Soil Survey Investigations Report No. 14

Soil Survey Laboratory Data and Descriptions for Some Soils of

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Soil Survey Laboratory Data and Descriptions for Some Soils of...

...KENTUCKY

MAY 1967
SOIL CONSERVATION SERVICE • U.S. DEPARTMENT OF AGRICULTURE
In cooperation with
KENTUCKY AGRICULTURAL EXPERIMENT STATION

1. SAMPLE COLLECTION AND PREPARATION
   A. Field sampling
      1. Site selection
      2. Soil sampling
         a. Stony soils
   B. Laboratory preparation
      1. Standard (airdry)
         a. Square-hole 2-mm sieve
         b. Round-hole 2-mm sieve
      2. Field moist
      3. Carbonate-containing material
      4. Carbonate-indurated material
2. CONVENTIONS
   A. Size-fraction base for reporting
      1. <2-mm
      2. <size specified
   B. Data-sheet symbols
      tr: trace, not measurable by quantitative procedure used or less than reportable amount
      tr(s): trace, detectable only by qualitative procedure more sensitive than quantitative procedure used
      – : analysis run but none detected
      –(s): none detected by sensitive qualitative test
      blank: analysis not run
      nd: analysis not run
      <: less than reported amount or none present
3. PARTICLE-SIZE ANALYSES
   A. <2-mm fraction (pipet method)
      1. Airdry samples
         a. Carbonate and noncarbonate clay
      2. Moist samples
         a. Carbonate and noncarbonate clay
   B. >2-mm fraction
      1. Weight estimates
      2. Volume estimates
4. FABRIC-RELATED ANALYSES
   A. Bulk density
      1. Saran-coated clods
         a. Field state
         b. Airdry
         c. 30-cm absorption
         d. 1/3-bar desorption I
         e. 1/3-bar desorption II
         f. 1/3-bar desorption III
         g. 1/10-bar desorption
         h. Ovendry
      2. Paraffin-coated clods
         a. Ovendry
      3. Cores
         a. Field moist
      4. Nonpolar-liquid-saturated clods
   B. Water retention
      1. Pressure-plate extraction (1/3 or 1/10 bar)
         a. Sieved samples
         b. Soil pieces
         c. Natural clods
         d. Cores
      2. Pressure-membrane extraction (15 bars)
      3. Sand table absorption
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      5. Airdry
   C. Water-retention difference
      1. 1/3 bar to 15 bars
      2. 1/10 bar to 15 bars
   D. Coefficient of linear extensibility
      1. Dry to moist
   E. Micromorphology
      1. Thin sections
         a. Preparation
         b. Interpretation
         c. Moved-clay percentage
5. ION-EXCHANGE PROPERTIES
   A. Cation-exchange capacity
      1. NH_4OAc, pH 7.0
         a. Direct distillation
         b. Displacement, distillation

5A. Cation-exchange capacity (cont.)
      2. NaOAc, pH 8.2
         a. Centrifuge method
      3. Sum of cations
         a. Acidity by $BaCl_2$-TEA, pH 8.2; bases by NH_4OAc, pH 7.0
      4. KOAc, pH 7.0
      5. $BaCl_2$, pH 8.2
         a. Barium by flame photometry
   B. Extractable bases
      1. NH_4OAc extraction
         a. Uncorrected
         b. Corrected (exchangeable)
      2. KCl-TEA extraction, pH 8.2
   C. Base saturation
      1. NH_4OAc, pH 7.0
      2. NaOAc, pH 8.2
      3. Sum of cations
   D. Sodium saturation (exchangeable Na pct.)
      1. NaOAc, pH 8.2
      2. NH_4OAc, pH 7.0
   E. Sodium adsorption ratio
6. CHEMICAL ANALYSES
   A. Organic carbon
      1. Acid-dichromate digestion
         a. $FeSO_4$ titration
         b. CO_2 evolution, gravimetric
      2. Dry combustion
         a. CO_2 evolution I
         b. CO_2 evolution II
      3. Peroxide digestion
         a. Weight loss
   B. Nitrogen
      1. Kjeldahl digestion
         a. Ammonia distillation
      2. Semimicro Kjeldahl
         a. Ammonia distillation
   C. Iron
      1. Dithionite extraction
         a. Dichromate titration
         b. EDTA titration
      2. Dithionite-citrate extraction
         a. Orthophenanthroline colorimetry
      3. Dithionite-citrate-bicarbonate extraction
         a. Potassium-thiocyanate colorimetry
      4. Pyrophosphate-dithionite extraction
   D. Manganese
      1. Dithionite extraction
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   E. Calcium carbonate
      1. HCl treatment
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   F. Gypsum
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         a. Precipitation in acetone
   G. Aluminum
      1. KCl extraction I, 30 min
         a. Aluminon I
         b. Aluminon II
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         d. Fluoride titration
      2. KCl extraction II, overnight
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         a. Aluminon III
      4. NaOAc extraction
         a. Aluminon III
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      1. $BaCl_2$-triethanolamine I
         a. Back-titration with HCl
      2. $BaCl_2$-triethanolamine II
         a. Back-titration with HCl
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   I. Carbonate
      1. Saturation extract
         a. Acid titration

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      1. Saturation extract
         a. Acid titration
   K. Chloride
      1. Saturation extract
         a. Mohr titration
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   L. Sulfate
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         a. Gravimetric, $BaSO_4$
      2. NH_4OAc extraction
         a. Gravimetric, $BaSO_4$
   M. Nitrate
      1. Saturation extract
         a. PDS acid colorimetry
   N. Calcium
      1. Saturation extract
         a. EDTA titration
      2. NH_4OAc extraction
         a. EDTA-alcohol separation
         b. Oxalate-permanganate I
         c. Oxalate-permanganate II Fe, Al, and Mn removed
         d. Oxalate-cerate
      3. NH_4Cl-EtOH extraction
         a. EDTA titration
      4. KCl-TEA extraction
         a. Oxalate-permanganate
   O. Magnesium
      1. Saturation extract
         a. EDTA titration
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         a. EDTA-alcohol separation
         b. Phosphate titration
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         a. EDTA titration
   P. Sodium
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         a. Flame photometry
      2. NH_4OAc extraction
         a. Flame photometry
   Q. Potassium
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         a. Flame photometry
      2. NH_4OAc extraction
         a. Flame photometry
   R. Sulfur
      1. $NaHCO_3$ extraction, pH 8.5
         a. Methylene blue
   S. Total phosphorus
      1. Perchloric-acid digestion
         a. Molybdovanadophosphoric-acid colorimetry
7. MINERALOGY
   A. Instrumental analysis
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         b. Organic-matter removal
         c. Iron removal
         d. Particle-size fractionation
      2. X-ray diffraction
      3. Differential thermal analysis
   B. Optical analysis
      1. Grain studies
   C. Total analysis
      1. Chemical
      2. X-ray emission spectrography
   D. Surface area
      1. Glycerol retention
8. MISCELLANEOUS
   A. Saturated paste, mixed
      1. Saturation extract
         a. Conductivity
      2. Conductivity, saturated paste
   B. Saturated paste, capillary rise
      1. Saturation extract
         a. Conductivity
   C. pH
      1. Soil suspensions
         a. Water dilution
         b. Saturated paste
         c. KCl
   D. Ratios
      1. To total clay
      2. To noncarbonate clay
      3. Ca to Mg (extractable)

PREFACE

This publication is one in a new U.S. Department of Agriculture series established to preserve and make available technical information resulting from soil survey investigations. These investigations have been going on for about two decades. Data from them have been distributed in unpublished form to those immediately concerned. Some of the data and descriptions have appeared in technical journals, in regional bulletins, in USDA technical bulletins, and in the text of published soil surveys. But most were not available to all who might use them.

We intend to publish in this series all data from the soil survey laboratories that form reasonably complete characterizations of soils. Already-assembled data and

ing. Fragmentary data collected as reference points for specific soil surveys will not be included.

While these data were being assembled, there were many changes in laboratory methods. Some were improved and some new ones were devised. Consequently, laboratory data for different soils cannot always be directly compared without allowance for the method.

The method used is indicated by symbol in the column headings of the data table. These symbols are identified in the code sheet on the opposite page. Each method is described in the first number of this series, "Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples," SSIR No. 1.

Ways of describing soils have also changed. Soil descriptions have become explicit on more and more features. The systems for designating horizons and for classifying soils have been changed.

The soil descriptions published here were prepared as working documents to meet a specific need of a soil survey at the time the soil samples were collected. The soil scientists who wrote them had no idea they would be published. Editing has been limited for the most part to that necessary for conformance to the "Soil Survey Manual." Field textural estimates have been retained, even though some are at variance with the laboratory data, because the field estimates themselves are important data.

There were several reasons for sampling these soils. Some were sampled to study soil genesis, some to facilitate classification, and some to obtain data to permit

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Beulah	Fulton	S60Ky-38-9	13
Calloway	Fulton	S60Ky-38-2	15
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	Adair	S54Ky-1-15	39
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Dundee	Fulton	S60Ky-38-6	43
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Loring	Jefferson	S59Ky-56-3	69
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Lowell	Clark	S60Ky-25-2	73
	Clark	S60Ky-25-3	75
	Clark	S60Ky-25-5	77
	Clark	S60Ky-25-6	79
Memphis	Jefferson	S57Ky-56-12	81
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Patton	Fulton	S60Ky-38-3	101
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[a]Part of Project Z-1-2-8.

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County	Soil Series	Soil Survey No.	Page
Adair	Christian	S54Ky-1-10	19
	Christian	S54Ky-1-11	21
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	Christian	S54Ky-1-13	25
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	Dandridge	S54Ky-1-15	39
	Needmore	S54Ky-1-16	89
	Needmore	S54Ky-1-17	91
Barren	Ashburn	S59Ky-5-1	5
	Ashburn	S59Ky-5-5	7
	Crider	S59Ky-5-2	33
	Crider	S59Ky-5-3	35
	Tarklin	S59Ky-5-4	119
	Tarklin	S59Ky-5-6	121
	Tarklin	S59Ky-5-7	123
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	Holston	S55Ky-6-9	59
	Holston	S55Ky-6-10	61
	Holston	S55Ky-6-11	63
	Leadvale	S54Ky-6-4	65
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	Otway	S54Ky-6-6	93
	Otway	S54Ky-6-7	95
Calloway	Grenada	S49Ky-18-1	49
Carlisle	Grenada	S49Ky-20-1	51
Clark	Eden	S60Ky-25-7	45
	Eden	S60Ky-25-8	47
	Lowell	S60Ky-25-2	73
	Lowell	S60Ky-25-3	75
	Lowell	S60Ky-25-5	77
	Lowell	S60Ky-25-6	79
	Muse	S60Ky-25-1	85
	Muse	S60Ky-25-4	87
Fulton	Beulah	S60Ky-38-9	13
Fulton	Calloway	S60Ky-38-2	15
	Calloway terrace phase	S60Ky-38-1	17
	Crevasse	S60Ky-38-10	27
	Dubbs	S60Ky-38-5	41
	Dundee	S60Ky-38-6	43
	Patton	S60Ky-38-3	101
	Patton	S60Ky-38-4	103
	Sharkey	S60Ky-38-7	115
	Sharkey	S60Ky-38-8	117
Henderson	Henshaw	S54Ky-51-12	55
	Henshaw	S54Ky-51-13	57
	Sequatchie	S54Ky-51-10	109
	Sequatchie	S54Ky-51-11	111
	Tygart	S54Ky-51-16	127
	Tygart	S54Ky-51-17	129
	Uniontown	S54Ky-51-14	131
	Uniontown	S54Ky-51-15	133
Jefferson	Beasley	S57Ky-56-9	9
	Beasley	S57Ky-56-15	11
	Crider	S57Ky-56-16	29
	Crider	S57Ky-56-17	31
	Loring	S59Ky-56-3	69
	Loring	S59Ky-56-4	71
	Memphis	S57Ky-56-12	81
	Otway	S59Ky-56-1	97
	Otway	S59Ky-56-2	99
	Russellville	S57Ky-56-14	105
	Russellville	S57Ky-56-18	107
	Sequatchie	S57Ky-56-11	113
	Wheeling	S57Ky-56-10	135
	Wheeling	S57Ky-56-13	137
Marshall	Grenada	391808-391814[a]	53
	Memphis	391827-391832[a]	83

[a]Part of Project Z-1-2-8.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Allegheny very fine sandy loam SOIL Nos. S55Ky-6-8 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55363-55367

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-10	Ap		43.0	8.2	0.3	4.7	13.6	18.6	11.6		26.4	38.1				-		
10-15	A3		52.6	15.8	0.5	2.7	7.2	11.9	9.3		35.6	33.1				-		
15-21	B1		47.8	23.0	0.5	1.8	4.8	11.6	10.5		31.7	33.9				tr.		
21-41	B2		35.4	25.9	0.3	1.2	4.9	17.2	15.1		19.1	42.8				tr.		
41-72	C		8.0	24.2	0.1	5.9	32.1	24.6	5.1		4.5	17.6				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	Bulk density g/cc	Bulk density g/cc		Water content Pct.	Water content Pct.	Water content Pct.			pH		8C1a (1:1) H_2O
0-10	0.92																	6.0
10-15	0.29																	6.5
15-21	0.23																	6.5
21-41	0.12																	4.9
41-72	0.09																	4.4

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-10	3.2	0.3	tr.	0.5	2.8	6.8										59	
10-15	3.6	0.3	tr.	0.2	3.8	7.9										52	
15-21	5.7	0.4	tr.	0.2	2.1	8.4										75	
21-41	3.3	1.0	tr.	0.2	6.1	10.6										42	
41-72	0.5	0.6	tr.	0.1	8.7	9.9										12	

Depth (In.)

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Allegheny very fine sandy loam
Soil No.: S55Ky-6-8
Location: Bath County, Kentucky; idle field on farm road approximately 1 1/4 miles east of dirt road, one mile north of Peasticks; photo AFH-2F-35, right 8 3/4 inches, up 4 1/4 inches
Vegetation: Sparse growth of weeds in two year old corn stubble
Slope: 2 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55363	0 to 10 inches. Dark grayish brown (2.5Y 4/2) to olive brown (2.5Y 4/4) very friable, fine, sandy loam; weak, medium, crumb structure. Medium acid. Abrupt, smooth boundary.
A3 55364	10 to 15 inches. Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) friable, very fine, sandy loam; weak, medium and coarse subangular blocky structure. Strongly acid. Abrupt wavy boundary.
B1 55365	15 to 21 inches. Strong brown (7.5YR 5/6) to dark brown (7.5YR 5/2) friable, very fine sandy loam; moderate, medium and coarse subangular blocky structure. Medium acid. Clear, smooth boundary.
B2 55366	21 to 41 inches. Dark reddish brown (5YR 3/3) to dark brown (7.5YR 4/4) ped faces; firm, compact, fine sandy clay loam. Interior of peds are mottled light olive brown (2.5YR 5/4) and yellowish brown (10YR 5/4). Peds are weakly cemented in place, easily crushed when removed; strong, coarse angular blocky structure. Clay skins prominent along structural lines. There are a few small, rounded quartzite pebbles through the horizon. Very strongly acid. Clear, smooth boundary.
C 55367	41 to 72 inches. Dominantly yellowish red (5YR 4/6) sandy clay loam streaked with brownish yellow. Extremely acid.

Notes: Soil moisture was above field capacity in the Ap and A3 horizons at time of sampling. Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Ashburn cherty silt loam SOIL Nos. S59Ky-5-1 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59373-59380

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: (0.05-0.02)	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		65.3	15.9	4.8	2.8	2.0	5.6	3.6		40.1	31.7				15		
6-10	A3-B'21		61.3	24.3	3.2	2.0	1.6	4.4	3.2		40.4	26.7				16		
10-15	B'21-B2		58.0	28.9	2.7	2.2	1.4	3.7	3.1		38.5	24.8				20		
15-22	B'22		55.7	33.2	1.6	1.2	1.2	3.8	3.3		37.9	23.3				23		
22-33	B'23		40.9	49.1	0.8	1.1	1.0	3.3	3.8		26.1	20.5				35		
33-43	B'24		30.2	58.7	1.5	1.6	1.1	3.0	3.9		20.0	16.0				20		
43-52	B'25		29.1	61.5	2.0	1.4	0.8	2.1	3.1		19.1	14.4				34		
52-66	B'26		26.1	65.4	2.0	1.5	0.8	1.2	3.0		17.1	12.9				31		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-6	1.56	0.156	10			1.8		1.43	1.46			20.6	7.6					7.0
6-10	0.52	0.082	6			2.1		1.44	1.52			17.4	9.0					6.8
10-15	0.33					2.6		1.52	1.61			19.0	10.6					6.5
15-22	0.18					3.1		1.50	1.59			19.2	12.1					5.8
22-33	0.14					4.5		1.38	1.54			27.5	17.6					4.7
33-43	0.14					5.4		1.30	1.41			30.7	20.8					4.5
43-52	0.12					5.7		1.26	1.36			32.4	22.3					4.7
52-66	0.10					5.7		1.31	1.55			32.4	23.9					4.9

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-6	8.9	0.8	0.1	0.6	3.1	13.4										77	
6-10	6.6	0.5	0.1	0.2	2.9	10.3										72	
10-15	6.5	0.7	0.1	0.2	3.3	10.8										69	
15-22	6.2	0.9	0.1	0.2	4.6	12.0										62	
22-33	6.1	1.3	tr.	0.3	7.9	15.6										49	
33-43	5.0	1.3	0.1	0.3	11.2	17.9										37	
43-52	6.2	1.4	0.1	0.4	10.7	18.7										43	
52-66	8.0	1.9	0.1	0.5	9.5	19.9										52	

Depth (In.)	Clay Fraction Analysis 7Ai-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
			7A2 X-ray				DTA 7A3		
0-6			tr.	-		xx	7		
6-10			x	tr.		xx	20		
10-15									
15-22			x	-		tr.	17		
22-33									
33-43			x	-		xx	34		
43-52									
52-66			tr.	tr.		xx	33		

a. Not corrected for gravel.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Ashburn cherty silt loam
Soil No.: S59Ky-5-1
Location: Barren County, Kentucky, SCD, about 9 miles northwest of Glasgow on Kentucky Highway 90. Photo ALK-7Z-219
Vegetation and land use: Rotation field (now in temporary pasture, mostly Kentucky fescue).
Slope and land form: Gently sloping to sloping (6 percent) toward the east near upper edge of slope, karst topography
Drainage: Well drained with medium surface runoff
Permeability: Moderate
Parent material: Cherty high grade limestone
Collected by and date: E. J. Pedersen, D. D. Bohrer, Earle Latham, May 5, 1959
Described by: E. V. Huffman and W. H. Zimmerman

Horizon and Beltsville Lab. No.	
Ap 59373	0 to 6 inches. Dark brown (10YR 3/3) cherty silt loam; moderate medium granular structure; very friable; abundance of roots; abundance of worm casts; abrupt smooth boundary.
A3-B'21 59374	6 to 10 inches. Predominately reddish brown (5YR 4/4) (A3 portion) mixed with yellowish red (5YR 4/6) (B'21 portion); heavy silt loam; weak medium and fine subangular blocky structure; friable; roots not as abundant as in Ap; abundance of worm casts; chert as in Ap horizon; clear smooth boundary. (This is a "mixed" horizon.)
B'21-B2 59375	10 to 15 inches. Red (2.5YR 4/6) and yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; a few clay films; friable; a few roots; chert as in Ap horizon with some black flinty chert; a few worm casts; clear wavy boundary. (This is a "mixed" horizon.)
B'22 59376	15 to 22 inches. Red (2.5YR 4/6) silty clay loam; moderate to strong medium subangular blocky structure; a few clay films; firm; small black specks of manganese; a few small pockets of yellowish brown silt loam; gradual smooth boundary.
B'23 59377	22 to 33 inches. Dark red (10R 3/6) silty clay; moderate to strong medium angular blocky structure; noticeable clay films; very firm; plastic and sticky when wet; few black specks of manganese; flecks of brown (7.5YR 5/4) silt loam on some ped surfaces; diffuse smooth boundary.
B'24 59378	33 to 43 inches. Dark red (10Y 3/6) ped surface, red (10R 4/6) when crushed, clay; strong medium subangular and fine angular blocky structure; prominent clay films; very firm; plastic and sticky when wet; a few black specks of manganese; many very small chert pieces and some nodular chert (1 to 3 inches in size); diffuse smooth boundary.
B'25 59379	43 to 52 inches. Dark red (10R 3/6) ped surface, red (10R 4/6) when crushed, clay; moderate fine angular blocky structure; noticeable clay films; very firm; plastic and sticky when wet; coating of reddish brown (5YR 4/4) silt are common; common large nodular chert; gradual smooth boundary.
B'26 59380	52 to 66 inches. Dark red (10R 3/6) ped surface, red (10R 4/6) when crushed, clay; moderate medium angular blocky structure; noticeable clay films; firm; plastic and sticky when wet; small white specks of chert; large nodular chert about 20 percent of volume.

Notes: Soil colors described of moist soil. There appears to be loess influence in the top three horizons, which accounts for the mixed colors of the second and third layers. Earthworm activity is pronounced in the upper three horizons and an occasional earthworm channel extends to as deep as 3 1/2 feet. Tongues of A horizon soil material is present in old root channels. These channels average about 1 or 2 inches across and extend downward nearly two feet.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Ashburn cherty silt loam SOIL Nos. S59Ky45-5 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59408-59415

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: 0.05-0.02	Silt: Int. III (0.02-0.002)	Silt: Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Size class and particle diameter (mm) 3A1															Pct. of < 76mm	
		Pct. of < 2 mm																
0-7	Ap		74.6	14.9	2.1	1.4	0.9	2.2	3.9		53.1	26.6				7		
7-13	B2		69.0	19.6	1.4	1.6	1.0	2.2	5.2		47.3	27.7				21		
	B'21																	
13-16	B'21		56.0	32.3	2.0	1.9	1.2	3.0	3.6		37.5	24.1				36		
	B2																	
16-26	B'22		42.1	51.3	0.5	0.6	0.4	1.7	3.4		28.0	18.3				3		
26-37	B'23		27.2	66.8	0.1	0.4	0.5	2.7	2.3		18.1	12.8				tr.		
37-49	B'24		16.2	79.2	0.1	0.2	0.4	2.2	1.7		11.2	7.8				tr.		
49-62	B'25		19.2	78.3	0.1	0.1	0.3	1.1	0.9		14.8	5.9				tr.		
62-67+	B'26		17.2	80.1	-	0.1	0.3	1.4	0.9		13.5	5.2				tr.		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH 8C1c (2:1) H_2O	8C1a (1:1) H_2O
0-7	1.04	0.122	9			1.8		1.44	1.50			22.0	7.4				6.7
7-13	0.47	0.088	5			2.5		1.26	1.34			25.8	9.9				6.4
13-16	0.31					3.2		1.33	1.40			25.5	12.1				6.0
16-26	0.20					4.7		1.46	1.57			26.0	18.6				4.6
26-37	0.20					6.3		1.27	1.47			36.0	23.7				4.6
37-49	0.04					7.0		1.28	1.44			37.1	27.6				4.7
49-62	0.08					7.5		1.30	1.50			36.5	28.1				4.6
62-67+	0.07					6.6		1.28	1.54			37.3	28.5			4.8	

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-7	8.6	0.5	0.1	0.3	2.9	12.4									76	
7-13	7.4	0.4	0.1	0.3	4.4	12.5									65	
13-16	7.3	0.5	0.1	0.2	4.8	12.9									63	
16-26	5.9	1.5	0.1	0.3	9.7	17.4									44	
26-37	5.1	2.4	0.1	0.3	12.9	20.8									38	
37-49	6.3	2.9	0.1	0.4	14.8	21.8									32	
49-62	8.2	3.4	0.1	0.4	14.2	26.3									46	
62-67+	8.4	3.5	0.1	0.4	14.2	26.6									47	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						DTA 7A3	
0-7			x	tr.		xx	10	
7-13			x	tr.		xx	8	
13-16								
16-26			x	tr.		x	33	
26-37								
37-49			x	tr.		tr.	25	
49-62								
62-67+			xx	tr.		tr.	32	

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS HYATTSVILLE, MD 1966

Soil type: Ashburn cherty silt loam
Soil No.: S59Ky-5-5
Location: Barren County, Kentucky, SCD, 6.2 miles north of Glasgow city limits on U. S. Highway 31E (about 0.2 mile north of Goodnight, Kentucky). Photo ALK-9Z-29
Vegetation and land use: Cultivated in alfalfa at present.
Slope and land form: Gently sloping to sloping (6 percent) toward south, near upper edge of slope
Drainage: Well drained with medium surface runoff
Permeability: Moderate
Parent material: Cherty high grade limestone
Collected by: E. J. Pedersen, D. D. Bohrer, James W. Dye and Earle Latham, May 4, 1959
Described by: W. H. Zimmerman and E. V. Huffman

Horizon and Beltsville Lab. No.	
Ap 59408	0 to 7 inches. Brown (10YR 4/3) to dark brown (10YR 3/3) cherty silt loam; weak fine granular structure; very friable; abundance of roots; many worm casts; clear smooth boundary.
B2-B'21 59409	7 to 13 inches. Brown (7.5YR 4/4) and yellowish red (5YR 4/6) cherty silt loam; weak to moderate fine subangular blocky structure; friable; roots are common; many worm casts. This horizon contains about 20 percent chert as a portion of a "chert line" within this profile. This is a "mixed" horizon of about 60 percent B2 developed in loess and 40 percent B'2 material from limestone origin; clear wavy boundary; 6 to 8 inches thick.
B'21-B2 59410	13 to 16 inches. Yellowish red (5YR 4/6) and brown (7.5YR 4/4) cherty light silty clay loam; moderate fine and medium subangular blocky structure; occasional clay films; friable to firm; a few small roots; many worm casts. This is a mixed horizon about 70 percent B'2 material from limestone origin and 30 percent B2 developed in loess. This horizon has a concentration (about 50 percent) of chert as a "chert line"; diffuse smooth boundary; 3 to 7 inches thick.
B'22 59411	16 to 26 inches. Dark red (2.5YR 3/6 to 10R 3/6) silty clay; moderate fine and medium angular blocky structure; noticeable clay films on some ped surfaces; some fine roots and root channels; many fine chert fragments with a few coarse (up to 5 inches) chert fragments; a few small black concretions; clear wavy boundary.
B'23 59412	26 to 37 inches. Dark red (2.5YR 3/6 to 10R 3/6) silty clay or clay; moderate coarse angular blocky structure breaking down to strong fine and medium angular structure; continuous clay films; firm; slightly sticky and plastic when wet; some coarse (4 to 6 inches) chert fragments; a few small black concretions; diffuse smooth boundary.
B'24 59413	37 to 49 inches. Dark red (10R 3/6) clay; very coarse (up to 5 inches in size) moderate angular blocky structure breaking down to strong medium angular blocky structure; prominent continuous clay films; very firm; sticky and plastic when wet; some coarse chert fragments; a few small black concretions; gradual smooth boundary.
B'25 59414	49 to 62 inches. Dark red (10R 3/6) clay; moderate very coarse angular blocky structure breaking into strong medium angular blocky structure; noticeable clay films; very firm; sticky and plastic when wet; some coarse chert fragments; several small manganese concretions; gradual wavy boundary.
B'26 59415	62 to 67 inches. Dark red (10R 3/6) clay; moderate very coarse angular blocky structure breaking into strong medium angular blocky structure; very firm; sticky and plastic when wet; some coarse chert also a few small pieces of "black" chert; many manganese concretions; has yellow hydrous iron oxide streaked horizontally thru portions of the horizon.

Notes: Colors described with moist soil. There are some old roots channels filled with Ap, B2 and B'21 material extending down thru the B'23 horizon, with an occasional tongue extending into the B'24

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Beasley silt loam SOIL Nos. S57Ky-56-9 LOCATION Jefferson County, Kentucky

Soil Type: Beasley silt loam
Soil No.: S57Ky-56-9

Slope: Gently sloping - 3 percent slope.
Erosion: None to slight
Drainage: Well drained
Parent material: Calcareous shales and limestone
Physiographic position: Outer bluegrass
Collected by: W. H. Zimmerman, May 18, 1957

Horizon and Beltsville Lab. No.	
Ap 5884	0 to 7 inches. Dark yellowish brown (10YR 4/4) silt loam with moderate fine granular structure; very friable; abundance small roots; many worm casts; slightly acid; abrupt smooth boundary.
A3 5885	7 to 11 inches. Brown (10YR 4/3) silt loam with weak coarse subangular blocky to weak fine granular structure; friable; many small roots; many worm casts; neutral; abrupt smooth boundary.
B1	11 to 15 inches. Brown (10YR 4/3) to yellowish brown (10YR 5/4) silty clay loam with weak to

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Beasley silt loam SOIL Nos. S57Ky 56-15 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58138-58144

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		78.6	18.9	0.2[a]	0.5	0.4	0.4	1.0		52.0	27.9				-		
7-13	B21		61.7	35.1	0.1	0.3	0.4	0.6	0.8		43.3	20.6				-		
13-18	B22		53.6	42.8	0.1	0.4	0.6	0.2	1.3		39.6	15.9				-		
18-25	B23		47.7	48.7	-	0.5	0.6	1.2	1.3		37.1	12.6				-		
25-30	B3		38.0	57.6	0.2	0.8	0.6	1.3	1.5		30.6	9.6				-		
30-36	C1		27.8	69.6	0.5	0.3	0.3	0.7	0.8		24.4	4.6				-		
36-60	C2		39.1	51.6	1.5	2.0	1.4	2.6	1.8		34.4	7.9				12		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-7	1.04	0.096	11			1.9						21.4	7.9					5.9
7-13	0.24					1.7						24.1	14.4					4.7
13-18	0.16					1.4						24.5	16.7					4.4
18-25	0.15					1.5						28.2	15.1					4.6
25-30	0.16					1.3						30.8	21.1					5.0
30-36	0.24					1.9						34.1	24.6					6.8
36-60	0.20					2.3							18.8					7.6

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	6.5	1.9	tr.	0.2	4.7	13.3										65	
7-13	7.9	1.5	tr.	0.3	10.1	19.9										49	
13-18	7.8	1.1	0.1	0.3	15.9	25.2										37	
18-25	11.6	0.9	0.1	0.4	16.0	28.9										45	
25-30	27.1	1.3	0.1	0.4	11.2	40.1										72	
30-36	42.6	1.6	0.1	0.4	4.5	49.3										91	
36-60	Free carbonates																

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
	7A2 X-ray						7A3		
0-7			xx	x	x		5		
7-13				x	xx		5		
13-18									
18-25									
25-30									
30-36									
36-60				xx	xxx		5		

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

a Iron oxide concretions in sand fractions and small amount of fossiliferous material in the C2 horizon.

USDA-SCS-HYATTSVILLE, MD. 1969

Soil type: Beasley silt loam
Soil No.: S57Ky-56-15
Location: Jefferson County, Kentucky; H. F. Broyles Farm, one-quarter mile west of Clark's Station Road, three miles south of U. S. Highway No. 60, and two and one-half miles north of railway crossing on Long Run Road. Photo No. AFW-2R-23, 1956
Vegetation and land use: Grasses and Korean lespedeza
Slope and land form: 3 percent - gently sloping
Erosion: Slight
Drainage: Well drained
Parent material: Shaly marl and limestone
Physiographic position: Outer Bluegrass - ridgetop
Collected by and date: W. H. Zimmerman, E. J. Pedersen, and G. M. Phibbs, October 17, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58138	0 to 7 inches. Brown (10YR 4/3) silt loam; moderate fine granular structure; friable; discontinuous remnants of an A2 occur as dark grayish brown (10YR 4/2) silt loam in lower part; pH 7.0; abrupt smooth boundary.
B21 58139	7 to 13 inches. Reddish brown (5YR 4/4), strong brown (7.5YR 5/6) crushed, silty clay; moderate to strong medium subangular blocky structure; noticeable clay skins; firm to friable; few small soft black concretions; pH 5.5; clear wavy boundary.
B22 58140	13 to 18 inches. Brown to reddish brown (7.5YR 4/4-5YR 4/4), strong brown (7.5YR 5/6) crushed, clay to silty clay; strong medium subangular blocky structure; pronounced clay skins; firm; few small soft black concretions; pH 5.5; clear wavy boundary.
B23 58141	18 to 25 inches. Yellowish brown (10YR 5/4) clay variegated with common fine distinct brown (7.5YR 4/4) and reddish brown (2.5YR 5/4); streaked with pale brown silt on vertical faces; strong medium and coarse prismatic and strong medium angular blocky structure; common clay skins; slightly compact; very firm; common iron and manganese stainings and concretions; pH 5.5; abrupt smooth boundary.
B3 58142	25 to 30 inches. Light olive brown (2.5Y 5/4) clay variegated common fine distinct brown (7.5YR 5/4); weak prismatic macrostructure; moderate to strong medium angular blocky microstructure; common clay skins; very firm, plastic when wet; abundant soft black concretionary material; pH 5.0; abrupt wavy boundary.
C1 58143	30 to 36 inches. Yellowish brown (10YR 5/6) clay variegated with dark brown (10YR 3/3) concretionary stainings; massive; extremely firm; very plastic and sticky; concretionary staining and small lime flecks are common; occasional coarse (3 inch) limestone fragments; pH 7.5; abrupt wavy boundary.
C2 58144	36 to 60 inches. Yellowish brown (10YR 5/6) weathered calcareous shale and limestone mixed with clay; massive; extremely firm, very plastic and sticky; dusky red (2.5YR 3/2) clay flows along faces of vertical cracks; pH 8.0; no bulk density core taken of this horizon.
Dr	60+ inches. Light olive brown calcareous shale and limestone; violent reaction to dilute HCl.

Notes: Slight suggestion of fragipan in B23. The 0-7, 18-25, and 36-60 inch zones were sampled for the Bureau of Public Roads. By volume the C2 consisted of 2 percent rocks over 5 inches across, and 4 percent rocks under 5 inches across. Color taken moist unless otherwise stated.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Beulah fine sandy loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-9 **LAB. NOS.** 14412-14418

General Methods: 1A, 1B1a, 2A1, 2B.

DEPTH INCHES	HORIZON	PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	3A1 0.2-0.02	0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-9	A1p	<0.1	0.1	0.3	17.7	44.9	31.2	5.8	87.6	5.4	-	vfsl
9-17	B11	<0.1	0.1 a	0.4 a	31.6	41.9	21.0	5.0	88.6	4.8	-	vfsl
17-25	B12	<0.1	0.1 a	0.3 a	31.2	45.6	17.8	5.0	90.7	3.1	-	vfsl
25-28	B2	<0.1	0.1 a	0.3 a	9.6	47.2	29.5	13.3	81.5	4.3	-	vfsl
28-44	C1	<0.1	0.1 a	0.4 a	10.7	52.7	31.4	4.7	89.5	4.7	-	vfsl
44-57	C2	<0.1	0.1 a	0.4 a	2.1	26.4	58.4	12.6	73.7	12.7	-	sil
57-70	C3	<0.1	0.2 a	0.4 a	11.7	48.2	32.9	6.6	86.2	5.8	-	vfsl

8C1a pH 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	6B1a NITROGEN %	C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 ATMOS. %
5.9			0.43	0.041	10	0.6						3.2
6.0			0.24	0.027		0.7						3.4
6.1			0.13	0.016		0.7						2.7
6.1			0.32			0.9						6.9
6.2			0.14			0.7						3.2
5.6			0.20			1.0						6.8
5.3			0.10			0.8						4.1

5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	5B1a BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry % M.	Air Dry g/cc	30 cm. % M.	30 cm. g/cc	O.D. g/cc
	← milliequivalents per 100g. soil →											
6.8	4.4	1.1	2.8	<0.1	0.5	88	68					
6.9	5.2	1.1	3.3	<0.1	0.3	96	67					
6.1	4.3	1.1	1.9	<0.1	0.2	92	75					
12.3	9.0	1.9	4.5	0.1	0.4	93	72					
6.8	5.2	1.2	2.1	<0.1	0.2	97	76					
12.4	7.8	2.4	5.2	0.1	0.5	87	68					
8.0	4.7	1.3	3.6	0.1	0.4	81	64					

a. Few mica flakes.

BEULAH FINE SANDY LOAM S60Ky-38-9

Location: Fulton County, Kentucky, on line with old graveyard, 250 feet west of road, 0.65 mile north of Western School. Photo ADV-4F-86.

Vegetation: Cultivation (cotton in 1960).

Slope and Land Form: Level, Mississippi River terrace.

Drainage: Somewhat excessively drained; slow surface runoff; rapid permeability.

Parent Material: Sandy old Mississippi River alluvium.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 3, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 3, 1960.

LINCOLN LAB NO.	HORIZON	DEPTH	DESCRIPTION
14412	A_{1p}	0-9 inches	Very dark grayish brown (10YR 3/2) fine sandy loam; weak very fine granular structure; very friable; compact in 7 to 9 inch zone (traffic pan); roots are abundant; pH 6.0; abrupt wavy boundary.
14413	B_{11}	9-17 inches	Brown (10YR 4/3) fine sandy loam or loamy fine sand; weak fine granular structure; very friable; small pockets and fingers of very dark material from A_{1p} are common; small roots are plentiful; pH 6.0; clear smooth boundary.
14414	B_{12}	17-25 inches	Brown (10YR 4/3) to dark grayish brown (10YR 4/2) loamy fine sand; weak medium subangular and fine granular structure; very friable to loose; small pores are common; small roots are plentiful; pH 6.0; abrupt smooth boundary.
14415	B_2	25-28 inches	Dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; weak clay film bridging; manganese stainings are common; small pores are common; small roots are plentiful; pH 6.5; abrupt smooth boundary.
14416	C_1	28-44 inches	Brown (10YR 5/3) loamy fine sand; massive, single grain when crushed; very friable to loose; small pores are common; small roots are plentiful; pH 5.5; clear smooth boundary.
14417	2	44-57 inches	Dark yellowish brown (10YR 4/4), with common medium distinct gray (10YR 5/1) mottles, fine sandy loam; massive, single grained when crushed; very friable; small pores are common; small roots are plentiful; pH 6.5; clear smooth boundary.
14418	C_3	57-70 inches	Stratified lenses of pale brown (10YR 6/3) fine sand and brown (10YR 5/3) loamy fine sand; massive, single grain when crushed; common small pores in the brown lenses; a few small roots; pH 5.5.

Remarks:

Horizon 4 (B_2) is continuous around the pit but varies from 3 to 3/4 inch thick.

Color given for moist soil.

Soil correlation samples collected from profile.

Reaction determined by Soiltex.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Calloway silt loam LOCATION Fulton County, Kentucky

SOIL NOS. S60Ky-38-2 LAB. NOS. 14368-14374

General Methods: 1A, 1B1a, 2A1, 2B

PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) 3A1

2A2

VERY

VERY

Calloway silt loam S60Ky-38-2

Location: Fulton County, Kentucky, SCD, 350 feet west and 550 feet north of SE corner; SW¼ of Sec. 28; T1N;R3W; 1 mile east of Liberty Church on Ky. 166. Photo No. ADV-10F-20.

Vegetation: Cultivated - soybeans in 1960.

Slope and Land Form: Nearly level, 1 percent, low stream terrace.

Drainage: Somewhat poorly drained; slow surface runoff, slow permeability.

Parent Material: Alluvium from loess uplands.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, October 31, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, October 31, 1960.

LINCOLN LAB NOS.	HORIZON	DEPTH	DESCRIPTION
14368	A_p	0-9 inches	Dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; roots are abundant; pH 5.0; abrupt smooth boundary.
14369	B_2	9-15	Yellowish brown (10YR 5/4) mottled common medium to strong medium blocky structure; friable; few very small black concretions; roots are plentiful pH 4.5; clear wavy boundary.
14370	B_{3m1}	15-21 inches	Mottled grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure to massive; slightly compact and brittle; many medium dark brown concretions; few fine roots; fine and medium pores are common; pH 4.5; clear smooth boundary.
14371	B_{3m2}	21-29 inches	Mottled many fine faint grayish brown (2.5Y 5/2), light olive brown (2.5Y 5/4), and yellowish brown (10YR 5/4) silty clay loam; weak to strong coarse blocky structure; patchy clay films; very firm; very compact and brittle; very dark brown and black concretions; few small roots; fine pores are common; pH 4.5; gradual smooth boundary.
14372	B_{3m3} 1/ (a)	29-39 inches	Yellowish brown (10YR 5/4) to light olive brown (2.5Y 5/2), mottled common medium distinct strong brown (7.5YR 5/6) and gray (5Y 6/1) silt loam; moderate coarse blocky structure; few discontinuous clay films on vertical surfaces; firm, compact and brittle; many small pores; many small very dark brown concretions and black manganese stains; pH 6.0; clear smooth boundary.
14373		(b) 39-46 inches	Same as layer above.
14374	C	46-64 inches	Mottled many fine faint dark yellowish brown (10YR 4/4), grayish brown (2.5Y 5/2), and light olive brown (2.5Y 5/4) silt loam; massive; friable; many small black soft concretions and black manganese stains; small pores abundant; pH 6.0.

Remarks:

Gray tongues of silty clay loam were common in the profile, tapering from 1-1/2" diameter in B_{3m2} to 1/2" diameter in the C horizon.

1/ B_{3m3} split for sampling purposes.

Soil correlation samples collected from profile

Colors given are for moist soil.

Reaction determined by Soiltex.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Calloway, Terrace Phase silt loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-1 **LAB. NOS.** 14361-14367

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	3A1 0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-7	Ap	2.4a	1.2a	0.2a	0.2a	1.5	86.3	8.2	57.5	30.4	-	si
7-13	B2	1.4a	1.5a	0.4a	0.4a	1.4	83.1	11.8	50.8	33.9	-	si/sil
13-21	B3m1	1.9a	1.4a	0.4a	0.4a	1.5b	78.1	16.3	45.5	34.3	-	sil
21-29	B3m2	0.4a	0.9a	0.4a	0.7a	1.5a	67.0	29.1	37.4	31.5	-	sicl
29-41	B3m3	<0.1	0.2a	0.2a	0.4a	1.2a	68.5	29.5	39.0	30.9	-	sicl
41-50	C11	<0.1	0.1a	0.1a	0.2a	1.3a	73.4	24.9	44.4	30.4	-	sil
50-64	C12	<0.1	0.1a	0.1a	0.3a	1.4a	78.1	20.0	46.5	33.2	-	sil

pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	6B1a NITROGEN %	C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 ATMOS. %
5.4			0.62	0.068	9	1.6						4.4
5.3			0.22	0.031		1.5						5.7
5.0			0.10	0.024		2.1						7.2
5.0			0.12	0.031		2.1						13.6
5.5			0.12			1.8						13.9
6.2			0.11			1.8						12.2
6.5			0.07			1.6		<0.1				10.7

5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry 4B5 % M.	4A1b g/cc	30 cm. 4B3 % M.	4A1c g/cc	O.D. 4A1h g/cc
←	milliequivalents per 100g. soil				→							
6.2	3.0	1.0	4.7	<0.1	0.2	68	47					
7.1	3.6	1.5	4.5	0.1	0.1	75	54	7.0	1.43	27.1	1.36	1.40
9.4	3.3	3.2	6.4	0.1	0.2	72	52	4.4	1.59c	23.7	1.49	1.58c
17.9	6.2	8.6	7.9	0.2	0.4	86	66					
19.3	7.8	11.1	5.5	0.2	0.4	101	78	4.3	1.66	27.4	1.48	1.68c
17.3	7.4	10.0	3.8	0.2	0.4	104	82					
15.8	7.3	8.3	3.6	0.2	0.4	102	82	5.4	1.53	30.1	1.42	1.56

a. Many Fe-Mn? concr.
b. Common Fe-Mn? concr.
c. Duplicate clods exceed confidence limit of ± 0.05 g/cc and range to ± 0.10 g/cc

Calloway, Terrace Phase, silt loam 860Ky-38-1

Location: Fulton County, Kentucky. SCD. 1,300 feet south and 950 feet east

Vegetation: Cultivated, milo in 1960.

Slope and Land Form: Nearly level, 1 percent, low stream terrace.

Drainage: Somewhat poorly drained; slow surface runoff, slow permeability.

Parent Material: Alluvium from loess upland.

Samples Collected by: J. S. Allen, Keith Young, and J. H. Newton, October 31, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, October 31, 1960.

LINCOLN LAB NO.	HORIZON	DEPTH	DESCRIPTION
14361	A_m	0-7	Dark grayish brown (10YR 4/2) silt loam with a few weak fine granular structure; very friable; roots are abundant; pH 6.0; abrupt smooth boundary.
14362	B_2	7-13 inches	Brown (10YR 5/3) silt loam with a few fine faint grayish brown (10YR 5/2) mottles; moderate medium angular blocky structure; firm; few discontinuous clay films; few small round dark brown concretions; roots are plentiful; pH 4.8; clear smooth boundary.
14363	B_{3m1}	13-21 inches	Mottled many fine faint brown (10YR 5/3) and light brownish gray (10YR 6/2) silt loam; massive; firm;

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Christian silt loam SOIL Nos. S54Ky-1-10 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55442-55447

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		38.7	16.8	0.4	0.6	2.1	28.2	13.2		24.1	47.1				-		
6-15	A2		44.2	16.7	0.2	0.5	1.7	24.6	12.1		28.3	45.0				17		
15-19	B1		40.1	26.5	0.3	0.5	1.7	20.7	10.2		27.7	36.9				tr.		
19-38	B2		24.3	40.3	0.1	0.3	1.6	22.4	11.0		15.6	35.2				tr.		
38-54	B3		20.2	31.7	0.2	0.4	2.3	32.0	13.2		11.7	43.1				tr.		
54+	C		17.2	38.1	0.2	0.6	2.1	28.8	13.0		9.3	41.1				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-6	1.24																	7.0
6-15	0.89																	6.7
15-19	0.79																	6.8
19-38	0.43																	5.0
38-54	0.26																	4.8
54+	0.20																	4.8

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-6	5.2	1.1	0.4	0.4	1.1	8.2									87	
6-15	4.4	0.8	0.3	0.3	1.7	7.5									77	
15-19	5.6	1.0	0.3	0.3	2.7	9.9									73	
19-38	3.4	2.0	0.4	0.3	7.9	14.0									44	
38-54	1.1	1.2	0.3	0.2	5.4	8.2									34	
54+	1.0	0.9	0.1	0.1	7.5	9.6									22	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
			7A2 X-ray				DTA 7A3	
0-6								
6-15								
15-19								
19-38			xx	x			xxx	
38-54								
54+								

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Christian silt loam
Soil No.: S54Ky-1-10
Location: Adair County, Kentucky; at the junction of Kentucky Highways 61 and 1012 near Sparksville, Kentucky, photo number AIR-9H-13
Vegetation: Corn
Slope: Gently sloping (4%)
Erosion: Moderate
Drainage: Well drained
Parent material: Residuum from interbedded limestone, sandstone and shale

Horizon and Beltsville Lab. No.	
Ap 55442	0 to 6 inches. Yellowish brown (10YR 5/4) very friable silt loam with a weak, fine granular structure; slightly acid; gradual, smooth boundary.
A2 55443	6 to 15 inches. Brown to dark brown (7.5YR 4/4) friable silt loam with a weak, fine granular structure; slightly acid; gradual, wavy boundary. Color grades to a yellowish brown in the lower 3 inches.
B1 55444	15 to 19 inches. Red (2.5YR 4/6) firm silty clay with a weak, fine and medium subangular blocky structure; slightly acid; clear, smooth boundary.
B2 55445	19 to 38 inches. Red (2.5YR 4/6) very firm clay with a moderate, fine and medium, subangular blocky structure; strongly acid; clear, wavy boundary. A few splotches of yellowish brown (10YR 5/6) and small sandstone fragments occur through lower 12 inches of this horizon.
B3 55446	38 to 54 inches. Reddish brown (2.5YR 4/4) very firm clay with a strong, medium and coarse, subangular blocky structure; strongly acid. Splotches of yellowish brown (10YR 5/6) are common, and fragments of sandstone are more numerous than in layer above.
C 55447	54+ inches. Variegated reddish brown (2.5YR 4/4) yellowish brown (10YR 5/6) and pale yellow (5Y 7/3-7/4) firm, slightly sticky and plastic clay with strong medium and coarse subangular and angular blocky structure; strongly acid. Weathered sandstone fragments 1 to 3 inches in diameter are numerous through this horizon.

Notes: Roots are abundant through the B2, but are only common in the B3. Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Christian silt loam SOIL Nos. S54Ky-1-11 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55448-55452

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19–76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		43.5	18.5	2.3	3.9	4.1	12.6	15.1		28.4	39.7				tr.		
6-12	B1		21.2	52.7	0.6	2.1	2.5	9.3	11.6		15.0	25.2				-		
12-28	B2		21.8	48.3	0.1	0.8	0.8	9.0	19.2		15.7	33.4				10		
28-35	B3		25.3	42.5	0.1	0.5	0.8	10.0	20.8		18.2	36.7				-		
35+	C		46.3	48.6	0.6	0.4	0.2	0.8	3.1		32.7	17.3				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-6	1.24																	5.6
6-12	0.89																	5.9
12-28	0.34																	5.2
28-35	0.28																	5.0
35+	0.23																	4.6

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-6	2.8	0.7	tr.	0.2	8.3	12.0										31	
6-12	9.6	1.2	0.2	0.4	6.9	18.3										62	
12-28	6.3	2.0	0.2	0.4	11.9	20.8										43	
28-35	2.0	1.1	0.2	0.3	17.7	21.3										17	
35+	0.5	0.5	0.2	0.2	19.5	20.9										7	

Depth (In.)	Clay Fraction Analysis 7Alb-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
			7A2 X-ray				DTA 7A3		
0-6									
6-12									
12-28			xxx	x			xx		
28-35									
35+									

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Christian silt loam
Soil No.: S54Ky-1-11
Location: Adair County, Kentucky; 30 yards southeast of Hopewell Baptist Church on the Columbia-Bakerton Road, photo AIR-5H-182

Slope: Gently sloping (3%)
Erosion: Moderate
Drainage: Well drained
Parent material: Residuum from interbedded limestone and sandstone

Horizon and Beltsville Lab. No.	
Ap 55448	0 to 6 inches. Strong brown (7.5YR 5/6) friable silt loam with a weak, fine granular structure; medium acid; clear, smooth boundary. Some mixing with B1 is apparent.
B1 55449	6 to 12 inches. Yellowish red (5YR 5/6-5/8) friable silty clay with a moderate fine and medium subangular blocky structure; medium acid; gradual, smooth boundary.
B2 55450	12 to 28 inches. Red (2.5YR 4/6-4/8) firm clay with a moderate fine and medium subangular blocky structure; slightly acid; gradual, wavy boundary. A few small fragments of soft sandstone and splotches of brownish yellow (10YR 6/6-6/8) occur in lower 5 inches.
B3 55451	28 to 35 inches. Red (2.5YR 5/6-5/8) splotched with brownish yellow (10YR 6/6-6/8) and pale yellow (5Y 7/3-7/4) very firm clay with a strong medium and coarse angular blocky structure; strongly acid; gradual, wavy boundary. The splotches and fragments of soft sandstone are more numerous and larger in this horizon.
C 55452	35+ inches. Variegated red (2.5YR 4/6-4/8) brownish yellow (10YR 6/6-6/8) and pale yellow (5Y 7/3-7/4) firm, sticky, plastic clay with strong, medium and coarse, angular blocky structure; very strongly acid. Intensity of variegation increases with depth. Sandstone fragments are larger and more numerous.

Notes: Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Christian cherty silt loam SOIL Nos. 854Ky-1-12 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55453-55457

Depth (in.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments: 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-8	Ap		32.8	7.7	2.3	1.8	4.1	35.2	16.1		18.8	53.6				26		
8-13	A2		32.5	8.0	1.3	1.5	3.4	31.2	22.1		20.2	57.3				37		
13-17	B1		28.2	12.1	1.9	1.5	3.8	32.1	20.4		17.1	54.5				31		
17-31	B2		18.3	45.9	0.3	0.5	1.1	18.2	15.7		11.5	37.3				11		
31-84	C		11.7	27.7	1.3	0.8	2.2	38.7	17.6		6.7	49.9				14		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-8	1.42																	5.5
8-13	0.40																	5.4
13-17	0.38																	5.3
17-31	0.48																	4.8
31-84	0.19																	4.5

Depth (in.)	Extractable bases: 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC: 5A3a Sum Cations										Base saturation: 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-8	2.1	0.4	0.1	0.3	5.1	8.0										36	
8-13	0.7	0.1	tr.	0.2	5.7	6.7										15	
13-17	2.1	0.2	0.2	0.1	2.3	4.9										53	
17-31	6.1	1.8	0.4	0.2	11.9	20.4										42	
31-84	0.7	0.4	0.2	0.2	9.8	11.3										13	

Soil type: Christian cherty silt loam
Soil No.: S54Ky-1-12
Location: Adair County, Kentucky; 500 yards west of Keltner Post Office, photo AIR-2H-34
Vegetation: Small grain
Slope: Sloping (6%)
Erosion: Moderate
Drainage: Well drained
Parent material: Residuum from argillaceous cherty limestone, sandstone and acid heavy shales

Horizon and Beltsville Lab. No.	
Ap 55453	0 to 8 inches. Dark grayish brown (10YR 4/2) friable silt loam with a weak, fine, granular structure; medium acid; clear, irregular boundary. Angular chert fragments ranging up to 6 inches in size were abundant on the surface and through this horizon.
A2 55454	8 to 13 inches. Yellowish brown (10YR 5/6) friable silt loam, with a weak, fine granular structure; strongly acid; clear, wavy boundary. Angular chert fragments are abundant; occasional small, strong brown (7.5YR 5/6-5/8) splotching from weathered sandstone.
B1 55455	13 to 17 inches. Yellowish brown (10YR 5/8) firm silty clay with a weak, fine and medium subangular blocky structure; strongly acid; clear, wavy boundary. Angular chert fragments are common and an occasional small, strong brown (7.5YR 5/6-5/8) splotching from weathered sandstone occurs.
B2 55456	17 to 31 inches. Red (2.5YR 4/8) firm silty clay with a moderate, medium, subangular and angular blocky structure; very strongly acid; gradual, wavy boundary. A few yellowish brown (10YR 5/8) splotches appear at 24 inches which increase in size and number with depth. Angular chert fragments are numerous. A few small reddish yellow fragments of sandstone are scattered through this layer.
C 55457	31 to 84 inches. Variegated yellowish red (5YR 5/6-5/8) yellowish brown (10YR 5/8) and pale yellow (5Y 7/3) very firm silty clay with a strong medium and coarse angular blocky structure; very strongly acid. Angular chert and small fragments of weathered sandstone are more numerous in this layer.
Dr Not sampled	84+ inches. Heavy acid shales and argillaceous cherty St. Louis limestone.

Notes: Color of soil moist unless otherwise stated.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Christian cherty silt loam SOIL Nos. S54Ky-1-13 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55458-55461

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		54.7	11.0	1.8	1.7	4.3	18.1	8.4		36.2	37.0				38		
7-11	B1		54.9	18.0	1.8	1.0	2.9	13.3	8.1		38.3	32.7				22		
11-33	B2		24.3	60.2	0.4	0.5	1.6	8.4	4.6		18.0	16.0				14		
33+	C		27.9	57.9	0.9	0.9	1.5	6.7	4.2		20.1	16.0				21		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-7	1.43																	6.5
7-11	0.50																	5.0
11-33	0.31																	4.8
33+	0.19																	4.8

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	3.4	0.6	0.1	0.2	3.0	7.3										59	
7-11	1.6	2.2	0.3	0.1	3.8	8.0										52	
11-33	4.6	2.5	0.2	0.2	11.1	18.6										40	
33+	3.4	2.4	0.2	0.2	10.9	17.1										36	

Depth (in.)	Clay Fraction Analysis 7Alb-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
			7A2 X-ray				DTA 7A3	
0-7								
7-11								
11-33			xx	x			xxxx	
33+								

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Christian cherty silt loam
Soil No.: S54Ky-1-13
Location: Adair County, Kentucky; one-half mile east of Moss Cemetery on Kentucky Highway 1012; photo AIR-9H-39
Vegetation: Korean lespedeza and fescue
Slope: Sloping (7%)
Erosion: Moderate
Drainage: Well drained
Parent material: Residuum from highly argillaceous cherty limestone of the St. Louis formation and sandstone

Horizon and Beltsville Lab. No.	
Ap 55458	0 to 7 inches. Light olive brown (2.5Y 5/4) friable silt loam with a weak, fine, granular structure; medium acid; gradual, irregular boundary. Angular chert fragments were abundant on the surface and through this horizon.
B1 55459	7 to 11 inches. Yellowish brown (10YR 5/6) firm silty clay with a moderate fine and medium subangular blocky structure; strongly acid; gradual, wavy boundary. Angular chert fragments were abundant throughout the horizon.
B2 55460	11 to 33 inches. Reddish brown (2.5YR 4/4) very firm clay with a moderate, medium, angular blocky structure; strongly acid; yellowish brown (10YR 5/8) splotching is common in lower portion. Angular chert fragments were numerous throughout the horizon; an occasional small fragment of strong brown (7.5YR 5/6-5/8) weathered sandstone occurs.
C 55461	33+ inches. Variegated red (2.5YR 4/8) brownish yellow (10YR 6/8) and pale yellow (5Y 7/3) very firm clay with a moderate to strong, medium and coarse, angular blocky structure; very strongly acid. Angular chert and strong brown (7.5YR 5/6-5/8) weathered sandstone fragments become more numerous with depth.

Notes: Roots were abundant throughout the A2 and B1 horizons, but were only common in the B2 horizon. A few roots were found in the C. Color of soil moist unless otherwise stated.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Crevasse fine sandy loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-10 **LAB. NOS.** 14419-14424

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) 3A1 VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-8	A1p	<0.1	0.1a	0.2a	31.4	32.7	26.4	9.2	81.3	7.4	-	vfsl
8-15	B1	<0.1	<0.1	0.3a	46.6	42.0	6.5	4.6	90.9	1.2	-	fs
15-27	B21	<0.1	0.1a	0.3a	32.5	47.7	15.6	3.8	88.4	2.3	-	lfs
27-34	B22	<0.1	<0.1	0.2	27.8	42.4	21.1	8.5	84.0	3.2	-	vfsl
34-53	C1	<0.1	<0.1	0.3	74.5	18.4	4.7	2.1	78.6	1.0	-	fs
53-70	C2	<0.1	0.1	0.3	62.9	26.5	7.8	2.4	82.6	2.6	-	fs

pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	ORGANIC MATTER 6B1a NITROGEN %	ORGANIC MATTER C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	MOISTURE TENSIONS 1/3 ATMOS. %	4B2 15 ATMOS. %
6.1			0.48	0.049	10	0.7						4.8
6.2			0.14	0.018		0.6						2.4
6.0			0.09	0.016		0.6						2.9
6.0			0.15			0.8						4.5
6.1			0.06			0.5						2.0
6.1			0.05			0.6						2.2

5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry % M.	Air Dry g/cc	30 cm. % M.	30 cm. g/cc	O.D. g/cc
←	milliequivalents per 100g. soil				→							
8.5	6.5	1.2	2.8	<0.1	0.3	94	74					
5.3	3.8	1.1	2.4	<0.1	0.2	96	68					
5.6	4.0	1.1	1.9	<0.1	0.2	95	74					
8.4	5.9	1.5	2.6	0.1	0.2	92	75					
3.9	2.9	0.8	1.2	<0.1	0.1	97	76					
4.4	3.2	0.8	1.6	0.1	0.1	95	72					

a. Few mica flakes.

CREVASSE FINE SANDY LOAM S60Kv-28-10

Drainage: Somewhat excessively drained; slow surface runoff; rapid permeability.

Parent Material: Sandy old Mississippi River alluvium.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 3, 1960.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Crider silt loam SOIL Nos. S57Ky-56-16 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58145-58154

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19 (Pct. of < 76mm)	19 – 76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-7	Ap		80.6	16.7	0.2[a]	0.4	0.2	0.4	1.5		47.1	35.2				-		
7-16	B1		72.9	25.2	0.1	0.2	0.2	0.3	1.1		47.0	27.1				-		
16-23	B21		72.6	25.3	0.2	0.4	0.2	0.3	1.0		46.0	27.9				-		
23-28	B22		72.5	24.2	0.7	0.9	0.4	0.4	0.9		48.5	25.1				-		
28-38	B3u		69.5	25.4	1.6	1.7	0.5	0.5	0.8		48.1	22.5				-		
38-49	B2b1		57.5	38.4	1.2	1.4	0.4	0.5	0.6		41.6	16.8				-		
49-59	B2b2		58.3	37.8	1.2	1.4	0.4	0.4	0.5		42.9	16.1				-		
59-69	B2b3		56.1	39.2	1.6	1.7	0.4	0.5	0.5		42.7	14.2				-		
69-80	B2b4		54.6	40.6	1.4	1.7	0.5	0.6	0.6		40.8	14.8				1		
80-113+	B2b5		50.7	44.1	1.7	1.7	0.5	0.7	0.6		37.0	14.8				1		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 bar g/cc	g/cc		Water content Pct.	Pct.	4B2 15 bar Pct.			pH		8C1a (1:1) H_2O
0-7	0.86	0.094	8			1.8		1.36					7.2					5.6
7-16	0.32					2.3		1.36					10.0					5.6
16-23	0.28					2.4		1.18					10.2					5.6
23-28	0.22					2.2		1.28					10.0					5.6
28-38	0.12					2.6		1.26					10.5					6.0
38-49	0.07					1.8		1.34					14.6					5.9
49-59	0.08					1.6		1.34					15.0					5.9
59-69	0.06					3.1		1.35					15.1					6.0
69-80	0.04					2.1		1.34					15.9					5.8
80-113+	0.04					2.0							17.4					5.1

Depth (In.)	Extractable bases 6N2a Ca	6Q2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	4.7	1.4	tr.	0.3	7.4	13.8										46	
7-16	7.6	0.9	tr.	0.3	5.3	14.1										62	
16-23	7.7	1.3	tr.	0.3	5.3	14.6										64	
23-28	7.2	1.4	tr.	0.2	4.7	13.5										65	
28-38	7.0	1.6	tr.	0.3	5.0	13.9										64	
38-49	8.1	3.3	tr.	0.4	5.8	17.7										67	
49-59	7.4	3.3	tr.	0.4	5.8	17.0										66	
59-69	6.8	4.2	tr.	0.4	5.6	17.1										67	
69-80	6.8	4.3	tr.	0.5	7.3	18.9										61	
80-113+	4.8	3.5	0.1	0.5	8.3	17.1										52	

Depth (In.)					

a. Sand fractions consist almost entirely of iron oxide concretions.

USDA-SCS-HYATTSVILLE MD. 1964

Soil type: Crider silt loam
Soil No.: S57Ky-56-16
Location: Jefferson County, Kentucky; H. F. Shumann Farm, corner Westport Road and Murphy Lane. Photo No. AFW-2R-83, 1956
Vegetation: Clover and grass
Slope: Gently sloping - 2 percent
Erosion: None
Drainage: Well drained
Parent material: Loess over limestone residuum
Physiographic position: Outer bluegrass - broad ridgetop
Collected by add date: W. H. Zimmerman, James M. Ross, E. J. Pedersen and G. M. Phibbs, October 17, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58145	0 to 7 inches. Dark brown (10YR 3/3-4/3) silt loam; moderate fine granular structure; very friable; pH 6.0; abrupt smooth boundary.
B1 58146	7 to 16 inches. Dark brown (7.5YR 3/2) coarse silty clay loam; moderate to weak medium subangular blocky structure; few weak clay skins; friable; common medium pores; pH 6.5; gradual wavy boundary.

[illegible]

and large pores; few small round black concretions; pH 7.0; gradual wavy boundary.

B22 58148	23 to 28 inches. Brown (7.5YR 4/4), strong brown (7.4YR 5/6) crushed, silty clay loam; moderate medium subangular blocky structure; patchy clay skins; firm to friable; common

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Crider silt loam SOIL Nos. S57Ky-56-17 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58155-58162

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt 0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)	Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Pct. of < 2 mm													Pct. of < 76mm	
0-7	Ap		81.4	16.6	0.2[a]	0.3	0.1	0.2	1.2		44.8	37.9		1		
7-15	B1		73.6	24.8	0.1	0.2	0.1	0.1	1.1		43.4	31.3		-		
15-22	B21		70.6	27.9	0.1	0.2	0.1	0.1	1.0		41.7	30.0		-		
22-30	B22		71.1	26.8	0.3	0.5	0.2	0.2	0.9		43.6	28.5		-		
30-36	B23		71.0	24.5	1.4	1.4	0.4	0.4	0.9		47.4	24.8		-		
36-44	B3u		64.7	29.7	2.4	1.8	0.4	0.4	0.6		45.3	20.3		-		
44-57	B2b1		56.9	38.9	1.2	1.6	0.4	0.4	0.6		40.1	17.6		-		
57-72	B2b2		59.9	37.0	1.0	1.0	0.3	0.3	0.5		41.7	18.9		-		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 bar g/cc	g/cc		Water content Pct.	Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-7	0.76	0.096	8			1.8		1.26					6.4					5.2
7-15	0.33					2.2		1.24					9.4					5.5
15-22	0.22					2.9		1.28					11.3					5.3
22-30	0.16					2.9		1.23					10.9					4.8
30-36	0.11					2.6		1.24					10.1					4.6
36-44	0.06					3.1		1.37					11.2					4.7
44-57	0.06					3.8		1.25					14.2					4.7
57-72	0.05					3.9		1.28					13.9					4.5

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H2a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	3.7	1.0	tr.	0.3	7.2	12.2										41	
7-15	6.0	1.3	tr.	0.2	5.3	12.9										59	
15-22	6.6	2.7	0.1	0.3	5.9	15.5										62	
22-30	4.9	3.3	0.1	0.3	7.7	16.2										53	
30-36	4.0	2.8	tr.	0.3	8.3	15.4										46	
36-44	3.5	3.1	tr.	0.3	9.4	16.3										42	
44-57	3.7	3.3	0.1	0.3	10.9	18.2										41	
57-72	2.9	3.0	0.1	0.3	9.4	15.6										40	

Depth (In.)

a. Sand fractions contain large amounts iron oxide concretions.

Soil type: Crider silt loam
Soil No.: S57Ky-56-17
Location: Jefferson County, Kentucky; Henry Fischer Farm, Goose Creek Road, 0.4 mile north of Westport Road. Photo No. AFW-2R-121, 1956
Vegetation and land use: Broomsedge, wild grasses and lespedeza
Slope and land form: Gently sloping - 3 percent slope
Erosion: Little or none
Drainage: Well drained
Parent material: Loess over limestone residuum
Physiographic position: Outer bluegrass - ridge top
Collected by and date: W. H. Zimmerman, James M. Ross, E. J. Pedersen and G. M. Phibbs, October 17, 1956
Described by: E. V. Hoffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58155	0 to 7 inches. Dark brown (10YR 3/3 to 7YR 3/2) silt loam; weak fine granular structure; very friable; abundant roots; pH 6.0; abrupt smooth boundary.
B1 58156	7 to 15 inches. Reddish brown to dark reddish brown (5YR 4/4-3/4) silty clay loam; moderate medium subangular blocky structure; few clay skins; friable; common medium and fine pores; some intrusion of Ap in root channels; pH 6.5; clear smooth boundary.
B21 58157	15 to 22 inches. Reddish brown (5YR 4/4), strong brown (7.5YR 5/6) crushed, silty clay loam; strong to moderate medium subangular blocky structure; prominent clay skins; firm to friable; few small concretions; few large pores; pH 6.0; diffuse smooth boundary.
B22 58158	22 to 30 inches. Dark reddish brown (5YR 3/4) ped exteriors, brown (7.5YR 4/4) interiors; silty clay loam; weak coarse prismatic breaking into strong medium subangular blocks; continuous clay skins; firm; few small black concretions; common medium pores; pH 5.5; gradual smooth boundary.
B23 58159	30 to 36 inches. Reddish brown (5YR 4/4) silty clay loam; moderate to strong medium subangular blocky structure; continuous clay skins; friable; common concretions and concretionary stainings; pH 5.5; gradual smooth boundary.
B3u 58160	36 to 44 inches. Red (2.5YR 4/6), variegated few fine distinct brown (7.5YR 4/4) silty clay loam; weak medium angular blocky structure; few clay skins; friable; common small concretions; few worm casts; pH 5.5; gradual smooth boundary.
B2b1 58161	44 to 57 inches. Dark reddish brown (2.5YR 3/4) silty clay; weak medium subangular blocky structure; pronounced clay skins; firm, plastic, and slightly sticky when wet; a few root channels about 15 mm in diameter filled with brown (7.5YR 5/4) silt loam; abundant soft [illegible]

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Crider silt loam SOIL Nos. S59Ky-5-2 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59381- 59391

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		70.6	15.7	0.7	0.9	0.8	5.1	6.2		46.4	34.3				tr.		
7-11	B1		66.3	23.1	0.5	0.7	0.8	3.9	4.7		45.5	28.3				-		
11-18	B21		63.4	24.7	0.6	0.7	0.7	4.5	5.4		43.9	28.2				tr.		
18-23	B22		60.3	24.5	0.6	0.9	0.8	5.9	7.0		41.3	30.3				2		
23-27	B3		58.9	23.6	0.8	0.8	0.7	6.3	8.9		39.9	32.6				3		
27-30	B2b1		55.0	26.8	1.5	0.9	0.7	6.4	8.7		38.0	30.6				4		
30-39	B2b2		46.8	36.4	0.9	0.5	0.6	6.2	8.6		31.3	28.8				1		
39-51	B2b3		25.1	50.1	0.4	0.5	0.8	9.9	13.2		16.0	29.8				tr.		
51-63	B2b4		24.5	40.0	0.2	0.7	1.1	14.5	19.0		14.2	40.2				tr.		
63-71	B2b5		24.5	39.2	0.6	0.7	1.1	14.5	19.4		40.3	14.4				tr.		
71-78	B3b		25.0	39.9	0.4	0.6	1.0	14.3	18.8		39.4	15.1				tr.		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-7	0.77	0.092	8			1.5		1.48	1.52			18.7	6.1					5.1
7-11	0.29					2.1		1.34	1.40			19.3	8.3					4.9
11-18	0.23					2.6		1.38	1.43			24.0	9.6					4.8
18-23	0.12					2.6		1.47	1.55			22.8	9.4					4.9
23-27	0.06					2.4		1.56	1.62			21.1	8.9					4.8
27-30	0.06					3.0		1.46	1.53			21.7	9.1					4.8
30-39	0.06					4.0		1.47	1.55			25.5	12.2					4.7
39-51	0.04					5.7		1.52	1.62			25.5	18.2					4.9
51-63	0.04					5.0		1.58	1.64			22.9	14.7					4.8
63-71	0.02					4.5		1.57	1.63			23.4	14.3					4.8
71-78	0.04					4.9		1.50	1.62			26.1	15.2					5.0

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-7	2.3	0.5	tr.	0.2	6.0	9.1									34	
7-11	3.6	0.8	0.1	0.2	5.7	10.4									45	
11-18	4.0	1.0	0.1	0.2	6.6	11.9									44	
18-23	4.7	1.3	0.1	0.2	5.9	12.2									52	
23-27	4.0	1.2	0.1	0.2	5.4	10.9									50	
27-30	3.8	1.0	0.1	0.2	5.8	10.9									47	
30-39	4.8	1.0	0.1	0.2	7.1	13.2									46	
39-51	5.8	1.0	0.1	0.2	8.5	15.6									46	
51-63	4.0	0.7	0.1	0.2	5.8	10.8									46	
63-71	4.0	0.7	0.1	0.2	5.4	10.3									47	
71-78	4.0	0.7	0.1	0.2	5.9	10.8									45	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
	7A2 X-ray						DTA 7A3		
0-7			xx	tr.		xx	10		
7-11			xx	x		xx	13		
11-18			xx	tr.		xx	10		
18-23			xx	tr.		xx	15		
23-27									
27-30									
30-39			xx	-		x	35		
39-51									
51-63			x	tr.		-	30		
63-71									
71-78									

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA SCS HYATTSVILLE, MD. 1966

Soil type: Crider silt loam
Soil No.: S59Ky-5-2
Location: Barren County, Kentucky, SCD, about 4 miles northwest of Glasgow city limits on Kentucky Highway 90, then 1/2 mile east on gravel road. Photo ALK-3Z-11
Vegetation and land use: Pasture field (some Brome grass and lespedeza, many weeds and wildgrasses)

Permeability: Moderate
Parent material: Loess in the upper horizon sequence and residuum from cherty moderately high grade limestone in the lower sequence
Collected by: E. J. Pedersen, D. D. Bohrer, Earle Latham and James W. Dye, May 6, 1959
Described by: E. V. Huffman, and W. H. Zimmerman

Horizon and Beltsville Lab. No.	
Ap 59381	0 to 7 inches. Dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; abundance of roots; a few worm casts; abrupt smooth boundary.
B1 59382	7 to 11 inches. Dark yellowish brown (10YR 4/4) silt loam with common medium faint dark brown (7.5YR 3/2) variegations; weak medium subangular blocky structure; friable; common worm casts; many roots; occasional very small dark brown concretions; gradual smooth boundary.
B21 59383	11 to 18 inches. Dark yellowish brown (10YR 4/4) to brown (7.5YR 4/4) silt loam; moderate to weak medium subangular blocky structure; a few thin clay films; friable; common pale brown (10YR 6/3) silt coatings on some ped surfaces; common worm casts; many roots; gradual smooth boundary.
B22 59384	18 to 23 inches. Brown (7.5YR 4/4) ped surfaces, strong brown (7.5YR 5/6) crushed, light silty clay loam; moderate medium and coarse subangular blocky structure; clay films more pronounced than in layer above; firm; a few small pieces of weathered chert impregnated with reddish iron concretions; a few small roots; a few worm casts; clear wavy boundary.
B3	23 to 27 inches. Brown (7.5YR 4/4) variegated with common medium distinct reddish brown

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Crider silt loam SOIL Nos. S59Ky-5-3 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59392-59400

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		68.4	17.8	1.4	1.2	1.1	4.9	5.2		43.2	33.6				1		
6-10	B21		61.4	29.3	0.9	0.8	0.7	3.4	3.5		41.4	25.7				1		
10-19	B22		57.2	34.1	0.5	0.7	0.7	3.2	3.6		39.8	23.2				tr.		
19-27	B3		57.2	32.2	0.8	0.8	0.8	3.8	4.4		39.6	24.5				tr.		
27-34	B2b1		53.7	33.7	0.8	0.7	1.0	4.5	5.6		35.9	26.5				1		
34-42	B2b2		53.0	31.5	0.6	1.0	1.3	5.9	6.7		34.1	29.6				1		
42-49	B3b		52.3	29.3	1.3	1.7	1.7	6.5	7.2		33.9	29.9				3		
49-58	Cb1		53.0	29.3	1.3	1.4	1.6	6.0	7.4		35.0	29.4				2		
58-69	Cb2		50.3	38.5	0.2	1.0	1.4	3.1	5.5		30.7	26.9				tr.		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-6	0.96	0.117	8			2.0		1.50	1.51			19.3	7.6					6.0
6-10	0.38	0.059	6			2.9		1.48	1.54			21.2	11.7					4.8
10-19	0.22					3.3		1.46	1.54			24.1	13.3					4.6
19-27	0.10					3.6							12.8					4.4
27-34	0.08					3.9		1.45	1.51			24.0	13.9					4.4
34-42	0.04					3.9		1.56	1.56			25.7	13.4					4.6
42-49	0.04					5.0		1.60	1.63			21.4	13.3					4.6
49-58	0.06					4.3						24.0	13.6					4.6
58-69	0.04					5.0		1.50	1.56			25.3	17.3					4.4

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-6	5.4	0.6	0.1	0.3	4.5	10.8										58	
6-10	3.7	0.8	0.1	0.2	8.1	12.9										37	
10-19	3.2	1.1	0.1	0.3	9.4	14.0										33	
19-27	1.9	1.0	0.1	0.3	9.6	12.8										25	
27-34	1.2	0.8	0.1	0.2	10.6	12.9										18	
34-42	1.1	0.8	0.1	0.3	9.8	12.0										18	
42-49	0.9	0.8	tr.	0.2	9.6	11.6										17	
49-58	0.7	0.8	tr.	0.2	9.2	11.0										16	
58-69	1.0	0.9	tr.	0.2	10.2	12.4										18	

Depth (In.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
			7A2 X-ray				DTA 7A3		
0-6			xx	-		x	10		
6-10			xx	-		-	18		
10-19			xx	-		x	12		
19-27									
27-34									
34-42			xx	x		tr.	20		
42-49									
49-58			xx	x		x	25		
58-69			x	-		x	23		

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Crider silt loam
Soil No.: S59Ky-5-3
Location: Barren County, Kentucky, SCD, 4 3/4 miles west of Glasgow on U. S. Highway 68. Photo ALK-7Z-161
Vegetation and land use: Pasture (Kentucky fescue)
Slope and land form: Gently sloping (3 percent) toward west, near upper edge of slope
Drainage: Well drained with medium surface runoff
Permeability: Moderate
Parent material: Loess in the upper horizon sequence and residuum from cherty moderately high grade limestone in the lower sequence
Collected by: E. J. Pedersen, D. D. Bohrer, Earle Latham and James W. Dye, May 6, 1959
Described by: E. V. Huffman and W. H. Zimmerman

Horizon and Beltsville Lab. No.	
Ap 59392	0 to 6 inches. Brown (10YR 4/3) silt loam; weak fine granular structure; very friable; a few specks of carbon; common worm casts; abundance of small roots; abrupt wavy boundary.
B21 59393	6 to 10 inches. Reddish brown (5YR 4/4), brown (7.5YR 4/4) crushed, light silty clay loam or heavy silt loam; weak medium and fine subangular blocky structure; few clay films; friable; a few small reddish black iron concretions; few dark grayish brown (10YR 4/2) silt loam intrusions from the Ap; common worm casts; abundance of small roots; clear smooth boundary.
B22 59394	10 to 19 inches. Reddish brown (5YR 4/4) variegated common medium faint yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; noticeable clay films; firm; slightly plastic and slightly sticky when wet; few small white chert pieces; few small reddish black iron concretions; many small roots; common worm casts; gradual smooth boundary.
B3 59395	19 to 27 inches. Variegated red (2.5YR 5/8), brown (7.5YR 4/4) and yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; noticeable clay films; firm; slightly plastic and slightly sticky when wet; vertical tapering tongues (2 inches across at top and narrowing with depth) of yellowish brown silt loam; worm casts common; some black staining with iron concretionary material; many fine roots; gradual smooth boundary.
B2b1 59396	27 to 34 inches. Variegated brown (7.5YR 4/4), dark red (2.5YR 3/6) and reddish brown (5YR 4/4) silty clay loam; strong medium angular blocky structure; noticeable reddish brown (2.5YR 4/4) clay films; firm; slightly plastic and slightly sticky when wet; small pockets of yellowish brown (10YR /54) silt loam and narrowing tongues of pale brown silt loam; reddish black iron oxide streaks are common; worm casts common; few fine roots; few small pieces of chert; diffuse smooth boundary.
B2b2 59397	34 to 42 inches. Red (2.5YR 4/6) silt loam with many medium distinct light reddish brown (2.5YR 6/4) and a few gray (10YR 6/1) mottles; strong medium angular blocky structure; noticeable dark red (2.5YR 3/6) clay films; firm; slightly plastic and slightly sticky when wet; black concretionary staining is common; few round iron concretions; narrowing tongues of yellowish brown to pale brown silt loam; a few fine roots; clear smooth boundary.
B3b 59398	42 to 49 inches. Variegated red (2.5YR 4/8) light olive brown (2.5Y 5/4) and light gray (5Y 7/1) silty clay loam; weak coarse angular blocky structure; few clay films; firm; slightly sticky and slightly plastic when wet; common small chert pieces; some reddish black iron concretions; clear wavy boundary.
Cb1 59399	49 to 58 inches. Variegated reddish brown (5YR 4/4), yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) silty clay loam (mixed silty clay and silt loam); massive except for some very coarse macrostructure; firm; slightly plastic and slightly sticky when wet; small chert fragments are common; some iron concretionary stainings; light brownish gray (2.5Y 6/2), yellowish brown (10YR 5/6) and some dark red (2.5YR 3/6) plinthite-like layer 2 to 4 inches thick is in the lower part of this horizon; clear wavy boundary.
Cb2 59400	58 to 69 inches. Variegated red, yellowish brown and gray clay and small pockets of pale brown silt loam; common pieces of weathered chert; thin discontinuous bands of material similar to plinthite-like layer described above occur in this layer also.

Notes: Colors described with moist soil. This is a polygenetic soil with 27 inches of loess over a solum developed in residuum from limestone. The B3 is the main transitional horizon or zone of greatest mixing.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

[redacted]

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55462-55465

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand (Pct. of < 2 mm): Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments (Pct.): 2A2 > 2	2 – 19 (Pct. of < 76mm)	19 – 76
0-2	A1		57.6	16.6	7.2	6.1	3.3	5.4	3.8		40.6	23.8				13		
2-8	A2		60.0	18.7	6.0	4.7	2.5	4.2	3.9		44.8	21.5				24		
8-20	C		55.8	21.8	6.2	5.6	2.5	4.0	4.1		41.6	20.5				33		
20+	Dr	Shale - No analysis																

Depth (In.)	6A1a Organic carbon (Pct.)	Nitrogen (Pct.)	C/N		Carbonate as $CaCO_3$ (Pct.)		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-2	4.6																	7.3
2-8	0.82																	6.4
8-20	0.43																	4.8
20+	--																	--

Depth (In.)	Extractable bases 5B1a (meq/100 g): 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC: 5A3a Sum Cations									Base saturation: 5C3 Sum Cations (Pct.)	Pct.
0-2	25.9	0.9	0.1	0.5	2.1	29.5									93	
2-8	5.6	0.4	0.1	0.2	1.3	7.6									83	
8-20	1.5	0.2	0.2	0.2	2.1	4.2									50	
20+	--	--	--	--	--	--									--	

Depth (In.)	Clay Fraction Analysis 7A4b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
			7A2 X-ray				DTA 7A3		
0-2									
2-8									
8-20		x	xx	xx			x		
20+									

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

Soil type: Dandridge shaly silt loam
Soil No.: S54Ky-1-14
Location: Adair County, Kentucky; one-half mile south of rock quarry, two miles north of Columbia at junction of gravel roads; photo AIR-5H-218
Vegetation: Deciduous hardwoods of oak, hard maple, hickory, walnut and other species
Slope: Sloping (9%)
Erosion: Slight
Drainage: Well drained
Parent material: Residuum from fissile limestone and shale of Warsaw formation

Horizon and Beltsville Lab. No.	
A1 55462	0 to 2 inches. Very dark grayish brown (10YR 3/2) friable silt loam with a weak, fine granular structure; neutral; clear, wavy boundary.
A2 55463	2 to 8 inches. Brown (10YR 5/3) friable silty clay with a weak, fine, and medium subangular blocky structure; slightly acid; clear, gradual boundary.
C 55464	8 to 20 inches. Yellowish brown (10YR 5/4) firm silty clay; no definite structure; slightly acid. Soil material in place is composed of layers of silty clay and weathered soft shale.
Dr 55465	20+ inches. Soft calcareous shales from the Warsaw formation.

Notes: Color of soil moist unless otherwise stated. Roots were abundant in the A1 and A2 horizons but only a few large ones were found in the "C" material.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Dandridge shaly silt loam SOIL Nos. S54Ky-1-15 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55466-55469

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-3	A1		55.6	13.6	6.6	6.3	3.2	8.3	6.4		40.4	26.5				10		
3-11	A2		57.2	20.4	5.0	4.2	2.3	6.0	4.9		40.5	25.2				39		
11-18	C		35.7	42.4	5.8	4.8	2.2	4.4	4.7		25.5	17.5				16		
18+	Dr		36.0	37.3	7.7	5.8	2.9	5.4	4.9		24.8	19.1				24		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-3	12.5																	6.8
3-11	1.03																	4.6
11-18	0.84																	5.4
18+	0.98																	6.9

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-3	39.0	2.1	0.1	0.5	12.2	53.9										77	
3-11	1.7	0.1	0.2	0.1	9.4	11.5										18	
11-18	12.2	0.9	0.2	0.2	6.7	20.2										67	
18+	20.6	0.9	0.3	0.2	8.4	30.4										72	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite	
	7A2 X-ray						DTA 7A3		
0-3									
3-11									
11-18			xx	xx			x-		
18+									

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Dandridge shaly silt loam
Soil No.: S54Ky-1-15
Location: Adair County, Kentucky; on gravel road three miles north of junction with Kentucky Highway 55 located two miles east of Glens Fork, Kentucky; photo AIR-5H-126
Vegetation: Deciduous hardwoods of oak, hickory, hard maple, walnut and other species
Slope: Strongly sloping (14%)
Erosion: Slight
Drainage: Well drained
Parent material: Residuum from fissile limestone and shale of the Warsaw formation

Horizon and Beltsville Lab. No.	
A1 55466	0 to 3 inches. Dark grayish brown (2.5Y 4/2) very friable shaly silt loam with a weak, fine, granular structure; slightly acid; clear, wavy boundary.
A2 55467	3 to 11 inches. Yellowish brown (10YR 5/6) firm silty clay loam with a weak, fine and medium subangular blocky structure; medium acid; gradual, smooth boundary.
C 55468	11 to 18 inches. Light yellowish brown (10YR 6/4) firm silty clay loam; no definite structure; medium acid. Soil material in place consists of laminations of clay and weathered shale.
Dr 55469	18+ inches. Soft calcareous shales from the Warsaw formation.

Notes: Roots are abundant in the A1 and A2 horizons. A few were observed in the C material. Color of soil moist unless otherwise stated.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Dubbs silty clay loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-5 **LAB. NOS.** 14387-14393

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	3A1 0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-4	Alp	0.1a	3.5a	1.8a	4.0b	9.3b	53.2	28.1	24.5	40.9	-	sicl
4-9	B1	0.1a	2.0a	1.2a	2.9b	7.3b	52.8	33.7	20.7	41.5	-	sicl
9-17	B21	<0.1	0.3a	0.3a	1.4b	11.7b	41.3	45.0	26.6	27.5	-	sic
17-23	B22	0.2a	0.2a	0.3a	2.2b	23.0b	39.7	34.4	48.1	16.4	-	cl
23-40	B3	<0.1	0.2a	0.5a	2.4b	25.0b	46.5	25.4	57.8	15.3	-	l
40-45	C	0.1a	0.5a	2.6b	21.4b	14.1b	36.7	24.6	45.0	18.3	-	l
45-70	D	<0.1	0.1	0.5	41.4	44.1	8.9	5.0	88.0	2.7	-	lfs

DEPTH INCHES	pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	ORGANIC MATTER 6B1a NITROGEN %	ORGANIC MATTER C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	MOISTURE TENSIONS 1/3 ATMOS. %	MOISTURE TENSIONS 4B2 15 ATMOS. %
0-4	5.7			1.56	0.138	11	1.6						11.9
4-9	5.6			1.21	0.119	10	1.6						14.9
9-17	4.9			0.66	0.073	9	1.6						19.5
17-23	4.9			0.38	0.048	8	1.2						15.0
23-40	5.2			0.23	0.036		1.2						11.8
40-45	5.2			0.22			1.2						10.9
45-70	5.5			0.08			0.7						2.8

DEPTH INCHES	5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	5B1a BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry 4B5 % M.	Air Dry 4A1b g/cc	30 cm. 4B3 % M.	30 cm. 4A1c g/cc	O.D. 4A1h g/cc
	←	milliequivalents per 100g. soil				→							
0-4	20.2	14.0	3.3	7.9	0.1	0.6	89	69					
4-9	22.3	15.4	4.6	9.1	0.1	0.6	93	69	3.8	1.67	23.5	1.54	1.69
9-17	28.0	17.1	5.3	12.8	0.2	0.8	84	65	5.4	1.70	27.0	1.42	1.68
17-23	22.4	12.8	5.1	10.4	0.2	0.6	83	64					
23-40	17.9	11.4	4.1	7.0	0.2	0.5	90	70	3.0	1.59	26.2	1.44	1.58
40-45	16.9	10.9	4.2	6.5	0.2	0.5	93	71					
45-70	6.0	3.9	1.7	2.4	0.1	0.2	98	71					

a. Common Fe-Mn? concr.
b. Few Fe-Mn? concr.

DUBBS SILTY CLAY LOAM S60Ky-38-5

Location: Fulton County, Kentucky. 600 feet southwest of house, 600 feet south

of gravel road, 3/4 mile west of Ky. 311, 1/2 mile north of Tennessee line. Photo ADV-4F-96.

Vegetation: Cultivated (wheat in 1960).

Slope and Land Form: Level Mississippi River terrace.

Drainage: Moderately well drained; slow surface runoff; moderate permeability.

Parent Material: Old Mississippi River alluvium.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 1, 1960.

LINCOLN LAB. NO.	HORIZON	DEPTH	DESCRIPTION
14387	A_{1p}	0-4 inches	Very dark grayish brown (10YR 3/2) light silty clay loam; weak fine and medium granular structure; friable; abundance of small roots; pH 6.0; abrupt smooth boundary.
14388	B_1	4-9 inches	Very dark brown (10YR 2/2) with a few medium faint brown (10YR 4/3) mottles, rubbed color very dark grayish brown (10YR 3/2), silty clay loam; weak medium subangular blocky structure; patchy clay films; firm; few dark brown concretions; abundance of small roots; pH 7.0; clear smooth boundary.
14389	B_{21}	9-17 inches	Dark brown (10YR 3/3) silty clay loam or silty clay with a few fine faint brown (7.5YR 4/4) mottles; moderate to strong medium blocky and subangular blocky structure; continuous clay films; firm; few very dark brown concretions; abundance of small roots; pH 6.5; gradual smooth boundary.
14390	B_{22}	17-23 inches	Dark brown (10YR 3/3) ped surface with mottled many fine distinct grayish brown (2.5Y 5/2) and brown (7.5YR 4/4) ped interiors; silty clay loam; strong medium subangular blocky structure; continuous clay films; firm; common dark brown concretions; small roots are plentiful; pH 6.0; clear smooth boundary.
14391	B_3	23-40 inches	Grayish brown (2.5Y 5/2), with common fine distinct brown (7.5YR 4/4) mottles, loam; weak medium angular blocky structure; patchy clay films; small roots are plentiful; pH 6.0; clear smooth boundary.
14392	C	40-45 inches	Grayish brown (10YR 5/2) to dark grayish brown (10YR 4/2), with many fine distinct dark yellowish brown (10YR 4/4) mottles, fine sandy clay loam; massive; common very dark brown and black concretions; common medium pores; small roots are plentiful;

SOIL SURVEY LABORATORY Lincoln, N br. August 1961

SOIL TYPE Dundee silty clay loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-6 **LAB. NOS.** 14394-14399

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	3A1 0.2-0.02	0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-6	A1p	<0.1	0.2a	0.3a	1.5a	2.0a	54.0	42.0	10.6	46.4	-	sic
6-12	B1	<0.1	0.1a	0.3a	1.1a	1.3a	43.4	53.8	7.7	37.7	-	sic
12-25	B21	<0.1	0.1a	0.3a	2.5a	5.5a	41.1	50.5	21.4	27.1	-	sic
25-33	B22	<0.1	0.1a	1.1b	17.6b	19.4b	28.9	32.9	47.4	15.1	-	cl
33-42	B3	<0.1	0.2a	2.1b	30.0	29.6	17.0	21.1	64.0	6.3	-	scl
42-59	D1	<0.1	0.4	13.7	44.7	22.6	10.9	7.7	51.4	3.6	-	lfs

pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	ORGANIC MATTER 6B1a NITROGEN %	ORGANIC MATTER C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %	GYPSUM me./100g. SOIL	MOISTURE TENSIONS 1/10 ATMOS. %	MOISTURE TENSIONS 1/3 ATMOS. %	MOISTURE TENSIONS 4B2 15 ATMOS. %
6.3			1.82	0.167	11	2.1		<0.1				19.4
4.7			0.66	0.074	9	1.9						22.1
4.5			0.40	0.048	8	1.7						21.6
4.7			0.25			1.3						13.4
5.0			0.17			0.9						8.7
5.4			0.07			0.6						3.6

5A1a CATION EXCHANGE CAPACITY	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	5B1a 6Q2a K	BASE SAT. % NH_4OAc EXCH.	Base Sat. % on Sum	Bulk Density Air Dry 4B5	Air Dry 4A1b	30 cm. 4B3	30 cm. 4A1c	O.D. 4A1h

Vegetation: Cultivated (cotton).

Slope and Land Form: Level, Mississippi River terrace.

Drainage: Moderately well drained; moderate permeability, slow surface runoff.

Parent Material: Old Mississippi River alluvium.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 2, 1960.

Profile Described by: E. V. Buffaen and W. H. Zimmerman, November 2, 1960.

LINCOLN

14394	A_{1p}	0-6 inches	Very dark grayish brown (10YR 3/2) light silty clay loam; moderate fine granular structure; friable; abundance of small roots; pH 6.5; abrupt smooth boundary.
14395	B_1	6-12 inches	Dark yellowish brown (10YR 3/4), with a few fine faint grayish brown (10YR 5/2) mottles, silty clay; strong medium subangular blocky structure; continuous clay film; firm; common dark brown concretions; abundance of small roots; pH 5.0; clear smooth boundary.
14396	B_{21}	12-25 inches	Grayish brown (10YR 5/2) to dark grayish brown (10YR 4/2), with a few fine distinct brown (7.5YR 4/4) mottles; clay; weak medium prismatic breaking into strong medium and fine blocky structure; continuous clay films; very firm; plastic; a few very dark brown concretions; abundance of small roots; pH 5.0; clear smooth boundary.
14397	B_{22}	25-33 inches	Larger ped surfaces are dark gray (10YR 4/1) with mottled many fine distinct dark gray (10YR 4/1) to dark grayish brown (10YR 4/2) and brown (7.5YR 4/4) interiors; clay loam; weak medium and coarse subangular blocky structure; clay films continuous on most large peds; firm and slightly plastic; few black soft concretions; scattering of small mica flakes; small roots are plentiful; fine pores are common; pH 5.5; clear smooth boundary.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Eden silty clay loam SOIL Nos. S60Ky-25-7 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14457-14461 June 1966

General Methods: 1A, 1B1a, 2A1, 2B

Depth (In.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	Clay: 3A1a Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-6	Ap	3.6	46.7	49.7	-	0.2a	0.4a	0.9a	2.1a	15.4	31.3	18.0	1.5			tr		
6-14	B2	3.9	37.3	58.8	0.1a	0.2a	0.3a	1.0a	2.3a	10.9	26.4	13.8	1.6			-		
14-23	B3	3.6	37.3	59.1	-	0.1b	0.3b	1.0b	2.2b	9.9	27.4	12.7	1.4	-	59.1	-		
23-34	C1	4.6	45.0	50.4	-	0.2c	0.3c	1.1b	3.0b	14.6	30.4	18.3	1.6	-	50.4	-		
34-48	C2	4.9	41.1	54.0	0.7d	0.6d	0.4c	1.0b	2.2b	10.9	30.2	13.7	2.7	-	54.0	tr		

Depth (In.)	6A1a Organic carbon	6B1a Nitrogen	C/N		6E1c Carbonate as $CaCO_3$	6C1a Ext. Iron as Fe	Bulk density				Water content		4B2 15-Bar			pH		8C1a (1:1)
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.					
0-6	3.66	0.314	12			2.9							21.3					6.3
6-14	0.84	0.089	9		-	3.6							22.4					6.8
14-23	0.45	0.054	8		tr	3.8							23.0					7.4
23-34	0.24	0.040			tr	3.4							20.7					7.5
34-48	0.19				2	3.4							21.6					7.5

Depth (In.)	Extractable bases 5B1a: 6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap: 5A3a Sum Cations	5A1a NH_4OAc	KCl-Ext. Al							Base saturation: 5C3 Sum Cations	5C1 NH_4OAc
	meq/100															Pct.	Pct.
0-6	27.7	1.3	tr	0.6	29.6	8.4	38.0	27.5								78	108
6-14	31.1	0.8	0.1	0.4	32.4	5.8	38.2	31.8								85	102
14-23			0.1	0.3				34.1									
23-34			0.1	0.2				28.7									
34-48			0.1	0.2				29.5									

Depth (In.)	Ratios to Clay 8B1: NH_4OAc CEC	Ext. Iron	15-Bar Water
0-6	0.55	0.058	0.43
6-14	0.54	0.061	0.38
14-23	0.58	0.064	0.39
23-34	0.57	0.067	0.41
34-48	0.55	0.063	0.40

a. > 50 percent Fe-Mn.
b. > 50 percent Fe-Mn, 1 to 5 percent carbonate.
c. 25-50 percent Fe-Mn, 25 to 50 percent carbonate.
d. > 50 percent carbonate.

USDA-SCS-LINCOLN, NEBR. 1966

Soil Type: Eden silty clay loam
Soil Nos.: S60Ky-25-7
Location: Clark County, Kentucky, 0.8 mile south on old Ruckerville Road from its north end beginning off State road 89; uphill southeast 800 feet on unimproved farm road; 100 feet northwest at lower end of long ridgetop. Photo AFN-2N-38.
Vegetation: Bluegrass; pasture.
Slope and Land Form: Gently sloping (5 percent) ridgetop upland.
Drainage: Well drained, medium runoff, slow permeability.
Parent Material: Clayey residuum from thin bedded limestone and calcareous shales.
Collected by: J. S. Allen and K. K. Young, November 9, 1960.
Described by: E. V. Huffman, November 9, 1960.

Horizon and Lincoln Lab. No.	
Ap 14457	0 to 6 inches. Dark grayish brown (10YR 4/2 and 2.5Y 4/2) silty clay loam; weak fine blocky structure; firm to friable; abundance of roots; pH 7.0; abrupt irregular boundary.
B2 14458	6 to 14 inches. Light olive brown (2.5Y 5/4) clay; moderate medium blocky structure; patchy clay films; very firm, very sticky and very plastic; abundance of roots; few small bits of black concretionary material; dark grayish brown silty clay loam intrusions from the Ap horizon are common; pH 7.0; clear smooth boundary.
B3 14459	14 to 23 inches. Yellowish brown (10YR 5/4) clay; weak medium blocky structure; few patchy clay films; very firm very sticky and very plastic; roots plentiful; few very small pockets of soft black concretionary material; pH 7.0; gradual smooth boundary.
C1 14460	23 to 34 inches. Variegated, many medium distinct olive gray (5Y 5/2) and strong brown (7.5YR 5/6), clay; massive; extremely firm, very sticky and extremely plastic; few roots; few small pockets of dark brown concretionary material; pH 7.0; weakly effervescent; gradual smooth boundary.
C2 14461	34 to 48 inches. Variegated fine and medium distinct olive (5Y 5/3) gray (10YR 5/1) and yellowish brown (10YR 5/6) clay; massive; extremely firm, sticky and very plastic; few roots; very dark brown concretionary stainings are common; pH 7.0; calcareous.

Remarks: Limestone slabs 12 to 24 inches across are common in the C1 horizon and abundant in the C2 horizon. Color given for moist soil. Reaction determined by Soiltex.

Mineralogy (Method 7A). Horizon B3 14 to 23 inches LSL No. 14459
The clay is dominated by mica (or illite) plus a mica-like mineral that expands somewhat with glycerol solvation. A

small amount of montmorillonite is present. Some interstratified minerals, likely weathered micas, are present.

The apparent exchange capacity of the clay, 58 me/100g, is high for illitic mineralogy. The diffraction patterns suggest the mica is weathered, too much to allow classification as illitic. The mineralogy is mixed, bordering on illitic.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Ellen silty clay loam SOIL Nos. 860Ky-25-8 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14462-14466 June 1966

General Methods: 1A, 1B1a, 2A1, 2B

Depth (In.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)	Clay: 3A1a Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-6	Ap	2.8	49.4	47.8	-	0.2a	0.2a	0.8a	1.6a	14.9	34.5	17.0	1.2			-		
6-12	B2	2.5	38.2	59.3	-	0.1a	0.2a	0.7a	1.5a	11.4	26.8	13.3	1.0			-		
12-21	B3	1.9	34.0	64.1	-	0.1b	0.2b	0.6b	1.0b	7.9	26.1	9.3	0.9	-	64.1	-		
21-33	C1	0.9	40.6	58.5	-	-	0.1b	0.3b	0.5b	9.4	31.2	10.1	0.4	-	58.5	-		
33-48	C2	3.9	41.8	54.3	1.5c	0.9c	0.4c	0.5c	0.6c	9.5	32.3	10.4	3.3	-	54.3	-		

Depth (In.)	6A1a Organic carbon	6B1a Nitrogen	C/N		6E1c Carbonate as $CaCO_3$	6C1a Ext. Iron as Fe	Bulk density				Water content		4B2 15-Bar			pH		8C1a (1:1)
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.					
0-6	4.53	0.400	11		-	2.9							22.4					6.6
6-12	1.36	0.132	10		-	3.7							23.4					6.1
12-21	0.59	0.062	10		tr	3.6							24.6					7.2
21-33	0.35	0.043	8		tr	3.2							21.8					7.4
33-48	0.29				5	3.0							20.8					7.6

Depth (In.)	Extractable bases 5H1a: 6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap. 5A3a Sum Cations	5A1a NH_4 OAc	KCl-Ext. Al	Base saturation 5C3 Sum Cations	5C1 NH_4 OAc
	meq/100 g								>	Pct.	Pct.
0-6	26.5	2.0	tr	1.0	29.5	8.4	37.9	27.5		78	107
6-12	26.9	1.1	0.1	0.6	28.7	10.1	38.8	30.2		74	95
12-21			0.1	0.4				34.9			
21-33			0.1	0.2				34.0			
33-48			0.1	0.2				31.7			

Depth (In.)	Ratios to Clay 8H1: NH_4 OAc CEC	Ext. Iron	15-Bar Water
0-6	0.58	0.061	0.47
6-12	0.51	0.062	0.39
12-21	0.54	0.056	0.38
21-33	0.58	0.055	0.37
33-48	0.58	0.055	0.38

a. > 50 percent Fe-Mn.
b. > 50 percent Fe-Mn, 1 to 5 percent carbonate.
c. > 50 percent carbonate.

USDA-SCS-LINCOLN, NEBR. 1966

Soil Type: Allen silty clay loam
Soil Nos.: S60Ky-25-8
Location: Clark County, Kentucky, southeast on Cole Road, 0.45 mile past grade crossing with railroad northeast of road, 200 feet on top of high point on long east-west ridge. Photo AFN-1N-89.
Vegetation: Bluegrass; pasture.
Slope and Land Form: Gently sloping (5 percent) ridgetop upland.
Drainage: Well drained, medium runoff, slow permeability.
Parent Material: Clayey residuum from thin bedded limestones and calcareous shales.
Collected by: J. S. Allen and K. K. Young, November 9, 1960.
Described by: E. V. Huffman, November 9, 1960.

Horizon and Lincoln Lab. No.	
Ap 14462	0 to 6 inches. Dark grayish brown (2.5Y 4/2) silty clay loam; weak fine subangular blocky structure; firm to friable; abundance of roots; pH 7.0; abrupt irregular boundary.
B2 14463	6 to 12 inches. Dark yellowish brown (10YR 4/4) ped exteriors and yellowish brown (10YR 5/6) ped interiors; clay; few fine faint light olive brown (2.5Y 5/4) variegations; moderate medium angular and subangular blocky structure; clay films mostly continuous; very firm, sticky and plastic; abundance of roots; dark colored silty clay loam intrusions from the A horizon are common; pH 7.0; gradual smooth boundary.
B3 14464	12 to 21 inches. Yellowish brown (10YR 5/4 to 5/6) clay; moderate medium blocky structure; patchy clay films; very firm, sticky and very plastic; roots are plentiful; very dark brown concretionary material is abundant; pH 7.0; gradual smooth boundary.
C1 14465	21 to 33 inches. Yellowish brown (10YR 5/6) clay with common fine distinct light olive brown (2.5Y 5/4) variegations; massive; very firm, very sticky and very plastic; few roots; very dark brown concretionary material is common; pH 7.0; weakly effervescent; clear irregular boundary.
C2 14466	33 to 48 inches. Variegated many medium distinct olive (5Y 5/3) light olive brown (2.5Y 5/6 and 5/4) and brown (7.5YR 4/4) massive calcareous clay; extremely firm, very sticky and extremely plastic; few roots; pH 7.5.

Remarks: Limestone slabs 12 to 24 inches across are common in the C1 horizon and abundant in the C2 horizon. Color given for moist soil. Reaction determined by Soiltex.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Grenada silt loam SOIL Nos. S49Ky-18-1 LOCATION Calloway County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 50105-50110

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1														Coarse fragments		
		Total			Sand					Silt								
		Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	(0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			2A2 > 2 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm															Pct. of < 76mm	
2½-7	A3		79.2	18.2	0.1	0.6	0.6	1.1	0.2		42.0					tr.		
15-22	B2		74.5	21.6	0.2	0.8	0.7	2.0	0.2		42.3					-		
27-33	Pan_1		67.9	29.4	-	0.3	0.5	1.2	0.7		37.6					-		
33-39	Pan_2		71.5	26.1	-	0.2	0.4	0.9	0.9		38.2					-		
43-49	Pan_4 (part)		76.2	20.5	0.1	0.2	0.6	1.4	1.0		39.4					-		
56-61	C (?) (part)		74.9	18.5	0.2	0.7	1.3	2.9	1.5		37.1					-		

Soil type: Grenada silt loam
Soil no.: S49Ky-18-1
Location: Calloway County, Kentucky; northwest corner of T. K. Murdock farm, about 2 miles south of highway 94 on first road west of Williams Chapel which is about 1 1/4 miles west of Lynn Grove.
Site: Oak-hickory woods
Slope: 2 percent slope to east

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 to 1/2 inches. Oak-hickory leaf, twig, and acorn litter, mostly undecomposed.
O2 Not sampled	1/2 to 0 inches. Dark brown (7.5YR 4/2) mixture of mineral soil and partially to well decomposed organic matter.
A1	0 to 2 1/2 inches. Dark brown (7.5YR 3/2) moderate coarse granular friable silt loam, coarsely and faintly splotched with brown (10YR 4/3); moderate number of fine roots and root hairs. Transition 1/2 inch.
A3 50105	2 1/2 to 7 inches. Brown (7.5YR 4/4) moderately coarse granular friable heavy silt loam, moderately porous, containing very few fine soft black concretions, medium and fine wormholes and fine roots and root hairs. Transition 1 inch.
B1	7 to 15 inches. Strong brown (7.5YR 5/6) weak medium subangular blocky; friable light silty clay loam; medium sized wormholes and medium and small roots common; infiltrated organic residues along root channels. Transition 1 1/2 inches.
B2 50106	15 to 22 inches. Between brown (7.5YR 4/4) and yellowish brown (10YR 5/6) moderate medium subangular blocky; friable to firm; silty clay loam, slightly porous, with few fine soft black concretions; medium root and wormholes common. Transition 1 1/2 inches.
B3	22 to 27 inches. Dominantly yellowish brown (10YR 5/4) strong medium subangular blocky heavy silt loam to light silty clay loam, mottled with light yellowish brown (10YR 6/4) and yellow (10YR 7/6); mottles are distinct, many and fine and medium. Few medium soft brown (7.5YR 4/4) concretions and concretionary mottles; few fine and medium sized roots and root and worm channels. This layer is slightly dry. Transition 1 inch.
Pan 1 50107	27 to 33 inches. Strongly mottled brown (10YR 5/3), pale brown (10YR 6/3), and light gray (10YR 7/2) strong medium to coarse blocky silty clay loam, firm and compact; mottles are coarse, many, prominent; soft medium dark brown and black concretionary splotches common. This layer is dry. Transition 1 inch.
Pan 2 50108	33 to 39 inches. Strongly mottled firm to hard compact strong medium to coarse blocky silty clay loam. Colors include brown (7.5YR 5/4), which is dominant, and brown (10YR 5/3), reddish yellow (7.5YR 7/6), and light brownish gray (10YR 6/2); mottles are coarse, many, prominent. The light colored areas are silty clay; the brighter areas coarser textured. Streaks of white (10YR 8/2) silt occur along many of the vertical cleavage planes. Few roots. This layer is dry. Transition indistinct.
Pan 3	39 to 43 inches. Similar to layer above except for hard consistence, stronger and coarser blocky structure, more white silt, chiefly along vertical interfaces, and less clay in lighter colored mottles. This layer is dry. Transition 1 inch.
Pan 4	43 to 56 inches. Dominantly brown (7.5YR 5/4) hard massive compact heavy silt loam

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Grenada silt loam SOIL Nos. S49Ky-20-1 LOCATION Carlisle County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 50111-50118

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Size class and particle diameter (mm) 3A1															Pct. of < 76mm	
		Pct. of < 2 mm																
3-6a	A2		84.6	13.4	-	0.2	0.2	0.4	1.2		38.2							
10-16½	B1		75.8	22.2	-	0.3	0.3	0.5	0.9		38.3							
22-25	B3		74.1	21.4	0.2	0.2	0.6	1.0	1.4		37.5							
25-30	Pan_1		76.1	19.8	0.1	0.1	0.7	1.0	1.3		38.6							
30-34	Pan_2		76.9	18.9	0.1	0.1	0.7	0.9	1.5		37.0							
40-46	Pan_4		77.6	19.7	-	-	0.3	0.5	1.5		35.7							
53-57	Pan_5		78.8	19.4	-	-	0.1	0.4	1.2		34.1							
61-65+	C (?)		78.8	18.6	0.1	0.1	0.2	0.5	1.5		32.8							

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
3-6	1.15																	4.6
10-16½	0.25																	4.4
22-25	0.14																	4.4
25-30	0.13																	4.4
30-34	0.08																	4.4
40-46	0.08																	4.6
53-57	0.08																	4.6
61-65+	0.07																	4.8

Depth (In.)	Extractable bases 5B1a: 6N2b Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acid-ity	CEC 5A3a Sum Cat-ions										Base saturation 5C3 Sum Cat-ions Pct.	Pct.
	meq/100 g																
3-6	1.7	0.8	0.1	0.4	8.6	11.8										27	
10-16½	1.6	2.8	0.2	0.4	9.9	15.0										34	
22-25	1.3	2.9	0.1	0.3	11.9	16.5										28	
25-30	1.1	2.6	0.2	0.3	11.5	15.7										27	
30-34	1.0	2.5	0.2	0.3	10.8	14.8										27	
40-46	1.5	3.4	0.5	0.3	9.8	15.5										37	
53-57	2.8	4.7	0.8	0.3	7.6	16.2										53	
61-65+	3.6	5.1	0.9	0.2	6.2	16.0										61	

Depth (In.)					

a. Undecomposed Organic Matter in sand fractions.

Soil type: Grenada silt loam
Soil No.: S49Ky-20-1
Location: Carlisle County, Kentucky, on Elmer Fischer farm; Aerial Photograph ADU4-302, Flight I-2, near southwest corner. 1.9 miles west of Cunningham to gravel road south; .5 mile to end of gravel road, turn west on dirt road.
Site: Oak-hickory woods
Slope: 6.5 percent slope to east

Horizon and Beltsville Lab. No.	
O1 Not sampled	2 to 1/2 inches. Undecomposed layer of oak-hickory leaves, twigs, and acorns.
O2 Not sampled	1/2 to 0 inches. Brownish black mixture of mineral soil and partially and well decomposed organic matter.
A1	0 to 3 inches. Dark grayish brown (10YR 4/2) weak coarse granular very friable silt loam, containing numerous fine root hairs and a few yellow (10YR 7/6) discolorations along roots. Transition 1 inch.
A2 50111	3 to 6 inches. Brown (10YR 5/3) weak coarse granular very friable silt loam with few faint streaks and mottles of light yellowish brown (10YR 6/4); few fine faint soft black concretions; numerous fine roots. Transition 1 inch.
A3	6 to 10 inches. Between strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) weak medium subangular blocky friable slightly porous heavy silt loam; moderate number of medium and small roots. Transition 1/2 inch.
B1 50112	10 to 16 1/2 inches. Between strong brown (7.5YR 5/6)and yellowish brown (10YR 5/6) weak medium subangular blocky friable light silty clay loam, with few fine wormholes and moderate number of medium and fine roots. Transition indistinct.
B2	16 1/2 to 22 inches. Between strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) moderate medium subangular blocky light silty clay loam, with few fine soft black concretions and few small wormholes and fine and medium roots. Transition 1 inch.
B3 50113	22 to 25 inches. Dominantly yellowish brown (10YR 5/6) moderate medium subangular blocky friable to firm slightly compact silty clay loam, mottled with light yellowish brown (10YR 6/4); mottles are common, medium, distinct; numerous fine and medium soft dark brown and black concretions and concretionary splotches; few fine roots. Transition 1 inch.
Pan 1 50114	25 to 30 inches. Dominantly light yellowish brown (10YR 6/4) moderate medium subangular blocky slightly compact friable heavy silt loam, with few fine distinct mottles of brownish yellow (10YR 6/6) and many medium, prominent soft dark brown and black concretions and concretionary splotches; few small roots. Transition indistinct.
Pan 2 50115	30 to 34 inches. Dominantly pale brown (10YR 6/3) to light yellowish brown (10YR 6/4) moderate medium irregular blocky slightly compact heavy silt loam to light silty clay loam, strongly mottled with medium and coarse prominent dark brown (7.5YR 4/4) soft concretions and concretionary splotches. Centers of concretions are dark brown (7.5YR 3/2) to black. Few vertical streaks of light brownish gray (10YR 6/2) heavy silt loam 1/2 inch in diameter; very few fine roots. Transition indistinct.
Pan 3	34 to 40 inches. Strongly mottled light yellowish brown (10YR 6/4), pale brown (10YR 6/3), strong brown (7.5YR 5/6), and brown (7.5YR 4/4) weak coarse blocky to massive compact firm light silty clay loam, containing few fine distinct black concretions and few light gray (10YR 7/2) vertical streaks of silty clay 1/4 to 1/2 inch across; few fine roots. Transition 1 1/2 inches.
Pan 41 50116	40 to 46 inches. Dominantly between brown (7.5YR 4/4) and strong brown (7.5YR 5/6) weak coarse blocky or massive firm compact light silty clay loam, with coarse faint mottles of dark brown and streaks, largely vertical, 1/4 to 1/2 inch across of light gray (10YR 7/2) light silty clay loam; very few roots and root channels. Transition indistinct.
Pan 42	46 to 53 inches. Same as above, transition indistinct.
Pan 5	53 to 57 inches. Mottled brown (7.5YR 4/4) and light yellowish brown (10YR 6/4) massive or structureless firm slightly compact silt loam; mottles are many, coarse, and distinct. A few streaks, mostly vertical, 1/4 to 1/2 inch across of light gray (10YR 7/2) to very pale brown (10YR 7/3) silt loam; distinct dark brown to black soft concretions of medium size are common; essentially root free. This layer slightly dry. Transition indistinct.
C (?)	57 to 61 inches. Similar to above layer, but dry and apparently more compact and containing less concretionary material. Transition indistinct.
C (?) 50117	61 to 65+ inches. Same as above.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Grenada silt loam SOIL Nos. 391808-391814[a] LOCATION Marshall County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. C3916-C3922

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1: 2A2 > 2 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-4			80.6	13.7	0.3	0.8	0.8	1.1	1.0		50.8	32.8						
1-4a			80.6	15.7	0.2	0.8	0.7	0.8	1.2		45.6	36.5						
4-8			79.6	16.3	0.1	0.6	0.7	0.9	0.7		47.9	33.7						
8-14			75.9	20.8	0.1	0.7	0.7	0.9	0.7		45.7	31.4						
14-21			74.1	20.9	0.2	1.3	1.1	1.2	1.1		44.3	31.5						
21-29			69.1	27.4	-	0.5	0.7	1.1	1.0		41.6	29.2						
29-41			69.2	27.5	-	0.5	0.6	1.0	0.9		43.1	27.7						
41+			74.8	21.8	-	0.3	0.4	1.2	1.4		43.2	33.7						

Depth (in.)	6A3a Organic Matter Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Ext. iron as Fe Pct.	Bulk density:	4A1e ⅓ bar g/cc	4A1h Oven dry g/cc	4D1 COLE	Water content:	4B1c ⅓ bar Pct.	4B2 15 bar Pct.		4C1 WRD in/in	pH:	8C1c (1:1) KCl	8C1e (1:1) H_2O
0-4	1.3																	5.6
1-4a	2.7																	5.4
4-8	0.8																	5.1
8-14	0.1																	4.9
14-21	-																	4.8
21-29	0.1																	4.4
29-41	0.2																	4.2
41+	-																	4.7

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H1a Ext. acidity	CEC: 5A3a Sum cations		6G1d Ext. Al			Ratios to clay: CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation: 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-4	1.3	1.3				6.0											33	
1-4	0.3	1.2				6.1											27	
8-14	0.7	1.7				6.7											30	
14-21	2.0	1.3				7.3											32	
21-29	3.0	3.4				10.7											37	
29-41	2.8	3.2				11.4											35	
41+	2.3	3.4				8.9											39	

Depth (in.)	Clay Fraction Analysis 7A1b-d: Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						7A3	

[a] assigned laboratory No. D3212 for analyses.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, mi = mica, Int. = interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

USDA-SCS-HYATTSVILLE, MD. 1966

Soil type: Grenada silt loam
Location: Marshall County, Kentucky, 3.03 miles S.E. of Brewers, 0.61 mile southeast of Jackson School
Vegetation: Trees in the Woods: principally post oak and hickory with some Southern red oak, black oak, and red oak
Collected by and date: W. J. Leighty, May 27, 1938

Beltsville Lab. Nos.	
C3916	0 to 1 inch. Dark grayish brown mellow, loose, fluffy, spongy, smooth silt loam. Fairly distinct soft fine crumb structure. Very numerous fibrous roots. Some partially decayed leaves. Much fungus growth.
C3916a	1 to 4 inches. Grayish brown, mellow, smooth silt loam. More grayish when dry. Slightly darker in upper part. Soft fine crumb structure. Very porous. Contains a moderate amount of very small, soft, black and rusty brown concretions. Very numerous fibrous and fine roots and some medium sized roots. Some wormholes and casts. Slight amount of fungus growth in channels.
C3917	4 to 8 inches. Light brown, slightly yellowish, mellow, smooth silt loam. Soft fine crumb structure. Very porous. Contains small amount of very small, soft, dark colored concretions. Numerous fine and medium sized roots. Slight amount of fungus growth in channels. Some wormholes and casts.
C3918	8 to 14 inches. Bright yellowish brown, mellow, smooth silt loam. Very slightly reddish on particle surfaces. Soft crumb structure. Very porous. Small amount of soft, small, dark colored concretions. Numerous fine, medium, and large sized roots. Slight amount of fungus growth in channels.
C3919	14 to 21 inches. Yellowish brown, mellow, smooth, slightly heavy silt loam. Less bright in color than above layer. Very porous. Breaks easily into soft crumbs which are somewhat larger than above. Fairly numerous soft, small black and rusty brown concretions and few soft to semihard pellets about 1/4" in size. Slightly less numerous roots than above.
C3920	21 to 29 inches. Pale yellowish brown, friable, light silty clay loam with considerable gray mottlings. Slightly plastic when wet. Moderately porous. Between a soft crumb and a soft, rounded, small nutlike structure. Numerous soft, small, rusty brown and black concretions and semihard pellets up to about 3/8" in size. Fairly numerous large and medium sized roots.
C3921	29 to 41 inches. Medium gray light silty clay with considerable yellowish brown, brownish gray, and rusty brown. Moderately compact and dense. Very plastic and moderately sticky when wet. Few pore spaces. Breaks into subangular nut-like aggregates about 1/4" to 5/8" in size which are firm and which break down into smaller subangular particles. Aggregates in upper part are coated with a very light gray silty material. Aggregates in lower part are coated with a glossy, gray, very fine textured material. Only a few medium sized roots. Numerous soft, rusty brown and black concretions.
C3922	41 to 96 inches. Pale yellowish brown heavy silt loam with some gray mottlings. Slightly friable, slightly compact. Some pore spaces. Breaks with moderate pressure into largely a fragmental structure. Very few soft, rusty brown concretions. Few small roots. Few root channels are coated with a whitish gray silty material. Below about 52", material is similar but dry and hard.

[a] 1 to 4 inch depth was assigned laboratory No. D3212.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Henshaw silt loam SOIL Nos. 854Ky-51-12 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55411-55416

Depth (in.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments: 2A2 > 2	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-9	Ap		86.8	8.9	1.2	1.3	0.5	0.3	1.0		38.9	49.1				-		
9-13	A2		78.7	17.8	0.6	1.0	0.4	0.3	1.2		38.1	42.0				-		
13-21	B1		68.0	29.6	0.2	0.6	0.3	0.4	0.9		34.3	34.9				-		
21-34	B2		64.7	33.2	0.2	0.5	0.2	0.3	0.9		29.0	36.8				-		
34-38	B3		82.3	15.6	0.1	0.1	0.1	0.2	1.6		30.9	53.1				tr.		
38-48+	C		83.7	14.4	0.1	0.2	0.1	0.2	1.3		29.9	55.3				tr.		

Depth (in.)	6A1a Organic carbon	Nitrogen	C/N		Carbonate as $CaCO_3$		Bulk density				Water content					pH		8C1a (1:1) H_2O
	Pct.	Pct.			Pct.		g/cc	g/cc	g/cc		Pct.	Pct.	Pct.					
0-9	0.49																	5.8
9-13	0.13																	4.6
13-21	0.15																	4.6
21-34	0.11																	4.8
34-38	0.11																	7.8
38-48+	0.10																	8.0

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC: 5A3a Sum Cations										Base saturation: 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-9	4.5	0.6	0.1	0.1	2.5	7.8										68	
9-13	3.3	0.9	0.1	0.1	9.8	14.2										31	
13-21	4.5	3.0	0.1	0.3	15.8	23.7										33	
21-34	6.2	6.6	0.1	0.3	14.6	27.8										47	
34-38	Calcareous																
38-48+	Calcareous																

Depth (in.)

a. Undecomposed Organic Matter in Sand Fractions

Soil type: Henshaw silt loam
Soil No.: S54Ky-51-12
Location: Henderson County, Kentucky; one-half mile west of Geneva, in field south side of Kentucky Highway 136, photo DKZ-8G-176
Vegetation: Bare (plowed)
Slope: Level
Erosion: None
Drainage: Imperfectly to moderately well drained
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55411	0 to 9 inches. Brown to dark brown (10YR 4/3) very friable silt loam, with common medium, and distinctive grayish brown (2.5Y 5/2) mottles; weak, medium, angular blocky breaking easily to a weak, fine, granular structure; abrupt, smooth boundary; medium acid.
A2 55412	9 to 13 inches. Mottled yellowish brown (10YR 5/6) and light brownish gray (2.5Y 6/2), friable silt loam; mottles are many, medium, distinct; moderate, fine and medium, angular blocky structure; clear, smooth boundary; very strongly acid. A few small, brown concretions occur through this horizon.
B1 55413	13 to 21 inches. Yellowish brown (10YR 5/4), friable to firm silty clay loam, mottled with light brownish gray (2.5Y 6/2); mottles are few, fine, and faint; strong, medium, angular blocky structure; plastic and slightly sticky when wet; clear, smooth boundary; very strongly acid.
B2 55414	21 to 34 inches. Light olive brown (2.5Y 5/6), firm silty clay, mottled with grayish brown (2.5Y 5/2); mottles are few, fine, and faint; moderate, coarse, angular blocky structure; plastic, slightly sticky when wet. Clay skin coatings impart a brown to dark brown cast to ped faces. A few small, brown concretions are present; gradual, smooth boundary; neutral.
B3	34 to 38 inches. Light olive brown (2.5Y 5/6) friable silty clay loam, mottled with

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Henshaw silt loam SOIL Nos. S54Ky-51-13 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55417-55422

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-10	Ap		89.6	7.9	0.3	0.5	0.2	0.2	1.3		38.3	52.7				tr.		
10-18	A2		84.4	11.1	1.4	1.2	0.4	0.3	1.2		36.7	49.1				-		
18-22	B1		71.7	25.3	0.2	0.7	0.4	0.4	1.3		32.3	40.9				-		
22-34	B2		65.3	31.1	0.2	0.6	0.4	0.7	1.7		28.7	38.7				-		
34-40	B3		70.0	27.9	0.2	0.3	0.2	0.3	1.1		33.0	38.3				-		
40-48+	C		77.4	19.8	0.4	0.7	0.3	0.3	1.1		32.4	46.3				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-10	0.69																	7.1
10-18	0.35																	6.9
18-22	0.26																	7.1
22-34	0.27																	7.4
34-40	0.20																	7.7
40-48+	0.15																	8.1

Depth (In.)	Extractable bases 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-10	6.1	0.8	0.1	0.1	1.0	8.0										88	
10-18	5.6	1.7	0.1	0.1	0.8	8.3										90	
18-22	8.6	6.6	0.6	0.2	2.4	18.4										87	
22-34	Calcareous																
34-40	Calcareous																
40-48+	Calcareous																

Depth (In.)					

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Henshaw silt loam
Soil No.: S54Ky-51-13
Location: Henderson County, Kentucky; Leo Manion farm on Airline Road, photo DKZ-5G-50
Vegetation: Small grain
Slope: Level
Erosion: None
Drainage: Imperfectly to moderately well
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55417	0 to 10 inches. Dark grayish brown (10YR 4/2), very friable silt loam, mottled with grayish brown (2.5Y 5/2); mottles are few, fine, and faint; weak, medium, angular and subangular blocky, breaking easily to a weak, fine, granular structure; clear, smooth boundary; mildly alkaline.
A2 55418	10 to 18 inches. Grayish brown (2.5Y 5/2), very friable silt loam, mottled with dark grayish brown (10YR 4/2); mottles are many, fine, and faint; weak, coarse, platy structure; clear, smooth boundary. A few small brown concretions are present; reaction is neutral.
B1 55419	18 to 22 inches. Mottled yellowish brown (10YR 5/8) and light brownish gray (2.5Y 6/2), friable to firm silty clay loam; mottles are many, medium and distinct; moderate, coarse, angular blocky structure; slightly plastic and slightly sticky when wet; gradual, smooth boundary. A few small brown concretions are present; reaction is neutral.
B2 55420	22 to 34 inches. Light olive brown (2.5Y 5/6), very firm silty clay; moderate, coarse, angular blocky structure; plastic and slightly sticky when wet. Clay skins impart a darker color on ped faces. A few small brown concretions are present; clear, smooth boundary; mildly alkaline.
B3 55421	34 to 40 inches. Light olive brown (2.5Y 5/6) firm silty clay loam, mottled with grayish brown (2.5Y 5/2); mottles are few, fine, and distinct; moderate, coarse, angular blocky structure; plastic and slightly sticky when wet; a few small brown concretions are present; gradual, smooth boundary; mildly alkaline.
C 55422	40 to 48+ inches. Mottled light olive brown (2.5Y 5/6), yellowish brown (10YR 5/8) and light brownish gray (10YR 6/2) very friable silt loam; mottles are many, fine and distinct; weak, fine and medium, angular blocky structure; moderately alkaline becoming slightly calcareous at 46 inches.

Notes: Color of soil moist unless otherwise stated

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Holston very fine sandy loam SOIL Nos. S55Ky-6-9 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55368-55373

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-5	Ap		41.4	7.0	1.4	6.1	14.8	22.9	6.4		26.8	31.5				tr.		
5-9	A3		45.2	8.8	1.3	5.1	12.8	20.8	6.0		32.0	29.2				tr.		
9-16	B1		48.0	17.8	1.2	3.1	7.9	16.6	5.4		34.1	27.9				tr.		
16-27	B2		44.2	26.3	1.8	2.9	6.3	13.5	5.0		33.0	23.5				6		
27-42	B2		38.8	32.0	1.8	2.8	5.7	14.0	4.9		28.3	23.0				tr.		
42-55+	C		19.0	19.2	0.4	4.1	16.0	35.6	5.7		13.1	26.3				tr.		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-5	0.90																	4.6
5-9	0.50																	4.7
9-16	0.25																	4.6
16-27	0.14																	4.6
27-42	0.14																	4.7
42-55+	0.12																	4.6

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-5	0.7	0.3	tr.	0.2	4.8	6.0										20	
5-9	0.3	tr.	tr.	0.1	4.2	4.6										8	
9-16	0.2	0.1	0.1	0.1	6.3	6.7										6	
16-27	0.1	0.4	0.1	0.2	9.9	10.7										7	
27-42	tr.	0.7	tr.	0.2	12.0	12.9										7	
42-55+	0.2	0.5	tr.	0.2	6.8	7.7										12	

Depth (In.)

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Holston very fine sandy loam
Soil No.: S55Ky-6-9
Location: Bath County, Kentucky; 1/8 mile east of Hedricks Chapel, 10 yards north of Hedricks Road; photo AFH-1F-68, 6 5/8 inches right, 8 3/4 inches up
Vegetation: Saw briers, weeds and a few small scattered cedar trees
Slope: 4 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55368	0 to 5 inches. Olive brown (2.5Y 4/4) very friable, very fine sandy loam; weak, medium crumb structure. Medium acid. Abrupt, smooth boundary.
A3 55369	5 to 9 inches. Yellowish brown (10YR 5/6), friable, very fine sandy loam; moderate, fine and medium subangular blocky structure. Very strongly acid. Abrupt, smooth boundary.
B1 55370	9 to 16 inches. Yellowish brown (10YR 5/8) friable, fine sandy clay loam; moderate, medium, subangular blocky structure. Very strongly acid. Abrupt, smooth boundary.
B2 55371	16 to 27 inches. Yellowish brown (10YR 5/8) firm, slightly sticky when wet, fine sandy clay loam; moderate, medium angular blocky structure. Very strongly acid. Clear, smooth boundary.
B2 55372	27 to 42 inches. Yellowish brown (10YR 5/8) firm, slightly sticky when wet, fine sandy clay loam. Interior of peds are mottled light brownish gray (10YR 6/2) to light yellowish brown (10YR 6/4). Mottles are common, fine and distinct. Strong medium and coarse angular blocky structure. Strongly acid. Boundary, smooth, clear.
C 55373	42 to 55+ inches. Yellowish red (5YR 4/6) and brownish yellow (10YR 6/6) streaked with light gray (5Y 7/1) fine, sandy clay loam. Very strongly acid.

Notes: Color of soil moist unless otherwise stated.

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10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Holston very fine sandy loam SOIL Nos. S55Ky-6-10 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55374-55378

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand Very coarse (2–1)	Sand Coarse (1–0.5)	Sand Medium (0.5–0.25)	Sand Fine (0.25–0.1)	Sand Very fine (0.1–0.05)	Silt 0.05–0.02	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-5	Ap		44.0	12.2	0.2	1.2	4.8	25.0	12.6		26.9	44.9				-		
5-13	A2		37.9	11.8	-	1.1	5.0	30.4	13.8		23.7	47.2				-		
13-18	B1		34.8	13.3	0.1	0.9	4.5	32.3	14.1		20.9	48.6				-		
18-45	B2		31.6	19.0	-	0.5	3.0	32.6	13.3		20.3	46.1				-		
45-57+	C		13.2	12.8	0.2	2.5	7.4	51.6	12.3		7.5	47.6				tr.		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-5	1.76																	4.7
5-13	0.78																	4.4
13-18	0.34																	4.5
18-45	0.19																	4.5
45-57+	0.15																	4.9

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-5	0.5	0.6	0.1	0.1	8.9	10.2										13	
5-13	0.2	tr.	0.1	0.2	6.6	7.1										7	
13-18	0.1	0.1	0.1	0.1	4.4	4.8										1	
18-45	0.2	tr.	0.1	0.1	6.3	6.7										6	
45-57+	0.2	0.2	tr.	0.1	2.3	2.8										17	

Depth (In.)					

USDA SCS WYATTSVILLE MD 1964

Soil type: Holston very fine sandy loam
Soil No.: S55Ky-6-10
Location: Bath County, Kentucky; 1 mile east of Zilpo on Maze Road; in pasture field 10 yards south of road; photo AFH-2F-7; 4 1/4 inches right and 7 1/4 inches up
Vegetation: Fescue grass and a few common weeds
Slope: 9 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55374	0 to 5 inches. Brown to dark brown (7.5YR 4/2) very friable, very fine sandy loam; weak, fine crumb structure. Strongly acid. Abrupt, smooth boundary. Numerous small roots present.
A2 55375	5 to 13 inches. Dark yellowish brown (10YR 4/4) friable, very fine sandy loam; weak, fine and medium crumb structure. Lower two inches is yellowish brown (10YR 5/4) and has weak, medium subangular blocky structure. Very strongly acid. Clear, smooth boundary.
B1 55376	13 to 18 inches. Yellowish brown (10YR 5/6) friable, fine, sandy loam; moderate, medium and coarse subangular blocky structure. Very strongly acid. Abrupt, smooth boundary.
B2 55377	18 to 45 inches. Yellowish brown (10YR 5/8) friable, slightly plastic when wet, fine sandy loam; strong, medium and coarse angular blocky structure. Very strongly acid. Abrupt, smooth boundary.
C 55378	45 to 57+ inches. Yellowish brown (10YR 5/8) fine sandy loam with small yellowish red (5YR 4/6) sand pockets. There are a few soft sandstone fragments with a thin (1 mm.) horizontal layer of iron precipitate. Very strongly acid.

Notes: Color of soil moist unless otherwise stated.

SCS-421
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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Holston very fine sandy loam SOIL Nos. S55Ky-6-11 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55379-55383

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand Very coarse (2-1)	Sand Coarse (1-0.5)	Sand Medium (0.5-0.25)	Sand Fine (0.25-0.1)	Sand Very fine (0.1-0.05)	Silt (0.05-0.02)	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Pct. of < 2 mm															Pct. of < 76mm	
0-12	Ap		54.5	11.3	0.6	0.8	2.4	13.7	16.7		30.1	50.4				tr.		
12-24	B1		51.4	21.5	0.4	0.5	1.9	11.7	12.6		31.6	40.3				-		
24-34	B2		49.1	24.1	0.2	0.5	1.8	11.7	12.6		31.8	37.9				-		
34-41	B3		22.4	34.0	-	0.2	2.1	22.7	18.6		10.5	46.4				-		
41-51+	C		18.0	22.6	-	0.4	5.2	33.7	20.1		6.8	51.9				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-12	1.02																	6.3
12-24	0.30																	5.3
24-34	0.10																	4.9
34-41	0.09																	4.4
41-51+	0.05																	4.6

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-12	4.8	0.9	tr.	0.3	1.7	7.7										77	
12-24	2.2	1.0	tr.	0.2	2.6	6.0										56	
24-34	1.0	0.8	tr.	0.2	5.7	7.7										26	
34-41	0.5	1.2	0.1	0.2	5.9	7.9										25	
41-51+	0.1	0.9	tr.	0.2	5.9	7.1										17	

Depth (In.)					

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Holston very fine sandy loam
Soil No.: S55Ky-6-11
Location: Bath County, Kentucky; 3/8 mile south of Moores Ferry in cultivated field, 20 feet to east of road; photo AFH-1F-43, 3 1/2 inches right, 8 1/4 inches up
Vegetation: Cultivated, small grain
Slope: 6 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55379	0 to 12 inches. Brown to dark brown (10YR 4/3) friable, very fine sandy loam; weak, fine crumb structure. Medium acid. Clear, smooth boundary.
B1 55380	12 to 24 inches. Yellowish brown (10YR 5/6) friable, very fine sandy loam; moderate, medium subangular blocky structure. Slightly acid. Clear, smooth boundary.
B2 55381	24 to 34 inches. Yellowish brown (10YR 5/8) friable, very fine sandy loam; few, fine, distinct light brownish gray (10YR 6/2) mottles; strong, medium and coarse subangular blocky structure. Slightly acid. Abrupt, irregular boundary.
B3 55382	34 to 41 inches. Dominantly yellowish red (5YR 4/6) variegated with light olive gray to grayish brown, compact in place, sandy clay loam. Strong, medium and coarse, angular blocky structure, slightly sticky, slightly plastic when wet; weakly cemented; clay skins visible along ped faces. A black precipitate is deposited along cleavage lines. Slightly acid. Boundary, clear, irregular.
C 55383	41 to 51+ inches. Strong brown (7.5YR 5/8) fine sandy loam. Very strongly acid.

Notes: This profile was not as acid in reaction as normal; however, a check of Holston profiles in this vicinity showed similar reaction. Color of soil moist unless otherwise stated.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Leadvale silt loam SOIL Nos. S54Ky-6-4 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55341-55346

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		80.1	17.7	0.5	0.5	0.2	0.4	0.6		48.4	32.5				-		
6-10	A3		79.9	19.0	0.1	0.2	0.1	0.2	0.5		46.9	33.6				-		
10-16	B1		80.7	17.7	0.1	0.2	0.1	0.4	0.8		48.8	32.9						
16-29	B2m1		79.0	18.7	0.4	0.4	0.3	0.4	0.8		46.2	33.8				-		
29-53	B2m2		76.7	19.7	1.2	0.8	0.3	0.4	0.9		48.4	29.5				10		
53+	C		74.1	16.7	2.4	2.5	0.8	1.0	2.5		41.7	35.5				17		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-6	1.68																	4.6
6-10	0.54																	4.5
10-16	0.27																	4.6
16-29	0.13																	4.7
29-53	0.13																	4.8
53+	0.14																	5.0

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-6	1.0	0.7	tr.	0.2	10.4	12.3									15	
6-10	0.4	0.2	0.1	0.2	8.6	9.5									9	
10-16	0.3	0.6	tr.	0.1	7.0	8.0									13	
16-29	0.1	1.0	0.1	0.1	7.2	7.6									5	
29-53	0.1	2.0	0.1	0.1	7.6	9.9									23	
53+	0.1	3.5	0.3	0.1	5.1	9.1									44	

Depth (In.)					

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Leadvale silt loam
Soil No.: S54Ky-6-4
Location: Bath County, Kentucky; two miles S. W. from junction of Clark Creek Road with Kentucky Highway 36; thirty yards to south of Clark Creek Road; photo AFH-2F-46, right 7 inches, up 7 1/2 inches
Vegetation: Woods, briars, decaying brushy stumps
Slope: 3 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55341	0 to 6 inches. Dark grayish brown (10YR 4/2 to 2.5Y 4/2) friable silt loam; weak, medium, angular blocky structure, crushing into weak, fine, granules; very strongly acid; boundary smooth, clear; some organic staining in upper 3 inches.
A3 55342	6 to 10 inches. Dark yellowish brown (10YR 4/4) friable silt loam; weak, medium angular blocky and fine granular structure; very strongly acid; boundary, clear and smooth.
B1 55343	10 to 16 inches. Yellowish brown (10YR 5/4-5/6) friable light silty clay loam; weak to moderate, medium, angular blocky structure; very strongly acid; clear, smooth boundary.
B2m1 55344	16 to 29 inches. Dark yellowish brown (10YR 4/4) compact, friable, light silty clay loam with many, fine, distinct light olive gray (5Y 6/2) mottles; strong, coarse and medium, angular, blocky structure. Medium and fine pores common in large peds; very strongly acid; gradual smooth boundary.
B2m2 55345	29 to 53 inches. Dominantly light brownish gray (2.5Y 6/2) compact, but friable, silt loam with many medium, distinct brown (10YR 5/3) mottles; insides of broken peds are dominantly brown. Few, irregular shaped, small sandstone fragments present. Medium and fine pores common in large peds; medium acid.
C 55346	53+ inches. Grayish brown (2.5Y 5/2) slightly compact, friable, silty clay loam; with common, fine, distinct dark brown (10YR 4/3) and strong brown (7.5YR 5/6) mottles; moderate and medium, angular blocky structure. Small, irregular shaped sandstone and shale fragments are common.

Notes: Color of soil moist unless otherwise stated.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Leadvale silt loam SOIL Nos. 854Ky-6-5 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55347-55352

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		78.0	15.8	1.6	1.0	0.5	0.7	2.4		45.7	35.1				7		
6-11	A3		76.2	19.7	0.3	0.5	0.3	0.7	2.3		44.2	34.7				-		
11-14	B1		75.8	19.0	0.3	0.5	0.4	1.0	3.0		43.4	36.0				-		
14-25	B2m1		76.1	17.6	0.8	0.7	0.4	1.1	3.3		41.7	38.4				-		
25-30	B2m2		73.7	17.0	1.6	1.5	0.7	1.7	3.8		43.1	35.5				10		
30+	C1		55.1	22.2	10.4	6.2	1.7	1.8	2.6		35.0	23.6				46		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-6	1.11																	4.7
6-11	0.44																	4.7
11-14	0.20																	4.8
14-25	0.15																	4.8
25-30	0.24																	4.8
30+	0.24																	4.8

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-6	1.2	0.6	0.1	0.2	17.7	19.8									11	
6-11	0.9	0.2	0.1	0.1	11.4	12.7									10	
11-14	0.6	0.5	0.1	0.1	8.0	9.3									14	
14-25	0.5	0.4	0.1	0.2	7.2	8.4									14	
25-30	0.4	0.5	0.1	0.1	7.8	8.9									12	
30+	0.5	1.5	0.1	0.2	9.1	11.4									20	

Depth (In.)

USDA-SCS-BELTSVILLE, MD. 1964

Soil type: Leadvale silt loam
Soil No.: S54Ky-6-5
Location: Bath County, Kentucky; in idle field 25 yards north of Clark Creek Road at a point approximately one mile east of Mill Creek Church; photo AFH-2F-56, right 7 inches, up 3 inches
Vegetation and land use: Weeds, briars, and scattered small Virginia pine
Slope and land form: 4 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55347	0 to 6 inches. Olive brown (2.5Y 4/4) friable silt loam; weak, angular blocky structure, which crushes into weak, fine, granules; medium acid. Boundary, clear, smooth. Numerous fine roots present.
A3 55348	6 to 11 inches. Yellowish brown (10YR 5/4) friable, light silty clay loam; hard when dry; weak, angular blocky macrostructure, breaking easily into moderate, angular, blocky peds; very strongly acid; boundary clear, smooth.
B1 55349	11 to 14 inches. Yellowish brown (10YR 5/4) to light olive brown (2.5Y 5/4) friable, heavy silt loam; weak to moderate, medium, angular blocky structure. Very strongly acid; boundary clear, smooth.
B2m1 55350	14 to 25 inches. Brown (10YR 5/3) slightly compact, friable, silty clay loam; many, fine, faint grayish brown (2.5Y 5/2) and a few fine, faint yellowish red (5YR 5/6-5/8) mottles; moderate, medium and coarse, angular blocky structure. Very strongly acid; boundary clear, smooth. A few sandstone fragments are present.
B2m2 55351	25 to 50 inches. Dominantly grayish brown (2.5Y 6/2) to light olive brown (2.5Y 5/4) compact, friable silt loam; many fine, distinct, yellowish red (5YR 5/6) mottles; strong, coarse, angular blocky structure. Very strongly acid; abrupt, wavy boundary. Inside of broken peds are dominantly brown. There are a few scattered sandstone fragments and a few fine pores.
C1 55352	30+ inches. Dominantly grayish brown (2.5Y 5/2) friable, silty clay loam; weak, fine and medium, angular blocky structure. Many small, round and irregularly shaped gravels are uniformly mixed through this layer. Medium acid.

Notes: Layer identified as A3 has manifestations of a B1 horizon and that identified as the B1 has A3 characteristics. This being a colluvial soil, this occurance is not uncommon. Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Loring silt loam SOIL Nos. S59Ky-56-3 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59450-59458

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-6	Ap		83.5	13.1	0.1	0.2	0.2	0.3	2.6		39.3	46.9				tr.		
6-13	B1		72.7	24.6	-	-	0.1	0.2	2.4		40.8	34.4				tr.		

Soil type: Loring silt loam
Soil No.: S59Ky-56-3
Location: Jefferson County, Kentucky, about 1 mile northwest of junction of Old Third Street Road and Arnoldtown Road. Photo AFW-1R-79, 1956
Vegetation and land use: Pasture of bluegrass, white clover and weeds
Slope and land form: Gently sloping (3 percent) narrow ridge top that breaks off to sloping and strongly sloping side slopes
Drainage: Well to moderately well drained with medium surface runoff
Permeability: moderate to moderately slow in the lower part of the profile
Parent material: Deep loess that overlies a buried Rarden-like profile that has developed from acid clay shale (Rosewood)
Collected by and date: E. J. Pedersen, D. D. Bohrer, W. H. Zimmerman and C. D. Luttrell, May 12, 1959
Described by: E. V. Huffman and J. C. Ross

Horizon and Beltsville Lab. No.	
Ap 59450	0 to 6 inches. Brown (10YR 4/3) silt loam; weak fine granular structure, very friable; abundance of fine grass roots and common wormholes; boundary clear, abrupt.
B1 59451	6 to 13 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) when crushed, silt loam; weak moderate subangular blocky structure; few clay films on ped surfaces and in pores; friable; roots common; few very dark brown iron stainings and old root holes; worm casts common; boundary gradual, smooth.
B21 59452	13 to 24 inches. Reddish brown (5YR 4/4), strong brown (7.5YR 5/6) when crushed, heavy silt loam; moderate medium subangular blocky structure; pronounced clay films; firm to friable; worm casts common; few reddish brown stains of iron oxide; roots fewer than in layers above; boundary clear, smooth.
B22 59453	24 to 32 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) when crushed, silt loam, with few fine distinct light yellowish brown (2.5Y 6/4) variegations; moderate medium and coarse angular blocky structure; clay films as in layer above; firm; very few roots; few black iron concretions; boundary clear, smooth.
B3ml	32 to 37 inches. Mixed equally brown (7.5YR 4/4) silt loam and light olive gray (5Y 6/2) manganese concretions; boundary clear, wavy. This horizon has characteristics very similar to an A2 with some B3 matrix intermixed. The gray silt coatings on the polygon faces are pronounced; large prisms without definite bottoms.
B2m2 59455	37 to 48 inches. Brown (7.5YR 4/4) silt loam, mottled common medium distinct pale brown (10YR 6/3) and gray (10YR 6/1); massive breaking out into coarse prisms and blocks; very compact in place; friable when crushed; thick gray silt coatings along polygon faces; manganese concretions as in layer above; polygons are same as in the B3ml. This is the most compact horizon. Boundary gradual, smooth.
B3m3 59456	48 to 53 inches. Similar to layer above but matrix color has slightly redder hue. Also it is slightly higher in clay, slightly less compact and gray silt coatings are not as pronounced; boundary gradual, smooth.
B3m4 59457	53 to 60 inches. Reddish brown (5YR 4/4) light silty clay loam with common medium distinct light brownish gray (10YR 6/2) mottles; massive breaking out in coarse blocks; compact; firm; black manganese stainings and concretions are more noticeable than in layer above; polygon faces are coated with gray silt and black manganese stains; boundary clear, smooth.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Loring silt loam SOIL Nos. S59Ky-56-4 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59459 - 59466

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand Very coarse (2–1)	Sand Coarse (1–0.5)	Sand Medium (0.5–0.25)	Sand Fine (0.25–0.1)	Sand Very fine (0.1–0.05)	Silt (0.05–0.02)	Silt Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)		3B2 Cm	Coarse fragments 3B1 2A2 > 2 Pct.	2 – 19	19 – 76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		79.2	16.7	0.1	0.2	0.2	0.3	3.3		35.5	47.2				tr.		
7-17	B21		71.0	25.5	0.0	0.1	0.1	0.2	3.1		31.6	42.7				tr.		
17-23	B22		74.2	21.2	0.0	0.1	0.1	0.2	4.2		31.9	46.6				tr.		
23-30	B3		73.4	20.6	0.0	0.2	0.2	0.3	5.3		27.2	51.7				tr.		
30-34	B3m1		85.4	7.8	0.0	0.6	0.7	1.0	4.5		32.1	58.2				tr.		
34-44	B3m2		83.8	9.8	0.0	0.3	0.4	0.7	5.0		31.3	57.8				tr.		
44-55	B3m3		84.6	9.5	0.0	0.5	0.5	0.9	4.0		31.9	57.2				tr.		
55-64+	B3m4		77.8	18.2	0.0	0.2	0.3	0.5	3.0		32.6	48.4				tr.		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	Ext. iron as Fe Pct.	Bulk density g/cc	4A1e ⅓ bar g/cc	4A1h Oven dry g/cc	4D1 COLE	Water content Pct.	4B1c ⅓ bar Pct.	4B2 15 bar Pct.		4C1 WRD in/in		pH 8C1c (1:1) KCl	8C1a (1:1) H_2O
0-7	0.94	0.112	8			1.7		1.51	1.53			13.6	7.3					5.2
7-17	0.14					3.4		1.43	1.47			25.7	11.2					4.5
17-23	0.12					3.2		1.43	1.47			24.5	9.9					4.5
23-30	0.06					3.2		1.48	1.52			25.5	8.8					4.4
30-34	0.06					2.4		1.48	1.52			24.6	6.3					4.4
34-44	0.04					2.2		1.47	1.51			23.6	6.9					4.2
44-55	0.06					2.4		1.58	1.64			19.8	6.8					4.7
55-64+	0.04					2.5		1.58	1.64			21.2	9.9					5.1

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H2a Ext. acidity	CEC 5A3a Sum cations		6G1d Ext. Al			Ratios to clay CEC Sum	Ext. iron	15-bar water	8D3 Ca/Mg		Base saturation 5C3 Sum cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																	
0-7	4.6	1.1	tr.	0.3		5.2	11.2										54	
7-17	2.8	2.6	0.1	0.2		9.4	15.1										38	
17-23	1.0	3.1	0.1	0.2		10.0	14.4										31	
23-30	0.6	2.9	0.1	0.2		9.7	13.5										28	
30-34	0.6	1.6	0.1	0.1		7.7	10.1										23	
34-44	0.5	1.8	0.1	0.1		7.9	10.4										24	
44-55	7.1	2.6	0.3	0.1		6.3	16.4										62	
55-64+	4.0	6.0	0.6	0.2		4.7	15.5										70	

Depth (In.)	Clay Fraction Analysis 7A1b-d Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite
	7A2 X-ray						7A3	

Mt. = Montmorillonite, Chl. = chlorite. Vm. = Vermiculite, mi = mica, Int. = Interstratified layer, Qtz. = quartz, Kl. = Kaolinite

Soil type: Loring silt loam
Soil No.: S59Ky-56-4
Location: Jefferson County, Kentucky, about 1/4 mile west from northwest corner of Cardinal Hill reservoir storage tank located at the end of Cardinal Hill Road. Photo AFW-1R-61, 1956
Vegetation and land use: Idle (Broom sedge, weeds, persimmon, sassafras and sumac)
Slope and land form: Gently sloping (3 percent) ridge top that breaks off to sloping and strongly sloping side slopes
Drainage: Well to moderately well drained with medium surface runoff
Permeability: Moderate to moderately slow in the lower part of the profile
Parent material: Deep loess, overlying acid shale (New Providence)
Collected by and date: E. J. Pedersen, D. D. Bohrer, W. H. Zimmerman and C. D. Luttrell, May 12, 1959
Described by: E. V. Huffman and J. C. Ross

Horizon and Beltsville Lab. No.	
Ap 59459	0 to 7 inches. Brown (10YR 4/3) silt loam, weak fine granular structure; very friable; roots abundant; boundary clear, smooth.
B21 59460	7 to 17 inches. Reddish brown (5YR 4/4) on ped surface, strong brown (7.5YR 5/6) when crushed, silty clay loam; moderate medium subangular blocky structure; noticeable clay films; firm to friable; roots and wormholes common; boundary clear, smooth.
B22 59461	17 to 23 inches. Brown (7.5YR 4/4) ped surfaces, strong brown (7.5YR 5/6) when crushed silt loam; moderate medium subangular blocky structure breaking down to fine angular blocky; clay films pronounced; friable; few black specks of manganese stains; roots few; common; boundary gradual, smooth.
B3 59462	23 to 30 inches. Brown (7.5YR 4/4) with a few fine distinct gray (10YR 6/1) and light yellowish brown (2.5Y 6/4) mottles; silt loam; weak medium subangular blocky and fine angular blocky structure; few clay films; friable; few black manganese stains; few roots; occasional wormholes; boundary clear, wavy.
B3m1 59463	30 to 34 inches. Light olive brown (2.5Y 5/4) silt loam with common medium distinct brown (7.5YR 4/4) and reddish brown (5YR 4/4) mottles; weak coarse angular blocky structure; friable; vertical tongues of gray silt and brown silt loam; very few wormholes; few black manganese concretions; boundary clear, irregular. Pockets of silt loam with characteristics of an A2 are irregularly spaced through this horizon.
B3m2 59464	34 to 44 inches. Mottled brown (7.5YR 4/4) and light brownish gray (2.5Y 6/2) silt loam; weak coarse angular blocky to massive, slightly compact in place; friable when crushed with tongues as in layer above but less noticeable; small black manganese concretions are common; boundary gradual, smooth.
B3m3 59465	44 to 55 inches. This horizon is similar to layer above as to color and texture but more compact in place and manganese concretions and stains are more noticeable; boundary clear, smooth.
B3m4 59466	55 to 644 inches. Brown (7.5YR 4/4) silt loam with pale brown silt coatings on ped surfaces and gray silt pockets; breaks out in massive coarse blocks; very compact in place but friable when crushed; black manganese stains are common.

Notes: Colors given are for moist soil.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Lowell silty loam SOIL Nos. S60Ky-25-2 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14432-14436 July 1966

General Methods: 1A, 1B1a, 2A1, 2B

Depth	Horizon	Size class and particle diameter (mm) 3A1															
		Total			Sand					Silt				Clay		Coarse fragments 2A2	
		Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		Int. III	Int. II			Non-clay	≥ 2	2 - 10	10 - 75

Soil Type: Lowell silt loam
Soil Nos.: S60Ky-25-2
Location: Clark County, Kentucky, 3/4 mile south on Fox and Quisenberry Roads to valley-type pond on west side of road; then north by west (335 degrees) 600 feet to top of ridge. Photo AFN-2N-175.
Vegetation: Tobacco with small grain cover crop; cultivated.
Slope and Land Form: Gently sloping (3 percent) upland ridgetop.
Drainage: Well drained, slow to medium runoff, moderately slow permeability.
Parent Material: Siltstone and limestone.
Collected by: J. S. Allen and K. K. Young, November 7, 1960.
Described by: E. V. Huffman, November 7, 1960.

Horizon and Lincoln Lab. No.	
A2 14432	0 to 9 inches. Very dark grayish brown (10YR 3/2) to brown (10YR 4/3) silt loam; moderate fine granular structure; friable; abundance of roots; pH 5.5; abrupt smooth boundary.
B2 14433	9 to 15 inches. Yellowish brown (10YR 5/4) ped exteriors and yellowish brown (10YR 5/6) ped interiors; light silty clay; strong medium subangular blocky structure; continuous clay films; firm, sticky and plastic; abundance of roots; few small pieces of partially weathered siltstone; few very small black concretions; pH 5.0; clear smooth boundary.
B3 14434	15 to 20 inches. Yellowish brown (10YR 5/4) ped exteriors and variegated many fine distinct yellowish brown (10YR 5/6) yellowish red (5YR 5/6) and light olive gray (5Y 6/2) ped interiors; silty clay; moderate medium subangular blocky structure; patchy clay films; firm, sticky and plastic; few roots; yellowish brown (10YR 5/8) siltstone ranging in size from very small fragments to pieces 1 1/2 inches across are common; pH 5.0; clear wavy boundary.
C1 14435	20 to 34 inches. Variegated many medium distinct gray (5Y 6/1) gray (N 6/0) and dark brown (7.5YR 4/4) clay; weak coarse blocky structure to massive; very firm, very sticky and very plastic; yellowish brown partially weathered siltstone ranging in size from small fragments up to channery size; makes up about 30 percent of the total volume; few black manganese stains; pH 4.8; diffuse smooth boundary.
C2 14436	34 to 44 inches. Interbedded gray (5Y 6/1) somewhat brittle clay and yellowish brown siltstone; dark red (2.5YR 3/6) iron stainings are common; pH 4.8; clear irregular boundary.
Dr	44 inches. Yellowish brown (10YR 5/6) siltstone; pH 4.0.

Remarks: The Ap horizon has discontinuous bands and pockets of yellowish brown (10YR 5/4) B material which was probably caused by plowing. Profile has thinner than normal solum and parent material is dominantly from siltstone. Siltstones are common on the surface around the pit ranging in size from 1 to 6 inches across. Color given for moist

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Lowell silt loam SOIL Nos. 360Ky-25-3 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14437-14440 June 1966

General Methods: 1A, 1B1a, 2A1, 2B

Depth (In.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2-0.05) a	Total: Silt (0.05-0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: (0.05-0.02)	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)	Clay: 3A1a Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2	2-19	19-76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-6	Ap	5.6	70.6	23.8	1.0	1.1	0.6	0.8	2.1	28.0	42.6	30.5	3.5			-		
6-15	B21	4.8	51.6	43.6	0.2	0.6	0.6	1.5	1.9	16.5	35.1	19.3	2.9			-		
15-26	B22	6.6	50.5	42.9	1.2	1.3	0.6	1.2	2.3	15.1	35.4	18.1	4.3			tr		
26-36	C1	6.8	58.0	35.2	1.1b	1.2b	0.6b	1.2b	2.7b	21.0	37.0	24.4	4.1	-	35.2	tr		

Depth (In.)	6A1a Organic carbon Pct.	6B1a Nitrogen Pct.	C/N		6E1c Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe Pct.	Bulk density: 4A1a Field-State g/cc	4A1c 30-cm. g/cc	4A1h Oven-Dry g/cc	4D1 COLE c	Water content: 4B4 Field-State Pct.	4B3 30-cm. Pct.	4B2 15-Bar Pct.	4C1 30-cm. minus 15-Bar in./in.		pH		8C1a (1:1)
0-6	1.65	0.151	11			1.7							11.2					5.7
6-15	0.31	0.047	6			2.3	1.62e	1.55	1.70	0.032	19.5	23.2	17.9	0.08				5.0
15-26	0.22	0.035				2.5	1.71		1.76				17.6					4.6
26-36	0.19				3	1.9							14.5					7.4

Depth (In.)	Extractable bases 5B1a: 6H2b Ca	6G2b Mg	6F2a Na	6G2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap. 5A3a Sum Cations	5A1a NH_4OAc	6G1a KCl-Ext. Al							Base saturation 5C3 Sum Cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-6	9.0	1.2	tr	0.5	10.7	8.1	18.8	14.0	-							57	76
6-15	11.6	1.6	tr	0.4	13.6	13.4	27.0	20.6	2.3							50	66
15-26	13.6	2.1	0.1	0.4	16.2	12.0	28.2	21.3	1.8							57	76
26-36			tr	0.2				17.5									

Depth (In.)	Ratios to Clay 8D1: NH_4OAc CEC	Ext. Iron	15-Bar Water		
0-6	0.59	0.071	0.47		
6-15	0.47	0.053	0.41		
15-26	0.50	0.058	0.41		
26-36	0.50	0.054	0.41		

a. Siltstone-like fragments compose a major portion of the sand-size material.
b. 1 to 5 percent carbonate.
c. Coefficient of Linear Extensibility.

USDA-SCS-LINCOLN, NEBR. 1966

Soil Type: Lowell silt loam
Soil Nos.: S60Ky-25-3
Location: Clark County, Kentucky, west 1.3 miles on Miller-Hunt Road to gate; through gate on unimproved farm road across railroad track to ridge and old house. Westerly on ridge to point northwest (326 degrees), 1,225 feet from where gas pipeline goes under railroad and west (267 degrees), 1,725 feet from old house. New road location may block entrance through gate to vehicles but will bring hard surface road much closer to site. Photo AFN-2N-63.
Vegetation: Bluegrass; pasture.
Slope and Land Form: Gently sloping (3 percent) upland ridgetop.
Drainage: Well drained, medium to slow runoff, moderately slow permeability.
Parent Material: Siltstone and limestone.
Collected by: J. S. Allen and K. K. Young, November 8, 1960.
Described by: E. V. Huffman, November 8, 1960.

Horizon and Lincoln Lab. No.	
Ap 14437	0 to 6 inches. Very dark grayish brown (10YR 3/2) silt loam; moderate fine granular structure; friable; few small pockets of B material in the last two inches; abundance of roots; pH 6.5; abrupt irregular boundary.
B21 14438	6 to 15 inches. Light olive brown (2.5Y 5/4) ped exteriors, yellowish brown (10YR 5/6) ped interiors; silty clay; few fine distinct pale olive (5Y 6/3) variegations; moderate medium subangular blocky structure; continuous clay films; firm, sticky and plastic; roots are plentiful; soft small black concretions are common; few vertical intrusions of A material in old root channels; few small fragments of partially weathered siltstone; pH 6.0; diffuse smooth boundary.
[illegible]	[illegible]
	continuous clay films; very firm, sticky and very plastic; roots are plentiful; small soft black concretions are common; fragments of partially weathered siltstone are common; pH 6.0; clear smooth boundary.
C1 14440	26 to 36 inches. Interbedded variegated light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/6) clay and yellowish brown (10YR 5/6) partially weathered siltstone; the texture of the material is silty clay when crushed and mixed together; massive; firm; slightly sticky and plastic when wet; black concretionary stainings are common; few roots; pH 7.0; gradual smooth boundary.
C2	36 to 41 inches. This horizon same as C1 horizon above except that the siltstone dominates the mass in this

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Lowell silt loam SOIL Nos. S60Ky-25-5 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14447-14451 June 1966

General Methods: 1A, 1B1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2-0.05)	Total: Silt (0.05-0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2-1) a	Sand: Coarse (1-0.5) a	Sand: Medium (0.5-0.25) a	Sand: Fine (0.25-0.1) a	Sand: Very fine (0.1-0.05) b	Silt: (0.05-0.02)	Silt: Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)	Clay: Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2 Pct.	2-19 (Pct. of < 76mm)	19-76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-7	Ap	6.2	68.3	25.5	0.4	1.4	1.0	1.1	2.3	23.6	44.7	26.4	3.9			-		
7-14	B1	6.3	62.5	31.2	0.4	1.5	1.2	1.3	1.9	20.4	42.1	22.9	4.4			-		
14-20	B2	6.6	55.4	38.0	0.6	1.2	0.9	1.4	2.5	18.1	37.3	21.3	4.1			-		
20-32	B3	6.7	50.4	42.9	0.8	0.9	0.7	1.2	3.1	18.1	32.3	21.8	3.6			-		
32-44	C	3.4	48.2	48.4	0.1	0.4	0.3	0.8	1.8	12.5	35.7	14.8	1.6			-		

Depth (in.)	6A1a Organic carbon c Pct.	6B1a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe Pct.	Bulk density: 4A1a Field-State g/cc	4A1c 30-cm. g/cc	4A1h Oven-Dry g/cc	4D1 COLE d	Water content: 4B4 Field-State Pct.	4B3 30-cm. Pct.	4B2 15-Bar Pct.	4C1 30-cm. minus 15-Bar in./in.		pH		8C1a (1:1)
0-7	1.31	0.140	9			2.4	1.45	1.42	1.48	0.014	15.7	24.9	10.6	0.20				6.0
7-14	0.44	0.069	6			2.6	1.66	1.62	1.68	0.014	13.7	19.9	13.5	0.10				5.7
14-20	0.24	0.053				3.2	1.69	1.63	1.71	0.017	14.7	21.1	16.2	0.08				5.9
20-32	0.19	0.046				3.8							18.1					5.8
32-44	0.22					3.6	1.72		1.79				19.1					5.5

Depth (in.)	Extractable bases 5B1a: 6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap.: 5A3a Sum Cations	5A1a NH_4OAc	6G1a KCl-Ext. Al							Base saturation: 5C3 Sum Cations	5C1 NH_4OAc
	meq/100 g															Pct.	Pct.
0-7	7.8	0.9	tr	0.3	9.0	7.4	16.4	11.8	-							55	76
7-14	8.3	0.8	tr	0.3	9.4	6.4	15.8	12.2	-							59	77
14-20	11.1	1.0	tr	0.3	12.4	6.7	19.1	15.0	-							65	83
20-32	12.7	1.3	tr	0.4	14.4	7.9	22.3	17.0	0.1							64	85
32-44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]

Soil Type: Lowell silt loam
Soil Nos.: S60Ky-25-5
Location: Clark County, Kentucky, one mile north on Morris Road from its south end to gate and unimproved farm road up hill to northeast, follow farm road 1/2 mile to house; 1,000 feet south by east (166 degrees) of house and 600 feet northeast (44 degrees) of pond on ridge. Photo AFN-2N-34.
Vegetation: Bluegrass; pasture.
Slope and Land Form: Sloping (8 percent) footslope.
Drainage: Well drained, medium runoff, moderately slow permeability.
Parent Material: Colluvium from soils of calcareous shale and limestone origin and with clayey subsoils.
Collected by: J. S. Allen and K. K. Young, November 8, 1960.
Described by: E. V. Huffman, November 8, 1960.

Horizon and Lincoln Lab. No.	
Ap 14447	0 to 7 inches. Dark brown (10YR 3/3) silt loam; weak fine granular structure; friable; abundance of roots; pH 7.0; clear wavy boundary.
B1 14448	7 to 14 inches. Dark yellowish brown (10YR 4/4) silty clay loam; weak medium subangular blocky structure; few patchy clay films; firm, slightly sticky and plastic; abundance of roots; few fine and medium pores; few small very dark brown concretions; pH 6.8; gradual wavy boundary.
B2 14449	14 to 20 inches. Yellowish brown (10YR 5/6) silty clay or clay; moderate medium subangular blocky structure; patchy brown (7.5YR 4/4) clay films; firm, sticky and plastic; small round very dark brown concretions and black concretionary material is common; roots are plentiful; pH 6.8; gradual smooth boundary.
B3 14450	20 to 32 inches. Yellowish brown (10YR 5/4) ped exteriors, yellowish brown (10YR 5/6) interiors; clay; weak medium blocky structure; very firm, sticky and plastic; few roots; abundance of black concretionary material; pH 6.8; clear irregular boundary.
C 14451	32 to 44 inches. Light olive brown (2.5Y 5/4) clay with common fine faint olive (5Y 5/3) and a few fine distinct strong brown (7.5YR 5/6) variegations; weak coarse blocky structure to massive; very firm, sticky
Dr	44 inches plus. Cynthiana limestone bedrock.

Remarks: There is an old root channel filled with dark grayish brown silt loam material 1 1/2 inches across at the top and tapering down to 1/2 inch at the bottom, that extends through the B1, B2, and B3 horizons. Color given for moist soil. Reaction determined by Soiltex.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Lowell silt loam SOIL Nos. 960Ky-25-6 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14452-14456 June 1966
General Methods: 1A, 1B1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)	Clay: Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-7	Ap	9.5	65.8	24.7	2.6a	3.2a	1.5a	1.4a	0.8a	17.4	48.4	18.8	8.7			tr		
7-13	B1	16.4	51.6	32.0	5.9a	5.4a	2.1a	1.9a	1.1a	12.9	38.7	14.8	15.3			-		
13-22	B2	17.5	41.7	40.8	6.2a	5.1a	2.1a	2.5a	1.6a	10.9	30.8	13.7	15.9			-		
22-31	B3	12.3	30.3	57.4	1.3a	2.5a	1.8b	3.7b	3.0b	7.9	22.4	13.0	9.3			-		
31-36	C	15.6	29.6	54.8	2.5a	3.1b	2.0b	4.4c	3.6c	7.6	22.0	13.9	12.0			-		

Depth (in.)	6A1a Organic carbon d Pct.	6B1a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe Pct.	Bulk density: 4A1a Field-State g/cc	4A1c 30-cm. g/cc	4A1h Oven-Dry g/cc	4D1 COLE f	Water content: 4B4 Field-State Pct.	4B3 30-cm. Pct.	4B2 15-Bar Pct.	4C1 30-cm. minus 15-Bar in./in.		pH		8C1a (1:1)
0-7	1.46	0.151	10			3.4	1.37e	1.33e	1.41e	0.020	24.0e	31.2e	11.0	0.27				5.3
7-13	0.32	0.061	5			4.5	1.64	1.60	1.65	0.010	15.2	20.2	13.5	0.11				5.2
13-22	0.19	0.054				5.0	1.71		1.74				17.1					5.3
22-31	0.25	0.061				4.5							22.9					5.3
31-36	0.23					4.6							22.3					6.1

Depth (in.)	Extractable bases 6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	5R1a Sum	6H1a Ext. Acidity	Cat. Exch. Cap. 5A3a Sum Cations	5A1a NH_4OAc	6G1a KCl-Ext. Al							Base saturation 5C3 Sum Cations	5C1 NH_4OAc
	meq/100 g															Pct.	Pct.
0-7	5.6	0.6	tr	0.2	6.4	13.1	19.5	13.4	0.5							33	48
7-13	6.7	0.4	tr	0.2	7.3	11.7	19.0	14.1	0.8							38	52
13-22	10.8	0.5	tr	0.3	11.6	14.2	25.8	18.6	0.8							45	62
22-31	20.2	0.7	0.1	0.4	21.4	17.1	38.5	28.3	1.4							56	76
31-36	27.2	0.7	0.1	0.4	28.4	11.8	40.2	30.8	-							71	92

Depth (in.)	Ratios to Clay 8III: NH_4OAc CEC	Ext. Iron	15-Bar Water
0-7	0.54	0.14	0.44
7-13	0.44	0.14	0.42
13-22	0.46	0.12	0.42
22-31	0.49	0.078	0.40
31-36	0.56	0.084	0.41

a. > 50 percent Fe-Mn.
b. > 50 percent Fe-Mn, 1 to 5 percent carbonate.
c. 25-50 percent Fe-Mn, 5 to 25 percent carbonate.
d. 5.0 kg/m^2 to 22 inches.
e. One clod.
f. Coefficient of Linear Extensibility.

USDA-SCS-LINCOLN, NEBR. 1966

Soil Type: Lowell silt loam
Soil Nos.: S60Ky-25-6
Location: Clark County, Kentucky, on Muddy Creek Road, 1.7 miles south of railroad overpass near city limits; through stone farm gate on unimproved farm road; 1,000 feet along farm road to bend; 30 feet from road on south side. Photo AFN-2N-10.
Vegetation: Bluegrass; pasture.
Slope and Land Form: Sloping (10 percent) footslope.
Drainage: Well drained, medium runoff, moderately slow permeability.
Parent Material: Colluvium from soils of calcareous shale and limestone origin and with clayey subsoils.
Collected by: J. S. Allen and K. K. Young, November 9, 1960.
Described by: E. V. Huffman, November 9, 1960.

Horizon and Lincoln Lab. No.	
Ap 14452	0 to 7 inches. Dark brown (10YR 3/3) silt loam; moderate fine granular structure; friable; abundance of roots; pH 6.8; abrupt irregular boundary.
B1 14453	7 to 13 inches. Brown (7.5YR 4/4) silty clay loam; weak medium subangular blocky structure; few clay films; firm to friable, slightly sticky and slightly plastic; abundance of roots; small round dark brown concretions are common; few small pores; pH 5.0; clear smooth boundary.
B2 14454	13 to 22 inches. Dark yellowish brown (10YR 4/4) silty clay; few medium faint brown (7.5YR 4/4) variegations; moderate medium subangular blocky structure; clay films mostly continuous; firm, sticky and plastic; roots are plentiful; small round dark brown concretions are common to abundant; pH 5.0; gradual smooth boundary.
B3 14455	22 to 31 inches. Dark yellowish brown (10YR 4/4) clay; few medium faint yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) variegations; weak medium blocky structure; patchy clay films; very firm, sticky and very plastic; few roots; soft black concretionary material and small very dark brown concretions are abundant; pH 5.5; gradual smooth boundary.
C 14456	31 to 36 inches. Variegated many fine distinct light olive brown (2.5Y 5/4) pale olive (5Y 6/3) and strong brown (7.5YR 5/6) clay; massive; very sticky and very plastic; few roots; abundance of soft black and dark brown concretionary material; pH 6.8; clear smooth boundary.
Dr	36 inches plus. Cynthiana limestone bedrock.

Remarks: Color given for moist soil. Reaction determined by Soiltex.

Mineralogy (Method 7A). Horizon B2 13 to 22 inches LSL No. 14454
The clay contains moderate amounts of mica (or illite) and interstratified minerals involving mica and 14Å minerals. A small amount of vermiculite is present. The interstratified minerals include montmorillonite and chlorite.

Mineralogy is mixed, based on X-ray diffraction patterns. The apparent exchange capacity of the clay, 46 me/100g, suggests a mixture including montmorillonite or vermiculite.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Memphis silt loam SOIL Nos. S57Ky-56-12 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58107-58117

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19 (Pct. of < 76mm)	19 – 76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-8	Ap		83.6	11.7	-	0.2	0.2	0.6	3.7		35.4	52.2				tr.		
8-14	B1		76.2	21.0	-	-	-	0.1	2.7		35.3	43.6				-		
14-23	B21		66.1	30.8	-	-	-	0.2	2.9		29.7	39.4				-		
23-30	B22		71.4	24.8	-	-	-	0.2	3.6		30.9	44.2				-		
30-39	B23		71.7	22.0	-	-	-	0.2	6.1		26.8	51.0				-		
39-46	B31		76.7	19.6	-	-	-	0.2	3.5		31.5	48.7				-		
46-52	B32		80.4	16.4	-	-	-	0.1	3.1		36.3	47.2				-		
52-65	C11		82.8	12.2	-	-	-	0.2	4.8		32.3	55.3				-		
65-86	C12		86.5	9.9	-	-	-	0.1	3.5		32.1	57.9				-		
86-100	B2b[a]		76.4	21.3	0.2	0.1	0.1	0.2	1.7		43.5	34.7				tr.		
100-104	Cb[b]		68.6	29.6	0.3	0.2	0.2	0.3	0.8		47.1	22.4				1		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-8	1.58	0.110	14			1.4						17.9	5.4					5.3
8-14	0.41	0.050	8			2.3						19.1	8.1					4.8
14-23	0.23					3.9						24.4	12.0					4.4
23-30	0.11					3.5						25.6	10.5					4.4
30-39	0.10					3.8						24.3	9.5					4.3
39-46	0.10					3.4						24.7	9.0					4.4
46-52	0.09					2.9						24.1	9.3					4.5
52-65	0.09					2.6						22.1	7.6					4.6
65-86	0.07					2.4						23.2	6.5					4.6
86-100	0.07					2.2							11.0					5.6
100-104	0.08					2.3							13.6					5.8

Depth (In.)	Extractable bases 6N2a Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-8	4.8	1.6	tr.	0.3	6.7	13.4									51	
8-14	2.7	2.3	tr.	0.5	6.5	12.0									46	
14-23	1.9	3.7	tr.	0.4	11.5	17.6									35	
23-30	1.1	4.4	0.1	0.3	10.6	16.4									35	
30-39	0.6	4.3	0.1	0.2	10.1	15.3									34	
39-46	0.5	3.9	0.1	0.2	9.8	14.5									32	
46-52	0.3	3.5	0.1	0.2	9.0	13.1									31	
52-65	0.3	3.1	0.1	0.2	7.8	11.4									32	
65-86	0.6	2.9	0.1	0.1	6.7	10.5									36	
86-100	5.3	7.4	0.6	0.1	3.6	17.1									79	
100-104	7.7	9.6	0.9	0.2	3.8	22.3									84	

Depth (In.)					

a. Small amount iron oxide concretions in sand fraction of the B2b horizon.

b. Large amount iron oxide concretions in sand fractions of Cb horizon.

Soil type: Memphis silt loam
Soil No.: S57Ky-56-12
Location: Jefferson County, Kentucky, 75 yards northeast of power transmission line, 50 yards northeast of farm pond-50 yards north of private home on St. Paul Roman Catholic Church property-1/8 mile west of St. Anthony Church Road and corner of St. Paul Cemetery. Photo AFW-1R-81, 1956
Vegetation and land use: Grease grass, broom sedge, sassafras sprouts
Slope and land form: 3 percent ridgetop - C and D side slopes.
Erosion: None
Drainage: Well drained
Parent material: Loess
Physiographic position: Outer bluegrass (Ohio River bluffs) - high ridge top on bluff above Ohio River lowlands
Collected by and date: W. H. Zimmemman, E. J. Pedersen and G. M. Phibbs, October 15, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58107	0 to 8 inches. Dark grayish brown (10YR 4/2) silt loam; moderate medium fine granular structure; very friable; common carbon specks; pH 6.5; abrupt wavy boundary.
B1 58108	8 to 14 inches. Yellowish red (5YR 4/6), strong brown (7.5YR 5/6) crushed, variegated few fine faint yellowish brown (10YR 5/4) fine silt loam or coarse silty clay loam; moderate medium subangular blocky structure; patchy clay skins; friable; few grayish brown silt loam intrusions from the Ap; pH 6.0; clear wavy boundary.
B21 58109	14 to 23 inches. Reddish brown (5YR 4/4) to strong brown (7.5YR 5/6) crushed, silty clay loam; strong medium subangular blocky structure; prominent dark reddish brown (5YR 3/4) clay skins; firm; few medium pores; few small black concretions, pH 5.0; gradual smooth boundary.
B22 58110	23 to 30 inches. Strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular and angular blocky structure; very prominent dark reddish brown clay skins; firm to friable; common black iron and manganese concretionary staining; pH 5.0; gradual smooth boundary.
B23 58111	30 to 39 inches. Very similar to layer above except possibly less clay content, a little more friable, has a weak medium prismatic macrostructure and clear smooth boundary.
B31 58112	39 to 46 inches. Brown (7.5YR 4/4) fine silt loam with a few fine faint variegations of yellowish brown (10YR 5/6); coarse prismatic macrostructure breaking into weak medium angular blocks; friable; few small black concretions; pH 5.0; clear smooth boundary.
B32 58113	46 to 52 inches. Brown (7.5YR 4/4) with a few fine faint variegations of light yellowish brown (10YR 6/4) silt loam (more silty than B31); weak coarse prismatic macrostructure breaking into moderate coarse subangular and weak medium angular blocky structure; reddish brown clay skins; friable; more concretions than B31; pH 5.0; clear smooth boundary.
C11 58114	52 to 65 inches. Brown (7.5YR 4/4) silt loam with common fine faint yellowish brown (10YR 5/4) variegations, weak medium subangular blocky to massive structure; weak reddish brown clay skins; friable; a few discontinuous voids 3 inches across and with long axis horizontal to surface and walls coated with grayish brown silt and streaked with yellowish red from iron oxidation; few specks of carbon; few root channels filled with grayish brown silt; pH 5.0; clear smooth boundary.
C12 58115	65 to 86 inches. Brown (7.5YR 4/4) strong brown (7.5YR 5/6) crushed silt loam (high in silt) with common fine distinct variegations of light brownish gray (10YR 6/2); massive; very friable; pale brown silt coats along walls of root voids; few flecks of soft black carbonlike material; pH 5.0; clear smooth boundary.
B2b 58116	86 to 100 inches. Brown (7.5YR 4/4) with common fine distinct yellowish brown (10YR 5/4) variegations coarse silty clay loam or silt loam; moderate medium angular blocky structure; friable; few charcoal specks, 2 mm. in size; pH 5.0; clear smooth boundary.
Cb 58117	100 to 104 inches. Brown (7.5YR 5/4); variegated with red (2.5YR 4/6) silty clay; weak medium angular blocky structure; firm, plastic when wet; common dusky red iron stones 1 cm. across; numerous black concretions; pH 6.0; abrupt smooth boundary.

Notes: Underlying rock is believed to be gray clay shale with numerous iron rocks. Ap contains discontinuous remnants of an A2, grayish brown (10YR 5/2) silt loam. C11 appears vesicular with some characteristics of a buried A horizon. Sampled with orchard auger from 86 to 104 inches. Color taken moist unless otherwise stated.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Memphis silt loam SOIL Nos. 391827-391832 LOCATION Marshall County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. C3929-C3934

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments: > 2 Pct.	2 – 19 (Pct. of < 76mm)	19 – 76 (Pct. of < 76mm)
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm																
1-4½			86.9	9.6	0.1	0.4	0.5	0.5	0.7		46.0	43.0						
4½-9			86.3	11.4	0.1	0.3	0.3	0.4	0.6		48.0	39.5						
9-15			67.6	30.5	-	0.1	0.2	0.2	0.4		41.9	26.9						
15-29			63.7	34.7	-	0.6	0.1	0.2	0.3		38.2	26.4						
29-50			70.9	26.0	0.2	0.6	0.8	0.4	0.5		40.3	31.6						
50-76			68.9	20.2	0.9	2.9	4.1	1.7	0.8		36.5	34.1						

Depth (In.)	6A3a Organic carbon H_2O_2 Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
1-4½	1.0																	4.4
4½-9	0.4																	4.4
9-15	0.9																	4.4
15-29	0.7																	4.4
29-50	0.5																	4.7
50-76	0.3																	4.6

Depth (In.)	Extractable bases: 6N2d Ca	602b Mg	5B1a Na	K	6H1a Ext. Acidity											Base saturation: 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
1-4½	tr.	0.2			6.4											5	
4½-9	tr.	0.1			5.3											4	
9-15	0.7	2.6			10.4											24	
15-29	2.0	5.2			11.3											37	
29-50	1.1	4.8			8.3											42	
50-76	0.7	2.1			6.9											29	

Depth (In.)

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Memphis silt loam, undulating phase
Location: 2.06 miles SW of Brewers, Marshall County, Kentucky
Sampled by and date: W. J. Leighty, 1938

Beltsville Lab. No.	
	0 to 1 inch. Dark grayish brown silt loam; mellow; smooth.
C3929	1 to 4 1/2 inches. Light grayish brown silt loam; mellow; faint thin platy structure; few iron concretions.
C3930	4 1/2 to 9 inches. Pale yellowish brown smooth silt loam; mellow; very faintly platy; very few small iron concretions.
C3931	9 to 15 inches. Bright yellowish brown silty clay loam; slightly reddish; quite friable; subangular; nutlike structure; very few concretions.
C3932	15 to 29 inches. Reddish yellowish brown heavy silty clay loam; rounded to subangular nutlike structure; quite friable.
C3933	29 to 50 inches. Reddish yellowish brown heavy silt loam; friable; rounded to subangular, soft nutlike structure; some black coating on particles.
C3934	50 to 76 inches. Yellowish brown heavy silt loam; friable; slightly reddish; gritty; some sand grains; few channels filled with grayish material.
	76+ inches. Reddish yellowish brown light sandy gravelly clay loam; few gray mottlings; very friable.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Muse silt loam SOIL Nos. S60Ky-25-1 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14425-14431 June 1966

General Methods: 1A, 1H1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1 — Total: Sand (2–0.05) a	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	Silt: (2–0.1)	Clay: Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2	2 – 19	19 – 76
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-2	A1	17.3	61.8	20.9	10.7	3.3	1.0	1.4	0.9	10.0	51.8	11.6	16.4			tr		
2-8	A3	9.8	66.2	24.0	4.1	2.6	0.9	1.3	0.9	10.1	56.1	11.6	8.9			tr		
8-15	B1	13.4	55.9	30.7	6.3	3.3	1.1	1.7	1.0	8.6	47.3	10.4	12.4			tr		
15-24	B21	6.2	55.4	38.4	2.8	1.5	0.6	0.8	0.5	8.6	46.8	9.5	5.7			tr		
24-31	B22	5.6	57.8	36.6	2.3	1.4	0.5	0.8	0.6	10.1	47.7	11.1	5.0			tr		
31-42	B3	7.6	57.8	34.6	3.8	1.8	0.6	0.8	0.6	11.4	46.4	12.4	7.0			tr		
42-48	C	8.7	58.2	33.1	4.1	2.0	0.7	1.0	0.9	11.2	47.0	12.6	7.8			tr		

Depth (in.)	6A1a Organic carbon	6H1a Nitrogen	C/N		Carbonate as $CaCO_3$	6C1a Ext. Iron as Fe	Bulk density: 4A1a Field-State	4A1c 30-cm.	4A1h Oven-Dry	4D1 COLE c	Water content: 4B4 Field-State	4B3 30-cm.	4B2 15-Bar	4C1 30-cm. minus 15-Bar		pH		8C1a (1:1)
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.	in./in.				
0-2	4.01	0.176	23			7.5							10.8					4.0
2-8	1.47	0.116	13			6.0	1.32	1.32	1.35	0.007	23.8	28.9	9.7	0.25				4.5
8-15	0.50	0.067	7			7.0							12.0					4.6
15-24	0.36	0.061	6			4.2	1.58b	1.56b	1.61b	0.010	18.3b	22.2b	14.5	0.12				4.7
24-31	0.23					4.2							14.4					4.8
31-42	0.17					4.9	1.62	1.60	1.64	0.007	20.3	23.7	14.1	0.15				4.8
42-48	0.25					6.5							13.8					4.6

Depth (in.)	Extractable bases 5H1a: 6N2b Ca	6Q2b Mg	6P2a Na	6Q2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap.: 5A3a Sum Cations	5A1a NH_4OAc	6G1a KCl-Ext. Al	Base saturation: 5C3 Sum Cations	5C1 NH_4OAc
	meq/100 g									Pct.	Pct.
0-2	0.3	0.6	tr	0.2	1.1	21.7	22.8	15.8	5.9	5	7
2-8	0.3	0.4	0.1	0.3	1.1	15.0	16.1	10.1	4.2	7	11
8-15	tr	0.5	tr	0.3	0.8	12.1	12.9	9.1	4.0	6	9
15-24	tr	0.4	0.1	0.4	0.9	13.3	14.2	9.5	5.2	6	9
24-31	0.2	0.6	tr	0.4	1.2	12.6	13.8	9.9	5.0	9	12
31-42	0.1	0.5	tr	0.3	0.9	12.4	13.3	9.3	5.2	7	10
42-48	tr	0.4	tr	0.2	0.6	10.7	11.3	7.3	3.5	5	8

Depth (in.)	Ratios to Clay 8H1: NH_4OAc CEC	Ext. Iron	15-Bar Water
0-2	0.76	0.36	0.52
2-8	0.42	0.25	0.40
8-15	0.30	0.23	0.39
15-24	0.25	0.11	0.38
24-31	0.27	0.11	0.39
31-42	0.27	0.14	0.41
42-48	0.22	0.20	0.42

a. Shale-like fragments compose a major portion of the sand-size material.
b. One clod.
c. Coefficient of Linear Extensibility.

9004-SCS-LINCOLN, NEBR. 1966

Soil Type: Muse silt loam
Soil Nos.: S60Ky-25-1
Location: Clark County, Kentucky, 3 miles south of Goffs Corner on Pine Ridge Road or 1/4 mile south of intersection of Pine Ridge Road with road to Rabbit Town, 200 feet east of road on south footslope of hill. Photo AFN-2N-195.
Vegetation: Pine and mixed hardwood (hardwood mostly oak) woodland.
Slope and Land Form: Strongly sloping (17 percent) footslope.
Drainage: Well drained, medium to rapid runoff, moderate permeability.
Parent Material: Colluvium of Ohio black shale origin.
Collected by: J. S. Allen and K. K. Young, November 7, 1960.
Described by: E. V. Huffman, November 7, 1960.

Horizon and Lincoln Lab. No.	
Ao	1 to 0 inch. Leaves, pine needles, twigs, and black partially decayed litter.
A1 14425	0 to 2 inches. Dark brown (7.5YR 3/2) silt loam; moderate fine granular structure; very friable; abundance of roots; pH 4.0; abrupt smooth boundary.
A3 14426	2 to 8 inches. Dark brown to brown (7.5YR 4/4 to 5/4) silt loam; weak fine subangular blocky and weak medium granular structure; friable; few very dark brown concretions; abundance of roots; pH 4.8; abrupt smooth boundary.
B1 14427	8 to 15 inches. Reddish brown (5YR 4/4) silty clay loam; moderate medium subangular blocky structure; few thin patchy clay films; firm, slightly sticky and plastic; roots plentiful; small pieces of partially weathered shale are common; pH 5.0; gradual smooth boundary.
B21 14428	15 to 24 inches. Reddish brown (5YR 4/4) heavy silty clay loam; few medium faint yellowish red (5YR 5/6) variegations; moderate medium subangular blocky structure; somewhat continuous clay films; firm, sticky, and plastic; roots plentiful; small fragments of partially weathered shale are common; pH 5.0; diffuse smooth boundary.
B22 14429	24 to 31 inches. Yellowish red (5YR 4/6) strong brown (7.5YR 5/6) crushed, heavy silty clay loam; strong medium subangular blocky structure; clay films common; firm, sticky and plastic; few roots; small pores are common; few small dark brown concretions; fragments of partially weathered shale are common; pH 5.0; clear smooth boundary.
B3 14430	31 to 42 inches. Variegated yellowish red (5YR 4/6) yellowish brown (10YR 5/6) and red (2.5YR 4/6) silty clay; weak medium angular blocky structure; very firm, sticky and very plastic; few small pores; small weathered shale fragments are common; pH 5.0; clear wavy boundary.
C 14431	42 to 48 inches. Variegated many fine distinct red (2.5YR 4/6) gray (10YR 6/1) and light olive gray (5Y 6/2) clay; massive; very firm and somewhat brittle; many small weathered shale fragments; pH 4.8.
Dr	48 inches plus. Dark brown (7.5YR 3/2) weathered Ohio black shale.

Remarks: Color given for moist soil. Reaction determined by Soiltex.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Muse silt loam SOIL Nos. 36OKy-25-4 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14441-14446 June 1966

General Methods: 1A, 1H1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1: Total: Sand (2–0.05) a	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)	Clay: Carbonate	Clay: Non-Carbonate	Coarse fragments 2A2: > 2 Pct.	2 – 19 (Pct. of < 76mm)	19 – 76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-2	A1	13.1	61.3	25.6	4.5	3.5	1.4	2.3	1.4	8.2	53.1	10.7	11.7			tr		
2-6	A3	9.4	57.9	32.7	3.0	2.5	1.1	1.8	1.0	6.2	51.7	8.1	8.4			tr		
6-18	B21	9.2	54.1	36.7	4.0	2.4	0.9	1.2	0.7	5.5	48.6	6.8	8.5			tr		
18-31	B22	6.6	49.2	44.2	2.3	2.0	0.7	1.0	0.6	5.1	44.1	6.2	6.0			tr		
31-46	B3	4.6	46.4	49.0	1.8	1.2	0.5	0.7	0.4	5.1	41.3	5.9	4.2			tr		
46-73	C1	7.7	55.4	36.9	3.6	1.7	0.6	1.1	0.7	8.3	47.1	9.6	7.0			tr		

Depth (in.)	6A1a Organic carbon Pct.	6H1a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe Pct.	Bulk density 4A1a Field-State g/cc	4A1c 30-cm. g/cc	4A1h Oven-Dry g/cc	4H1 COLE b	Water content 4B4 Field-State Pct.	4B3 30-cm. Pct.	4B2 15-Bar Pct.	4C1 30-cm. minus 15-Bar in./in.		pH	8C1a (1:1)
0-2	2.95	0.235	12			5.3							11.4				4.5
2-6	1.55	0.153	10			4.8							12.1				4.5
6-18	0.43	0.078	6			5.4	1.65	1.60	1.66	0.014	18.5	22.9	13.4	0.15			4.6
18-31	0.39	0.083	5			3.9	1.64	1.60	1.68	0.017	19.5	23.0	16.4	0.11			4.5
31-46	0.32					3.7	1.68	1.61	1.68	0.014	16.1	23.3	18.3	0.08			4.2
46-73	0.24					5.0							15.5				4.1

Depth (in.)	Extractable bases 6N2b Ca	6Q2b Mg	6P2a Na	5B1a 6Q2a K	Sum	6H1a Ext. Acidity	Cat. Exch. Cap. 5A3a Sum Cations	5A1a NH_4OAc	6C1a KCl-Ext. Al							Base saturation 5C3 Sum Cations Pct.	5C1 NH_4OAc Pct.
	meq/100 g																
0-2	0.4	0.6	tr	0.5	1.5	17.8	19.3	13.0	3.9							8	12
2-6	0.1	0.5	tr	0.4	1.0	15.4	16.4	11.3	4.7							6	9
6-18	tr	0.2	tr	0.4	0.6	12.3	12.9	9.4	5.3							5	6
18-31	0.1	0.2	tr	0.4	0.7	14.0	14.7	10.5	6.5							5	7
31-46	tr	0.3	tr	0.3	0.6	15.2	15.8	10.8	7.0							4	6
46-73	0.1	0.3	tr	0.3	0.7	13.8	14.5	9.9	6.4							5	7

Depth (in.)	Ratios to Clay 8H1: NH_4OAc CEC	Ext. Iron	15-Bar Water
0-2	0.51	0.21	0.44
2-6	0.34	0.15	0.37
6-18	0.26	0.15	0.36
18-31	0.24	0.09	0.37
31-46	0.22	0.08	0.37
46-73	0.27	0.14	0.42

a. Shale-like fragments compose a major portion of the sand-size material.
b. Coefficient of Linear Extensibility.

USDA-SCS-LINCOLN, NEBR. 1966

Soil Type: Muse silt loam
Soil Nos.: S60Ky-25-4
Location: Clark County, Kentucky, on State Route 89, 710 feet north of northern apex of triangle formed by road intersections at Trapp, to second pipeline crossing; out pipeline in a southwesterly direction 1,220 feet and then north 300 feet. Photo AFN-2N-181.
Vegetation: Yellow poplar, mixed oak and hickory; woodland.
Slope and Land Form: Strongly sloping (20 percent) footslope.
Drainage: Well drained, medium to rapid runoff, moderate permeability.
Parent Material: Colluvium from soils of Ohio black shale origin.
Collected by: J. S. Allen and K. K. Young, November 8, 1960.
Described by: E. V. Huffman, November 8, 1960.

Horizon and Lincoln Lab. No.	
Aoo	$1\frac{1}{2}$ to $\frac{1}{2}$ inch. Leaves and dead twigs.
Ao	$\frac{1}{2}$ to 0 inch. Black duff from decayed and partially decayed leaves and twigs.
A1 14441	0 to 2 inches. Dark brown (10YR 3/3) to brown (10YR 4/3) silt loam; moderate fine granular structure; friable; few small bits of partially weathered shale; abundance of roots; pH 4.8; clear smooth boundary.
A3 14442	2 to 6 inches. Brown (7.5YR 5/4) heavy silt loam; weak medium subangular blocky structure; friable; abundance of roots; few small pores; bits of partially weathered shale are common; pH 4.5; abrupt smooth boundary.
B21 14443	6 to 18 inches. Brown (7.5YR 4/4) silty clay loam with a few medium distinct gray (5Y 5/1) variegations; weak to moderate medium subangular blocky structure; discontinuous clay films on surfaces of larger peds; firm, slightly sticky and slightly plastic; abundance of roots; bits of partially weathered shale are common; few soft black concretions; pH 4.5; gradual smooth boundary.
B22 14444	18 to 31 inches. Reddish brown (5YR 4/4) silty clay with common medium distinct gray (N 6/0) and light olive gray (5Y 6/2) variegations; moderate medium subangular blocky structure; patchy clay films; firm, sticky and plastic; roots are plentiful; bits of partially weathered reddish shale are common; few fine pores; few small very dark brown concretions; pH 4.5; diffuse smooth boundary.
B3 14445	31 to 46 inches. Reddish brown (5YR 5/4) clay with common medium distinct gray (10YR 5/1) and olive gray (5Y 5/2) variegations; moderate coarse subangular blocks that break into weak medium angular blocky structure; patchy clay films; firm, sticky and plastic; few roots; bits of partially weathered red shale are common to abundant; pH 4.5; gradual irregular boundary.
C1 14446	46 to 73 inches. Variegated many medium distinct red (2.5YR 4/6) gray (10YR 5/1) and yellowish brown (10YR 5/4) clay; massive; firm, sticky and plastic; interbedded partially weathered black and gray shale; pH 4.5.
Dr	73 inches plus. Partially weathered gray and black shale with yellowish brown clay interstitial material; pH 4.0.

Remarks: Silt loam-filled root channels extend through the A3, B21, B22 and B3 horizons. Color given for moist soil. Reaction determined by Soiltex.

Mineralogy (Method 7A). Horizon B2 31 to 46 inches LSL No. 14445
Abundant to dominant mica (or illite) with very small amounts of interstratified minerals and montmorillonite.

The mineralogy is illitic according to X-ray diffraction patterns. The apparent exchange capacity of the clay, 22 me/100g, suggests kaolinite. The family mineralogy is tentatively placed as mixed with further consideration intended to determine whether illitic is more appropriate.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Needmore silt loam SOIL Nos. S54Ky-1-16 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55470-55474

Depth (in.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) — Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments: 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-2	A1		77.5	13.7	1.4	2.0	1.2	2.2	2.0		51.1	29.8				tr.		
2-7	A2		77.9	15.3	1.1	1.5	0.9	1.6	1.7		51.1	29.5				tr.		
7-17	B2		68.1	28.6	0.5	0.7	0.5	0.8	0.8		50.7	18.8				tr.		
17-24	C		48.5	48.5	0.3	0.7	0.4	0.7	0.9		37.1	12.7				tr.		
24+	Dr		50.6	45.7	0.5	1.0	0.5	0.8	0.9		39.1	12.8				25		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-2	2.84																	6.8
2-7	0.72																	4.9
7-17	0.39																	4.5
17-24	0.55																	5.0
24+	0.35																	5.3

Depth (in.)	Extractable bases: 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC: 5A3a Sum Cations										Base saturation: 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-2	10.4	0.5	0.1	0.4	3.6	15.0										76	
2-7	1.6	0.2	0.1	0.1	6.7	8.7										23	
7-17	0.8	0.1	0.3	0.1	12.9	14.2										9	
17-24	14.6	0.6	0.4	0.3	10.7	26.6										60	
24+	19.6	0.9	0.3	0.3	8.4	29.5										72	

Depth (in.)					

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Needmore silt loam
Soil No.: S54Ky-1-16
Location: Adair County, Kentucky; 1.1 miles north of Kentucky Highway 80 on Kentucky Highway 531; photo AIR-5H-88
Vegetation: Sparse growth of weeds
Slope: Gently sloping (3 percent)
Erosion: None
Drainage: Moderately well to well drained. Internal drainage slow
Parent material: Residuum from soft shales of the Warsaw formation, some of which are calcareous

Horizon and Beltsville Lab. No.	
A1 55470	0 to 2 inches. Dark grayish brown (2.5Y 4/2) friable silt loam with a weak, fine, granular structure; slightly acid; abrupt, wavy boundary.
A2 55471	2 to 7 inches. Light olive brown (2.5Y 4/4) friable silt loam with a weak, fine, granular structure; strongly acid; clear, wavy boundary.
B2 55472	7 to 17 inches. Light olive brown (2.5Y 5/4) firm, sticky, slightly plastic, silty clay loam with a moderate, fine and medium, subangular blocky structure; strongly acid; diffused, smooth boundary.
C 55473	17 to 24 inches. Mottled brown (7.5YR 5/4) and pale olive (5Y 6/4) laminated clay and weathered soft shales; strongly acid. Soil material in place has a faint greenish cast.
Dr 55474	24+ inches. Soft shales from Warsaw limestone formation.

Notes: Roots are abundant in A2, but only common in B2. Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Needmore silt loam SOIL Nos. S54Ky-1-17 LOCATION Adair County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55475-55479

Depth (in.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-2	A1		74.1	13.6	3.2	3.2	1.5	2.3	2.1		51.4	26.1				6		
2-8	A2		76.2	15.9	2.7	1.5	0.7	1.3	1.7		54.1	24.6				6		
8-18	B2		71.5	22.1	1.7	1.2	0.6	1.1	1.8		50.8	23.3				6		
18-26	C		69.1	25.5	1.3	1.0	0.5	1.0	1.6		50.1	21.2				5		
26+	De		63.8	27.9	1.6	1.8	0.8	1.6	2.5		46.6	20.6				30		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N	Carbonate as $CaCO_3$ Pct.	Bulk density g/cc	g/cc	g/cc	Water content Pct.	Pct.	Pct.	pH		8C1a (1:1) H_2O
0-2	5.1												4.6
2-8	1.29												4.6
8-18	0.45												4.7
18-26	0.32												4.7
26+	0.27												4.6

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations	Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g							
0-2	5.4	tr.	0.1	0.2	16.1	21.8	26	
2-8	0.8	tr.	0.2	0.1	8.7	9.8	11	
8-18	1.0	0.1	0.2	0.1	7.5	8.9	16	
18-26	1.3	tr.	0.2	0.1	10.5	11.6	14	
26+	1.7	0.2	0.4	0.1	11.8	14.2	17	

Depth (in.)

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Needmore silt loam
Soil No.: S54Ky-1-17
Location: Adair County, Kentucky; 1 mile east of Glens Fork on gravel road, one-half mile north of junction with Kentucky Highway 55; photo AIR-5H-126
Vegetation: Oaks, hickory, elm, dogwood and some birch
Slope: Sloping (7 percent)
Erosion: None
Drainage: Surface drainage good; internal drainage slow
Parent material: Residuum for soft shales of Warsaw formation, some of which are calcareous

Horizon and Beltsville Lab. No.	
A1 55475	0 to 2 inches. Dark grayish brown (2.5Y 4/2) friable silt loam with a weak, fine, granular structure; medium acid; abrupt, smooth boundary.
A2 55476	2 to 8 inches. Light olive brown (2.5Y 5/4) friable silt loam with a weak, fine, granular structure; strongly acid; clear, wavy boundary.
B2 55477	8 to 18 inches. Yellowish brown (10YR 5/4-5/6) firm, sticky and plastic silty clay with a strong, medium and coarse, subangular and angular blocky structure; very strongly acid; gradual, wavy boundary.
C 55478	18 to 26 inches. Variegated yellowish brown (10YR 5/6-5/8) strong brown (7.5YR 5/8) and pale olive (5Y 6/4) laminated clay and weathered shale. Soil mass has greenish cast.
Dr 55479	26+ inches. Soft shales from the Warsaw limestone formation.

Notes: Roots are common throughout B2. Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Otway silty clay loam SOIL Nos. 854Ky-6-6 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55353-55357

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 — Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-5	Ap		47.3	44.4	0.7	1.3	1.0	2.3	3.0		38.1	13.6				-		
5-8	B1		46.6	43.8	0.7	1.1	0.6	2.4	4.8		33.1	19.9				-		
8-15	B2		51.1	38.6	0.8	1.0	0.7	1.1	6.7		29.8	28.7				-		
15-20	B3		51.4	36.2	1.4	1.2	1.0	1.1	7.7		26.1	33.7				-		
20+	C		51.4	27.2	1.8	1.9	1.3	2.4	14.0		24.0	43.0				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-5	3.91																	7.2
5-8	1.79																	7.6
8-15	0.50																	7.9
15-20	0.27																	8.0
20+	0.23																	8.1

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-5	29.8	7.9	0.1	0.2	4.1	42.1										90	
5-8	Calcareous																
8-15	"																
15-20	"																
20+	"																

Depth (In.)					

USDA-SCS-BELTSVILLE MD. 1964

Soil type: Otway silty clay loam
Soil No.: S54Ky-6-6
Location: Bath County, Kentucky; twenty feet S.E. of fence corner on County Road 1/4 mile N.E. from Kentucky Highway 36; county road is 1/4 mile east of Y in road at Reynoldsville; photo AFH-3F40, right 8 3/4 inches, up 5 inches
Vegetation: Weeds, honey locust, brush, and bluegrass
Slope: 8 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55353	0 to 5 inches. Very dark grayish brown (2.5Y 3/2) firm, silty clay loam; slightly sticky, slightly plastic when wet; moderate, fine, and medium, angular blocky structure. Fine granular in upper inch. Mildly alkaline. Roots are abundant. Clear, smooth boundary.
B1 55354	5 to 8 inches. Dark grayish brown (2.5Y 4/2) to very dark grayish brown (2.5Y 3/2) firm to very firm calcareous silty clay; slightly sticky, slightly plastic when wet; few, medium distinct pale olive (5Y 6/4) mottles; strong, medium, angular blocky structure. Clay skins are prominent on ped surfaces. Clear, smooth boundary.
B2 55355	8 to 15 inches. Olive (5Y 5/3) very firm, plastic, calcareous clay with a few fine, distinct, brownish yellow (10YR 6/6) mottles; weak, medium, angular blocky structure. Clear, wavy boundary.
B3 55356	15 to 20 inches. Dominantly olive gray (5Y 5/2) very firm, plastic, massive like, calcareous clay; mottled yellowish brown (10YR 5/6). Mottles are common, fine and distinct. This layer has weathered calcareous shale laminations.
C 55357	20+ inches. Lenses of weathered, calcareous soft shales and clay pocketed with disintegrated calcareous sandstone. Cut surface appear splotched, brownish yellow, pale yellow, and light gray.

Notes: Color of soil moist unless otherwise stated.

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10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Otway silty clay loam SOIL Nos. S54Ky-6-7 LOCATION Bath County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55358-55362

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt 0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Pct. of < 2 mm															Pct. of < 76mm	
0-4	Ap		52.1	40.6	2.2	1.7	1.0	1.2	1.2		40.5	13.4				-		
4-10	B1		52.7	40.7	1.4	1.6	0.9	1.3	1.4		42.6	12.2				-		
10-13	B2		40.9	53.9	0.8	0.7	0.6	1.4	1.7		32.9	10.7				-		
13-16	B3		33.8	52.7	1.7	1.5	1.1	3.6	5.6		26.2	15.8				-		
16+	C		34.5	39.7	3.3	3.0	2.2	6.7	10.6		19.5	30.2				6		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-4	2.65																	6.6
4-10	1.82																	6.8
10-13	1.41																	7.4
13-16	0.93																	7.8
16+	0.48																	8.0

Depth (In.)	Extractable bases 5B1a 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity meq/100 g	CEC 5A3a Sum Cations											Base saturation 5C3 Sum Cations Pct.	Pct.
0-4	21.9	6.7	0.1	0.5	5.9	35.1											83	
4-10	20.9	4.8	0.1	0.4	4.6	30.8											85	
10-13	Calcareous																	
13-16	"																	
16+	"																	

Depth (In.)					

Soil type: Otway silty clay loam
Soil No.: S54Ky-6-7
Location: Bath County, Kentucky; twenty five feet west of Manley Lane; 3/16 mile north of junction with Conyers Road; photo AFH-3F-16 right 9 inches, up 3 1/2 inches
Vegetation: Bluegrass, orchard grass and white clover pasture, and a few blackberry bushes
Slope: 7 percent
Erosion: Slight

Horizon and Beltsville Lab. No.	
Ap 55358	0 to 4 inches. Dark grayish brown to very dark grayish brown (2.5Y 4/2 to 3/2) firm, silty clay loam; slightly sticky, slightly plastic when wet; moderate, fine and medium, angular blocky structure; upper one inch is granular; slightly acid. Clear, smooth boundary.
B1 55359	4 to 10 inches. Olive brown (2.5Y 4/4) firm to very firm silty clay; slightly sticky, slightly plastic when wet; moderate, fine and medium, angular blocky structure. Mildly alkaline. Clear, smooth boundary.
B2 55360	10 to 13 inches. Light olive brown (2.5Y 5/4) very firm calcareous clay with a few fine, faint light yellowish brown (2.5Y 6/4) mottles; slightly sticky, plastic when wet; moderate, medium, angular blocky structure. Clay skins prominent on ped faces. Clear, wavy boundary.
B3 55361	13 to 16 inches. Light olive brown (2.5Y 5/4) very firm, calcareous clay, with a few, medium, distinct, strong brown (7.5YR 5/8) and pale olive (5Y 6/4) mottles; slightly sticky, slightly plastic when wet; strong, medium, angular blocky structure. Clear, smooth boundary. A few small fragments of weathered, calcareous sandstone occur through this layer.
C	16+ inches. Light bluish gray weathered, calcareous shale with laminations and pockets of [illegible]

Notes: Color of soil moist unless otherwise stated.

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10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Otway flaggy silty clay loam SOIL Nos. S59Ky-56-1 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59439-59444

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 ≥ 2 Pct.	2 - 19	19 - 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-5	Ap		42.4	56.1	0.4	0.4	0.2	0.2	0.3		38.7	4.2				7		
5-9	A3		43.9	44.8	5.4	2.7	1.1	1.2	0.9		39.5	5.8				53		
9-15	B21		45.3	40.0	5.8	4.2	1.4	1.7	1.6		38.3	9.5				47		
15-23	B22		51.1	39.9	4.1	2.3	0.6	0.9	1.1		44.1	8.6				32		
23-37	C11		45.5	32.2	9.7	5.6	1.9	2.5	2.6		38.5	11.0				33		
37-43	C12		45.6	34.8	5.6	4.6	2.4	3.5	3.5		37.0	13.9				18		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		6E1e Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	4B2 15 Bar Pct.			pH	8C1a (1:1) H_2O
0-5	5.42	0.497	11		2.5	3.6							25.1				6.8
5-9	2.81	0.329	8		18.9	3.1							20.2				7.3
9-15	0.67	0.123	5		30.7	3.0							15.4				7.6
15-23	0.50	0.078	6		23.9	3.2							15.6				7.5
23-37	0.17				36.5	2.9							13.2				7.6
37-43	0.22				31.5	2.7							13.7				7.6

Depth (in.)	Extractable bases 5B1a 6N2a Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-5	Free carbonates present in all horizons.																
5-9																	
9-15																	
15-23																	
23-37																	
37-43																	

Depth (in.)

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Otway flaggy silty clay loam
Soil No.: S59Ky-56-1
Location: Jefferson County, Kentucky, about 3/4 mile up Old Mans Run Creek from Floyds Fork Creek on southern slope of creek. Photo AFW-2R-97, 1956
Vegetation and land use: Second growth timber of cedar, hickory, locust and walnut
Slope and land form: Moderately steep (22 percent) toward south on steep dissected topography
Drainage: Excessively drained with rapid to very rapid surface runoff
Permeability: Slow
Parent material: Thin bedded limestone and calcareous shales
Collected by:and date: E. J. Pedersen, D. D. Bohrer, James P. Fehr, May 11, 1959
Described by: William H. Zimmerman and James C. Ross

Horizon and Beltsville Lab. No.	
Ap 59439	0 to 5 inches. Very dark grayish brown (10YR 3/2) flaggy heavy silty clay loam; moderate to strong fine granular and some weak medium angular blocky structure; firm; slightly sticky and plastic when wet; limestone fragments of 1/2 to 1 inch in size with some coarser fragments; a few fine dark brown concretionary specks; an abundance of fine roots, many fine root and worm channels; a few worm casts; boundary abrupt, smooth.
A3 59440	5 to 9 inches. Very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) with some variegations of brown (10YR 4/3) heavy silty clay loam; moderate to strong fine angular blocky structure; very firm; slightly sticky and plastic when wet; an abundance (50-60 percent) of small limestone fragments from 1/4 to 1 inch in size with some much coarser fragments; an abundance of fine roots and many worm casts; many fine worm and root holes; boundary clear, smooth.
B21 59441	9 to 15 inches. Brown (10YR 4/3) silty clay to clay; moderate fine and medium angular blocky structure; very firm; sticky and very plastic when wet. An abundance of fossils 1/4 to 1 inch in size; some limestone fragments 1/2 to 3 inches in size; a few faint clay films on some ped surfaces; many fine root and worm channels and some worm casts; many roots; boundary clear, smooth.
B22 59442	15 to 23 inches. Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) clay; weak medium angular blocky to massive structure; very firm; sticky and very plastic when wet; a few very fine concretionary specks; many roots; 60 to 70 percent 1/2 to 3 inches stones. Tongues of strong brown (7.5YR 5/6) clay extend into this horizon from above material; transition to "C" horizon; boundary irregular.
C11 59443	23 to 37 inches. Variegated brown (10YR 5/3), dark yellowish brown (10YR 4/4) and light olive brown (2.5Y 5/4) clay; firm to very firm; sticky and plastic when wet; many fine black concretionary specks; roots are many; occasional worm casts; 70 to 80 percent of 3 to 5 inch stones; tongues of above horizon extend into this one; boundary clear, wavy.
C12 59444	37 to 43 inches. Light olive brown (2.5Y 5/4) to yellowish brown (10YR 5/4) silty clay to clay; massive; firm, sticky and plastic when wet; a few very fine dark brown and black concretionary specks; a few worm casts; occasional fine roots; 40 to 50 percent rock.
Dr	43+ inches. Thinbedded limestones and calcareous shales.

Notes: Colors given are for moist soil. Appears to have creep influence. Rocks are small at top (A3) 1/4 to 1 inch in size increasing in "C" horizon to 6 to 12 inches. Also the soil and rocks were interbedded. The coarse fragments are oriented in the "C" horizon, whereas in the upper horizons the coarse fragments are not oriented, indicating movement.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Otway flaggy silty clay loam SOIL Nos. 859Ky-56-2 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59445-59449

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Silt: 0.05-0.02	Silt: Int. III (0.02-0.002)	Silt: Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2	2-19	19-76
		Size class and particle diameter (mm) 3A1																
		Pct. of < 2 mm														Pct.	Pct. of < 76mm	
0-4	A1		46.9	51.2	0.4	0.4	0.2	0.3	0.6		35.1	12.5				7		
4-8	A3		49.2	37.9	5.6	2.8	1.0	1.7	1.8		39.3	12.7				54		
8-13	B2		53.3	29.9	3.5	3.6	1.9	3.6	4.2		41.8	17.9				tr.		
13-20	Cca		47.1	40.9	3.6	2.8	1.3	2.0	2.3		38.3	12.3				12		
20-38	C		52.6	31.2	3.8	4.7	2.0	3.0	2.7		44.7	12.2				8		

Depth (In.)	6A1a Organic carbon	6B2a Nitrogen	C/N		Carbonate as $CaCO_3$	6C1a Ext. Iron as Fe_2O_3	Bulk density				Water content		4B2 15 Bar			pH		8C1a (1:1) H_2O
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc		Pct.	Pct.	Pct.					
0-4	3.91	0.459	8		3.1	2.7							25.7					7.3
4-8	2.21	0.251	9		30.8	1.9							17.0					7.4
8-13	0.74	0.104	7		46.9	1.1							12.6					7.5
13-20	0.51	0.083	6		30.1	1.1							14.7					7.7
20-38	0.31				47.1	1.9							12.2					7.7

Depth (In.)	Extractable bases: Ca	Mg	Na	K												Base saturation	
	meq/100 g															Pct.	Pct.
0-4	a																
4-8																	
8-13																	
13-20																	
20-38																	

Depth (In.)

a Free carbonates present in all horizons.

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Otway flaggy silty clay loam
Soil No.: S59Ky-56-2
Location: Jefferson County, Kentucky, about 3/4 mile west of the junction of Dawson Hill Road and Broad Back Run Road. Photo AFW-2R-59, 1956
Vegetation and land use: Bluegrass, weeds, bushes of elm, white oak, sumac, cedar, and walnut
Slope and land form: Moderately steep (24 percent) toward the East on steep dissected topography
Drainage: Excessively drained with rapid to very rapid surface runoff
Permeability: Slow
Parent material: Thin bedded limestone and calcareous shale
Collected by and date: E. J. Pedersen, D. D. Bohrer, William H. Zimmerman and James P. Fehr, May 11, 1959
Described by: E. V. Huffman and James C. Ross

Horizon and Beltsville Lab. No.	
A1 59445	0 to 4 inches. Very dark gray (10YR 3/1) to very dark grayish brown (10YR 3/2) flaggy silty clay loam; moderate medium and fine granular structure; friable; roots abundant; worm casts common; abrupt, smooth boundary; weakly calcareous.
A3 59446	4 to 8 inches. Dark gray (10YR 4/1) silty clay loam with few fine faint dark grayish brown (10YR 4/2) variegations; moderate coarse granular and fine subangular blocky structure; friable; roots are abundant; has an abundance of small (1/4 to 1 inch across) irregular shaped pieces of limestone; worm casts are common; boundary clear, smooth; weakly calcareous.
B2 59447	8 to 13 inches. Grayish brown (2.5Y 5/2) light silty clay with a few fine faint light olive gray (5Y 6/2) variegations; dark gray (10YR 4/1) intrusions from horizons above; weak to moderate medium subangular blocky structure; a few clay films; firm; few pieces of limestone as in layer above; roots are few; boundary gradual, smooth; calcareous.
Cca 59448	13 to 20 inches. Olive gray (5Y 5/2) clay with fine faint distinct mottles of light yellowish brown (10YR 6/4) and greenish gray (5GY 5/1); massive; few clay films; has small pieces of partially weathered limestone and bits of carbonate precipitate a discontinuous band about 2 inches thick of mottled very dark gray, olive brown and greenish gray clay occupies the lower portion of this horizon; boundary clear, wavy; calcareous.
C 59449	20 to 38 inches. Grayish brown (10YR 5/2) to dark grayish brown (10YR 4/2) clay with few medium distinct brown (7.5YR 4/4) variegations; coarse blocky to massive structure; firm; few roots; a ledge of large limestone from 1 to 3 inches across and 8 to 10 inches in thickness was removed from this horizon; calcareous.
Dr	38+ inches. Thinbedded (5 to 12 inches thick) limestones.

Notes: Colors given are for moist soil. Secondary carbonates are not pronounced in the horizon designated as a Cca, but their presence was believed enough to use the ca subscript. There is indication of creep influence in the A1 and A3.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Patton silt loam **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-3 **LAB. NOS.** 14375-14380

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) 3A1									2A2	TEXTURAL CLASS
		VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	0.02-0.002	> 2	
0-8	A1p	0.1a	0.3a	0.1a	0.2a	1.3	81.6	16.4	50.5	32.5	-	sil
8-17	A12	0.1a	0.1a	0.1a	0.2a	1.1b	79.3	19.1	49.1	31.4	-	sil
17-23	A13	0.3a	0.4a	0.2a	0.2a	1.1b	79.2	18.6	49.3	31.1	-	sil
23-37	Bg	0.4a	0.4a	0.2a	0.2a	1.0b	71.5	26.3	38.8	33.8	-	sil
37-50	Cg1	0.3a	0.5a	0.2a	0.2a	1.0b	74.9	22.9	41.4	34.6	-	sil
50-63	Cg2	0.5a	0.8a	0.3a	0.4a	1.0b	77.0	20.0	44.3	33.9	-	sil

PATTON SILT LOAM S60Ky-98-3

Location: Fulton County, Kentucky, 250 feet west and 335 feet north of SE corner; SW¼ of Sec. 31; T1N; R3W; 1/3 mile east of Ky.239 on Ky. 116. Photo ADV-9F-28.

Vegetation: Cultivated - wheat in 1960.

Slope and Land Form: Level, bottomland.

Drainage: Very poorly drained, slow surface runoff, moderate permeability.

Parent Material: Alluvium from loess uplands.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 1, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 1, 1960.

LINCOLN LAB NO.	HORIZON	DEPTH	DESCRIPTION
			fine granular structure; very friable; few dark brown concretions; abundance of small roots; pH 6.0; abrupt smooth boundary.
14376	A_{12}	8-17 inches	Black (10YR 2/1), very dark gray (10YR 3/1) crushed, silt loam with few medium faint very dark grayish brown (10YR 3/2) mottles; moderate fine granular structure; friable; few dark brown concretions; abundance of small roots; common fine pores; pH 6.5; diffuse smooth boundary.
14377	A_{13}	17-23 inches	Black (10YR 2/1) to very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2) crushed, silt loam; weak fine granular structure; friable; small roots are plentiful; few medium dark brown concretions; common fine and medium pores; pH 6.5; clear smooth boundary.
14378	B_g	23-37 inches	Yellowish brown (2.5Y 5/2) with common fine distinct olive yellow (2.5Y 6/6) mottles on ped surfaces; mottled many fine distinct grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) and specked with strong brown (7.5YR 5/6) ped interiors; light silty clay loam; weak coarse prismatic and blocky structure; clay films are continuous on most vertical surfaces and tops of prisms; firm; common to abundant small pores; black concretions are common; small roots are plentiful; pH 6.5; gradual wavy boundary.
14379	C_{g1}	37-50 inches	Mottled many medium faint grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) silt loam; massive with a few weak coarse prisms and clay flows on vertical surfaces; some strong brown (7.5YR 5/6) soft concretionary material and small round black concretions; pH 7.0; diffuse smooth boundary.
14380	C_{g2}	50-63 inches	Mottled many fine distinct grayish brown (2.5Y 5/2) and yellowish brown (10YR 5/6) silt loam with a reticulate pattern of fine dark gray (10YR 4/1) streaks; massive; friable; pH 7.0; diffuse smooth boundary.
	C_{g3}	63-70 inches	Similar to above horizon, except slightly coarser textured. (Not sampled)

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Patton silt loam LOCATION Fulton County, Kentucky

SOIL NOS. S60Ky-38-4 LAB. NOS. 14381-14386

General Methods: 1A, 1B1a, 2A1, 2B

PATTON SILT LOAM S60Ky-38-4

Location: Fulton County, Kentucky, 750 feet south and 250 feet west of center of Sec. 16; T1N; R4W; 3/4 mile south of Ky. 94, first road east of Mud Creek Bridge, 4-1/2 miles east of Hickman. Photo ADV-5F-74.

Vegetation: Cultivated - corn in 1960.

Slope and Land Form: Level, bottom land.

Drainage: Very poorly drained; slow surface runoff; moderate permeability.

Parent Material: Alluvium from loess uplands.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 1, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 1, 1960.

LINCOLN LAB NO.	HORIZON	DEPTH	DESCRIPTION
14381	A_{1p}	0-10 inches	Very dark brown (10YR 2/2), very dark grayish brown (10YR 3/2) crushed, silt loam; moderate fine granular structure; very friable; few small dark brown concretions; abundance of small roots; pH 6.0; abrupt smooth boundary.
14382	A_{12}	10-16 inches	Black (10YR 2/1) silt loam with a few fine faint dark grayish brown (2.5Y 4/2) mottles; moderate fine and medium granular structure; friable; few small dark brown concretions; clay content slightly higher than in A_{1p}; abundance of small roots; pH 7.0; clear smooth boundary.
14383	B_{g1}	16-21 inches	Very dark gray (10YR 3/1) to black (10YR 2/1) ped surfaces with a few fine faint dark grayish brown (2.5Y 4/2) mottles; ped interiors are very dark gray (10YR 3/1) with common fine faint dark grayish brown (10YR 4/2) mottles; light silty clay loam; moderate medium prismatic structure breaking down into moderate medium subangular blocky; discontinuous clay films; firm; common small pores; few small dark brown concretions; abundance of small roots; pH 7.0; gradual smooth boundary.
14384	B_{g2}	21-27 inches	Very dark gray (10YR 3/1), with common fine distinct light olive brown (2.5Y 5/4) mottles, silty clay loam; moderate to strong medium prismatic structure breaking down to moderate medium blocky; discontinuous clay films; firm; common small dark brown concretions; small roots are plentiful; pH 7.0; diffuse smooth boundary.
14385	C_{g1}	27-46 inches	Light olive brown (2.5Y 5/4), with common fine distinct dark gray (10YR 4/1) and strong brown (7.5YR 5/6) mottles, light silty clay loam; coarse prismatic macrostructure to massive; some vertical surfaces of prisms have dark grayish brown clay films; firm; common small pores; small roots are plentiful; pH 7.0; diffuse smooth boundary.
14386	C_{g2}	46-65 inches	Mottled many fine distinct olive gray (5Y 5/2), dark grayish brown (2.5Y 4/2), and yellowish brown (10YR 5/6) silt loam; massive; friable; common small and medium pores; reticulate pattern of very dark gray following old root channels; soft black concretions; few small roots; pH 7.0; diffuse smooth boundary.
	C_{g3}	65-70 inches	Similar to horizon above except slightly coarser textured. (Not sampled)

Remarks:

Krotovinas consisting of dark gray silt loam occur irregularly throughout the profile.

Colors given are for moist soil.

Reaction determined by Soiltex.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Russellville silt loam SOIL Nos. 857Ky-56-14 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58127-58137

Depth (In.)	Horizon	1B1b Total: Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt: 0.05-0.02	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Pct. of < 2 mm															Pct. of < 76mm	
0-8	Ap[b]		81.5	13.5	0.2[a]	1.0	0.7	0.9	2.2		42.4	41.7				tr.		
8-15	B21		72.2	24.8	0.2	0.4	0.4	0.6	1.4		43.1	30.8				tr.		
15-21	B22		72.9	23.8	0.1	0.4	0.4	0.7	1.7		42.2	32.9				tr.		
21-26	B3		73.7	23.5	0.2	0.4	0.3	0.5	1.4		42.8	32.6				-		
26-32	B3m1		73.5	21.7	1.9	1.1	0.4	0.4	1.0		46.5	28.2				1		
32-42	B3m2		70.8	22.0	3.4	1.9	0.5	0.6	0.8		48.1	23.8				4		
42-49	B3m3		65.1	26.5	4.0	2.0	0.6	0.8	1.0		44.7	21.8				8		
49-64	C11		64.8	28.4	2.6	1.6	0.5	0.9	1.2		48.5	18.4				3		
64-76	C12		58.2	32.8	2.9	2.1	0.8	1.4	1.8		41.1	19.7				3		
76-110	D		54.8	36.5	3.0	2.6	0.8	1.1	1.2		39.4	17.3				12		
26-60	--[c]		65.8	29.8	1.8	1.0	0.3	0.5	0.8		42.5	24.4				2		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-8	0.88	0.086	10			1.4						18.5	5.7					6.6
8-15	0.25					2.6						21.2	9.9					5.0
14-23	0.15					2.4						22.6	10.1					4.6
23-30	0.12					2.2						22.3	10.3					4.4
30-39	0.09					2.6						23.7	9.9					4.5
39-46	0.07					2.9						21.5	10.1					4.4
46-52	0.05					3.8						20.7	11.5					4.5
52-65	0.05					5.1						24.3	14.3					4.5
65-86	0.05					4.1						23.3	14.7					5.1
86-100	0.05					2.0							15.2					6.3
100-104	0.09					1.8												4.4

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g.																
0-8	6.0	2.4	tr.	0.2	3.1	11.7										74	
8-15	4.5	2.4	tr.	0.2	6.7	13.8										52	
15-21	2.3	1.9	tr.	0.2	10.4	14.9										30	
21-26	1.6	2.7	0.1	0.3	11.4	16.0										29	
26-32	0.9	2.4	0.1	0.2	11.2	14.8										24	
32-42	1.1	2.5	0.1	0.2	10.8	14.7										26	
42-49	1.9	3.0	0.3	0.2	10.2	15.5										34	
49-64	3.8	4.7	0.4	0.2	10.0	19.1										47	
64-76	6.4	6.5	0.6	0.2	5.3	18.9										72	
76-110	7.7	6.1	0.7	0.1	3.4	18.0										81	
26-60	2.2	3.9	0.3	0.3	13.3	20.0										34	

Depth (In.)					

a. Sand fractions contain large amounts iron oxide concretions.

b. Sand fraction of Ap horizon also contained considerable organic matter not destroyed by H_2O_2 treatment.

c. 58137 is a sample of gray streaks in the pan.

Soil type: Russellville silt loam
Soil No.: S57Ky-56-14
Location: Jefferson County, Kentucky, Buren Bandy farm about 150 yards east of driveway, near line fence. Photo AFW-2R-111, 1956
Vegetation and land use: Alfalfa field
Slope and land form: Gently sloping - 3 percent
Erosion: Little or none
Drainage: Well drained
Parent material: Loess over limestone residuum
Physiographic position: Outer bluegrass - broad ridge top
Collected by and date: W. H. Zimmerman, E. J. Pedersen and G. M. Phibbs, October 16, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and
Beltsville
Lab. No.

Ap 0 to 8 inches Dark yellowish brown (10YR 3/4) silt loam; moderate medium granular structure;

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Russellville silt loam SOIL Nos. S57Ky-56-18 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58163-58171

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19 (Pct. of < 76mm)	19 – 76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-8	Ap		82.2	15.3	0.1	0.3	0.2	0.3	1.6		47.7	36.2				-		
8-15	B21a		76.2	22.2	-	0.2	0.1	0.2	1.1		46.7	30.7				-		
15-21	B22		75.6	22.7	-	0.2	0.1	0.2	1.2		45.6	31.3				-		
21-31	B3		78.2	20.0	-	0.2	0.2	0.3	1.1		47.7	31.8				-		
31-37	B3m1		77.0	20.4	0.4	0.6	0.3	0.4	0.9		49.4	38.8				-		
37-44	B3m2		72.3	23.1	1.2	1.5	0.5	0.6	0.8		50.4	23.1				-		
44-53	B3u		66.8	28.0	1.2	2.0	0.6	0.6	0.8		47.0	20.9				-		
53-97	B3b1		59.0	36.6	1.3	1.3	0.4	0.6	0.8		41.0	19.2				-		
97-115+	B3b2		49.6	45.7	1.2	1.4	0.5	0.8	0.8		37.5	13.3				-		

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H20
0-8	0.81	0.089	9			1.5						24.9	7.1					6.0
8-15	0.20					1.9						24.7	8.0					5.0
15-21	0.16					2.4						27.1	9.2					4.6
21-31	0.10					2.6						26.0	8.6					4.7
31-37	0.10					2.4						23.8	8.4					4.5
37-44	0.05					2.3						21.3	8.7					4.7

Soil type: Russellville silt loam
Soil No.: S57Ky-56-18
Location: Jefferson County, Kentucky, Sam Ewing Farm. Photo AFW-2R-121, 1956
Vegetation and land use: Orchard grass; ladino clover
Slope and land form: Gently sloping - 3 percent slope
Erosion: Little or none
Drainage: Well drained
Parent material: Loess over limestone residuum
Physiographic position: Outer Bluegrass - broad ridgetop
Collected by and date: W. H. Zimmerman, E. J. Pedersen and G. M. Phibbs, October 18, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58163	0 to 8 inches. Brown to dark brown (10YR 4/3-10YR 3/3) silt loam; weak fine granular structure; very friable; a few medium pores; pH 6.0; abrupt smooth boundary.
B21 58164	8 to 15 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) crushed, coarse silty clay loam; moderate medium subangular blocky structure; patchy clay skins; friable; abundant medium and large pores; pH 5.5; gradual smooth boundary.
B22 58165	15 to 21 inches. Brown (7.5YR 4/4) with a few fine faint brown (10YR 5/3) variegations, silty clay loam; moderate medium subangular blocky structure; patchy clay skins; friable; abundant medium and large pores; pH 5.5; gradual smooth boundary.
B3 58166	21 to 31 inches. Strong brown (7.5YR 5/6) variegated common medium distinct light yellowish brown (2.5Y 6/4), fine silt loam; moderate medium subangular blocky structure; patchy clay skins; friable to firm; brown silt coats on vertical ped faces are common; few concretionary stains; pH 6; clear wavy boundary.
B3m1 58167	31 to 37 inches. Brown (7.5YR 4/4) fine silt loam mottled with a few fine faint brown (7.5YR 5/2) and streaked with light brownish gray (10YR 6/2) silt in vertical cracks and on horizontal faces; strong coarse platy macrostructure; very compact in place, friable when disturbed; abundance of small black concretions; clay filled cracks first appear in this horizon; pH 5; clear smooth boundary.
B3m2 58168	37 to 44 inches. Reddish brown (5YR 4/4) mottled with common fine distinct light brownish gaay (10YR 6/2) coarse silty clay loam; weak coarse platy macrostructure; few thin patchy clay skins; firm and very compact; abundance of small black concretions and concretionary material; pH 5.5; gradual smooth boundary.
B3µ 58169	44 to 53 inches. Yellowish red (5YR 4/6) variegated common fine distinct yellowish brown (10YR 5/4), grayish brown (10YR 5/2), and strong brown (7.5YR 5/6) silty clay loam; weak medium angular blocky structure; patchy clay skins; firm; slightly plastic and slightly sticky wet; abundance of soft black concretionary material and stainings; pH 5.5; diffuse smooth boundary.
B3b1 58170	53 to 97 inches. Yellowish red (5YR 4/6) variegated common medium distinct brown (10YR 5/3) silty clay; weak medium angular blocky structure; firm to very firm; plastic and slightly sticky wet; abundance of soft black concretions; black stains on ped faces; pH 5.5.
B3b2 58171	97 to 115 inches. Yellowish red (5YR 4/8) clay; very firm, very plastic and sticky; numerous small chert fragments; common concretionary material; few small pockets of gray silty clay; pH 6; sampled with can auger from bottom of pit.

Notes: Dark grayish brown (10YR 4/2) silt loam remnants of A2 about 1/2 inch thick at boundary of Ap

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Sequatchie fine sandy loam SOIL Nos. S54Ky-51-10 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55402-55405

Depth (In.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-10	Ap		43.2	11.2	0.1	1.6	7.0	26.0	10.9		24.1	43.1				-		
10-15	B1		36.6	13.8	0.2	2.5	10.5	27.1	9.3		22.2	35.9				-		
15-25	B2		27.2	15.5	0.5	3.6	13.8	30.6	8.8		16.1	33.4				-		
25-48+	C		13.1	6.8	0.1	1.6	11.0	54.4	13.0		8.2	46.6				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-10	0.64																	5.6
10-15	0.18																	5.5
15-25	0.04																	5.7
25-48+	0.08																	5.4

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6Q2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-10	2.6	0.4	tr.	0.2	4.2	7.4										43	
10-15	2.3	0.5	0.2	0.1	1.5	4.6										67	
15-25	2.7	0.5	0.2	0.1	1.0	4.5										78	
25-48+	1.4	0.4	0.2	0.1	1.3	3.4										62	

Depth (In.)

USDA-SCS-BELTSVILLE, MD. 1964

Soil type: Sequatchie fine sandy loam
Soil No.: S54Ky-51-10
Location: Henderson County, Kentucky, G. H. Gentry farm, four miles north Geneva, photo DKZ-8G-171
Vegetation: Alfalfa
Slope: Level
Erosion: None
Drainage: Well drained
Parent material: Ohio River alluvium

Horizon and Beltsville Lab. No.	
Ap 55402	0 to 10 inches. Brown to dark brown (7.5YR 4/4) very friable fine sandy loam; weak, fine and medium, subangular blocky breaking easily to a weak, fine, granular structure; abrupt, smooth boundary; medium acid.
B1 55403	10 to 15 inches. Reddish brown (5YR 4/4) friable, fine sandy loam; moderate, medium, angular blocky structure; vesicular; clear, smooth boundary; slightly acid.
B2 55404	15 to 25 inches. Reddish brown (5YR 4/4) friable, sandy clay loam; moderate, coarse, angular blocky structure; vesicular; clear, smooth boundary; slightly acid.
C 55405	25 to 48+ inches. Strong brown (7.5YR 5/6) loose, loamy fine sand; single grain structure; medium acid.

Notes: Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Sequatchie fine sandy loam SOIL Nos. S54Ky-51-11 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55406-55410

Depth (In.)	Horizon	1B1b Total: Sand (2-0.05)	Silt (0.05-0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2-1)	Coarse (1-0.5)	Medium (0.5-0.25)	Fine (0.25-0.1)	Very fine (0.1-0.05)	Silt: (0.05-0.02)	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2-19	19-76
		Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		39.6	15.1	-	4.6	23.6	11.7	5.4		27.1	21.4				-		
7-11	A2		39.4	15.6	-	4.9	23.1	11.5	5.5		28.2	20.2				-		
11-16	B1		32.3	17.7	-	5.0	23.8	14.9	6.3		21.4	22.7				-		
16-34	B2		27.7	22.5	-	5.0	23.1	15.3	6.4		19.4	20.5				-		
34-48+	C		3.7	7.2	-	9.3	56.4	22.2	1.2		3.5	6.2				-		

Depth (In.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-7	0.74																	6.4
7-11	0.74																	6.6
11-16	0.31																	6.2
16-34	0.26																	5.8
34-48+	0.08																	5.9

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-7	5.3	1.4	0.1	0.2	1.1	8.1									86	
7-11	5.5	1.5	0.1	0.2	1.1	8.4									87	
11-16	3.9	1.0	0.2	0.1	3.4	8.6									60	
16-34	4.5	0.8	0.2	0.2	4.0	9.7									59	
34-48+	2.0	0.3	tr.	0.1	1.5	3.9									62	

Depth (In.)					

Soil type: Somerset fine sandy loam

Vegetation: Small grain
Slope: Level
Erosion: None
Drainage: Well drained
Parent material: Ohio River alluvium

Horizon and Beltsville Lab. No.	
Ap 55406	0 to 7 inches. Dark brown (7.5YR 3/2) very friable, fine sandy loam; weak, fine and medium, subangular blocky breaking easily to a weak, fine, granular structure; clear, smooth boundary; strongly acid.
A2 55407	7 to 11 inches. Dark brown (7.5YR 3/2) friable, fine sandy loam; moderate, medium, angular blocky structure; abrupt, smooth boundary; slightly acid.
B1 55408	11 to 16 inches. Reddish brown (5YR 4/3) firm, sandy clay loam; moderate, coarse, angular blocky structure; plastic, slightly sticky when wet; vesicular; gradual, smooth boundary; slightly acid.
B2 55409	16 to 34 inches. Dark reddish brown (5YR 3/4) very firm, sandy clay loam; moderate, coarse, angular blocky structure; plastic, slightly sticky when wet, vesicular; clear, smooth boundary; medium acid.
C 55410	34 to 48+ inches. Yellowish red (5YR 4/6) loose, loamy fine sand; single grain structure; slightly acid.

Notes: Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Sequatchie fine sandy loam SOIL Nos. S57Ky-56-11 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 5899-58106

Depth (In.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: (0.05–0.02)	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		30.8	9.7	-	0.3	2.4	38.6	18.2		15.7	57.8				tr.		
7-11	B1		32.2	14.0	-	0.2	1.7	34.5	17.4		18.3	53.5				-		
11-18	B21		32.0	15.6	-	0.3	1.7	33.3	17.1		18.4	51.5				-		
18-26	B22		27.3	13.3	-	0.2	1.9	38.7	18.6		15.0	56.5				-		
26-32	B23		26.1	12.9	-	0.2	2.0	38.5	20.3		13.9	57.5				-		
32-43	B31		30.7	13.7	-	0.1	1.3	33.5	20.7		16.1	57.2				-		
43-53	B32		24.5	13.5	-	0.1	2.5	43.3	16.1		13.1	52.1				tr.		
53-67	C		22.3	13.1	-	0.1	1.2	45.9	17.4		10.9	58.0				-		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-7	0.53	0.058	9			1.4						12.8	4.0					5.2
7-11	0.23					2.2						15.0	5.7					5.3
11-18	0.15					1.5						15.3	5.6					4.6
18-26	0.22					2.0						13.7	5.7					4.6
26-32	0.18					2.0						14.6	5.7					4.7
32-43	0.12					2.4						15.2	6.4					4.8
43-53	0.17					2.3						12.7	6.3					4.5
53-67	0.33					2.5						9.2	5.9					4.4

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	2.3	0.4	tr.	0.2	4.4	7.3										40	
7-11	2.5	0.7	tr.	0.1	3.9	7.2										46	
11-18	1.7	0.6	tr.	0.1	6.0	8.4										28	
18-26	1.8	0.6	tr.	0.1	6.0	8.6										30	
26-32	2.2	0.6	tr.	0.1	5.7	8.6										34	
32-43	2.5	0.9	tr.	0.2	5.7	9.3										39	
43-53	1.7	0.7	tr.	0.2	7.1	9.7										27	
53-67	1.4	0.7	tr.	0.2	8.0	10.3										22	

Depth (In.)

Soil type: Sequatchie fine sandy loam
Soil No.: S57Ky-56-11
Location: Jefferson County, Kentucky, Parker Miller Farm, 100 feet west of Cane Run Road, along Motor Court Drive, 1 mile south of Greenwood Road intersection. Photo No. AFW-1R-129, 1956
Vegetation and land use: Weeds
Slope and land form: Gently sloping - 3 percent slope
Erosion: None
Drainage: Well drained
Parent material: Ohio Rivrr Alluvium
Physiographic position: Outer bluegrass - low ridge top
Collected by and date: W. H. Zimmerman, E. J. Pedersen, and G. M. Phibbs, October 14, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 5899	0 to 7 inches. Dark brown (10YR 3/3-4/3) fine sandy loam; weak, fine granular structure; very friable; pH 6.5; abrupt smooth boundary.
B1 58100	7 to 11 inches. Brown (7.5YR 4/4) fine sandy loam; weak medium angular blocky structure; pH 6.0; gradual smooth boundary.
B21 58101	11 to 18 inches. Brown (7.5YR 4/4) strong brown (7.5YR 5/6) crushed, fine sandy loam; variegated few medium faint yellowish brown (10YR 5/4); moderate medium angular blocky structure; patchy dark yellowish brown clay skins; friable; few medium pores, few mica flakes; pH 5.5; gradual smooth boundary.
B22 58102	18 to 26 inches. Brown (7.5YR 4/4) fine sandy loam; moderate medium subangular blocky structure; patchy clay skins; friable; numerous pores, common worm casts; pH 5.5; gradual smooth boundary.
B23 58103	26 to 32 inches. Brown (10YR 4/3) fine sandy loam; weak to moderate subangular blocky structure; patchy clay skins; friable; common medium pores; pH 5.5; clear wavy boundary.
B31 58104	32 to 43 inches. Brown (10YR 4/4) variegated few fine distinct olive gray (5Y 5/2) and dark reddish brown (5YR 3/4) fine sandy loam; moderate to weak coarse angular blocky structure; few patchy clay skins; compact in place, friable when disturbed; few black carbon specks; few medium pores; pH 5.5; gradual smooth boundary.
B32 58105	43 to 53 inches. Brown (10YR 4/3) variegated few fine faint brown (10YR 5/3) fine sandy clay loam with pockets of reddish brown (5YR 4/4) fine sandy loam flecked with black carbon specks; moderate medium subangular blocky and moderate coarse angular blocky structure; friable; common mica flakes, few medium pores; pH 5.5; clear smooth boundary.
C 58106	53 to 67 inches. Brown (7.5YR 4/4) very fine sandy loam to fine sandy loam with a few fine faint variegations of pale brown (10YR 6/3); massive structure; friable; numerous mica flakes, numerous reddish brown iron streaks.

Notes: Upper 2 inches of C is yellowish brown (10YR 5/4) loose sand. Very weakly discernible polygons in B32. Color taken moist unless otherwise stated.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Sharkey silty clay **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-7 **LAB. NOS.** 14400-14405

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent) 3A1 VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-4	Alp1	<0.1	0.1a	0.1a	0.4a	0.8a	58.3	40.3	10.1	49.3	-	sic/sicl
4-8	Alp2	<0.1	<0.1	0.1a	0.3a	0.5a	57.4	41.7	9.2	48.9	-	sic
8-13	Cg1	<0.1	<0.1	0.1a	0.3a	0.7a	52.7	46.2	10.0	43.6	-	sic
13-31	Cg2	0.1a	0.2a	0.2a	0.5a	1.0a	52.0	46.0	14.4	38.9	-	sic
31-49	Cg3	0.1a	0.3a	0.3a	0.8a	1.5a	47.6	49.4	14.3	35.3	-	sic
49-69	Cg4	<0.1	0.2a	0.2a	0.5a	1.0a	48.1	50.0	14.6	34.8	-	sic

pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	ORGANIC MATTER 6B1a NITROGEN %	ORGANIC MATTER C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	MOISTURE TENSIONS 1/3 ATMOS. %	4B2 15 ATMOS. %
6.5			1.54	0.134	11	2.2		<0.1				16.5
6.6			1.48	0.134	11	2.2		<0.1				18.3
6.8			1.44	0.136	10	2.0		<0.1				21.7
6.6			1.10	0.107	10	2.0		<0.1				22.4
6.7			0.71			2.1		<0.1				21.2
7.0			0.46			1.8		<0.1				22.5

5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 5B1a 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry 4B5 % M.	Air Dry 4A1b g/cc	30 cm. % M.	30 cm. g/cc	O.D. g/cc
	milliequivalents per 100g. soil →											
25.5	20.3	6.5	5.8	0.1	0.8	109	83					
25.6	21.0	5.8	5.8	0.1	0.8	108	83	4.5	1.76			
28.8	25.9	6.2	5.1	0.2	0.8	115	87	4.8	1.66			
30.0	25.5	7.0	6.0	0.2	1.0	112	85	7.6	1.72			
30.7	25.7	7.9	5.1	0.2	1.1	114	87					
30.5	26.4	7.1	3.9	0.3	1.0	114	90					

a. Many Fe-Mn? concr.

SHARKEY SILTY CLAY 860Ky-38-7

Location: Fulton County, Kentucky, 150 feet north of Ky. 925, 500 feet west of Owens Slough. Photo ADV-4F-184.

Vegetation: Cultivation (cotton).

Slope and Land Form: Level, Mississippi River Flood Plain.

Drainage: Poorly to very poorly drained, slow surface runoff, slow permeability.

Parent Material: Mississippi River slack water alluvium.

Samples Collected by: J. S. Allen, K. K. Young, J. H. Newton, November 2, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 2, 1960.

LINCOLN LAB NO.	HORIZON	DEPTH	DESCRIPTION
14400	A_{1p1}	0-4 inches	Very dark grayish brown (10YR 3/2) light silty clay; moderate to strong medium granular structure; firm; sticky and plastic; abundance of roots; pH 7.0; clear smooth boundary.
14401	A_{1p2}	4-8 inches	Very dark gray (10YR 3/1) to very dark grayish brown (10YR 3/2) clay, specked with dark brown concretionary material; weak angular blocky structure; very firm, compact (traffic pan); abundance of roots; pH 7.0; abrupt smooth boundary.
14402	C_{g1}	8-13 inches	Very dark gray (10YR 3/1), with common fine distinct dark gray (N 4/) and brown (7.5YR 4/4) mottles, clay; weak fine blocky structure; very firm, sticky and plastic; small roots are plentiful; pH 7.0; gradual smooth boundary.
14403	C_{g2}	13-31 inches	Very dark gray (10YR 3/1), with common fine distinct dark brown mottles, clay; weak coarse subangular blocky structure; very firm, very sticky and very plastic; slight evidence of some pressure faces; few small black round concretions; small roots are plentiful; pH 7.0; diffuse smooth boundary.
14404	C_{g3}	31-49 inches	Dark gray (N 4/), with common fine distinct dark brown mottles, clay; massive; very firm, very sticky and very plastic; few small roots; pH 7.5; clear wavy boundary.
14405	C_{g4}	49-69 inches	Gray (N 5/) to dark gray (N 4/), with common fine distinct dark brown mottles, clay; massive; very firm, very sticky and very plastic; few to no roots; pH 7.5.

Remarks:

One black krotovina (about 2 inches in diameter) occurs in the Cg3 horizon. Cracks (up to 1/2 inch wide at top) that extend vertically to a depth of about 2 1/2 feet are common. Few old root channels filled with charcoal-like material.

Soil correlation samples collected from profile.

Colors given are for moist soil.

Reaction determined by Soiltex.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Sharkey silty clay **LOCATION** Fulton County, Kentucky

SOIL NOS. S60Ky-38-8 **LAB. NOS.** 14406-14411

General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent) 3A1 VERY COARSE SAND 2-1	COARSE SAND 1-0.5	MEDIUM SAND 0.5-0.25	FINE SAND 0.25-0.10	VERY FINE SAND 0.10-0.05	SILT 0.05-0.002	CLAY < 0.002	0.2-0.02	0.02-0.002	2A2 > 2	TEXTURAL CLASS
0-4	Alp1	<0.1	0.3a	0.6a	1.6a	1.3a	48.5	47.7	8.2	42.5	-	sic
4-8	Alp2	<0.1	0.2a	0.3a	1.5a	1.2a	47.1	49.7	7.5	41.7	-	sic
8-14	Cg1	<0.1	0.1a	0.3a	0.9a	0.7a	49.4	48.6	7.7	42.9	-	sic
14-28	Cg2	<0.1	0.3a	0.4a	0.8a	0.6a	49.3	48.6	9.0	41.3	-	sic
28-43	Cg3	<0.1	0.2a	0.3a	0.4a	0.5a	50.0	48.6	11.2	39.5	-	sic
43-65	Cg4	<0.1	0.1a	0.1a	0.2a	0.2a	47.8	51.6	6.6	41.5	-	sic

pH 8C1a 1:1	pH 1:5	pH 1:10	ORGANIC MATTER 6A1a ORGANIC CARBON %	6B1a NITROGEN %	C/N	Free Iron Fe_2O_3% 6C1a		6E1c $CaCO_3$ equivalent %		MOISTURE TENSIONS 1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 ATMOS. %
5.7			1.91	0.182	10	2.4						20.0
5.9			1.66	0.163	10	2.4						22.2
5.1			0.74	0.087	8	2.0						21.4
5.1			0.51	0.068	8	1.8						19.9
5.6			0.43			1.4						20.9
7.2			0.44			1.6						22.0

5A1a CATION EXCHANGE CAPACITY NH_4OAc	EXTRACTABLE CATIONS 6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	5B1a BASE SAT. % NH_4OAc EXCH. 5C1	Base Sat. % on Sum Cations 5C3	Bulk Density Air Dry 4B5 % M.	Air Dry 4A1b g/cc	30 cm. % M.	30 cm. g/cc	0.1b. g/cc
←	milliequivalents per 100g. soil				→							
28.1	20.8	8.4	10.7	0.1	1.1	108	74					
27.9	20.7	6.7	10.4	0.2	1.0	102	73	4.6	1.75			
27.6	16.3	7.0	12.8	0.4	0.8	89	66	4.3	1.69			
28.3	15.7	8.0	11.3	0.7	1.0	90	69					
31.7	19.7	11.0	8.2	1.4	1.0	104	80					
38.1	23.0	14.4	3.2	2.1	0.9	106	93					

a. Many Fe-Mn? concr.

SHARKEY SILTY CLAY 860Ky-38-8

Location: Fulton County, Kentucky, 500 feet west of Ky. 94, 1/2 mile north of Tennessee line. Photo ADV-4F-90.

Vegetation: Cultivation (soybeans in 1960).

Slope and Land Form: Level, Mississippi River Flood Plain.

Drainage: Poorly to very poorly drained, slow surface runoff; slow permeability.

Parent Material: Old Mississippi River slack water alluvium.

Samples Collected by: J. S. Allen, K. K. Young, and J. H. Newton, November 2, 1960.

Profile Described by: E. V. Huffman and W. H. Zimmerman, November 2, 1960.

LINCOLN LAB. NO.	HORIZON	DEPTH	DESCRIPTION
14406	A_{1p1}	0-4 inches	Very dark grayish brown (10YR 3/2) silty clay; moderate strong granular structure; firm, sticky and plastic; abundance of roots; pH 6.5; abrupt smooth boundary.
14407	A_{1p2}	4-8 inches	Very dark gray (10YR 3/1), with a few fine faint dark brown mottles, clay; weak medium and coarse blocky structure; very firm, sticky and plastic; compact in place (traffic pan); few small black soft concretions; abundance of roots; pH 6.5; abrupt smooth boundary.
14408	C_{g1}	8-14 inches	Dark gray (10YR 4/1), with common medium distinct reddish brown (5YR 4/4) mottles, clay; medium angular blocky structure; very firm, sticky and very plastic; few small black soft concretions; small roots are plentiful; pH 6.0; clear smooth boundary.
14409	C_{g2}	14-28 inches	Gray (5Y 5/1), with common fine and medium distinct dark brown mottles, clay; massive; very firm, very sticky and very plastic; few small black concretions; small roots are plentiful; pH 6.0; diffuse smooth boundary.
14410	C_{g3}	28-43 inches	Dark gray (5Y 4/1), with common fine and medium distinct dark brown (7.5YR 3/2) and yellowish red (5YR 4/6) mottles, clay; massive; very firm, very sticky and very plastic; evidence of a few small (1 inch in diameter) slickensides; few small black concretions; few roots; pH 6.5; diffuse smooth boundary.
14411	C_{g4}	43-65 inches	Very dark gray to dark gray (5Y 3/1-4/1), with common medium distinct very dark brown mottles, clay; massive; very firm, very sticky and very plastic; few small black concretions; slickensides are larger (8 inches across) and much more common than in C_{g3} horizon; few small roots; pH 7.5; gradual smooth boundary.
	C_{g5}	65-70 inches	Gray (N 5/) to dark gray (N 4/), with common medium distinct dark grayish brown (10YR 4/2) mottles, clay; massive; very firm, very sticky and very plastic; few small black concretions; few or no roots; pH 7.5. (Not sampled)

Remarks:

Slickensides are much more common in this profile than Sharkey, Soil [illegible]

Common vertical cracks up to 1/2 inch wide at top extend through profile to a depth of about 2 1/2 feet.

Color given for moist soil.

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tarklin cherty silt loam SOIL Nos. 859Ky-5-4 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59401-59407

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-9	Ap		67.2	12.9	5.7	4.1	2.2	3.4	4.5		46.5	27.3				18		
9-14	A2		66.6	16.1	5.2	3.5	188	3.1	3.7		46.1	26.2				23		
14-17	B1		66.0	16.8	4.5	3.8	1.9	3.1	3.9		46.6	25.1				31		
17-22	B3m1		65.4	16.9	5.4	3.7	1.8	2.1	4.7		45.3	25.7				26		
22-27	B3m2		63.6	19.3	5.2	3.5	1.8	2.9	3.7		44.4	24.6				25		
27-37	B3m3		60.3	23.6	5.5	3.1	1.7	2.6	3.2		42.4	22.7				30		
37-52+	B3m4		44.8	36.2	5.5	3.6	2.1	3.5	4.3		32.8	18.3				38		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content 4A3a Field Moisture Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-9	0.86	0.108	8			1.4		1.42	1.50			23.6	5.7					6.0
9-14	0.16					1.7		1.49	1.53			21.1	6.3					4.9
14-17	0.04					2.3		1.58	1.64			21.0	7.0					4.6
17-22	0.06					4.5		1.63	1.64			20.4	7.1					4.6
22-27	0.02					2.4		1.61	1.66			20.5	7.9					4.5
27-37	0.04					2.2		1.61	1.72			19.6	10.0					4.7
37-52+	0.02					3.5		1.60	1.66		16.3		14.1					5.4

Depth (In.)	Extractable bases 6N2d Ca	6Q2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-9	4.6	0.5	0.1	0.2	3.9	9.2										58	
9-14	2.7	0.4	0.1	0.1	3.9	7.2										46	
14-17	1.7	0.5	0.1	0.1	4.9	7.3										33	
17-22	1.0	0.7	0.1	0.1	6.1	8.0										24	
22-27	1.0	1.2	0.1	0.2	6.9	9.4										26	
27-37	1.9	2.6	0.1	0.2	7.3	12.1										40	
37-52+	6.3	7.0	0.2	0.2	4.0	17.7										77	

Depth (In.)

Soil type: Tarklin cherty silt loam
Soil No.: S59Ky-5-4
Location: Barren County, Kentucky, SCD, about 5 1/2 miles south of Glasgow near Kentucky Highway 63 (on Glover Creek, 1/2 mile east of Highway 63). Photo ALK-4Z-837
Vegetation: Cultivated - planted to spring oats
Slope: Nearly level (1 to 2 percent slope) terrace position, but also influenced by local alluvium
Drainage: Moderately well to somewhat poorly drained; surface runoff is medium to slow
Permeability: Slow
Parent material: Local and general alluvium (mixed) from low grade (very cherty) limestone soils. (Ft. Payne limestone thought to be primary parent rock)
Collected by: E. J. Pedersen, D. D. Bohrer, Earle Latham, May 7, 1959
Described by: W. H. Zimmerman and James W. Dye

Horizon and Beltsville Lab. No.	
Ap 59401	0 to 9 inches. Dark grayish brown (10YR 4/2) cherty silt loam; weak fine granular structure; very friable; many fine roots and some partially decomposed mixed stems and leaves due to recent plowing; many worm casts; contains many small rounded chert fragments 1/8 to 2 inches in size; abrupt, smooth boundary.
A2 59402	9 to 14 inches. Light yellowish brown to light olive brown (2.5Y 6/4 to 5/4) mottled with common medium faint grayish brown (2.5Y 5/2) cherty silt loam; weak, medium subangular blocky structure breaking into moderate, fine, granular structure; friable; abundance of fine rounded chert pieces and a few small iron concretions; a few roots; worm casts common; clear smooth boundary.
B1 59403	14 to 17 inches. Mottled light olive brown (2.5Y 5/4) and pale olive (5Y 6/3) with some yellowish brown (10YR 5/4) heavy silt loam; weak medium coarse subangular blocky structure; friable; silt coatings of pale brown (10YR 6/3) on some ped surfaces; several fine to medium sized iron concretions; abundance of fine to medium 3/4 inch rounded chert pieces; many worm casts and an abundance of small worm and root channels; clear smooth boundary.
B3m1 59404	17 to 22 inches. Mottled light olive brown (2.5Y 5/4 to 5/6), light brownish gray (2.5Y 6/2) with some strong brown (7.5YR 5/8) heavy silt loam; weak coarse subangular blocky structure to massive; firm and somewhat compact; some pale brown (10YR 6/3) silt pockets; many fine and medium dark brown to black concretions; abundance of small water worn chert; a few worm casts; many small worm and root channels; clear smooth boundary.
B3m2 59405	22 to 27 inches. Mottled many medium distinct light brownish gray (2.5Y 6/2), light olive brown (2.5Y 5/4), and yellowish brown (10YR 5/6) silty clay loam; weak polygonal structure units with vertical boundaries about 5 or 6 inches across; many (20 percent) water worn small chert fragments up to 3/4 inch diameter; many small iron concretions; several small root channels and wormholes; clear smooth boundary.
B3m3 59406	27 to 37 inches. Coarsely mottled gray (N/6) light brownish gray to light yellowish brown (2.5Y 6/2 to 6/4) and yellowish brown (10YR 5/6) silty clay loam to clay loam; weak polygonal structure with vertical boundary about 5 or 6 inches across; gray streaks of clay on some ped surfaces; very firm and compact; many small rounded chert fragments (20 percent); some small chert pieces impregnated with iron oxides; clear smooth boundary.
B3m4 59407	37 to 52+ inches. Very coarsely mottled gray (N/6) and yellowish brown (10YR 5/6 and 5/4); massive, firm and very compact in place; abundance of medium and coarse chert fragments up to 2 to 3 inches across; abundance of manganese material and stainings; chert increases

SCS-421
10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tarklin cherty silt loam SOIL Nos. S59Ky-5-6 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59416-59422

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments: 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-9	Ap		64.9	17.1	3.0	2.9	2.0	4.1	6.0		42.9	30.5				16		
9-12	A2		62.5	21.6	3.4	2.7	1.5	3.2	5.1		42.8	27.0				15		
12-16	B2		62.0	22.9	3.5	2.6	1.4	2.9	4.7		43.3	25.2				16		
16-23	B3m1		61.6	22.2	3.7	2.4	1.5	3.2	5.4		43.3	25.8				23		
23-33	B3m2		61.3	22.7	3.0	2.1	1.4	3.6	5.9		43.1	26.4				40		
33-43	B3m3		54.2	28.7	3.2	2.6	1.7	3.9	5.7		37.1	25.2				39		
43-49+	C		28.6	41.2	3.4	4.5	3.6	11.0	7.7		21.4	22.0				31		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH	8C1c (2:1) H_2O	8C1a (1:1) H_2O
0-9	0.74	0.098	8			1.7		1.49	1.54			20.4	6.9					5.1
9-12	0.27					1.4		1.50	1.58			21.5	8.4					5.0
12-16	0.14					2.2		1.52	1.58			22.8	9.0					4.8
16-23	0.06					2.1		1.55	1.59			23.8	8.9					4.7
23-33	0.06					1.6		1.30	1.54			29.1	8.4					4.5
33-43	0.06					1.9		1.58	1.63			15.7	10.4					4.3
43-49+	0.04					3.5							17.7					4.3

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation: 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-9	3.0	0.6	tr.	0.2	4.3	8.2										48	
9-12	3.7	0.4	0.1	0.2	4.5	8.9										49	
12-16	3.9	0.5	0.1	0.2	5.3	9.9										46	
16-23	2.6	0.6	0.1	0.2	6.3	9.8										35	
23-33	1.5	0.5	0.1	0.2	6.7	9.0										26	
33-43	1.3	0.6	0.1	0.2	9.4	11.6										19	
43-49+	3.4	0.9	0.1	0.2	15.5	20.1										23	

Depth (In.)					

USDA-SCS-HYATTSVILLE MD. 1964

Soil type: Tarklin cherty silt loam
Soil No.: S59Ky-5-6
Location: Barren County, Kentucky, SCD, on county Highway 340 about 0.6 mile northeast of Highway 1324 (east of Temple Hill, Kentucky) Photo ALK-4Z-151
Vegetation and land use: Cultivated field, at present in spring oats and clover

alluvium
Drainage: Moderately well to somewhat poorly drained; surface runoff medium to slow
Permeability: Slow
Parent material: Local and general alluvium (mixed) from low grade (very cherty) limestone soils (Ft. Payne limestone believed to be the primary parent rock.)
Collected by and date: E. J. Pedersen, D. D. Bohrer, Earle Latham, May 7, 1959
Described by: W. H. Zimmerman and James W. Dye

Horizon and Beltsville Lab. No.	
Ap 59416	0 to 9 inches. Dark grayish brown (10YR 4/2) mixed with common fine faint yellowish brown (10YR 5/4) cherty silt loam; weak fine granular structure; very friable; somewhat rounded small chert (3/4 to 1 inch) common; abundance of worm casts and many fine roots; abrupt smooth boundary.
A2 59417	9 to 12 inches. Light olive brown (2.5Y 5/4) to yellowish brown (10YR 5/4) heavy silt loam to light silty clay loam; weak medium subangular blocky structure breaking into moderate medium granular structure; friable; many small (up to 3/4 inch) rounded chert fragments; many small dark brown concretions; few small roots and root channels; many worm casts; contains some mixed materials from layer above in old root channels; clear smooth boundary.
B2 59418	12 to 16 inches. Light olive brown (2.5Y 5/4) mottled with common fine faint light brownish gray (2.5Y 6/2) heavy silty clay loam; weak to moderate medium and coarse subangular blocky structure; somewhat firm; a few pale brown silt coatings on some ped surfaces; a few small rounded chert fragments; many very small dark brown concretions; several fine root and worm channels; a few worm casts; containing some mixing of material from layer above in root channels; clear smooth boundary.
B3ml 59419	16 to 23 inches. Light olive brown (2.5Y 5/4) mottled common medium faint light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/8) silty clay loam; weak coarse subangular blocky structure to massive; firm and somewhat compact; few to common chert fragments; black concretionary material is common; occasional fine root channels; clear, smooth boundary.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tarklin cherty silt loam SOIL Nos. S59Ky-5-7 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59423-59430

Depth (In.)	Horizon	1B1b Total Sand (2-0.05)	Total Silt (0.05-0.002)	Total Clay (< 0.002)	Sand Very coarse (2-1)	Sand Coarse (1-0.5)	Sand Medium (0.5-0.25)	Sand Fine (0.25-0.1)	Sand Very fine (0.1-0.05)	Silt (0.05-0.02)	Silt Int. III (0.02-0.002)	Silt Int. II (0.2-0.02)	(2-0.1)			Coarse fragments 2A2 > 2 Pct.	2 - 19	19 - 76
		Size class and particle diameter (mm) 3A1															Pct. of < 76mm	
		Pct. of < 2 mm																
0-8	Ap		66.3	17.4	3.6	3.5	2.1	3.5	3.6		44.5	27.4				13		
8-12	A2		65.2	23.0	2.8	2.3	1.4	2.4	2.9		46.8	22.8				8		
12-18	B2		63.8	24.9	2.5	2.3	1.2	2.3	3.0		45.4	22.7				15		
18-24	B22		60.1	29.1	2.6	1.5	1.0	2.3	3.4		44.4	20.6				6		
24-29	B23		55.1	34.3	1.4	1.6	1.2	2.6	3.8		39.7	20.9				9		
29-40	B3m1		46.9	36.6	3.9	2.5	1.8	3.6	4.7		42.6	11.2				26		
40-45	B3m2		46.0	31.5	8.0	3.3	2.0	3.9	5.3		33.5	20.1				47		
45-53+	C		39.0	25.6	7.0	4.5	2.7	15.0	6.2		35.1	23.0				47		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-8	1.07	0.107	10			1.9		1.26	1.30			23.1	7.6					5.6
8-12	0.34					2.0		1.59	1.67			22.8	8.8					4.8
12-18	0.18					2.3		1.54	1.62			21.6	9.8					4.6
18-24	0.12					2.5		1.60	1.66			21.4	11.3					4.5
24-29	0.08					3.0		1.47	1.54			26.7	13.3					4.5
29-40	0.08					3.3		1.46	1.52			26.8	14.6					4.4
40-45	0.12					2.6		1.30	1.35			37.8	12.5					4.4
45-53+	0.12					2.4		1.44	1.48			26.8	10.1					4.5

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	5B1a 6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-8	4.1	0.4	tr.	0.6	5.4	10.5									48	
8-12	2.9	0.3	tr.	0.2	6.1	9.6									36	
12-18	2.3	0.6	0.1	0.2	7.5	10.7									30	
18-24	2.2	1.1	0.1	0.2	8.1	11.6									30	
24-29	2.2	1.7	0.1	0.2	10.2	14.4									29	
29-40	1.9	1.0	0.1	0.2	12.4	15.6									20	
40-45	1.6	1.4	tr.	0.2	10.2	13.5									24	
45-53+	1.0	2.8	tr.	0.2	7.9	11.9									34	

Depth (In.)

Soil type: Tarklin cherty silt loam
Soil No.: S59Ky-5-7
Location: Barren County, Kentucky, SCD, about 7 miles south of Glasgow, then 1.6 miles west on county Highway 332. Photo ALK-4Z-25
Vegetation: Cultivated field, in corn last year, not yet plowed this spring
Slope: Gently sloping (4 percent) a foot slope position with some influence from Skaggs Creek general alluvium
Drainage: Moderately well drained; medium surface runoff
Permeability: Slow
Parent material: Local and general alluvium; primarily from soils developed in low grade cherty limestones
Collected by: E. J. Pedersen, D. D. Bohrer, and Earl Latham, May 7, 1959
Described by: W. H. Zimmerman and James W. Dye

Horizon and Beltsville Lab. No.	
Ap 59423	0 to 8 inches. Dark grayish brown (10YR 4/2) cherty silt loam; weak fine granular structure; very friable; abundance of worm casts; chert fragments are rounded and up to 2 inches across in size; abundance of roots; clear, smooth boundary.
A2 59424	8 to 12 inches. Yellowish brown (10YR 5/4) mixed with some brown (10YR 5/3) heavy silt loam; weak fine subangular blocky structure breaking into weak granular structure; friable; several small rounded chert fragments; some very fine dark brown concretions and an occasional medium sized reddish brown concretion; many worm casts; many very fine root and worm channels; clear, wavy boundary.
B21 59425	12 to 18 inches. Yellowish brown (10YR 5/4) with occasional yellowish red (5YR 5/6) on some ped surfaces silty clay loam; moderate fine and medium subangular blocky structure; few clay films; somewhat firm; occasional spots of carbon; a few fine dark brown concretions; several small rounded chert fragments; many worm casts and roots; clear, smooth boundary.
B22 59426	18 to 24 inches. Yellowish brown (10YR 5/6) with occasional yellowish red (5YR 5/6) on some ped surfaces heavy silty clay loam; moderate fine and medium angular and subangular blocky structure; few clay films; firm; common chert fragments; several dark brown small concretions; several worm casts and many fine root and worm pores; clear wavy boundary.
B23 59427	24 to 29 inches. Yellowish brown (10YR 5/6) with occasional strong brown (7.5YR 5/6) on some ped surfaces; silty clay loam; moderate medium subangular blocky structure; an occasional clay film; firm; several small rounded chert fragments; many very fine to medium dark brown concretions; many roots; clear, smooth boundary.
B3m1 59428	29 to 40 inches. Mottled yellowish brown (10YR 5/4), brown (7.5YR 5/4) and light brownish gray (2.5Y 6/2) silty clay loam; weak coarse subangular blocky structure to massive; firm and somewhat compact; many small (1/2 to 2 inches in size) rounded chert fragments; many small dark brown concretions; a few roots; clear, smooth boundary.
B3m2 59429	40 to 45 inches. Mottled light olive brown (2.5Y 5/4), yellowish brown (10YR 5/8) and light brownish gray (2.5Y 6/2) gritty silt loam; weak coarse platy structure to massive; firm and

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tarklin cherty silt loam SOIL Nos. S59Ky-5-8 LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59431-59438

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		66.1	17.9	2.2	2.8	2.5	4.2	4.3		43.4	29.5				18		
7-11	B1		58.9	24.1	5.0	3.4	2.0	3.0	3.6		40.1	24.1				30		
11-18	B21		49.9	25.0	8.1	4.7	3.0	4.6	4.7		34.3	22.8				43		
18-23	B22		47.9	23.6	4.3	4.4	4.5	8.1	7.2		22.2	37.6				25		
23-32	B3m1		34.2	32.3	2.4	3.0	6.3	12.2	9.6		22.3	28.2				13		
32-39	B3m2		23.0	35.0	0.6	3.5	10.3	16.9	10.7		14.5	27.9				10		
39-47	C11		22.9	29.8	0.5	5.5	13.8	18.1	9.4		13.9	26.8				2		
47-54+	C12		16.2	31.4	0.5	7.1	19.4	17.8	7.6		11.8	20.0				2		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density: 4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc		Water content: Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-7	0.90	0.114	8			1.6		1.36	1.39		21.7	7.6					4.8
7-11	0.34					2.4		1.46	1.48		23.1	9.8					4.7
11-18	0.20					3.3		1.43	1.44		25.6	10.8					4.7
18-23	0.10					2.8		1.53	1.55		22.1	10.4					4.8
23-32	0.10					2.5		1.60	1.66		20.8	13.2					4.5
32-39	0.07					3.4		1.58	1.64		21.4	15.1					4.6
39-47	0.08					2.5		1.54	1.60		21.6	13.0					4.4
47-54+	0.06					2.5		1.49	1.54		22.5	13.9					4.3

Depth (In.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations									Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g															
0-7	1.6	0.7	tr.	0.3	7.5	10.1									26	
7-11	2.1	0.5	tr.	0.2	6.9	9.7									29	
11-18	2.4	0.8	0.1	0.2	7.1	10.6									33	
18-23	2.7	1.3	0.1	0.2	5.9	10.2									42	
23-32	2.7	3.8	0.1	0.2	8.8	15.6									44	
32-39	3.4	2.5	0.1	0.2	9.5	15.7									39	
39-47	2.5	3.0	0.1	0.2	8.2	14.0									41	
47-54+	2.3	2.0	0.1	0.2	9.2	13.8									33	

Depth (In.)

USDA-SCS-WASHINGTON, D.C. 1964

Soil type: Tarklin cherty silt loam
Soil No.: S59Ky-5-8
Location: Barren County, Kentucky, SCD, about 13 miles south of Glasgow on U. S. Highway 31E at junction of Kentucky Highway 87. Photo ALK-7Z-87 (1955)
Vegetation: Pasture field (lespedeza, weeds and wildgrasses)
Slope: Gently sloping (2-3 percent); long foot slope position, with some influence from Barren River general alluvium
Drainage: Moderately well drained, medium to slow surface runoff
Permeability: Slow
Parent material: Local and general alluvium, primarily from soils developed in low grade cherty limestones
Collected by: E. J. Pedersen, D. D. Bohrer, Earle Latham, May 8, 1959
Described by: W. H. Zimmerman and James W. Dye

Horizon and Beltsville Lab. No.	
Ap 59431	0 to 7 inches. Dark grayish brown (10YR 4/2) cherty silt loam; weak fine granular structure; very friable; abundance of fine roots; many worm casts; several small old root and worm channels; chert is from 1/2 to 1 inch in size and rounded; clear abrupt boundary.
B1 59432	7 to 11 inches. Yellowish brown (10YR 5/4-5/6) silty clay loam; weak medium and coarse subangular blocky structure; friable; many small black and dark brown concretions; many small (1/4 to 2 inches in size) chert fragments; some small pockets and old root channels filled with Ap horizon material; many worm casts; many fine roots; clear smooth boundary.
B21 59433	11 to 18 inches. Dark yellowish brown (10YR 4/4) mottled with common medium faint light yellowish brown (10YR 6/4) silty clay loam; moderate medium subangular blocky structure; somewhat firm; many chert fragments (1/2 to 2 inches in size); black organic stainings on many ped surfaces; abundance of fine and medium dark brown and black concretions; many worm casts; many old root and worm channels; a few fine roots; clear smooth boundary.
B22 59434	18 to 23 inches. Yellowish brown (10YR 5/4-5/6) mottled with many medium light olive brown (2.5Y 5/4) silty clay loam; moderate medium subangular blocky structure; firm; many small rounded chert fragments; many small round black and dark brown concretions, and a few reddish brown concretions; some black concretionary material and stainings; several small root and worm channels; a few fine roots; some worm casts; clear smooth boundary.
B3m1 59435	23 to 32 inches. Mottled yellowish brown (10YR 5/4), light olive brown (2.5Y 5/4) with some brown (7.5YR 4/4) silty clay loam; weak coarse angular blocky structure to massive; firm and [illegible]

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tygart silt loam SOIL Nos. S54Ky-51-16 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55434-55437

Depth (in.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3a1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 ≥ 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-8	Ap		67.0	26.9	1.4	1.7	0.8	1.0	1.2[a]		45.9	22.9				-		
8-13	B2		60.4	26.2	0.6	0.8	0.4	0.6	1.0		42.1	19.8				-		
13-26	B3m		44.7	53.5	0.3	0.4	0.2	0.4	0.5		32.1	13.3				-		
26-61	C		52.9	44.1	0.2	0.6	0.4	0.8	1.0		37.4	17.0				-		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-8	0.86																	5.0
8-13	0.24																	4.8
13-26	0.26																	4.8
26-61	0.36																	5.1

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Ext. Cations										Base saturation 5C3 Sum Cations	
	meq/100 g															Pct.	Pct.
0-8	3.9	2.3	0.4	0.2	10.4	17.2										40	
8-13	2.5	2.8	0.3	0.2	13.1	18.9										31	
13-26	3.4	7.9	0.6	0.5	18.6	31.0										40	
26-61	2.8	10.6	0.8	0.4	9.8	24.4										60	

Depth (in.)

a. Undecomposed organic matter in sand fractions.

USDA-SCS-HYATTSVILLE, MD. 1964

Soil type: Tygart silt loam
Soil No.: S54Ky-51-16
Location: Henderson County, Kentucky; one-half mile north of Rangers Landing, photo DKZ-6G-176
Vegetation: Corn stalks
Slope: Level
Erosion: None
Drainage: Poorly to imperfectly drained
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55434	0 to 8 inches. Mottled brown (10YR 5/3) and grayish brown (10YR 5/2) friable, heavy silt loam; mottles are many, fine and faint; weak, medium, subangular blocky structure which breaks easily to a moderate, fine granular structure. A few small, round, black concretions and many fine roots occur; abrupt, smooth boundary; very strongly acid.
B2 55435	8 to 13 inches. Mottled yellowish brown (10YR 5/6) and light brownish gray (2.5Y 6/2) firm silty clay loam; mottles are many, fine, and distinct; moderate, medium angular blocky structure; clear, smooth boundary; a few small, round brown concretions and fine roots occur; very strongly acid.
B3m 55436	13 to 26 inches. Mottled strong brown (7.5Y 5/6), light olive brown (2.5Y 5/4) and gray (5Y 6/1) firm clay; mottles are many, fine and distinct; strong, coarse, blocky structure; sticky and plastic when wet; very pronounced clay skins; a few small, brown concretions. Reaction ranges from very strongly acid in upper portion to medium acid in lower limits.
C 55437	26 to 61 inches. Mottled dark yellowish brown (10YR 4/4) and grayish brown (2.5Y 5/2) very firm clay; mottles are many, fine, and distinct; very sticky and plastic when wet; strong, medium and coarse, angular blocky structure. There are a few small, brown concretions, and some dark concretionary staining is on some ped surfaces. The reaction ranges from neutral at 30 inches to mildly alkaline at 50 inches, becoming slightly calcareous at 60 inches. Lime nodules are common below 60 inches.

Notes: Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Tygart silt loam SOIL Nos. S54Ky-51-17 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55438-55441

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Silt: Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 ≥ 2 Pct.	2 - 19	19 - 76
		Size class and particle diameter (mm) 3A1 — Pct. of < 2 mm															Pct. of < 76mm	
0-7	Ap		73.7	16.7	4.0	2.7	1.0	1.1	0.8		37.8	37.2				-		
7-14	B2		62.8	32.3	1.5	1.3	0.6	0.8	0.7		33.2	30.7				-		
14-26	B3m		51.5	46.5	0.2	0.3	0.3	0.5	0.7		31.7	20.8				-		
26-60	C		53.0	44.8	0.5	0.5	0.3	0.4	0.5		31.9	21.7				-		

Depth (in.)	6A1a Organic carbon Pct.	Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.		Bulk density g/cc	g/cc	g/cc		Water content Pct.	Pct.	Pct.			pH		8C1a (1:1) H_2O
0-7	1.34																	4.8
7-14	0.54																	5.0
14-26	0.63																	4.9
26-60	0.36																	6.7

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-7	4.6	1.5	0.4	0.1	9.4	16.0										41	
7-14	3.1	5.5	1.2	0.2	12.8	22.8										44	
14-26	4.3	7.2	2.2	0.4	9.2	23.3										61	
26-60	8.2	18.9	5.0	0.2	2.6	30.4										91	

Depth (in.)					

USDA-SCS-HYATTSVILLE MD 1964

Soil type: Tygart silt loam
Soil No.: S54Ky-51-17
Location: Henderson County, Kentucky; Ben Strother farm near Highway 41, near Webster County line, photo DLD-5G-16
Vegetation: Lespedeza
Slope: Level (1 percent)
Erosion: None
Drainage: Poorly to imperfectly drained
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55438	0 to 7 inches. Brown (10YR 5/3) friable silt loam mottled with grayish brown (2.5Y 5/2); mottles are common, fine and distinct; weak, medium, subangular blocky structure which breaks easily to a weak fine granular structure; many small roots and a few small round

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10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Uniontown silt loam SOIL Nos. S54Ky-51-14 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55423-55427

Depth	Horizon	1B1b Size class and particle diameter (mm) 3A1													2A2		
		Total			Sand					Silt					Coarse fragments		
		Sand	Silt	Clay	Very	Coarse	Medium	Fine	Very fine		Int. III	Int. II			> 2	2 - 19	19 - 76

Soil type: Uniontown silt loam
Soil No.: S54Ky-51-14
Location: Henderson County, Kentucky; on south side of Kentucky Highway 136, opposite Spencer Chemical Plant, photo DKZ-5G-174
Vegetation: Fescue, orchard grass, lespedeza, wheat stubble
Slope: Level (1 percent)
Erosion: None
Drainage: Moderately well to well drained
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55423	0 to 8 inches. Dark grayish brown (10YR 4/2) very friable silt loam, with a few, fine, faint grayish brown (2.5Y 5/2); mottles; weak, medium, subangular blocky breaking easily to a weak, fine, granular structure; abrupt, smooth boundary; slightly acid.
B1 55424	8 to 12 inches. Yellowish brown (10YR 5/6) firm silty clay; plastic and slightly sticky when wet; moderate, medium and coarse, angular blocky structure; gradual, smooth boundary; very strongly acid.
B2 55425	12 to 21 inches. Yellowish brown (10YR 5/6) firm silty clay; plastic and slightly sticky when wet; strong, medium and coarse, angular blocky structure; a few small round, brown concretions are present; clear, smooth boundary; slightly acid.
B3 55426	21 to 25 inches. Light olive brown (2.5Y 5/6) friable silty clay loam; moderate, coarse, angular blocky structure; clear, smooth boundary; mildly alkaline. A few small brown concretions occur.
C 55427	25 to 48+ inches. Light olive brown (2.5Y 5/6) very friable, slightly calcareous silt loam, mottled with light brownish gray (2.5Y 6/2); mottles are common, fine, and distinct; weak, fine and medium, angular blocky structure. Irregular shaped lime nodules, 1/2 to 3 inches in diameter, are numerous below 28 inches.

Notes: Color of soil moist unless otherwise stated.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Uniontown silt loam SOIL Nos. S54Ky-51-1 LOCATION Henderson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55428-55433

Depth (in.)	Horizon	1B1b Total Sand (2–0.05)	Total Silt (0.05–0.002)	Total Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt (0.05–0.02)	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			2A2 Coarse fragments > 2 Pct.	2 - 19 (Pct. of < 76mm)	19 - 76 (Pct. of < 76mm)
		Size class and particle diameter (mm) 5A1 — Pct. of < 2 mm																
0-9	Ap		85.2	12.2	0.4	0.6	0.4	0.3	0.9[a]		38.1	48.1				-		
9-14	B1		79.2	19.3	0.1	0.4	0.3	0.2	0.5		41.3	38.4				-		
14-18	B21		67.6	31.2	0.1	0.2	0.2	0.2	0.5		36.1	32.2				-		
18-25	B22		64.1	34.8	-	0.1	0.1	0.3	0.6		31.6	33.2				-		
25-35	B3		70.6	27.1	0.1	0.2	0.3	0.6	1.1		35.2	36.9				-		
35-74+	C		86.5	10.9	0.6	0.5	0.2	0.3	1.0		36.7	50.9				tr.		

Depth (in.)	6A1a Organic carbon (Pct.)	Nitrogen (Pct.)	C/N		Carbonate as $CaCO_3$ (Pct.)		Bulk density (g/cc)	Bulk density (g/cc)	Bulk density (g/cc)		Water content (Pct.)	Water content (Pct.)	Water content (Pct.)			pH		8C1a (1:1) H_2O
0-9	0.81																	7.6
9-14	0.26																	7.3
14-18	0.26																	7.1
18-25	0.34																	7.4
25-35	0.25																	7.6
35-74+	0.08																	8.1

Depth (in.)	Extractable bases 5B1a: 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation: 5C3 Sum Cations (Pct.)	Pct.
	meq/100 g																
0-9	7.7	3.3	tr.	0.1	1.3	12.4										90	
9-14	7.7	3.7	tr.	0.1	1.9	13.0										85	
14-18	11.8	6.8	0.1	0.2	3.3	22.2										85	
18-25	15.1	8.5	0.1	0.3	3.5	27.5										87	
25-35	12.8	7.2	0.1	0.2	1.5	21.8										93	
35-74+	Calcareous																

Depth (in.)

a. Undecomposed organic matter in sand fractions.

USDA-SCS-HYATTSVILLE MD 1964

Soil type: Uniontown silt loam
Soil No.: S54Ky-51-15
Location: Henderson County, Kentucky; one-half mile south of Bluff City, photo DKZ-1G-51
Vegetation: Corn stalks
Slope: Level
Erosion: None
Drainage: Moderately well to well drained
Parent material: Calcareous alluvium

Horizon and Beltsville Lab. No.	
Ap 55428	0 to 9 inches. Brown (10YR 5/3) very friable silt loam with a weak, medium, angular blocky structure which breaks easily into a weak, fine, granular structure; numerous roots and a few dark organic matter stains; abrupt, smooth boundary; mildly alkaline.
B1 55429	9 to 14 inches. Yellowish brown (10YR 5/6) friable, slightly sticky, heavy silt loam to light silty clay loam, with a few, fine faint brown (10YR 5/3) mottles; moderate, medium, angular blocky structure; clear, smooth boundary; mildly alkaline.
B21 55430	14 to 18 inches. Yellowish brown (10YR 5/6) friable, slightly plastic, silty clay loam with a few fine, distinct mottles of light brownish gray (2.5Y 6/2); moderate, medium, angular blocky structure. Clay skin coatings of a lighter shade than matrix color are on many of the ped surfaces. A few small, round, brown concretions are present. Clear, smooth boundary; mildly alkaline.
B22 55431	18 to 25 inches. Dark yellowish brown (10YR 4/4) on ped surface, yellowish brown (10YR 5/8) crushed, firm silty clay with a strong, medium and coarse angular blocky structure; clay skins are prominent. A few, small, round, brown concretions are present; gradual, smooth boundary; mildly alkaline.
B3 55432	25 to 35 inches. Mottled yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/6) friable silty clay loam; moderate, coarse, angular blocky structure; brown (10YR 5/3)

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10-64

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Wheeling silt loam SOIL Nos. 857Ky-56-10 LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 5890-5898

Depth (In.)	Horizon	1B1b Total: Sand (2–0.05)	Silt (0.05–0.002)	Clay (< 0.002)	Size class and particle diameter (mm) 3A1 Sand: Very coarse (2–1)	Coarse (1–0.5)	Medium (0.5–0.25)	Fine (0.25–0.1)	Very fine (0.1–0.05)	Silt: 0.05–0.02	Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 – 19	19 – 76
		Pct. of < 2 mm															Pct. of < 76mm	
0-8	Ap		54.3	14.7	0.2	0.6	2.8	14.2	13.2		34.3	41.8				tr.		
8-16	B21		53.0	23.2	-	0.3	1.8	10.7	11.0		35.7	35.1				tr.		
16-23	B22		45.6	25.8	0.1	0.3	1.2	11.3	15.7		28.1	41.4				-		
23-29	B23		40.1	21.2	0.1	0.3	1.4	16.0	20.9		21.1	51.6				-		
29-36	B24		34.9	18.0	-	0.4	2.8	21.2	22.7		17.7	54.7				-		
36-45	B31		29.6	15.5	-	0.5	4.5	27.5	22.4		13.6	55.6				-		
45-54	B32		27.2	14.7	-	0.4	7.3	29.8	20.6		12.7	51.6				-		
54-72	C (a)		7.7	3.5	0.1	1.0	21.0	57.9	8.8		3.9	34.9				-		
54-72	C (b)		15.8	12.5	-	0.2	6.1	47.8	17.6		8.5	52.8				-		

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N		Carbonate as $CaCO_3$ Pct.	6C1a Ext. Iron as Fe_2O_3 Pct.	Bulk density g/cc	g/cc	g/cc		Water content Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			pH		8C1a (1:1) H_2O
0-8	1.12	0.120	9			2.6						19.0	6.3					5.4
8-16	0.34	0.054	6			2.3						18.7	9.1					5.0
16-23	0.19					3.0						19.0	10.3					4.6
23-29	0.13					2.8						18.2	8.3					4.4
29-36	0.14					2.6						17.2	7.9					4.4
36-45	0.13					2.7						15.9	6.8					4.4
45-54	0.12					2.4						13.3	6.2					4.4
54-72	0.10					2.0						5.1	2.2					4.6
54-72	0.15					2.6						13.3	5.6					4.4

Depth (In.)	Extractable bases 6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	5B1a 6H1a Ext. Acidity	CEC 5A3a Sum Cations										Base saturation 5C3 Sum Cations Pct.	Pct.
	meq/100 g																
0-8	4.9	1.0	tr.	0.3	6.7	12.9										48	
8-16	4.1	1.1	tr.	0.3	6.3	11.8										47	
16-23	3.2	1.0	tr.	0.4	8.2	12.8										36	
23-29	2.1	0.6	tr.	0.3	8.8	11.8										25	
29-36	1.7	0.7	tr.	0.2	8.6	11.3										24	
36-45	1.2	0.7	tr.	0.2	7.8	10.0										22	
45-54	1.5	0.7	tr.	0.2	7.5	9.9										24	
54-72	0.6	0.3	tr.	0.2	2.9	4.0										28	
54-72	1.1	0.8	tr.	0.2	6.3	8.4										25	

Depth (In.)

a. 5897 - major part of the C horizon

b. 5898 - bands of fine sandy loam in C horizon

DEPA-SCS HYATTSVILLE, MD. 1964

Soil type: Wheeling silt loam
Soil No.: S57Ky-56-10
Location: Jefferson County, Kentucky, Ernest Nall Farm, 400 yards northwest of Lee's Lane and Can Run Road, 60 yards south of residence. Photo No. AFW-1R-103, 1956
Vegetation and land use: Alfalfa and grass meadow
Slope and land form: Level - 2 percent slope
Erosion: None
Drainage: Well drained
Parent material: Ohio River alluvium
Physiographic position: Outer Bluegrass River terrace - low ridge top
Collected by and date: W. H. Zimmerman, E. J. Pedersen and G. M. Phibbs, October 14, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 5890	0 to 8 inches. Dark brown (10YR 4/3-3/3) silt loam; moderate fine granular structure; very friable; pH 7.0; abrupt smooth boundary.
B21 5891	8 to 16 inches. Brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; thin discontinuous clay skins; firm; medium pores common; pH 6.0; clear smooth boundary.
B22 5892	16 to 23 inches. Brown (7.5YR 4/4) silty clay loam; weak very coarse prismatic breaking into strong medium subangular and angular blocky structure; firm to very firm; common medium pores; pH 4.5; gradual smooth boundary.
B23 5893	23 to 29 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) crushed, clay loam; moderate medium subangular and angular blocky structure; patchy clay skins; firm to friable; few black concretionary specks and mica flakes; pH 4.5; gradual smooth boundary.
B24 5894	29 to 36 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) crushed, fine sandy clay loam; very coarse prismatic breaking into moderate medium angular blocky structure; discontinuous clay skins; friable; organic clay films along macrostructure faces; medium pores and mica flakes common; pH 4.5; gradual smooth boundary.
B31 5895	36 to 45 inches. Brown (7.5YR 4/4), strong brown (7.5YR 5/6) crushed, fine sandy clay loam; weak coarse angular blocky structure; discontinuous organic and silicate clay skins; friable; few mica flakes; pH 4.5; gradual smooth boundary.
B32 5896	45 to 54 inches. Brown (7.5YR 4/4) to dark yellowish brown (10YR 4/4) fine sandy loam; weak coarse angular blocky structure; thin patchy organic and silicate clay skins; friable to very friable; few mica flakes; pH 4.5; gradual smooth boundary.
C 5897 and 5898	54 to 72 inches. (8a) Brown (10YR 4/3) fine sand; single grain structure; loose; common mica flakes and carbon specks; (8b) brown to reddish brown (7.5YR 4/4 to 5YR 4/4) bands of fine sandy loam; massive; very friable; few mica flakes; pH 4.5; clear smooth boundary.

Notes: Color taken moist unless otherwise stated. One building brick encountered in Ap horizon. Subhorizons 8a and 8b of the C occur as discontinuous irregular bands and pockets and were sampled separately. 0 to 8, 16 to 23, and 54 to 72 inch zones were sampled for the Bureau of Public Roads.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL Wheeling silt loam SOIL Nos. S57Ky-56-13 LOCATION Jefferson County, Kentucky

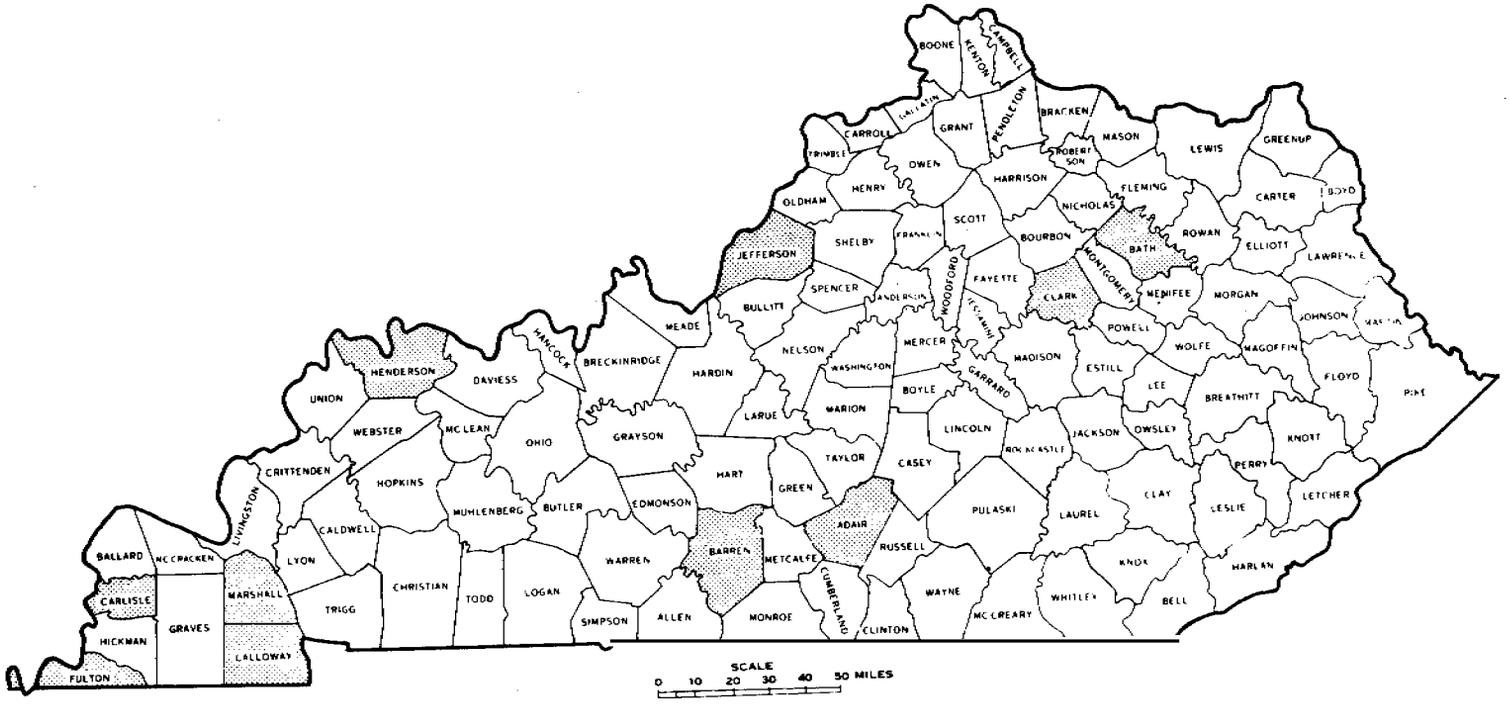
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58118-58126

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1 Total: Sand (2–0.05)	Total: Silt (0.05–0.002)	Total: Clay (< 0.002)	Sand: Very coarse (2–1)	Sand: Coarse (1–0.5)	Sand: Medium (0.5–0.25)	Sand: Fine (0.25–0.1)	Sand: Very fine (0.1–0.05)	Silt: 0.05–0.02	Silt: Int. III (0.02–0.002)	Int. II (0.2–0.02)	(2–0.1)			Coarse fragments 2A2 > 2 Pct.	2 - 19 (Pct. of < 76mm)	19 - 76 (Pct. of < 76mm)
		Pct. of < 2 mm																
0-8	Ap		65.8	20.1	0.2	0.6	1.2	3.4	8.7		39.8	36.7				tr.		
8-12	B1		62.6	26.6	-	0.2	0.7	2.0	7.9		38.9	32.8				tr.		
12-21	B21		59.2	26.4	-	0.1	0.2	1.7	12.4		32.4	40.5				-		
21-32	B22		58.1	20.2	-	-	0.1	2.3	19.3		24.6	54.8				-		
32-41	B3		60.1	18.0	-	-	0.1	1.5	20.3		21.8	59.8				-		
41-49	C11		52.8	14.4	-	-	0.6	11.1	21.1		17.1	60.4				-		
49-51	C12		56.8	7.5	-	-	0.6	6.6	28.5		14.1	74.4				-		
51-55	C13		19.0	18.3	-	0.2	4.0	43.7	14.8		5.7	48.7				-		
55-72	C14		51.0	7.3	-	-	0.1	10.5	31.1		11.2	80.3				-		
	6A1a	6B2a				6C1a	Bulk density				Water content					pH		

Soil type: Wheeling silt loam
Soil No.: S57Ky-56-13
Location: Jefferson County, Kentucky, R. B. Fenley Farm, 400 yards east of Dixie Highway, 400 yards north of Medora Elementary School, 400 yards west of railroad, and 30 feet north of walnut tree. Photo No. AFW-1R-109, 1956
Vegetation and land use: Wheat field adjacent to alfalfa
Slope and land form: Level - 1 to 2 percent slope
Erosion: None
Drainage: Well drained
Parent material: Ohio River alluvium
Physiographic position: Outer Bluegrass - Ohio River terrace - low ridge top
Collected by and date: W. H. Zimmerman, E. J. Pedersen and G. M. Phibbs, October 15, 1957
Described by: E. V. Huffman and H. H. Bailey

Horizon and Beltsville Lab. No.	
Ap 58118	0 to 8 inches. Brown to dark grayish brown (10YR 4/3-4/2) silt loam; moderate medium granular structure; very friable; pH 7.5; abrupt smooth boundary.
B1 58119	8 to 12 inches. Brown (7.5YR 4/4) variegated few fine distinct yellowish red (5YR 5/8) silty clay loam; reddish gray (5YR 5/2) silt coats; weak medium angular blocky structure; few clay skins; firm in place, friable when disturbed; reddish gray (5YR 5/2) silt coats are common on ped surfaces; pH 7.5; clear smooth boundary.
B21 58120	12 to 21 inches. Brown (7.5YR 4/4) strong brown (7.5YR 5/6) crushed, silty clay loam; moderate medium angular blocky and subangular blocky structure; clay skins noticeable; firm, slightly plastic; concretionary specks noticeable; few medium pores; pH 7.0.
B22 58121	21 to 32 inches. Brown (7.5YR 4/4), few medium distinct variegations of yellowish brown (10YR 5/8) and gray (5Y 5/1), coarse silty clay loam; moderate medium angular blocky structure; reddish brown (5YR 4/3) clay skins; friable; few black concretions; few medium pores; pH 5.0.
B3 58122	32 to 41 inches. Brown (10YR 4/3) variegated few fine faint yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; few thin clay skins; friable; few black concretions; common medium pores; pH 5.0.
C11 58123	41 to 49 inches. Brown (10YR 4/3) with a few fine distinct variegations of yellowish red and light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure; friable; some evidence of clay flows along vertical surfaces; few black concretions; common medium pores; pH 5.0.
C12 58124	49 to 51 inches. Dark yellowish brown (10YR 4/4) silt loam; massive; very friable; few very small black concretions; common medium pores; pH 5.0.
C13 58125	51 to 55 inches. Brown (7.5YR 4/4) variegated few medium faint dark yellowish brown (10YR 4/4) mixed sandy clay loam and sandy loam; massive; friable; clay-filled interstices; few very small black concretions; common medium pores; pH 5.0.
C14 58126	55 to 72+ inches. Variegated brown (7.5YR 4/4) and yellowish brown (10YR 4/4) silt loam; [illegible]

KENTUCKY


BOONE
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ROBERTSON
HARRISON
FLEMING
CARTER
BOYD
OLDHAM
HENRY
NICHOLAS
SCOTT
BOURBON
ROWAN
ELLIOTT
JEFFERSON
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BUTLER
EDMONSON
PULASKI
CLAY
LESLIE
LETCHER
CALDWELL
ADAIR
LAUREL
BALLARD
MC CRACKEN
LYON
WARREN
BARREN
METCALFE
RUSSELL
KNOX
HARLAN
CARLISLE
MARSHALL
CHRISTIAN
TODD
LOGAN
CUMBERLAND
WAYNE
WHITLEY
BELL
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ALLEN
MONROE
MC CREARY
HICKMAN
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