



Natural Resources Conservation Service  
Parkade Center, Suite 250, 601 Business Loop 70 West  
Columbia, Missouri 65203

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# Productivity of Missouri Soils

Natural Resources Conservation Service  
Ival D. Persinger/Kenneth D. Vogt

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# Productivity of Missouri Soils Index

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## INTRODUCTION

This publication is a 1995 update of the original work of Ival D. Persinger, deceased. A previous update was made in 1989. At the time of the first publication, May 1977, Mr. Persinger was Assistant State Soil Scientist for the Soil Conservation Service (Natural Resources Conservation Service), Columbia, Missouri. Literature cited was used as reference material for the original document. The Persinger system was developed to arrive at Productivity Index Ratings to calculate estimated yields for soil survey mapping units as delineated in soil survey publications. It is revised and updated to consider current technology and trends. After consultation with other soil scientists and agronomists, some minor changes were made in the rating criteria. Other changes were made to coincide with boundaries in Soil Taxonomy.

Other methods of Productivity Index Ratings and yield estimates have been developed and some of those are listed in the literature cited. Another method has been developed in Missouri.<sup>1/</sup> It uses a mathematical model centered around sufficiency response curves and an assumed geometry of rooting in ideal soils. It is especially adaptable to on-site evaluation which constitutes its greatest potential, especially for the effects of soil modification and erosion on soil productivity.

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<sup>1/</sup> C.L. Scrivner, B.L. Conkling and P.G. Koenig, 1985. Soil Productivity Indices and Soil Properties for Farm-Field Sites in Missouri; The Effects of Soil Erosion Upon Soil Productivity in Missouri Farm Fields; and Soil Productivity Indices and Soil Properties of Some Major Soil Series of the Missouri Ozarks; Missouri Cooperative Extension Service Extension Circulars 947, 950 and 955; University of Missouri-Columbia, College of Agriculture, Agricultural Experiment Station in cooperation with United States Department of Agriculture, Soil Conservation Service and State of Missouri, Department of Natural Resources.

## PRODUCTIVITY OF MISSOURI SOILS

Soil surveys contain the key ingredients in making wise land use decisions easier and more accurate. Planners, bankers, land appraisers, farmers, county assessors, and other users of land are all seeking good reliable sources to evaluate the productivity of soils.

Published soil surveys contain yield estimates which serve as guides. Many users consider the comparative yields between soils to be of more value than the actual yields. The Productivity Index relationships are likely to remain constant over a period of years even though yields may increase with advancing technology.

The Productivity Index provides a scientific basis for comparing one tract of land with another. An individual farmer or farm manager can utilize these indexes in his management planning.

Using soil surveys, a farm appraiser can determine the acres of different soils on a given farm; then using the productivity indexes he can find an "average PI" for the farm. The same procedure can be used for other farms recently sold in the area. All this can be a guide to establish the fairness of a price for land.

It provides state tax personnel and county assessors with a uniform means of comparing soil resources throughout the county and state for land evaluation.

Demands on our land resources are increasing. It will be even more important in the future to know how to evaluate our land resource and to manage and use our land in the best possible manner. Productivity Index ratings along with soil surveys and other management tools will help us achieve this goal.

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## SOIL PROPERTIES AND FACTORS AFFECTING SOIL PRODUCTIVITY

The selected soil properties and factors considered for Productivity Index ratings in this system are:

1. Nutrient supplying power
2. Depth of root penetration
3. Natural soil drainage
4. Soil texture
5. Flooding and ponding
6. Slope and erosion

A discussion of each of these factors follows.

### 1. Nutrient-supplying Power

#### a. Mollisols (Prairie Soils)

These soils are dark colored, have fertile surface layers, and formed under grassland vegetation. The extension of roots into the soil profile has added high amounts of organic matter to the soil. Bases such as calcium and magnesium remain high. They have good tilth and are generally highly productive soils. Most of these soils have a high nutrient-supplying capacity. The small area of Histosols in the state is included with this group.

#### b. Entisols (Recently Formed)

These soils are on flood plains, areas of wind blown silts, some upland rocky areas and where disturbed by surface mining. Soil material may be added to the surface by flood water on floodplains at the same rate that soil development takes place. A high water table and flooding are problems in some of the alluvial soils even though fertility is high.

#### c. Inceptisols (Some Development)

These are the immature soils having profile features more weakly expressed than mature soils and retaining close resemblance to the parent material. The extreme landscape positions such as steep lands, depressions, and young surfaces limit soil development. The accumulation of clay content in the subsoil is somewhat retarded. The steep areas are mostly used for woodland or pasture. The low areas are productive, but may require artificial drainage. It is important on these soils to maintain a well balanced fertilizer program and favorable soil reaction. They have a moderately high nutrient-supplying capacity.

#### d. Alfisols (Forest Soils)

Most of these soils are light colored and formed under deciduous forest. A significant amount of clay has moved out of the surface horizon and accumulated in the subsoil. These soils have a high capacity to hold bases. However, the subsoil is leached of carbonates, soil reaction is acid, and there is a moderate amount of available bases to plants. Fragipans are present in some of these soils. They have a moderate nutrient-supplying capacity.

Some of these soils formed under prairie-timber transition and have a thicker darker surface than typical for Alfisols.

In Missouri, Alfisols occur on all kinds of landscapes and are productive soils if limed and fertilized properly.

#### e. Ultisols (Low Base Status Forest Soils)

These soils are light colored and formed under forest vegetation. Extensive leaching has taken place throughout the profile. This has led to a severe removal of bases. Clay has moved out of the surface horizons and accumulated in the subsoil. Ultisols with fragipans are not rated as severe because of the critical depth for Ultisol classification and the restriction given rooting penetration because of the fragipan. They formed in climates that have long frost-free seasons and an abundance of rainfall. The low fertility and low base status are limitations to agricultural use. In Missouri, slope and coarse fragments are often other limitations. It is necessary to add adequate quantities of lime and fertilizer when cropping these soils.

#### f. Vertisols (Shrinking and swelling clays)

These are clayey soils that have deep wide cracks at some time of year and have high bulk density between the cracks. The open cracks may be 1 centimeter or more wide and may extend to a meter or more. Normally the cracks are open to the surface, but if the soil is cultivated, the cracks may be only to the base of the plow layer or a silty surface layer.

## 2. Depth of Root Penetration

The amount of available water a plant can take from a soil is partly dependent on the depth to which the plant roots can penetrate. There are several special soil horizons that completely exclude or partially restrict root penetration. Yields on soils with these kinds of horizons are lower than those of a soil of similar soil material without these horizons. Some of these special horizons are bedrock, fragipans or those with unfavorable chemical characteristics such as high sodium content. Not all of these special horizons limit root development to the same degree. The greatest depth of root penetration is considered for this selected soil property.

- a. More than 40 inches - No root restriction.
- b. 20-40 inches - Nearly all fragipans in Missouri soils are at a depth of 20 to 36 inches. This is the maximum depth to which most roots penetrate. Some soils with horizons high in sodium restrict root development. Some soils are underlain with bedrock at this depth.
- c. Less than 20 inches - Some soils have horizons high in sodium or bedrock at this depth which restrict root development.

Fertilization and other soil management practices may increase the rooting depth of plants so they can obtain more nutrients and moisture.

### 3. Natural Soil Drainage

The natural soil drainage and aeration of a soil is related to the downward flow of water through the profile and replacement by air. It indicates the degree that a soil is saturated with water under natural conditions. It is important to have a balance of soil moisture and aeration during the cropping season.

Soils with apparent or perched water tables supply additional amounts of water to crops in the summer months. This is beneficial so long as the soils are not waterlogged for long periods within the rooting zone during the growing season. Plants need moisture regularly and in large quantities during the peak of the growing season.

Generally, the optimum combination of soil texture and soil drainage class for best crop yields is a medium textured (18 to 35 percent clay in the subsoil) moderately well drained or somewhat poorly drained soil. These soils have a high available water capacity and a seasonal high water table in the spring. Field operations are usually not significantly delayed on these silty soils.

Of the clayey soils with more than 60 percent in the subsoil, the ones that are well drained or moderately well drained are best for crops. Of the sandy soils, the ones that are somewhat poorly drained or poorly drained, but have artificial drainage yield the best.

Very poorly drained soils with clayey textures in depressional areas may pond water following a rain. Ponding is standing water in a depression and is removed only by percolation, transpiration or evaporation. It is detrimental because of poor seedling establishment in the ponded areas. Land grading to remove the depressions and improve surface drainage does improve production on these soils.

#### 4. Soil Texture

The soil texture terms used in soil materials represent the proportion of sand, silt, clay and coarse fragments in the soil. The clay content increases from sandy to fine-silty to very-fine.

The control section is a portion of the soil profile used to determine the average weighted soil texture. The control section is 10 to 40 inches below the surface in soils with no textural B horizons. In soils with textural B horizons, the control section is the top 20 inches of the subsoil. This zone commonly is 10 to 30 inches.

The capacity of the soil to supply water to plants is largely determined by the texture of the soil horizons. The available water capacity increases with increasing silt content. The coarse-silty and fine-silty soils have high available water capacities. The more sandy soils and more clayey soils have lower available water capacities. Skeletal soils average more than 35 percent coarse fragments throughout the control section and generally have low available water capacities.

Soil permeability refers to the ease with which air and water can move through the soil profile. Sandy soils normally have very rapid permeability rates, fine-silty have moderate rates and fine textured soils commonly have slow rates.

#### 5. Flooding

Flooding is the temporary covering of the soil surface by water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, or combinations of these. Shallow water standing during or immediately following a rain is excluded from the definition of flooding. Yields are lower on areas subject to flood damage, depending upon frequency, duration, and season of flooding.

##### Frequency Classes:

a. None to rare or protected by levees - (0 to 5 percent chance in any one year). Even during the unusual year of flooding, certain short season crops can be grown successfully. There is no evidence of recent water deposited sediments on the surface.

b. Occasional - (5 to 50 percent chance of flooding in any one year). The probability of flooding is not great enough to interfere seriously with farming operations although some crop damage is likely. These soils show evidence of past deposition or scouring.

c. Frequent - (more than a fifty percent chance of flooding in any one year). The probability of floods is great enough to restrict the choice of crops, cause severe damage, or prevent the production of crops. Soils show evidence of yearly deposition or scouring. In addition, debris or other recent flood water marks are easily observable on the ground, on trees, fences, or bridges.

## 6. Slope and Erosion

Slope influences the amount of surface runoff, water infiltrating into the soil surface, tillage intensity, and the efficiency of machine operations. Conservation practices are aimed at slowing down runoff water and help control soil erosion.

Most sloping soils cannot be continuously row cropped without conservation practices because soil loss will exceed the allowable limits. Some soils on slopes need no erosion control practices if used for permanent cover of grass or trees.

Generally, as the slope of the land or the intensity of the use increases, so does the need for erosion control practices. Thus, slope influences the Productivity Index.

Erosion is important from the standpoint that the surface soil is normally the most fertile and has the most favorable tilth, due to the incorporated organic matter. Loss of surface soil takes away valuable nutrients, minerals and organic matter. Even more serious is the fact that exposed "B" horizons or subsoil is usually finer in texture, lower in organic matter, of poorer structure, and lower in available water capacity than the A horizon that formerly covered it.

Reductions in crop yields for moderate and severe erosion are greater for soils with fragipans, bedrock or unfavorable subsoils at depths of 20 to 40 inches. Unfavorable subsoils include those with high sodium, clay percentages greater than 60 percent or with more than 60 percent coarse fragments. Reductions in crop yields are least for coarse-silty or fine-silty soils that are well drained.

Slight erosion is where the surface soil or A horizon remaining is greater than 7 inches thick. This means that the plow layer, 7 inches, if plowed, is all surface soil. Moderate erosion is where the upper 7 inches is mostly surface soil with mixing of subsoil material. Severe erosion is where the upper 7 inches is mostly subsoil material. The original surface soil is nearly gone.

## CALCULATING PRODUCTIVITY INDEXES

The Productivity Index compares one soil to another. These relationships are likely to remain constant over a period of years while overall yields may increase.

An index soil was selected for each soil property and other soils were compared to the index soil. The index soil represents the best combination of soil properties for growing crops. Soils were compared that had one factor variable and the other five factors constant. After a thorough comparison was made, a quantitative soil index value (0 or -) was assigned to each subdivision of the soil property or factor. A soil series and mapping unit has a set of soil properties which have to be considered to determine the Productivity Index.

The index soil was assigned a Productivity Index of 100. For example, Joy silt loam, 0 to 2 percent slopes, has a Productivity Index of 100. The properties are (1) mollisol, (2) depth of rooting is over 40 inches, (3) somewhat poorly drained or moderately well drained and 18 to 35 percent clay (fine-silty) in the upper part of the subsoil (4) fine-silty, (5) no flooding, and (6) 0-2% slopes with slight erosion.

The quantitative values need to be subtracted from 100 to arrive at the Productivity Index for other soils.

Marshall silty clay loam, 5 to 9 percent slopes, is similar to Joy, but is well drained and fine-silty (-8) and has slopes of 5 to 9 percent (-4). Subtracting the quantitative value (-12) from 100 gives Marshall silty clay loam, 5 to 9 percent slopes, a Productivity Index of 88.

Stony or bouldery surface phases are not considered in the rating criteria. Also, mapping units with substratum phases are not considered in the ratings. These phases are variable and should be considered locally by comparing them against other mapping units in the area.

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SELECTED SOIL PROPERTIES AND FACTORS CONSIDERED FOR  
PRODUCTIVITY INDEX RATINGS

1. Nutrient-Supplying Power

a.	Mollisols (Prairie Soils) Histosols	Index Soil
b.	Entisols (Recently Formed)	-4
c.	Inceptisols (Some Development)	
	Non-acid Soils	-4
	Acid soils	-8
d.	Alfisols (Forest Soils)	
	Mollic colored plow layer	-4
	Non-mollic surface layer	-8
e.	Ultisols (Low base forest soils)	-12
f.	Vertisols (Shrinking and swelling clays)	
	Mollic	-4
	Non-mollic	-8

2. Depth of Root Penetration

Layers Mostly  
Exclude Roots

a.	Over 40 inches	Index Soil
b.	20 to 40 inches	-16
c.	Less than 20 inches	-30

3. Natural Soil Drainage

% Clay in Subsoil	Somewhat Excess. or Excessively	Well	Mod. Well	Somewh Poorly	Poorly or V. Poorly
a. 0-18	-16	-8	-8	-4	-4
b. 18-35	-8	-8	Index Soil		-8
c. 35-60	-8	-8	-4	-4	-12
d. Over 60	-8	-8	-12	-16	-20

## 4. Soil Textural Family\*

a.	Sandy		
	Fine		-40
	Medium - Coarse and skeletal		-48
	Fine sand with strata of finer texture		-32
b.	Loamy-skeletal		-32
	Loamy-skeletal over clayey		-24
c.	Sandy over clayey		-24
	Sandy over loamy		-20
d.	Coarse-loamy		
	> 45% sand coarser than very fine		-20
	< 45% sand coarser than very fine		-10
e.	Coarse-loamy over clayey		-12
f.	Fine-loamy		-4
	Fine-loamy over sandy or over clayey		-12
g.	Coarse-silty	Index Soil	
	Coarse-silty over clayey		-4
	Coarse-silty over sandy		-8
h.	Fine-silty	Index Soil	
	Fine-silty with silt loam E horizon		
	6 inches or more thick		-8
i.	Fine-silty over clayey		-4
j.	Clayey over loamy		-8
k.	Clayey over sandy		-12
l.	Fine or clayey-less than 60 percent clay		
	Control section 35 to 42 percent clay		-4
	Control section > 42 percent clay		
	Loamy surface of 12 or more inches		-12
	All other surface textures		-16
m.	Very-fine or clayey-more than 60 percent		-20
n.	Clayey-skeletal		-32
o.	Loamy (shallow soils and arenic subgroups)		-20

\*Soils in loamy textural families that are not skeletal, but average 15 to 35 percent coarse fragments in the upper thirty inches of the profile should have a higher negative value; for example, a fine-loamy soil with a 15 percent average would be -8, 20 percent average -12, 25 percent average -18 and 30 percent average -24.

## 5. Flooding

a. None to rare or protected by levees	Index Soil
b. Occasional (5 to 50 percent chance)	-8
c. Frequent (greater than 50 percent chance)	-20

## 6. Slope and Erosion

Erosion	A 0-2%	B 2-5%	C 5-9%	D 9-14%	E 14-20%	F,G Over 20%
A. Slight	Index Soil	-4	-8	-14	-20	-26
*	-	-0	-4	-8	-14	-20
B. Moderate						
Favorable Subsoil	-	-8	-12	-18	-24	-30
Unfavorable Subsoil	-	-14	-20	-26	-32	-40
*	-	-0	-4	-8	-16	-24
C. Severe						
Favorable Subsoil	-	-12	-16	-22	-28	-36
Unfavorable Subsoil	-	-20	-26	-34	-40	-48
*	-	-4	-8	-12	-20	-28

\* Well drained fine-silty or coarse-silty soils to 40 inches or more.

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## DISCUSSION OF YIELD ESTIMATES AND PRODUCTIVITY INDEX

The yield estimates and Productivity Index ratings were developed from benchmark soils that comprise large acreages with considerable data available. They were rated in terms of their suitability for producing corn, soybeans, wheat, grain sorghum, cotton, grass-legume hay, and pasture. Personal knowledge of yields obtained by successful farmers and reported by soil scientists and district conservationists throughout the state of Missouri were considered. A knowledge of soil characteristics and their effect on yield potential on a farm-to-farm basis provide the information for some estimates.

A great deal of yield data was collected from farmers during normal field mapping procedures and from test plots on specific farms in progressive soil survey areas.

The Productivity Index rating system provides an index for ranking all the soil mapping units in Missouri based upon their suitability to produce crops. An individual Productivity Index rating for a soil mapping unit reflects the integrated effects of numerous factors that influence the yield potential.

## AVERAGE HIGH LEVEL MANAGEMENT

Most farm operators will fit in the category of average high level management. Such practices include providing drainage where needed, but are not adequate for all months of every year. Some protection from flooding is provided for most years on the flood plain soils.

Other practices are contouring, grass waterways, conservation tillage, and planting the correct kind and amount of high quality seed. Control of weeds, diseases, and harmful insects are other important considerations.

Favorable soil reaction and optimum levels of available nitrogen, phosphorus, and potassium need to be maintained for various crops by applying them according to soil tests.

Average high level management also includes efficient use of crop residues and green cover crops. Cropping systems designed to control erosion, maintain optimum soil organic matter levels, and facilitate the production and utilization of nitrogen in soils are provided. Timely harvesting and other crop-production operations are carried out as conditions permit.

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GUIDELINES FOR ESTIMATED YIELDS AS  
RELATED TO  
SOIL INDEX VALUE FOR SOME COMMON  
CROPS GROWN IN MISSOURI 1\_/

Soil Index Value	Corn (Bu)	Soy Beans (Bu)	Wheat (Bu)	Grain Sorghum (Bu)	Cotton Lint (lbs)	Grass Legume Hay (Tons)	Grass Legume Pasture_2/ (AUM)
100	160	55	70	120	990	5.0	10.0
95	152	52	66	114	940	4.8	9.5
90	144	49	63	108	891	4.5	9.0
85	136	47	59	102	841	4.3	8.5
80	128	44	56	96	792	4.0	8.0
75	120	41	52	90	742	3.8	7.5
70	112	38	49	84	693	3.5	7.0
65	104	36	45	77	643	3.3	6.5
60	96	33	42	72	599	3.0	6.0
55	88	30	38	65	544	2.8	5.5
50	80	27	35	60	495	2.5	5.0
45	72	25	31	54	445	2.3	4.5
40	64	22	28	48	396	2.0	4.0
35						1.8	3.5
30						1.5	3.0
25						1.3	2.5
20						1.0	2.0
15						0.8	1.5
10						0.5	1.0
5						0.3	0.5

1\_/Climatic differences such as total rainfall and monthly distribution, average annual air temperature and length of growing season were not considered in the rating system. These factors also have an influence on common crops grown that are most suitable, for example soybeans, wheat or grain sorghum instead of corn. The climatic factor needs to be considered in adjustments of estimated yields for a particular county or more specific site location. However, the index rating system should remain relatively constant. Yield estimates are those expected as average over at least a 10 year period and will increase with advances in technology.

In addition, unless designated in the mapping unit name, landscape position is not considered in the rating system. When a similar map unit is on both a summit and footslope or terrace position, the summit position is a runoff position and the footslope or terrace position accumulates water. These differing moisture situations will have some effect on yields in most years.

2\_/Pasture refers to legumes and grasses (alfalfa, bromegrass, tall fescue, reed canarygrass, orchardgrass) that are best adapted to the various soils and climatic conditions. Grass only pasture or hay will produce about 75 percent of a grass-legume mixture and yields should be adjusted accordingly.

#### PRODUCTIVITY INDEX FOR MISSOURI SOILS

Productivity Index ratings are listed for the dominant mapping units (soil series, slope and erosion) which are mapped in Missouri. Frequency of flooding is indicated where applicable on the nearly level bottomland soils. Slope group ranges are in general: A (0-2%), B (2-5%), C (5-9%), D (9-14%), E (14-20%), F (20-30%) and G (30+%). Where slope range for a mapping unit is wider than one letter slope range (for example 3-9%), normally the higher letter for the range is used. The Productivity Index Ratings are estimates based on soil properties and are not statistical values. Erosion is indicated as 1 for none to slight, 2 for moderate and 3 for severe.

An attachment lists the the mapping units by numerical sequence.

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Acadia	None-Rare	76
Ackmore	Occas. Freq.	84 72
Adair	B-2 C-1 C-2 C-3 D-2	76 76 72 68 66
Adco	A-1 B-1 B-2	80 76 72
Adler	None-Rare Occas.	88 80
Agnos	D-1 G-1	46 34
Aholt	None-Rare Occas.	60 52
Albaton	None-Rare Occas.	68 60
Allemands	None-Rare Occas.	60 52
Alligator	None-Rare Occas.	52 44
Alred	C-1 D-1 E-1 G-1	52 46 40 34
Alsup	B-1 C-1 C-2 D-1	72 68 64 62
Alvin	C-1	56
Amagon	None-Rare Occas.	84 76
Amana	Occas. Freq.	92 80

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Arbela	Occas.	76
Arisburg	B-1	88
	B-2	84
	C-2	80
Arispe	C-1	84
	C-2	80
	D-1	76
	D-2	72
Armster	B-1	72
	C-1	68
	C-2	64
	C-3	60
	D-1	62
	D-2	58
	D-3	54
	E-2	52
	E-3	48
Armstrong	B-1	76
	B-2	72
	C-1	72
	C-2	68
	C-3	64
	D-1	66
	D-2	62
	D-3	58
Ashton	None-Rare	88
	Occas.	80
	B-1	84
	C-1	80
Askew	None-Rare	92
	Occas.	84
	B-1	88
	B-2	84
Atkins	Occas.	76
	Freq.	64
Auxvasse	None-Rare	76
	B-1	72
Bado	A-1	52
	B-1	48
Bahner	B-1	80
	C-1	76

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Baldwin	A-1	68
Balltown	E-1	10
Barco	B-1	56
	B-2	46
	C-1	52
	C-2	40
	D-2	34
	D-3	26
	E-2	28
	G-1	34
Barden	B-1	76
	B-2	72
Bardley	C-1	40
	D-1	34
	F-1, G-1	22
Basehor	D-1	20
	G-1	8
Bates	B-1	68
	C-2	52
Beaucoup	None-Rare	92
	Occas.	84
	Freq.	72
Beemont	C-1	52
	D-1	46
	E-1	40
	G-1	34
Belinda	A-1	68
Belknap	Occas.	84
	Freq.	72
Bendavis	C-1	32
	D-1	26
	G-1	14
Bender	D-1	26
	G-1	14
Bethesda	E-1	38
	F-1	32

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Beulah	None-Rare	56
	B-1	52
Bevier	B-1	72
	C-1	68
	C-2	64
Blackoar	None-Rare	92
	Occas.	84
	Freq.	72
Blake	None-Rare	96
	Occas.	88
	Freq.	76
Blase	None-Rare	88
Blencoe	None-Rare	88
Bloomsdale	Freq.	36
Bluelick	B-1	72
	C-1	68
	C-2	64
	D-1	62
	D-2	58
	E-1	56
Blueye	C-1	52
	D-1	46
Bolivar	B-1	60
	B-2	50
	C-1	56
	C-2	44
	D-1	50
	D-2	38
	F-2	24
Bona	C-1	52
	D-1	46
Bonnefemme	F-1, G-1	30
Booker	None-Rare	60
	Occas.	52
	Freq.	40

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Bosket	A-1	84
	B-1	80
	B-2	76
	C-1	76
	D-1	70
	D-3	62
Bowdre	None-Rare	88
	Occas.	80
Brandon	C-1	72
	D-1	66
Branson	B-1	76
Brazilton	B-1	76
Bremer	None-Rare	84
	Occas.	76
	B-1	80
Brevator	F-1	46
Britwater	B-1	62
	C-1	56
	C-2	52
Bronaugh	B-1	72
Broseley	A-1	60
	B-1	56
	D-1	46
Brussels	G-1	34
Bucklick	B-1	68
	C-1	62
	C-2	58
	D-1	56
	D-2	52
	E-1	50
	E-2	46
	F-1	44
Buckney	None-Rare	52
	Occas.	44
	Freq.	32
Bunceton	C-1	80
	C-2	76
	D-2	70

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Cairo	Occas.	68
	Freq.	56
Caleb	D-2	78
Calhoun	None-Rare	76
	Occas.	68
Calwoods	B-1	72
	B-2	68
Canalou	None-Rare	68
Caneyville	B-1	48
	C-1	44
	D-1	38
	E-1	32
Cantril	B-1	88
Captina	B-1	72
	B-2	62
	C-1	66
	C-2	54
	D-1	60
Carlow	None-Rare	72
	Occas.	64
Carr	Occas.	60
	Freq.	48
Caruthersville	None-Rare	88
	Occas.	80
	Frequent	68
Carytown	A-1	38
Cedargap	None-Rare	60
	Occas.	52
	Freq.	40
Celt	B-1	48
Chariton	None-Rare	72
Chauncey	A-1	84
Chequest	Occas.	76
	Freq.	64

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Cherokee	A-1	76
	B-1	72
	B-2	68
Chilhowie	F-1	22
Chillicothe	C-2	68
Clafork	B-1	76
	B-2	72
	C-2	68
Claiborne	B-1	72
	C-1	68
	D-1	62
Clana	None-Rare	48
Clarinda	C-2	60
Clarksville	C-1	40
	D-1	34
	E-1	28
	F-1, G-1	22
Cleora	Occas.	64
	Freq.	52
Clinton	C-2	72
Cliquot	C-1	60
	D-1	54
Coland	Occas.	80
Collins	None-Rare	88
Collinsville	B-1	30
	D-1	20
	E-1	14
Colo	None-Rare	92
	Occas.	84
	Freq.	72
Commerce	None-Rare	96
Contrary	C-1	84
	D-1	80
	D-2	80

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Convent	None-Rare	92
Cooter	Occas. Freq.	76 64
Cotter	None-Rare	92
Cotton	B-1 B-2 C-2 D-1	72 68 64 62
Coulstone	C-1 D-1 F-1, G-1	40 34 22
Courtois	C-1 D-1	64 58
Coweta	C-1 D-1 F-1	34 28 22
Craig	B-1 C-1	56 52
Creldon	B-1 B-2 C-1	62 52 58
Crestmeade	A-1 B-1 B-2	84 80 76
Crevasse	None-Rare Occas. Freq. B-1 C-1	42 34 22 38 34
Crider	B-1 B-2 C-1 C-2 D-1 D-2 E-1 F-1	80 76 74 70 68 64 62 56
Crowley	None-Rare	76

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Dameron	None-Rare	88
	Occas.	80
	Freq.	68
Darwin	None-Rare	72
	Occas.	64
	Freq.	52
Dawn	C-2	46
	D-2	40
Deepwater	B-1	96
	B-2	92
	B-3	88
	C-1	92
	C-2	88
	C-3	84
Delassus	B-1	64
	C-1	60
	D-1	54
Dennis	B-1	80
Diehlstadt	Occas.	40
Dockery	None-Rare	96
	Occas.	88
	Freq.	76
Doniphan	C-1	52
	D-1	46
	F-1	40
Dubbs	A-1	84
	B-1	80
Dundee	None-Rare	92
	Occas.	84
Dunning	None-Rare	76
	Occas.	68
	Freq.	56
Dupo	None-Rare	88
	Occas.	80
Edina	A-1	76
Edinburg	A-1	76

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Eldon	B-1	52
	C-1	48
	D-1	42
	E-1	36
Eldorado	C-1	52
	D-1	46
Elk	None-Rare	84
	Occas.	76
Elkins	None-Rare	88
	Occas.	80
Elsah	Freq.	36
Eram	B-2	46
	C-1	52
	D-1	46
	E-1	40
Eudora	None-Rare	92
	Occas.	84
Eustis	F-1	6
Excello	None-Rare	88
	Occas.	80
	Freq.	68
	B-1	92
Exira	D-2	84
Falaya	None-Rare	92
	Occas.	84
	Freq.	72
Farrenburg	None-Rare	88
Fatima	Occas.	92
	Freq.	80
Fishpot	None-Rare	88
Floris	Occas.	60
	Freq.	48
Foley	A-1	68
Forestdale	None-Rare	72
	Occas.	64

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Fountain	A-1	84
Fourche	B-1	88
	C-1	84
	D-1	78
Freeburg	None-Rare	92
	Occas.	84
	Freq.	72
	B-1	88
	C-1	84
Friendly	B-1	68
	B-2	64
Gabriel	Occas.	92
Gara	C-1	84
	C-2	80
	C-3	76
	D-1	78
	D-2	74
	D-3	70
	E-1	72
	E-2	68
	F-3	54
Gasconade	D-1	16
	E-1	10
	F-1	4
Gatewood	C-1	40
	D-1	34
	E-1	28
	F-1	22
Gepp	C-1	56
	D-1	50
	F-1, G-1	44
Gerald	A-1	64
	B-1	60
Gideon	None-Rare	84
	Occas.	76
Gifford	B-1	64
	C-1	60
	C-2	56
Gilford	Occas.	68

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Gilliam	None-Rare	100
	Occas.	92
Gladden	Occas.	60
	Freq.	48
Glensted	B-1	64
	B-2	60
Gobbler	C-1	44
Goodson	B-1	72
	C-1	68
	D-1	62
Gorin	B-1	72
	C-1	68
	C-2	64
	D-2	58
Gosport	C-1	48
	D-1	42
	E-1	36
	E-2	24
	F-1	30
	F-2	16
Goss	C-1	44
	D-1	38
	E-1	32
	F-1, G-1	26
Grable	None-Rare	76
	Occas.	68
Greenton	B-1	80
	B-2	76
	C-1	76
	C-2	72
	C-3	68
	D-1	70
	D-2	66
	D-3	62
Grundy	A-1	84
	B-1	80
	B-2	76
	C-2	72

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Gunlock	B-1	72
	C-1	68
	D-1	62
Haig	A-1	76
Hailey	D-1	30
	G-1	12
Hamburg	F-1	60
Hartville	None-Rare	76
	Occas.	68
	B-1	72
	C-1	68
	C-2	64
Hartwell	A-1	84
	B-1	80
	B-2	76
	B-3	72
Harvestor	C-1	88
	D-1	82
Hatton	B-1	72
	C-1	68
	C-2	64
Hacreek	Occas.	92
Haymond	Occas.	80
	Freq.	68
Haynie	None-Rare	88
	Occas.	80
	Freq.	68
Hayti	None-Rare	88
	Occas.	80
	Freq.	68
Healing	None-Rare	92
	Occas.	84
Hector	B-1	30
	D-1	20
	F-1	8
Hepler	Occas.	88
	Freq.	76

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Herrick	B-1	84
Hercules	Occas.	52
	Freq.	40
Higginsville	B-1	96
	B-2	92
	C-1	92
	C-2	88
	C-3	84
	D-2	82
Hildebrecht	B-1	72
	C-1	68
	D-1	62
	D-2	50
Hoberg	B-1	58
Hobson	B-1	64
	C-1	60
	D-1	54
Hodge	None-Rare	48
	Occas.	40
	Frequent	28
Hogcreek	B-1	64
	C-1	60
Holstein	C-2	68
	D-2	62
	E-1	60
	F-1	54
Hontas	Occas.	88
	Freq.	76
Hoopeston	None-Rare	76
Hootentown	None-Rare	84
Hornbuck	C-1	76
Houlka	Occas.	64
	Freq.	52
Humeston	None-Rare	80
	Occas.	72

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Huntington	Occas.	84
	Freq.	72
Huntsville	Occas.	88
Hurst	None-Rare	76
Ida	D-2	80
	F-2	64
Irondale	F-1	6
Iva	B-1	88
Jackport	None-Rare	52
Jasper	B-1	84
Jemerson	None-Rare	84
	B-1	80
Jonca	B-1	68
	C-1	64
Joy	A-1	100
Judson	B-1	92
Kaintuck	Occas.	60
	Freq.	48
Kampville	None-Rare	76
	Occas.	68
Kanima	G-1	30
Keeno	B-1	40
	C-1	36
Kenmoor	None-Rare	60
Kennebec	None-Rare	100
	Occas.	92
	Freq.	80
Kenoma	B-1	76
	C-1	72
Kenridge	B-1	96

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Keswick	C-1	68
	C-2	64
	C-3	60
	D-1	60
	D-2	56
	D-3	52
	E-2	50
	E-3	46
Kickapoo	None-Rare	68
	Occas.	60
	Freq.	48
Killarney	G-1	10
Kilwinning	B-1	72
Klum	Occas.	60
	Freq.	48
Knobby	C-1	16
	D-1	10
	E-1	4
	G-1	0
Knobtop	C-1	64
Knox	B-1	88
	C-1	84
	C-2	84
	D-1	80
	D-2	80
	D-3	76
	E-1	74
	E-2	72
	E-3	68
	F-1	68
	F-2	64
	F-3	60
	Kobel	None-Rare
Occas.		60
Ladoga	B-1	84
	B-2	80
	C-1	76
	C-2	72
	D-2	68
	D-3	64
Lafe	None-Rare	62

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Lagonda	B-1	80
	B-2	76
	C-1	76
	C-2	72
	C-3	68
Lamine	None-Rare	76
	Occas.	68
Lamoni	C-1	72
	C-2	68
	C-3	64
	D-1	66
	D-2	62
	D-3	58
Lamotte	C-1	72
	D-1	66
Landes	Occas.	64
	Freq.	52
Lanton	Occas.	88
	Freq.	76
Lebanon	B-1	60
	C-1	56
	C-2	44
	D-1	50
	D-2	38
Lecoma	C-1	80
	D-2	70
Lenzburg	B-1	76
	C-1	72
	D-1	66
	E-1	60
	G-1	54
Leonard	B-1	64
	B-2	60
	C-1	60
	C-2	56
	D-2	50
Leslie	A-1	76
	B-1	80
	C-2	72

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Leta	None-Rare	88
	Occas.	80
	Freq.	68
Levasy	Occas.	72
	Freq.	60
Liberal	B-1	76
	C-1	72
	C-2	68
	D-1	66
Lighting	Occas.	68
Lilbourn	None-Rare	72
Lily	B-1	56
	C-1	52
	D-1	46
	F-1	34
Lindley	C-1	80
	D-1	74
	D-2	70
	D-3	66
	E-1	68
	E-2	64
	F-1	62
	F-2	58
	F-3	52
Lindsay	None-Rare	96
	Occas.	88
	Freq.	76
Lineville	B-1	88
	B-2	84
	C-1	84
	C-2	80
	C-3	76
Lomax	None-Rare	82
Loring	B-1	72
	B-2	62
	C-1	68
	C-2	56
	D-1	62
	D-2	50
	D-3	44

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Loughboro	A-1	68
Lowassie	A-1	64
Lowell	B-1	64
Lula	B-1	88
Luton	None-Rare Occas.	72 64
Macedonia	C-1 D-1	60 54
Macksburg	B-1 C-1	88 82
Malden	A-1 B-1	40 36
Malvern	D-3	62
Mandeville	B-1 C-1 C-2 D-1 D-2 D-3 E-1 F-1	64 60 48 54 42 34 48 42
Mano	C-1 D-1 G-1	60 54 42
Maplewood	B-1 B-2 C-2	68 64 60
Marion	A-1 B-1	76 72
Marioso	A-1	64
Marshall	B-1 B-2 C-1 C-2 C-3 D-2 D-3	92 92 88 88 84 84 80

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Mayes	A-1	88
McGirk	B-1	60
	B-2	56
	C-1	56
	C-2	52
McPaul	None-Rare	88
	Occas.	80
	Freq.	68
Medoc	A-1	76
Melvin	Occas.	80
	Freq.	68
Memphis	B-1	84
	C-1	80
	C-2	80
	C-3	76
	D-1	76
	D-3	72
	F-1	64
	F-2	60
	F-3	56
Menfro	A-1	84
	B-1	84
	C-1	80
	C-2	80
	D-2	76
	D-3	72
	E-1	70
	E-2	68
	F-1	64
	F-2	60
Mexico	B-1	76
	B-2	72
Mhoon	None-Rare	88
	Occas.	80
Midco	Occas.	40
	Freq.	28
Minden	B-1	96
Minnith	C-1	88
	D-1	84
	D-2	84

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Modale	None-Rare	88
	Occas.	80
Moko	C-1	18
	D-1	12
	F-1, G-1	0
Moniteau	None-Rare	76
	Occas.	68
	Freq.	56
Monona	B-1	92
	C-2	88
	D-2	84
Motark	None-Rare	88
	Occas.	80
Moville	None-Rare	88
	Occas.	80
	Freq.	68
Muldrow	None-Rare	84
Myrick	Occas.	72
	Freq.	60
Nameoki	None-Rare	80
	Occas.	72
	Freq.	60
Napier	B-1	88
	C-1	84
Needleye	A-1	72
	B-1	68
Neeper	None-Rare, B-1	84
Nevin	None-Rare	100
	Occas.	92
Newark	Occas.	88
Newcomer	D-2	42
	F-1	42
	F-2	28
Newtonia	B-1	88
Niangua	G-1	38

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Nicholson	B-1	72
	C-1	68
Nixa	B-1	28
	C-1	24
	D-1	18
Noark	C-1	40
	D-1	34
	E-1	28
	F-1	22
Nodaway	None-Rare	96
	Occas.	88
	Freq.	76
Nolin	None-Rare	88
	Occas.	80
	Freq.	68
Norborne	None-Rare	82
Norris	C-1	34
	D-1	28
	F-1	16
Nowata	C-1	36
Ocie	C-1	52
	D-1	46
	F-1	34
Okaw	A-1	68
Okemah	A-1	84
Olmitz	B-1	92
	C-1	88
Onawa	None-Rare	84
	Occas.	76
	Freq.	64
Opequon	D-1	24
	G-1	12
Opolis	A-1	76
	B-1	72
	B-2	68
Orion	Occas.	84

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Osage	None-Rare	72
	Occas.	64
	Freq.	52
Oska	C-1	52
	C-2	48
Otter	None-Rare	92
	Occas.	84
	Freq.	72
Paintbrush	B-1	54
	C-1	50
Parkville	None-Rare	88
	Occas.	80
Parsons	A-1	80
	B-1	76
	B-2	72
Paxico	None-Rare	92
	Occas.	84
Pembroke	B-1	80
	C-1	76
	D-1	70
Percival	None-Rare	70
	Occas.	62
Perche	Occas.	70
Peridge	B-1	80
	C-1	76
	D-1	70
	E-1	64
Perks	None-Rare	32
	Occas.	24
Pershing	B-1	72
	B-2	68
	C-1	68
	C-2	64
	C-3	60
Piopolis	Occas.	80
	Freq.	68

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Plainfield	C-1	24
	D-1	18
	F-1, G-1	12
Plato	B-1	56
	C-1	52
Polo	B-1	84
	C-1	80
	C-2	76
	D-2	70
Pomme	B-1	62
	C-1	58
Pope	None-Rare	64
	Occas.	56
Portage	None-Rare	60
	Occas.	52
Portageville	None-Rare	60
	Occas.	52
Portia	C-1	72
Poynor	C-1	52
	D-1	46
	F-1, G-1	34
Purdin	C-1	80
	C-2	76
	D-2	70
	D-3	66
	E-1	68
	E-2	64
	E-3	60
	F-1	62
	F-2	58
Putco	G-1	46
Putnam	A-1	72
Quarles	None-Rare	72
	Occas.	64
Racket	Occas.	80
	Freq.	68

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Racoon	None-Rare	76
	Occas.	68
Radley	None-Rare	100
	Occas.	92
Raftville	None-Rare, B-1	48
Ramsey	G-1	8
Ranacker	D-1	16
Razort	None-Rare	84
	Occas.	76
Reelfoot	None-Rare	100
	Occas.	92
Reger	E-2	38
	G-1	40
Relfe	Freq.	12
Rinda	C-2	60
Rocheport	F-1, G-1	58
Roellen	None-Rare	76
	Occas.	68
Roseland	C-1	46
	D-1	40
	D-3	34
Rosendale	F-1	62
Ross	Occas.	80
	Freq.	68
Rueter	D-1	38
	E-1	32
	G-1	26
Saffell	G-1	22
Salix	None-Rare	100

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Sampsel	B-1	72
	C-1	68
	C-2	64
	C-3	60
	D-1	62
	D-2	58
Sandbur	Freq.	40
Sandover	Occas.	60
	Freq.	48
Sarpy	None-Rare	40
	Occas.	32
	Freq.	20
Scholten	C-1	32
	D-1	26
Schuline	C-1	76
	D-1	70
	F-1	58
Scotco	B-1	28
	C-1	22
Secesh	None-Rare	76
	Occas.	68
Sedalia	B-2	68
	C-2	64
Sensabaugh	Occas.	62
Sewanee	Occas.	66
Seymour	A-1	80
	B-1	76
	B-2	72
Shadygrove	C-2	60
Shannondale	None-Rare	100
Sharkey	None-Rare	56
	Occas.	48
Sharon	Occas.	84
	Freq.	72

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Sharpsburg	B-1	88
	C-1	84
	C-2	80
	C-3	76
	D-2	78
Shelby	C-1	80
	C-2	76
	D-1	70
	D-2	66
	D-3	64
	E-1	66
	E-2	62
	E-3	58
	F-1	60
Sibley	B-1	92
	C-1	88
	C-2	88
	D-2	84
Sikeston	None-Rare	88
	Occas.	80
	Freq.	68
Silverdale	None-Rare	68
Smileyville	B-1	68
Snead	B-1	64
	B-2	54
	C-1	60
	C-2	48
	D-1	54
	D-2	42
	E-1	48
	F-1	42
Sonsac	D-1	22
	E-1	16
	F-1, G-1	10
Speed	None-Rare	92
	Occas.	84
Splitlimb	B-1	84
Steele	None-Rare	64
Stultz	Freq.	46

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Sturges	A-1	84
Sturkie	Occas.	84
	Freq.	72
Summit	A-1	84
	B-1	80
	B-2	76
	C-1	76
	C-2	72
Syenite	F-1	34
Sylvania	D-1	58
Tanglenook	None-Rare	84
	Occas.	76
Taumsauk	G-1	0
Tice	Occas.	92
	Freq.	80
Timula	C-1	84
	D-3	76
	F-1, G-1	68
	F-3	60
Tina	None-Rare	84
Tiptonville	None-Rare	100
Tonti	B-1	50
	C-1	46
	D-1	40
Towasahgy	None-Rare	80
Triplett	None-Rare	84
Tuckerman	None-Rare	80
	Occas.	72
Tunica	None-Rare	76
Tuskeego	Occas.	60
Twomile	None-Rare	60

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Union	B-1	64
	C-1	60
	C-2	48
	C-3	42
	D-1	54
	D-2	44
	D-3	36
	E-2	38
Urich	None-Rare	92
	Occas.	84
Vanmeter	D-1	50
	F-1, G-1	38
Verdigris	None-Rare	92
	Occas.	84
	Freq.	72
Vesser	None-Rare	84
	Occas.	76
	B-1	88
Viburnam	C-1	64
	D-1	58
Vigar	B-1	92
	C-1	88
Viraton	B-1	54
	C-1	50
	C-2	38
	D-1	44
Wabash	None-Rare	72
	Occas.	60
	Freq.	48
Waben	B-1	48
	C-1	44
	D-1	38
Wakeland	None-Rare	92
	Occas.	84
	Freq.	72
Wakenda	B-1	92
	C-1	88
	C-2	88

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Waldron	None-Rare	76
	Occas.	68
Wanda	B-1	84
Wardell	None-Rare	84
Waubonsie	None-Rare	80
	Occas.	72
Waverly	None-Rare	92
	Occas.	84
Weingarten	C-1	76
	D-1	70
	E-1	64
	E-2	60
	F-1	58
Weller	A-1	76
	B-1	72
	B-2	68
	C-1	68
	C-2	64
	C-3	62
	D-2	60
Westerville	None-Rare	96
	Occas.	88
Wideman	Occas.	32
	Freq.	20
Wilbur	None-Rare	88
	Freq.	68
Wilderness	B-1	40
	C-1	36
	D-1	30
	E-1	24
	F-1	18

<u>Soil Series</u>	<u>Slope and Erosion or Flooding Frequency</u>	<u>Productivity Index</u>
Winfield	B-1	88
	C-1	84
	C-2	80
	C-3	76
	D-1	78
	D-2	74
	D-3	70
	E-1	72
	E-2	68
	F-1, G-1	66
	F-2	62
Winnegan	D-1	74
	D-2	70
	D-3	66
	E-1	68
	E-2	64
	E-3	60
	F-1	62
	F-2	58
Winterset	A-1	76
Wiota	None-Rare	92
	B-1	88
Woodson	A-1	80
Wrengart	C-2	80
	D-2	74
Yelton	B-2	54
	C-1	60
	C-2	48
	D-1	54
Zaar	B-1	76
	C-1	72
Zachary	Occas.	68
	Freq.	56
Zook	None-Rare	76
	Occas.	68
	Freq.	56
	B-1	72

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As counties are mapped and completed, new mapping units will need to be added to the list.

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Attachment  
(listed by numerical sequence)

Gilliam	None-Rare	100	Radley	Occas.	92
Joy	A-1	100	Reelfoot	Occas.	92
Kennebec	None-Rare	100	Sibley	B-1	92
Nevin	None-Rare	100	Speed	None-Rare	92
Radley	None-Rare	100	Tice	Occas.	92
Reelfoot	None-Rare	100	Urich	None-Rare	92
Salix	None-Rare	100	Verdigris	None-Rare	92
Shannondale	None-Rare	100	Vigar	B-1	92
Tiptonville	None-Rare	100	Wakeland	None-Rare	92
			Wakenda	B-1	92
Blake	None-Rare	96	Waverly	None-Rare	92
Commerce	None-Rare	96	Wiota	None-Rare	92
Deepwater	B-1	96			
Dockery	None-Rare	96	Adler	None-Rare	88
Higginsville	B-1	96	Arisburg	B-1	88
Kenridge	B-1	96	Ashton	None-Rare	88
Lindsay	None-Rare	96	Askew	B-1	88
Minden	B-1	96	Blake	Occas.	88
Nodaway	None-Rare	96	Blase	None-Rare	88
Westerville	None-Rare	96	Blencoe	None-Rare	88
			Bowdre	None-Rare	88
Amana	Occas.	92	Cantril	B-1	88
Askew	None-Rare	92	Caruthersville	None-Rare	88
Beaucoup	None-Rare	92	Collins	None-Rare	88
Blackoar	None-Rare	92	Dameron	None-Rare	88
Colo	None-Rare	92	Deepwater	B-3	88
Convent	None-Rare	92	Deepwater	C-2	88
Cotter	None-Rare	92	Dockery	Occas.	88
Deepwater	B-2	92	Dupo	None-Rare	88
Deepwater	C-1	92	Elkins	None-Rare	88
Dundee	None-Rare	92	Excello	None-Rare	88
Eudora	None-Rare	92	Farrenburg	None-Rare	88
Excello	B-1	92	Fishpot	None-Rare	88
Falaya	None-Rare	92	Fourche	B-1	88
Fatima	Occas.	92	Freeburg	B-1	88
Freeburg	None-Rare	92	Harvestor	C-1	88
Gabriel	Occas.	92	Haynie	None-Rare	88
Gilliam	Occas.	92	Hayti	None-Rare	88
Hacreek	Occas.	92	Hepler	Occas.	88
Healing	None-Rare	92	Higginsville	C-2	88
Higginsville	B-2	92	Hontas	Occas.	88
Higginsville	C-1	92	Huntsville	Occas.	88
Judson	B-1	92	Iva	B-1	88
Kennebec	Occas.	92	Knox	B-1	88
Marshall	B-1	92	Lanton	Occas.	88
Marshall	B-2	92	Leta	None-Rare	88
Monona	B-1	92	Lindsay	Occas.	88
Nevin	Occas.	92	Lineville	B-1	88
Olmitz	B-1	92	Lula	B-1	88
Otter	None-Rare	92	Macksburg	B-1	88
Paxico	None-Rare	92	Marshall	C-1	88

Marshall	C-2	88	Freeburg	C-1	84
Mayes	A-1	88	Freeburg	Occas.	84
McPaul	None-Rare	88	Gara	C-1	84
Mhoon	None-Rare	88	Gideon	None-Rare	84
Minnith	C-1	88	Grundy	A-1	84
Modale	None-Rare	88	Hartwell	A-1	84
Monona	C-2	88	Healing	Occas.	84
Motark	None-Rare	88	Herrick	B-1	84
Moville	None-Rare	88	Higginsville	C-3	84
Napier	B-1	88	Hootentown	None-Rare	84
Newark	Occas.	88	Huntington	Occas.	84
Newtonia	B-1	88	Jasper	B-1	84
Nodaway	Occas.	88	Jemerson	None-Rare	84
Nolin	None-Rare	88	Knox	C-1	84
Olmitz	C-1	88	Knox	C-2	84
Parkville	None-Rare	88	Ladoga	B-1	84
Sharpsburg	B-1	88	Lineville	B-2	84
Sibley	C-1	88	Lineville	C-1	84
Sibley	C-2	88	Marshall	C-3	84
Sikeston	None-Rare	88	Marshall	D-2	84
Vesser	B-1	88	Memphis	B-1	84
Vigar	C-1	88	Menfro	A-1	84
Wakenda	C-1	88	Menfro	B-1	84
Wakenda	C-2	88	Minnith	D-1	84
Westerville	Occas.	88	Minnith	D-2	84
Wilbur	None-Rare	88	Monona	D-2	84
Winfield	B-1	88	Muldrow	None-Rare	84
Wiota	B-1	88	Napier	C-1	84
			Neeper	None-Rare, B-1	84
Ackmore	Occas.	84	Okemah	A-1	84
Amagon	None-Rare	84	Onawa	None-Rare	84
Arisburg	B-2	84	Orion	Occas.	84
Arispe	C-1	84	Otter	Occas.	84
Ashton	B-1	84	Paxico	Occas.	84
Askew	B-2	84	Polo	B-1	84
Askew	Occas.	84	Razort	None-Rare	84
Beaucoup	Occas.	84	Sharon	Occas.	84
Belknap	Occas.	84	Sharpsburg	C-1	84
Blackoar	Occas.	84	Sibley	D-2	84
Bosket	A-1	84	Speed	Occas.	84
Bremer	None-Rare	84	Splitlimb	B-1	84
Chauncey	A-1	84	Sturges	A-1	84
Colo	Occas.	84	Sturkie	Occas.	84
Contrary	C-1	84	Summit	A-1	84
Crestmeade	A-1	84	Tanglenook	None-Rare	84
Deepwater	C-3	84	Timula	C-1	84
Dubbs	A-1	84	Tina	None-Rare	84
Dundee	Occas.	84	Triplett	None-Rare	84
Elk	None-Rare	84	Urich	Occas.	84
Eudora	Occas.	84	Verdigris	Occas.	84
Exira	D-2	84	Vesser	None-Rare	84
Falaya	Occas.	84	Wakeland	Occas.	84
Fountain	A-1	84	Wanda	B-1	84
Fourche	C-1	84	Wardell	None-Rare	84

Waverly	Occas.	84	Marshall	D-3	80
Winfield	C-1	84	McPaul	Occas.	80
			Melvin	Occas.	80
Harvestor	D-1	82	Memphis	C-1	80
Higginsville	D-2	82	Memphis	C-2	80
Lomax	None-Rare	82	Menfro	C-1	80
Macksburg	C-1	82	Menfro	C-2	80
Norborne	None-Rare	82	Mhoon	Occas.	80
			Modale	Occas.	80
Adco	A-1	80	Motark	Occas.	80
Adler	Occas.	80	Moville	Occas.	80
Amana	Freq.	80	Nameoki	None-Rare	80
Arisburg	C-2	80	Nolin	Occas.	80
Arispe	C-2	80	Parkville	Occas.	80
Ashton	C-1	80	Parsons	A-1	80
Ashton	Occas.	80	Pembroke	B-1	80
Bahner	B-1	80	Peridge	B-1	80
Bosket	B-1	80	Piopolis	Occas.	80
Bowdre	Occas.	80	Polo	C-1	80
Bremer	B-1	80	Purdin	C-1	80
Bunceton	C-1	80	Racket	Occas.	80
Caruthersville	Occas.	80	Ross	Occas.	80
Coland	Occas.	80	Seymour	A-1	80
Contrary	D-1	80	Sharpsburg	C-2	80
Contrary	D-2	80	Shelby	C-1	80
Crestmeade	B-1	80	Sikeston	Occas.	80
Crider	B-1	80	Summit	B-1	80
Dameron	Occas.	80	Tice	Freq.	80
Dennis	B-1	80	Towasahgy	None-Rare	80
Dubbs	B-1	80	Tuckerman	None-Rare	80
Dupo	Occas.	80	Waubonsie	None-Rare	80
Elkins	Occas.	80	Winfield	C-2	80
Excello	Occas.	80	Woodson	A-1	80
Fatima	Freq.	80	Wrengart	C-2	80
Gara	C-2	80			
Greenton	B-1	80	Caleb	D-2	78
Grundy	B-1	80	Fourche	D-1	78
Hartwell	B-1	80	Gara	D-1	78
Haymond	Occas.	80	Sharpsburg	D-2	78
Haynie	Occas.	80	Winfield	D-1	78
Hayti	Occas.	80			
Humeston	None-Rare	80	Acadia	None-Rare	76
Ida	D-2	80	Adair	B-2	76
Jemerson	B-1	80	Adair	C-1	76
Kennebec	Freq.	80	Adco	B-1	76
Knox	D-1	80	Amagon	Occas.	76
Knox	D-2	80	Arbela	Occas.	76
Ladoga	B-2	80	Arispe	D-1	76
Lagonda	B-1	80	Armstrong	B-1	76
Lecoma	C-1	80	Atkins	Occas.	76
Leslie	B-1	80	Auxvasse	None-Rare	76
Leta	Occas.	80	Bahner	C-1	76
Lindley	C-1	80	Barden	B-1	76
Lineville	C-2	80	Blake	Freq.	76

Bosket	B-2	76	Onawa	Occas.	76
Bosket	C-1	76	Opolis	A-1	76
Branson	B-1	76	Parsons	B-1	76
Brazilton	B-1	76	Pembroke	C-1	76
Bremer	Occas.	76	Peridge	C-1	76
Bunceton	C-2	76	Polo	C-2	76
Calhoun	None-Rare	76	Purdin	C-2	76
Chequest	Occas.	76	Racoon	None-Rare	76
Cherokee	A-1	76	Razort	Occas.	76
Clafork	B-1	76	Roellen	None-Rare	76
Cooter	Occas.	76	Schuline	C-1	76
Crestmeade	B-2	76	Secesh	None-Rare	76
Crider	B-2	76	Seymour	B-1	76
Crowley	None-Rare	76	Sharpsburg	C-3	76
Dockery	Freq.	76	Shelby	C-2	76
Dunning	None-Rare	76	Summit	B-2	76
Edina	A-1	76	Summit	C-1	76
Edinburg	A-1	76	Tanglenook	Occas.	76
Elk	Occas.	76	Timula	D-3	76
Gara	C-3	76	Tunica	None-Rare	76
Gideon	Occas.	76	Vesser	Occas.	76
Grable	None-Rare	76	Waldron	None-Rare	76
Greenton	B-2	76	Weingarten	C-1	76
Greenton	C-1	76	Weller	A-1	76
Grundy	B-2	76	Winfield	C-3	76
Haig	A-1	76	Winterset	A-1	76
Hartville	None-Rare	76	Zaar	B-1	76
Hartwell	B-2	76	Zook	None-Rare	76
Hepler	Freq.	76			
Hontas	Freq.	76	Crider	C-1	74
Hoopeston	None-Rare	76	Gara	D-2	74
Hornbuck	C-1	76	Knox	E-1	74
Hurst	None-Rare	76	Lindley	D-1	74
Kampville	None-Rare	76	Winfield	D-2	74
Kenoma	B-1	76	Winnegan	D-1	74
Knox	D-3	76	Wrengart	D-2	74
Ladoga	C-1	76			
Lagonda	B-2	76	Ackmore	Freq.	72
Lagonda	C-1	76	Adair	C-2	72
Lamine	None-Rare	76	Adco	B-2	72
Lanton	Freq.	76	Alsup	B-1	72
Lenzburg	B-1	76	Arispe	D-2	72
Leslie	A-1	76	Armster	B-1	72
Liberal	B-1	76	Armstrong	B-2	72
Lindsay	Freq.	76	Armstrong	C-1	72
Lineville	C-3	76	Auxvasse	B-1	72
Marion	A-1	76	Barden	B-2	72
Medoc	A-1	76	Beaucoup	Freq.	72
Memphis	C-3	76	Belknap	Freq.	72
Memphis	D-1	76	Bevier	B-1	72
Menfro	D-2	76	Blackoar	Freq.	72
Mexico	B-1	76	Bluelick	B-1	72
Moniteau	None-Rare	76	Brandon	C-1	72
Nodaway	Freq.	76	Bronaugh	B-1	72

Calwoods	B-1	72	Putnam	A-1	72
Captina	B-1	72	Quarles	None-Rare	72
Carlow	None-Rare	72	Sampsel	B-1	72
Chariton	None-Rare	72	Seymour	B-2	72
Cherokee	B-1	72	Sharon	Freq.	72
Clafork	B-2	72	Sturkie	Freq.	72
Claiborne	B-1	72	Summit	C-2	72
Clinton	C-2	72	Tuckerman	Occas.	72
Colo	Freq.	72	Verdigris	Freq.	72
Cotton	B-1	72	Wabash	None-Rare	72
Darwin	None-Rare	72	Wakeland	Freq.	72
Falaya	Freq.	72	Waubonsie	Occas.	72
Forestdale	None-Rare	72	Weller	B-1	72
Freeburg	Freq.	72	Winfield	E-1	72
Gara	E-1	72	Zaar	C-1	72
Goodson	B-1	72	Zook	B-1	72
Gorin	B-1	72			
Greenton	C-2	72	Bosket	D-1	70
Grundy	C-2	72	Bunceton	D-2	70
Gunlock	B-1	72	Crider	C-2	70
Hartville	B-1	72	Gara	D-3	70
Hartwell	B-3	72	Greenton	D-1	70
Hatton	B-1	72	Lecoma	D-2	70
Hildebrecht	B-1	72	Lindley	D-2	70
Humeston	Occas.	72	Menfro	E-1	70
Huntington	Freq.	72	Pembroke	D-1	70
Kenoma	C-1	72	Perche	Occas.	70
Kilwinning	B-1	72	Percival	None-Rare	70
Knox	E-2	72	Peridge	D-1	70
Ladoga	C-2	72	Polo	D-2	70
Lagonda	C-2	72	Purdin	D-2	70
Lamoni	C-1	72	Schuline	D-1	70
Lamotte	C-1	72	Shelby	D-1	70
Lenzburg	C-1	72	Weingarten	D-1	70
Leslie	C-2	72	Winfield	D-3	70
Levasy	Occas.	72	Winnegan	D-2	70
Liberal	C-1	72			
Lilbourn	None-Rare	72	Adair	C-3	68
Loring	B-1	72	Albaton	None-Rare	68
Luton	None-Rare	72	Alsop	C-1	68
Marion	B-1	72	Armster	C-1	68
Memphis	D-3	72	Armstrong	C-2	68
Menfro	D-3	72	Baldwin	A-1	68
Mexico	B-2	72	Bates	B-1	68
Myrick	Occas.	72	Belinda	A-1	68
Nameoki	Occas.	72	Bevier	C-1	68
Needleye	A-1	72	Bluelick	C-1	68
Nicholson	B-1	72	Bucklick	B-1	68
Opolis	B-1	72	Cairo	Occas.	68
Osage	None-Rare	72	Calhoun	Occas.	68
Otter	Freq.	72	Calwoods	B-2	68
Parsons	B-2	72	Canalou	None-Rare	68
Pershing	B-1	72	Caruthersville	Frequent	68
Portia	C-1	72	Cherokee	B-2	68

Chillicothe	C-2	68	Pershing	C-1	68
Clafork	C-2	68	Piopolis	Freq.	68
Claiborne	C-1	68	Purdin	E-1	68
Cotton	B-2	68	Racket	Freq.	68
Crider	D-1	68	Racoon	Occas.	68
Dameron	Freq.	68	Roellen	Occas.	68
Dunning	Occas.	68	Ross	Freq.	68
Excello	Freq.	68	Sampsel	C-1	68
Foley	A-1	68	Secesh	Occas.	68
Friendly	B-1	68	Sedalia	B-2	68
Gara	E-2	68	Sikeston	Freq.	68
Gilford	Occas.	68	Silverdale	None-Rare	68
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