour factor should not be given a terrace "P" subfactor.)

3/ The average channel grade is calculated from 300 feet or 1/3 of the terrace length closest to the outlet, whichever is less.