Average Crop, Pasture, and Forestry Productivity Ratings for Illinois Soils

University of Illinois
at Urbana-Champaign

College of Agricultural, Consumer
and Environmental Sciences

Office of Research

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Introduction

Illinois is one of the most productive agricultural areas in the world, as a result of a favorable humid climate, deep soils with good water-holding capacity, a favorable topography, and the use of improved crop-management technology. Within the state, climate and length of crop-growing season vary significantly depending on region. Four continental glaciers have influenced soil formation in Illinois, and many kinds of soils can be found here. As a consequence of the variability of climate, soils, and management, differences in crop production and soil productivity exist. *Soil productivity* refers to the capacity of soil to grow crops or plants under specified environmental conditions and is influenced by soil properties, climatic conditions, and management inputs.

Crop yields are useful in determining the suitability of any soil for agricultural use. Attempts have been made to key the yields of crops to a limited number of soil properties. Some researchers have directly measured crop yields for identified soils in farmer fields. Crop yields are the result of environmental factors such as soil, climate, and management inputs. The effects of technology and management on crop yield are determined in part by the type of soil. Consequently, more specific information on the influence of soil properties on crop yields is required. Many scientists have tried to find relationships among soil properties, climate, and crop yields, and have grouped soils to compare them. Many studies (Olson and Olson, 1985; 1986) have shown that yield response is correlated with soil properties. One study showed that silt and organic matter contents of a soil layer have a significant positive correlation with available water percentage considered in estimating the soil moisture regime of a soil. Other soil properties of importance include surface texture, root ramification zone, moisture conductivity, and depth to free water. Associated land features, such as slope and shape of soil surfaces, affect the amount of rainfall that effectively recharges the soil moisture supply. Most of this agronomic research has enhanced the importance of soil depth on crop yields in direct and indirect ways. Many of the soil properties considered as important for explaining crop yields have been related to moisture-holding capacity. Much agronomic research (Olson and Olson, 1985; 1986) has been done to describe the combined effect of soil, climatic, and management factors on crop yields by means of mathematical equations.

Differences in crop yield and soil productivity may be represented by productivity indices. Productivity ratings are a good indicator of the suitability of soils for crop production; they are useful in determining the best use and management of soils. Accurate and reliable soil productivity information is needed in the form of crop yield estimates and productivity indices for each soil type found in Illinois for wise land-use planning and accurate land appraisal. Most of the soil productivity information now in use is taken from the 1970 Circular 1016, *Productivity of Illinois Soils* (Odell and Oschwald, 1970). Much of the information was developed using data from the period between 1933 and 1950 (Wascher et al., 1950) and was updated with new information in the 1960s. The productivity data published in 1978 in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978), were updated by adjusting the previous numbers for improved technology. In 1994 a supplement to Circular 1156 was released for new soils established between 1978 and 1994 (Olson and Lang, 1994). This supplement used 1970s management of estimated crop yields.

As a result of the federal Farm Bills and state T by 2000 programs with conservation provisions Illinois farmers have changed practices and crop rotations. By reducing the use of row crops, farmers have been able to meet tolerable soil-loss standards.

Crop yield trends are important for economic decision makers, as well as for farm owners and operators, because yield performance may influence decisions about levels of agricultural inputs and adoption of new technologies. Furthermore, information about past, present, and future crop yields may be used as a basis for land valuation, crop insurance, and other related farm business. Crop-yield trends were the main concerns in the 1970s. Several studies were performed to determine whether crop yields were either increasing or leveling off (Chicoine and Scott, 1988). Many of these studies were focused at the state level.

From about 1945 to the present, crop yields have increased substantially in Illinois. These incremental increases in crop yields were primarily a result of using better technology, which included (1) biological-chemical inputs such as improved varieties, mineral fertilizers, pesticides, and higher plant populations; (2) mechanical resources such as machinery; and (3) management. Along with an upward trend in crop yields, there were annual fluctuations in crop yields resulting from weather factors.

The impact of improved technology on crop production is reflected in the continuing upward trend of yields obtained by Illinois farmers. The yearly crop yield data (Illinois Agricultural Statistics Staff, 1969–1999) collected by the Illinois Agricultural Statistics Service were used to calculate a moving 10-year average. They are shown in Figures 1A, 1B, 1C, 1D, 1E, and 1F and, in most cases, are reported from 1978 to 1999. For example, the average corn yield in 1978 represented the average of the previous 10 years (between 1969 and 1978).

Estimated crop yields under two levels of management (basic and high) were previously published by the University of Illinois Department of Agronomy as

Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978), and were based on the agricultural technology available in the late 1960s and early 1970s. The basic level of management is no longer used by Illinois farmers, apparently, because of the adoption of new, profitable management. The development and increased use of pesticides, fertilizers, improved crop varieties, reduced row width, and more efficient machinery during the 1970s resulted in a 15% increase in average corn yields. Substantial increases also occurred in the average yields of soybeans (10%), wheat (15%), and oats (10%). The yield estimates given in Circular 1156 reflected these increases and are consistent with the agricultural technology available in 1978.

Grain sorghum estimates, which are new to this publication, were the mean of four different estimates. The pasture yield estimates were calculated by multiplying the hay yields in tons/acre by 50 to estimate the number of days a cow can be supported. Forestry productivity data and site index value estimates for important tree species were developed to quantify the effects of soil properties on tree growth.

The purpose of this publication is to show the average 1990s yields of various grain, forage, and tree crops obtainable for Illinois soil types under an average level of management. Productivity indices are given for the various soils, and a simplified method of adjusting both yields and productivity indices for slope and erosion is provided for the average level of management.

Changes from Previous Soil Productivity Publications

The previously published crop yield estimates (Circular 1156) are more than 22 years old, and changes in crop yields and rotation have had an effect. In this publication, each soil type has new crop yields; this maintains accuracy and incorporates the effects of improved technology on crop production and soil productivity. A decision was made to present only the 10-year crop yields under an average level of management in this publication and not the crop yields under basic and high management levels as defined and presented in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978). We anticipate putting this publication including these average level of management crop yields and average productivity indices on a Department of Natural Resources and Environmental Sciences web site at the following location: http://www.nres.uiuc.edu/soil productivity.

A number of significant changes have occurred in the way we estimated 10-year crop yields, defined the management level, and calculated the soil-productivity indices. We decided to use average management by 1990s Illinois farmers rather than basic management, which is seldom used by farmers, and high management, which is used by the upper 10% of farmers in the 1970s, as defined in Circular 1016, *Productivity of Illinois Soils* (Odell and Oschwald, 1970), and used in Circular 1156. Average 1990s level of management is defined in Table 1. The crop yield estimates represent the mean 10-year crop yields, with half of Illinois farmers obtaining a lower yield and half obtaining a higher yield. The major reasons for the yield differences, in addition to management, are most likely a result of variations in regional weather, ranges of soil properties within a soil type, and contrasting soil map unit inclusions. We anticipate releasing Bulletin 811, *Optimum Crop Productivity Ratings for Illinois Soils* (Olson and Lang, 2000), as a supplement to this publication with an additional set of crop yield estimates for soils under an optimum level of management. The optimum level of management will be defined as the crop yields that are achieved by the top 16% of farmers in Illinois. Bulletin 811 will also be on a Department of Natural Resources and Environmental Sciences web site at the following location: http://www.nres.uiuc.edu/soilproductivity.

Table 1. Goals of Average Management Level

Management factor	average management
Drainage	sufficient
Soil pH	5.8 to 6.2 for grain; 6.0 to 6.9 for alfalfa and clover
Available phosphorus (P-1 test)	based on soil test and depending on yield goal, 40–50 pounds per acre
Available potassium	based on soil test and depending on yield goal, 240–300 pounds per acre
Nitrogen rates per year for corn (or legume equivalent)	based on soil test and depending on yield goal, 90–175 pounds per acre
Plant population (corn)	22,000 to 30,000 plants per acre
Crop residues	returned to soil
Weed and insect control	timely
Tillage, planting operations	moldboard plow or conservation tillage < 2 % slopes; conservation tillage including no-tillage for 2 to 10 % slopes
Soil erosion	within soil tolerances using conservation practices as needed

The second major change is the way the average productivity index (PI) is calculated. As previously stated, average PI is based on crop yields under average management. The State of Illinois was divided into a 66-county northern region and a 36-county southern region, as shown in Figure 2. The average PI was calculated using the 1990s average crop acreage distributions of the farmers in northern and southern Illinois (Figures 3A and 3B), and that value was rounded to the nearest whole number. Significant changes in land-use patterns have occurred as a result of the Illinois T by 2000 program, the Federal Food Security Act of 1985, and the Agricultural Farm Bills of 1990 and 1996, with their soil conservation incentives and requirements. As a consequence, all Illinois farms have a soil survey map and a conservation farm plan. The plan often includes crop rotation suggestions and management changes to keep soil loss to tolerable T levels of between 1 and 5 tons per acre per year. Subsequently, some farmers have put highly eroded soil in set-aside programs for 5, 10, or 15 years, with most of this land placed in timber or grassland. Other producers have implemented practices such as waterways, contour farming, or a no-till or conservation tillage system, or have changed the crop rotation to reduce the number of years that corn and soybeans are grown in a 10-year period. The management goals as defined in Table 1 reflect these conservation-related changes on sloping and eroding soils. The 1990s crop acreage distributions shown in Figures 3A and 3B represent changing cropland use, which has been influenced by state and federal conservation programs. In southern Illinois, corn acreage has declined, while grain sorghum and forage acreage has increased. Grain sorghum and forage crops have been added to the crop acreage distributions and were used for calculating the average PI. In northern Illinois the acreage of oats and wheat has continued to decline, while forage acreage has increased. Forage has been added to the northern crop acreage distributions and used to calculate the average PI.

An average soil PI was not given in Circular 1156 (Fehrenbacher et al., 1978). The average of basic PI and high PI (both rounded to the nearest 5 points) was assumed to represent the average PI. Only an average PI to the nearest 1 point will be provided in this publication. Another significant change is the use of one soil as the most productive instead of the nine productive soils that were used as the base value and assigned a basic PI of 100 (Circular 1156). Our base soil is Muscatune silt loam (no. 51) with crop yields under an average level of management using the 1990s crop-use pattern of the northern region.

Circular 1156 included a section on the estimated productivity of timber for selected Illinois soils. These productivity estimates were expressed as a per-acre yield in board feet for deciduous species and cords for coniferous species. In this publication the Illinois forest productivity data are presented as a derived site index value estimate rather than volume yield estimates for white oak, northern red oak, white ash, pin oak, eastern white pine, eastern cottonwood, and tulip poplar. A site index is the estimated height in feet that a tree will grow in 50 years. Tulip poplar is an important timber species in southern Illinois, but its native range does not extend to the northern half of the state, so site index predictions were limited to southern Illinois soils. Site indices were made for pin oak and eastern cottonwood for all northern and southern Illinois soils on both bottomlands and uplands. Site index predictions were not made for eastern white pine, white ash, northern red oak, and white oak on soils that are on bottomland and subject to flooding or on upland soils in depressions that are subject to ponding for long durations during some portion of the year. These productivity data will be useful to land managers who wish to allocate time and other resources to land based on the potential productivity of the site.

Data Sources and Methods

The task of collecting crop yields for an average level of management for 10 years for five grain crops (corn, soybeans, wheat, grain sorghum, and oats), forage (alfalfa or legume-grass mixtures), pasture, and timber (two to seven species of trees) is immense. The complexity of this assignment is increased because there are approximately 800 soil types that occur in approximately 2,500 soil map units with up to four erosion phases and seven slope classes. If you were to design such an experiment and collect three replicated data sets for an average management level, six crop yields including forage, and 2,500 soil map units, it would require gathering yields on about 45,000 plots or soil map units. These plots would have to be harvested for 10 years in a crop rotation that would add additional years of data collection and would not include 7,500 replicated pasture and timber plots required for additional years. Obviously, this approach of collecting data for all soil map units is not possible. Instead, it was decided to use mathematical modeling approaches with existing soil-property data and published 1970s crop yield data, crop yield trends from 1978 to 1999, and 1990s crop yield data from farmer records and fields. The collection of crop yield data for base, benchmark, and extensive Illinois soils was given priority, and these values were used for validation of estimates. These predicted crop yields were checked by using published and actual measured crop yields to validate the models. The sources of crop yield data included the following: (1) the previously published 1970s crop, forage, and timber yields in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978); (2) the supplement to *Soil Productivity in Illinois* (*Productivity of Newly Established Soils, 1978–1994*)

(Olson and Lang, 1994); (3) the Illinois Agricultural Statistics Staff (1969–1999); (4) Illinois Farm Business Farm Management records (1976–1997) (Rejesus and Hornbaker, 1999); (5) Illinois Agricultural Experiment Station Research centers (1990–1999); (6) Illinois variety trials (1990–1999); (7) check plots on farmer fields (1990–1999); (8) agronomic research plots (1990–1999); and (9) widespread use of crop yield monitors coupled with global positioning satellite systems (GPS) (1997–1999) by both farmers and researchers. The recent use of GPS with crop yield monitors provided much additional data by soil map unit, which could be used to validate other crop yield estimates. Geographic information systems (GIS) and allied technologies for organizing existing soil survey information have emerged as powerful tools for both soil survey information and crop yield data. Automated technologies also provide a means for improving the amount and usefulness of information contained on digital soil maps and their associated databases through application of spatial, analytical, and display techniques.

Average Level of Management

Crop yields produced by any soil under a given climate depend on the technological inputs used and the capacity of the soil and crop to respond. Management is the selection and application of crop-production technology. Continuing increases in average crop yields result from improved management. Because the impact of management on crop yields is so great, the average level of management should be defined for measures of soil productivity to have any meaning. Some representative characteristics of the average management levels are given in Table 1. The average level of management includes the average inputs used for crop production by most farmers in Illinois. Drainage is needed for crops grown on naturally very poorly or poorly drained soils. Drainage is not, however, always effective when rainfall amounts are high or when outlets are full. All crop yield estimates are for dryland conditions, and irrigation is not included as a management technique. Limestone should be applied to highly acid soils. Nitrogen from fertilizers or legumes is essential for corn production. Requirements such as these are met by average management (Table 1).

Estimated Ten-Year Average Crop Yields in Illinois Under an Average Level of Management

Estimated 10-year average yields under average management for the five major grain crops (corn, soybeans, wheat, grain sorghum, and oats) and hay (alfalfa and legume-grass mixture) in Illinois under dryland conditions are shown in Table 2. If you know the soil name but not the soil number, it can be obtained from the alphabetical list in Appendix A. All the soils for which 10-year crop yields are given have been established as part of the Illinois Cooperative Soil Survey program. Yields are not given for some crops on soils where these crops are not well adapted, including oat yields on soils restricted to southern Illinois. Similarly, grain sorghum yields are not given for northern Illinois soils. Yield ratings for oats, wheat, grain sorghum, and hay for the organic soils were not provided because these soils are seldom used for those crops.

Crop Adaptation to Various Soils

Crops vary in their adaptation to various soils and climatic conditions. Oats, for example, is a cool-season crop that usually yields poorly in the relatively warm climate of southern Illinois. Corn and soybeans are better adapted than wheat and oats to naturally very poorly and poorly drained soils. Grain sorghum is grown primarily in a rotation with soybeans in southern Illinois on soils that tend to have low corn yields. Forage crops, such as alfalfa, clover, bromegrass, and orchard grass, are better suited than corn and soybeans to well-drained, steep, or easily eroded soils. Tree species also differ in their adaptation to specific soil conditions.

Relationship Between Ten-Year Average Yields and Average Level of Management

Average annual yield estimates of grain and hay crops for the state, crop-reporting districts, and counties in Illinois are available from the Illinois Agricultural Statistical Reporting Service, Springfield, Illinois. The moving 10-year state average yields of corn, soybeans, wheat, oats, grain sorghum, and hay from 1978 to 1999 are shown in Figures 1A to 1F. Average soil and crop management are difficult or even unrealistic to define for a diversified area such as Illinois. You might consider an average of the crop yields under all management as a reflection of the average management under which crops are produced in Illinois (Table 1).

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay ton/ac	Grass-legume[e] hay ton/ac	Crop productivity index for average management	IL map symbol
2	Cisne silt loam	FAV	119	37	47	0	90	0.00	3.70	97	2
3	Hoyleton silt loam	FAV	116	37	46	0	91	0.00	3.70	96	3
4	Richview silt loam	FAV	121	38	48	0	93	3.10	0.00	98	4
5	Blair silt loam	FAV	110	36	44	0	88	0.00	3.50	92	5
6	Fishhook silt loam	UNF	105	34	41	50	0	0.00	3.10	86	6
7	Atlas silt loam	UNF	94	33	37	43	0	0.00	2.80	79	7
8	Hickory loam	FAV	96	33	39	45	0	0.00	3.20	81	8
9	Sandstone rock land	Crop yield data not available									9
10	Plumfield silty clay loam	FAV	85	28	33	0	72	0.00	2.80	72	10
12	Wynoose silt loam	FAV	102	33	41	0	86	0.00	3.40	86	12
13	Bluford silt loam	FAV	108	35	44	0	88	2.70	0.00	90	13
14	Ava silt loam	UNF	107	35	44	0	85	2.60	0.00	89	14
15	Parke silt loam	FAV	122	38	47	0	92	2.90	0.00	97	15
16	Rushville silt loam	FAV	117	38	49	58	0	0.00	3.70	97	16
17	Keomah silt loam	FAV	129	41	52	66	0	0.00	4.10	105	17
18	Clinton silt loam	FAV	132	41	53	69	0	4.20	0.00	107	18
19	Sylvan silt loam	FAV	120	39	48	56	0	3.20	0.00	98	19
21	Pecatonica silt loam	FAV	123	39	48	61	0	3.60	0.00	100	21
22	Westville silt loam	FAV	121	40	48	59	0	3.30	0.00	100	22
23	Blount silt loam	FAV	111	38	46	52	0	0.00	3.50	93	23
24	Dodge silt loam	FAV	133	42	51	66	0	3.90	0.00	108	24
25	Hennepin loam	UNF	94	33	34	37	0	0.00	3.10	80	25
26	Wagner silt loam	FAV	116	38	48	56	0	0.00	3.70	96	26
27	Miami silt loam	FAV	122	39	48	60	0	3.40	0.00	99	27
28	Jules silt loam	FAV	136	41	50	62	0	3.90	0.00	108	28
29	Dubuque silt loam	UNF	103	34	43	55	0	0.00	3.20	85	29
30	Hamburg silt loam	FAV	117	37	43	50	0	0.00	3.50	95	30
31	Pierron silt loam	FAV	108	34	44	0	87	0.00	3.60	90	31
34	Tallula silt loam	FAV	145	44	54	72	0	4.00	0.00	116	34
35	Bold silt loam	FAV	124	36	45	57	0	0.00	3.50	97	35
36	Tama silt loam	FAV	149	48	58	78	0	5.80	0.00	123	36
37	Worthen silt loam	FAV	154	48	59	81	0	5.60	0.00	126	37
38	Rocher loam	FAV	121	37	46	61	0	2.90	0.00	96	38
40	Dodgeville silt loam	FAV	109	38	49	56	0	3.20	0.00	92	40
41	Muscatine silt loam	FAV	159	51	60	83	0	0.00	4.80	130	41
42	Papineau fine sandy loam	FAV	110	36	44	51	0	0.00	3.40	91	42
43	Ipava silt loam	FAV	153	50	61	80	0	0.00	4.70	126	43
45	Denny silt loam	FAV	127	41	51	61	0	0.00	3.90	105	45
46	Herrick silt loam	FAV	144*	46*	58	75	0	0.00	4.40	118*	46
48	Ebbert silt loam	FAV	137	43	52	0	99	0.00	4.10	111	48
49	Watseka loamy fine sand	FAV	97*	33*	41*	49	0	0.00	3.50	82*	49
50	Virden silty clay loam	FAV	145	47	57	74	0	0.00	4.20	119	50
51	Muscatune silt loam	FAV	159	51	60	83	110	0.00	4.80	130	51
53	Bloomfield fine sand	FAV	92*	29*	39*	47	0	0.00	3.10	75*	53
54	Plainfield sand	FAV	79*	27*	32*	38	0	0.00	2.70	67*	54

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
55	Sidell silt loam	FAV	145	44	56	76	0	4.70	0.00	117	55
56	Dana silt loam	FAV	143*	44	55*	79*	0	5.00	0.00	116*	56
57	Montmorenci silt loam	FAV	125	41	50	61	0	3.90	0.00	103	57
59	Lisbon silt loam	FAV	153	49	60	80	0	0.00	4.50	125	59
60	La Rose silt loam	FAV	126	41	50	59	0	4.00	0.00	104	60
61	Atterberry silt loam	FAV	145	45	57	78	0	0.00	4.40	117	61
62	Herbert silt loam	FAV	143	45	54	73	0	0.00	4.20	116	62
63	Blown-out land	Crop yield data not available									63
64	Parr fine sandy loam	FAV	116	37	48	62	0	3.80	0.00	95	64
67	Harpster silty clay loam	FAV	145	46	54	71	0	0.00	4.30	117	67
68	Sable silty clay loam	FAV	153	50	59	79	0	0.00	4.60	126	68
69	Milford silty clay loam	FAV	136	45	54	70	0	0.00	4.40	113	69
70	Beaucoup silty clay loam	FAV	140	47	55	72	0	0.00	4.30	116	70
71	Darwin silty clay	FAV	118	40	48	57	0	0.00	3.50	98	71
72	Sharon silt loam	FAV	131	43	50	66	0	3.80	0.00	108	72
73	Ross loam	FAV	144	47	57	71	0	0.00	4.30	119	73
74	Radford silt loam	FAV	148	47	58	79	0	0.00	4.40	120	74
75	Drury silt loam	FAV	138	43	54	68	0	4.60	0.00	112	75
76	Otter silt loam	FAV	149	49	57	74	0	0.00	4.50	123	76
77	Huntsville silt loam	FAV	154	49	59	80	0	6.00	0.00	127	77
78	Arenzville silt loam	FAV	142	44	53	72	0	4.70	0.00	115	78
79	Menfro silt loam	FAV	132	41	50	0	97	3.90	0.00	106	79
81	Littleton silt loam	FAV	155	49	59	80	0	0.00	4.80	126	81
82	Millington loam	FAV	137	43	52	63	0	0.00	4.10	111	82
83	Wabash silty clay	FAV	125	41	49	59	0	0.00	3.80	103	83
84	Okaw silt loam	FAV	103	33	44	53	0	0.00	3.00	85	84
85	Jacob clay	FAV	84	31	34	37	0	0.00	2.70	73	85
86	Osco silt loam	FAV	153	48	60	81	0	5.50	0.00	125	86
87	Dickinson sandy loam	FAV	113	37	45	59	0	2.70	0.00	92	87
88	Sparta loamy sand	FAV	95*	33*	40*	46	0	0.00	3.20	81*	88
89	Maumee fine sandy loam	FAV	99*	34*	42*	49	0	2.60	0.00	83*	89
90	Bethalto silt loam	FAV	146	45	57	0	104	0.00	4.40	118	90
91	Swygert silty clay loam	UNF	126	42	50	63	0	0.00	3.60	104	91
92	Sarpy sand	FAV	89*	30*	33	37	0	0.00	3.00	74*	92
93	Rodman gravelly loam	UNF	87*	33*	33	36	0	0.00	2.90	74*	93
94	Limestone rock land	Crop yield data not available									94
95	Shale rock land	Crop yield data not available									95
96	Eden silty clay loam	UNF	87	29	26	0	77	0.00	3.10	72	96
97	Houghton peat	FAV	132	42	0	0	0	0.00	0.00	107	97
98	Ade loamy fine sand	FAV	108*	37*	46*	56	0	0.00	3.40	91*	98
100	Palms muck	FAV	129	41	0	0	0	0.00	0.00	104	100
102	La Hogue loam	FAV	129	42	57	64	0	0.00	4.20	107	102
103	Houghton muck	FAV	140	46	0	0	0	0.00	0.00	115	103
104	Virgil silt loam	FAV	145	45	56	77	0	0.00	4.40	117	104
105	Batavia silt loam	FAV	141	44	54	75	0	4.60	0.00	114	105

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
107	Sawmill silty clay loam	FAV	150	48	57	77	0	0.00	4.60	123	107
108	Bonnie silt loam	FAV	118	39	47	58	0	0.00	3.70	98	108
109	Racoon silt loam	FAV	115	37	45	0	91	3.10	0.00	94	109
111	Rubio silt loam	FAV	123	39	50	62	0	0.00	3.80	101	111
112	Cowden silt loam	FAV	126	39	50	0	95	0.00	3.90	103	112
113	Oconee silt loam	FAV	131	40	50	0	95	0.00	4.20	105	113
115	Dockery silt loam	FAV	138	45	55	68	0	0.00	4.00	114	115
116	Whitson silt loam	FAV	126	40	48	60	0	0.00	3.80	103	116
119	Elco silt loam	FAV	121	39	47	60	0	3.40	0.00	99	119
120	Huey silt loam	UNF	87	34	34	0	76	0.00	2.80	79	120
122	Colp silt loam	UNF	107	33	45	57	0	0.00	3.40	87	122
123	Riverwash	Crop yield data not available									123
125	Selma loam	FAV	139	45	55	71	0	0.00	4.20	114	125
127	Harrison silt loam	FAV	143	44	56	74	0	4.60	0.00	115	127
128	Douglas silt loam	FAV	139	43	55	74	0	4.30	0.00	112	128
131	Alvin fine sandy loam	FAV	119	39	47	59	0	3.00	0.00	98	131
132	Starks silt loam	FAV	130	41	50	67	0	4.10	0.00	106	132
134	Camden silt loam	FAV	132	40	51	69	0	3.80	0.00	106	134
136	Brooklyn silt loam	FAV	121	39	48	59	0	0.00	3.60	99	136
138	Shiloh silty clay loam	FAV	140	46	55*	70	0	0.00	4.30	115*	138
141	Wesley fine sandy loam	FAV	122	39	47	62	0	0.00	3.80	100	141
142	Patton silty clay loam	FAV	142	46	54	68	0	0.00	4.30	117	142
145	Saybrook silt loam	FAV	143	45	55	76	0	5.00	0.00	117	145
146	Elliott silt loam	FAV	134	44	54	69	0	0.00	4.00	111	146
147	Clarence silty clay loam	UNF	111	39	47	52	0	0.00	3.50	95	147
148	Proctor silt loam	FAV	147	46	56	79	0	5.10	0.00	120	148
149	Brenton silt loam	FAV	156	48	59	84	0	0.00	4.50	125	149
150	Onarga sandy loam	FAV	118	38	49	61	0	3.30	0.00	97	150
151	Ridgeville fine sandy loam	FAV	121	41	50	62	0	0.00	4.00	101	151
152	Drummer silty clay loam	FAV	155	50	58	80	0	0.00	4.50	127	152
153	Pella silty clay loam	FAV	146	48	56	73	0	0.00	4.20	120	153
154	Flanagan silt loam	FAV	155	50	61	81	0	0.00	4.70	127	154
155	Stockland loam	UNF	95	34	40	45	0	0.00	3.30	82	155
157	Symerton loam	FAV	141	43	54	75	0	4.60	0.00	114	157
159	Pillot silt loam	FAV	129	42	51	65	0	3.70	0.00	106	159
162	Gorham silty clay loam	FAV	140	46	54	71	0	0.00	4.10	115	162
164	Stoy silt loam	FAV	116	37	46	0	90	0.00	3.70	96	164
165	Weir silt loam	FAV	112	36	45	0	89	0.00	3.60	94	165
166	Cohoctah loam	FAV	141	48	59	74	0	0.00	3.90	118	166
171	Catlin silt loam	FAV	149	47	58	79	0	5.40	0.00	122	171
172	Hoopeston sandy loam	FAV	117	38	47	58	0	0.00	3.80	97	172
173	McGary silt loam	UNF	105	36	45	51	0	0.00	3.40	89	173
174	Chaseburg silt loam	FAV	131	42	50	66	0	4.00	0.00	107	174
175	Lamont fine sandy loam	FAV	104	35	43	54	0	2.60	0.00	86	175
176	Marissa silt loam	FAV	133	42	55	71	0	0.00	4.30	109	176

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
178	Ruark fine sandy loam	FAV	104	35	44	51	0	0.00	3.50	88	178
179	Minneiska loam	FAV	110	37	42	46	0	0.00	3.60	92	179
180	Dupo silt loam	FAV	145	45	54	74	0	0.00	4.10	116	180
182	Peotone mucky silty clay loam, marl substratum	FAV	132	41	57	70	0	0.00	3.70	106	182
183	Shaffton loam	FAV	124	41	48	64	0	0.00	4.10	102	183
184	Roby fine sandy loam	FAV	116	40	46	56	0	0.00	3.70	98	184
188	Beardstown loam	FAV	121	40	50	62	0	3.90	0.00	100	188
189	Martinton silt loam	FAV	138	46	56	70	0	0.00	4.30	115	189
191	Knight silt loam	FAV	129	43	51	67	0	4.20	0.00	107	191
192	Del Rey silt loam	FAV	120	40	49	59	0	0.00	3.70	100	192
193	Mayville silt loam	FAV	119	39	48	61	0	3.20	0.00	98	193
194	Morley silt loam	FAV	111	38	46	53	0	2.70	0.00	92	194
197	Troxel silt loam	FAV	152	48	58	80	0	5.50	0.00	124	197
198	Elburn silt loam	FAV	157	49	59	75	0	0.00	4.60	127	198
199	Plano silt loam	FAV	155	48	59	82	0	5.60	0.00	126	199
200	Orio sandy loam	FAV	118	38	47	57	0	0.00	3.70	97	200
201	Gilford fine sandy loam	FAV	118	39	47	58	0	0.00	3.60	98	201
204	Ayr sandy loam	FAV	117	38	48	57	0	3.70	0.00	96	204
205	Metea silt loam	FAV	104	34	42	48	0	2.70	0.00	86	205
206	Thorp silt loam	FAV	136	44	53	70	0	0.00	4.10	112	206
208	Sexton silt loam	FAV	125	40	50	63	0	0.00	3.90	102	208
210	Lena muck	FAV	136	44	0	0	0	0.00	0.00	111	210
212	Thebes silt loam	FAV	120	39	47	62	0	3.20	0.00	98	212
213	Normal silt loam	FAV	144	46	56	74	0	0.00	4.50	118	213
214	Hosmer silt loam	UNF	111	36	46	0	88	2.90	0.00	93	214
216	Stookey silt loam	FAV	128	39	47	0	94	3.50	0.00	102	216
217	Twomile silt loam	FAV	113	37	46	56	0	0.00	3.40	93	217
218	Newberry silt loam	FAV	123	39	48	0	95	0.00	3.80	101	218
219	Millbrook silt loam	FAV	141	44	55	74	0	0.00	4.20	114	219
221	Parr silt loam	FAV	127	41	51	54	0	4.30	0.00	105	221
223	Varna silt loam	FAV	126	40	51	63	0	3.90	0.00	103	223
224	Strawn silt loam	FAV	112	38	45	49	0	2.80	0.00	93	224
225	Holton silt loam	FAV	108	35	40	0	84	0.00	3.40	89	225
226	Wirt silt loam	FAV	116	37	44	0	89	2.80	0.00	94	226
227	Argyle silt loam	FAV	131	43	52	67	0	4.00	0.00	108	227
228	Nappanee silt loam	UNF	92	32	36	39	0	0.00	3.20	78	228
229	Monee silt loam	FAV	106	35	44	51	0	0.00	3.20	88	229
230	Rowe silty clay	FAV	118	39	47	56	0	0.00	3.40	98	230
231	Evansville silt loam	FAV	144	44	52	0	103	0.00	4.00	114	231
232	Ashkum silty clay loam	FAV	136	45	52	68	0	0.00	4.10	112	232
233	Birkbeck silt loam	FAV	133	42	53	70	0	4.10	0.00	108	233
234	Sunbury silt loam	FAV	143	45	56	74	0	0.00	4.40	116	234
235	Bryce silty clay	FAV	129	43	51	65	0	0.00	3.80	107	235
236	Sabina silt loam	FAV	134	42	52	69	0	0.00	4.10	108	236
238	Rantoul silty clay	FAV	115	39	45	51	0	0.00	3.30	96	238
239	Dorchester silt loam	FAV	143	42	51	70	0	4.50	0.00	113	239

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
240	Plattville silt loam	FAV	128	42	52	71	0	4.00	0.00	106	240
241	Chatsworth silt loam	UNF	81	28	29	32	0	0.00	2.60	69	241
242	Kendall silt loam	FAV	137	42	53	71	0	0.00	4.20	110	242
243	St. Charles silt loam	FAV	134	41	52	69	0	4.10	0.00	108	243
244	Hartsburg silty clay loam	FAV	145	47	54	71	0	0.00	4.30	119	244
248	McFain silty clay	FAV	129	41	50	63	0	0.00	3.60	105	248
249	Edinburg silty clay loam	FAV	137	44	54	68	0	0.00	4.00	112	249
250	Velma loam	FAV	122	40	50	61	0	3.50	0.00	100	250
256	Pana silt loam	FAV	123	41	50	62	0	3.30	0.00	102	256
257	Clarksdale silt loam	FAV	139	44	55	71	0	0.00	4.20	114	257
259	Assumption silt loam	FAV	130	41	52	66	0	3.80	0.00	106	259
261	Niota silt loam	FAV	105	34	44	52	0	0.00	3.30	87	261
262	Denrock silt loam	FAV	125	40	51	65	0	3.40	0.00	102	262
264	El Dara sandy loam	FAV	108	36	46	51	0	2.60	0.00	89	264
265	Lomax loam	FAV	123	40	49	63	0	3.60	0.00	102	265
266	Disco sandy loam	FAV	115	39	46	56	0	3.00	0.00	96	266
267	Caseyville silt loam	FAV	136	42	52	0	99	0.00	4.20	112	267
268	Mt. Carroll silt loam	FAV	146	46	56	74	0	4.90	0.00	119	268
271	Timula silt loam	FAV	124	40	47	58	0	3.00	0.00	100	271
272	Edgington silt loam	FAV	133	43	52	67	0	0.00	4.20	109	272
274	Seaton silt loam	FAV	132	41	51	68	0	3.60	0.00	106	274
275	Joy silt loam	FAV	158	49	60	82	0	0.00	4.80	127	275
277	Port Byron silt loam	FAV	156	48	60	83	0	5.60	0.00	127	277
278	Stronghurst silt loam	FAV	136	43	53	69	0	0.00	4.20	111	278
279	Rozetta silt loam	FAV	131	41	52	67	0	4.20	0.00	106	279
280	Fayette silt loam	FAV	133	42	53	68	0	4.20	0.00	108	280
282	Chute fine sand	FAV	78*	27*	30*	35	0	0.00	2.70	66*	282
283	Downsouth silt loam	FAV	147	46	56	0	102	5.10	0.00	120	283
284	Tice silty clay loam	FAV	147	46	56	76	0	0.00	4.50	118	284
286	Carmi sandy loam	FAV	116	36	48	61	0	3.40	0.00	94	286
287	Chauncey silt loam	FAV	128	41	50	0	93	3.80	0.00	105	287
288	Petrolia silty clay loam	FAV	129	39	49	63	0	0.00	3.90	103	288
290	Warsaw silt loam	FAV	128	41	51	65	0	4.10	0.00	105	290
291	Xenia silt loam	FAV	129	40	51	66	0	3.60	0.00	104	291
292	Wallkill silt loam	FAV	134	43	50	64	0	0.00	3.80	109	292
293	Andres silt loam	FAV	147	47	57	77	0	0.00	4.30	120	293
294	Symerton silt loam	FAV	143	44	55	73	0	5.00	0.00	116	294
295	Mokena silt loam	FAV	137	43	53	70	0	0.00	3.90	111	295
296	Washtenaw silt loam	FAV	143	45	54	74	0	0.00	4.00	116	296
297	Ringwood silt loam	FAV	140	45	55	73	0	4.50	0.00	115	297
298	Beecher silt loam	FAV	121	41	49	63	0	0.00	3.70	101	298
300	Westland clay loam	FAV	131	42	50	67	0	0.00	3.80	107	300
301	Grantsburg silt loam	UNF	107	36	44	0	83	2.60	0.00	90	301
302	Ambraw clay loam	FAV	122	40	49	60	0	0.00	4.00	101	302
304	Landes fine sandy loam	FAV	107	36	44	49	0	2.70	0.00	89	304
306	Allison silty clay loam	FAV	147	46	56	75	0	5.50	0.00	120	306
307	Iona silt loam	FAV	128	41	51	64	0	3.80	0.00	105	307

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
308	Alford silt loam	FAV	133	40	52	0	96	4.00	0.00	107	308
310	McHenry silt loam	FAV	125	40	49	62	0	3.40	0.00	101	310
311	Ritchey silt loam	UNF	89	30	37	46	0	0.00	2.80	74	311
312	Edwards muck	FAV	117	39	0	0	0	0.00	0.00	97	312
313	Rodman loam	UNF	87*	31*	33	36	0	0.00	2.90	74*	313
314	Joliet silty clay loam	FAV	104	35	42	54	0	0.00	2.90	87	314
315	Channahon silt loam	UNF	91	31	39	49	0	0.00	2.90	77	315
316	Romeo silt loam	UNF	49	18	27	35	0	0.00	1.80	43	316
317	Millsdale silty clay loam	FAV	115	40	48	60	0	0.00	3.50	97	317
318	Lorenzo loam	UNF	114	37	46	56	0	2.70	0.00	93	318
319	Aurelius muck	FAV	98	36	0	0	0	0.00	0.00	85	319
320	Frankfort silt loam	UNF	106	36	46	49	0	0.00	3.20	90	320
321	Du Page silt loam	FAV	136	43	52	65	0	4.20	0.00	111	321
322	Russell silt loam	FAV	128	40	50	65	0	3.60	0.00	103	322
323	Casco silt loam	UNF	112	36	44	52	0	2.30	0.00	91	323
324	Ripon silt loam	FAV	120	39	49	68	0	3.50	0.00	98	324
325	Dresden silt loam	FAV	126	40	49	65	0	3.30	0.00	102	325
326	Homer silt loam	FAV	124	39	47	61	0	0.00	3.70	101	326
327	Fox silt loam	FAV	118	38	47	58	0	2.80	0.00	96	327
328	Holly silt loam	FAV	117	38	43	0	89	0.00	3.40	96	328
329	Will silty clay loam	FAV	139	46	54	70	0	0.00	3.90	115	329
330	Peotone silty clay loam	FAV	131	43	49	62	0	0.00	4.00	108	330
331	Haymond silt loam	FAV	144	45	56	73	0	4.60	0.00	117	331
332	Billett sandy loam	FAV	107	35	43	51	0	2.40	0.00	88	332
333	Wakeland silt loam	FAV	139	45	54	68	0	0.00	4.10	114	333
334	Birds silt loam	FAV	125	41	49	60	0	3.90	0.00	103	334
335	Robbs silt loam	FAV	108	36	44	0	86	0.00	3.50	92	335
336	Wilbur silt loam	FAV	138	45	53	67	0	4.30	0.00	113	336
337	Creal silt loam	FAV	120	38	47	0	94	3.20	0.00	98	337
338	Hurst silt loam	UNF	107	35	44	54	0	0.00	3.30	88	338
339	Wellston silt loam	UNF	95	32	38	44	0	0.00	2.90	80	339
340	Zanesville silt loam	UNF	99	34	42	49	0	0.00	3.10	84	340
341	Ambraw silty clay loam, sandy substratum	FAV	123	40	48	60	0	0.00	3.80	101	341
342	Matherton silt loam	FAV	123	40	50	62	0	0.00	3.80	101	342
343	Kane silt loam	FAV	134	44	54	69	0	0.00	3.90	110	343
344	Harvard silt loam	FAV	136	43	53	70	0	4.40	0.00	111	344
345	Elvers silt loam	FAV	128	41	49	63	0	0.00	3.40	104	345
346	Dowagiac silt loam	FAV	121	40	50	61	0	3.10	0.00	99	346
347	Canisteo silt loam	FAV	134	44	53	65	0	0.00	4.20	111	347
348	Wingate silt loam	FAV	132	41	54	73	0	4.30	0.00	107	348
349	Zumbro sandy loam	FAV	106*	35*	43*	52	0	2.50	0.00	87*	349
350	Drummer silty clay loam, gravelly substratum	FAV	149*	49	56	77	0	0.00	4.20	122	350
351	Elburn silt loam, gravelly substratum	FAV	149	46	53	79	0	0.00	4.40	120	351

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
352	Palms silty clay loam, overwash	FAV	138	43	0	0	0	0.00	0.00	112	352
353	Toronto silt loam	FAV	138	45	55	74	0	0.00	4.20	114	353
354	Hononegah loamy coarse sand	FAV	91*	29*	37*	45	0	0.00	2.80	74*	354
355	Binghampton sandy loam	FAV	114	36	47	60	0	0.00	3.80	93	355
356	Elpaso silty clay loam	FAV	156	50	53	81	0	0.00	4.60	127	356
357	Vanpetten loam	FAV	117	37	49	64	0	3.10	0.00	94	357
359	Fayette silt loam, till substratum	FAV	131	40	51	64	0	3.80	0.00	105	359
360	Slacwater silt loam	FAV	126	38	48	59	0	0.00	3.70	100	360
361	Kidder silt loam	FAV	110	37	45	51	0	2.80	0.00	91	361
362	Whitaker variant loam	FAV	127	41	51	63	0	0.00	3.90	105	362
363	Griswold loam	FAV	125	41	51	61	0	3.80	0.00	103	363
365	Aptakisic silt loam	FAV	124	40	48	63	0	0.00	3.90	102	365
366	Algansee fine sandy loam	FAV	101*	33*	42*	49	0	0.00	3.00	83*	366
367	Beach sand	Crop yield data not available									367
368	Raveenwash silty clay loam	FAV	118	37	44	53	0	3.00	0.00	95	368
369	Waupecan silt loam	FAV	150	47	59	81	0	5.50	0.00	123	369
370	Saylesville silt loam	FAV	114	38	47	55	0	3.20	0.00	94	370
371	St. Charles silt loam, sandy substratum	FAV	124	39	49	62	0	3.20	0.00	100	371
372	Kendall silt loam, sandy substratum	FAV	128	40	50	64	0	0.00	3.90	104	372
373	Camden silt loam, sandy substratum	FAV	120	38	46	59	0	2.70	0.00	96	373
374	Proctor silt loam, sandy substratum	FAV	132	42	52	70	0	3.80	0.00	108	374
375	Rutland silt loam	FAV	144	46	57	77	0	0.00	4.40	118	375
376	Cisne silt loam, bench	FAV	119	37	47	0	90	0.00	3.70	97	376
377	Hoyleton silt loam, bench	FAV	116	37	46	0	91	0.00	3.70	96	377
378	Lanier fine sandy loam	FAV	87*	29*	32*	37	0	0.00	2.80	72*	378
379	Dakota silt loam	FAV	120	39	49	59	0	3.50	0.00	99	379
380	Fieldon silt loam	FAV	121	40	48	63	0	0.00	4.00	101	380
381	Craigmile sandy loam	FAV	122	41	48	59	0	0.00	3.60	102	381
382	Belknap silt loam	FAV	125	41	50	60	0	0.00	3.90	104	382
383	Newvienna silt loam	FAV	147	46	56	77	0	0.00	4.30	119	383
384	Edwardsville silt loam	FAV	155	47	60	0	109	0.00	4.60	124	384
385	Mascoutah silty clay loam	FAV	154	49	57	0	108	0.00	4.60	125	385
386	Downs silt loam	FAV	146	46	56	77	0	5.10	0.00	119	386
387	Ockley silt loam	FAV	124	39	49	63	0	4.30	0.00	102	387
388	Wenona silt loam	FAV	138	45	54	73	0	4.40	0.00	114	388
389	Hesch loamy sand, shallow variant	UNF	58	21	26	29	0	0.00	1.60	50	389
390	Hesch fine sandy loam	UNF	107	36	44	52	0	2.30	0.00	89	390
391	Blake silty clay loam	FAV	129	39	48	64	0	0.00	3.80	103	391
392	Urban land, loamy Orthents complex	Crop yield data not available									392

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
393	Marseilles silt loam, gravelly substratum	UNF	112	40	44	56	0	0.00	3.40	96	393
394	Haynie silt loam	FAV	130	41	48	64	0	3.10	0.00	105	394
395	Ceresco loam	FAV	124	42	50	60	0	0.00	3.80	104	395
396	Vesser silt loam	FAV	134	42	51	67	0	0.00	4.10	109	396
397	Boone loamy fine sand	UNF	72*	25*	33*	39	0	0.00	2.40	61*	397
398	Wea silt loam	FAV	141	44	55	74	0	5.10	0.00	115	398
400	Calco silty clay loam	FAV	148	48	55	72	0	0.00	4.40	121	400
401	Okaw silty clay loam	FAV	95	30	36	0	82	0.00	3.00	78	401
402	Colo silty clay loam	FAV	149	48	56	74	0	0.00	4.40	122	402
403	Elizabeth silt loam	UNF	63	22	26	30	0	0.00	2.20	54	403
404	Titus silty clay loam	FAV	126	42	49	60	0	0.00	3.90	104	404
405	Zook silty clay	FAV	122	42	48	61	0	0.00	3.80	103	405
406	Paxico silt loam	FAV	132	41	50	68	0	0.00	3.80	106	406
407	Udifluvents, loamy	Crop yield data not available									407
408	Aquents, loamy	Crop yield data not available									408
409	Aquents, clayey	Crop yield data not available									409
410	Woodbine silt loam	FAV	105	34	45	54	0	2.80	0.00	87	410
411	Ashdale silt loam	FAV	136	43	54	74	0	4.20	0.00	110	411
412	Ogle silt loam	FAV	141	45	56	76	0	4.70	0.00	116	412
413	Gale silt loam	FAV	107	35	43	55	0	0.00	3.20	89	413
414	Myrtle silt loam	FAV	136	43	52	69	0	3.80	0.00	110	414
415	Orion silt loam	FAV	144	45	53	71	0	0.00	4.00	116	415
416	Durand silt loam	FAV	135	45	54	70	0	4.30	0.00	112	416
417	Derinda silt loam	UNF	101	34	41	50	0	0.00	3.00	84	417
418	Schapville silt loam	UNF	113	39	46	58	0	2.60	0.00	94	418
419	Flagg silt loam	FAV	129	41	50	66	0	4.00	0.00	106	419
420	Piopolis silty clay loam	FAV	113	39	47	54	0	0.00	3.50	95	420
421	Kell silt loam	FAV	99	33	38	0	78	0.00	3.10	83	421
422	Cape silty clay loam	FAV	108	37	46	51	0	0.00	3.40	91	422
423	Millstadt silt loam	FAV	124	37	44	0	92	0.00	4.00	97	423
424	Shoals silt loam	FAV	138	44	55	70	0	0.00	4.20	113	424
425	Muskingum stony silt loam	UNF	70	26	29	32	0	0.00	2.10	61	425
426	Karnak silty clay	FAV	107	36	42	47	0	0.00	3.20	89	426
427	Burnside silt loam	FAV	102	35	41	48	0	2.50	0.00	85	427
428	Coffeen silt loam	FAV	144	46	54	72	0	0.00	4.30	117	428
429	Palsgrove silt loam	FAV	113	36	47	58	0	3.30	0.00	92	429
430	Raddle silt loam	FAV	150	47	58	77	0	5.20	0.00	122	430
431	Genesee silt loam	FAV	136	43	52	64	0	4.30	0.00	111	431
432	Geff silt loam	FAV	121	37	45	0	92	0.00	3.90	97	432
433	Floraville silt loam	FAV	111	34	44	0	88	0.00	3.60	90	433
434	Ridgway silt loam	FAV	131	40	49	0	95	3.60	0.00	104	434
435	Streator silty clay loam	FAV	141	46	55	73	0	0.00	4.10	116	435
436	Meadowbank silt loam	FAV	151	46	57	0	104	5.00	0.00	121	436
437	Redbud silt loam	FAV	124	39	50	0	92	3.70	0.00	101	437
438	Aviston silt loam	FAV	148	46	57	0	105	5.20	0.00	121	438
439	Jasper silt loam, sandy substratum	FAV	126	41	51	66	0	3.70	0.00	104	439

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
440	Jasper silt loam	FAV	140	45	57	75	0	4.60	0.00	115	440
441	Wakenda silt loam	FAV	149	47	58	0	106	5.30	0.00	123	441
442	Mundelein silt loam	FAV	150	48	59	79	0	0.00	4.30	123	442
443	Barrington silt loam	FAV	140	45	55	75	0	4.70	0.00	115	443
445	Newhaven loam	FAV	137	42	54	0	100	0.00	4.20	111	445
446	Springerton loam	FAV	144	45	56	0	104	0.00	4.30	117	446
447	Canisteo silt loam, sandy substratum	FAV	127	42	50	61	0	0.00	3.80	105	447
448	Mona silt loam	FAV	129	41	50	66	0	3.40	0.00	104	448
450	Brouillett silt loam	FAV	144	47	56	72	0	0.00	4.40	118	450
451	Lawson silt loam	FAV	152	49	58	77	0	0.00	4.60	124	451
452	Riley silty clay loam	FAV	137	44	53	69	0	0.00	4.00	112	452
453	Muren silt loam	FAV	130	40	49	0	96	4.10	0.00	105	453
454	Iva silt loam	FAV	138	42	51	0	99	0.00	4.20	110	454
455	Mixed alluvial land	Crop yield data not available									455
456	Ware silt loam	FAV	126	41	50	62	0	4.10	0.00	104	456
457	Booker silty clay	FAV	93	33	35	38	0	0.00	3.10	79	457
458	Fayette silt loam, sandy substratum	FAV	128	41	51	69	0	3.40	0.00	104	458
459	Tama silt loam, sandy substratum	FAV	146	46	56	73	0	5.10	0.00	120	459
460	Ginat silt loam	FAV	114	39	47	54	0	0.00	3.50	95	460
461	Weinbach silt loam	FAV	111	37	47	54	0	0.00	3.70	93	461
462	Sciotoville silt loam	FAV	112	38	47	56	0	3.20	0.00	93	462
463	Wheeling silt loam	FAV	117	38	47	57	0	3.00	0.00	96	463
464	Wallkill silty clay loam	FAV	118	39	47	57	0	0.00	3.30	97	464
465	Montgomery silty clay loam	FAV	118	39	46	54	0	0.00	3.60	98	465
466	Bartelso silt loam	FAV	140	44	51	0	96	0.00	3.90	112	466
467	Markland silt loam	UNF	111	37	47	56	0	0.00	3.30	93	467
468	Lakaskia silt loam	FAV	134	41	49	0	95	0.00	3.80	107	468
469	Emma silty clay loam	FAV	118	39	47	57	0	3.60	0.00	98	469
470	Keller silt loam	UNF	121	40	49	52	0	0.00	3.70	101	470
471	Clarksville cherty silt loam	UNF	62	23	24	27	0	0.00	2.30	54	471
472	Baylis silt loam	FAV	118	38	47	62	0	2.50	0.00	96	472
473	Rossburg loam	FAV	142	46	56	71	0	4.60	0.00	117	473
474	Piasa silt loam	UNF	108	38	42	53	0	0.00	3.20	92	474
475	Elsah cherty silt loam	FAV	117	39	45	54	0	3.30	0.00	97	475
476	Biddle silt loam	UNF	125	41	50	60	0	0.00	3.90	103	476
477	Winfield silt loam	FAV	129	40	50	0	98	4.00	0.00	105	477
479	Aurelius muck, sandy substratum	FAV	108	38	0	0	0	0.00	0.00	92	479
480	Moundprairie silty clay loam	FAV	129	40	49	63	0	0.00	3.70	103	480
481	Raub silt loam	FAV	146*	46*	58	81	0	0.00	4.50	119*	481
482	Uniontown silt loam	FAV	128	41	49	60	0	3.80	0.00	104	482
483	Henshaw silt loam	FAV	127	40	48	0	93	0.00	3.90	104	483
484	Harco silt loam	FAV	151	49	59	77	0	0.00	4.50	124	484
485	Richwood silt loam	FAV	148	46	57	81	0	5.20	0.00	120	485

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
486	Bertrand silt loam	FAV	125	40	49	65	0	3.10	0.00	101	486
487	Joyce silt loam	FAV	144	45	56	76	0	0.00	4.40	117	487
488	Hooppole loam	FAV	130	43	51	62	0	0.00	4.00	107	488
489	Hurst silt loam, sandy substratum	UNF	100	34	36	0	77	0.00	3.10	83	
490	Odell silt loam	FAV	140	45	54	72	0	0.00	4.10	114	490
491	Ruma silt loam	FAV	129	39	48	0	97	3.90	0.00	103	491
492	Normandy silt loam	FAV	134	43	53	66	0	0.00	4.00	109	492
493	Bonfield silt loam	FAV	131	43	51	66	0	0.00	3.80	108	493
494	Kankakee fine sandy loam	FAV	122	41	51	61	0	4.00	0.00	102	494
495	Corwin silt loam	FAV	130	42	53	65	0	4.60	0.00	108	495
496	Fincastle silt loam	FAV	133	41	52	68	0	0.00	4.00	107	496
499	Fella silty clay loam	FAV	146	47	55	74	0	0.00	4.30	119	499
501	Morocco fine sand	FAV	89*	31*	40*	47	0	0.00	3.50	77*	501
503	Rockton loam	FAV	107	36	47	60	0	3.10	0.00	90	503
504	Sogn silt loam	UNF	65	21	28	37	0	0.00	2.10	54	504
505	Dunbarton silt loam	UNF	78	27	32	40	0	0.00	2.50	66	505
506	Hitt silt loam	FAV	126	42	50	66	0	3.70	0.00	105	506
508	Selma loam, bedrock substratum	FAV	135	44	52	69	0	0.00	4.10	112	508
509	Whalan loam	FAV	98	31	40	52	0	2.40	0.00	79	509
511	Dunbarton silt loam, cherty variant	UNF	62	22	25	28	0	0.00	2.10	53	511
512	Danabrook silt loam	FAV	149	47	58	80	0	5.10	0.00	122	512
513	Granby loamy sand	FAV	111*	40*	48*	54	0	0.00	3.50	96*	513
515	Bunkum silty clay loam	FAV	117	40	45	0	90	3.10	0.00	98	515
516	Faxon clay loam	FAV	123	41	47	65	0	0.00	3.60	102	516
517	Marine silt loam	FAV	115	36	45	0	90	2.70	0.00	92	517
518	Rend silt loam	FAV	125	39	48	0	92	3.60	0.00	101	518
523	Dunham silty clay loam	FAV	141	46	55	72	0	0.00	4.20	117	523
524	Zipp silty clay loam	FAV	109	37	42	48	0	0.00	3.40	91	524
526	Grundelein silt loam	FAV	148	48	57	78	0	0.00	4.20	122	526
527	Kidami silt loam	FAV	125	40	47	61	0	3.60	0.00	102	527
528	Lahoguess loam	FAV	135	44	52	70	0	0.00	4.10	111	528
529	Selmass loam	FAV	130	42	51	67	0	0.00	4.10	107	529
530	Ozaukee silt loam	FAV	120	37	48	64	0	3.00	0.00	96	530
531	Markham silt loam	FAV	124	40	49	63	0	3.30	0.00	101	531
533	Urban land	Crop yield data not available									533
534	Urban land, clayey Orthents complex	Crop yield data not available									
535	Orthents, stony	Crop yield data not available									535
536	Dumps, mine	Crop yield data not available									536
537	Hesch fine sandy loam, gray subsoil variant	UNF	120	39	49	60	0	0.00	3.70	99	537
538	Emery silt loam	FAV	138	43	52	69	0	0.00	4.00	112	538

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
539	Wenona silt loam, loamy substratum	FAV	141	46	55	74	0	4.70	0.00	116	539
540	Frankville silt loam	FAV	105	34	43	58	0	2.70	0.00	86	540
541	Graymont silt loam	FAV	146	46	57	75	0	4.80	0.00	119	541
542	Rooks silt loam	FAV	152	47	57	78	0	0.00	4.40	122	542
543	Piscasaw silt loam	FAV	134	41	51	69	0	3.70	0.00	108	543
544	Torox silt loam	FAV	135	42	50	69	0	0.00	3.90	109	544
545	Windere silt loam	FAV	138	43	53	72	0	4.10	0.00	112	545
546	Keltner silt loam	FAV	127	41	49	66	0	3.40	0.00	104	546
547	Eleroy silt loam	FAV	114	37	42	56	0	2.70	0.00	93	547
548	Marseilles silt loam, moderately wet	UNF	115	37	46	60	0	2.90	0.00	94	548
549	Marseilles silt loam	UNF	115	38	46	60	0	2.90	0.00	94	549
551	Gosport silt loam	UNF	90	31	37	45	0	0.00	2.80	75	551
552	Drummer silty clay loam, till substratum	FAV	148	47	55	77	0	0.00	4.30	120	552
553	Bryce-Calamine variant complex	FAV	124	41	49	62	0	0.00	3.72	103	553
554	Kernan silt loam	FAV	122	40	49	62	0	0.00	3.70	100	554
555	Shadeland silt loam	FAV	103	34	44	56	0	0.00	3.40	85	555
556	High Gap loam	UNF	100	34	43	55	0	2.20	0.00	84	556
557	Millstream silt loam	FAV	143	45	55	74	0	0.00	4.10	115	557
558	Breeds silty clay loam	FAV	127	42	50	65	0	3.80	0.00	105	558
559	Lindley loam	FAV	99	33	39	44	0	0.00	3.10	83	559
560	St. Clair silt loam	UNF	98	33	43	46	0	0.00	3.20	83	560
561	Whalan and NewGlarus silt loams	FAV	105	33	42	54	0	0.00	2.64	85	561
562	Port Byron silt loam, sandy substratum	FAV	142	45	55	71	0	4.30	0.00	115	562
563	Seaton silt loam, sandy substratum	FAV	125	39	49	62	0	2.80	0.00	101	563
564	Waukegan silt loam	FAV	129	42	50	65	0	3.50	0.00	106	564
565	Tell silt loam	FAV	122	40	48	61	0	3.10	0.00	99	565
566	Rockton and Dodgeville soils	FAV	108	37	48	58	0	3.14	0.00	91	566
567	Elkhart silt loam	FAV	136	43	52	65	0	4.20	0.00	111	567
568	Niota silty clay loam, clayey subsurface variant	FAV	92	32	39	42	0	0.00	3.00	78	568
569	Medary silty clay loam	FAV	90	31	38	41	0	0.00	3.10	76	569
570	Martinsville silt loam	FAV	124	39	50	60	0	3.60	0.00	101	570
571	Whitaker silt loam	FAV	130	41	49	0	98	0.00	4.00	106	571
572	Loran silt loam	FAV	130	42	51	67	0	0.00	3.90	107	572
573	Tuscola loam	FAV	108	37	46	52	0	3.10	0.00	90	573
574	Ogle silt loam, silt loam subsoil variant	FAV	124	41	50	66	0	3.40	0.00	102	574
575	Joy silt loam, sandy substratum	FAV	145	47	56	74	0	0.00	4.40	119	575

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
576	Zwingle silt loam	FAV	112	38	46	55	0	0.00	3.40	94	576
577	Terrace escarpment	Crop yield data not available									577
578	Dorchester silt loam, cobbly substratum	FAV	116	36	43	53	0	3.60	0.00	93	578
579	Beavercreek loam	UNF	90	31	33	36	0	0.00	2.70	75	579
580	Fayette silty clay loam, karst	FAV	118	38	48	58	0	3.30	0.00	96	580
581	Tamalco silt loam	UNF	93	34	38	0	79	0.00	2.80	82	581
582	Homen silt loam	FAV	120	38	45	0	91	3.00	0.00	96	582
583	Pike silt loam	FAV	128	39	50	0	95	3.40	0.00	103	583
584	Grantfork silty clay loam	UNF	89	33	33	0	75	0.00	2.60	77	584
585	Negley loam	FAV	108	35	41	0	86	0.00	3.50	90	585
587	Terril loam	FAV	141	45	56	74	0	5.10	0.00	116	587
588	Sparta loamy sand, loamy substratum	FAV	102*	33*	42*	52	0	2.40	0.00	83*	588
589	Bowdre silty clay	FAV	121	38	46	61	0	0.00	3.60	98	589
590	Cairo silty clay	FAV	127	42	49	63	0	0.00	3.80	105	590
591	Fults silty clay	FAV	124	40	47	0	94	0.00	3.70	102	591
592	Nameoki silty clay	FAV	130	41	50	0	98	0.00	4.00	106	592
593	Chautauqua silty clay loam	FAV	128	42	53	61	0	4.20	0.00	106	593
594	Reddick silty clay loam	FAV	141	45	53	71	0	0.00	4.10	115	594
595	Coot loam	FAV	117	39	47	59	0	0.00	3.60	97	595
596	Marbletown silt loam	FAV	143	44	54	75	0	4.70	0.00	115	596
597	Armiesburg silty clay loam	FAV	141	45	55	69	0	5.30	0.00	117	597
598	Bedford silt loam	FAV	99	33	42	50	0	0.00	2.90	83	598
599	Baxter cherty silt loam	FAV	85	30	35	38	0	0.00	3.00	73	599
600	Huntington silt loam	FAV	148	48	58	77	0	5.50	0.00	122	600
601	Nolin silty clay loam	FAV	126	40	48	0	96	3.10	0.00	102	601
602	Newark silty clay loam	FAV	107	35	46	0	93	0.00	3.80	92	602
603	Blackoar silt loam	FAV	142	46	53	70	0	0.00	4.30	116	603
604	Sandy alluvial land	Crop yield data not available									604
605	Ursa silt loam	UNF	90	31	37	40	0	0.00	3.00	76	605
606	Goss gravelly silt loam	UNF	67	24	24	27	0	0.00	2.40	58	606
607	Monterey silty clay loam	FAV	139	45	52	67	0	0.00	4.20	114	607
608	Mudhen clay loam	FAV	115	38	45	56	0	0.00	3.40	95	608
609	Crane silt loam	FAV	135	42	53	69	0	0.00	4.20	110	609
611	Sepo silty clay loam	FAV	139	45	52	68	0	0.00	4.40	114	611
614	Chenoa silt loam	FAV	138	45	54	73	0	0.00	4.10	114	614
615	Vanmeter silty clay loam	FAV	82	27	32	0	75	0.00	2.80	69	615
618	Senachwine silt loam	FAV	117	38	46	56	0	2.80	0.00	95	618
619	Parkville silty clay	FAV	138	42	50	67	0	0.00	4.00	110	619
620	Darmstadt silt loam	UNF	94	35	35	0	79	0.00	2.90	82	620
621	Coulterville silt loam	UNF	122	38	45	0	85	0.00	3.30	98	621
622	Wyanet silt loam	FAV	128	42	52	63	0	4.20	0.00	106	622
623	Kishwaukee silt loam	FAV	145	46	57	77	0	5.30	0.00	119	623
624	Caprell silt loam	FAV	125	40	48	61	0	3.50	0.00	101	624
625	Geryune silt loam	FAV	148	47	57	79	0	5.10	0.00	121	625
626	Kish loam	FAV	135	43	52	67	0	0.00	4.10	110	626
627	Miami fine sandy loam	FAV	113	37	45	54	0	2.70	0.00	92	627

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
628	Lax silt loam	FAV	98	32	40	50	0	0.00	3.20	81	628
629	Crider silt loam	FAV	122	40	49	63	0	3.50	0.00	100	629
630	Navlys silty clay loam	FAV	111	36	44	50	0	0.00	3.70	92	630
631	Princeton fine sandy loam	FAV	117	37	45	0	91	3.40	0.00	96	631
632	Copperas silty clay loam	FAV	130	42	50	62	0	0.00	4.10	107	632
633	Traer silt loam	FAV	127	41	50	63	0	0.00	3.70	104	633
634	Blyton silt loam	FAV	136	44	53	66	0	0.00	4.10	112	634
635	Lismod silt loam	FAV	149	48	58	80	0	0.00	4.40	122	635
636	Parmod silt loam	FAV	135	43	52	69	0	4.50	0.00	110	636
637	Muskego silty clay loam, overwash	FAV	138	45	0	0	0	0.00	0.00	113	637
638	Muskego muck	FAV	135	43	0	0	0	0.00	0.00	110	638
639	Wynoose silt loam, bench	FAV	102	32	41	0	83	0.00	3.40	84	639
640	Bluford silt loam, bench	FAV	108	35	44	0	88	2.70	0.00	90	640
641	Quiver silty clay loam	FAV	111	38	43	48	0	0.00	3.30	93	641
647	Lawler loam	FAV	125	42	50	61	0	0.00	4.20	104	647
648	Clyde clay loam	FAV	148	49	61	80	0	0.00	4.40	123	648
649	Nachusa silt loam	FAV	146	49	58	75	0	0.00	4.20	121	649
650	Prairieville silt loam	FAV	141	45	56	76	0	5.10	0.00	116	650
651	Keswick loam	FAV	89	30	33	42	0	0.00	2.80	74	651
652	Passport silt loam	FAV	100	33	44	50	0	0.00	3.30	84	652
656	Octagon silt loam	FAV	127	41	51	62	0	4.00	0.00	104	656
657	Burksville silt loam	FAV	115	38	44	0	89	0.00	3.40	95	657
658	Sonsac very cobbly silt loam	UNF	80	29	32	0	79	0.00	2.80	71	658
660	Coatsburg silt loam	UNF	103	35	41	49	0	0.00	3.10	86	660
661	Atkinson loam	FAV	121	40	49	64	0	3.90	0.00	100	661
662	Barony silt loam	FAV	137	42	53	71	0	4.40	0.00	111	662
663	Clare silt loam	FAV	145	46	56	77	0	5.10	0.00	118	663
665	Stonelick fine sandy loam	FAV	114	35	43	51	0	2.90	0.00	91	665
667	Kaneville silt loam	FAV	142	44	54	75	0	3.40	0.00	113	667
668	Somonauk silt loam	FAV	130	39	50	67	0	0.00	4.10	104	668
669	Saffell gravelly sandy loam	UNF	76	30	32	0	74	0.00	2.70	71	669
670	Aholt silty clay	FAV	98	33	37	40	0	0.00	3.10	81	670
671	Biggsville silt loam	FAV	156	49	57	81	0	0.00	4.70	126	671
673	Onarga fine sandy loam, till substratum	FAV	121	38	48	64	0	3.00	0.00	98	673
675	Greenbush silt loam	FAV	147	46	56	77	0	0.00	4.30	119	675
678	Mannon silt loam	FAV	145	45	54	75	0	4.70	0.00	118	678
681	Dubuque-Orthents-Fayette complex	Crop yield data not available									681
682	Medway silty clay loam	FAV	141	45	55	68	0	4.50	0.00	116	682
683	Lawndale silt loam	FAV	157	49	59	86	0	0.00	4.70	127	683
684	Broadwell silt loam	FAV	150	47	58	80	0	5.40	0.00	122	684
685	Middletown silt loam	FAV	129	39	52	67	0	3.70	0.00	103	685
689	Coloma silt loam	FAV	81*	26*	36*	42	0	0.00	2.90	67*	689
690	Brookside stony silty clay loam	UNF	99	32	38	0	80	0.00	3.30	82	690

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
691	Beasley silt loam	FAV	88	31	32	38	0	0.00	3.20	75	691
695	Fosterburg silt loam	FAV	132	43	51	0	100	0.00	4.00	110	695
696	Zurich silt loam	FAV	130	41	48	62	0	3.50	0.00	105	696
697	Wauconda silt loam	FAV	144	45	53	75	0	4.70	0.00	117	697
698	Grays silt loam	FAV	134	43	52	69	0	4.10	0.00	110	698
699	Timewell silt loam	FAV	148*	48*	59*	76*	0	0.00	4.40	122*	699
700	Westmore silt loam	FAV	107	35	43	54	0	2.40	0.00	87	700
706	Boyer sandy loam	FAV	107	35	42	48	0	2.40	0.00	88	706
709	Osceola silt loam	FAV	125	40	49	65	0	3.40	0.00	101	709
718	Marsh	Crop yield data not available									718
723	Reesville silt loam	FAV	134	43	52	67	0	0.00	4.00	110	723
727	Waukee loam	FAV	117	39	47	59	0	3.20	0.00	97	727
728	Winnebago silt loam	FAV	131	43	53	67	0	3.80	0.00	108	728
731	Nasset silt loam	FAV	121	39	49	65	0	3.60	0.00	100	731
732	Appleriver silt loam	FAV	113	36	46	57	0	0.00	3.60	93	732
740	Darroch silt loam	FAV	140	45	55	73	0	0.00	4.10	114	740
741	Oakville fine sand	FAV	85*	30*	37*	42	0	0.00	2.90	73*	741
742	Dickinson sandy loam, loamy substratum	FAV	117	37	43	60	0	3.20	0.00	95	742
743	Ridott silt loam	FAV	120	39	48	60	0	0.00	3.70	99	743
745	Shullsburg silt loam	UNF	119	40	51	61	0	0.00	3.60	100	745
746	Calamine silt loam	FAV	117	39	47	57	0	0.00	3.60	97	746
750	Skelton fine sandy loam	FAV	115	36	44	0	93	3.10	0.00	93	750
751	Crawleyville fine sandy loam	FAV	114	37	45	0	90	0.00	3.50	94	751
752	Oneco silt loam	FAV	117	39	49	61	0	3.30	0.00	97	752
753	Massbach silt loam	FAV	120	39	48	62	0	3.10	0.00	98	753
755	Lamoille silt loam	FAV	91	30	37	42	0	0.00	2.90	75	755
759	Udolpho loam, sandy substratum	FAV	108	36	42	57	0	0.00	3.30	90	759
760	Marshan loam, sandy substratum	FAV	130	44	52	65	0	0.00	3.70	109	760
761	Eleva sandy loam	UNF	90	31	36	39	0	0.00	2.70	76	761
763	Joslin silt loam	FAV	141	45	57	75	0	4.80	0.00	115	763
764	Coyne fine sandy loam	FAV	113	37	47	56	0	2.90	0.00	93	764
765	Trempealeau silt loam	FAV	120	40	48	62	0	2.90	0.00	100	765
767	Prophetstown silt loam	FAV	151	47	56	75	0	0.00	4.20	122	767
768	Backbone loamy sand	FAV	91	31	38	43	0	0.00	2.90	77	768
769	Edmund silt loam	UNF	94	32	44	51	0	2.30	0.00	79	769
770	Udolpho loam	FAV	110	36	44	58	0	0.00	3.30	91	770
771	Hayfield loam	FAV	121	40	47	59	0	0.00	3.80	100	771
772	Marshan loam	FAV	133	44	51	65	0	0.00	3.80	110	772
774	Saude loam	FAV	117	39	44	57	0	2.70	0.00	96	774
776	Comfrey clay loam	FAV	147	49	55	71	0	0.00	4.40	122	776
777	Adrian muck	FAV	117	39	0	0	0	0.00	0.00	97	777
779	Chelsea loamy fine sand	FAV	84*	26*	37*	43	0	0.00	2.90	68*	779
780	Grellton sandy loam	FAV	114	37	47	58	0	2.90	0.00	93	780

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IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
781	Friesland sandy loam	FAV	127	42	51	64	0	3.90	0.00	105	781
782	Juneau silt loam	FAV	144	44	54	75	0	4.60	0.00	116	782
783	Flagler sandy loam	FAV	103	35	41	48	0	2.30	0.00	85	783
784	Berks loam	UNF	63	24	26	29	0	0.00	2.00	56	784
785	Lacrescent cobbly silty clay loam	FAV	87	30	31	36	0	0.00	3.00	73	785
786	Frondorf loam	UNF	90	31	35	0	75	0.00	3.00	77	786
787	Banlic silt loam	FAV	113	37	45	54	0	0.00	3.70	94	787
789	Ambraw-Ceresco-Sarpy complex	FAV	116*	39	46	55	0	0.00	3.74	97*	789
791	Rush silt loam	FAV	141	44	54	73	0	4.90	0.00	114	791
792	Bowes silt loam	FAV	141	44	56	76	0	5.00	0.00	115	792
800	Psamments	Crop yield data not available									800
801	Orthents, silty	Crop yield data not available									801
802	Orthents, loamy	Crop yield data not available									802
803	Orthents	Crop yield data not available									803
804	Orthents, acid	Crop yield data not available									804
805	Orthents, clayey	Crop yield data not available									805
806	Orthents, clayey-skeletal	Crop yield data not available									806
807	Aquents-Orthents complex	Crop yield data not available									807
808	Orthents, sandy-skeletal	Crop yield data not available									808
810	Oil-brine damaged land	Crop yield data not available									810
811	Aquolls	Crop yield data not available									811
812	Typic Hapludalfs	Crop yield data not available									812
815	Udorthents, silty	Crop yield data not available									815
816	Stookey-Timula-Orthents complex	Crop yield data not available									816
819	Hennepin-Vanmeter complex	UNF	89	31	33	0	86	0.00	2.98	76	819
820	Hennepin-Casco complex	UNF	101	34	38	43	0	0.00	2.78	84	820
821	Morristown silt loam	FAV	84	29	32	35	0	0.00	2.90	71	821
823	Schuline silt loam	FAV	106	34	37	0	90	2.60	0.00	86	823
824	Swanwick silt loam	FAV	98	32	36	0	83	0.00	3.20	82	824
825	Lenzburg silt loam, acid substratum	FAV	70	24	27	30	0	0.00	2.40	59	825
829	Biggsville-Mannon silt loams	FAV	152	47	56	79	0	0.00	4.70	123	829
844	Ava-Blair complex	UNF	108	35	44	0	86	0.00	2.96	90	844
850	Hickory-Hosmer silt loams	UNF	102	34	42	0	90	0.00	2.84	86	850
851	Alford-Ursa silt loams	UNF	116	36	46	0	94	0.00	3.60	95	851
852	Alford-Wellston silt loams	UNF	118	37	46	0	83	0.00	3.56	96	852
853	Alford-Westmore silt loams	FAV	123	38	48	0	92	3.36	0.00	99	853
855	Timewell and Ipava soils	FAV	150*	49*	60*	78*	0	0.00	4.52	123*	855
856	Stookey and Timula soils	FAV	126	39	47	0	101	3.30	0.00	101	856
857	Strawn-Hennepin loams	UNF	105	36	41	44	0	0.00	2.92	88	857
858	Port Byron-Mt. Carroll-Urban land	Crop yield data not available									858
859	Blair-Ursa silt loams	UNF	102	34	41	0	90	0.00	3.30	87	859
860	Hosmer-Ursa silt loams	UNF	103	34	42	0	90	0.00	2.94	87	860
861	Ursa-Hickory complex	UNF	92	32	38	42	0	0.00	2.92	78	861

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862	Pits, sand	Crop yield data not available									862
863	Pits, clay	Crop yield data not available									863
864	Pits, quarries	Crop yield data not available									864
865	Pits, gravel	Crop yield data not available									865
866	Dumps, slurry	Crop yield data not available									866
867	Oil-waste land	Crop yield data not available									867
868	Pits, organic	Crop yield data not available									868
869	Pits, quarries-Orthents complex	Crop yield data not available									869
870	Blake-Beaucoup complex	FAV	133	42	51	67	0	0.00	4.00	108	870
871	Lenzburg silt loam	FAV	96	32	36	39	0	0.00	3.20	80	871
872	Rapatee silty clay loam	FAV	117	40	47	55	0	2.90	0.00	97	872
873	Dunbarton-Dubuque complex	UNF	88	30	36	46	0	0.00	2.78	73	873
874	Dickinson-Hamburg complex	FAV	115	37	44	55	0	0.00	3.02	93	874
875	Lenzlo silty clay loam	FAV	103	34	38	43	0	0.00	3.20	85	875
876	Lenzwheel silty clay loam	FAV	91	30	34	40	0	0.00	3.00	75	876
878	Coulterville-Grantfork silty clay loams	UNF	109	36	40	0	81	0.00	3.02	90	878
880	Coulterville-Darmstadt complex	UNF	111	37	41	0	83	0.00	3.14	92	880
881	Coulterville-Hoyleton-Darmstadt complex	UNF	115	37	43	0	86	0.00	3.34	94	881
882	Oconee-Darmstadt-Coulterville silt loams	UNF	118	38	45	0	88	0.00	3.63	97	882
883	Oconee-Coulterville-Darmstadt silt loams	UNF	121	38	46	0	89	0.00	3.67	99	883
884	Bunkum-Coulterville silty clay loams	UNF	119	39	45	0	88	0.00	3.18	98	884
885	Virden-Fosterburg silt loams	FAV	140	45	55	0	102	0.00	4.12	116	885
886	Ruma-Ursa silty clay loams	UNF	113	36	44	0	95	0.00	3.54	93	886
887	Darmstadt-Grantfork complex	UNF	92	34	34	0	77	0.00	2.78	81	887
888	Passport-Grantfork complex	UNF	96	33	40	0	88	0.00	3.02	83	888
889	Bluford-Darmstadt complex	UNF	102	35	40	0	84	0.00	2.78	87	889
890	Ursa-Atlas complex	UNF	92	32	37	41	0	0.00	2.92	78	890
891	Cisne-Piasa complex	UNF	115	37	45	0	96	0.00	3.50	96	891
892	Sawmill-Lawson complex	FAV	151	48	57	77	0	0.00	4.60	123	892
893	Catlin-Saybrook complex	FAV	147	46	57	78	0	5.24	0.00	120	893
894	Herrick-Biddle-Piasa silt loams	UNF	131*	43	52	66	0	0.00	4.01	108*	894
895	Fayette-Westville complex	FAV	128	41	51	64	0	3.84	0.00	105	895
896	Wynoose-Huey complex	UNF	96	33	38	0	82	0.00	3.16	83	896
897	Bunkum-Atlas silty clay loams	UNF	108	37	42	0	92	0.00	2.98	92	897
898	Hickory-Sylvan complex	FAV	106	35	43	49	0	0.00	3.20	88	898
899	Raddle-Sparta complex	FAV	128*	41*	51*	65	0	0.00	4.40	106*	899
900	Hickory-Wellston silt loams	UNF	96	33	39	45	0	0.00	3.08	80	900
901	Ipava-Tama complex	FAV	151	49	60	79	0	0.00	5.14	125	901
902	Ipava-Sable complex	FAV	153	50	60	80	0	0.00	4.66	126	902
903	Muskego and Houghton mucks	FAV	137	44	0	0	0	0.00	0.00	112	903

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904	Muskego and Peotone soils, ponded	FAV	133	43	0	0	0	0.00	0.00	109	904
905	NewGlarus-Lamoille complex	FAV	105	34	42	50	0	0.00	2.96	86	905
906	Redbud-Hurst silty clay loams	UNF	117	37	48	0	91	0.00	3.54	97	906
907	Redbud-Colp silty clay loams	UNF	117	37	48	0	90	0.00	3.58	96	907
908	Hickory-Kell silt loams	FAV	97	33	39	0	86	0.00	3.16	83	908
909	Coulterville-Oconee silt loams	UNF	126	39	47	0	89	0.00	3.66	101	909
910	Timula-Miami complex	FAV	123	40	47	59	0	3.16	0.00	100	910
911	Timula-Hickory complex	FAV	113	37	44	53	0	0.00	3.08	93	911
912	Hoyleton-Darmstadt complex	UNF	107	36	42	0	86	0.00	3.38	91	912
913	Marseilles-Hickory complex	UNF	107	36	43	54	0	0.00	3.02	89	913
914	Atlas-Grantfork complex	UNF	92	33	35	0	86	0.00	2.72	80	914
915	Elco-Ursa silt loams	UNF	109	36	43	52	0	0.00	3.24	90	915
916	Darmstadt-Oconee silt loams	UNF	109	37	41	0	85	0.00	3.42	92	916
917	Oakville-Tell complex	FAV	100*	34*	41*	50	0	0.00	2.98	84*	917
918	Marseilles-Atlas complex	UNF	107	36	42	53	0	0.00	2.86	89	918
919	Rodman-Fox complex	UNF	100*	34*	39	45	0	0.00	2.86	83*	919
920	Rushville-Huey silt loams	UNF	105	36	43	0	90	0.00	3.34	91	920
921	Faxon-Ripon complex	FAV	122	40	48	66	0	0.00	3.56	101	921
922	Alford-Hurst silty clay loams	UNF	123	38	49	0	94	0.00	3.72	100	922
923	Urban land-Markham-Ashkum complex	Crop yield data not available									923
924	Urban land-Milford-Martinton complex	Crop yield data not available									924
925	Urban land-Frankfort-Bryce complex	Crop yield data not available									925
926	Urban land-Drummer-Barrington complex	Crop yield data not available									926
927	Blair-Atlas silt loams	UNF	104	35	41	0	90	0.00	3.22	88	927
928	NewGlarus-Palsgrove silt loams	FAV	114	37	46	57	0	0.00	3.12	93	928
929	Ava-Hickory complex	UNF	103	34	42	0	88	0.00	2.84	87	929
930	Goss-Alford complex	UNF	93	30	35	0	85	0.00	3.04	78	930
931	Seaton-Goss complex	UNF	106	34	40	52	0	0.00	3.12	87	931
932	Clinton-El Dara complex	FAV	122	39	50	62	0	3.56	0.00	100	932
933	Hickory-Clinton complex	FAV	110	36	45	55	0	0.00	3.60	92	933
934	Blair-Grantfork complex	UNF	102	35	40	0	83	0.00	3.14	87	934
935	Miami-Hennepin complex	UNF	111	37	42	51	0	0.00	3.28	92	935
936	Fayette-Hickory complex	FAV	118	38	47	59	0	0.00	3.80	98	936
937	Seaton-Hickory complex	FAV	118	38	46	59	0	0.00	3.44	96	937
938	Miami-Casco complex	UNF	118	38	46	57	0	2.96	0.00	96	938
939	Rodman-Warsaw complex	UNF	104*	35*	40	48	0	0.00	3.38	87*	939
940	Zanesville-Westmore silt loams	UNF	102	34	42	51	0	0.00	2.82	85	940
941	Virden-Piasa silt loams	UNF	130	43	51	66	0	0.00	3.80	108	941
942	Seaton-Oakville complex	FAV	113*	37*	45*	58	0	0.00	3.32	93*	942

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
943	Seaton-Timula silt loams	FAV	129	41	49	64	0	3.36	0.00	104	943
944	Velma-Coatsburg silt loams	UNF	114	38	46	56	0	0.00	3.34	95	944
945	Hickory-High Gap silt loams	UNF	98	33	41	49	0	0.00	2.80	82	945
946	Hickory-Atlas complex	UNF	95	33	38	44	0	0.00	3.04	81	946
947	Lamont, Tell, and Bloomfield soils	FAV	107*	35*	44	55	0	0.00	2.85	88*	947
948	Fayette-Clarksville complex	UNF	105	34	41	52	0	0.00	3.44	87	948
949	Eleroy and Derinda soils	UNF	109	36	42	54	0	0.00	2.82	89	949
950	Dubuque and Palsgrove soils	UNF	107	35	45	56	0	0.00	3.24	88	950
951	Palsgrove and Woodbine soils	FAV	110	35	46	56	0	3.10	0.00	90	951
952	Tell-Lamont complex	FAV	115	38	46	58	0	2.90	0.00	95	952
953	Hosmer-Lax silt loams	UNF	106	34	44	0	87	0.00	3.02	88	953
954	Alford-Baxter complex	FAV	114	36	45	0	91	0.00	3.60	94	954
955	Muskingum and Berks soils	UNF	67	25	28	31	0	0.00	2.06	59	955
956	Brandon and Saffell soils	UNF	95	34	38	0	80	0.00	2.76	83	956
957	Elco-Atlas silt loams	UNF	110	37	43	53	0	0.00	3.16	91	957
958	Hickory and Hennepin soils	UNF	95	33	37	42	0	0.00	3.16	81	958
959	Strawn-Chute complex	FAV	98*	33*	39*	43	0	0.00	2.76	82*	959
960	Hickory-Sylvan-Fayette silt loams	FAV	111	37	45	53	0	0.00	3.40	92	960
961	Burkhardt-Saude complex	FAV	103*	31*	40*	49	0	0.00	3.12	82*	961
962	Sylvan-Bold complex	FAV	122	38	47	56	0	0.00	3.32	98	962
963	Hickory and Sylvan soils	FAV	106	35	43	49	0	0.00	3.20	88	963
964	Hennepin and Miami soils	UNF	105	35	40	46	0	0.00	3.22	88	964
965	Tallula-Bold silt loams	FAV	137	41	50	66	0	0.00	3.80	109	965
966	Miami-Russell silt loams	FAV	124	39	49	62	0	3.48	0.00	101	966
967	Hickory-Gosport complex	UNF	94	32	38	45	0	0.00	3.04	79	967
968	Birkbeck-Miami silt loams	FAV	129	41	51	66	0	3.82	0.00	105	968
969	Rodman-Casco complex	UNF	97*	33*	37	42	0	0.00	2.66	81*	969
970	Keller-Coatsburg complex	UNF	114	38	46	51	0	0.00	3.46	95	970
971	Fishhook-Atlas complex	UNF	101	34	39	47	0	0.00	2.98	84	971
972	Casco-Fox complex	UNF	114	37	45	54	0	2.50	0.00	93	972
973	Dubuque and Dunbarton soils	UNF	93	31	39	49	0	0.00	2.92	78	973
974	Dickinson-Onarga complex	FAV	115	37	47	60	0	2.94	0.00	94	974
975	Alvin-Lamont complex	FAV	113	37	45	57	0	2.84	0.00	93	975
976	Neotoma-Rock outcrop complex	Crop yield data not available									976
977	Neotoma-Wellston complex	UNF	86	30	34	39	0	0.00	3.26	74	977
978	Wauconda and Beecher silt loams	FAV	135	43	51	70	0	0.00	4.30	111	978
979	Grays and Markham silt loams	FAV	130	42	51	67	0	3.78	0.00	106	979
980	Zurich and Morley silt loams	FAV	122	40	47	58	0	3.18	0.00	100	980
981	Wauconda and Frankfort silt loams	UNF	129	41	50	65	0	0.00	4.10	106	981
982	Aptakisic and Nappanee silt loams	UNF	111	37	43	53	0	0.00	3.62	92	982

Table 2. Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name	Subsoil rooting[a]	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	Oats[b] bu/ac	Sorghum[c] bu/ac	Alfalfa[d] hay, ton/ac	Grass-legume[e] hay, ton/ac	Crop productivity index for average management	IL map symbol
983	Zurich and Nappanee silt loams	UNF	115	37	43	53	0	0.00	3.38	94	983
984	Barrington and Varna silt loams	FAV	134	43	53	70	0	4.38	0.00	110	984
985	Alford-Bold complex	FAV	129	38	49	0	107	0.00	3.80	103	985
986	Wellston-Berks complex	UNF	82	29	33	38	0	0.00	2.54	70	986
987	Atlas-Grantfork variant complex	UNF	87	32	34	0	85	0.00	2.80	77	987
988	Westmore-Neotoma complex	UNF	96	33	39	47	0	0.00	2.84	80	988
989	Mundelein and Elliott soils	FAV	146	46	57	75	0	0.00	4.18	118	989
990	Stookey-Bodine complex	UNF	105	36	44	0	86	0.00	3.18	90	990
991	Cisne-Huey complex	UNF	106	36	42	0	84	0.00	3.34	90	991
992	Hoyleton-Tamalco complex	UNF	107	36	43	0	86	0.00	3.34	90	992
993	Cowden-Piasa complex	UNF	119	39	47	0	99	0.00	3.62	99	993
994	Oconee-Tamalco complex	UNF	116	38	45	0	89	0.00	3.64	96	994
995	Herrick-Piasa complex	UNF	130	43	52	66	0	0.00	3.92	107*	995
996	Velma-Walshville complex	UNF	109	37	44	0	88	0.00	3.18	93	996
997	Hickory-Hennepin complex	UNF	95	33	37	42	0	0.00	3.16	81	997
998	Hickory-Negley complex	FAV	101	34	40	0	90	0.00	3.32	86	998
999	Alford-Hickory complex	FAV	118	37	47	0	94	0.00	3.68	97	999

*Values were revised to reflect current conditions.
[a]UNF = unfavorable; FAV = favorable
[b]Soils in the southern region were not rated for oats and are shown with a zero, 0.
[c]Soils in the northern region or in both the northern and southern regions were not rated for grain sorghum and are shown with a zero, 0.
[d]Soils in the poorly drained group were not rated for alfalfa and are shown with zeros, 0.00.
[e]Soils in the well-drained group were not rated for grass-legume mixture and are shown with zeros, 0.00.

Soil Type Selection

A total of 34 selected soil types (Table 3) were chosen for this model development. These included the nine base soils that were selected to represent some of the best soils under basic management (Fehrenbacher et al., 1978), and they were assigned the highest basic productivity indices (PIs) in Circular 1156, *Soil Productivity in Illinois*. All of these soils have extensive acreage in the state. For various soil survey and soil conservation programs, it was determined that a list of 30 benchmark soils represented most of the major soil conditions in Illinois. Five soils appear on both the base and benchmark lists. The 34 unique soils on the base and benchmark soils list (Table 3) were selected for use in the crop yield–soil property rating (CYSPR) model development (Garcia-Paredes, 1999; Majchrzak, 2000).

A comprehensive list of 16 physical and chemical properties that affect or appear to affect crop yields in Illinois were identified (Appendix B). These soil properties include (1) surface layer thickness (in.), (2) surface layer percent silt, (3) organic matter (OM) in surface layer (%), (4) cation-exchange capacity (CEC) of surface layer (cmole/kg), (5) depth (in.) to redoximorphic (wetness) features (relates to drainage class) (in.), (6) subsoil thickness (in.), (7) plant available water-holding capacity (PAWHC) (in.) to a depth of 60 in., (8) rooting depth as a function of soil structure (in.), (9) depth to second parent material (usually thickness of loess) (in.), (10) permeability (in./hr), (11) surface layer pH, (12) subsoil pH, (13) surface layer bulk density (g/cc), (14) subsoil bulk density (g/cc), (15) Na on the exchange (%), and (16) clay in subsoil (%).

The current soil property data from the Illinois soil characterization database (2,160 pedons) and the United States Department of Agriculture–Natural Resources Conservation Service (USDA–NRCS) estimated soil properties database (for all selected soil types) were compiled for all the comprehensive lists of soil properties.

Regression Analysis of Circular 1156 Average Crop Yields

Multiple regression was used to establish the relationship between the crop yields as estimated in Circular 1156 and the selected soil-property values. The soil properties were represented with one numeric value for each soil property that was provided for each soil interval such as the A horizon, B horizon, or the entire solum (topsoil and subsoil).

Table 3. Soil Types (Base and Benchmark) Used to Develop Crop Yield Models

Base	---------------Benchmark Soils-----------------	
*Drummer silty clay loam	Alvin fine sandy loam	Herrick silt loam
*Elburn silt loam	Ashkum silty clay loam	Hickory loam
*Flanagan silt loam	Belknap silt loam	Hoopeston sandy loam
*Ipava silt loam	Blount silt loam	Huey silt loam
Joy silt loam	Bluford silt loam	*Ipava silt loam
Lisbon silt loam	Catlin silt loam	Karnak silty clay loam
Littleton silt loam	Cisne silt loam	Milford silty clay loam
Muscatine silt loam	Denny silt loam	Morley silt loam
*Sable silty clay loam	*Drummer silty clay loam	*Sable silty clay loam
	Ebbert silt loam	Sawmill silty clay loam
	*Elburn silt loam	Saybrook silt loam
	Elliott silt loam	Selma loam
	*Flanagan silt loam	Varna silt loam
	Grantsburg silt loam	Virden silty clay loam
	Harpster silty clay loam	Weir silt loam

*On both lists

Preliminary Statistical Analysis

The statistical analysis system (SAS) was used to analyze the soil and yield data (Freund and Littell, 1991). The R-square option was used with emphasis on maximizing R for regression. Correlation analysis was used to provide information about the nature of the variables used in the multiple regression models and to identify which variables were more highly correlated. Simple statistical data analysis (stem-leaf diagrams, box plot, and normal probability plot) for each variable was done to check the usual assumption for normally distributed data in regression analysis. The diagrams for most of the predictor variables were acceptable bell-shaped curves except exchangeable sodium, for which all but one of the soils had zero values.

Illinois Farm Business Farm Management Records and Crop Yield Descriptions

The Farm and Resource Management Laboratory (FaRM Lab) at the Department of Agricultural and Consumer Economics is a cooperative educational service program designed to assist farmers with management decision making and to provide help with farm record keeping and analysis. Rejesus and Hornbaker (1999) provided an "alternative" analysis of crop yield trends and productivity based on actual Illinois Farm Business Farm Management records rather than on soil models. This alternative analysis served as a potential basis for comparing results with the yield-trend analysis based on soil-science models.

The aim of the Farm Business Farm Management records study was to determine the productivity of seven major crops in Illinois for different soil categories using aggregate (average values from many farms) data from actual farm business records. The soil categories used in the analysis (Rejesus and Hornbaker, 1999) are based on a classification of the soil productivity indices associated with where the crop was planted.

The data used for this study are a subset of records from approximately 5,000 farms participating in the Farm Business Farm Management (FBFM) Association of Illinois. FBFM, therefore, maintains a database of farm records for the 102 counties of Illinois. For the purposes of this study, the data for Illinois were classified into two regions in Figure 2, where the classification is based on similarity of the soil and climatic conditions.

Within the regions, another classification exists based on a rating system of soil productivity. Soils within each region have a particular soil productivity rating associ-ated with them. The soil productivity rating is an index that ranks soil types based on the productive capacity of a soil. This rating has a basic level of management range of 0–100 (Fehrenbacher et al., 1978), with 100 as the most optimal soil condition for agricultural production. The basic PI of a farm was determined by FBFM staff using the county soil survey reports to determine names and acreage of soil types, and Circular 1156 was used to assign the appropriate basic PI. The basic PIs of soil types on the farm were weighted by extent of each soil type. For reporting purposes, a farm with a weighted basic PI of 95 (50% soils with a basic PI of 90 and 50% with a basic PI of 100) is assumed to be the same as another farm with only one soil with a basic PI of 95. In this study, the soil productivity rating was then grouped into four soil productivity rating categories (SPRCs): SPRC 1 has a basic PI range from 91 to 100, SPRC 2 has a range from 81 to 90, SPRC 3 has a range from 71 to 80, and SPRC 4 is any rating below 71.

Rejesus and Hornbaker (1999) used FBFM records from approximately 5,000 farms throughout the State of Illinois for the period 1976–1995. During this 20-year span, not all county farms reported production information every year. This does not present a problem, however, because our intent is to examine county and regional yield trends and not individual trends. Farms with obvious data-entry errors were subsequently deleted from the data set. After several outliers (most likely caused by reporting or processing errors) were omitted, the data set was reduced to obtain realistic characteristics for an average Illinois grain farm. Extremely small farms of less than 50 tillable acres were also excluded. Furthermore, within the original data set, all farms were included regardless of whether the farm was strictly livestock, strictly grain, or a combination of both. Information was needed only from farms that produced grain crops, and thus farms not producing grain crops were excluded. The grain crops included in the yield-trend analysis were corn, soybeans, wheat, oats, grain sorghum, grass-legume mixture, and alfalfa.

It is important to note that the quantity or number of observations for each crop is not uniform. The number of farms reporting may differ from crop to crop and from year to year, as will representativeness and reliability of the mean yield estimates used in the regression analysis. Yield figures from corn, soybeans, wheat, and oats are the most complete and reliable. The remaining crops did not include as many observations. The mean yields and the number of farms reporting for each year during the period 1976–1995 are reported by Rejesus and Hornbaker (1999).

To analyze the productivity of grain crops in Illinois based on the FBFM data set, the mean yields of each crop for each region and SPRC are first computed. After the average yield is computed for each year, crop, region, and SPRC, the resulting average yearly yields are then used for the estimation of the yield productivity coefficients. Simple yield-trend regressions for each region and each soil type were run to estimate potential yearly increases in yield. This serves as the measure of yield productivity for each crop. The regressions are linear:

$Y = a + bX + c$

where Y = annual mean yield (bu/ac)
X = year
a = intercept
b = annual yield increase (bu/ac)
c = error term

The linear functional form was chosen based on the scatter plots of the annual mean yields computed for each region and SPRC. Ordinary least squares (OLS) regressions of the equation above were estimated for each region under every SPRC. Annual mean yield was used as the dependent variable because the number of farms reporting yield information for each year is not the same. That is, for some farms they reported 20 years of data, but for some farms they reported yield information for less than 13 years. Hence, Rejesus and Hornbaker (1999) could not use ordinary statistical techniques to estimate the annual yearly yield increase based on actual yields because of the "unbalanced" nature of the data set. Rejesus and Hornbaker (1999) recognized that they were losing some precision in the estimation of the parameter by using the annual mean yields as the dependent variable rather than the actual yields observed in the panel data set. However, the procedure above is sufficient in ascertaining the potential yield trends of the seven Illinois crops selected.

The estimated annual yield increases, represented by the b coefficient, for corn, soybeans, and wheat are presented in Table 4. Productivity coefficients varied among regions and from crop to crop. For corn, the estimated yearly yield increase for the whole of Illinois, regardless of region, was 1.22 bu/ac (Rejesus and Hornbaker, 1999). The coefficients for corn were slightly higher for the southern region (1.42 bu/ac) compared to the northern region (1.10 bu/ac). For soybeans, the estimated yearly yield increase for the whole state was (0.34 bu/ac). The coefficient for the southern region had a lower value (0.30 bu/ac) compared to the northern region (0.32 bu/ac). This is in contrast to corn yield results. The estimated yearly yield increase for wheat yields in Illinois regardless of region was 0.38 bu/ac. The northern region had higher wheat productivity estimates (0.36 bu/ac) compared to the southern region (0.32 bu/ac).

Ten-Year Average Corn, Soybean, and Wheat Yields of Illinois Soils Under an Average Level of Management

Regression Modeling Approach

An approach based on multiple regression was used to evaluate the relationship between 16 selected soil properties of 34 base and benchmark soils (see Appendix B) and published 1970s corn, soybean, and wheat yields as published in Circular 1156, *Soil Productivity in Illinois.* These crop yields were established using yield data from farmers' fields, research centers, and farm-management records. These yield estimates and relative rankings of the Illinois soils have been accepted and used extensively by both the private and public agricultural sectors.

Statistical models developed from base and benchmark soils were tested internally by calculating the average corn, soybean, and wheat yields for each of the 34 soils. Comparing published (Circular 1156) crop yields with predicted 1970s crop yields resulted in high R^2 values of 0.90, 0.90, and 0.78 for corn, soybeans, and wheat, respectively. Three corn yields, two soybean yields, and two wheat yields were considered to be outliers because they were greater than ±2 standard deviations (SD) from the mean. Further analyses and adjustments were made. The coefficients generated from multiple regression were further tested using the soil property values for the additional 165 soils identified in nine counties representing the crop-reporting districts

Table 4. Yield Trend Coefficients for Soil Regions from Illinois Agricultural Statistics (IAS) for Individual Years from 1978–1999 and Farm Business Farm Management (FBFM) for Individual Years from 1976–1995

	Northern region		Southern region		State	
Crop	IAS	FBFM	IAS	FBFM	IAS	FBFM
	-----------bu/ac/yr-----------				----------ton/ac/yr----------	
Corn	1.25(x)	1.10(x)	1.52(x)	1.42(x)		
Soybeans	0.41(x)	0.32(x)	0.30(x)	0.30(x)		
Wheat	0.63(x)	0.36(x)	0.54(x)	0.32(x)		
Oats	0.43(x)	-0.15(x)				
Sorghum			1.41(x)	3.35(x)		
Grass-legume					0.02(x)	0.06(x)
Alfalfa					0.02(x)	0.27(x)

(x) = years since 1978.

and weather districts in Illinois, which were not included in the list of 34 base and benchmark soils. Using crop yields from these 165 soils, the equations explained 50% of the yield variation for corn, 47% for soybeans, and 55% for wheat (Garcia-Paredes, 1999).

The outliers as described above were reexamined in an attempt to understand why the predicted and published crop yields were different (Garcia-Paredes et al., in press). Based on the characteristics of soils that were outliers, many of the soils fit into either a poorly drained group (including very poorly drained and poorly drained) or a group of soils with rock fragments (coarse fragments greater than 5% by volume in the subsoil). The following adjustments were made to reflect the impact of these two soil properties: a 15% reduction for very poorly drained soils, 10% for soils that are either poorly or very poorly drained, and 5% for poorly drained soils. These percent adjustments were assumed to equal the percent crop yield loss in wet years during a 10-year period as a result of ponding caused by low gradient outlets that are often full of water at the time drainage is required. The crop yields for soils with more than 5% rock fragments were reduced by the percent of the rock fragments in the rooting volume. For example, a soil with 25% rock fragment would have a 25% reduction in crop yields. The percent rock fragment was assumed to equal the percent of root volume reduction and percent that the models overestimated crop yields for these soils.

Additional adjustments in the soil-property ranges were made for the bulk density of the 5-ft potential root zone and not just for the most restricting layer. The soils with bedrock within the upper 5 ft were weighted to include both the bulk density of the mineral horizons and the bedrock. The rooting depth for soils with a B horizon was assumed to be the solum depth or depth to C horizon, which lacked the presence of soil structure. However, soils without a B horizon were considered favorable for rooting if the C horizon materials were either silty or loamy. The calcareous C horizons in sediments, loess, and till soils were not considered to be root restricting if the soils were loamy or silty. Paleosols (soils formed on a landscape during the geological past and subsequently buried by sedimentation) were assumed to reduce rooting depth because they were highly weathered and usually had low pHs and low fertility levels. Soils with a loamy sand or sand texture were assumed to be root restricting, as were the C horizons of previously surface-mined soils. The buried organic soils (overlain by mineral soil horizons) were considered to be organic soils and were eliminated from the modeling effort (345 Elvers; 182 Peotone, marl substratum; 292 Wallkill; and 464 Wallkill). For a few soils, the representative pedon and range of characteristics changed significantly over the last 50 years. These soils included 98 Ade, 740 Darrock, 136 Brooklyn, 406 Paxico, 204 Ayr, 599 Baxter, 598 Bedford, and 472 Baylis. These adjustments improved the R^2 for corn to 0.57, lowered the R^2 for soybeans to 0.43, and raised the R^2 to 0.56 for wheat for the 165 soils in nine selected test counties (Figure 2).

Using the student residual value of 2.0 as a limit to identify nonconforming values, 12 values were identified as outliers in the corn model. These values were outside the range of 2 SD. The number of outliers represent 7% of the total observation, which means that 93% of the values were within the range of ±2 SD. These values were close to the 95% that would characterize a normal distribution population.

There were eight observations with residuals greater than 2 SD for soybeans. These values were considered outliers. From a total of 165 observations, 95% of the observations were within the range of ±2 SD. More outliers were identified with the supplementary soil group from the nine selected test counties (Figure 2). Some non-conforming observations were explained because they were depressional soils with drainage problems that could not be completely corrected by surface and subsurface drainage and outlets. Although depth to redoximorphic features was a variable present in the 16 soil properties evaluated, this variable was not chosen in the final equations. Because of the high collinearity between the depth to redoximorphic features and organic matter variable selected as the first factor in most yield models, the depth to redoximorphic properties parameter was excluded in the yield models. The number of outliers (more than 2 SD) for corn was reduced from 12 to 1 and for soybeans from 8 to 4 (Garcia-Paredes et al., in press).

Corn, soybeans, and wheat yield ratings for 199 Illinois soil types were determined for the 1990s management. The relationship between farmer-reported IAS corn, soybean, and wheat yields versus time (years) was established using regression analysis (Garcia-Paredes, 1999). Crop yield trends were estimated for 66 counties in the northern region and for 36 counties in the southern region for the period between 1978 and 1999. The coefficients from yield-trend equations (Table 4) generated from a 22-year period for both northern (higher-productivity) and for southern (lower-productivity) regions were used along with published and predicted 1970s crop yields to update the average established and predicted corn, soybean, and wheat yield data for the 1990s. The 10 soils with the lowest 1970s crop yields were increased by only one-half of the magnitude of the 22-year crop yield trend increase, which was applied to all other soils. In general, these 10 soils had shallow root zones with limited plant available water capacity and would not respond well to the improved technology.

Illinois Farm Business Farm Management Approach
The 10-year average corn, soybean, and wheat yields from 1988 to 1997 were determined for both the northern and southern regions' basic PI classes (<71, 71–80, 81–90, and 91–100), using annual data analyzed by Rejesus and Hornbaker (1999). Over 5,000 farms with a calculated farm or field basic PI were summarized for corn (5,000 farm records), soybeans (4,000 farm records), and wheat (1,300 farm records). The relationship between the 1990s FBFM crop yields and the basic PI class means is provided in the equations in Table 5. The basic soil PIs that were assigned in Circular 1156 (Fehrenbacher et al., 1978) were used in the equations (Table 5) to determine the 1990s corn, soybean, and wheat yields. The FBFM crop yields estimated for all 600 soil types were then averaged with and compared to the 1990s published plus trend crop yields and 1990s predicted plus trend yields.

Test County Yield Data
The crop yields predicted by the model were compared to the average 1970s yields for each crop published in Circular 1156, and to the farmer-reported 1970s crop yields by the Illinois Agricultural Statistics (IAS) Staff (1969 to 1999). There were no significant differences among the nine test counties' (Figure 2) predicted 1970s yields and the farmer-reported IAS 1970s yields for corn, soybeans, and wheat. For nine test counties, the 1990s model predicted plus trend and the established plus trend yield estimates were weighted by extent of each soil type in the county and compared against 10-year county averages for the 1990s farmer-reported (IAS) corn, soybean, and wheat yields. Predicted 1970s county crop yields plus projected 22-year yield increase (trend) and established 1970s county crop yields in Circular 1156 plus 22-year increase were statistically similar to 1990s farmer-reported (IAS) county crop yields (Garcia-Paredes, 1999). The predicted plus projected yields by county were estimated to be within 5% to 7% of the 1990s farmer-reported (IAS) county yields for corn, soybeans, and wheat.

Field-Measured Corn and Soybean Yields
A total of 90 soil types (Appendix C) were selected and checked with farmer-field (1,800 separate map units or fields on a total of 14,000 acres) yields that were measured for 3 to 5 years for both soybeans and corn under

Table 5. Relationship Between 1990s Farm Business Farm Management Record Crop Yields and Basic Soil Productivity Indices by Illinois Soil Region

Crop	Region	Equation	Observations
Corn	North	Y= 0.733X + 83.3 (bu/ac)	4200
Corn	South	Y= 1.267X + 38.0 (bu/ac)	800
Soybeans	North	Y= 0.172X + 32.5 (bu/ac)	3300
Soybeans	South	Y= 0.267X + 24.0 (bu/ac)	700
Wheat	North	Y= 0.286X + 33.7 (bu/ac)	650
Wheat	South	Y= 0.467X + 20.0 (bu/ac)	650
Oats	North	Y= 0.596X + 23.8 (bu/ac)	500
Grain sorghum	South	Y= 0.067X + 76.0 (bu/ac)	100
Grass-legume	Illinois	Y= 0.011X + 2.67 (ton/ac)	1000
Alfalfa	Illinois	Y= 0.145X - 7.27 (ton/ac)	100

an optimum level of management. These yields were measured by field with known soil type and recorded using geographical information systems (GIS) or by global positioning systems (GPS) and crop yield monitors on combines. The measured corn and soybean yields for 90 soil types were compared with 1990s crop yield values under an average level of management in Table 2 to check for outliers and validate estimates. As anticipated, the field-measured corn and soybean yields for 3 to 5 years under optimum level of management were higher by approximately 10 bu/ac/yr for corn and 3 bu/ac/yr for soybeans. The differences were assumed to be a result of fewer years and a higher level of management.

Oat Yields of Illinois Soils Under an Average Level of Management

Regression Modeling Approach

An approach based on multiple regression was used to evaluate the relationship among 16 selected soil properties of 28 base and benchmark soils (see Appendix B) and established 1970s oat yields as published in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978). Statistical models developed from base and benchmark soils from the northern region were tested internally by calculating the average oat yields for each of the 28 major soils. Comparing published (Circular 1156) crop yields with predicted 1970s crop yields resulted in high R^2 values of 0.85 for oats (Majchrzak, 2000). One oat yield was considered to be an outlier because it was greater than ±2 SD from the mean. Further analyses and adjustments were made. The coefficients generated from multiple regression were further tested using the soil-property values for the additional 119 soils identified in five counties representing the crop-reporting districts and weather districts in Illinois, which were not included in the list of 28 base and benchmark soils. The equation explained 51% of the yield variation for oats. The model-predicted crop yields were compared to the published 1970s Circular 1156 average yields for oats and to the farmer-reported 1970s oat yields in Illinois Agricultural Statistics (IAS). The oat yield outliers (greater than ±2 SD) were identified for further analysis and adjustments when appropriate. There were no significant differences between the five county-predicted 1970s yields and the 1970s farmer-reported (IAS) yields for oats (Majchrzak, 2000).

Oat yield ratings for 199 Illinois soil types were determined for the 1990s management. The relationship between farmer-reported oat yields in Illinois Agricultural Statistics (IAS) versus time (years) were established using regression analysis. Crop yield trends were estimated for 66 counties in the northern region for the period between 1978 and 1999. The yield-trend equation (Table 4), generated from a 22-year period for the northern (high-productivity) region was used along with published and predicted 1970s crop yields to update the average published and predicted oat yield data for the 1990s. The IAS trend (Table 4) for the northern-region oats had an increase of 0.43 bu/ac. It appears that farmers who still grow oats tend to plant them in soils with the lowest basic PIs. The yields are reported for the average farm PI, which is often higher, and not the actual PI of the soil or field, which is often lower. Consequently, the yield increases that result from the advances in technology are being offset by oats being grown primarily on the lowest-PI soils of the farm.

Illinois Farm Business Farm Management Approach

The 10-year average oat yields from 1988 to 1997 were determined for the northern regions' basic PI classes (<71, 71–80, 81–90, and 91–100) (Rejesus and Hornbaker, 1999). Over 500 farms with a calculated farm basic PI were summarized for oats. The relationship between the 1990s FBFM oat yields and the basic PI class means is expressed in the equation in Table 5. The basic soil PIs, which were assigned in Circular 1156 (Fehrenbacher et al., 1978), were used to determine the oat yields. The FBFM crop yields were then averaged with and compared to the 1990s published plus trend crop yields and 1990s predicted plus trend yields.

Test County Yield Data

For five counties, the 1990s yield estimates were weighted by extent of each soil type in the county and compared with 10-year county averages for the 1990s farmer-reported (IAS) oat yields. Predicted 1970s county crop yields plus projected 22-year yield trend and established 1970s county crop yields in Circular 1156 plus 22-year trend were statistically similar to 1990s farmer-reported (IAS) county crop yields (Majchrzak, 2000). The predicted plus projected yields by county were estimated to be within 5% to 7% of the 1990s farmer-reported (IAS) county yields for oats.

Grain Sorghum Yields of Illinois Soils Under an Average Level of Management

Regression Modeling Approach

Because Circular 1156 did not contain grain sorghum yields, a relationship between 1970s county grain sorghum and corn yield data and a relationship between 1970s county grain sorghum and soybean yield data were established. The mean of corn and soybean average yields provided in Circular 1156 were calculated to estimate a first approximation of average grain sorghum yields for southern Illinois soils. Grain sorghum yields for 22 southern Illinois counties were correlated with the combined average of the county wheat and county corn yields for the years 1974 to 1976. This relationship was used to calculate 1970s grain sorghum yields from the published 1970s wheat and corn yields. The 22-year yield trend was then added to the estimated 1970s grain sorghum yields. The relationship between the estimated sorghum yields and the 16 soil properties was determined using multiple regression. The seven soil properties selected by the stepwise regression model were the organic matter of the Ap horizon, the depth to redoximorphic features, the thickness of the B horizon, the plant available soil water to a 60-inch depth, the rooting depth, the pH of the A and E horizons, and the pH of B horizon. The soil-property ranges were used with previously generated model coefficients to predict the grain sorghum yields for all of the southern Illinois soils. A 22-year average increase in grain sorghum yields for the 36 counties in southern Illinois for the years 1978–1999 was applied, and the 1990s grain sorghum yields were estimated (Table 2).

Illinois Farm Business Farm Management Approach
The FBFM data set records (Table 4) for the southern region grain sorghum had a 3.35 bu/ac/yr increase. More than 100 farms with a calculated farm or field basic PI were summarized for grain sorghum. The FBFM crop yields were then compared and averaged with the 1990s model-predicted plus trend grain sorghum yields.

Hay and Pasture Yields of Illinois Soils Under an Average Level of Management

Regression Modeling Approach
Hay and pasture yields for Illinois soils are predicted from soil properties that are analyzed through principal component analysis (PCA). All soils in the state were divided into two groups to account for the effects of drainage on hay. Because alfalfa does not perform well in poorly drained situations, soils were divided into two drainage groups based on the depth to redoximorphic (wetness) features.We have assumed that a better-adapted legume will be grown in a mixture with grass in poorly drained sites. Poorly drained soils (including very poorly, poorly, and somewhat poorly drained) were those with wetness features at or above 22 inches in the soil profile. Soils that had drainage classifications of somewhat poorly drained or wetter and did not meet depth to redoximorphic features requirement were also placed into the poorly drained group. Soil properties that appear to affect forage yields in Illinois are identified in Appendix B. Soil properties are from the interpretation records (USDA–NRCS) that normally accompany official soil series descriptions. The estimates represent a range of data collected from various sources, including field collection. The data include the 2,160 pedons that are in the Illinois Soil Characterization Database. Soil properties were chosen to be included in the prediction model through PCA. PCA allows for correlation between the soil variables and reduces the number of soil properties into a smaller set of artificial variables, which explained some of the variation in the predicted yields. The model for the poorly drained group predicts yields for grass-legume mixtures, whereas the model for the well-drained group predicts yields for alfalfa. PROC UNIVARIATE procedures in SAS were used to identify any outliers in the models. The grass-legume model for poorly drained soils was applied to 267 soils (that were not used in model development) and interpreted approximately 39% of the yield variation (Hadley, 2000). The alfalfa model for well-drained (moderately well-, well-, and excessively well-drained) soils was tested on 306 soils, those not used in model development, which explained approximately 50% of the yield variation.

Yield trends and magnitudes of change were estimated for both soil groups to account for improvements in technology, which were then added to the published 1970s data. The FBFM data set records (Table 4) for Illinois showed that the grass-legumes had a 0.06 ton/ac/year increase and alfalfa has an increase of 0.27 ton/ac/year (Rejesus and Hornbaker, 1999). The yield trend (Table 4) was inserted to predicted yields to project the 1990s forage yields.

Illinois Farm Business Farm Management Approach
The 10-year average hay yields from 1988 to 1997 were determined for the four basic PI classes of Rejesus and Hornbaker (1999) (<71, 71–80, 81–90, and 91–100). More than 1,100 farms with a calculated farm or field basic PI were included for hay, but most of the records were for the grass-legume mixture.The relationship between the 1990s FBFM forage yields and the basic PI class means is expressed in the equations in Table 5. The basic soil PIs that were assigned in Circular 1156 (Fehrenbacher et al., 1978) were used to determine the 1990s forage yields. The FBFM crop yields were then averaged with and compared to the 1990s established plus trend crop yields and 1990s predicted plus trend yields.

Test County Yield Data
In addition to grain crop yields, Table 2 gives the estimated yields under average level of management of mixed grass-legume hay, and Table 6 provides the pasture ratings. Pasture yields are based on the assumption that 1 ton of hay or its pasture equivalent will support one cow for 50 days. Because fewer data are available, the estimated hay yields in Table 2 and pasture yields in Table 6 are less reliable than the estimated yields of grain crops. Pasture yields for organic soils were estimated by adding the 22-year yield trend to the pasture yields published in Circular 1156 (Fehrenbacher et al., 1978).

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
2	Cisne silt loam	FAV	0	185	69	77	76	80	96	87	84	2
3	Hoyleton silt loam	FAV	0	185	73	74	78	82	102	92	88	3
4	Richview silt loam	FAV	155	0	79	81	76	97	113	101	94	4
5	Blair silt loam	FAV	0	175	77	78	80	77	96	86	89	5
6	Fishhook silt loam	UNF	0	155	73	81	78	83	101	91	0	6
7	Atlas silt loam	UNF	0	140	72	83	78	81	102	92	83	7
8	Hickory loam	FAV	0	160	80	75	80	84	106	95	0	8
9	Sandstone rock land	Crop yield data not available										9
10	Plumfield silty clay loam	FAV	0	140	67	74	65	80	105	94	0	10
12	Wynoose silt loam	FAV	0	170	70	75	69	79	98	89	91	12
13	Bluford silt loam	FAV	135	0	73	72	72	81	103	93	96	13
14	Ava silt loam	UNF	130	0	71	73	76	83	103	93	92	14
15	Parke silt loam	FAV	145	0	77	79	79	94	114	102	96	15
16	Rushville silt loam	FAV	0	185	72	81	79	83	94	84	82	16
17	Keomah silt loam	FAV	0	205	73	77	75	89	98	88	0	17
18	Clinton silt loam	FAV	210	0	76	79	76	95	103	93	0	18
19	Sylvan silt loam	FAV	160	0	75	76	83	91	103	92	0	19
21	Pecatonica silt loam	FAV	180	0	79	77	75	91	117	105	0	21
22	Westville silt loam	FAV	165	0	81	82	78	91	106	96	0	22
23	Blount silt loam	FAV	0	175	68	75	83	75	89	80	0	23
24	Dodge silt loam	FAV	195	0	74	77	87	95	112	100	0	24
25	Hennepin loam	UNF	0	155	75	76	80	89	102	92	0	25
26	Wagner silt loam	FAV	0	185	0	0	0	0	96	87	0	26
27	Miami silt loam	FAV	170	0	72	76	80	79	109	98	0	27
28	Jules silt loam	FAV	195	0	0	0	0	0	103	93	0	28
29	Dubuque silt loam	FAV	0	160	59	62	64	75	97	88	0	29
30	Hamburg silt loam	FAV	0	175	71	84	89	100	101	91	0	30
31	Pierron silt loam	FAV	0	180	70	76	68	83	93	84	0	31
34	Tallula silt loam	FAV	200	0	75	83	84	101	104	94	0	34
35	Bold silt loam	FAV	0	175	80	87	103	108	112	100	0	35
36	Tama silt loam	FAV	290	0	77	76	77	97	105	95	0	36
37	Worthen silt loam	FAV	280	0	82	82	86	101	111	100	0	37
38	Rocher loam	FAV	145	0	0	0	0	0	103	92	0	38
40	Dodgeville silt loam	FAV	160	0	64	69	63	76	97	88	0	40
41	Muscatine silt loam	FAV	0	240	75	77	82	90	98	89	0	41
42	Papineau fine sandy loam	FAV	0	170	75	76	82	65	97	87	0	42
43	Ipava silt loam	FAV	0	235	73	77	75	89	96	87	0	43
45	Denny silt loam	FAV	0	195	74	79	82	89	97	87	0	45
46	Herrick silt loam	FAV	0	220	75	84	77	91	96	87	0	46
48	Ebbert silt loam	FAV	0	205	0	0	0	0	100	90	84	48
49	Watseka loamy fine sand	FAV	0	175	63	68	73	62	84	76	0	49
50	Virden silty clay loam	FAV	0	210	74	82	81	88	94	85	0	50

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
51	Muscatune silt loam	FAV	0	240	75	77	80	93	99	89	0	51
53	Bloomfield fine sand	FAV	0	155	71	68	81	69	97	88	0	53
54	Plainfield sand	FAV	0	135	66	68	74	73	93	84	0	54
55	Sidell silt loam	FAV	235	0	82	83	85	93	115	103	0	55
56	Dana silt loam	FAV	250	0	77	80	88	91	110	99	0	56
57	Montmorenci silt loam	FAV	195	0	73	74	82	84	100	90	0	57
59	Lisbon silt loam	FAV	0	225	76	80	82	83	104	93	0	59
60	La Rose silt loam	FAV	200	0	72	76	75	90	100	90	0	60
61	Atterberry silt loam	FAV	0	220	77	79	88	85	99	89	0	61
62	Herbert silt loam	FAV	0	210	70	78	77	86	102	92	0	62
63	Blown-out land	Crop yield data not available										63
64	Parr fine sandy loam	FAV	190	0	81	78	86	74	101	91	0	64
67	Harpster silty clay loam	FAV	0	215	77	79	84	85	98	88	0	67
68	Sable silty clay loam	FAV	0	230	77	75	82	88	100	90	0	68
69	Milford silty clay loam	FAV	0	220	81	75	89	76	99	89	0	69
70	Beaucoup silty clay loam	FAV	0	215	0	0	0	0	97	87	0	70
71	Darwin silty clay	FAV	0	175	0	0	0	0	88	80	0	71
72	Sharon silt loam	FAV	190	0	0	0	0	0	103	93	0	72
73	Ross loam	FAV	0	215	0	0	0	0	94	85	0	73
74	Radford silt loam	FAV	0	220	0	0	0	0	99	89	0	74
75	Drury silt loam	FAV	230	0	72	79	77	101	104	94	0	75
76	Otter silt loam	FAV	0	225	0	0	0	0	97	88	0	76
77	Huntsville silt loam	FAV	300	0	0	0	0	0	111	99	0	77
78	Arenzville silt loam	FAV	235	0	0	0	0	0	106	95	0	78
79	Menfro silt loam	FAV	195	0	82	84	82	97	109	98	0	79
81	Littleton silt loam	FAV	0	240	78	77	88	93	105	94	0	81
82	Millington loam	FAV	0	205	0	0	0	0	97	87	0	82
83	Wabash silty clay	FAV	0	190	0	0	0	0	92	83	0	83
84	Okaw silt loam	FAV	0	150	0	0	0	0	101	91	0	84
85	Jacob clay	FAV	0	135	0	0	0	0	85	77	0	85
86	Osco silt loam	FAV	275	0	79	80	77	101	108	97	0	86
87	Dickinson sandy loam	FAV	135	0	65	64	75	76	96	86	0	87
88	Sparta loamy sand	FAV	0	160	66	70	66	76	94	85	0	88
89	Maumee fine sandy loam	FAV	130	0	64	64	85	61	87	79	0	89
90	Bethalto silt loam	FAV	0	220	78	82	81	91	101	91	0	90
91	Swygert silty clay loam	UNF	0	180	68	80	81	76	92	83	0	91
92	Sarpy sand	FAV	0	150	0	0	0	0	94	85	0	92
93	Rodman gravelly loam	UNF	0	145	63	77	71	89	90	82	0	93
94	Limestone rock land	Crop yield data not available										94
95	Shale rock land	Crop yield data not available										95
96	Eden silty clay loam	UNF	0	155	60	58	72	72	92	83	80	96
97	Houghton peat	FAV	0	180	0	0	0	0	93	84	0	97
98	Ade loamy fine sand	FAV	0	170	70	72	69	75	94	85	0	98

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100	Palms muck	FAV	0	170	0	0	0	0	83	75	0	100
102	La Hogue loam	FAV	0	210	78	73	91	70	98	88	0	102
103	Houghton muck	FAV	0	210	0	0	0	0	89	80	0	103
104	Virgil silt loam	FAV	0	220	75	81	78	84	99	89	0	104
105	Batavia silt loam	FAV	230	0	76	78	82	98	109	98	0	105
107	Sawmill silty clay loam	FAV	0	230	0	0	0	0	100	90	0	107
108	Bonnie silt loam	FAV	0	185	0	0	0	0	100	90	0	108
109	Racoon silt loam	FAV	155	0	0	0	0	0	103	93	91	109
111	Rubio silt loam	FAV	0	190	72	77	75	82	92	83	0	111
112	Cowden silt loam	FAV	0	195	72	76	81	84	95	86	84	112
113	Oconee silt loam	FAV	0	210	74	78	73	86	97	87	85	113
115	Dockery silt loam	FAV	0	200	0	0	0	0	96	87	0	115
116	Whitson silt loam	FAV	0	190	77	81	87	85	99	89	0	116
119	Elco silt loam	FAV	170	0	78	80	81	84	109	98	0	119
120	Huey silt loam	FAV	0	140	69	86	88	80	89	81	69	120
122	Colp silt loam	UNF	0	170	71	75	71	81	106	96	0	122
123	Riverwash	Crop yield data not available										123
125	Selma loam	FAV	0	210	78	77	93	75	95	86	0	125
127	Harrison silt loam	FAV	230	0	79	83	79	96	109	98	0	127
128	Douglas silt loam	FAV	215	0	79	79	80	95	112	101	0	128
131	Alvin fine sandy loam	FAV	150	0	80	82	88	80	102	92	0	131
132	Starks silt loam	FAV	205	0	77	77	78	83	108	97	0	132
134	Camden silt loam	FAV	190	0	79	80	86	95	114	102	0	134
136	Brooklyn silt loam	FAV	0	180	74	80	78	84	98	89	0	136
138	Shiloh silty clay loam	FAV	0	215	0	0	0	0	98	89	0	138
141	Wesley fine sandy loam	FAV	0	190	69	68	81	57	97	87	0	141
142	Patton silty clay loam	FAV	0	215	0	0	0	0	95	86	0	142
145	Saybrook silt loam	FAV	250	0	79	75	80	90	116	104	0	145
146	Elliott silt loam	FAV	0	200	70	76	73	81	103	93	0	146
147	Clarence silty clay loam	UNF	0	175	66	76	73	77	84	77	0	147
148	Proctor silt loam	FAV	255	0	77	78	76	96	112	101	0	148
149	Brenton silt loam	FAV	0	225	72	78	82	84	100	90	0	149
150	Onarga sandy loam	FAV	165	0	79	74	72	77	102	92	0	150
151	Ridgeville fine sandy loam	FAV	0	200	77	75	74	66	93	84	0	151
152	Drummer silty clay loam	FAV	0	225	79	76	84	82	103	87	0	152
153	Pella silty clay loam	FAV	0	210	79	81	86	79	104	94	0	153
154	Flanagan silt loam	FAV	0	235	76	79	82	88	103	92	0	154
155	Stockland loam	UNF	0	165	76	75	80	73	98	88	0	155
157	Symerton loam	FAV	230	0	71	75	77	95	111	100	0	157
159	Pillot silt loam	FAV	185	0	75	76	77	94	110	99	0	159
162	Gorham silty clay loam	FAV	0	205	0	0	0	0	97	88	0	162
164	Stoy silt loam	FAV	0	185	70	71	69	79	95	85	90	164
165	Weir silt loam	FAV	0	180	73	72	78	82	98	88	89	165

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IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
166	Cohoctah loam	FAV	0	195	0	0	0	0	88	80	0	166
171	Catlin silt loam	FAV	270	0	78	80	80	97	109	98	0	171
172	Hoopeston sandy loam	FAV	0	190	72	71	83	65	91	82	0	172
173	McGary silt loam	UNF	0	170	72	74	83	73	92	83	0	173
174	Chaseburg silt loam	FAV	200	0	0	0	0	0	109	98	0	174
175	Lamont fine sandy loam	FAV	130	0	77	71	81	73	103	92	0	175
176	Marissa silt loam	FAV	0	215	75	76	88	85	99	89	0	176
178	Ruark fine sandy loam	FAV	0	175	73	73	79	70	92	84	0	178
179	Minneiska loam	FAV	0	180	0	0	0	0	104	94	0	179
180	Dupo silt loam	FAV	0	205	0	0	0	0	102	92	0	180
182	Peotone mucky silty clay loam, marl substratum	FAV	0	185	0	0	0	0	101	91	0	182
183	Shaffton loam	FAV	0	205	0	0	0	0	96	86	0	183
184	Roby fine sandy loam	FAV	0	185	70	75	74	74	92	83	0	184
188	Beardstown loam	FAV	195	0	77	73	77	77	98	88	0	188
189	Martinton silt loam	FAV	0	215	77	80	82	83	96	87	0	189
191	Knight silt loam	FAV	210	0	79	75	75	88	105	94	0	191
192	Del Rey silt loam	FAV	0	185	72	78	81	78	93	84	0	192
193	Mayville silt loam	FAV	160	0	72	71	82	81	106	95	0	193
194	Morley silt loam	FAV	135	0	72	76	85	77	94	85	0	194
197	Troxel silt loam	FAV	275	0	77	77	80	90	107	96	0	197
198	Elburn silt loam	FAV	0	230	74	79	78	80	97	88	0	198
199	Plano silt loam	FAV	280	0	78	81	75	101	111	99	0	199
200	Orio sandy loam	FAV	0	185	66	74	70	71	86	78	0	200
201	Gilford fine sandy loam	FAV	0	180	72	72	85	61	95	86	0	201
204	Ayr sandy loam	FAV	185	0	78	76	75	73	106	95	0	204
205	Metea silt loam	FAV	135	0	78	74	83	72	106	96	0	205
206	Thorp silt loam	FAV	0	205	76	77	80	80	100	90	0	206
208	Sexton silt loam	FAV	0	195	0	0	0	0	104	94	0	208
210	Lena muck	FAV	0	190	0	0	0	0	104	93	0	210
212	Thebes silt loam	FAV	160	0	71	75	68	97	110	98	0	212
213	Normal silt loam	FAV	0	225	75	79	81	91	99	89	0	213
214	Hosmer silt loam	UNF	145	0	73	76	69	88	101	91	93	214
216	Stookey silt loam	FAV	175	0	83	81	77	97	111	100	0	216
217	Twomile silt loam	FAV	0	170	0	0	0	0	97	88	0	217
218	Newberry silt loam	FAV	0	190	73	75	77	84	101	91	88	218
219	Millbrook silt loam	FAV	0	210	74	77	88	81	103	93	0	219
221	Parr silt loam	FAV	215	0	77	78	85	83	102	92	0	221
223	Varna silt loam	FAV	195	0	75	79	73	86	97	88	0	223
224	Strawn silt loam	FAV	140	0	73	76	75	87	100	90	0	224
225	Holton silt loam	FAV	0	170	0	0	0	0	97	87	87	225
226	Wirt silt loam	FAV	140	0	0	0	0	0	104	93	88	226
227	Argyle silt loam	FAV	200	0	76	78	75	93	112	100	0	227
228	Nappanee silt loam	UNF	0	160	72	76	76	65	87	79	0	228

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
229	Monee silt loam	FAV	0	160	76	80	85	72	102	92	0	229
230	Rowe silty clay	FAV	0	170	70	78	80	74	97	88	0	230
231	Evansville silt loam	FAV	0	200	77	80	88	80	98	88	82	231
232	Ashkum silty clay loam	FAV	0	205	77	77	83	78	103	93	0	232
233	Birkbeck silt loam	FAV	205	0	78	81	82	92	109	98	0	233
234	Sunbury silt loam	FAV	0	220	75	79	80	92	105	95	0	234
235	Bryce silty clay	FAV	0	190	69	78	81	70	83	75	0	235
236	Sabina silt loam	FAV	0	205	74	78	85	80	100	90	0	236
238	Rantoul silty clay	FAV	0	165	0	0	0	0	87	79	0	238
239	Dorchester silt loam	FAV	225	0	0	0	0	0	113	101	0	239
240	Plattville silt loam	FAV	200	0	72	68	76	82	105	94	0	240
241	Chatsworth silt loam	UNF	0	130	62	73	78	70	80	73	0	241
242	Kendall silt loam	FAV	0	210	76	81	75	87	100	90	0	242
243	St. Charles silt loam	FAV	205	0	78	81	74	98	111	99	0	243
244	Hartsburg silty clay loam	FAV	0	215	75	78	88	88	99	89	0	244
248	McFain silty clay	FAV	0	180	0	0	0	0	102	92	0	248
249	Edinburg silty clay loam	FAV	0	200	76	83	76	87	96	86	0	249
250	Velma loam	FAV	175	0	80	75	81	87	106	95	0	250
256	Pana silt loam	FAV	165	0	75	77	70	90	102	92	0	256
257	Clarksdale silt loam	FAV	0	210	75	80	84	87	97	87	0	257
259	Assumption silt loam	FAV	190	0	76	79	80	88	108	97	0	259
261	Niota silt loam	FAV	0	165	70	75	67	82	104	81	0	261
262	Denrock silt loam	FAV	170	0	71	75	70	87	107	96	0	262
264	El Dara sandy loam	FAV	130	0	78	79	78	75	96	87	0	264
265	Lomax loam	FAV	180	0	76	70	80	81	103	93	0	265
266	Disco sandy loam	FAV	150	0	68	67	78	77	97	88	0	266
267	Caseyville silt loam	FAV	0	210	77	81	77	88	99	90	0	267
268	Mt. Carroll silt loam	FAV	245	0	78	83	76	103	107	97	0	268
271	Timula silt loam	FAV	150	0	76	76	92	98	110	98	0	271
272	Edgington silt loam	FAV	0	210	71	75	77	87	96	86	0	272
274	Seaton silt loam	FAV	180	0	81	83	80	101	111	99	0	274
275	Joy silt loam	FAV	0	240	76	83	76	98	102	92	0	275
277	Port Byron silt loam	FAV	280	0	81	83	78	101	108	97	0	277
278	Stronghurst silt loam	FAV	0	210	75	79	83	86	98	89	0	278
279	Rozetta silt loam	FAV	210	0	79	77	76	97	110	98	0	279
280	Fayette silt loam	FAV	210	0	77	78	77	100	108	97	0	280
282	Chute fine sand	FAV	0	135	72	78	88	70	95	85	0	282
283	Downsouth silt loam	FAV	255	0	78	83	80	94	102	92	0	283
284	Tice silty clay loam	FAV	0	225	0	0	0	0	97	87	0	284
286	Carmi sandy loam	FAV	170	0	71	68	73	72	105	95	0	286
287	Chauncey silt loam	FAV	190	0	74	76	84	85	99	89	82	287
288	Petrolia silty clay loam	FAV	0	195	0	0	0	0	97	87	0	288
290	Warsaw silt loam	FAV	205	0	76	76	83	81	106	96	0	290
291	Xenia silt loam	FAV	180	0	79	79	83	90	113	101	0	291

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
292	Wallkill silt loam	FAV	0	190	0	0	0	0	116	104	0	292
293	Andres silt loam	FAV	0	215	78	80	86	78	102	92	0	293
294	Symerton silt loam	FAV	250	0	72	75	75	95	113	101	0	294
295	Mokena silt loam	FAV	0	195	73	78	79	79	103	93	0	295
296	Washtenaw silt loam	FAV	0	200	0	0	0	0	105	95	0	296
297	Ringwood silt loam	FAV	225	0	78	78	77	91	114	102	0	297
298	Beecher silt loam	FAV	0	185	69	72	76	79	103	93	0	298
300	Westland clay loam	FAV	0	190	72	77	85	66	94	85	0	300
301	Grantsburg silt loam	UNF	130	0	71	74	65	91	100	90	95	301
302	Ambraw clay loam	FAV	0	200	0	0	0	0	93	84	0	302
304	Landes fine sandy loam	FAV	135	0	0	0	0	0	100	90	0	304
306	Allison silty clay loam	FAV	275	0	0	0	0	0	108	97	0	306
307	Iona silt loam	FAV	190	0	79	78	86	84	102	92	0	307
308	Alford silt loam	FAV	200	0	78	79	77	96	107	96	97	308
310	McHenry silt loam	FAV	170	0	76	77	74	92	115	103	0	310
311	Ritchey silt loam	UNF	0	140	63	57	71	60	102	92	0	311
312	Edwards muck	FAV	0	175	0	0	0	0	74	67	0	312
313	Rodman loam	UNF	0	150	62	77	70	89	90	81	0	313
314	Joliet silty clay loam	FAV	0	165	59	56	66	56	92	83	0	314
315	Channahon silt loam	UNF	0	145	64	56	75	59	102	92	0	315
316	Romeo silt loam	FAV	0	115	0	0	0	0	89	81	0	316
317	Millsdale silty clay loam	FAV	0	175	0	0	0	0	86	78	0	317
318	Lorenzo loam	UNF	135	0	65	68	70	82	106	95	0	318
319	Aurelius muck	FAV	0	155	0	0	0	0	86	78	0	319
320	Frankfort silt loam	FAV	0	160	65	75	80	73	84	76	0	320
321	Du Page silt loam	FAV	210	0	0	0	0	0	102	92	0	321
322	Russell silt loam	FAV	180	0	80	80	82	91	115	103	0	322
323	Casco silt loam	UNF	115	0	64	72	75	87	104	94	0	323
324	Ripon silt loam	FAV	175	0	66	65	84	69	100	90	0	324
325	Dresden silt loam	FAV	165	0	69	73	73	91	107	96	0	325
326	Homer silt loam	FAV	0	185	68	77	83	76	98	88	0	326
327	Fox silt loam	FAV	140	0	71	75	80	86	108	97	0	327
328	Holly silt loam	FAV	0	170	0	0	0	0	95	86	82	328
329	Will silty clay loam	FAV	0	195	66	75	74	79	93	84	0	329
330	Peotone silty clay loam	FAV	0	200	0	0	0	0	96	87	0	330
331	Haymond silt loam	FAV	230	0	0	0	0	0	110	99	0	331
332	Billett sandy loam	FAV	120	0	74	76	81	77	98	88	0	332
333	Wakeland silt loam	FAV	0	205	0	0	0	0	99	90	0	333
334	Birds silt loam	FAV	195	0	0	0	0	0	102	92	0	334
335	Robbs silt loam	FAV	0	175	68	69	67	77	93	84	90	335
336	Wilbur silt loam	FAV	215	0	0	0	0	0	105	94	0	336
337	Creal silt loam	FAV	160	0	76	75	81	86	102	91	89	337
338	Hurst silt loam	UNF	0	165	70	73	73	78	105	94	0	338

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
339	Wellston silt loam	UNF	0	145	70	72	70	79	103	93	94	339
340	Zanesville silt loam	UNF	0	155	73	71	72	83	108	97	0	340
341	Ambraw silty clay loam, sandy substratum	FAV	0	190	0	0	0	0	90	81	0	341
342	Matherton silt loam	FAV	0	190	68	74	77	74	98	89	0	342
343	Kane silt loam	FAV	0	195	65	73	81	78	96	87	0	343
344	Harvard silt loam	FAV	220	0	77	80	77	94	110	99	0	344
345	Elvers silt loam	FAV	0	170	0	0	0	0	114	102	0	345
346	Dowagiac silt loam	FAV	155	0	70	77	73	88	102	92	0	346
347	Canisteo silt loam	FAV	0	210	73	76	87	75	90	81	0	347
348	Wingate silt loam	FAV	215	0	78	75	76	79	108	97	0	348
349	Zumbro sandy loam	FAV	125	0	68	69	82	73	94	85	0	349
350	Drummer silty clay loam, gravelly substratum	FAV	0	210	71	74	73	83	96	92	0	350
351	Elburn silt loam, gravelly substratum	FAV	0	220	71	75	78	76	98	88	0	351
352	Palms silty clay loam, overwash	FAV	0	185	0	0	0	0	119	107	0	352
353	Toronto silt loam	FAV	0	210	76	74	81	75	102	92	0	353
354	Hononegah loamy coarse sand	FAV	0	140	58	63	79	71	98	89	0	354
355	Binghampton sandy loam	FAV	0	190	67	64	72	57	98	88	0	355
356	Elpaso silty clay loam	FAV	0	230	79	81	86	87	104	93	0	356
357	Vanpetten loam	FAV	155	0	67	62	75	75	108	97	0	357
359	Fayette silt loam, till substratum	FAV	190	0	78	81	77	100	110	98	0	359
360	Slacwater silt loam	FAV	0	185	0	0	0	0	96	87	0	360
361	Kidder silt loam	FAV	140	0	77	75	82	80	101	91	0	361
362	Whitaker variant loam	FAV	0	195	77	80	85	77	99	90	0	362
363	Griswold loam	FAV	190	0	74	75	73	89	102	91	0	363
365	Aptakisic silt loam	FAV	0	195	74	74	84	82	107	96	0	365
366	Algansee fine sandy loam	FAV	0	150	0	0	0	0	91	82	0	366
367	Beach sand	Crop yield data not available										367
368	Raveenwash silty clay loam	FAV	150	0	0	0	0	0	97	88	0	368
369	Waupecan silt loam	FAV	275	0	73	74	72	88	107	96	0	369
370	Saylesville silt loam	FAV	160	0	80	74	91	83	107	96	0	370
371	St. Charles silt loam, sandy substratum	FAV	160	0	78	79	77	98	111	100	0	371
372	Kendall silt loam, sandy substratum	FAV	0	195	75	82	77	86	99	89	0	372

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
373	Camden silt loam, sandy substratum	FAV	135	0	75	79	82	93	110	99	0	373
374	Proctor silt loam, sandy substratum	FAV	190	0	75	77	73	92	109	98	0	374
375	Rutland silt loam	FAV	0	220	75	79	87	83	101	91	0	375
376	Cisne silt loam, bench	FAV	0	185	69	77	76	80	96	87	0	376
377	Hoyleton silt loam, bench	FAV	0	185	73	74	78	82	102	92	0	377
378	Lanier fine sandy loam	FAV	0	140	0	0	0	0	104	94	0	378
379	Dakota silt loam	FAV	175	0	74	70	78	78	106	96	0	379
380	Fieldon silt loam	FAV	0	200	72	78	84	77	90	82	0	380
381	Craigmile sandy loam	FAV	0	180	0	0	0	0	85	77	0	381
382	Belknap silt loam	FAV	0	195	0	0	0	0	102	92	0	382
383	Newvienna silt loam	FAV	0	215	73	83	75	95	97	88	0	383
384	Edwardsville silt loam	FAV	0	230	77	80	82	88	99	89	0	384
385	Mascoutah silty clay loam	FAV	0	230	79	81	88	88	100	90	0	385
386	Downs silt loam	FAV	255	0	78	79	78	102	109	98	0	386
387	Ockley silt loam	FAV	215	0	77	78	80	83	112	100	0	387
388	Wenona silt loam	FAV	220	0	72	80	80	87	102	92	0	388
389	Hesch loamy sand, shallow variant	UNF	0	105	57	43	66	41	100	90	0	389
390	Hesch fine sandy loam	UNF	115	0	70	68	75	64	97	87	0	390
391	Blake silty clay loam	FAV	0	190	0	0	0	0	99	89	0	391
392	Urban land, loamy Orthents complex	Crop yield data not available										392
393	Marseilles silt loam, gravelly substratum	UNF	0	170	59	70	73	80	94	85	0	393
394	Haynie silt loam	FAV	155	0	0	0	0	0	110	99	0	394
395	Ceresco loam	FAV	0	190	0	0	0	0	91	83	0	395
396	Vesser silt loam	FAV	0	205	0	0	0	0	98	89	0	396
397	Boone loamy fine sand	UNF	0	120	60	59	70	66	97	87	0	397
398	Wea silt loam	FAV	255	0	78	78	81	83	109	98	0	398
400	Calco silty clay loam	FAV	0	220	0	0	0	0	98	88	0	400
401	Okaw silty clay loam	FAV	0	150	0	0	0	0	102	92	90	401
402	Colo silty clay loam	FAV	0	220	0	0	0	0	103	92	0	402
403	Elizabeth silt loam	UNF	0	135	59	49	62	54	99	89	0	403
404	Titus silty clay loam	FAV	0	195	0	0	0	0	95	86	0	404
405	Zook silty clay	FAV	0	190	0	0	0	0	91	82	0	405
406	Paxico silt loam	FAV	0	190	0	0	0	0	102	92	0	406
407	Udifluvents, loamy	Crop yield data not available										407
408	Aquents, loamy	Crop yield data not available										408
409	Aquents, clayey	Crop yield data not available										409
410	Woodbine silt loam	FAV	140	0	69	70	68	78	107	96	0	410
411	Ashdale silt loam	FAV	210	0	74	76	78	90	106	95	0	411
412	Ogle silt loam	FAV	235	0	76	76	73	93	113	102	0	412

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
413	Gale silt loam	FAV	0	160	64	67	64	81	102	91	0	413
414	Myrtle silt loam	FAV	190	0	78	82	83	93	109	98	0	414
415	Orion silt loam	FAV	0	200	0	0	0	0	105	95	0	415
416	Durand silt loam	FAV	215	0	77	78	74	93	113	102	0	416
417	Derinda silt loam	UNF	0	150	64	67	72	83	104	94	0	417
418	Schapville silt loam	UNF	130	0	63	63	62	82	103	93	0	418
419	Flagg silt loam	FAV	200	0	76	80	75	93	108	97	0	419
420	Piopolis silty clay loam	FAV	0	175	0	0	0	0	95	86	0	420
421	Kell silt loam	FAV	0	155	64	68	60	74	99	89	95	421
422	Cape silty clay loam	FAV	0	170	0	0	0	0	91	83	0	422
423	Millstadt silt loam	FAV	0	200	78	80	82	82	101	91	0	423
424	Shoals silt loam	FAV	0	210	0	0	0	0	93	84	0	424
425	Muskingum stony silt loam	UNF	0	130	58	68	55	77	92	83	0	425
426	Karnak silty clay	FAV	0	160	0	0	0	0	84	76	0	426
427	Burnside silt loam	FAV	125	0	0	0	0	0	114	102	0	427
428	Coffeen silt loam	FAV	0	215	0	0	0	0	97	88	0	428
429	Palsgrove silt loam	FAV	165	0	69	72	70	83	103	92	0	429
430	Raddle silt loam	FAV	260	0	83	86	84	101	110	99	0	430
431	Genesee silt loam	FAV	215	0	0	0	0	0	106	95	0	431
432	Geff silt loam	FAV	0	195	75	75	72	81	104	94	93	432
433	Floraville silt loam	FAV	0	180	71	77	68	83	98	88	0	433
434	Ridgway silt loam	FAV	180	0	75	77	69	93	112	100	101	434
435	Streator silty clay loam	FAV	0	205	71	79	78	82	94	85	0	435
436	Meadowbank silt loam	FAV	250	0	75	75	75	93	110	99	99	436
437	Redbud silt loam	FAV	185	0	76	81	75	88	104	93	0	437
438	Aviston silt loam	FAV	260	0	80	82	80	100	109	98	0	438
439	Jasper silt loam, sandy substratum	FAV	185	0	76	77	76	91	103	93	0	439
440	Jasper silt loam	FAV	230	0	79	76	82	91	106	96	0	440
441	Wakenda silt loam	FAV	265	0	80	81	81	98	109	98	0	441
442	Mundelein silt loam	FAV	0	215	73	81	77	86	100	90	0	442
443	Barrington silt loam	FAV	235	0	75	76	82	89	110	99	0	443
445	Newhaven loam	FAV	0	210	71	68	80	69	98	88	126	445
446	Springerton loam	FAV	0	215	79	77	87	75	96	87	87	446
447	Canisteo silt loam, sandy substratum	FAV	0	190	74	80	93	75	89	81	0	447
448	Mona silt loam	FAV	170	0	71	78	72	88	108	97	0	448
450	Brouillett silt loam	FAV	0	220	0	0	0	0	97	87	0	450
451	Lawson silt loam	FAV	0	230	0	0	0	0	101	91	0	451
452	Riley silty clay loam	FAV	0	200	0	0	0	0	98	88	0	452
453	Muren silt loam	FAV	205	0	80	80	79	84	102	92	91	453
454	Iva silt loam	FAV	0	210	79	79	81	82	99	89	89	454
455	Mixed alluvial land	Crop yield data not available										455

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
456	Ware silt loam	FAV	205	0	0	0	0	0	103	93	0	456
457	Booker silty clay	FAV	0	155	0	0	0	0	86	78	0	457
458	Fayette silt loam, sandy substratum	FAV	170	0	74	79	76	101	109	98	0	458
459	Tama silt loam, sandy substratum	FAV	255	0	72	73	73	97	107	96	0	459
460	Ginat silt loam	FAV	0	175	73	79	76	83	94	85	0	460
461	Weinbach silt loam	FAV	0	185	74	71	72	71	95	85	0	461
462	Sciotoville silt loam	FAV	160	0	79	74	74	82	105	94	0	462
463	Wheeling silt loam	FAV	150	0	76	81	68	88	101	91	0	463
464	Wallkill silty clay loam	FAV	0	165	0	0	0	0	117	105	0	464
465	Montgomery silty clay loam	FAV	0	180	71	74	85	75	90	81	0	465
466	Bartelso silt loam	FAV	0	195	0	0	0	0	105	95	76	466
467	Markland silt loam	UNF	0	165	67	72	72	91	109	98	0	467
468	Lakaskia silt loam	FAV	0	190	0	0	0	0	103	93	82	468
469	Emma silty clay loam	FAV	180	0	82	78	70	87	105	94	0	469
470	Keller silt loam	UNF	0	185	74	77	81	81	104	94	0	470
471	Clarksville cherty silt loam	UNF	0	140	67	79	56	92	95	86	0	471
472	Baylis silt loam	FAV	125	0	73	80	73	94	110	99	0	472
473	Rossburg loam	FAV	230	0	0	0	0	0	105	95	0	473
474	Piasa silt loam	FAV	0	160	68	83	82	85	91	82	0	474
475	Elsah cherty silt loam	FAV	165	0	0	0	0	0	98	88	0	475
476	Biddle silt loam	FAV	0	195	71	85	84	86	91	82	0	476
477	Winfield silt loam	FAV	200	0	77	80	81	91	103	92	0	477
479	Aurelius muck, sandy substratum	FAV	0	160	0	0	0	0	69	63	0	479
480	Moundprairie silty clay loam	FAV	0	185	0	0	0	0	96	86	0	480
481	Raub silt loam	FAV	0	225	77	77	81	77	102	92	0	481
482	Uniontown silt loam	FAV	190	0	79	81	85	94	106	95	0	482
483	Henshaw silt loam	FAV	0	195	75	82	76	89	98	88	86	483
484	Harco silt loam	FAV	0	225	76	78	84	88	99	89	0	484
485	Richwood silt loam	FAV	260	0	76	72	88	90	112	100	0	485
486	Bertrand silt loam	FAV	155	0	78	75	84	91	111	100	0	486
487	Joyce silt loam	FAV	0	220	69	79	69	98	101	91	0	487
488	Hooppole loam	FAV	0	200	76	80	95	77	93	84	0	488
489	Hurst silt loam, sandy substratum	UNF	0	155	68	74	74	81	104	94	0	489
490	Odell silt loam	FAV	0	205	73	76	86	70	102	92	0	490
491	Ruma silt loam	FAV	195	0	83	82	78	96	113	101	0	491
492	Normandy silt loam	FAV	0	200	0	0	0	0	95	86	0	492
493	Bonfield silt loam	FAV	0	190	67	73	82	74	97	88	0	493

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
494	Kankakee fine sandy loam	FAV	200	0	76	75	85	78	109	97	0	494
495	Corwin silt loam	FAV	230	0	73	73	78	78	96	87	0	495
496	Fincastle silt loam	FAV	0	200	75	78	88	80	105	94	0	496
499	Fella silty clay loam	FAV	0	215	0	0	0	0	99	89	0	499
501	Morocco fine sand	FAV	0	175	61	65	69	63	85	77	0	501
503	Rockton loam	FAV	155	0	68	59	71	53	97	88	0	503
504	Sogn silt loam	UNF	0	130	50	40	27	76	102	92	0	504
505	Dunbarton silt loam	UNF	0	145	65	58	71	58	104	94	0	505
506	Hitt silt loam	FAV	185	0	77	76	71	90	114	103	0	506
508	Selma loam, bedrock substratum	FAV	0	205	75	74	90	71	96	86	0	508
509	Whalan loam	FAV	120	0	64	59	73	55	96	87	0	509
511	Dunbarton silt loam, cherty variant	UNF	0	130	63	55	68	56	103	93	0	511
512	Danabrook silt loam	FAV	255	0	76	78	83	87	106	95	0	512
513	Granby loamy sand	FAV	0	175	64	70	74	63	82	74	0	513
515	Bunkum silty clay loam	FAV	155	0	75	79	75	91	101	91	0	515
516	Faxon clay loam	FAV	0	180	70	54	79	50	90	82	0	516
517	Marine silt loam	FAV	135	0	76	77	80	89	103	92	88	517
518	Rend silt loam	FAV	180	0	77	76	73	86	111	100	92	518
523	Dunham silty clay loam	FAV	0	210	71	75	72	83	98	88	0	523
524	Zipp silty clay loam	FAV	0	170	0	0	0	0	83	75	0	524
526	Grundelein silt loam	FAV	0	210	68	76	74	83	97	87	0	526
527	Kidami silt loam	FAV	180	0	84	80	88	83	119	107	0	527
528	Lahoguess loam	FAV	0	205	73	74	85	74	99	89	0	528
529	Selmass loam	FAV	0	205	74	74	81	74	97	88	0	529
530	Ozaukee silt loam	FAV	150	0	79	77	84	85	116	104	0	530
531	Markham silt loam	FAV	165	0	77	79	78	82	109	98	0	531
533	Urban land	Crop yield data not available										533
534	Urban land, clayey Orthents complex	Crop yield data not available										534
535	Orthents, stony	Crop yield data not available										535
536	Dumps, mine	Crop yield data not available										536
537	Hesch fine sandy loam, gray subsoil variant	UNF	0	185	67	69	72	63	90	81	0	537
538	Emery silt loam	FAV	0	200	81	84	96	82	103	93	0	538
539	Wenona silt loam, loamy substratum	FAV	235	0	70	81	77	87	99	89	0	539
540	Frankville silt loam	FAV	135	0	61	59	67	67	97	88	0	540
541	Graymont silt loam	FAV	240	0	73	78	76	91	105	94	0	541
542	Rooks silt loam	FAV	0	220	77	82	88	85	105	94	0	542
543	Piscasaw silt loam	FAV	185	0	79	80	89	94	116	104	0	543

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
544	Torox silt loam	FAV	0	195	73	78	89	83	105	94	0	544
545	Windere silt loam	FAV	205	0	77	80	87	88	108	97	0	545
546	Keltner silt loam	FAV	170	0	69	75	78	80	98	89	0	546
547	Eleroy silt loam	FAV	135	0	73	77	85	80	104	98	0	547
548	Marseilles silt loam, moderately wet	UNF	145	0	68	71	66	88	108	97	0	548
549	Marseilles silt loam	UNF	145	0	65	71	65	79	99	89	0	549
551	Gosport silt loam	UNF	0	140	63	63	56	79	100	90	0	551
552	Drummer silty clay loam, till substratum	FAV	0	215	77	80	93	80	98	89	0	552
553	Bryce ([a])-Calamine (246) variant complex	FAV	0	185	69	78	81	70	83	75	0	553
554	Kernan silt loam	FAV	0	185	68	75	73	86	99	89	0	554
555	Shadeland silt loam	FAV	0	170	71	61	74	57	103	93	0	555
556	High Gap loam	UNF	110	0	67	62	76	67	98	88	0	556
557	Millstream silt loam	FAV	0	205	69	78	77	85	101	91	0	557
558	Breeds silty clay loam	FAV	190	0	72	73	74	77	100	90	0	558
559	Lindley loam	FAV	0	155	78	81	83	79	99	89	0	559
560	St. Clair silt loam	UNF	0	160	73	75	84	84	99	89	0	560
561	Whalan ([a]) and NewGlarus (X561) silt loams	FAV	0	145	64	59	73	55	96	87	0	561
562	Port Byron silt loam, sandy substratum	FAV	215	0	80	85	77	105	114	102	0	562
563	Seaton silt loam, sandy substratum	FAV	140	0	72	79	72	101	108	97	0	563
564	Waukegan silt loam	FAV	175	0	68	71	82	88	107	96	0	564
565	Tell silt loam	FAV	155	0	69	72	75	93	109	98	0	565
566	Rockton ([a]) and Dodgeville (40) soils	FAV	160	0	72	70	100	81	103	88	0	566
567	Elkhart silt loam	FAV	210	0	76	79	84	94	103	93	0	567
568	Niota silty clay loam, clayey subsurface variant	FAV	0	150	0	0	0	0	90	94	0	568
569	Medary silty clay loam	FAV	0	155	73	70	76	77	98	88	0	569
570	Martinsville silt loam	FAV	180	0	82	82	86	85	105	94	0	570
571	Whitaker silt loam	FAV	0	200	77	78	83	79	98	89	87	571
572	Loran silt loam	FAV	0	195	70	74	77	76	96	87	0	572
573	Tuscola loam	FAV	155	0	79	77	84	73	99	89	0	573
574	Ogle silt loam, silt loam subsoil variant	FAV	170	0	77	75	72	93	111	99	0	574
575	Joy silt loam, sandy substratum	FAV	0	220	70	72	70	87	101	91	0	575
576	Zwingle silt loam	FAV	0	170	67	78	69	88	94	85	0	576
577	Terrace escarpment	Crop yield data not available										577

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
578	Dorchester silt loam, cobbly substratum	FAV	180	0	0	0	0	0	101	91	0	578
579	Beavercreek loam	UNF	0	135	0	0	0	0	107	96	0	579
580	Fayette silty clay loam, karst	FAV	165	0	77	79	78	98	108	97	0	580
581	Tamalco silt loam	UNF	0	140	66	76	76	85	95	86	80	581
582	Homen silt loam	FAV	150	0	81	86	78	93	104	93	0	582
583	Pike silt loam	FAV	170	0	76	78	78	95	110	99	97	583
584	Grantfork silty clay loam	UNF	0	130	77	83	93	70	98	88	70	584
585	Negley loam	FAV	0	175	68	77	71	86	92	83	99	585
587	Terril loam	FAV	255	0	80	74	87	85	106	96	0	587
588	Sparta loamy sand, loamy substratum	FAV	120	0	67	69	63	77	97	87	0	588
589	Bowdre silty clay	FAV	0	180	0	0	0	0	105	94	0	589
590	Cairo silty clay	FAV	0	190	0	0	0	0	97	87	0	590
591	Fults silty clay	FAV	0	185	0	0	0	0	98	89	90	591
592	Nameoki silty clay	FAV	0	200	0	0	0	0	99	89	80	592
593	Chautauqua silty clay loam	FAV	210	0	0	0	0	0	100	90	0	593
594	Reddick silty clay loam	FAV	0	205	78	79	83	74	100	91	0	594
595	Coot loam	FAV	0	180	65	71	82	72	96	87	0	595
596	Marbletown silt loam	FAV	235	0	76	78	85	87	110	99	0	596
597	Armiesburg silty clay loam	FAV	265	0	0	0	0	0	109	97	0	597
598	Bedford silt loam	FAV	0	145	67	75	67	81	98	88	0	598
599	Baxter cherty silt loam	FAV	0	150	73	79	65	90	97	88	0	599
600	Huntington silt loam	FAV	275	0	0	0	0	0	107	97	0	600
601	Nolin silty clay loam	FAV	155	0	0	0	0	0	109	98	85	601
602	Newark silty clay loam	FAV	0	190	0	0	0	0	97	87	83	602
603	Blackoar silt loam	FAV	0	215	0	0	0	0	101	91	0	603
604	Sandy alluvial land	Crop yield data not available										604
605	Ursa silt loam	UNF	0	150	73	79	76	82	95	86	90	605
606	Goss gravelly silt loam	FAV	0	145	64	79	55	91	90	82	94	606
607	Monterey silty clay loam	FAV	0	210	77	80	82	82	98	88	0	607
608	Mudhen clay loam	FAV	0	170	0	0	0	0	93	84	0	608
609	Crane silt loam	FAV	0	210	75	77	79	73	99	89	0	609
611	Sepo silty clay loam	FAV	0	220	0	0	0	0	99	89	0	611
614	Chenoa silt loam	FAV	0	205	74	73	79	78	103	92	0	614
615	Vanmeter silty clay loam	FAV	0	140	67	71	74	80	101	91	76	615
618	Senachwine silt loam	FAV	140	0	72	76	79	79	107	96	0	618
619	Parkville silty clay	FAV	0	200	0	0	0	0	106	96	0	619
620	Darmstadt silt loam	UNF	0	145	69	81	85	84	92	83	73	620
621	Coulterville silt loam	FAV	0	165	70	87	87	82	89	80	71	621
622	Wyanet silt loam	FAV	210	0	74	76	78	87	101	91	0	622
623	Kishwaukee silt loam	FAV	265	0	79	78	83	83	114	102	0	623

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
624	Caprell silt loam	FAV	175	0	82	80	88	80	115	103	0	624
625	Geryune silt loam	FAV	255	0	75	76	82	87	107	97	0	625
626	Kish loam	FAV	0	205	78	81	96	74	94	85	0	626
627	Miami fine sandy loam	FAV	135	0	73	77	82	76	108	97	0	627
628	Lax silt loam	FAV	0	160	71	78	71	78	100	90	0	628
629	Crider silt loam	FAV	175	0	76	80	76	92	108	97	0	629
630	Navlys silty clay loam	FAV	0	185	79	78	85	95	109	98	0	630
631	Princeton fine sandy loam	FAV	170	0	80	81	77	86	105	94	102	631
632	Copperas silty clay loam	FAV	0	205	76	80	82	84	98	88	0	632
633	Traer silt loam	FAV	0	185	74	80	84	86	95	86	0	633
634	Blyton silt loam	FAV	0	205	0	0	0	0	101	91	0	634
635	Lismod silt loam	FAV	0	220	73	74	80	84	103	93	0	635
636	Parmod silt loam	FAV	225	0	78	76	83	80	110	99	0	636
637	Muskego silty clay loam, overwash	FAV	0	205	0	0	0	0	116	73	0	637
638	Muskego muck	FAV	0	185	0	0	0	0	81	73	0	638
639	Wynoose silt loam, bench	FAV	0	170	70	75	69	79	98	89	0	639
640	Bluford silt loam, bench	FAV	135	0	73	72	72	81	103	93	0	640
641	Quiver silty clay loam	FAV	0	165	0	0	0	0	95	86	0	641
647	Lawler loam	FAV	0	210	72	70	75	72	97	87	0	647
648	Clyde clay loam	FAV	0	220	77	70	86	73	99	90	0	648
649	Nachusa silt loam	FAV	0	210	79	83	82	78	103	93	0	649
650	Prairieville silt loam	FAV	255	0	79	81	76	81	107	96	0	650
651	Keswick loam	FAV	0	140	73	75	81	77	106	96	0	651
652	Passport silt loam	FAV	0	165	78	82	82	78	101	91	0	652
656	Octagon silt loam	FAV	200	0	75	77	81	83	99	89	0	656
657	Burksville silt loam	FAV	0	170	71	81	85	79	91	82	0	657
658	Sonsac very cobbly silt loam	UNF	0	140	62	68	70	64	97	87	0	658
660	Coatsburg silt loam	UNF	0	155	71	76	72	78	103	93	0	660
661	Atkinson loam	FAV	195	0	75	68	82	65	101	91	0	661
662	Barony silt loam	FAV	220	0	76	82	78	86	104	94	0	662
663	Clare silt loam	FAV	255	0	76	82	75	89	105	95	0	663
665	Stonelick fine sandy loam	FAV	145	0	0	0	0	0	92	83	0	665
667	Kaneville silt loam	FAV	170	0	75	81	81	94	105	95	0	667
668	Somonauk silt loam	FAV	0	205	76	81	86	86	105	95	0	668
669	Saffell gravelly sandy loam	UNF	0	135	76	77	67	77	97	87	0	669
670	Aholt silty clay	FAV	0	155	0	0	0	0	86	78	0	670
671	Biggsville silt loam	FAV	0	235	78	81	78	99	104	94	0	671
673	Onarga fine sandy loam, till substratum	FAV	150	0	78	74	77	82	108	97	0	673
675	Greenbush silt loam	FAV	0	215	73	83	75	95	97	88	0	675
678	Mannon silt loam	FAV	235	0	78	85	76	101	105	95	0	678

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
681	Dubuque-Orthents-Fayette complex	Crop yield data not available										681
682	Medway silty clay loam	FAV	225	0	0	0	0	0	102	92	0	682
683	Lawndale silt loam	FAV	0	235	67	68	79	81	100	90	0	683
684	Broadwell silt loam	FAV	270	0	78	81	83	91	103	93	0	684
685	Middletown silt loam	FAV	185	0	74	82	74	92	103	92	0	685
689	Coloma silt loam	FAV	0	145	66	66	69	73	94	85	0	689
690	Brookside stony silty clay loam	UNF	0	165	67	80	72	80	87	79	81	690
691	Beasley silt loam	FAV	0	160	68	60	70	79	94	85	0	691
695	Fosterburg silt loam	FAV	0	200	80	83	88	86	98	89	0	695
696	Zurich silt loam	FAV	175	0	77	82	88	86	108	97	0	696
697	Wauconda silt loam	FAV	235	0	72	76	84	81	104	93	0	697
698	Grays silt loam	FAV	205	0	77	79	76	92	112	101	0	698
699	Timewell silt loam	FAV	0	220	74	80	70	91	97	87	0	699
700	Westmore silt loam	FAV	120	0	77	76	74	86	112	101	91	700
706	Boyer sandy loam	FAV	120	0	67	77	72	74	98	89	0	706
709	Osceola silt loam	FAV	170	0	71	76	78	80	101	91	0	709
718	Marsh	Crop yield data not available										718
723	Reesville silt loam	FAV	0	200	73	78	82	85	100	90	0	723
727	Waukee loam	FAV	160	0	76	74	73	82	106	95	0	727
728	Winnebago silt loam	FAV	190	0	77	78	74	96	105	95	0	728
731	Nasset silt loam	FAV	180	0	71	67	77	81	107	96	0	731
732	Appleriver silt loam	FAV	0	180	78	80	81	87	109	97	0	732
740	Darroch silt loam	FAV	0	205	76	71	88	73	109	98	0	740
741	Oakville fine sand	FAV	0	145	67	72	69	76	94	85	0	741
742	Dickinson sandy loam, loamy substratum	FAV	160	0	71	67	78	79	101	91	0	742
743	Ridott silt loam	FAV	0	185	69	75	79	73	95	86	0	743
745	Shullsburg silt loam	UNF	0	180	66	68	82	74	97	87	0	745
746	Calamine silt loam	FAV	0	180	69	73	76	73	97	87	0	746
750	Skelton fine sandy loam	FAV	155	0	81	76	73	85	106	96	93	750
751	Crawleyville fine sandy loam	FAV	0	175	74	75	75	73	94	85	94	751
752	Oneco silt loam	FAV	165	0	68	72	67	85	106	96	0	752
753	Massbach silt loam	FAV	155	0	72	76	77	83	102	92	0	753
755	Lamoille silt loam	FAV	0	145	73	75	69	91	113	102	0	755
759	Udolpho loam, sandy substratum	FAV	0	165	66	74	72	78	95	86	0	759
760	Marshan loam, sandy substratum	FAV	0	185	67	70	77	76	95	86	0	760
761	Eleva sandy loam	UNF	0	135	69	70	68	67	96	87	0	761
763	Joslin silt loam	FAV	240	0	81	81	80	88	107	96	0	763
764	Coyne fine sandy loam	FAV	145	0	84	79	87	76	108	97	0	764

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
765	Trempealeau silt loam	FAV	145	0	67	68	76	88	109	98	0	765
767	Prophetstown silt loam	FAV	0	210	75	82	87	85	97	88	0	767
768	Backbone loamy sand	FAV	0	145	68	65	75	54	94	85	0	768
769	Edmund silt loam	UNF	115	0	62	54	72	60	102	92	0	769
770	Udolpho loam	FAV	0	165	66	75	75	80	94	85	0	770
771	Hayfield loam	FAV	0	190	64	71	73	81	97	88	0	771
772	Marshan loam	FAV	0	190	68	70	78	75	95	86	0	772
774	Saude loam	FAV	135	0	72	71	71	82	106	95	0	774
776	Comfrey clay loam	FAV	0	220	0	0	0	0	93	84	0	776
777	Adrian muck	FAV	0	175	0	0	0	0	85	77	0	777
779	Chelsea loamy fine sand	FAV	0	145	67	67	73	71	94	85	0	779
780	Grellton sandy loam	FAV	145	0	85	76	86	76	115	103	0	780
781	Friesland sandy loam	FAV	195	0	80	76	86	77	107	96	0	781
782	Juneau silt loam	FAV	230	0	0	0	0	0	101	91	0	782
783	Flagler sandy loam	FAV	115	0	73	69	74	72	102	92	0	783
784	Berks loam	FAV	0	125	56	58	57	65	91	82	0	784
785	Lacrescent cobbly silty clay loam	FAV	0	150	67	74	74	91	96	87	0	785
786	Frondorf loam	UNF	0	150	63	67	59	75	99	89	95	786
787	Banlic silt loam	FAV	0	185	0	0	0	0	93	84	0	787
789	Ambraw ([a]) Ceresco (395)-Sarpy (92) complex	FAV	0	185	0	0	0	0	93	84	0	789
791	Rush silt loam	FAV	245	0	80	86	85	92	112	101	0	791
792	Bowes silt loam	FAV	250	0	75	72	81	89	109	98	0	792
800	Psamments	Crop yield data not available										800
801	Orthents, silty	Crop yield data not available										801
802	Orthents, loamy	Crop yield data not available										802
803	Orthents	Crop yield data not available										803
804	Orthents, acid	Crop yield data not available										804
805	Orthents, clayey	Crop yield data not available										805
806	Orthents, clayey-skeletal	Crop yield data not available										806
807	Aquents-Orthents complex	Crop yield data not available										807
808	Orthents, sandy-skeletal	Crop yield data not available										808
810	Oil-brine damaged land	Crop yield data not available										810
811	Aquolls	Crop yield data not available										811
812	Typic Hapludalfs	Crop yield data not available										812
815	Udorthents, silty	Crop yield data not available										815
816	Stookey-Timula-Orthents complex	Crop yield data not available										816
819	Hennepin ([a])-Vanmeter (615) complex	UNF	0	150	75	76	80	89	102	92	0	819
820	Hennepin ([a])-Casco (323) complex	UNF	0	140	75	76	80	89	102	92	0	820

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
821	Morristown silt loam	FAV	0	145	68	73	83	80	95	86	0	821
823	Schuline silt loam	FAV	130	0	78	74	92	82	105	95	72	823
824	Swanwick silt loam	FAV	0	160	68	69	80	84	98	88	80	824
825	Lenzburg silt loam, acid substratum	FAV	0	145	65	61	61	88	99	90	0	825
829	Biggsville ([a])-Mannon (678) silt loams	FAV	0	225	78	81	78	99	104	94	0	829
844	Ava ([a])-Blair (5) complex	UNF	0	175	71	73	76	83	103	93	0	844
850	Hickory ([a])-Hosmer (214) silt loams	UNF	0	155	80	75	80	84	106	95	0	850
851	Alford ([a])-Ursa (605) silt loams	UNF	0	180	78	79	77	96	107	96	0	851
852	Alford ([a])-Wellston (339) silt loams	UNF	0	180	78	79	77	96	107	96	0	852
853	Alford ([a])-Westmore (700) silt loams	FAV	170	0	78	79	77	96	107	96	0	853
855	Timewell ([a]) and Ipava (43) soils	FAV	0	225	74	80	70	91	97	87	0	855
856	Stookey ([a]) and Timula (271) soils	FAV	165	0	83	81	77	97	111	100	0	856
857	Strawn ([a])-Hennepin (25) loams	UNF	0	145	73	76	75	87	100	90	0	857
858	Port Byron-Mt. Carroll-Urban land	Crop yield data not available										858
859	Blair ([a])-Ursa (605) silt loams	UNF	0	165	77	78	80	77	96	86	0	859
860	Hosmer ([a])-Ursa (605) silt loams	UNF	0	145	73	76	69	88	101	91	0	860
861	Ursa ([a])-Hickory (8) complex	UNF	0	150	73	79	76	82	95	86	0	861
862	Pits, sand	Crop yield data not available										862
863	Pits, clay	Crop yield data not available										863
864	Pits, quarries	Crop yield data not available										864
865	Pits, gravel	Crop yield data not available										865
866	Dumps, slurry	Crop yield data not available										866
867	Oil-waste land	Crop yield data not available										867
868	Pits, organic	Crop yield data not available										868
869	Pits, quarries-Orthents complex	Crop yield data not available										869
870	Blake ([a])-Beaucoup (70) complex	FAV	0	200	0	0	0	0	99	89	0	870
871	Lenzburg silt loam	FAV	0	160	73	74	91	88	102	92	0	871
872	Rapatee silty clay loam	FAV	145	0	71	70	86	85	99	89	0	872

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
873	Dunbarton ([a])-Dubuque (29) complex	UNF	0	150	63	55	68	56	103	94	0	873
874	Dickinson ([a])-Hamburg (30) complex	FAV	0	150	65	64	75	76	96	86	0	874
875	Lenzlo silty clay loam	FAV	0	160	0	0	0	0	101	91	0	875
876	Lenzwheel silty clay loam	FAV	0	150	72	69	86	79	100	90	0	876
878	Coulterville ([a])-Grantfork (584) silty clay loams	UNF	0	155	70	87	87	82	89	80	0	878
880	Coulterville ([a])-Darmstadt (620) complex	UNF	0	155	70	87	87	82	89	80	0	880
881	Coulterville ([a])-Hoyleton (3)-Darmstadt (620) complex	UNF	0	170	70	87	87	82	89	80	0	881
882	Oconee ([a])-Darmstadt (620)-Coulterville (621) silt loams	UNF	0	180	74	78	73	86	97	87	0	882
883	Oconee ([a])-Coulterville 621-Darmstadt (620) silt loams	UNF	0	185	74	78	73	86	97	87	0	883
884	Bunkum ([a])-Coulterville 621 silty clay loams	FAV	0	160	75	79	75	91	101	91	0	884
885	Virden ([a])-Fosterburg (695) silt loams	FAV	0	205	74	82	81	88	94	85	0	885
886	Ruma ([a])-Ursa (605) silty clay loams	UNF	0	175	83	82	78	96	113	101	0	886
887	Darmstadt ([a])-Grantfork (584) complex	UNF	0	140	69	81	85	84	92	83	0	887
888	Passport ([a])-Grantfork (584) complex	UNF	0	150	78	82	82	78	101	91	0	888
889	Bluford ([a])-Darmstadt (620) complex	FAV	0	140	73	72	72	81	103	93	0	889
890	Ursa ([a])-Atlas (7) complex	UNF	0	145	73	79	76	82	95	86	0	890
891	Cisne ([a])-Piasa (474) complex	FAV	0	175	69	77	76	80	96	87	0	891
892	Sawmill ([a])-Lawson (451) complex	FAV	0	230	77	78	85	87	100	90	0	892
893	Catlin ([a])-Saybrook (145) complex	FAV	260	0	78	80	80	97	109	98	0	893
894	Herrick ([a])-Biddle (476)-Piasa (474) silt loams	FAV	0	200	75	84	77	91	96	87	0	894
895	Fayette ([a])-Westville (22) complex	FAV	190	0	77	79	78	98	108	97	0	895
896	Wynoose ([a])-Huey (120) complex	FAV	0	155	70	75	69	79	98	89	0	896

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index							IL map symbol
					White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	
897	Bunkum ([a])-Atlas (7) silty clay loams	UNF	0	145	75	79	75	91	101	91	0	897
898	Hickory ([a])-Sylvan (19) complex	FAV	0	160	80	75	80	84	106	95	0	898
899	Raddle ([a])-Sparta (88) complex	FAV	0	220	83	86	84	101	110	99	0	899
900	Hickory ([a])-Wellston (339) silt loams	UNF	0	155	80	75	80	84	106	95	0	900
901	Ipava ([a])-Tama (36) complex	FAV	0	255	73	77	75	89	96	87	0	901
902	Ipava ([a])-Sable (68) complex	FAV	0	235	73	77	75	89	96	87	0	902
903	Muskego ([a]) and Houghton (103) mucks	FAV	0	200	0	0	0	0	81	73	0	903
904	Muskego ([a]) and Peotone (330) soils, ponded	FAV	0	140	0	0	0	0	81	104	0	904
905	NewGlarus ([a])-Lamoille (755) complex	FAV	0	160	68	78	71	95	107	96	0	905
906	Redbud ([a])-Hurst (338) silty clay loams	UNF	0	180	76	81	75	88	104	93	0	906
907	Redbud ([a])-Colp (122) silty clay loams	UNF	0	180	76	81	75	88	104	93	0	907
908	Hickory ([a])-Kell (421) silt loams	FAV	0	155	80	75	80	84	106	95	0	908
909	Coulterville ([a])-Oconee (113) silt loams	FAV	0	185	70	87	87	82	89	80	0	909
910	Timula ([a])-Miami (27) complex	FAV	160	0	76	76	92	98	110	98	0	910
911	Timula ([a])-Hickory (8) complex	FAV	0	155	76	76	92	98	110	98	0	911
912	Hoyleton ([a])-Darmstadt (620) complex	UNF	0	170	73	74	78	82	102	92	0	912
913	Marseilles ([a])-Hickory (8) complex	UNF	0	150	65	71	65	79	99	89	0	913
914	Atlas ([a])-Grantfork (584) complex	UNF	0	135	72	83	78	81	102	92	0	914
915	Elco ([a])-Ursa (605) silt loams	UNF	0	160	78	80	81	84	109	98	0	915
916	Darmstadt ([a])-Oconee (113) silt loams	UNF	0	170	69	81	85	84	92	83	0	916
917	Oakville ([a])-Tell (565) complex	FAV	0	150	67	72	69	76	94	85	0	917
918	Marseilles ([a])-Atlas (7) complex	UNF	0	140	65	71	65	79	99	89	0	918

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
919	Rodman (a)-Fox (327) complex	UNF	0	145	63	77	71	89	90	82	0	919
920	Rushville (a)-Huey (120) silt loams	FAV	0	165	72	81	79	83	94	84	0	920
921	Faxon (a)-Ripon (324) complex	FAV	0	180	70	54	79	50	90	82	0	921
922	Alford (a)-Hurst (338) silty clay loams	UNF	0	185	78	79	77	96	107	96	0	922
923	Urban land-Markham-Ashkum complex	Crop yield data not available										923
924	Urban land-Milford-Martinton complex	Crop yield data not available										924
925	Urban land-Frankfort-Bryce complex	Crop yield data not available										925
926	Urban land-Drummer-Barrington complex	Crop yield data not available										926
927	Blair (a)-Atlas (7) silt loams	UNF	0	160	77	78	80	77	96	86	0	927
928	NewGlarus (a)-Palsgrove (429) silt loams	FAV	0	170	68	78	71	95	107	96	0	928
929	Ava (a)-Hickory (8) complex	UNF	0	170	71	73	76	83	103	93	0	929
930	Goss (a)-Alford (308) complex	FAV	0	170	64	79	55	91	90	82	0	930
931	Seaton (a)-Goss (606) complex	FAV	0	170	81	83	80	101	111	99	0	931
932	Clinton (a)-El Dara (264) complex	FAV	175	0	76	79	76	95	103	93	0	932
933	Hickory (a)-Clinton (18) complex	FAV	0	180	80	75	80	84	106	95	0	933
934	Blair (a)-Grantfork (584) complex	UNF	0	155	77	78	80	77	96	86	0	934
935	Miami (a)-Hennepin (25) complex	UNF	0	165	72	76	80	79	109	98	0	935
936	Fayette (a)-Hickory (8) complex	FAV	0	190	77	79	78	98	108	97	0	936
937	Seaton (a)-Hickory (8) complex	FAV	0	170	81	83	80	101	111	99	0	937
938	Miami (a)-Casco (323) complex	UNF	150	0	72	76	80	79	109	98	0	938
939	Rodman (a)-Warsaw (290) complex	UNF	0	170	63	77	71	89	90	82	0	939
940	Zanesville (a)-Westmore (700) silt loams	UNF	0	140	73	71	72	83	108	97	0	940

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
941	Virden ([a])-Piasa (474) silt loams	FAV	0	190	74	82	81	88	94	85	0	941
942	Seaton ([a])-Oakville (741) complex	FAV	0	165	81	83	80	101	111	99	0	942
943	Seaton ([a])-Timula (271) silt loams	FAV	170	0	81	83	80	101	111	99	0	943
944	Velma ([a])-Coatsburg (660) silt loams	UNF	0	165	80	75	81	87	106	95	0	944
945	Hickory ([a])-High Gap (556) silt loams	UNF	0	140	80	75	80	84	106	95	0	945
946	Hickory ([a])-Atlas (7) complex	UNF	0	150	80	75	80	84	106	95	0	946
947	Lamont ([a]), Tell (565), and Bloomfield (53) soils	FAV	0	150	77	71	81	73	103	92	0	947
948	Fayette ([a])-Clarksville (471) complex	UNF	0	180	77	79	78	98	108	97	0	948
949	Eleroy ([a]) and Derinda (417) soils	UNF	0	145	73	77	85	80	104	93	0	949
950	Dubuque ([a]) and Palsgrove (429) soils	FAV	0	165	59	62	64	75	97	88	0	950
951	Palsgrove ([a]) and Woodbine (410) soils	FAV	155	0	69	72	70	83	103	92	0	951
952	Tell ([a])-Lamont (175) complex	FAV	145	0	69	72	75	93	109	98	0	952
953	Hosmer ([a])-Lax (628) silt loams	UNF	0	150	73	76	69	88	101	91	0	953
954	Alford ([a])-Baxter (599) complex	FAV	0	185	78	79	77	96	107	96	0	954
955	Muskingum ([a]) and Berks (784) soils	UNF	0	125	58	68	55	77	92	83	0	955
956	Brandon ([a]) and Saffell (669) soils	UNF	0	155	70	75	67	100	110	99	0	956
957	Elco ([a])-Atlas (7) silt loams	UNF	0	155	78	80	81	84	109	98	0	957
958	Hickory ([a]) and Hennepin (25) soils	UNF	0	155	80	75	80	84	106	95	0	958
959	Strawn ([a])-Chute (282) complex	FAV	0	140	73	76	75	87	100	90	0	959
960	Hickory ([a])-Sylvan (19)-Fayette (280) silt loams	FAV	0	170	80	75	80	84	106	95	0	960
961	Burkhardt ([a])-Saude (774) complex	FAV	0	145	67	71	68	77	102	92	0	961
962	Sylvan ([a])-Bold (35) complex	FAV	0	170	75	76	83	91	103	92	0	962

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

					Predicted site index							
IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
963	Hickory ([a]) and Sylvan (19) soils	FAV	0	160	80	75	80	84	106	95	0	963
964	Hennepin ([a]) and Miami (27) soils	UNF	0	160	75	76	80	89	102	92	0	964
965	Tallula([a])-Bold (35) silt loams	FAV	0	190	75	83	84	101	104	94	0	965
966	Miami ([a])-Russell (322) silt loams	FAV	175	0	72	76	80	79	109	98	0	966
967	Hickory ([a])-Gosport (551) complex	UNF	0	150	80	75	80	84	106	95	0	967
968	Birkbeck ([a])-Miami (27) silt loams	FAV	190	0	78	81	82	92	109	98	0	968
969	Rodman ([a])-Casco (323) complex	UNF	0	135	63	77	71	89	90	82	0	969
970	Keller ([a])-Coatsburg (660) complex	UNF	0	175	74	77	81	81	104	94	0	970
971	Fishhook ([a])-Atlas (7) complex	UNF	0	150	73	81	78	83	101	91	0	971
972	Casco ([a])-Fox (327) complex	UNF	125	0	64	72	75	87	104	94	0	972
973	Dubuque ([a]) and Dunbarton (505) soils	UNF	0	155	59	62	64	75	97	88	0	973
974	Dickinson ([a])-Onarga (150) complex	FAV	150	0	65	64	75	76	96	86	0	974
975	Alvin ([a])-Lamont (175) complex	FAV	140	0	80	82	88	80	102	92	0	975
976	Neotoma-Rock outcrop complex	Crop yield data not available										976
977	Neotoma ([a])-Wellston (339) complex	UNF	0	140	63	69	61	89	94	85	0	977
978	Wauconda ([a]) and Beecher (298) silt loams	FAV	0	210	72	76	84	81	104	93	0	978
979	Grays ([a]) and Markham (531) silt loams	FAV	190	0	77	79	76	92	112	101	0	979
980	Zurich ([a]) and Morley (194) silt loams	FAV	155	0	77	82	88	86	108	97	0	980
981	Wauconda ([a]) and Frankfort (320) silt loams	UNF	0	200	72	76	84	81	104	93	0	981
982	Aptakisic ([a]) and Nappanee (228) silt loams	UNF	0	180	74	74	84	82	107	96	0	982
983	Zurich ([a]) and Nappanee (228) silt loams	UNF	0	170	77	82	88	86	108	97	0	983
984	Barrington ([a]) and Varna (223) silt loams	FAV	215	0	75	76	82	89	110	99	0	984

Table 6. Pasture and Timber Ratings of Illinois Soils, Slightly Eroded, 0% to 2% Slopes

IL map symbol	Soil type name[a]	Subsoil rooting[b]	Pasture alfalfa[c] Cow days	Pasture grass-legume mix[d] Cow days	Predicted site index: White oak[e] (ft)	Northern red oak[e] (ft)	White ash (ft)	Eastern white pine[e] (ft)	Eastern cotton-wood (ft)	Pin oak (ft)	Tulip poplar[f] (ft)	IL map symbol
985	Alford ([a])-Bold (35) complex	FAV	0	190	78	79	77	96	107	96	0	985
986	Wellston ([a])-Berks (784) complex	UNF	0	135	70	72	70	79	103	93	0	986
987	Atlas ([a])-Grantfork variant (V584) complex	UNF	0	140	72	83	78	81	102	92	0	987
988	Westmore ([a])-Neotoma (X977) complex	FAV	0	130	77	76	74	86	112	101	0	988
989	Mundelein ([a]) and Elliott (146) soils	FAV	0	210	73	81	77	86	100	90	0	989
990	Stookey ([a])-Bodine (X471) complex	UNF	0	160	83	81	77	97	111	100	0	990
991	Cisne ([a])-Huey (120) complex	FAV	0	170	69	77	76	80	96	87	0	991
992	Hoyleton ([a])-Tamalco (581) complex	UNF	0	165	73	74	78	82	102	92	0	992
993	Cowden ([a])-Piasa (474) complex	FAV	0	180	72	76	81	84	95	86	0	993
994	Oconee ([a])-Tamalco (581) complex	UNF	0	180	74	78	73	86	97	87	0	994
995	Herrick ([a])-Piasa (474) complex	FAV	0	195	75	84	77	91	96	87	0	995
996	Velma ([a])-Walshville (X584) complex	UNF	0	155	80	75	81	87	106	95	0	996
997	Hickory ([a])-Hennepin (25) complex	UNF	0	155	80	75	80	84	106	95	0	997
998	Hickory ([a])-Negley (585) complex	FAV	0	165	80	75	80	84	106	95	0	998
999	Alford ([a])-Hickory (8) complex	FAV	0	185	78	79	77	96	107	96	0	999
X956	Brandon silt loam	FAV	0	140	70	75	67	100	110	99	97	X956
X961	Burkhardt sandy loam	FAV	0	170	67	71	68	77	102	92	0	X961
V584	Grantfork variant silt loam	UNF	0	140	73	83	84	73	95	86	0	V584
X977	Neotoma stony silt loam	FAV	0	175	63	69	61	89	94	85	103	X977
X561	NewGlarus silt loam	FAV	0	150	68	78	71	95	107	96	0	X561
X471	Bodine cherty silt loam	UNF	0	135	66	77	62	91	94	85	0	X471
X584	Walshville loam	UNF	0	135	78	82	90	81	99	89	0	X584

[a]Soil complexes were assigned forest site indices for the first and most extensive soil. Forest site indices for the second- and third-named soils are provided for the soil type numbers given in parentheses, ( ).
[b]UNF = unfavorable; FAV = favorable
[c]Soils in the poorly drained group were not rated for alfalfa pasture and are shown with a zero, 0.
[d]Soils in the well-drained group were not rated for grass-legume pasture and are shown with a zero, 0.
[e]Bottomland soils subject to flooding and upland soils subject to ponding for long durations were not rated for white oak, northern red oak, white ash, and eastern white pine, and are shown with a zero, 0.
[f]Soils in the northern region or in both the northern and southern regions were not rated for tulip poplar and are shown with a zero, 0.

Reasons for Crop Yield Variability

The 10-year average crop yields obtained by individual farmers vary for many reasons including soil-management differences, long-term regional weather differences, within-soil type variability in soil properties, and the presence of contrasting soil map unit inclusions. The management used by individual farmers varies from farmer to farmer and is often different from the average management levels as defined in Table 1. Soils such as Drummer silty clay loam occur on over 1 million acres in a 20,000-square-mile area in Illinois, which extends more than 200 miles in a north-south direction (almost from the Wisconsin border to east-central Illinois) and more than 100 miles in an east-west direction. As a consequence, differences in the 10-year regional weather (temperature, rainfall, and growing season length) still exist. Recent Illinois Cooperative Soil Survey correlation decisions have resulted in a reduction in the size of area in which most soils occur. In general, soils will no longer be mapped and correlated in both northern and southern regions (shown in Figure 2). Soils such as Downs silt loam, which previously occurred in both regions, will be restricted to the northern region. Soils previously mapped as Downs silt loam in the southern region will be renamed as Downsouth silt loam. This will reduce the regional impact of weather. Every soil series has an established range of soil characteristics. For example, individual soils on a farm can have properties that are either slightly more or less favorable than the mean or the central concept of a soil for crop production. Any mean soil-property values provided for a soil such as in Appendix B could range above or below the mean value and in some cases could affect the crop yield potential. Another reason the crop yields vary among farmers is the existence of map unit inclusions of other soils that cannot be separated and shown on maps because they are smaller than the minimum size delineation (2.5 ac) allowable on soil survey maps (scale 1:15,840). These contrasting inclusions are usually less than 15% of the map unit and could either raise or lower the crop yield potential.

Timber Yields of Illinois Soils Under an Average Level of Management

Circular 1156 expressed timber yields as yield in board feet per acre for deciduous species and cords for coniferous species. In this publication, the Illinois forest productivity data and derived site index value estimates will be provided by soil type rather than volume yield estimates for important tree species, including soil types currently lacking estimates.

Prediction of site quality based on indirect observations is a procedure that has been used many times. Correlating tree growth with certain soil or topographic factors is one of the methods that has been most commonly used for prediction. Indirect methods of gaining information about site quality are important tools for resource managers interested in the potential productivity of a site absent of all tree species, or proper stand conditions for conventional site index measurement.

Published site index values were obtained from USDA county soil surveys, the USDA–SCS publication "Woodland Suitability Groups for Correlated Soil Series in Illinois," and from the USDA–NRCS online forest-soils database. As part of the pilot study, Woolery (2000) used 16 physical and chemical soil properties (listed in Appendix B) of 70 individual soils found in southern Illinois (Appendix D) to develop a multiple regression analysis method with published site index values used as dependent variables. The tree species selected for site index regression in southern Illinois included white oak, northern red oak, and tulip popular. Stepwise regression procedures were used to select the most important soil parameters for each species from the 16 original physical and chemical soil properties of all Illinois soil types (Woolery, 2000).

Soil variables chosen by this regression procedure to predict the site index of white oak were clay percentage of the B horizon, rooting depth, and the cation-exchange capacity of the soil. Northern red oak soil variables were depth to second parent material, water availability, and permeability of the B horizon. The variables selected for tulip poplar were permeability of the B horizon, pH of the B horizon, and depth to redoximorphic features. The R^2 values for the resulting models were 0.61 for white oak, 0.70 for northern red oak, and 0.80 for tulip poplar (Woolery, 2000). Each of the three species had at least one outlier in its predicted site index values. The outliers in every case were mild outliers and were explained by physical or chemical properties of the soil. In each of these cases, the response in predicted site index to the soil variable was plausible.

The two soil properties that are present in the three models, in one form or another, are depth and water relation factors. Soil depth, or amount of soil that is available to support root growth, appears in the model as rooting depth, depth to second parent material, and depth to redoximorphic features. The water relation term is available water, permeability, and clay percentage. It is not surprising that the three species would have similar terms chosen to predict growth because these species have similar soil requirements for optimal growth. Site index predictions seem to agree with the general understanding of how the growth of these species compares to each another. Tulip poplar generally had the highest predicted site index, whereas white oak usually had the lowest predicted site index.

In general, some of the most important soil parameters for use in models to predict site index were total rooting depth, thickness of the A horizon, bulk density of the A and E horizons, bulk density of the B horizon, and percent clay found in the B horizon. Analysis of variance was performed using stepwise regression, and the parameter estimates were selected to construct a site index prediction equation (Woolery, 2000). The white oak equation explained 59% of the variation in site index, 68% of northern red oak site index, and 78% of the variation in site index of tulip poplar.

The factors used (Woolery, 2000) included percent clay found in the B horizon, total rooting depth, cation-exchange capacity of A and E horizons, depth to second parent material, plant available water to 60 inches, permeability of the B horizon, B horizon pH, and depth to redoximorphic features.

The initial study in southern Illinois with three species (white oak, northern red oak, and tulip popular) was expanded to include four additional tree species (white ash, eastern white pine, pin oak, and eastern cottonwood) for site index regression for all soils in the entire state of Illinois. Sixteen physical and chemical soil properties of 600 individual soils found in Illinois were used in a multiple regression analysis, with published site index values used as dependent variables. Stepwise regression procedures were used to select the most important soil parameters for each species from the 16 original physical and chemical soil properties. Regression equations for two species (pin oak and eastern cottonwood) provided in Table 6 were selected to predict site indices for all northern and southern Illinois soils on both bottomlands and uplands. Forest site indices for white oak, northern red oak, white ash, and eastern white pine are provided in Table 6 for all Illinois upland soils except very poorly drained or organic soils in depressions that are subject to ponding for long durations. A seventh species, tulip popular, an important timber species in southern Illinois, was retained from the pilot study as an indicator species.

For the identified two- or three-member soil complexes shown in Table 6, the timber site index given is for the most extensive soil (first-named soil), which occupies at least 60% of a two-soil complex and at least 50% of a three-soil complex. The timber site indices for the second- and third-named soil can be obtained from the rating for those soils, which were rated individually and are shown in Table 6.

The statistical models used in this study are simple, and they include variables that appear to capture meaningful variation in the growth of the three species. For this reason, one can conclude that the models are using variables that actually affect tree growth. The multivariate analysis completed in this study was found to be optimum for determining quantitative estimates of site index. Although we could not include all possible variables affecting forest site productivity in a prediction equation, we can include variables that are easily measured and do, in fact, account for a large portion of height-growth variability as measured by the height growth of individual trees. But it does allow the estimation, with a certain degree of confidence, of the general productivity that can be expected on sites with particular soil characteristics. The annual timber growth estimates shown in Table 6 are based on predicted model values and the experience and judgment of professional foresters and soil scientists. The tree species selected are intended only as a guide to help in selecting species that can adapt to a soil and can be used as guides to predicted anticipated growth rates of the indicator species.

Crop Productivity Indices of Illinois Soils Under an Average Level of Management

Soil productivity is strongly influenced by the capacity of a soil to supply the nutrients and soil-stored water needs of a growing crop in a given climate. Productivity also depends in part on the adaptation of a particular crop to specific growing conditions and level of management. It is often necessary to compare soils that differ in suitability for particular crops or in response to management. Estimated crop yields are not suitable for these comparisons because yields fluctuate from year to year, and absolute yields mean little when comparing different crops. Productivity indices provide a single scale on which soils may be rated according to their suitability for several major crops under specified levels of management such as an average level (Table 1).

Calculation of Productivity Indices for Grain and Forage Crops Under an Average Level of Management

Productivity indices for grain and forage crops grown in Illinois are reflected as a single percentage of the average yields obtained under average management for one of the most productive soils in the state. This soil type is Muscatune silt loam (no. 51) and was previously identified in Circular 1156 and mapped in many northern and central Illinois counties as Muscatine (no. 41). Under average management, the 10-year average yields used to calculate a productivity index (PI) for this soil are as follows: corn, 159 bu/ac; soybeans, 51 bu/ac; wheat, 60 bu/ac; oats, 83 bu/ac; and hay, 4.80 ton/ac. Muscatune silt loam under an average level of management was assigned a PI of 130. This number was chosen because it represented the highest average PI (basic management PI + high management PI / 2) in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978). The highest possible basic management level PI was 100, whereas the highest possible high management PI was 160 (Fehrenbacher et al., 1978).

An example of calculating the productivity index for Tama silt loam under average management using the crop yields in Table 2 is given below.

Wheat and oats are relatively minor crops in northern and central Illinois, where Tama soils occur. According to the Illinois Agricultural Statistics Service (Illinois Agri-cultural Statistics Staff, 1969 to 1999), corn is grown on 52%, soybeans on 40%, wheat on 3%, oats on 1%, and hay on 4% of the total agricultural crop acreage in northern and central Illinois (Figure 3A) during the 1990s. In Illinois, crop acreage distributions affect the soils' calculated average PI.

Organic soils in the northern region are not normally used for oats, hay, or wheat. Its crop acreage distribution, presumably, for calculating an average PI, was 56% corn and 44% soybeans. These soils are assumed to have already been drained and used in crop production. Undrained organic soils would qualify as hydric soils and wetlands and therefore would not be suited for crop use and subject to land use change restrictions.

These percentages or fractions were used to weight the relative yields of the crops (line 5 on page 57). In southern Illinois during the 1990s, the relative acreages (Figure 3B) were as follows: corn, 32%; soybeans, 44%; wheat, 15%; grain sorghum, 3%; and hay, 6%. As used here, the term *southern Illinois* refers to the 36 southern-most counties of the state, bounded on the north by Madison, Bond, Fayette, Effingham, Cumberland, and Clark counties (Figure 2).

An example of calculating productivity index for southern Illinois at the average level of management is given below for Grantsburg silt loam. The crop yields are in Table 2.

Productivity indices have no units because they are relative and not absolute measures of productive capacity. For instance, a productivity index of 120 is not the same as 120 bushels per acre of corn. The relationship between average management PIs and the yields of each of the major crops (Figures 4A and 4B) does show,

	Tama silt loam (no. 36) Average management Northern and central Illinois Favorable subsoil for rooting				
Line	Corn	Soybeans	Wheat	Oats	Hay
1. Estimated yield under average level of management, bu/ac	149	48	58	78	5.80
2. Base yield (Muscatune under average management), bu/ac	159	51	60	83	4.80
3. Relative yield (line 1/ line 2 × 130)	122	122	126	124	157
4. Fraction of total crop acreage (northern region)	0.52	0.40	0.03	0.01	0.04
5. Weighted relative yield (line 3 × line 4)	63	49	4	1	6
6. Average productivity index (sum of line 5 data)	123				

however, that the average yield corresponds to a particular productivity index. For example, a soil that has an average productivity index of 120 should produce approximately 147 bushels of corn, 47 bushels of soybeans, 56 bushels of wheat, 73 bushels of oats, 104 bushels of grain sorghum, 4.4 tons of grass-legume hay per acre, and 5.3 tons of alfalfa hay per acre under an average level of management. The average PI range for all of the approximately 800 soil types and soil complexes is from 43 to 130 (Table 2).

Adjustments in Crop Yields and Productivity Indices

It is necessary to make adjustments in crop yield estimates and productivity indices for conditions other than those used in Table 2 (0% to 2% slopes, slightly eroded). Crop yields, for example, decrease as slope increases and erosion becomes more severe. Some adjustments, such as for flood damage, may be extremely variable and require local knowledge for a reasonable assessment of the situation.

Adjustments for Increasing Slope and Erosion

The crop yield estimates and productivity indices given in Table 2 are for 0% to 2% slopes and slightly eroded conditions (Fehrenbacher et al., 1978). It should be emphasized that most Illinois soils occur on 0% to 2% slopes. The ranges in slope gradients for all soils in Illinois are given in the alphabetical index of soils in Appendix A. The term *slightly eroded* is meant to include a range from no erosion to slight erosion (soil lost is less than 25% of the original A horizon or upper 8 in.). Because yields were estimated and productivity indices were calculated for these conditions on all soils, however, adjustments for slope and erosion (Hussain et al., 1999) are always reductions in the values given in Table 2.

The two erosion classes for which adjustments are suggested here are moderate erosion (lost 25% to 75% of the original A horizon or upper 8 in.) and severe erosion (lost more than 75% of the original A horizon or upper 8 in.) (Soil Survey Staff, 1993). *Moderate erosion* is

	Grantsburg silt loam (no. 301) Average management Southern Illinois Unfavorable subsoil for rooting				
Line	Corn	Soybeans	Wheat	Sorghum	Hay
1. Estimated yield under average level of management, bu/ac	107	36	44	83	2.6
2. Base yield (Muscatune under average management), bu/ac	159	51	60	110	4.80
3. Relative yield (line 1/ line 2 × 130)	87	92	95	98	70
4. Fraction of total crop acreage (southern region)	0.32	0.44	0.15	0.03	0.06
5. Weighted relative yield (line 3 × line 4)	28	41	14	3	4
6. Average productivity index (sum of line 5 data)	90				

defined as significant erosion with subsoil materials evident in the plow layer in much of the moderately eroded areas that have been freshly plowed. Enough subsoil has been mixed with the surface soil to change the behavior of the plow layer from that occurring in uneroded or slightly eroded areas (Nizeyimana and Olson, 1988). *Severe erosion* is defined as extreme erosion, a condition in which all or nearly all of the surface soil (or A horizon) and probably some of the subsoil have been removed. Management problems are usually severe depending on the nature of the exposed subsoil.

Table 7 shows the percentage adjustments for common slope groups and erosion conditions. Adjustments for steeper slopes and greater erosion are given as percentages of yields and productivity indices for 0% to 2% slopes, slightly eroded conditions under an average level of management for both favorable (FAV) and unfavorable (UNF) subsoils for rooting. The subsoil ratings for all soils are provided in a column in Table 2. Figure 5 also shows the slope and erosion adjustments for both soils under an average level of management with favorable and unfavorable subsoils for rooting. On sloping soils that are subject to erosion (Olson et al., 1994), greater reductions for slope and erosion are made on those soils that have unfavorable subsoils for root growth (Fehrenbacher et al., 1978; Olson and Carmer, 1990). Unfavorable subsoils or other shallow subsurface layers include those with high clay content, weak soil structure, high gravel (rock fragment) content, dense pans (fragipans), high sodium content, and massive bedrock. The sloping soils with unfavorable subsoils that are subject to erosion are indicated in Table 2 by unfavorable subsoil rooting (Olson et al., 1999).

The decimal adjustments given in Table 7 for various slope groups and erosion conditions with favorable or unfavorable subsoils under an average level of management are plotted in Figure 5. Table 7 can be used to obtain the decimal adjustments in yields and productivity indices on all soils for any slope group and erosion combination.

For example, to calculate the grain yields and productivity index under an average level of management for soil type no. 280, Fayette silt loam; 5% to 10% slopes; severely eroded, favorable subsoils, obtain the yields for Fayette silt loam (given in Table 2) for 0% to 2% slopes, slightly eroded conditions: 133 bu/ac for corn, 42 bu/ac for soybeans, 53 bu/ac for wheat, 68 bu/ac for oats, and 4.20 ton/ac for hay. The crop-productivity index under average management is 108. Place the midpoint of the 5% to 10% slope group, 7 1/2 percent, on the horizontal axis of Figure 5 (average management), and follow down to the curved line for severe erosion and favorable subsoil; then follow horizontally to the left, and read on the vertical axis the decimal by which the base yields and productivity index in Table 2 should be multiplied to make the adjustment. In this example, all crop yields and the productivity index in Table 2 should be multiplied by a number expressed as a decimal to make the adjustment. The yields and productivity index for Fayette silt loam, 5% to 10% slopes, severely eroded, are 112 bu/ac for corn, 35 bu/ac for soybeans, 45 bu/ac for wheat, 57 bu/ac for oats, and 3.50 ton/ac for hay, and the crop productivity index is 91. Similar adjustments could also have been obtained using the columns in Table 7 for 5% to 10% slopes, severely eroded with favorable subsoils.

The curves in Figure 5 include adjustments for slopes to 43%. Yields of grain crops are seldom given for slopes greater than about 15% because of the problems of controlling erosion and otherwise obtaining good crop yields on the steeper slopes. The portion of the curves from the 15% to about 43% slope is useful mainly for adjusting productivity indices on steep slopes for land-valuation purposes. The shapes of the curves indicate that yields and productivity indices decrease slowly on gentle slopes up to about 6% to 8% slope, decrease sharply to about 35% slope, and then begin to level off, with little change beyond about 40% slope. In most cases, it is likely that slopes much greater than 43% do not affect productivity indices much differently from those slopes near 43%. For this reason, it is suggested that the decimal adjustments in Figure 5 for 43% slopes be used for all slope groups having a midpoint (average slope) greater than 43%.

Relationships Among Soil Prefixes, Soil Numbers, and Soil Names

The soil numbers in Tables 2 and 6 are listed in numerical sequence from 2 to 999 and are linked to the soil name and associated crop, pasture, and timber yields. Soil numbers above 1000 are not listed in Tables 2 or 6, and their crop yields and productivity indices are the same as the similar one- to three-digit soil number. These numbers above 1000 have been used in soil survey reports and were formed by adding a single-digit prefix (0s for spacing) to the soil number of the similar soil name below 1000. The prefixes are used in the following manner and with the meaning as indicated.

Prefix 1	Wet phase	1000–1999
Prefix 2	Urban land-soil complex	2000–2999
Prefix 3	Frequently flooded phase	3000–3999
Prefix 4	Ponded phase	4000–4999
Prefix 5	Karst phase (also mine sinks)	5000–5999
Prefix 6	Variant of series (no longer in use)	6000–6999
Prefix 7	Rarely flooded phase	7000–7999
Prefix 8	Occasionally flooded phase	8000–8999
Prefix 9	Not assigned	9000–9999

Table 7. Decimal Adjustments in Crop Yields and Productivity Indices Under an Average Level of Management for Various Slope Groups and Erosion Phases

Slope class %	Average management Favorable subsoils			Average management Unfavorable subsoils		
	Slightly eroded	Moderately eroded	Severely eroded	Slightly eroded	Moderately eroded	Severely eroded
0–2	1.00	0.96	0.88	1.00	0.93	0.78
2–5	0.99	0.95	0.86	0.98	0.91	0.76
5–10	0.96	0.92	0.84	0.95	0.88	0.72
10–15	0.92	0.87	0.78	0.90	0.82	0.67
15–20	0.86	0.80	0.73	0.84	0.76	0.61
20–25	0.79	0.72	0.65	0.76	0.69	0.54
25–30	0.70	0.63	0.57	0.67	0.60	0.45
30–35	0.59	0.53	0.46	0.56	0.49	0.34
35–40	0.51	0.46	0.38	0.48	0.41	0.26
43+	0.47	0.42	0.34	0.44	0.37	0.22

An example of how the prefixes are used is as follows: An occasionally flooded phase (prefix 8) of Sawmill silty clay loam (107) would have the symbol 8107 on some of the soil survey maps. The crop, pasture, and timber yields and productivity indices for soil map unit number 8107 (occasionally flooded phase of Sawmill silty clay loam) can be obtained from soil symbol number 107 (Sawmill silty clay loam). The productivity index and crop yields are considered to be the same for both map units.

Adjustment for Flooding

Estimated yields and productivity indices given in Table 2 apply to bottomland soils that are protected from flooding or a prolonged high water during the cropping season because of high water in stream valleys. Soils that are subject to flooding are less productive than soils that are protected by levees. The frequency and severity of flooding are often governed by landscape characteristics and management of the watershed in which a soil occurs. For this reason, factors used to adjust productivity indices for flooding must be based on knowledge of the characteristics and history of the specific site.Wide variation in the flooding hazard, sometimes within short distances in a given valley, require that each situation be assessed locally.

If the history of flooding in a valley is known to have caused 2 years of total crop failures and 2 years of 50% crop losses out of 10 years, for example, the estimated yields and productivity indices of the bottomland soils could be reduced to 70% of those given in Table 2. Estimated crop yields and productivity indices for upland soils subject to crop damage from long-duration ponding have already been reduced accordingly in Table 2.

Adjustments for Soil Complexes and Soil Associations

A soil complex consists of two or more soils occurring together in a pattern that is too intricate for the individual soils to be delineated on the soil maps at the scale being used. Crop yield estimates and productivity indices of a soil-complex area are averages of the yields and indices of the component soils. For example, Huey silt loam (no. 120), a high-sodium soil, often occurs within some areas of Cisne silt loam (no. 2) in south-central Illinois. These areas are delineated as a Cisne-Huey complex (No. 991), when the two soils cannot be separated at the scale used in mapping. Weighted productivity indices can be calculated if the percentage of each soil in the complex is known. In this publication, complexes with two soils are weighted 60/40 with the first-named soil being dominant in extent and occupying 60% of the unit. The weighted productivity index of the complex under an average management level is 90, when the two soils have productivity indices of 97 for Cisne silt loam and 79 for Huey silt loam. If the complex contains three-named soils, the soils are weighted 50/30/20 with the first-named soil representing 50%, the second-named soil 30% and the third-named soil representing 20% of the map unit.

For soil complexes, the timber site indices given in Table 6 are for the first-named and most extensive soil. If timber site indices are needed for the second- and third-named soils, these timber site indices can be found by going to the listed soil type number provided in parentheses after the second and third soil-type names.

Soil associations are similar to soil complexes in many respects, but they are usually used on general rather than on detailed soil maps. Like soil complexes, soil associations are geographic mixtures of two or more soils. Where the percentages of the various soils are known, crop yield estimates and productivity indices of soil associations are calculated in the same manner as for soil complexes.

Summary

The objective of this study is to provide up-to-date crop, pasture, and timber ratings for the 1990s under average management for known Illinois soil types. For land-use and crop-rotation purposes, Illinois was divided into northern (66 counties) and southern (36 counties) regions. The 1990s crop acreage distribution pattern in the 1990s for northern Illinois was 52% corn, 40% soybeans, 3% wheat, 1% oats, and 4% hay. The 1990s southern Illinois region crop acreage distribution pattern was 44% soybeans, 32% corn, 15% wheat, 3% grain sorghum, and 6% hay. The 10-year crop yield estimates for six crops were determined from Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978), Illinois Agricultural Statistics (IAS) Staff (1969 to 1999), and Farm Business and Farm Management (FBFM) records (Rejesus and Hornbaker, 1999). A fourth source of data (3- to 5-year yield measurements on farmer fields) for corn and soybeans under an optimum level of management was collected for 90 soil types to validate estimates because these crops were grown on 88% of the Illinois cropland.

For the six crops, three different approaches were used to generate yield estimates under an average level of management. The first approach, which resulted in two different crop yield estimates, was based on a multiple regression approach and was used to evaluate the relationships between 16 selected soil properties of 34 base and benchmark soils and 1970s crop yields published in Circular 1156. Statistical models developed from major (base and benchmark) soils were tested by calculating the 10-year average corn and soybean yields for these 34 major soils. The coefficients for the soil variables that were generated from multiple regression equations were further tested using the soil-property values for an additional 165 soils identified in nine test counties representing the crop-reporting and weather districts in Illinois. Outliers were identified and modifications were made to both the crop yield equations and the soil-properties ranges to better predict crop yield estimates. The 22-year average crop yield trend changes by region from 1978 to 1999 were determined by using IAS records. These 22-year average trend changes were added to the established (Circular 1156) and model-predicted 1970s crop yields to generate 1990s crop yield estimates for 199 soil types in nine counties. These two sets of 1990s crop yield estimates were compared against 10-year county crop averages for the farmer-reported IAS yields after being weighted by the extent of each soil type in a county. Predicted 1990s county crop yields were statistically similar to 1990s farmer-reported (IAS) county crop yields. The 1990s crop yields were then estimated for all Illinois soil types using soil-type property ranges, crop-prediction models, the established (Circular 1156) crop yields, and the estimated crop yield trends since 1978.

The third set of crop yield estimates was generated by using the previous 1970s basic productivity indices (PIs) of all Illinois soils as established in Circular 1156, *Soil Productivity in Illinois,* and the 1986 to 1995 FBFM crop yield records for over 5,000 Illinois farms. The basic PI of a farm was determined and the crop yields were reported by the basic PI of the farm. The soil productivity rating is an index that ranks soil types based on the productive capacity of a soil. This rating has a basic level of management range of 0 to100, with 100 as the most favorable soil condition for agricultural production. For this study, the basic soil productivity rating was then grouped into four soil productivity rating categories (SPRCs), including the following: SPRC 1 has a basic PI range from 91 to 100, SPRC 2 has a range from 81 to 90, SPRC 3 has a range from 71 to 80, and SPRC 4 is any rating below 71. The linear relationship between the basic PI and the 10-year average crop yield for the 1990s (1988–1997) was established and used with the basic PI of every Illinois soil type to create a third set of crop yield estimates. The mean corn and soybean yields for the nearly 800 soil types including complexes were calculated. In the case of corn and soybeans, 90 soil types under an optimum level of management with the 3- to 5-year checks on farmer fields were compared to the mean of three sets of corn and soybean yields to validate these estimates. For oats, wheat, and hay (alfalfa or grass-legume mixture), the three sets of crop yield estimates under an average level of management for all soil types were then averaged to create mean yield estimates. Grain sorghum estimates, which are new to this publication, were the mean of four different estimates. Pasture yield estimates were calculated by multiplying the hay yields by 50 to estimate the number of days a cow could be supported.

Forestry productivity data and site index value estimates for important tree species were developed to quantify the effects of soil properties on tree growth. Sixteen physical and chemical soil properties of soils found in Illinois were used, along with published site index values, in a multivariate analysis. Published site index values were obtained from USDA county soil surveys, the USDA–SCS publication “Woodland Suitability Groups for Correlated Soil Series in Illinois,” and the USDA–NRCS online forest-soils database. The tree species selected for site index regression were white oak, northern red oak, white ash, eastern white pine, pin oak, eastern cottonwood, and tulip poplar.

Stepwise regression procedures were used to select the most important soil parameters for each species from the original physical and chemical soil properties. In general, some of the most important soil parameters for use in models to predict site index were available water, depth to redoximorphic features, bulk density of the subsoil (B horizon), thickness of the B horizon, and pH of the B horizon. Analysis of variance was performed using stepwise regression, and the parameter estimates were used to construct a site index prediction equation. The soil property equations explained most of the variation in white oak, northern red oak, white ash, pin oak, eastern white pine, eastern cottonwood, and tulip poplar. Regression equations for each species were used to predict site index for all the appropriate Illinois soils. This method was found to be the best way to develop a quantitative estimate of site index.

Productivity indices for crops provide a single scale on which soils may be rated according to their suitability for several major crops under specified levels of management. Productivity indices for crops grown in Illinois were calculated as a single percentage of the average yields obtained under average level of management for one of the most productive soils in the state. This soil type is Muscatune silt loam (no. 51), which was previously mapped as Muscatine (no. 41). Under average management, the 10-year average yields used to calculate a productivity index (PI) for this soil are as follows: corn, 159 bu/ac; soybeans, 51 bu/ac; wheat, 60 bu/ac; oats, 83 bu/ac; grain sorghum, 110 bu/ac; and hay (grass-legume), 4.80 ton/ac. The Muscatune silt loam under an average level of management was assigned a PI of 130. This number was chosen because it represented the highest average PI (basic management PI + high management PI / 2) previously identified in Circular 1156, *Soil Productivity in Illinois* (Fehrenbacher et al., 1978). The highest possible basic management level PI was 100, and the highest possible high management PI was 160. The average PI for all Illinois soil types was calculated using each soil type's crop yield estimates as compared to the yield estimates for the Muscatune soil type. It was necessary to make adjustments in crop yield estimates and productivity indices for slopes greater than 2% and for moderately and severely eroded soils.

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Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management

IL map symbol	Soil type name and slope range
98	Ade loamy fine sand, 1-12
777	Adrian muck, 0-1
670	Aholt silty clay, 0-2
308	Alford silt loam, 0-60
954	Alford-Baxter complex, 0-60
985	Alford-Bold complex, 0-75
999	Alford-Hickory complex, 0-70
922	Alford-Hurst silty clay loams, 0-60
851	Alford-Ursa silt loams, 0-60
852	Alford-Wellston silt loams, 0-60
853	Alford-Westmore silt loams, 0-70
366	Algansee fine sandy loam, 0-4
306	Allison silty clay loam, 0-7
131	Alvin fine sandy loam, 0-45
975	Alvin-Lamont complex, 0-45
302	Ambraw clay loam, 0-2
341	Ambraw silty clay loam, sandy substratum, 0-2
789	Ambraw-Ceresco-Sarpy complex, 0-9
293	Andres silt loam, 0-4
732	Appleriver silt loam, 2-5
365	Aptakisic silt loam, 0-3
982	Aptakisic and Nappanee silt loams, 0-6
409	Aquents, clayey
408	Aquents, loamy
807	Aquents-Orthents complex
811	Aquolls
78	Arenzville silt loam, 0-5
227	Argyle silt loam, 2-18
597	Armiesburg silty clay loam, 0-2
411	Ashdale silt loam, 0-20
232	Ashkum silty clay loam, 0-3
259	Assumption silt loam, 2-18
661	Atkinson loam, 0-10
7	Atlas silt loam, 2-20
914	Atlas-Grantfork complex, 2-20
987	Atlas-Grantfork variant complex, 2-12
61	Atterberry silt loam, 0-6
319	Aurelius muck, 0-2
479	Aurelius muck, sandy substratum, 0-2
14	Ava silt loam, 0-18
844	Ava-Blair complex, 0-20
929	Ava-Hickory complex, 0-70
438	Aviston silt loam, 2-10
204	Ayr sandy loam, 0-10
768	Backbone loamy sand, 2-18
787	Banlic silt loam, 0-3
662	Barony silt loam, 0-10
443	Barrington silt loam, 0-7
984	Barrington and Varna silt loams, 0-18
466	Bartelso silt loam, 0-2
105	Batavia silt loam, 0-12
599	Baxter cherty silt loam, 2-60
472	Baylis silt loam, 8-30
367	Beach sand
188	Beardstown loam, 0-4
691	Beasley silt loam, 2-60
70	Beaucoup silty clay loam, 0-2
579	Beavercreek loam, 1-15
598	Bedford silt loam, 0-12
298	Beecher silt loam, 0-6
382	Belknap silt loam, 0-4
784	Berks loam, 0-80
486	Bertrand silt loam, 0-35
90	Bethalto silt loam, 0-5
476	Biddle silt loam, 0-2
671	Biggsville silt loam, 0-10
829	Biggsville-Mannon silt loams, 0-10
332	Billett sandy loam, 0-20
355	Binghampton sandy loam, 0-3
334	Birds silt loam, 0-2
233	Birkbeck silt loam, 0-18
856	Birkbeck-Dodge complex, 0-20
968	Birkbeck-Miami silt loams, 0-60
603	Blackoar silt loam, 0-2
5	Blair silt loam, 2-20
927	Blair-Atlas silt loams, 2-20
934	Blair-Grantfork complex, 2-20
859	Blair-Ursa silt loams, 2-50
391	Blake silty clay loam, 0-2
870	Blake-Beaucoup complex, 0-2
53	Bloomfield fine sand, 1-60
23	Blount silt loam, 0-6
63	Blown-out land
13	Bluford silt loam, 0-7
640	Bluford silt loam, bench, 0-7
889	Bluford-Darmstadt complex, 0-10
634	Blyton silt loam, 0-2
X471	Bodine cherty silt loam, 4-60
35	Bold silt loam, 4-75
493	Bonfield silt loam, 0-5
108	Bonnie silt loam, 0-2
457	Booker silty clay, 0-2
397	Boone loamy fine sand, 0-70
589	Bowdre silty clay, 0-8
792	Bowes silt loam, 0-10
706	Boyer sandy loam, 0-50
X956	Brandon silt loam, 2-50

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
956	Brandon and Saffell soils, 1-60
558	Breeds silty clay loam, 0-3
149	Brenton silt loam, 0-5
684	Broadwell silt loam, 0-12
136	Brooklyn silt loam, 0-2
690	Brookside silty clay loam, 3-60
690	Brookside silty clay loam, bouldery phase, 3-60
450	Brouillett silt loam, 0-2
235	Bryce silty clay, 0-2
553	Bryce-Calamine variant complex, 0-12
515	Bunkum silty clay loam, 2-18
897	Bunkum-Atlas silty clay loams, 2-20
884	Bunkum-Coulterville silty clay loams, 0-18
X961	Burkhardt sandy loam, 0-30
961	Burkhardt-Saude complex, 1-60
657	Burksville silt loam, 0-2
427	Burnside silt loam, 0-4
590	Cairo silty clay, 0-4
746	Calamine silt loam, 0-12
400	Calco silty clay loam, 0-2
134	Camden silt loam, 0-50
373	Camden silt loam, sandy substratum, 1-5
347	Canisteo silt loam, 0-2
447	Canisteo silt loam, sandy substratum, 0-2
422	Cape silty clay loam, 0-1
624	Caprell silt loam, 2-20
286	Carmi sandy loam, 0-10
323	Casco silt loam, 0-70
972	Casco-Fox complex, 0-70
267	Caseyville silt loam, 0-5
171	Catlin silt loam, 0-15
893	Catlin-Saybrook complex, 0-20
395	Ceresco loam, 0-3
315	Channahon silt loam, 1-25
174	Chaseburg silt loam, 0-15
241	Chatsworth silt loam, 4-50
287	Chauncey silt loam, 0-3
593	Chautauqua silty clay loam, 0-25
779	Chelsea loamy fine sand, 0-45
614	Chenoa silt loam, 0-5
282	Chute fine sand, 5-60
2	Cisne silt loam, 0-2
376	Cisne silt loam, bench, 0-2
991	Cisne-Huey complex, 0-2
891	Cisne-Piasa complex, 0-2
663	Clare silt loam, 0-5
147	Clarence silty clay loam, 0-7
257	Clarksdale silt loam, 0-7
471	Clarksville cherty silt loam, 1-60
18	Clinton silt loam, 0-25
932	Clinton-El Dara complex, 0-60
648	Clyde clay loam, 0-3
660	Coatsburg silt loam, 4-20
428	Coffeen silt loam, 0-2
166	Cohoctah loam, 0-2
402	Colo silty clay loam, 0-5
689	Coloma silt loam, 0-70
122	Colp silt loam, 0-25
776	Comfrey clay loam, 0-2
595	Coot loam, 0-3
632	Copperas silty clay loam, 0-2
495	Corwin silt loam, 0-12
621	Coulterville silt loam, 0-10
880	Coulterville-Darmstadt complex, 0-10
878	Coulterville-Grantfork silty clay loams, 0-20
881	Coulterville-Hoyleton-Darmstadt complex, 0-10
909	Coulterville-Oconee silt loams, 0-10
882	Coulterville-Oconee-Darmstadt complex, 0-10
112	Cowden silt loam, 0-2
993	Cowden-Piasa complex, 0-2
764	Coyne fine sandy loam, 0-12
381	Craigmile sandy loam, 0-2
609	Crane silt loam, 0-2
751	Crawleyville fine sandy loam, 0-2
337	Creal silt loam, 0-7
629	Crider silt loam, 0-30
379	Dakota silt loam, 0-18
56	Dana silt loam, 0-12
512	Danabrook silt loam, 0-10
620	Darmstadt silt loam, 0-10
887	Darmstadt-Grantfork complex, 0-20
916	Darmstadt-Oconee silt loams, 0-10
740	Darroch silt loam, 0-3
71	Darwin silty clay, 0-2
192	Del Rey silt loam, 0-7
45	Denny silt loam, 0-2
262	Denrock silt loam, 0-2
417	Derinda silt loam, 4-12
87	Dickinson sandy loam, 0-30
742	Dickinson sandy loam, loamy substratum, 0-9
874	Dickinson-Hamburg complex, 0-90
974	Dickinson-Onarga complex, 0-30
266	Disco sandy loam, 0-5
115	Dockery silt loam, 0-5

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
24	Dodge silt loam, 0-20
40	Dodgeville silt loam, 0-30
239	Dorchester silt loam, 0-5
578	Dorchester silt loam, cobbly substratum variant, 0-2
128	Douglas silt loam, 2-15
346	Dowagiac silt loam, 0-12
386	Downs silt loam, 0-25
283	Downsouth silt loam, 2-10
325	Dresden silt loam, 0-30
152	Drummer silty clay loam, 0-2
350	Drummer silty clay loam, gravelly substratum, 0-2
552	Drummer silty clay loam, till substratum, 0-2
75	Drury silt loam, 0-30
29	Dubuque silt loam, 2-60
973	Dubuque and Dunbarton soils, 2-60
950	Dubuque and Palsgrove soils, 2-60
681	Dubuque-Orthents-Fayette complex
536	Dumps, mine
866	Dumps, slurry
505	Dunbarton silt loam, 2-60
511	Dunbarton silt loam, cherty variant, 2-60
873	Dunbarton-Dubuque complex, 2-60
523	Dunham silty clay loam, 0-2
321	Du Page silt loam, 0-4
180	Dupo silt loam, 0-2
416	Durand silt loam, 1-20
48	Ebbert silt loam, 0-2
96	Eden silty clay loam, 2-70
272	Edgington silt loam, 0-2
249	Edinburg silty clay loam, 0-2
769	Edmund silt loam, 2-35
312	Edwards muck, 0-6
384	Edwardsville silt loam, 0-5
264	El Dara sandy loam, 5-60
198	Elburn silt loam, 0-5
351	Elburn silt loam, gravelly substratum, 0-3
119	Elco silt loam, 2-25
957	Elco-Atlas silt loams, 2-25
915	Elco-Ursa silt loams, 2-50
547	Eleroy silt loam, 2-30
949	Eleroy and Derinda soils, 2-30
761	Eleva sandy loam, 1-60
403	Elizabeth silt loam, 4-65
567	Elkhart silt loam, 0-18
146	Elliott silt loam, 0-7
356	Elpaso silty clay loam, 0-2
475	Elsah cherty silt loam, 0-5
345	Elvers silt loam, 0-3
538	Emery silt loam, 2-10
469	Emma silty clay loam, 2-12
231	Evansville silt loam, 0-2
516	Faxon clay loam, 0-2
921	Faxon-Ripon complex, 0-12
280	Fayette silt loam, 0-40
458	Fayette silt loam, sandy substratum, 2-25
359	Fayette silt loam, till substratum, 10-15
580	Fayette silty clay loam, karst, 5-15
948	Fayette-Clarksville complex, 0-60
936	Fayette-Hickory complex, 0-70
895	Fayette-Westville complex, 0-40
499	Fella silty clay loam, 0-2
380	Fieldon silt loam, 0-2
496	Fincastle silt loam, 0-6
6	Fishhook silt loam, 2-18
971	Fishhook-Atlas complex, 2-20
419	Flagg silt loam, 0-20
783	Flagler sandy loam, 0-9
154	Flanagan silt loam, 0-7
433	Floraville silt loam, 0-2
695	Fosterburg silt loam, 0-2
327	Fox silt loam, 0-35
320	Frankfort silt loam, 1-12
540	Frankville silt loam, 0-18
781	Friesland sandy loam, 0-7
786	Frondorf loam, 6-60
908	Frondorf-Hickory complex, 5-70
591	Fults silty clay, 0-3
413	Gale silt loam, 0-60
432	Geff silt loam, 0-5
431	Genesee silt loam, 0-2
625	Geryune silt loam, 0-10
201	Gilford fine sandy loam, 0-2
460	Ginat silt loam, 0-1
162	Gorham silty clay loam, 0-7
551	Gosport silt loam, 5-50
606	Goss gravelly silt loam, 2-70
930	Goss-Alford complex, 0-70
513	Granby loamy sand, 0-3
584	Grantfork silty clay loam, 2-20
V584	Grantfork variant silt loam, 4-12
301	Grantsburg silt loam, 2-18
541	Graymont silt loam, 2-10
698	Grays silt loam, 0-12

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
979	Grays and Markham silt loams, 0-20
675	Greenbush silt loam, 0-18
780	Grellton sandy loam, 0-20
363	Griswold loam, 0-20
526	Grundelein silt loam, 0-2
30	Hamburg silt loam, 20-90
484	Harco silt loam, 0-3
67	Harpster silty clay loam, 0-2
127	Harrison silt loam, 0-10
244	Hartsburg silty clay loam, 0-2
344	Harvard silt loam, 0-10
771	Hayfield loam, 0-3
331	Haymond silt loam, 0-3
394	Haynie silt loam, 0-5
25	Hennepin loam, 10-70
964	Hennepin and Miami soils, 0-70
820	Hennepin-Casco complex, 0-70
819	Hennepin-Vanmeter complex, 5-70
483	Henshaw silt loam, 0-6
62	Herbert silt loam, 0-3
46	Herrick silt loam, 0-5
894	Herrick-Biddle-Piasa silt loams, 0-5
995	Herrick-Piasa complex, 0-5
390	Hesch fine sandy loam, 0-45
537	Hesch fine sandy loam, gray subsoil variant, 0-2
389	Hesch loamy sand, shallow variant, 0-4
8	Hickory loam, 5-70
958	Hickory and Hennepin soils, 5-70
963	Hickory and Sylvan soils, 2-70
946	Hickory-Atlas complex, 2-70
933	Hickory-Clinton complex, 0-70
908	Hickory-Frondorf complex, 5-70
967	Hickory-Gosport complex, 5-70
997	Hickory-Hennepin complex, 5-70
945	Hickory-High Gap silt loams, 0-70
850	Hickory-Hosmer silt loams, 0-70
908	Hickory-Kell silt loams, 5-70
998	Hickory-Negley complex, 2-70
898	Hickory-Sylvan complex, 2-70
960	Hickory-Sylvan-Fayette silt loams, 0-70
900	Hickory-Wellston silt loams, 0-70
556	High Gap loam, 0-60
506	Hitt silt loam, 1-12
328	Holly silt loam, 0-1
225	Holton silt loam, 0-2
582	Homen silt loam, 2-10
326	Homer silt loam, 0-6

IL map symbol	Soil type name and slope range
354	Hononegah loamy coarse sand, 0-25
172	Hoopeston sandy loam, 0-5
488	Hooppole loam, 0-2
214	Hosmer silt loam, 0-30
953	Hosmer-Lax silt loams, 0-30
860	Hosmer-Ursa silt loams, 0-30
103	Houghton muck, 0-2
97	Houghton peat, 0-2
3	Hoyleton silt loam, 0-7
377	Hoyleton silt loam, bench, 0-7
912	Hoyleton-Darmstadt complex, 0-10
992	Hoyleton-Tamalco complex, 0-7
120	Huey silt loam, 0-2
600	Huntington silt loam, 0-15
77	Huntsville silt loam, 0-6
338	Hurst silt loam, 0-15
489	Hurst silt loam, sandy substratum, 0-6
307	Iona silt loam, 0-6
43	Ipava silt loam, 0-5
902	Ipava-Sable complex, 0-5
901	Ipava-Tama complex, 0-20
454	Iva silt loam, 0-6
85	Jacob clay, 0-1
440	Jasper silt loam, 0-15
439	Jasper silt loam, sandy substratum, 0-15
314	Joliet silty clay loam, 0-2
763	Joslin silt loam, 0-6
275	Joy silt loam, 0-5
575	Joy silt loam, sandy substratum, 0-2
487	Joyce silt loam, 0-2
28	Jules silt loam, 0-2
782	Juneau silt loam, 0-6
343	Kane silt loam, 0-3
667	Kaneville silt loam, 0-10
494	Kankakee fine sandy loam, 0-12
426	Karnak silty clay, 0-2
421	Kell silt loam, 10-60
470	Keller silt loam, 2-15
970	Keller-Coatsburg complex, 2-20
546	Keltner silt loam, 0-30
242	Kendall silt loam, 0-5
372	Kendall silt loam, sandy substratum, 0-2
17	Keomah silt loam, 0-5
554	Kernan silt loam, 1-5
651	Keswick loam, 2-25
527	Kidami silt loam, 0-20
361	Kidder silt loam, 0-35
626	Kish loam, 0-2

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
623	Kishwaukee silt loam, 0-6
191	Knight silt loam, 0-2
785	Lacrescent cobbly silty clay loam, 5-70
102	La Hogue loam, 0-5
528	Lahoguess loam, 0-2
468	Lakaskia silt loam, 0-2
755	Lamoille silt loam, 15-50
175	Lamont fine sandy loam, 0-45
947	Lamont, Tell, and Bloomfield soils, 0-60
304	Landes fine sandy loam, 0-7
378	Lanier fine sandy loam, 0-2
60	La Rose silt loam, 2-18
647	Lawler loam, 0-6
683	Lawndale silt loam, 0-3
451	Lawson silt loam, 0-3
628	Lax silt loam, 2-12
210	Lena muck, 0-2
871	Lenzburg silt loam, 0-70
825	Lenzburg silt loam, acid substratum, 2-20
875	Lenzlo silty clay loam, 1-7
876	Lenzwheel silty clay loam, 1-60
94	Limestone rock land
559	Lindley loam, 5-60
59	Lisbon silt loam, 0-4
635	Lismod silt loam, 0-4
81	Littleton silt loam, 0-5
265	Lomax loam, 0-5
572	Loran silt loam, 0-12
318	Lorenzo loam, 0-45
678	Mannon silt loam, 0-10
596	Marbletown silt loam, 0-5
517	Marine silt loam, 0-5
176	Marissa silt loam, 0-3
531	Markham silt loam, 0-20
467	Markland silt loam, 12-70
549	Marseilles silt loam, 0-60
393	Marseilles silt loam, gray subsoil variant, 0-4
548	Marseilles silt loam, moderately wet, 0-60
918	Marseilles-Atlas complex, 0-60
913	Marseilles-Hickory complex, 0-70
718	Marsh
772	Marshan loam, 0-2
760	Marshan loam, sandy substratum, 0-2
570	Martinsville silt loam, 0-35
189	Martinton silt loam, 0-6
385	Mascoutah silty clay loam, 0-2
753	Massbach silt loam, 1-15

IL map symbol	Soil type name and slope range
342	Matherton silt loam, 0-6
89	Maumee fine sandy loam, 0-2
193	Mayville silt loam, 0-15
248	McFain silty clay, 0-1
173	McGary silt loam, 0-2
310	McHenry silt loam, 0-30
436	Meadowbank silt loam, 0-5
569	Medary silty clay loam, 0-45
682	Medway silty clay loam, 0-3
79	Menfro silt loam, 2-60
205	Metea sandy loam, 0-25
627	Miami fine sandy loam, 0-60
27	Miami silt loam, 0-60
938	Miami-Casco complex, 0-70
935	Miami-Hennepin complex, 0-70
966	Miami-Russell silt loams, 0-60
685	Middletown silt loam, 0-15
69	Milford silty clay loam, 0-2
219	Millbrook silt loam, 0-5
82	Millington loam, 0-2
317	Millsdale silty clay loam, 0-2
423	Millstadt silt loam, 0-5
557	Millstream silt loam, 0-2
179	Minneiska loam, 0-4
455	Mixed alluvial land
295	Mokena silt loam, 0-5
448	Mona silt loam, 0-18
229	Monee silt loam, 0-2
607	Monterey silty clay loam, 0-2
465	Montgomery silty clay loam, 0-1
57	Montmorenci silt loam, 0-12
194	Morley silt loam, 1-15
501	Morocco fine sand, 0-3
821	Morristown silt loam, 0-70
480	Moundprairie silty clay loam, 0-1
268	Mt. Carroll silt loam, 0-25
608	Mudhen clay loam, 0-2
442	Mundelein silt loam, 0-5
989	Mundelein and Elliott soils, 0-7
453	Muren silt loam, 0-30
41	Muscatine silt loam, 0-5
51	Muscatune silt loam, 0-5
638	Muskego muck, 0-2
637	Muskego silty clay loam, overwash, 0-2
903	Muskego and Houghton mucks, 0-2
904	Muskego and Peotone soils, ponded, 0-2
425	Muskingum stony silt loam, 2-75
955	Muskingum and Berks soils, 0-80
414	Myrtle silt loam, 2-20

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
649	Nachusa silt loam, 0-3
592	Nameoki silty clay, 0-3
228	Nappanee silt loam, 0-6
731	Nasset silt loam, 0-18
630	Navlys silty clay loam, 2-18
585	Negley loam, 2-70
X977	Neotoma stoney silt loam, 6-70
976	Neotoma-Rock outcrop complex
977	Neotoma-Wellston complex, 0-70
602	Newark silty clay loam, 0-3
218	Newberry silt loam, 0-2
X561	NewGlarus silt loam, 2-45
905	NewGlarus-Lamoille complex, 2-50
928	NewGlarus-Palsgrove silt loams, 2-45
445	Newhaven loam, 0-2
261	Niota silt loam, 0-2
568	Niota silty clay loam, clayey subsurface variant, 0-2
601	Nolin silty clay loam, 0-25
213	Normal silt loam, 0-4
492	Normandy silt loam, 0-2
741	Oakville fine sand, 0-60
917	Oakville-Tell complex, 0-60
387	Ockley silt loam, 0-30
113	Oconee silt loam, 0-7
883	Oconee-Coulterville-Darmstadt silt loams, 0-10
882	Oconee-Darmstadt-Coulterville silt loams, 0-10
994	Oconee-Tamalco complex, 0-7
656	Octagon silt loam, 2-20
490	Odell silt loam, 0-6
412	Ogle silt loam, 2-18
574	Ogle silt loam, silt loam subsoil variant, 2-18
810	Oil-brine damaged land
867	Oil-waste land
84	Okaw silt loam, 0-5
401	Okaw silty clay loam, 0-5
150	Onarga sandy loam, 0-10
673	Onarga fine sandy loam, reddish subsoil variant, 0-10
752	Oneco silt loam, 1-12
200	Orio sandy loam, 0-2
415	Orion silt loam, 0-5
804	Orthents, acid
805	Orthents, clayey
806	Orthents, clayey-skeletal
802	Orthents, loamy
808	Orthents, sandy-skeletal
801	Orthents, silty
535	Orthents, stony
803	Orthents
709	Osceola silt loam, 0-5
86	Osco silt loam, 0-10
76	Otter silt loam, 0-2
530	Ozaukee silt loam, 0-35
100	Palms muck, 0-6
352	Palms silty clay loam, overwash, 0-2
429	Palsgrove silt loam, 2-30
951	Palsgrove and Woodbine soils, 2-30
256	Pana silt loam, 4-15
42	Papineau fine sandy loam, 0-3
15	Parke silt loam, 0-50
619	Parkville silty clay, 0-3
636	Parmod silt loam, 2-15
64	Parr fine sandy loam, 0-18
221	Parr silt loam, 0-18
652	Passport silt loam, 2-18
888	Passport-Grantfork complex, 2-20
142	Patton silty clay loam, 0-2
406	Paxico silt loam, 0-2
21	Pecatonica silt loam, 0-30
153	Pella silty clay loam, 0-3
182	Peotone mucky silty clay loam, marl substratum, 0-2
330	Peotone silty clay loam, 0-2
288	Petrolia silty clay loam, 0-2
474	Piasa silt loam, 0-2
31	Pierron silt loam, 0-1
583	Pike silt loam, 0-18
159	Pillot silt loam, 0-12
420	Piopolis silty clay loam, 0-2
543	Piscasaw silt loam, 2-4
863	Pits, clay
865	Pits, gravel
868	Pits, organic
864	Pits, quarries
869	Pits, quarries-Orthents complex
862	Pits, sand
54	Plainfield sand, 0-70
199	Plano silt loam, 0-12
240	Plattville silt loam, 1-5
10	Plumfield silty clay loam, 5-18
277	Port Byron silt loam, 0-30
562	Port Byron silt loam, sandy substratum, 0-15
858	Port Byron-Mt. Carroll-Urban land
650	Prairieville silt loam, 0-5
631	Princeton fine sandy loam, 0-60

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
148	Proctor silt loam, 0-18
374	Proctor silt loam, sandy substratum, 2-10
767	Prophetstown silt loam, 0-2
800	Psamments
641	Quiver silty clay loam, 0-2
109	Racoon silt loam, 0-3
430	Raddle silt loam, 0-10
899	Raddle-Sparta complex, 0-40
74	Radford silt loam, 0-5
238	Rantoul silty clay, 0-1
872	Rapatee silty clay loam, 1-15
481	Raub silt loam, 0-2
368	Raveenwash silt loam, 0-2
437	Redbud silt loam, 2-18
907	Redbud-Colp silty clay loams, 0-25
906	Redbud-Hurst silty clay loams, 0-18
594	Reddick silty clay loam, 0-2
723	Reesville silt loam, 0-7
518	Rend silt loam, 0-10
4	Richview silt loam, 1-15
485	Richwood silt loam, 0-12
151	Ridgeville fine sandy loam, 0-5
434	Ridgway silt loam, 0-10
743	Ridott silt loam, 1-7
452	Riley silty clay loam, 0-3
297	Ringwood silt loam, 0-12
324	Ripon silt loam, 0-12
311	Ritchey silt loam, 0-12
123	Riverwash
335	Robbs silt loam, 0-3
184	Roby fine sandy loam, 0-7
38	Rocher loam, 0-7
503	Rockton loam, 0-25
566	Rockton and Dodgeville soils, 0-30
93	Rodman gravelly loam, 2-70
313	Rodman loam, 0-2
969	Rodman-Casco complex, 2-70
919	Rodman-Fox complex, 2-70
939	Rodman-Warsaw complex, 2-70
316	Romeo silt loam, 0-4
542	Rooks silt loam, 0-2
73	Ross loam, 0-3
473	Rossburg loam, 0-3
230	Rowe silty clay, 0-2
279	Rozetta silt loam, 0-25
178	Ruark fine sandy loam, 0-2
111	Rubio silt loam, 0-2
491	Ruma silt loam, 2-35
886	Ruma-Ursa silty clay loams, 2-50
791	Rush silt loam, 0-12
16	Rushville silt loam, 0-2
920	Rushville-Huey silt loams, 0-2
322	Russell silt loam, 0-25
375	Rutland silt loam, 0-7
236	Sabina silt loam, 0-5
68	Sable silty clay loam, 0-2
669	Saffell gravelly sandy loam, 1-60
9	Sandstone rock land
604	Sandy alluvial land
92	Sarpy sand, 0-9
774	Saude loam, 0-9
107	Sawmill silty clay loam, 0-3
892	Sawmill-Lawson complex, 0-3
145	Saybrook silt loam, 0-20
370	Saylesville silt loam, 0-40
418	Schapville silt loam, 2-30
823	Schuline silt loam, 0-15
462	Sciotoville silt loam, 0-25
274	Seaton silt loam, 0-60
563	Seaton silt loam, sandy substratum, 0-18
931	Seaton-Goss complex, 0-70
937	Seaton-Hickory complex, 0-70
942	Seaton-Oakville complex, 0-60
943	Seaton-Timula silt loams, 0-60
125	Selma loam, 0-2
508	Selma loam, bedrock substratum, 0-2
529	Selmass loam, 0-2
618	Senachwine silt loam, 2-60
611	Sepo silty clay loam, 0-2
208	Sexton silt loam, 0-2
555	Shadeland silt loam, 0-6
183	Shaffton loam, 0-2
95	Shale rock land
72	Sharon silt loam, 0-4
138	Shiloh silty clay loam, 0-2
424	Shoals silt loam, 0-2
745	Shullsburg silt loam, 1-25
55	Sidell silt loam, 0-12
750	Skelton fine sandy loam, 0-2
360	Slacwater silt loam, 0-2
504	Sogn silt loam, 0-20
668	Somonauk silt loam, 0-5
658	Sonsac very cobbly silt loam, 5-70
88	Sparta loamy sand, 0-40
588	Sparta loamy sand, loamy substratum, 0-14
446	Springerton loam, 0-2

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
132	Starks silt loam, 0-5
155	Stockland loam, 0-15
665	Stonelick fine sandy loam, 0-2
216	Stookey silt loam, 10-70
856	Stookey and Timula soils, 2-70
990	Stookey-Bodine complex, 4-70
816	Stookey-Timula-Orthents complex
164	Stoy silt loam, 0-10
224	Strawn silt loam, 2-75
959	Strawn-Chute complex, 2-75
857	Strawn-Hennepin loams, 2-75
435	Streator silty clay loam, 0-1
278	Stronghurst silt loam, 0-6
243	St. Charles silt loam, 0-30
371	St. Charles silt loam, sandy substratum, 1-5
560	St. Clair silt loam, 1-12
234	Sunbury silt loam, 0-5
824	Swanwick silt loam, 0-10
91	Swygert silty clay loam, 0-12
19	Sylvan silt loam, 2-60
962	Sylvan-Bold silt loams, 2-75
157	Symerton loam, 0-10
294	Symerton silt loam, 0-10
34	Tallula silt loam, 2-30
965	Tallula-Bold silt loams, 2-75
36	Tama silt loam, 0-20
459	Tama silt loam, sandy substratum, 0-9
581	Tamalco silt loam, 1-7
565	Tell silt loam, 0-30
952	Tell-Lamont complex, 0-45
577	Terrace escarpment
587	Terril loam, 0-25
212	Thebes silt loam, 1-35
206	Thorp silt loam, 0-2
284	Tice silty clay loam, 0-4
699	Timewell silt loam, 0-5
855	Timewell and Ipava soils, 0-5
271	Timula silt loam, 2-60
911	Timula-Hickory complex, 2-70
910	Timula-Miami complex, 0-60
404	Titus silty clay loam, 0-2
353	Toronto silt loam, 0-6
544	Torox silt loam, 0-2
633	Traer silt loam, 0-2
765	Trempealeau silt loam, 0-6
197	Troxel silt loam, 0-4
573	Tuscola loam, 0-12
217	Twomile silt loam, 0-2

IL map symbol	Soil type name and slope range
812	Typic Hapludalfs
407	Udifluvents, loamy
770	Udolpho loam, 0-2
759	Udolpho loam, sandy substratum, 0-2
815	Udorthents, silty
482	Uniontown silt loam, 0-30
533	Urban land
534	Urban land, clayey Orthents complex
392	Urban land, loamy Orthents complex
926	Urban land-Drummer-Barrington complex
925	Urban land-Frankfort-Bryce complex
923	Urban land-Markham-Ashkum complex
924	Urban land-Milford-Martinton complex
605	Ursa silt loam, 5-50
890	Ursa-Atlas complex, 2-50
861	Ursa-Hickory complex, 5-70
615	Vanmeter silty clay loam, 5-60
357	Vanpetten loam, 1-5
223	Varna silt loam, 1-18
250	Velma loam, 4-20
944	Velma-Coatsburg silt loams, 4-20
996	Velma-Walshville complex, 4-20
396	Vesser silt loam, 0-5
50	Virden silty clay loam, 0-2
885	Virden-Fosterburg silt loams, 0-2
941	Virden-Piasa silt loams, 0-2
104	Virgil silt loam, 0-6
83	Wabash silty clay, 0-2
26	Wagner silt loam, 0-3
333	Wakeland silt loam, 0-2
441	Wakenda silt loam, 2-9
292	Wallkill silt loam, 0-3
464	Wallkill silty clay loam, 0-3
X584	Walshville loam, 4-15
456	Ware silt loam, 1-6
290	Warsaw silt loam, 0-15
296	Washtenaw silt loam, 0-2
49	Watseka loamy fine sand, 0-4
697	Wauconda silt loam, 0-5
978	Wauconda and Beecher silt loams, 0-6
981	Wauconda and Frankfort silt loams, 0-18
727	Waukee loam, 0-9
564	Waukegan silt loam, 0-12
369	Waupecan silt loam, 0-5
398	Wea silt loam, 0-6
461	Weinbach silt loam, 0-6
165	Weir silt loam, 0-2
339	Wellston silt loam, 0-50

continued

Appendix A. Alphabetical List of and Percent Slope Ranges for Soil Types in Illinois Under an Average Level of Management (continued)

IL map symbol	Soil type name and slope range
986	Wellston-Berks complex, 0-80
388	Wenona silt loam, 2-15
539	Wenona silt loam, loamy substratum, 2-10
141	Wesley fine sandy loam, 0-5
300	Westland clay loam, 0-1
700	Westmore silt loam, 1-70
988	Westmore-Neotoma complex, 1-70
22	Westville silt loam, 2-30
509	Whalan loam, 0-25
561	Whalan and NewGlarus silt loams, 0-45
463	Wheeling silt loam, 0-8
571	Whitaker silt loam, 0-6
362	Whitaker variant loam, 0-2
116	Whitson silt loam, 0-3
336	Wilbur silt loam, 0-2
329	Will silty clay loam, 0-3
545	Windere silt loam, 0-4
477	Winfield silt loam, 2-45
348	Wingate silt loam, 0-10

IL map symbol	Soil type name and slope range
728	Winnebago silt loam, 2-30
226	Wirt silt loam, 0-2
410	Woodbine silt loam, 2-25
37	Worthen silt loam, 0-12
622	Wyanet silt loam, 0-18
12	Wynoose silt loam, 0-2
639	Wynoose silt loam, bench, 0-2
896	Wynoose-Huey complex, 0-2
291	Xenia silt loam, 0-12
340	Zanesville silt loam, 0-30
940	Zanesville-Westmore silt loams, 0-70
524	Zipp silty clay loam, 0-1
405	Zook silty clay, 0-5
349	Zumbro sandy loam, 0-2
696	Zurich silt loam, 0-35
980	Zurich and Morley silt loams, 0-35
983	Zurich and Nappanee silt loams, 0-35
576	Zwingle silt loam, 0-10

Appendix B: Soil Type Characterization Data for 34 Base and Benchmark Soils.

IL map symbol	Series name	Texture[a]	Thickness A & E horizons, in.	% Silt A & E horizons	% OM[b] A & E horizons	CEC[b] A & E horizons, cmole/kg	Depth to redoxi-morphic features, in.
2	Cisne	sil	17	69.3	2.0	14.5	8
8	Hickory	l	12	40.8	1.5	16.5	60
13	Bluford	sil	16	66.8	2.0	18.0	25
23	Blount	sil	10	54.5	2.5	19.5	10
41	Muscatine	sil	16	68.5	5.0	33.0	16
43	Ipava	sil	18	64.3	4.5	23.5	24
45	Denny	sil	20	66.9	3.5	21.0	9
46	Herrick	sil	15	69.1	3.5	21.0	15
48	Ebbert	sil	22	66.7	2.5	19.0	13
50	Virden	sicl	12	69.1	5.0	25.5	12
59	Lisbon	sil	11	62.8	4.0	10.0	17
67	Harpster	sicl	18	59.3	5.5	29.5	18
68	Sable	sicl	23	64.1	5.5	29.5	23
69	Milford	sicl	18	41.2	5.5	31.0	18
81	Littleton	sil	32	65.3	3.5	23.0	32
107	Sawmill	sicl	32	59.2	4.5	27.5	25
120	Huey	sil	10	64.5	2.0	16.5	8
125	Selma	l	16	37.9	5.0	24.0	16
131	Alvin	fsl	8	27.9	1.3	7.5	60
145	Saybrook	sil	13	64.8	3.5	21.0	60
146	Elliott	sil	14	55.6	4.5	22.0	14
152	Drummer	sicl	14	54.6	6.0	39.5	14
154	Flanagan	sil	18	64.3	4.5	23.0	18
165	Weir	sil	17	73.1	2.0	15.5	8
171	Catlin	sil	10	67.7	3.5	20.5	60
172	Hoopeston	sl	18	11.6	2.5	13.0	18
194	Morley	sil	9	52.3	2.5	19.5	34
198	Elburn	sil	13	63.3	4.5	25.0	17
223	Varna	sil	12	59.9	3.5	21.0	30
232	Ashkum	sicl	11	45.7	5.0	32.5	11
275	Joy	sil	17	77.5	3.0	18.0	21
301	Grantsburg	sil	7	76.0	1.8	14.5	60
382	Belnap	sil	13	70.4	2.0	12.0	13
426	Karnak	sicl	5	45.1	2.5	35.0	5

[a]sil = silt loam, l = loam, sicl = silty clay loam, fsl = fine sandy loam, sl = sandy loam, sic = silty clay.
[b]OM = organic matter, CEC = cation-exchange capacity, PAWHC = plant available water-holding capacity, PM = parent material, Db = bulk density.

continued

Appendix B: Soil Type Characterization Data for 34 Base and Benchmark Soils (continued)

Thickness of B horizon, in.	PAWHC[b] in 60 in., in.	Rooting depth, in.	Depth to 2nd PM[b], in.	Permeability of B horizon, in./hr	pH A & E horizons	pH B horizon	Db[b] A & E horizons, g/cc	Db[b] B horizon, g/cc
43	8.5	60	37	0.03	6.2	5.8	1.40	1.60
34	10.4	46	60	1.30	5.9	5.9	1.40	1.55
44	9.7	60	36	0.13	5.9	4.8	1.40	1.65
22	6.9	32	60	0.33	6.2	7.0	1.45	1.60
32	12.0	60	60	1.30	6.2	7.2	1.33	1.38
32	10.6	50	60	0.40	6.5	6.7	1.25	1.38
28	11.8	48	60	0.13	6.5	6.1	1.35	1.30
43	10.9	58	60	0.40	6.2	6.5	1.23	1.30
26	11.9	48	48	0.13	6.2	5.9	1.30	1.45
41	10.5	53	60	0.40	6.7	6.7	1.30	1.33
28	9.3	39	36	1.30	6.5	7.3	1.20	1.50
23	11.8	41	60	1.30	7.9	7.9	1.15	1.40
24	12.2	47	60	1.30	6.5	6.7	1.25	1.40
32	12.3	60	60	0.40	6.5	6.7	1.40	1.50
17	13.2	49	60	1.30	6.7	6.7	1.33	1.30
26	11.9	58	60	1.30	7.0	7.0	1.30	1.38
47	6.5	57	49	0.03	6.5	8.2	1.43	1.55
29	10.4	60	60	1.30	7.0	7.3	1.50	1.50
52	8.3	60	60	4.00	5.9	6.8	1.55	1.55
27	11.4	40	26	1.30	6.5	7.0	1.20	1.60
22	8.7	36	14	0.40	6.5	6.7	1.20	1.45
33	12.2	47	41	1.30	6.7	7.3	1.20	1.43
31	11.9	49	45	1.30	6.2	6.5	1.30	1.35
29	12.1	46	60	0.03	5.9	5.0	1.40	1.55
42	10.4	52	46	1.30	6.2	6.2	1.35	1.40
14	7.6	60	60	4.00	5.8	6.5	1.53	1.58
33	7.5	42	60	0.33	6.2	7.3	1.45	1.70
47	9.4	60	44	1.30	6.7	7.3	1.20	1.60
36	9.7	48	60	0.40	6.7	6.5	1.20	1.45
31	10.8	42	26	1.30	6.7	7.3	1.25	1.45
32	12.9	49	60	1.30	6.5	6.2	1.15	1.20
53	7.7	38	60	0.03	5.1	4.6	1.38	1.68
0	13.5	27	60	1.10	5.9	5.3	1.45	1.50
45	5.6	50	60	0.10	6.5	6.2	1.30	1.40

continued

Appendix B: Soil Type Characterization Data for 34 Base and Benchmark Soils (continued)

Exchangeable Na, %	% Clay B horizon	IL map symbol	Soil series name
0.0	40.0	2	Cisne
0.0	29.5	8	Hickory
0.0	38.5	13	Bluford
0.0	42.5	23	Blount
0.0	32.5	41	Muscatine
0.0	39.0	43	Ipava
0.0	40.0	45	Denny
0.0	38.5	46	Herrick
0.0	29.5	48	Ebbert
0.0	38.5	50	Virden
0.0	25.0	59	Lisbon
0.0	31.0	67	Harpster
0.0	29.5	68	Sable
0.0	38.5	69	Milford
0.0	24.5	81	Littleton
0.0	31.0	107	Sawmill
25.0	30.0	120	Huey
0.0	28.5	125	Selma
0.0	6.5	131	Alvin
0.0	30.0	145	Saybrook
0.0	42.5	146	Elliott
0.0	27.5	152	Drummer
0.0	33.5	154	Flanagan
0.0	37.5	165	Weir
0.0	31.0	171	Catlin
0.0	15.0	172	Hoopeston
0.0	40.0	194	Morley
0.0	22.5	198	Elburn
0.0	41.5	223	Varna
0.0	40.0	232	Ashkum
0.0	22.5	275	Joy
0.0	30.0	301	Grantsburg
0.0	16.5	382	Belnap
0.0	50.0	426	Karnak

Appendix C. List of Soil Types with Three to Five Years of Measured Corn and Soybean Yields Under an Optimum Level of Management

IL map symbol	Soil type name	IL map symbol	Soil type name
98	Ade loamy fine sand	60	La Rose silt loam
308	Alford silt loam	304	Landes fine sandy loam
302	Ambraw clay loam	451	Lawson silt loam
78	Arenzville silt loam	81	Littleton silt loam
232	Ashkum silty clay loam	265	Lomax loam
259	Assumption silt loam	549	Marseilles silt loam
7	Atlas silt loam	918	Marseilles-Atlas complex
61	Atterberry silt loam	913	Marseilles-Hickory complex
188	Beardstown loam	682	Medway silty clay loam
70	Beaucoup silty clay loam	27	Miami silt loam
53	Bloomfield fine sand	219	Millbrook silt loam
149	Brenton silt loam	82	Millington loam
171	Catlin silt loam	41	Muscatine silt loam
2	Cisne silt loam	741	Oakville fine sand
257	Clarksdale silt loam	150	Onarga sandy loam
428	Coffeen silt loam	200	Orio sandy loam
776	Comfrey clay loam	415	Orion silt loam
112	Cowden silt loam	100	Palms muck
71	Darwin silty clay	330	Peotone silty clay loam
45	Denny silt loam	54	Plainfield sand
87	Dickinson sandy loam	199	Plano silt loam
266	Disco sandy loam	148	Proctor silt loam
115	Dockery silt loam	430	Raddle silt loam
386	Downs silt loam	74	Radford silt loam
152	Drummer silty clay loam	452	Riley silty clay loam
75	Drury silt loam	93	Rodman gravelly loam
198	Elburn silt loam	279	Rozetta silt loam
119	Elco silt loam	68	Sable silty clay loam
567	Elkhart silt loam	107	Sawmill silty clay loam
146	Elliott silt loam	274	Seaton silt loam
280	Fayette silt loam	943	Seaton-Timula silt loams
6	Fishhook silt loam	125	Selma loam
154	Flanagan silt loam	138	Shiloh silty clay loam
781	Friesland sandy loam	19	Sylvan silt loam
201	Gilford fine sandy loam	962	Sylvan-Bold complex
460	Ginat silt loam	36	Tama silt loam
162	Gorham silty clay loam	206	Thorp silt loam
301	Grantsburg silt loam	284	Tice silty clay loam
8	Hickory loam	404	Titus silty clay loam
946	Hickory-Atlas complex	605	Ursa silt loam
97	Houghton peat	50	Virden silty clay loam
43	Ipava silt loam	333	Wakeland silt loam
439	Jasper, sandy substratum	290	Warsaw silt loam
17	Keomah silt loam	336	Wilbur silt loam
102	La Hogue loam	37	Worthen silt loam

Appendix D. The 70 Soil Types in Southern Illinois Used to Develop Equations for Timber Site Indices

IL map symbol	Soil type name
308	Alford silt loam
7	Atlas silt loam
14	Ava silt loam
466	Bartelso silt loam
5	Blair silt loam
13	Bluford silt loam
X956	Brandon silt loam
690	Brookside stony silt loam
287	Chauncey silt loam
2	Cisne silt loam
621	Coulterville silt loam
112	Cowden silt loam
751	Crawleyville fine sandy loam
337	Creal silt loam
620	Darmstadt silt loam
48	Ebbert silt loam
96	Eden silty clay loam
231	Evansville silt loam
786	Frondorf loam
591	Fults silty clay loam
432	Geff silt loam
606	Goss gravelly silt loam
584	Grantfork silty clay loam
301	Grantsburg silt loam
483	Henshaw silt loam
328	Holly silt loam
225	Holton silt loam
214	Hosmer silt loam
3	Hoyleton silt loam
120	Huey silt loam
454	Iva silt loam
421	Kell silt loam
468	Lakaskia silt loam
517	Marine silt loam
436	Meadowbank silt loam

IL map symbol	Soil type name
453	Muren silt loam
592	Nameoki silty clay
585	Negley loam
X977	Neotoma stony silt loam
602	Newark silty clay loam
218	Newberry silt loam
445	Newhaven loam
601	Nolin silty clay loam
113	Oconee silt loam
401	Okaw silty clay loam
15	Parke silt loam
583	Pike silt loam
631	Princeton fine sandy loam
109	Racoon silt loam
518	Rend silt loam
4	Richview silt loam
485	Richwood silt loam
434	Ridgway silt loam
335	Robbs silt loam
16	Rushville silt loam
823	Schuline silt loam
750	Skelton fine sandy loam
466	Springerton loam
164	Stoy silt loam
824	Swanwick silt loam
581	Tamalco silt loam
605	Ursa silt loam
615	Vanmeter silty clay loam
461	Weinbach silt loam
165	Weir silt loam
339	Wellston silt loam
700	Westmore silt loam
571	Whitaker silt loam
226	Wirt silt loam
12	Wynoose silt loam

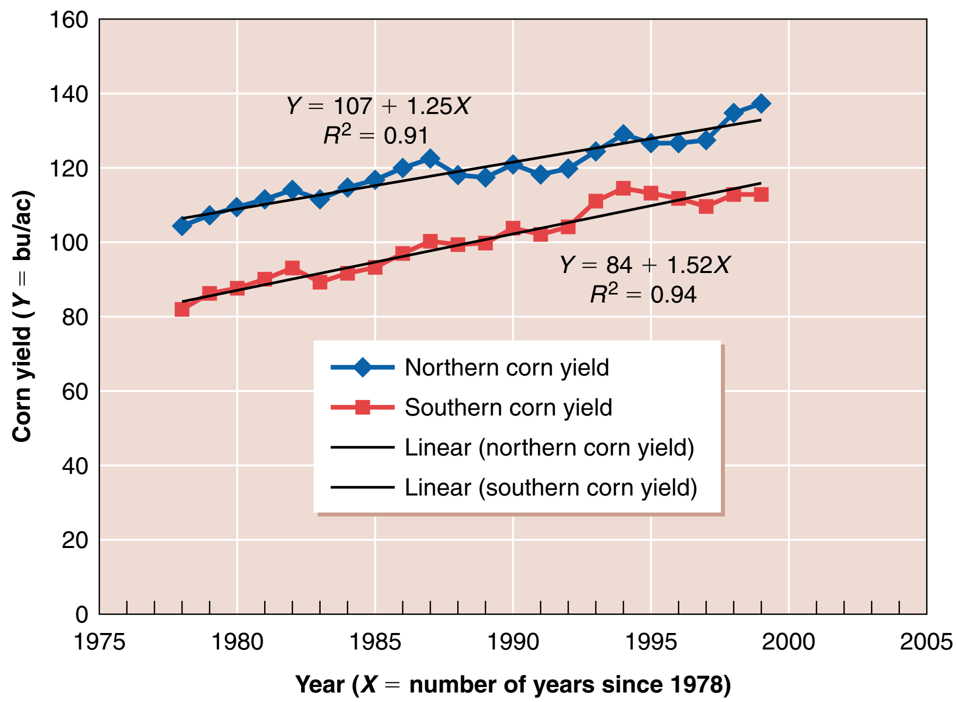

Figure 1A. Moving ten-year corn yield trends in northern and southern Illinois from 1978 to 1999.

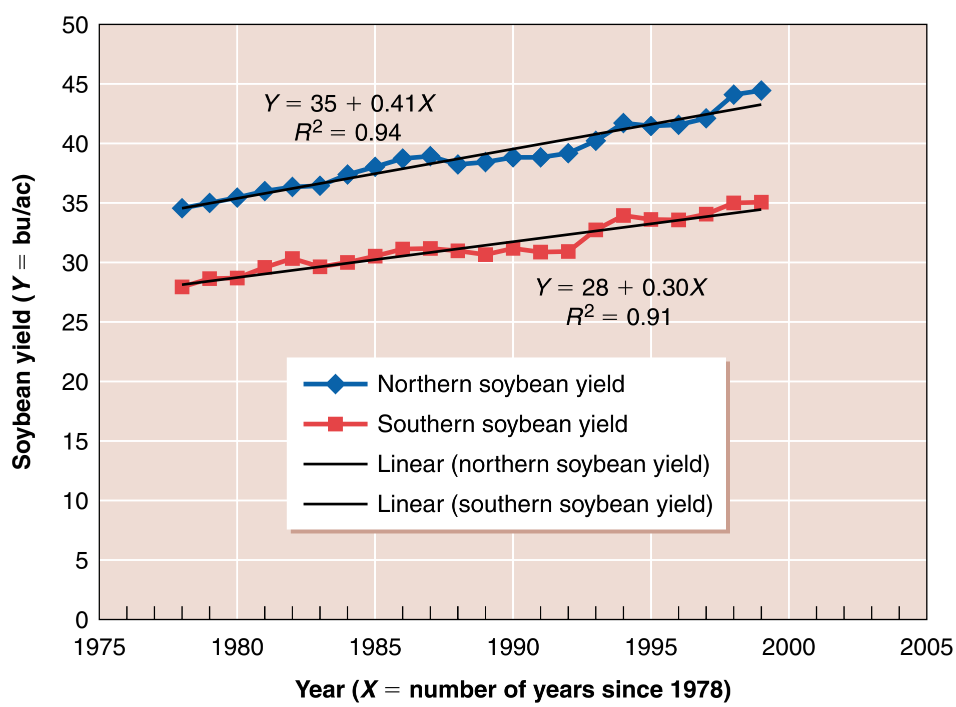

Figure 1B. Moving ten-year soybean yield trends in northern and southern Illinois from 1978 to 1999.

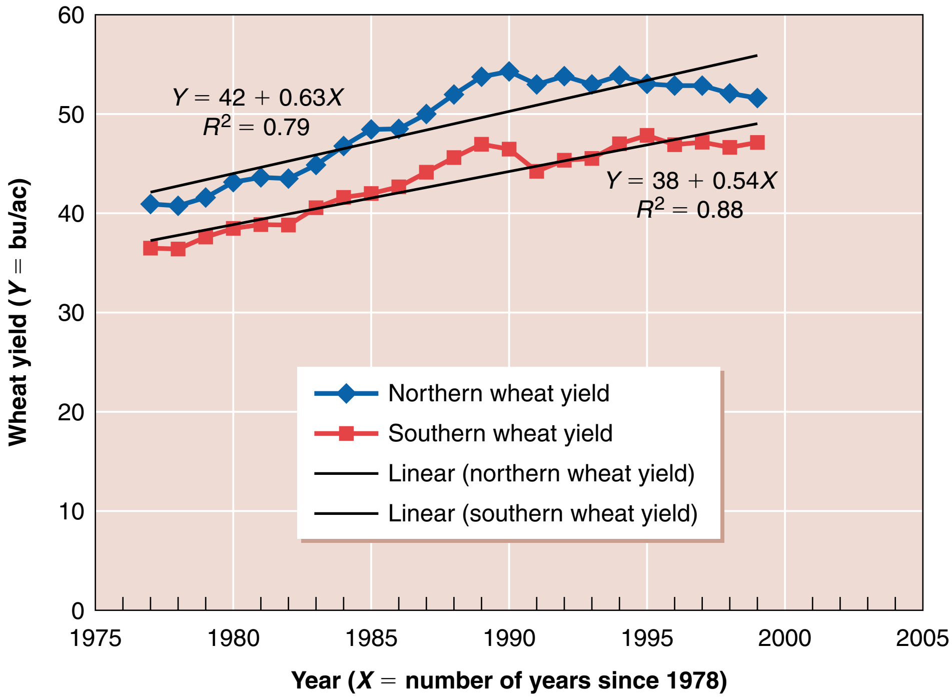

Figure 1C. Moving ten-year wheat yield trends in northern and southern Illinois from 1978 to 1999.

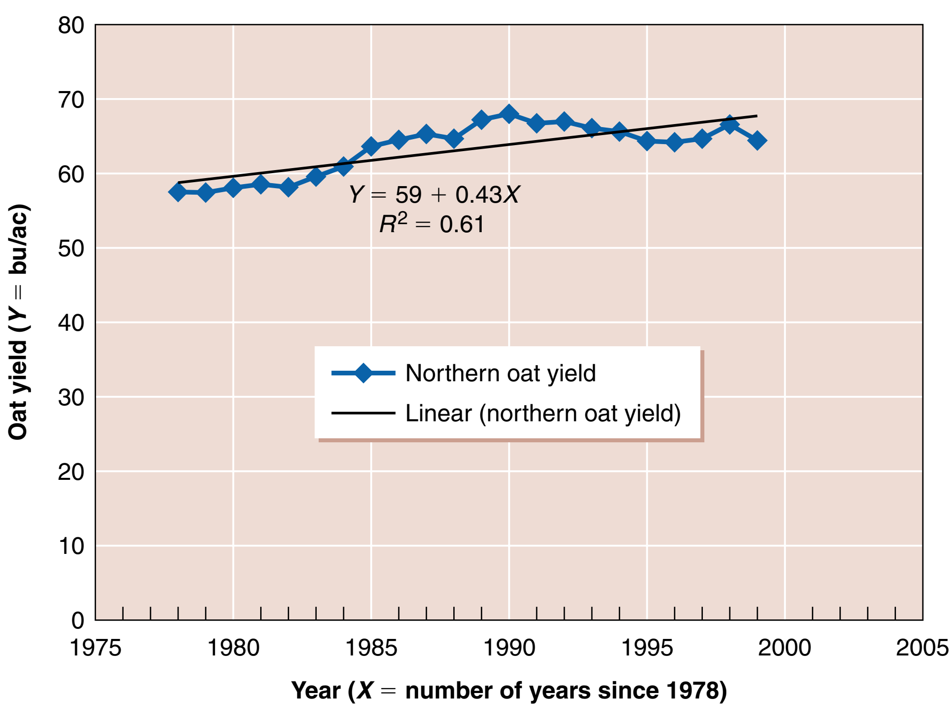

Figure 1D. Moving ten-year oat yield trends in northern Illinois from 1978 to 1999.

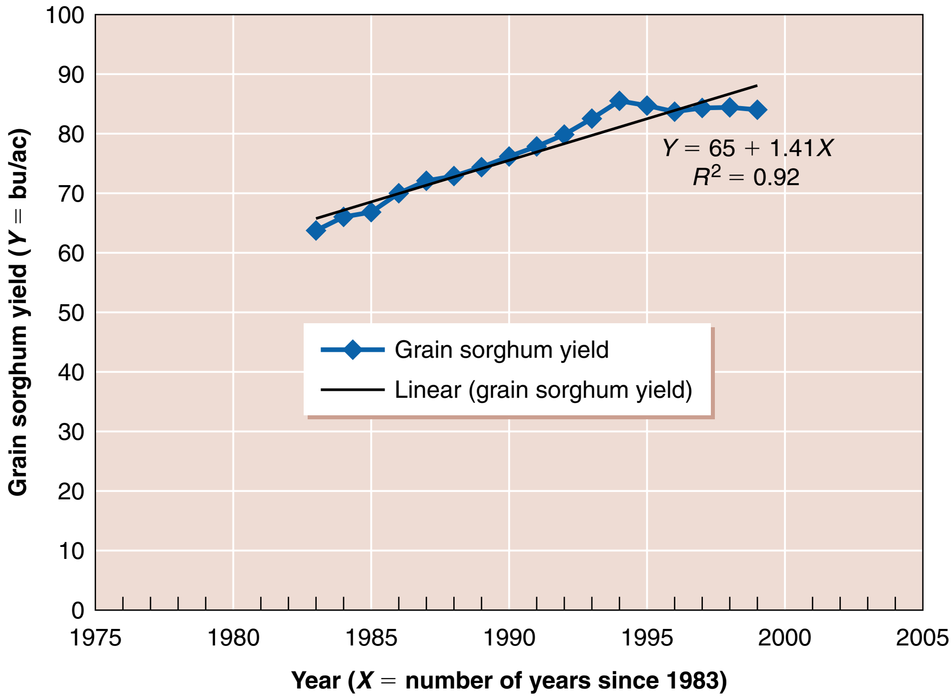

Figure 1E. Moving ten-year grain sorghum yield trends in southern Illinois from 1983 to 1999.

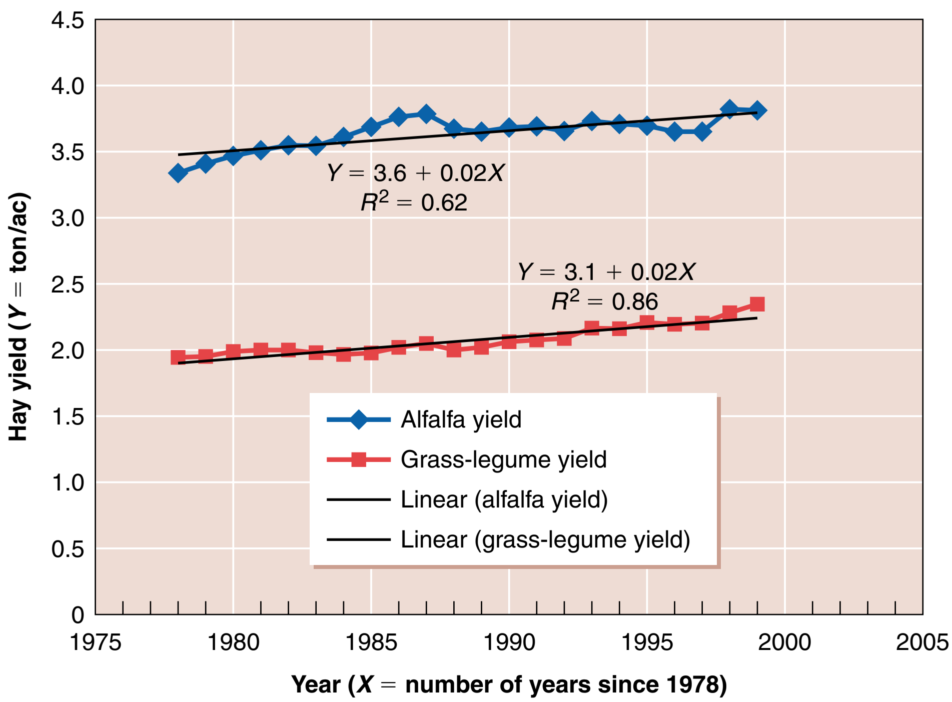

Figure 1F. Moving ten-year hay (alfalfa and grass-legume) yield trends from 1978 to 1999.

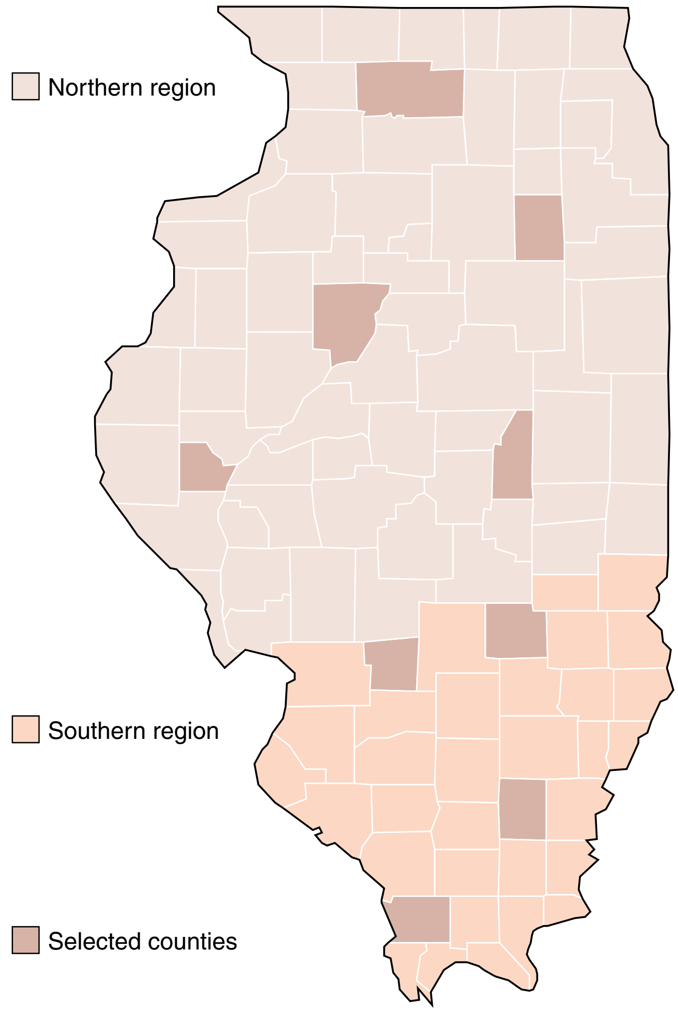

Figure 2. Nine test counties in the northern and southern soil regions of Illinois.

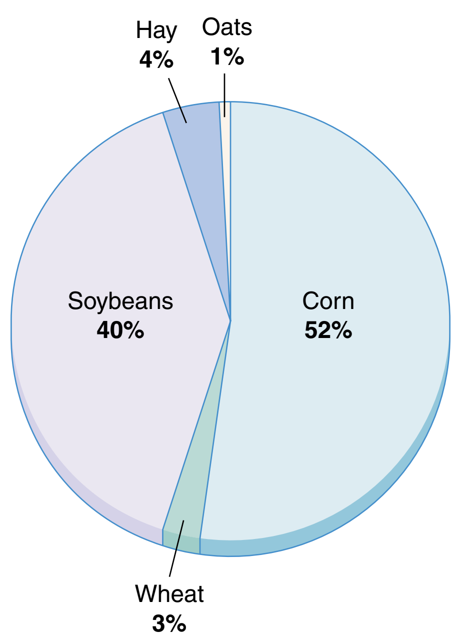

Figure 3A. Land use and crop acreage distribution in northern Illinois.

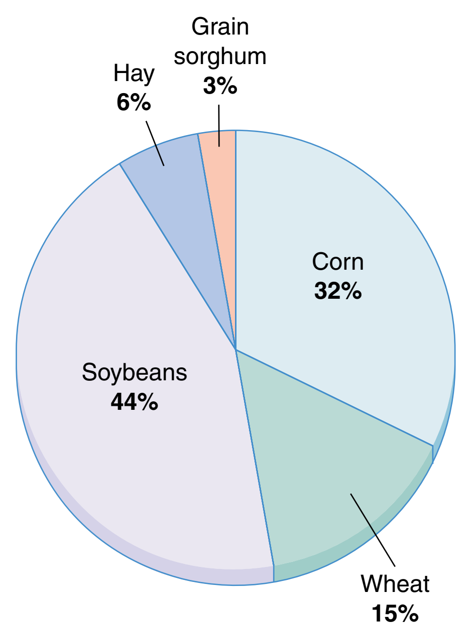

Figure 3B. Land use and crop acreage distribution in southern Illinois.

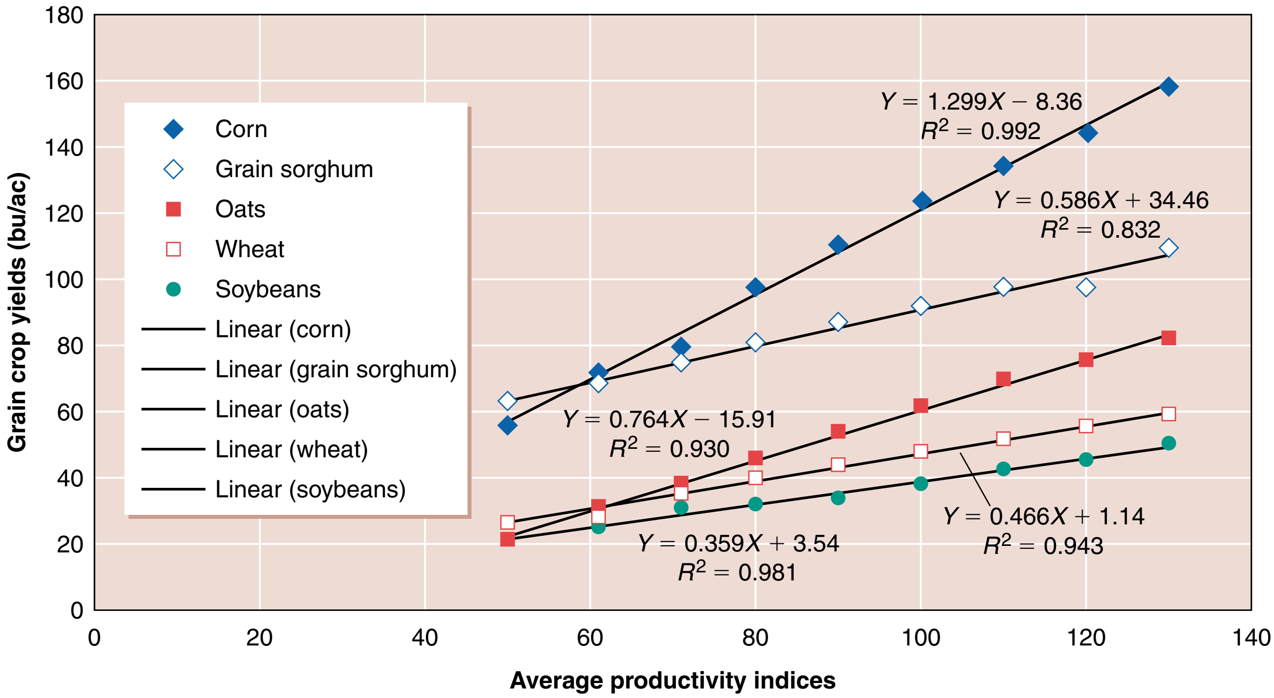

Figure 4A. Relationship between ten-year average crop yields and productivity indices under an average level of management.

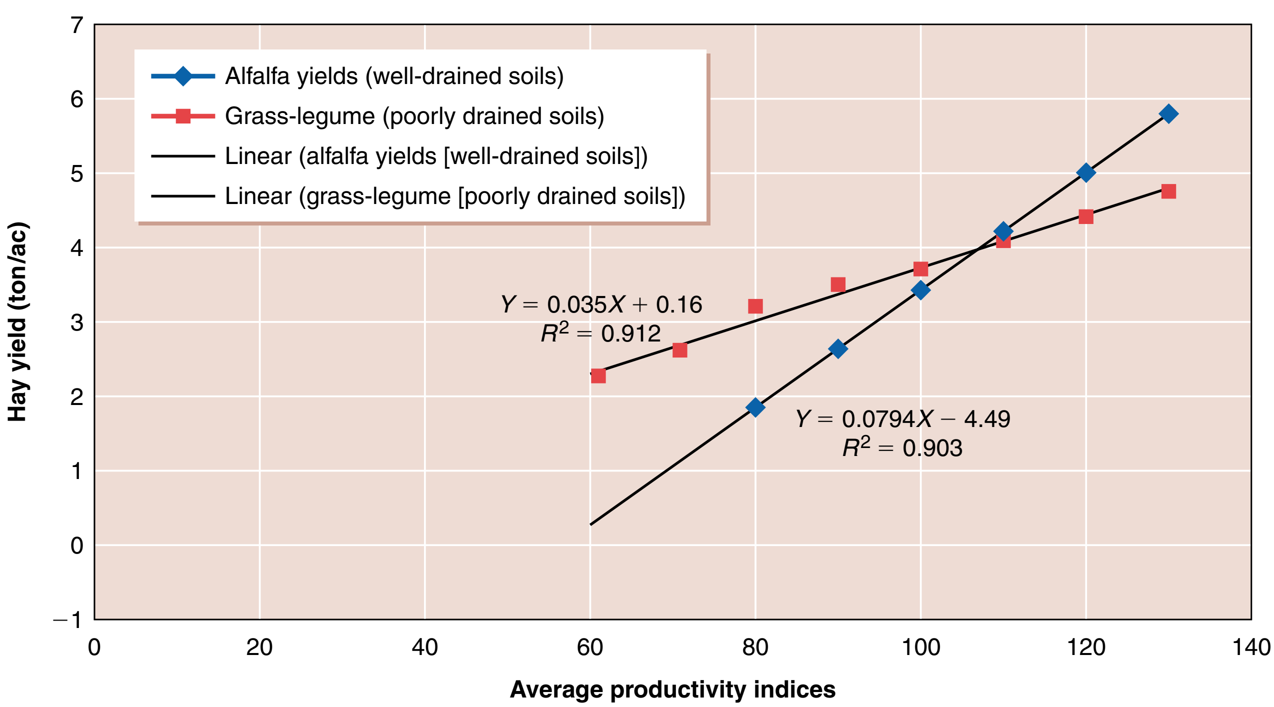

Figure 4B. Relationship between ten-year average hay (alfalfa and grass-legume) yields and productivity indices under an average level of management.

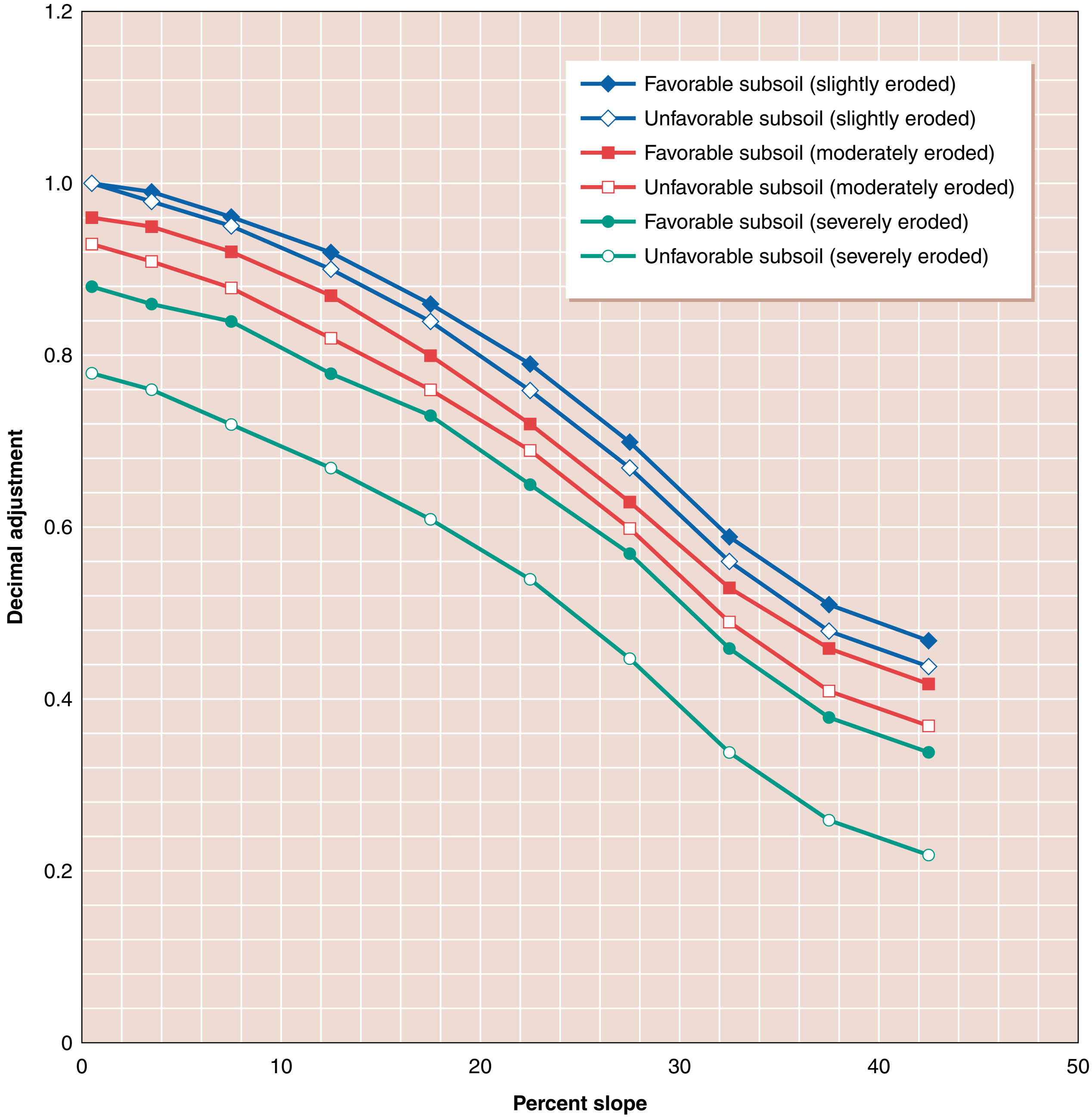

Figure 5. Adjustments in yields and productivity indices for various slope groups and erosion phases with favorable and unfavorable subsoils under an average level of management.