

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

**...KENTUCKY**

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

Soil Survey Investigations Report No. 14

**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
    4. Field state
    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.  $\text{NH}_4\text{OAc}$ , pH 7.0
      - a. Direct distillation
      - b. Displacement, distillation
  - 5A. Cation-exchange capacity (cont.)
    2.  $\text{NaOAc}$ , pH 8.2
      - a. Centrifuge method
    3. Sum of cations
      - a. Acidity by  $\text{BaCl}_2\text{-TEA}$ , pH 8.2; bases by  $\text{NH}_4\text{OAc}$ , pH 7.0
    4.  $\text{KOAc}$ , pH 7.0
    5.  $\text{BaCl}_2$ , pH 8.2
      - a. Barium by flame photometry
  - B. Extractable bases
    1.  $\text{NH}_4\text{OAc}$  extraction
      - a. Uncorrected
      - b. Corrected (exchangeable)
    2.  $\text{KCl-TEA}$  extraction, pH 8.2
  - C. Base saturation
    1.  $\text{NH}_4\text{OAc}$ , pH 7.0
    2.  $\text{NaOAc}$ , pH 8.2
    3. Sum of cations
  - D. Sodium saturation (exchangeable Na pct.)
    1.  $\text{NaOAc}$ , pH 8.2
    2.  $\text{NH}_4\text{OAc}$ , pH 7.0
  - E. Sodium adsorption ratio
6. CHEMICAL ANALYSES
  - A. Organic carbon
    1. Acid-dichromate digestion
      - a.  $\text{FeSO}_4$  titration
      - b.  $\text{CO}_2$  evolution, gravimetric
    2. Dry combustion
      - a.  $\text{CO}_2$  evolution I
      - b.  $\text{CO}_2$  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
      - a. Permanganate colorimetry
  - E. Calcium carbonate
    1.  $\text{HCl}$  treatment
      - a. Gas volumetric
      - b. Manometric
      - c. Weight loss
      - d. Weight gain
      - e. Titrimetric
    2. Sensitive qualitative method
      - a. Visual, gas bubbles
  - F. Gypsum
    1. Water extract
      - a. Precipitation in acetone
  - G. Aluminum
    1.  $\text{KCl}$  extraction I, 30 min
      - a. Aluminon I
      - b. Aluminon II
      - c. Aluminon III
      - d. Fluoride titration
    2.  $\text{KCl}$  extraction II, overnight
      - a. Aluminon I
    3.  $\text{NH}_4\text{OAc}$  extraction
      - a. Aluminon III
    4.  $\text{NaOAc}$  extraction
      - a. Aluminon III
  - H. Extractable acidity
    1.  $\text{BaCl}_2\text{-triethanolamine I}$ 
      - a. Back-titration with  $\text{HCl}$
    2.  $\text{BaCl}_2\text{-triethanolamine II}$ 
      - a. Back-titration with  $\text{HCl}$
    3.  $\text{KCl-triethanolamine}$ 
      - a. Back-titration with  $\text{NaOH}$
  - I. Carbonate
    1. Saturation extract
      - a. Acid titration
6. CHEMICAL ANALYSES (cont.)
  - J. Bicarbonate
    1. Saturation extract
      - a. Acid titration
  - K. Chloride
    1. Saturation extract
      - a. Mohr titration
      - b. Potentiometric titration
  - L. Sulfate
    1. Saturation extract
      - a. Gravimetric,  $\text{BaSO}_4$
    2.  $\text{NH}_4\text{OAc}$  extraction
      - a. Gravimetric,  $\text{BaSO}_4$
  - M. Nitrate
    1. Saturation extract
      - a. PDS acid colorimetry
  - N. Calcium
    1. Saturation extract
      - a. EDTA titration
    2.  $\text{NH}_4\text{OAc}$  extraction
      - a. EDTA-alcohol separation
      - b. Oxalate-permanganate I
      - c. Oxalate-permanganate II
      - d. Oxalate-cerate
    3.  $\text{NH}_4\text{Cl-EtOH}$  extraction
      - a. EDTA titration
    4.  $\text{KCl-TEA}$  extraction
      - a. Oxalate-permanganate
  - O. Magnesium
    1. Saturation extract
      - a. EDTA titration
    2.  $\text{NH}_4\text{OAc}$  extraction
      - a. EDTA-alcohol separation
      - b. Phosphate titration
      - c. Gravimetric,  $\text{Mg}_2\text{P}_2\text{O}_7$
    3.  $\text{NH}_4\text{Cl-EtOH}$  extraction
      - a. EDTA titration
  - P. Sodium
    1. Saturation extract
      - a. Flame photometry
    2.  $\text{NH}_4\text{OAc}$  extraction
      - a. Flame photometry
  - Q. Potassium
    1. Saturation extract
      - a. Flame photometry
    2.  $\text{NH}_4\text{OAc}$  extraction
      - a. Flame photometry
  - R. Sulfur
    1.  $\text{NaHCO}_3$  extraction, pH 8.5
      - a. Methylene blue
  - S. Total phosphorus
    1. Perchloric-acid digestion
      - a. Molybdovanadophosphoric-acid colorimetry
7. MINERALOGY
  - A. Instrumental analysis
    1. Preparation
      - a. Carbonate removal
      - 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.  $\text{KCl}$
  - 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 descriptions will be published just as rapidly as they can be prepared for printing. 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 more useful interpretations. Those sampled for genesis or classification studies do not always fit neatly into our present concepts of soil series. Partly because of these studies, our concepts of some soil series have been modified. As a consequence, the soil series name assigned a soil at the time of sampling is not always the name that would be assigned today. Soil series names in this publication follow 1965 series definitions.

*Soil Survey  
Soil Conservation Service*

KENTUCKY

<u>Soil Series</u>	<u>County</u>	<u>Soil Survey No.</u>	<u>Page</u>	<u>Soil Series</u>	<u>County</u>	<u>Soil Survey No.</u>	<u>Page</u>
Allegheny	Bath	S55Ky-6-8	3	Loring	Jefferson	S59Ky-56-3	69
Ashburn	Barren	S59Ky-5-1	5		Jefferson	S59Ky-56-4	71
	Barren	S59Ky-5-5	7	Lowell	Clark	S60Ky-25-2	73
Beasley	Jefferson	S57Ky-56-9	9		Clark	S60Ky-25-3	75
	Jefferson	S57Ky-56-15	11		Clark	S60Ky-25-5	77
Beulah	Fulton	S60Ky-38-9	13		Clark	S60Ky-25-6	79
Calloway	Fulton	S60Ky-38-2	15	Memphis	Jefferson	S57Ky-56-12	81
Calloway terrace phase	Fulton	S60Ky-38-1	17		Marshall	391827-391832 <sup>a</sup>	83
Christian	Adair	S54Ky-1-10	19	Muse	Clark	S60Ky-25-1	85
	Adair	S54Ky-1-11	21		Clark	S60Ky-25-4	87
	Adair	S54Ky-1-12	23	Needmore	Adair	S54Ky-1-16	89
	Adair	S54Ky-1-13	25		Adair	S54Ky-1-17	91
Crevasse	Fulton	S60Ky-38-10	27	Otway	Bath	S54Ky-6-6	93
Crider	Jefferson	S57Ky-56-16	29		Bath	S54Ky-6-7	95
	Jefferson	S57Ky-56-17	31		Jefferson	S59Ky-56-1	97
	Barren	S59Ky-5-2	33	Patton	Jefferson	S59Ky-56-2	99
	Barren	S59Ky-5-3	35		Fulton	S60Ky-38-3	101
Dandridge	Adair	S54Ky-1-14	37		Fulton	S60Ky-38-4	103
	Adair	S54Ky-1-15	39	Russellville	Jefferson	S57Ky-56-14	105
Dubbs	Fulton	S60Ky-38-5	41		Jefferson	S57Ky-56-18	107
Dundee	Fulton	S60Ky-38-6	43	Sequatchie	Henderson	S54Ky-51-10	109
Eden	Clark	S60Ky-25-7	45		Henderson	S54Ky-51-11	111
	Clark	S60Ky-25-8	47		Jefferson	S57Ky-56-11	113
Grenada	Calloway	S49Ky-18-1	49	Sharkey	Fulton	S60Ky-38-7	115
	Carlisle	S49Ky-20-1	51		Fulton	S60Ky-38-8	117
	Marshall	391808-391814 <sup>a</sup>	53	Tarklin	Barren	S59Ky-5-4	119
Henshaw	Henderson	S54Ky-51-12	55		Barren	S59Ky-5-6	121
	Henderson	S54Ky-51-13	57		Barren	S59Ky-5-7	123
Holston	Bath	S55Ky-6-9	59	Tygart	Barren	S59Ky-5-8	125
	Bath	S55Ky-6-10	61		Henderson	S54Ky-51-16	127
	Bath	S55Ky-6-11	63	Uniontown	Henderson	S54Ky-51-17	129
Leadvale	Bath	S54Ky-6-4	65		Henderson	S54Ky-51-14	131
	Bath	S54Ky-6-5	67	Wheeling	Henderson	S54Ky-51-15	133
					Jefferson	S57Ky-56-10	135
					Jefferson	S57Ky-56-13	137

<sup>a</sup>Part of Project Z-1-2-8.

KENTUCKY

<u>County</u>	<u>Soil Series</u>	<u>Soil Survey No.</u>	<u>Page</u>	<u>County</u>	<u>Soil Series</u>	<u>Soil Survey No.</u>	<u>Page</u>		
Adair	Christian	S54Ky-1-10	19	Fulton	Calloway	S60Ky-38-2	15		
	Christian	S54Ky-1-11	21		Calloway				
	Christian	S54Ky-1-12	23		terrace				
	Christian	S54Ky-1-13	25		phase	S60Ky-38-1	17		
	Dandridge	S54Ky-1-14	37		Crevasse	S60Ky-38-10	27		
	Dandridge	S54Ky-1-15	39		Dubbs	S60Ky-38-5	41		
	Needmore	S54Ky-1-16	89		Dundee	S60Ky-38-6	43		
Barren	Needmore	S54Ky-1-17	91		Patton	S60Ky-38-3	101		
	Ashburn	S59Ky-5-1	5		Patton	S60Ky-38-4	103		
	Ashburn	S59Ky-5-5	7		Sharkey	S60Ky-38-7	115		
	Crider	S59Ky-5-2	33	Sharkey	S60Ky-38-8	117			
	Crider	S59Ky-5-3	35	Henderson	Henshaw	S54Ky-51-12	55		
	Tarklin	S59Ky-5-4	119		Henshaw	S54Ky-51-13	57		
	Tarklin	S59Ky-5-6	121		Sequatchie	S54Ky-51-10	109		
	Tarklin	S59Ky-5-7	123		Sequatchie	S54Ky-51-11	111		
	Tarklin	S59Ky-5-8	125		Tygart	S54Ky-51-16	127		
	Bath	Allegheny	S55Ky-6-8		3	Tygart	S54Ky-51-17	129	
Holston		S55Ky-6-9	59		Uniontown	S54Ky-51-14	131		
Holston		S55Ky-6-10	61		Uniontown	S54Ky-51-15	133		
Holston		S55Ky-6-11	63		Jefferson	Beasley	S57Ky-56-9	9	
Leadvale		S54Ky-6-4	65			Beasley	S57Ky-56-15	11	
Leadvale		S54Ky-6-5	67	Crider		S57Ky-56-16	29		
Otway		S54Ky-6-6	93	Crider		S57Ky-56-17	31		
Otway		S54Ky-6-7	95	Loring		S59Ky-56-3	69		
Calloway		Grenada	S49Ky-18-1	49		Loring	S59Ky-56-4	71	
		Carlisle	Grenada	S49Ky-20-1		51	Memphis	S57Ky-56-12	81
	Clark		Eden	S60Ky-25-7		45	Otway	S59Ky-56-1	97
			Eden	S60Ky-25-8		47	Otway	S59Ky-56-2	99
			Lowell	S60Ky-25-2		73	Russellville	S57Ky-56-14	105
			Lowell	S60Ky-25-3	75	Russellville	S57Ky-56-18	107	
			Lowell	S60Ky-25-5	77	Sequatchie	S57Ky-56-11	113	
			Lowell	S60Ky-25-6	79	Wheeling	S57Ky-56-10	135	
			Muse	S60Ky-25-1	85	Wheeling	S57Ky-56-13	137	
			Muse	S60Ky-25-4	87	Marshall	Grenada	391808-391814 <sup>a</sup>	53
Fulton			Beulah	S60Ky-38-9	13		Memphis	391827-391832 <sup>a</sup>	83

<sup>a</sup>Part of Project Z-1-2-8.

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	IB1b											3A1					
		Total			Sand					Silt			Clay			Coarse fragments		
		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	2-19	19-76		
Pct. of < 2 mm															Pct. of < 75mm			
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				Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O					
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>														
	Pct.	Pct.		Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.								
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				6H1a	CEC					Base saturation							
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acidity meq/100 g	5A3a Sum Cations				5C3 Sum Cations Pct.	Pct.							
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.)																		

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.

SOIL Ashburn cherty silt loam SOIL Nos. S59Ky-5-1 LOCATION Barren County, Kentucky  
SOIL SURVEY LABORATORY Beltville, Maryland LAB. Nos. 59373-59380

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total				Sand					Silt		2A2 > 2	2-19	19-76
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)			
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		6B2a Nitrogen		C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content			pH	
	Pct.	Pct.	Pct.	Pct.				6A1e 1/3 <sup>a</sup> Bar	6A1h Oven-dry	6B1e 1/3 Bar	6B2 15 Bar	6C1a (1:1) H <sub>2</sub> O			
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				6B1a Ext. Acidity mag/100g	6A3a Sum Cations	CEC	Base saturation	
	6B2d Ca	6B2b Mg	6B2a Na	6B2a K				Sum Cations Pct.	Pct.
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 7A1b-d							
	Mt.	Chl.	Vm.	Mi.	Int.	Qtr.	Kl.	Gibbsite
	7A2 X-ray				7A3			
0-6			tr.	-		xx	7	
6-10			x	tr.		xx	20	
10-15						tr.	17	
15-22			x	-		xx	34	
22-33						xx	34	
33-43			x	-		xx	34	
43-52			tr.	tr.		xx	33	
52-66						xx	33	

a. Not corrected for gravel.

Mt. = Montmorillonite, Chl. = chlorite, Vm. = Vermiculite, ml = mica, Int. = interstratified layer, Qtr. = quartz, Kl. = Kaolinite  
Relative amounts: blank = not determined, dash = not detected, tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

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.

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	3A1 Size class and particle diameter (mm)											Coarse fragments			
		3B1D Total			Sand					Silt			2A2 > 2	2-19	19-76	
		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)
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				
7-13	B2		69.0	19.6	1.4	1.6	1.0	2.2	5.2		47.3	27.7				
	B'21															
13-16	B'21		56.0	32.3	2.0	1.9	1.2	3.0	3.6		37.5	24.1				
	B2															
16-26	B'22		42.1	51.3	0.5	0.6	0.4	1.7	3.4		28.0	18.3				
26-37	B'23		27.2	66.8	0.1	0.4	0.5	2.7	2.3		18.1	12.8				
37-49	B'24		16.2	79.2	0.1	0.2	0.4	2.2	1.7		11.2	7.8				
49-62	B'25		19.2	78.3	0.1	0.1	0.3	1.1	0.9		14.8	5.9				
62-67+	B'26		17.2	80.1	-	0.1	0.3	1.4	0.9		13.5	5.2				

  

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density		Water content		pH	
						4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	8C1c (2:1) H <sub>2</sub> O	8C1a (1:1) H <sub>2</sub> O
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				6H1a Ext. Acidity meq/100 g	CEC		Base saturation	
	6N2a Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum Cations		5C3 Sum Cations Pct.	
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
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.

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 horizon. The lower portion of the Ap horizon has a discontinuous weak coarse platy structure (assumed to be a "traffic" pan).



Soil Type: Beasley silt loam  
 Soil No.: S57Ky-56-9  
 Location: Jefferson County, Kentucky; William Hawes Farm, one mile southeast of U. S. Highway No. 60 and Beckley Station Road. Photo AFW-2R-39, 1956  
 Vegetation: Rye (cultivated)  
 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.
E1 5886	11 to 15 inches. Brown (10YR 4/3) to yellowish brown (10YR 5/4) silty clay loam with weak to moderate fine and medium angular blocky structure; friable to firm; worm casts are common; many old root channels filled with grayish brown silt loam; slightly acid; clear smooth boundary.
E21 5887	15 to 21 inches. Yellowish brown (10YR 5/6) silty clay with moderate fine angular blocky structure; thin patchy clay skins; firm slightly plastic when wet; slightly hard when dry; several small round hard black concretions; slightly acid; gradual smooth boundary.
E22 5888	21 to 26 inches. Yellowish brown (10YR 5/6) clay with strong fine angular blocky structure; continuous clay skins; very firm; very sticky and very plastic when wet; hard when dry; irregular shaped coarse black concretions are common; strongly acid; gradual wavy boundary.
E3 5889	26 to 32 inches. Variegated yellowish brown (10YR 5/6) light olive brown (2.5Y 5/4) and olive brown (2.5Y 4/4) clay with strong fine and medium angular blocky structure; thick patchy clay skins; very firm when moist; very plastic when wet; very hard when dry; abundance fine irregular dark concretions; neutral; clear smooth boundary.
C Not sampled	32 to 37 inches. Light olive brown (2.5Y 5/6) weathered sandy limestone and calcareous sandy clay; disintegrated calcareous sandstone.
Dr Not sampled	37+ inches. Massive sandy limestone and calcareous shale.

Notes: The 0-7, 15-21, and 32-37 inch zones were sampled for the Bureau of Public Roads. The hard rock fragments in C horizon are flat shaped, about 2 inches thick, and ranging from 3 to 6 inches across, about 30 percent of volume, and 6 to 10 inches about 10 percent of volume. No coarse material occurred above 32 inches. Color of soil moist unless otherwise stated.

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 Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total			Sand						Silt		2A2 > 2	2-19	19-76
		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. II (0.02-0.002)	Int. I (2-0.1)			
Pct. of < 2 mm													Pct. of < 76mm		
0-7	Ap		78.6	18.9	0.2 <sup>a</sup>	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		6B2a Nitrogen		C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content		pH	
	Pct.	Pct.	Pct.	Pct.				g/cc	g/cc	g/cc	Pct.	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	8C1a (1:1) H <sub>2</sub> O
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				6H1a Ext. Acidity meq/100 g	5A3a Sum Cat-ions	CEC	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K				Sum Cat-ions Pct.	Pct.
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
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.

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 LOCATION Fulton County, Kentucky  
fine sandy loam

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)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
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
pH		ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS			
8Cl a	1:5	1:10	6Al a ORGANIC CARBON	6Bl a NITRO-GEN	C/N	Fe <sub>2</sub> O <sub>3</sub> %	CaCO <sub>3</sub> equiv- alent	1/10 ATMOS.	1/3 ATMOS.	4B <sub>2</sub> 5 ATMOS.		
	1:1		%	%		6Cl a	%	%	%	%		
			0.43	0.041	10	0.6						3.2
			0.24	0.027		0.7						3.4
			0.13	0.016		0.7						2.7
			0.32			0.9						6.9
			0.14			0.7						3.2
			0.20			1.0						6.8
			0.10			0.8						4.1
5Al a	EXTRACTABLE CATIONS 5Bl a					BASE SAT. %	Base Sat. %	Bulk Density				
CATION EXCHANGE CAPACITY	6N2b	6O2b	6H1a	6P2a	6Q2a	NH <sub>4</sub> OAc EXCH.	on Sum	Air Dry	30 cm.	O.D.		
NH <sub>4</sub> OAc	Ca	Mg	H	Na	K		Cations	% M.	g/cc	% M.	g/cc	g/cc
	milliequivalents per 100g. soil					5Cl	5C3					
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      960Ky-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-4P-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

<u>LAB NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14412	A <sub>1p</sub>	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 <sub>11</sub>	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 <sub>1p</sub> are common; small roots are plentiful; pH 6.0; clear smooth boundary.
14414	B <sub>12</sub>	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 <sub>2</sub>	25-28 inches	Dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; weak clay film bridging; somewhat compact in place, friable when removed; black manganese stainings are common; small pores are common; small roots are plentiful; pH 6.5; abrupt smooth boundary.
14416	C <sub>1</sub>	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 <sub>3</sub>	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<sub>2</sub>) 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 TYPE Calloway LOCATION Fulton County, Kentucky  
 silt loam

SOIL NOS. S60Ky-38-2 LAB. NOS. 14368-14374  
 General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent)									TEXTURAL CLASS	
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1			
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002		
0-9	Ap	0.7a	1.0a	0.3a	0.2a	1.2	83.6	13.0	51.1	33.8	-	sil
9-15	B2	0.7a	1.0a	0.4a	0.4a	1.1	79.9	16.5	50.7	30.5	-	sil
15-21	B3m1	1.2a	1.7a	0.5a	0.5a	1.4b	81.4	13.3	44.9	38.1	-	sil
21-29	B3m2	0.6a	1.0a	0.5a	0.6a	1.3a	68.5	27.5	37.8	32.3	-	sicl/sil
29-39	B3m3	0.2a	0.6a	0.3a	0.4a	1.2a	70.1	27.2	38.7	32.8	-	sicl/sil
39-46	B3m3	0.1a	0.5a	0.3a	0.4a	1.1a	74.1	23.5	45.0	30.4	-	sil
46-64	C	<0.1	0.2a	0.2a	0.4a	1.3a	78.6	19.3	47.7	32.4	-	sil

  

8C1a	pH	ORGANIC MATTER			Free Iron Fe <sub>2</sub> O <sub>3</sub> <sup>d</sup>	MOISTURE TENSIONS				
	1:5	1:10	6A1a ORGANIC CARBON %	6B1a NITROGEN %	C/N	6C1a	CoCO <sub>3</sub> equivalent %	1/10 ATMOS. %	1/3 ATMOS. %	4B2/5 ATMOS. %
5.1			0.74	0.083	9	1.3				5.6
4.7			0.19	0.037		1.7				7.3
5.0			0.09	0.026		2.2				7.1
5.1			0.12	0.031		2.0				13.7
5.1			0.10			1.8				13.6
5.3			0.06			1.9				13.0
6.0			0.10			1.9				11.4

  

5A1a	EXTRACTABLE CATIONS 5B1a					BASE SAT. %	Base Sat. % on Sum Cations	Bulk Density				
CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc	6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	NH <sub>4</sub> OAc EXCH.	5C1	Air Dry		30 cm.		O.D.
	milliequivalents per 100g. soil							4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
7.7	2.9	1.1	7.4	0.1	0.2	56	37					
8.4	2.1	1.0	8.8	0.1	0.2	40	28	3.4	1.58	25.6	1.50	1.58
8.8	1.2	1.5	8.8	0.2	0.2	35	26	5.7	1.64	24.3	1.58	1.67
16.9	2.6	5.3	13.2	0.7	0.3	53	40	4.6	1.66	24.6	1.52	1.63
17.7	3.7	6.8	11.0	1.0	0.3	67	52	4.5	1.62	28.4	1.43	1.64
17.6	4.8	7.4	7.9	1.2	0.4	78	64					
15.8	5.8	7.6	5.3	1.2	0.4	95	74	4.2	1.55	31.2	1.38	1.57

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

Callovy silt loam960ky-38-2

Location: Fulton County, Kentucky, SCD, 350 feet west and 550 feet north of SE corner; SW $\frac{1}{4}$  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.

<u>LINCOLN</u> <u>LAB NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14368	A <sub>p</sub>	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 <sub>2</sub>	9-15 inches	Yellowish brown (10YR 5/4) mottled common medium distinct grayish brown (2.5Y 5/2) silt loam; weak to strong medium blocky structure; friable; few very small black concretions; roots are plentiful pH 4.5; clear wavy boundary.
14370	B <sub>3a1</sub>	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 <sub>3a2</sub>	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 <sub>3a3</sub> <sup>1/</sup> (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<sub>3a2</sub> to 1/2" diameter in the C horizon.

1/ B<sub>3a3</sub> split for sampling purposes.

Soil correlation samples collected from profile

Colors given are for moist soil.

Reaction determined by Soiltext.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

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

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

General Methods: 1A, 1E1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
0-7	Ap	2.4a	1.2a	0.2a	0.2a	1.5	86.3	8.2	57.5	30.4	-	s1
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	-	sil
29-41	B3m3	<0.1	0.2a	0.2a	0.4a	1.2a	68.5	29.5	39.0	30.9	-	sil
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

  

8C1a	pH		ORGANIC MATTER			Free Iron Fe <sub>2</sub> O <sub>3</sub> %	6E1c CoCO <sub>3</sub> equivalent %	MOISTURE TENSIONS		
	1:5	1:10	6A1a ORGANIC CARBON %	6B1a NITROGEN %	C/N			1/10 ATMOS.	1/3 ATMOS.	4B2 15 ATMOS.
	1:1		%	%				%	%	%
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 <sub>4</sub> OAc	EXTRACTABLE CATIONS 5B1a					BASE SAT. % NH <sub>4</sub> OAc EXCH.	Base Sat. % on Sum Cations	Bulk Density				
	6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K			Air Dry		30 cm.		O.D.
	milliequivalents per 100g. soil							4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
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 plots exceed confidence limit of ± 0.05 g/cc and range to ± 0.10 g/cc

Location: Fulton County, Kentucky, SCD, 1,300 feet south and 950 feet east of northwest corner of Sec. 6; T1N; R3W; 1/2 mile south of Hickman County line on Ky. 239. Photo ADV-9F-3b.

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.

	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14361	A <sub>p</sub>	0-7 inches	Dark grayish brown (10YR 4/2) silt loam with a few fine faint light brownish gray (10YR 6/2) mottles; weak fine granular structure; very friable; roots are abundant; pH 6.0; abrupt smooth boundary.
14362	B <sub>2</sub>	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 <sub>3</sub> <sub>1</sub>	13-21 inches	Mottled many fine faint brown (10YR 5/3) and light brownish gray (10YR 6/2) silt loam; massive; firm; compact and brittle; few dark brown soft concretions; pockets of gray (10YR 6/1) silt; few small roots; common small pores; pH 5.0; gradual wavy boundary.
14364	B <sub>3</sub> <sub>2</sub>	21-29 inches	Grayish brown (10YR 5/2) silt loam with common fine faint brown (10YR 5/3) mottles; moderate coarse prismatic structure; few clay skins on tops of prisms; firm; brittle and compact; whitish silt coatings on ped surfaces; very dark brown and black concretionary material; pH 5.5; clear smooth boundary.
14365	B <sub>3</sub> <sub>3</sub>	29-41 inches	Mottled many medium faint light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silty clay loam with a few vertical tongues and pockets of grayish brown (2.5Y 5/2) silt loam and silty clay loam; weak coarse prismatic and blocky structure; few discontinuous clay films on the tops of prisms; firm and compact; abundance of very dark brown soft concretionary material; pH 6.3; gradual smooth boundary.
14366	C <sub>11</sub>	41-50 inches	Mottled many fine faint grayish brown (2.5Y 5/2) and yellowish brown (10YR 5/6) silt loam with a few gray (10YR 5/1) silty clay or silty clay loam vertical tongues, approximately 1-1/2 inch diameter; massive; friable; abundance of very dark brown soft concretionary material; pH 6.5; gradual smooth boundary.
14367	C <sub>12</sub>	50-64 inches	Mottled many fine faint olive gray (5Y 5/2) and yellowish brown (10YR 5/6) silt loam with a few gray (5Y 5/1) silty clay vertical tongues approximately 3/4 inch in diameter; massive; friable; abundance of dark brown soft concretionary material; pH 7.0.

Remarks:

Colors given for moist soil.

Reaction determined by Soiltek.



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.

SOIL Christian silt loam SOIL No. S54Ky-1-11 LOCATION Adair County, Kentucky

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

Depth (in.)	Horizon	IB16 Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total				Sand				Silt			2A2 > 2	2-19	19-76		
		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)	
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				
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				
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH						
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	6C1a (1:1) H <sub>2</sub> O			
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				6H1a Ext. Acidity meq/100g	5A3a Sum Cations	Cation	Base saturation									
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K					5C3 Sum Cations Pct.	Pct.							
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 7A6-d																
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite									
	7A2 X-ray				7A3 DTA												
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.

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  
 Vegetation: Broom sedge  
 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 E1 is apparent.

E1 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.

E2 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.

E3 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.

SOIL Christian cherty silt loam SOIL Nos. 954Ky-1-12 LOCATION Adair County, Kentucky

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

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total			Sand					Silt			2A2 > 2	2-19	19-76		
		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)	
Pct. of < 2 mm													Pct.	Pct. of < 76mm			
0-8	Ap	32.8	7.7	2.3	1.8	4.1	35.2	16.1					18.8	53.6			
8-13	A2	32.5	8.0	1.3	1.5	3.4	31.2	22.1					20.2	57.3			
13-17	B1	28.2	12.1	1.9	1.5	3.8	32.1	20.4					17.1	54.5			
17-31	B2	18.3	45.9	0.3	0.5	1.1	18.2	15.7					11.5	37.3			
31-84	C	11.7	27.7	1.3	0.8	2.2	38.7	17.6					6.7	49.9			
6A1a Organic carbon																	
Depth (in.)	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O				
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.		Pct.			
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				
Extractable bases 5B1a 6H1a CEC																	
Depth (in.)	Extractable bases				Ext. Acid-ity meq/100 g	5A3a Sum Cat-ions	CEC									Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K												5C3 Sum Cat-ions Pct.	Pct.
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	
Clay Fraction Analysis 7A1b-d																	
Depth (in.)	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite									
	7A2 X-ray						DFA										
0-8																	
8-13																	
13-17																	
17-31			xxx	xx			xxx										
31-84																	

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: 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 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.  
 55453

A2 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.  
 55454

B1 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.  
 55455

B2 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.  
 55456

C 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.  
 55457

Dr 84+ inches. Heavy acid shales and argillaceous cherty St. Louis limestone.  
 Not sampled

Notes: Color of soil moist unless otherwise stated.

SOIL Christian cherty silt loam SOIL Nos. 854Ky-1-13 LOCATION Adair County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55458-55461

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total			Sand					Silt			2A2 ≥ 2	2-19	19-76
		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)	Int. III 0.05-0.02	Int. II (0.02-0.002)	(2-0.1)			
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH				
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	8C1a (1:1) H <sub>2</sub> O	
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				6H1a	CEC		Base saturation							
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid- ity meq/100g	5A3a Sum Cat- ions	5C3 Sum Cat- ions Pct.								
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 7A1b-d														
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite							
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.

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

LOCATION Fulton County, Kentucky

fine sandy loam

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)										TEXTURAL CLASS	
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2		
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2		
0-8	Alp	<0.1	0.1a	0.2a	31.4	32.7	26.4	9.2	81.3	7.4	-	vfs1	
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	-	vfs1	
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		ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS				
8C1a	1:5	1:10	6A1a	6B1a	C/N	Fe <sub>2</sub> O <sub>3</sub> %	CoCO <sub>2</sub> equiv-atom		1/10 ATMOS.	1/3 ATMOS.	4B2 15 ATMOS.		
1:1			%	%		6C1a	%		%	%	%		
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	EXTRACTABLE CATIONS					5B1a	BASE SAT. %	Bulk Density					
CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc	6N2b	6O2b	6H1a	6P2a	6Q2a		% NH <sub>4</sub> OAc EXCH.	Base Sat. % on Sum Cations	Air Dry		30 cm.		O.D.
	Co	Mg	H	Na	K		5C1	5C3	% M.	g/cc	% M.	g/cc	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.

Location: Fulton County, Kentucky, 50 feet north of dirt road and 0.38 mile west of Ky. 94, 700 feet south of Ridge Store. Photo ADV-47-88.

Vegetation: Cultivated - 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

<u>LAB NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14419	A <sub>1p</sub>	0-8 inches	Very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; roots are abundant; pH 6.0; abrupt irregular boundary.
14420	B <sub>1</sub>	8-15 inches	Dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2), with common fine faint brown (10YR 4/3) variegations, loamy fine sand; weak coarse blocky structure; breaking into single grain; loose; few fine pores; small roots are plentiful; pH 6.5; abrupt wavy boundary.
14421	<sup>1/</sup> B <sub>21</sub>	15-27 inches	Brown (10YR 5/3) loamy fine sand; massive, single grain when crushed with continuous bands 2 to 3 inches wide of dark brown (10YR 3/3) fine sandy loam; very friable; weak medium subangular blocky structure; few small pores; small roots are plentiful; pH 6.5; abrupt smooth boundary.
14422	B <sub>22</sub>	27-34 inches	Dark yellowish brown (10YR 4/4) loamy fine sand; weak coarse angular blocky structure to massive, breaking into single grain; very friable, loose; common small pores; a few small pockets of sand; small roots are plentiful; pH 6.5; abrupt wavy boundary.
14423	<sup>2/</sup> C <sub>1</sub>	34-53 inches	Brown (10YR 4/3) loose fine sand, with common evenly spaced bands up to 1/4 inch wide of dark yellowish brown (10YR 3/4) loamy fine sand with a few medium faint brown (7.5YR 4/4) variegations; massive, single grained when crushed; loose; few small roots; pH 6.5; clear smooth boundary.
14424	C <sub>2</sub>	53-70 inches	Pale brown (10YR 6/3) fine sand; massive, single grain when crushed; loose; discontinuous very thin lenses of brown loamy sand; few small roots; pH 6.0.

Remarks:

Bands are more widely distributed in this profile than in the Beulah, Soil Nos. S60Ky-38-9.

<sup>1/</sup> Band material was excluded from sample from the B<sub>21</sub>.

<sup>2/</sup> Bands are too close for separate sampling, therefore were included in sample collected from the C<sub>1</sub> horizon.

Colors given for moist soil.

Reaction determined by Soiltext.

SOIL Crider silt loam SOIL Nos. 57Ky-56-16 LOCATION Jefferson County, Kentucky

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

Depth (in.)	Horizon	Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total				Sand				Silt			2A2 > 2	2-19	19-76	
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)				
Pct. of <= 2 mm													Pct. of < 76mm			
0-7	Ap		80.6	16.7	0.2 <sup>a</sup>	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				
80-113+	B2b5		50.7	44.1	1.7	1.7	0.5	0.7	0.6		37.0	14.8				
Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content			pH				
	Organic carbon Pct.	Nitrogen Pct.				4A1e 1/3 bar g/cc	4B2 15 bar g/cc	4C2 15 bar g/cc	6C1a (1:1) H <sub>2</sub> O							
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 5B1a				6B1a	CEC		5A3a Sum Cations meq/100 g						Base saturation		
	6N2a Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acidity	503 Sum Cations Pct.	Pct.									
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.															

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. Ruffman 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.

B21 58147 16 to 23 inches. Brown (7.5YR 4/4) silty clay loam; moderate to weak medium subangular blocky structure; dark brown (7.5YR 3/2) patchy clay skins; friable to firm; common medium 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 medium pores; common black concretionary stains; pH 7.0; gradual wavy boundary.

B3u 58149 28 to 38 inches. Dark reddish brown (5YR 3/4) variegated few fine distinct brown (10YR 5/3); silty clay loam; moderate medium subangular blocky and moderate fine angular blocky structure; firm; few pale brown silt coats on vertical faces; common medium pores, and small, black concretions; few small dark brown organic stainings; pH 7.0; clear wavy boundary.

B2b1 58150 38 to 49 inches. Dark red (2.5YR 3/6), variegated few fine distinct light yellowish brown (10YR 6/4), silty clay; moderate fine, angular blocky structure; noticeable clay skins; firm, plastic and slightly sticky when wet; common small black concretions and concretionary stainings; pH 7.0; diffuse smooth boundary.

B2b2 58151 49 to 59 inches. Similar to B2b1 except texture is clay and concretions are more abundant.

B2b3 58152 59 to 69 inches. Dark yellowish brown (10YR 3/4), variegated common fine distinct brown (7.5YR 5/4), clay; moderate fine angular blocky structure; very firm; very plastic, slightly sticky when wet; concretions common, concretionary stains abundant; pH 7.0; diffuse smooth boundary.

B2b4 58153 69 to 80 inches. Dark yellowish brown (10YR 3/4), variegated common medium distinct brown (7.5YR 5/4) clay; moderate fine angular blocky structure; very firm, very plastic, slightly sticky when wet; fewer concretions than in B2b3; pH 6.5; diffuse smooth boundary.

B2b5 58154 80 to 113+ inches. Dark red (2.5YR 3/6) clay; extremely firm; very plastic and sticky when wet; light yellowish brown pieces of weathered calcareous siltstone common; sampled with Orchard auger; pH 5.9.

Notes: The horizon labeled B3u is a transitional zone between the upper solum, which is developed in loess, and a lower unconforming B developed in residuum from limestone. Color taken moist unless otherwise stated.

SOIL Crider silt loam

SOIL Nos. 857Ky-56-17

LOCATION Jefferson County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland

LAB. Nos. 58155-58162

Depth (in.)	Horizon	IB1b Size class and particle diameter (mm) 3A1													Coarse fragments		
		Total			Sand					Silt					2A2	2-19	19-76
		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)	Pct. > 2	Pct. of < 76mm	Pct. of < 76mm	
0-7	Ap	81.4	16.6	0.2 <sup>a</sup>	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	0.7		41.7	18.9			-			
Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O			
						4A1e g/cc	1/3 bar g/cc	g/cc	4B2 Pct.	15 Bar Pct.	Pct.	Pct.					
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 Ext. Acid-ity meq/100 g	5A3a Sum Cations	CEC								Base saturation		
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K											5C3 Sum Cations Pct.	Pct.	
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. Pibbs, October 17, 1956  
 Described by: E. V. Hoffman and H. E. Pailey

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 concretionary material and concretionary stainings; few very small chert fragments; pH 5.6+; diffuse smooth boundary.

B2b2  
 58162 57 to 72+ inches. Dark reddish brown (2.5YR 4/4) clay; weak medium subangular blocky structure; patchy clay skins; very firm, plastic and sticky when wet; abundant black concretionary material; root channels filled as in B2b1; pH 5.6+.

Notes: The horizon labeled B3u is a transitional zone between the upper solum developed dominantly in loess and the B below developed in residuum from limestone. Color taken moist unless otherwise stated.

SOIL Grider silt loam SOIL Nos. S59Ky-5-2 LOCATION Barren County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59381-59391

Depth (In.)	Horizon	IB1b											3A1			Coarse fragments		
		Total			Sand					Silt			2A2 > 2	2-19	19-75			
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)						
Pct. of < 2 mm																		
0-7	Ap	70.6	15.7	0.7	0.9	0.8	5.1	6.2		46.4	34.3							
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							
18-23	B22	60.3	24.5	0.6	0.9	0.8	5.9	7.0		41.3	30.3							
23-27	B3	58.9	23.6	0.8	0.8	0.7	6.3	8.9		39.9	32.6							
27-30	B2b1	55.0	26.8	1.5	0.9	0.7	6.4	8.7		38.0	30.6							
30-39	B2b2	46.8	36.4	0.9	0.5	0.6	6.2	8.6		31.3	28.8							
39-51	B2b3	25.1	50.1	0.4	0.5	0.8	9.9	13.2		16.0	29.8							
51-63	B2b4	24.5	40.0	0.2	0.7	1.1	14.5	19.0		14.2	40.2							
63-71	B2b5	24.5	39.2	0.6	0.7	1.1	14.5	19.4		40.3	14.4							
71-78	B3b	25.0	39.9	0.4	0.6	1.0	14.3	18.8		39.4	15.1							

  

Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density		Water content		pH		6C1a (1:1) H <sub>2</sub> O
						4A1e 1/3 Bar g/cc	4A1h Oven dry g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.			
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 7B1a				6H1a Ext. Acid- ity meq/100 g	CEC 5A3a Sum Cat- ions	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cat- ions Pct.	Pct.
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.
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	38
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.

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-32-11

Vegetation and land use: Pasture field (some Brome grass and lespedeza, many weeds and wildgrasses)

Slope and land form: Gently sloping (3 percent) toward east, 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  
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.
- E1  
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.
- E21  
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.
- E22  
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  
59385 23 to 27 inches. Brown (7.5YR 4/4) variegated with common medium distinct reddish brown (5YR 4/4) silty clay loam; moderate medium angular blocky structure; noticeable clay films; firm; few dark reddish brown "iron rock"; few worm casts; few small roots; clear smooth boundary. This is a transitional horizon of mixed genesis with influence from loess and parent material from limestones.
- E2b1  
59386 27 to 30 inches. Dark red (2.5YR 3/6) variegated with common fine distinct light olive brown (2.5YR 5/4) and pale brown (10YR 6/3) silty clay loam; moderate medium angular blocky structure; noticeable clay films; firm; slightly sticky when wet; chert (1-5 cm size) is common; few small concretions; few small roots; some worm casts; clear smooth boundary. This horizon exhibits properties from mixed parent materials but with the stronger influence from limestones.
- E2b2  
59387 30 to 39 inches. Dark red (2.5YR 3/6) variegated common medium and fine distinct yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/4) heavy silty clay loam; strong medium angular blocky structure; noticeable clay films; firm; slightly plastic and sticky when wet; pale brown silt coatings on a few of the vertical structural faces; common iron concretions; few fine roots; gradual smooth boundary.
- E2b3  
59388 39 to 51 inches. Dusky red (10R 3/4) ped surfaces, dark red (10R 3/6) crushed, silty clay; strong medium and fine angular blocky structure; prominent clay films; very firm; plastic and sticky when wet; coatings of dark grayish brown (2.5YR 4/2) silt on a few vertical ped surfaces; gradual smooth boundary.
- E2b4  
59389 51 to 63 inches. Dark red (10R 3/6) silty clay with a noticeable amount of fine sand; moderate medium angular blocky structure; noticeable clay films; firm; plastic and sticky when wet; dark grayish brown (2.5Y 4/2) coatings of very fine silt are common; gradual smooth boundary.
- E2b5  
59390 63 to 71 inches. Dark red (10R 3/6) silty clay loam with a few medium distinct light olive brown (2.5Y 5/4) variegations; moderate coarse blocky macrostructure and weak angular blocky microstructure; dusky red (10R 3/4) clay films on macrostructure faces; small yellowish brown chert pieces are common; sand content as in layer above; a few iron concretions; diffuse smooth boundary.
- B3b  
59391 71 to 78+ inches. Dark red (10R 3/6) variegated common medium distinct grayish brown (2.5YR 5/2) and brown (10YR 5/3) heavy clay loam; weak coarse angular blocky structure to massive; firm; plastic and sticky when wet.

Notes: Colors described with moist soil. This is a polygenetic profile with upper solum developed in loess and lower solum developed in residuum from limestone. Horizons 5 and 6 are mixed genesis. Some old root channels extending from the Ap down thru the E2b1 horizon are filled with soil material from the upper layers.

SOIL Crider silt loam

SOIL Nos. 859Ky-5-3

LOCATION Barren County, Kentucky

SOIL SURVEY LABORATORY Beltsville, Maryland

LAB. Nos. 59392-59400

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total		Sand							Silt		Int. II (2-0.1)	2A2 > 2	2-19	19-76
		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)	Pct.				
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	6B2a Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	Bulk density		Water content		pH	
						4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	8C1a (1:1) H <sub>2</sub> O	
											Pct.
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				6E1a Ext. Acidity meq/100 g	CEC 5A3a Sum Cations	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cations Pct.	Pct.
	0-6	5.4	0.6	0.1			0.3	4.5
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.
	7A2 X-ray				7A3 DTA		
0-6			xx	-		x	10
6-10			xxx	-		-	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

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 7/4) 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.

SOIL Dandridge shaly silt loam SOIL Nos. S54Ky-1-14 LOCATION Adair County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55462-55465

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments					
		Total			Sand					Silt			2A2 > 2	2-19	19-76			
		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)		
Pct. of <= 2 mm														Pct. of <= 76mm				
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH							
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	8C1a (1:1) H <sub>2</sub> O				
0-2	4.6																7.3	
2-8	0.82																	6.4
8-20	0.43																	4.8
20+	--																	--
Depth (in.)	Extractable bases 5B1a				6B1a	CEC								Base saturation				
	6N2d	6O2b	6P2a	6Q2a	Ext. Acid-ity	5A3a							5C3					
	Ca	Mg	Na	K	meq/100g	Sum Cat-ions							Sum Cat-ions	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 7A1b-d																	
	Mt.	Chl.	Vm.	Mi.	Int.	Qtz.	Kl.	Gibbsite										
									DFA									
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 sub-angular 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.

SOIL Dandridge shaly silt loam SOIL Nos. 854Ky-1-15 LOCATION Adair County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55466-55469

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand				Silt				2A2 > 2	2-19	19-76	
		Sand (2-0.05)	Silt (0.05-0.002)	Clay (= 0.002)	Vary 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)
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH	8C1a (1:1) H <sub>2</sub> O
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				6H1a Ext. Acidity meq/100 g	CEC 5A3a Sum Cations	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cations Pct.	
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
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.

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 LOCATION Fulton County, Kentucky  
silty clay loam

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)										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	3A1 0.2-0.02		2A2 > 2	
0-4	Alp	0.1a	3.5a	1.8a	4.0b	9.3b	53.2	28.1	24.5	40.9	-	sic1
4-9	B1	0.1a	2.0a	1.2a	2.9b	7.3b	52.8	33.7	20.7	41.5	-	sic1
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
pH		ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS			
8C1a	1:5	1:10	6A1a ORGANIC CARBON	6B1a NITROGEN	C/N	Fe <sub>2</sub> O <sub>3</sub> % 6C1a	CoCO <sub>2</sub> equiv- alent	1/10 ATMOS.	1/3 ATMOS.	15 ATMOS.	4B2	
	1:1		%	%			%	%	%	%		
			1.56	0.138	11	1.6						11.9
			1.21	0.119	10	1.6						14.9
			0.66	0.073	9	1.6						19.5
			0.38	0.048	8	1.2						15.0
			0.23	0.036		1.2						11.8
			0.22			1.2						10.9
			0.08			0.7						2.8
5A1a	EXTRACTABLE CATIONS 5B1a					BASE SAT. % NH <sub>4</sub> OAc EXCH.	Base Sat. % on Sum Cations	Bulk Density				
CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc	6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	5C1	5C3	Air Dry		30 cm.	O.D.	
								4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
	milliequivalents per 100g. soil											
20.2	14.0	3.3	7.9	0.1	0.6	89	69					
22.3	15.4	4.6	9.1	0.1	0.6	93	69	3.8	1.67	23.5	1.54	1.69
28.0	17.1	5.3	12.8	0.2	0.8	84	65	5.4	1.70	27.0	1.42	1.68
22.4	12.8	5.1	10.4	0.2	0.6	83	64					
17.9	11.4	4.1	7.0	0.2	0.5	90	70	3.0	1.59	26.2	1.44	1.58
16.9	10.9	4.2	6.5	0.2	0.5	93	71					
6.0	3.9	1.7	2.4	0.1	0.2	98	71					

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

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.

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
14387	A <sub>1p</sub>	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 <sub>1</sub>	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 <sub>21</sub>	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 <sub>22</sub>	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 <sub>3</sub>	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; pH 6.5; abrupt smooth boundary.
14393	D	45-70 inches	Grayish brown (10YR 5/2), with few fine distinct dark brown mottles, loamy fine sand; massive, single grain when crushed; few small roots; pH 6.0.

Remarks:

Color given for moist soil

Reaction determined by Soiltest.

SOIL SURVEY LABORATORY

Lincoln, N br.

August 1961

SOIL TYPE

Dundee

LOCATION

Fulton County, Kentucky

silty clay loam

SOIL NOS.

860Ky-38-6

LAB. NOS.

14394-14399

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

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2.1	1.0-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
0-6	Alp	<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		ORGANIC MATTER				Free Iron	6E1c		MOISTURE TENSIONS			
8C1a	1:5	1:10	6A1a ORGANIC CARBON	6B1a NITROGEN	C/N	Fe <sub>2</sub> O <sub>3</sub> %	CoCO <sub>3</sub> equiv- alent	GYP SUM me./100g. SOIL	1/10 ATMOS.	1/3 ATMOS.	4B2 15 ATMOS.	
	1:1		%	%		6C1a	%		%	%	%	
	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	EXTRACTABLE CATIONS					5B1a	BASE SAT. %	Base Sat. %	Bulk Density			
CATION EXCHANGE CAPACITY	6N2b	6O2b	6H1a	6P2a	6Q2a	NH <sub>4</sub> OAc EXCH.	on Sum Cations	Air Dry	30 cm.		O.D.	
NH <sub>4</sub> OAc	Ca	Mg	H	Na	K	5C1	5C3	4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
	milliequivalents per 100g. soil											
25.5	21.7	4.5	7.5	0.1	1.0	107	78					
29.8	16.5	5.7	17.2	0.1	0.9	78	57	1.4	1.68			
29.8	12.4	5.8	19.4	0.1	0.8	64	50	6.2	1.74			
20.4	9.5	4.6	10.3	0.1	0.6	72	59	3.2	1.79	22.9	1.53	1.77
14.2	7.9	3.6	5.7	0.1	0.4	84	68					
6.0	3.6	1.7	2.6	0.1	0.2	93	68					

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

BUNDER SILTY CLAY LOAM      8608y-38-6

Location: Fulton County, Kentucky, 175 feet north of fence row and 700 feet east of right angle turn in gravel road 1/4 mile east of Ky. 311, 1/2 mile north of Tennessee line. Photo ADW-47-96.

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. Buffum and W. K. Zimmerman, November 2, 1960.

LINCOLN

<u>LAB. NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14394	A <sub>1p</sub>	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 <sub>1</sub>	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 <sub>21</sub>	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 <sub>22</sub>	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.
14398	B <sub>3</sub>	33-42 inches	Mottled many medium distinct grayish brown (2.5Y 5/2) and dark yellowish brown (10YR 4/4) fine sandy clay loam; weak medium angular blocky structure; few patchy clay films; friable; few small black concretions; common small mica flakes; fine pores are common; small roots are plentiful; pH 5.5; gradual smooth boundary.
14399	D <sub>1</sub>	42-59 inches	Mottled many medium distinct grayish brown (2.5Y 5/2) and dark yellowish brown (10YR 3/4) loamy sand; massive; loose; common small and medium pores; common mica flakes; few small roots; pH 6.5; clear wavy boundary.
	D <sub>2</sub>	59-69 inches	Mottled many medium distinct olive gray (5Y 5/2) and dark yellowish brown (10YR 3/4) fine sandy loam; massive; friable; common small pores; few mica flakes; few small roots; pH 6.0; clear smooth boundary.
	D <sub>3</sub>	69-72 inches	Brown (10YR 4/3) with few medium distinct grayish brown (2.5Y 5/2) mottles; loamy sand; massive, single grain when crushed; loose; few mica flakes; pH 6.0.

Remarks:

Upper three inches of D<sub>1</sub> horizon has dark brown bands about 3/4 inch thick that are of redder hue, slightly finer in texture, and manifest iron precipitation.

Large root one inch in diameter in A<sub>p</sub> tapering to 3/4 inch at 70 inches extends vertically through the profile and below bottom of pit.

Soil correlation samples collected from profile.

Color given for moist soil.

Reaction determined by Soiltex.

SOIL Man silty clay loam SOIL Nos. 860Ry-25-7 LOCATION Clark County, Kentucky  
 SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14457-14461 June 1966  
 General Methods: 1A, 1E1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm)													Clay			Course fragments 2A2		
		Total		Sand								Silt			3A1a Carbonate	Non-Carbonate	> 2	2-19	19-76	
		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)	Pct.						Pct. of < 76mm
0-6	A0	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				
Pct. of < 2 mm																				
Depth (in.)	6A1a Organic carbon	6A1a Nitrogen	C/N	6E1c Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe	Bulk density			Water content			pH								
	Pct.	Pct.		Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	4B2 15-Bar			8C1a (1:1)						
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 5E1a				6E1a Ext. Acidity	5A3a Sum Cations	5A1a Ext. Al	Base saturation												
	6E2b Ca	6E2b Mg	6E2a Na	6E2a K	Sum	Ext. Al	Ext. Al	5C3 Sum Cations	5C1 Na, Ca											
	meq/100 g							Pct.	Pct.											
0-6	27.7	1.3	tr	0.6	29.6	8.4	38.0	27.5	78											
6-14	31.1	0.8	0.1	0.4	32.4	5.8	38.2	31.8	85											
14-23			0.1	0.3				34.1	102											
23-34			0.1	0.2				28.7												
34-48			0.1	0.2				29.5												
Depth (in.)	Ratios to Clay 8E1																			
	5E1a CaCO <sub>3</sub> 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.

Soil Type: **Bluen 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. Buffman, 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 Soiltest.

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.

SOIL Thin silty clay loam SOIL Nos. 60KY-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				Silt				Clay		Coarse fragments 2A2	
		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)	3A1a Carbonate	Non-Carbonate	> 2 Pct.	2-19 Pct.
0-6	A <sub>p</sub>	2.8	49.4	47.8	-	0.2a	0.2a	0.8a	1.6a	14.9	34.5	17.0	1.2	-	-	-	-
6-12	B <sub>2</sub>	2.5	38.2	59.3	-	0.1a	0.2a	0.7a	1.5a	11.4	26.8	13.3	1.0	-	-	-	-
12-21	B <sub>3</sub>	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	C <sub>1</sub>	0.9	40.6	58.5	-	-	0.1b	0.3b	0.5b	9.4	31.2	10.1	0.4	-	58.5	-	-
33-48	C <sub>2</sub>	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 <sub>3</sub>	6C1a Ext. Iron as Fe	Bulk density			Water content			pH	
	Pct.	Pct.			Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	4B2 15-Bar
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 5B1a					6E1a Ext. Acidity	Cat. Exch. Cap. Sum	5A3a NH <sub>4</sub> OAc	5A1a NH <sub>4</sub> OAc	KCl-Ext. Al	Base saturation	
	6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	Sum						5C3 Sum	5C1 NH <sub>4</sub> OAc
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 8D1		
	NH <sub>4</sub> 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.

Soil Type: 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 AFM-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 Siltex.

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) 3A.1											Coarse fragments					
		Total				Sand				Silt			2A2 > 2	2-19	19-76			
		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)	Pct.	Pct. of < 76mm			
2 1/2-7	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 <sub>1</sub>		67.9	29.4	-	0.3	0.5	1.2	0.7				37.6			-		
33-39	Pan <sub>2</sub>		71.5	26.1	-	0.2	0.4	0.9	0.9				38.2			-		
43-49	Pan <sub>4</sub> (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			-		
Depth (in.)	6A1a				Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O					
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.								
2 1/2-7	0.54													4.6				
15-22	0.13													4.7				
27-33	0.07													4.6				
33-39	0.03													4.6				
43-49	0.03													4.6				
56-61	0.07													4.6				
Depth (in.)	Extractable bases 5B1a				6H1a Ext. Acid-ity mg/100 g	CBO		Base saturation										
	6N2b Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum	Cations	503 Sum	Cations	Pct.	Pct.							
2 1/2-7	0.3	0.5	tr.	0.4	9.8	11.2					12							
15-22	0.9	2.6	0.2	0.4	10.3	14.5					29							
27-33	1.9	4.7	0.4	0.3	14.7	22.0					33							
33-39	2.1	4.8	0.5	0.2	12.9	20.5					37							
43-49	2.2	4.3	0.5	0.2	9.8	17.0					42							
56-61	2.5	3.4	0.5	0.1	6.4	12.9					50							

Soil type: Grenada silt loam

Soil no.: S49Ky-18-1

Location: Calloway County, Kentucky; northwest corner of T. K. Mirdock 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 2 to 1/2 inches. Oak-hickory leaf, twig, and acorn litter, mostly undecomposed.  
Not sampled
- O2 1/2 to 0 inches. Dark brown (7.5YR 4/2) mixture of mineral soil and partially to well decomposed organic matter.  
Not sampled
- A1 0 to 2 1/2 inches. Dark brown (7.5YR 3/2) moderate coarse granular friable silt loam, coarsely and faintly spotted with brown (10YR 4/3); moderate number of fine roots and root hairs. Transition 1/2 inch.
- A3 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.  
50105
- 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 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.  
50106
- 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 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.  
50107
- Pan 2 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.  
50108
- 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 to light silty clay loam mottled with brownish yellow (10YR 6/6) and light gray (10YR 7/2); mottles are fine and medium, common, and distinct. White silt along some interfaces as in above layers, and a few grayish brown (10YR 5/2) streaks of silty clay have filled old root channels or cleavage planes 1/2 to 1 inch in diameter. This layer is very dry. Transition 1 1/2 inches.  
50109
- C (?) 56+ inches. Dominantly yellow (10YR 7/6) hard massive or structureless compact heavy silt loam, with mottles of light gray (10YR 7/2) and very pale brown (10YR 7/3), and with brown (7.5YR 5/4) colloidal films along some cracks and pore walls. Mottles are fine, faint, common. This material is very dry.  
50110

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	1Elb Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total				Sand				Silt			2A2 ≥ 2	2-19	19-76	
		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)
Pct. of $\leq 2$ mm													Pct. of $\leq 76$ mm			
3-6	A2	84.6	13.4	-	0.2	0.2	0.4	1.2					38.2			
10-16	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 <sub>1</sub>	76.1	19.8	0.1	0.1	0.7	1.0	1.3					38.6			
30-34	Pan <sub>2</sub>	76.9	18.9	0.1	0.1	0.7	0.9	1.5					37.0			
40-46	Pan <sub>3</sub>	77.6	19.7	-	-	0.3	0.5	1.5					35.7			
53-57	Pan <sub>4</sub>	78.8	19.4	-	-	0.1	0.4	1.2					34.1			
61-65+	C (1)	78.8	18.6	0.1	0.1	0.2	0.5	1.5					32.8			

  

Depth (in.)	6A1a		Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH	
	Organic carbon	Nitrogen		C/N	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	8C1a (1:1) H <sub>2</sub> O
3-6	1.15										4.6
10-16	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				6H1a	CEC		Base saturation 5C3 Sum Cations Pct.	Pct.
	6N2b Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid- ity	Sum Cations			
3-6	1.7	0.8	0.1	0.4	8.6	11.8		27	
10-16	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 2 to 1/2 inches. Undecomposed layer of oak-hickory leaves, twigs, and acorns.  
Not sampled
- O2 1/2 to 0 inches. Brownish black mixture of mineral soil and partially and well decomposed organic matter.  
Not sampled
- 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 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.  
50111
- 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 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.  
50112
- 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 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.  
50113
- Pan 1 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.  
50114
- Pan 2 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.  
50115
- 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 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.  
50116
- 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 (?) 61 to 65+ inches. Same as above.  
50117

SOIL Grenada silt loam SOIL Nos. 391808-391814<sup>a</sup> LOCATION Marshall County, Kentucky

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

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											3B2 Cm	3B1 Coarse fragments		
		Total		Sand						Silt				2A2 > 2	2-19	19-75
		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)				
0-4		80.6	13.7	0.3	0.8	0.8	1.1	1.0		50.8	32.8					
1-4 <sup>a</sup>		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 by H <sub>2</sub> O Pct.	Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	Ext. iron as Fe Pct.	Bulk density			4D1 COLE	Water content			4C1 WRD in/in	pH	
						4A1a 1/2 bar g/cc	4A1h Oven dry g/cc	4D1		4B1c 1/2 bar Pct.	4B2 15 bar Pct.	4C1		8C1c (1:1) KCl	8C1a (1:1) H <sub>2</sub> O
0-4	1.3														5.6
1-4 <sup>a</sup>	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					6B1c 6B1a Ext. acidity meq/100 g	CEC		6D1d Ext. Al	Ratio to clay			8D3 Ca/Mg	Base saturation				
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum		5A3a Sum cations	CEC		Ext. iron	15-bar water	CEC Sum		Ext. iron	15-bar water	Ca/Mg	5C3 Sum cations Pct.	5C1 NH <sub>4</sub> OAc Pct.
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			

<sup>a</sup> 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.

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.

<sup>a</sup> 1 to 4 inch depth was assigned laboratory No. D3212.

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 Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total			Sand					Silt			2A2 2-19	19-76	
		Sand (2-0.05)	Silt (0.05-0.002)	Clay ( $\leq$ 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)
Pct. of $\leq$ 2 mm													Pct. of $\leq$ 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				
38-48+	C	83.7	14.4	0.1	0.2	0.1	0.2	1.3		29.9	55.3				
Bulk density															
Depth (in.)	6A1a Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O		
					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		
Extractable bases 5B1a															
Depth (in.)	Extractable bases 5B1a				6B1a Ext. Acid-ity meq/100 g	5A3a Sum Cat-ions						Base saturation			
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K		Sum	Cat-ions			5C3 Sum Cat-ions Pct.	Pct.				
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	5.8	23.7						33			
21-34	6.2	6.6	0.1	0.3	4.6	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.

- A<sub>p</sub>  
 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.
- A<sub>2</sub>  
 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.
- B<sub>1</sub>  
 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.
- B<sub>2</sub>  
 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.
- B<sub>3</sub>  
 55415 34 to 38 inches. Light olive brown (2.5Y 5/6) friable silty clay loam, mottled with yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2); mottles are common, fine, and distinct; moderate, medium, angular blocky structure; gradual, smooth boundary; mildly alkaline.
- C  
 55416 38 to 48+ inches. Light olive brown (2.5Y 5/6) very friable silt loam, mottled with yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2); mottles are common, fine and distinct; weak, medium, angular blocky structure; slightly calcareous below 45 inches, and a few lime nodules 1/2 to 2 inches in diameter occur at 50 inches.

Notes: Color of soil moist unless otherwise stated.

SOIL Henshaw silt loam SOIL Nos. 854Ky-51-13 LOCATION Henderson County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55417-55422

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total											2A2 > 2	2-19	19-76		
		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)	
Pct. of < 2 mm													Pct.	Pct. of < 76mm			
0-10	Ap		89.6	7.9	0.3	0.5	0.2	0.2	1.3				38.3	52.7			
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O				
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.		Pct.			
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 5B1a				6N1a Ext. Acidity meq/100 g	5A3a Sum Cations	CEC	Base saturation									
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K				5C3 Sum Cations Pct.	Pct.								
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.)																	

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.

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 Size class and particle diameter (mm) 2A1											Coarse fragments				
		Total											2A2 > 2	2-19	19-76		
		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)	Pct.	Pct. of < 76mm		
Pct of < 2 mm																	
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH						
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	BC1a (1:1)	H <sub>2</sub> O		
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 5B1a				6H1a	CEC							Base saturation				
	6N2d Ca	6O2d Mg	6P2a Na	6Q2a K	Ext. Acid-ity	5A3a Sum Cat-ions						5C3 Sum Cat-ions Pct.	Pct.				
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					
52-55+	0.2	0.5	tr.	0.2	6.8	7.7						12					

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 briars, 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 pods 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.

SOIL Holston very fine sandy loam SOIL Nos. 855Ky-6-10 LOCATION Bath County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55374-55378

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total			Sand				Silt				2A2	2-19	19-76
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)	> 2	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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH				
	Pct.	Pct.		Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.					
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				6H1a Ext. Acidity meq/100g	CEC				Base saturation					
	6N2a Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum	Cat-ions			5C3 Sum Cat-ions Pct.	Pct.				
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				

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 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.  
55374

A2 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.  
55375

B1 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.  
55376

B2 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.  
55377

C 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.  
55378

Notes: Color of soil moist unless otherwise stated.



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-IF-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.
E1 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.
E2 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.

SOIL Leadvale silt loam SOIL Nos. S54Ky-6-4 LOCATION Bath County, Kentucky  
 Beltsville, Maryland LAB. Nos. 55341-55346

Depth (in.)	Horizon	IB1D Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand					Silt			2A2	2-19	19-76	
		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)	> 2 Pct.	2-19 Pct.	19-76 Pct.
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			
Pct. of < 2 mm																
Depth (in.)	6A1a Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O			
					Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.				
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 2B1a				6H1a	C1C					Base saturation					
	6W2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid-ity	5A3a Sum					5C3 Sum Cat-ions	Pct.				
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.)																

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.

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 Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand				Silt				2A2 ≥ 2	2-19	19-75	
		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)
Pct. of $< 2$ mm													Pct.	Pct. of $< 75$ mm		
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH					
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	8C1a (1:1) H <sub>2</sub> O		
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				6H1a Ext. Acid-ity meq/100g	CEC 5A3a Sum Cat-ions	Base saturation									
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cat-ions Pct.	Pct.								
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.)																

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 APH-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.
- E1  
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 E1 horizon and that identified as the E1 has A3 characteristics. This being a colluvial soil, this occurrence is not uncommon. Color of soil moist unless otherwise stated.

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											Coarse fractions				
		Total			Sand				Silt				2A2 > 2 Pct.	2-19 Pct.	19-76 Pct. of <= 76mm		
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)					
0-6	Ap		83.5	13.1	0.1	0.2	0.2	0.3	2.6			39.3	46.9				
6-13	B1		72.7	24.6	-	-	0.1	0.2	2.4			40.8	34.4				
13-24	B21		74.6	22.1	-	-	-	0.2	3.1			33.2	44.5				
24-32	B22		78.3	17.5	-	0.1	0.1	0.3	3.7			33.0	49.1				
32-37	B3m1		76.7	14.6	0.1	0.1	0.3	0.6	7.6			33.5	51.2				
37-48	B3m2		77.6	18.2	-	0.2	0.2	0.4	3.4			32.6	48.6				
48-53	B3m3		77.9	19.2	-	0.1	0.1	0.3	2.4			33.1	47.4				
53-60	B3m4		70.9	27.2	-	0.1	0.1	0.2	1.5			40.8	31.7				
60-80	C		79.1	18.8	-	0.1	0.1	0.2	1.7			42.7	38.1				

  

Depth (in.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	Bulk density		Water content		pH	
						4A1e 1/3 Bar g/cc	4A1h Own dry g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	6C1a (1:1) H <sub>2</sub> O	
0-6	0.96	0.126	8		1.4	1.48	1.48	17.2	5.7		6.6
6-13	0.27				2.9	1.46	1.50	20.2	10.5		5.5
13-24	0.14				3.4	1.40	1.45	24.2	10.5		4.5
24-32	0.10				3.1	1.50	1.52	24.0	8.8		4.4
32-37	0.06				2.8	1.44	1.46	21.1	7.5		4.4
37-48	0.04				2.6	1.60	1.66	20.0	9.4		4.5
48-53	0.04				2.5	1.53	1.59	23.4	9.9		4.8
53-60	0.06				2.3	1.60	1.68	21.1	12.3		5.1
60-80	0.04				2.2	1.54	1.58	22.5	9.4		5.6

  

Depth (in.)	Extractable bases				6H1a Ext. Acidity mg/100g	CEC 5A3a Sum Cations	Base saturation	
	6M2a Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cations Pct.	Pct.
0-6	6.1	1.4	tr.	0.2	3.1	10.9		72
6-13	5.6	2.3	0.1	0.2	5.4	13.6		60
13-24	2.4	3.2	0.1	0.2	9.6	15.5		38
24-32	1.1	2.9	0.1	0.2	9.6	13.9		31
32-37	1.0	1.1	0.1	0.2	9.2	11.6		21
37-48	2.1	4.4	0.3	0.2	8.7	15.7		44
48-53	3.4	6.6	0.5	0.2	5.8	16.5		65
53-60	5.4	8.7	0.7	0.2	4.8	19.9		76
60-80	4.6	6.8	0.7	0.2	3.8	16.1		76

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.
B3m1 59454	32 to 37 inches. Mixed equally brown (7.5YR 4/4) silt loam and light olive gray (5Y 6/2) silt; weak coarse platy structure; slightly compact in place; friable when crushed; few small 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 B3m1. 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.
C 59458	60 to 80 inches. Brown (7.5YR 4/4) silt loam, with few fine distinct pale brown variegations; massive; friable to firm; black manganese stains are common.
B3b Not sampled	80 to 90 inches. Red (2.5YR 4/6) silty clay with common medium distinct light olive gray (5Y 6/2) mottles; massive; very firm and plastic.
Cb Not sampled	90 to 96 inches. Variegated many medium and distinct yellowish red, olive gray, and olive brown clay; massive; very firm and plastic and sticky.
Dr Not sampled	96+ inches. Partially weathered olive shales with olive brown broken surfaces.

Notes: Colors given are for moist soil.

SOIL Loring silt loam SOIL Nos. 859Kv-56-4 LOCATION Jefferson County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59459 - 59466

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											3B2 Cm	3B1 Coarse fragments		
		Total		Sand					Silt					2A2 > 2	2-19	19-76
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)				
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 <sub>3</sub> Pct.	Ext. iron as Fe Pct.	Bulk density			4D1 COLE	Water content			4C1 WRD in/in	pH	
						1/2 bar g/cc	4A1a g/cc	4A1h Oven dry g/cc		4B1c 1/2 bar Pct.	4B2 15 bar Pct.	8C1c (1:1) KCl		8C1a (1:1) H <sub>2</sub> O	
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					6H2a Ext. acidity	CEC		6G1d Ext. Al	Ratios to clay			8D3 Ca/Mg	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Sum		5A3a Sum cations	Ext. CEC		Ext. Iron	15-bar water	5C3 Sum cations Pct.		5C1 NH <sub>4</sub> OAc Pct.	
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  
Relative amounts: blank = not determined, dash = not detected,  
tr. = trace, x = small, xx = moderate, xxx = abundant, xxxx = dominant.

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 64+ 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.

SOIL Lowell silty loam SOIL Nos. 860Ky-25-2 LOCATION Clark County, Kentucky

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

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

Depth (in.)	Horizon	Size class and particle diameter (mm)											Clay		Coarse fragments 2A2		
		Total		Sand					Silt				Clay Carbonate	Non-Carbonate	Coarse fragments 2A2		
		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. II (0.02-0.002)	Int. I (0.2-0.02)			(2-0.1)	> 2	2-19
Pct. of < 2 mm																	
0-9	Ap	6.7	65.2	28.1	1.7	1.2	0.6	0.9	2.3	22.2	43.0	25.0	4.4			tr	
9-15	B2	5.7	44.1	50.2	0.4	0.7	0.3	0.7	3.6	15.0	29.1	19.0	2.1			tr	
15-20	B3	6.4	42.5	51.1	0.7	0.9	0.4	0.8	3.6	14.0	28.5	18.1	2.8			tr	
20-34	C1	8.2	45.4	46.4	1.4	0.9	0.4	1.1	4.4	16.7	28.7	21.8	3.8			-	
34-44	C2	9.6	53.1	37.3	0.5	0.7	0.6	1.9	5.9	18.5	34.6	25.8	3.7			-	
Pct. of < 76mm																	
Pct. of < 2 mm																	
Depth (in.)	6A1a Organic carbon	6B1a Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density				4D1 COLE	Water content				8C1a (1:1)			
					6C1a Iron as Fe	4A1a Field State	4A1c 30-cm.	4A1h Oven-Dry		4B4 Field State	4B3 30-cm.	4B2 15-Bar	4C1 30-cm. minus 15-Bar				
0-9	2.23	0.198	11		2.4				0.032	23.1	25.2	13.0	0.06	4.9			
9-15	0.52	0.065	8		3.3	1.49	1.46	1.60	0.036	26.2	27.4	22.1	0.08	4.5			
15-20	0.42	0.056	8		3.5	1.44	1.42	1.58	0.036	26.2	27.4	22.1	0.08	4.4			
20-34	0.26	0.043	6		2.5	1.46	1.46	1.60	0.032	26.2	27.2	19.7	0.11	4.3			
34-44	0.15				2.4							17.0		4.4			
Depth (in.)	Extractable bases				6B1a Sum	6B1a Act. Acidity	Cat. Exch. Cap.		6C1a KCl-Ext. Al	Base saturation							
	6N2b Ca	6O2b Mg	6P2a Na	6Q2a K			5A3a Sum	5A1a NH <sub>4</sub> OAc		5C3 Sum	5C1 NH <sub>4</sub> OAc						
0-9	5.9	1.4	0.1	0.6	8.0	14.5	22.5	13.9	0.7		36	58					
9-15	4.7	1.4	tr	0.6	6.7	19.4	26.1	19.0	7.1		26	35					
15-20	3.1	1.6	tr	0.4	5.1	21.8	26.9	20.4	10.2		19	25					
20-34	2.2	2.1	tr	0.3	4.6	21.8	26.4	20.2	11.0		17	23					
34-44	1.7	2.3	0.1	0.3	4.4	19.8	24.2	18.7	9.6		18	24					
Depth (in.)	Ratios to Clay 8B1			15-Bar Water													
	NH <sub>4</sub> OAc CEC	Ext. Iron	15-Bar Water														
0-9	0.49	0.085	0.46														
9-15	0.38	0.066	0.42														
15-20	0.40	0.068	0.43														
20-34	0.44	0.054	0.42														
34-44	0.50	0.064	0.46														

a. Siltstone-like fragments compose a major portion of the sand-size material.  
b. Coefficient of linear extensibility.

Soil Type: Lowell silt loam

Soil Nos.: 960Ky-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. Ruffman, 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.
- Dc  
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 soil. Reaction determined by Soiltext.

SOIL Lowell silt loam SOIL Nos. 860K-25-3 LOCATION Clark County, Kentucky

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

General Methods: 1A, 1R1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm)													Clay		Coarse fragments 2A2		
		3A1													3A1a Carbonate	Non-Carbonate	> 2	2-19	19-76
		Sand			Silt			Clay											
		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)			Pct. of < 76mm			
		Pct. of < 2 mm																	
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						
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				
Depth (in.)	6A1a Organic carbon	6B1a Nitrogen	C/N	6E1c Carbonate as CaCO <sub>3</sub>	6G1a Ext. Iron as Fe	Bulk density			4M COLE	Water content				pH	8C1a (1:1)				
						4A1a Field State	4A1c 30-cm.	4A1h Oven-Dry		4B1 Field State	4B3 30-cm.	4B2 15-Bar	4C1 30-cm. minus 15-Bar in./in.						
	Pct.	Pct.		Pct.	Pct.	g/cc	g/cc	g/cc	c	Pct.	Pct.	Pct.							
0-6	1.65	0.151	11		1.7														
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	5.7					
15-26	0.22	0.035			2.5	1.71		1.76				17.6		5.0					
26-36	0.19			3	1.9							14.5		4.6					
														7.4					
Depth (in.)	Extractable bases					6H1a Ext. Acidity	Cat. Sum	Anch. Sum	Cap. NH <sub>4</sub> OAc	6C1a Ext. Al	Base saturation								
	6M2b Ca	6Q2b Mg	6P2a Na	6Q2a K	Sum						5C3 Sum Cations	5C1 NH <sub>4</sub> OAc							
	meq/100 g										Pct.	Pct.							
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 8M			NH <sub>4</sub> OAc 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.

Soil Type: Lowell silt loam

Soil Nos.: 950Ky-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 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  
14437
- B21 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.  
14438
- B22 15 to 26 inches. Light olive brown (2.5Y 5/4) to olive brown (2.5Y 4/4) clay with common fine distinct yellowish brown (10YR 5/6) and olive gray (5Y 5/2) variegations; strong medium subangular blocky structure; 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.  
14439
- C1 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.  
14440
- C2 36 to 41 inches. This horizon same as C1 horizon above except that the siltstone dominates the mass in this horizon; the texture is silty clay loam when the material is crushed and mixed together; pH 7.0; gradual smooth boundary.
- Dr 41 inches plus. Weathered siltstone; pH 7.0.

Remarks: Profile has thinner than normal solum and parent material is dominantly from siltstone. Traversing the face of the cut about 15 degrees from vertical in horizons B21 and B22 is a clay zone about 1½ inches wide with an abundance of soft black concretionary material. This zone was not considered to be a genetic horizon and was not sampled separately. Color given for moist soil. Reaction determined by Soiltext.

Mineralogy (Method 7A). Horizon B22 15 to 26 inches LSL No. 14439  
The clay contains moderate amounts of mica (or illite) or a mica-like mineral, small amounts of vermiculite, montmorillonite and interstratified minerals involving mica and the 14Å minerals. There is a hint of chlorite. The mica-like mineral expands with glycerol. The minerals have fair crystalline quality. The apparent exchange capacity of the clay, 50 me/100g, suggests a mixture including vermiculite or montmorillonite. The fine clay is 0.6 the amount of coarse clay. Mineralogy is mixed, according to X-ray evidence.

SOIL Lowell silt loam SOIL Nos. 560ky-25-5 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14447-14451 June 1966  
General Methods: 1A, 1E1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm)											Clay		Course fragments 2A2			
		Total			Sand					Silt			Carbonate	Non-Carbonate	> 2	2-19	19-76	
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)						Pct.
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	6H1a Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe	Bulk density			4D1 COLE	Water content				8C1a (1:1)
						4A1a Field State	4A1c 30-cm.	4A1h Oven Dry		4B4 Field State	4B3 30-cm.	4B2 15-Bar	4C1 30-cm. minus 15-Bar	
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				5H1a Sum	6H1a Ext. Acidity	Cat. Exch. Sum	5A1a NH <sub>4</sub> OAc	6G1a KCl-Ext. Al	Base saturation	
	6N2b Ca	6O2b Mg	6P2a Na	6Q2a K						5C3 Sum Cations	5C1 NH <sub>4</sub> OAc
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	17.1	1.2	tr	0.3	18.6	9.1	27.7	21.0	0.4	67	88

  

Depth (in.)	Ratios to Clay 8M		
	NH <sub>4</sub> OAc CEC	Ext. Iron	15-Bar Water
0-7	0.46	0.094	0.42
7-14	0.39	0.083	0.43
14-20	0.39	0.084	0.43
20-32	0.40	0.089	0.42
32-44	0.43	0.074	0.39

- a. > 50 percent Fe-Mn, 0 to 44 inches.
- b. 25-50 percent Fe-Mn, 0 to 44 inches.
- c. 5.2 kg/m<sup>2</sup> to 20 inches.
- d. Coefficient of Linear Extensibility.

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. Ruffman, November 8, 1960.

Horizon and  
 Lincoln  
 Lab. No.

Ap 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.  
 14447  
 E1 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.  
 14448  
 E2 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.  
 14449  
 E3 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.  
 14450  
 C 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 and very plastic; very small very dark brown concretions are common; pH 7.0.  
 14451  
 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 E1, E2, and E3 horizons. Color given for moist soil. Reaction determined by Soiltest.

SOIL Lowell silt loam SOIL Nos. 650Ky-25-6 LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska LAB. Nos. 14452-14456 June 1966  
General Methods: 1A, 1R1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm)											Clay		Coarse fragments 2A2			
		Total			Sand					Silt			Carbonate	Non-Carbonate	> 2	2-19	19-76	
		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)
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					
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	6B1a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a	Bulk density			4M	Water content				8C1a (1:1)
	Organic carbon	Nitrogen			Iron	4A1a	4A1c	4A1h	4B	4B3	4B2	4C1	pH	
	d	Pct.		Pct.	Pct.	g/cc	g/cc	g/cc	f	Pct.	Pct.	Pct.	in./in	
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				5R1a	6R1a	Cat. Exch. Cap.		6C1a	Base saturation	
	6M2b	6O2b	6P2a	6Q2a	Sum	Exct. Acidity	5A3a	5A1a	KCl	5C3	5C1
	Ca	Mg	Na	K	Sum	Sum	NH <sub>4</sub>	OH	Ext. Al	Sum	NH <sub>4</sub> OAc
	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	36	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 8M		
	NH <sub>4</sub> OAc CEC	Exct. 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<sup>2</sup> to 22 inches.  
e. One clod.  
f. Coefficient of Linear Extensibility.

Soil Type: Lowell silt loam

Soil Nos.: 860Ky-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 AFW-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 Soiltext.

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.

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	LELID											3A1				
		Total				Sand					Silt		Clay		Coarse fragments		
		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	2-19	19-76	
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 <sup>a</sup>		76.4	21.3	0.2	0.1	0.1	0.2	1.7		43.5	34.7				tr.	
100-104	Cb <sup>b</sup>		68.6	29.6	0.3	0.2	0.2	0.3	0.8		47.1	22.4				1	

  

Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a	Bulk density			Water content		pH	
	Organic carbon	Nitrogen			Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	g/cc	g/cc	g/cc	4B1c	4B2	8C1a (1:1) H <sub>2</sub> O	8C1a (1:1) H <sub>2</sub> O
	Pct.	Pct.		Pct.	Pct.				Pct.	1/3 Bar Pct.	15 Bar Pct.	
0-8	1.58	0.110	14		1.4					17.9	5.4	
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				6H1a	CBC		Base saturation	
	6N2a	6O2b	6P2a	6Q2a	Ext. Acid-ity	5A3a	Sum Cat-ions	5C3	Sum Cat-ions Pct.
	Ca	Mg	Na	K	mg/100 g				Pct.
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.)	Notes									
	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. Zimmelman, E. J. Pedersen and G. M. Phibbs, October 15, 1957  
 Described by: E. V. Huffman and H. R. 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.



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.

SOIL Misc silt loam

SOIL Nos. 860Ky-25-1

LOCATION Clark County, Kentucky

SOIL SURVEY LABORATORY Lincoln, Nebraska

LAB. Nos. 14425-14431

June 1966

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

Depth (in.)	Horizon	Size class and particle diameter (mm) <u>3A1</u>																
		Total				Sand					Silt			Clay	Coarse fragments <u>2A2</u>			
		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) %	Carbonate	Non-Carbonate	> 2 Pct.	2-19 Pct.	19-76 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		6B1a Nitrogen		C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Bulk density			4D1 Coeff. of expansion	Water content				pH	8C1a (1:1)
	Pct.	Pct.	Pct.	4A1a Field State			4A1c 30-cm. Dry	4A1h Oven Dry	4B1 Field State		4B3 30-cm. Bar	4B2 15-cm. Bar	4C1 30-cm. minus 15-Bar in./in.			
				g/cc			g/cc	g/cc	Pct.		Pct.	Pct.				
0-2	4.01	0.176	23			7.5										4.0
2-8	1.47	0.116	13			6.0	1.32	1.32	1.35	0.007	23.8	28.9	10.8	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	1.58	1.56	1.61	0.010	18.3	22.2	14.5	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	14.1	0.15	4.8
42-48	0.25					6.5							13.8			4.6

Depth (in.)	Extractable bases					6B1a Act. Acidity	6A3a Sum	6A1a NH <sub>4</sub> OAc	Base saturation				
	6E2b Ca	6O2b Mg	6P2a Na	6Q2a K	Sum							5C3 Sum	5C1 NH <sub>4</sub> OAc
	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 8D1		
	NH <sub>4</sub> OAc / CBC	Act. 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.

Soil Type: Mue 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 APN-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 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.  
14425
- A3 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.  
14426
- B1 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.  
14427
- B21 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.  
14428
- B22 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.  
14429
- B3 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.  
14430
- C 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.  
14431
- Dr 48 inches plus. Dark brown (7.5YR 3/2) weathered Ohio black shale.

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

SOIL Misc silt loam SOIL Nos. S60Ky-25-4 LOCATION Clark County, Kentucky

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

General Methods: 1A, 1E1a, 2A1, 2B

Depth (in.)	Horizon	Size class and particle diameter (mm)											Clay		Coarse fragments			
		Total		Sand							Silt		Carbonate	Non-Carbonate	> 2	2 - 19	19 - 76	
		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)
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		6B1a		C/N	Carbonate as CaCO <sub>3</sub>	6C1a			4D1	Water content				pH	8C1a (1:1)
	Organic carbon	Nitrogen	Iron	Field State			30-cm.	Oven Dry	4E1		4E3	4E2	4C1			
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	in./in.			
0-2	2.95	0.235	12	5.3		5.3							11.4		4.5	
2-6	1.95	0.153	10	4.8		4.8							12.1		4.5	
6-18	0.43	0.078	6	5.4		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		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		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		5.0							15.5		4.1	

  

Depth (in.)	Extractable bases				6E1a	Cat. Base Cap.			6G1a	Base saturation		
	6E2b	6E2a	6E2a	6E2a		Act. Acidity	5A3a	5A1a		KCl-Act. Al	5C3	5C1
	Ca	Mg	Na	K	Sum	Sum	Sum	Sum			Pct.	Pct.
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 8E1		
	NE <sub>4</sub> OAc 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.

Soil Type: Muse silt loam

Soil Nos.: S50Ky-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. Ruffman, November 8, 1960.

Horizon and

Lincoln

Lab. No.

- Aoo 1½ to ½ inch. Leaves and dead twigs.
- Ao ½ to 0 inch. Black duff from decayed and partially decayed leaves and twigs.
- A1 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.  
14441
- A3 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.  
14442
- E21 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.  
14443
- E22 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.  
14444
- E3 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.  
14445
- C1 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.  
14446
- Dc 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, E21, E22 and E3 horizons. Color given for moist soil. Reaction determined by Soiltext.

Mineralogy (Method 7A). Horizon E2 31 to 46 inches ISL 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.



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.

SOIL Needmore silt loam SOIL Nos. 554Ky-1-17 LOCATION Adair County, Kentucky  
 SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55475-55479

Depth (in.)	Horizon	1B1b											Size class and particle diameter (mm) 3A1			Coarse fragments					
		Total											Sand			Silt			Clay		
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)	2A2 2-76	2-19	19-76						
Pct. of $< 2$ mm															Pct.			Pct. of $< 76$ mm			
0-2	A1		74.1	13.6	3.2	3.2	1.5	2.3	2.1		51.4	26.1									
2-8	A2		76.2	15.9	2.7	1.5	0.7	1.3	1.7		54.1	24.6									
8-18	B2		71.5	22.1	1.7	1.2	0.6	1.1	1.8		50.8	23.3									
18-26	C		69.1	25.5	1.3	1.0	0.5	1.0	1.6		50.1	21.2									
26+	De		63.8	27.9	1.6	1.8	0.8	1.6	2.5		46.6	20.6									
Depth (in.)	6A1a				Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O								
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.											
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				6H1a		5A3a		Base saturation		5C3 Sum Cations Pct.										
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid- ity meq/100 g	Sum Cations				Pct.											
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										

Soil type: Needmore silt loam

Soil No.: 554Ky-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.

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 Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand					Silt			2A2 > 2 Pct.	2-19 Pct.	19-76 Pct. of < 76mm	
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)				
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		C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH	
	Organic carbon	Nitrogen			g/cc	g/cc	g/cc	Pct.	Pct.	Pct.	6C1a (1:1) H <sub>2</sub> O	
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				6H1a Ext. Acidity meq/100 g	5A3a Sum Cations	CEC	Base saturation	
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K				5C3 Sum Cations Pct.	Pct.
0-5	29.8	7.9	0.1	0.2	4.1	42.1		90	
5-8	Calcareous								
8-15	"								
15-20	"								
20+	"								

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-3P40, 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.

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 Size class and particle diameter (mm) 3A1											Coarse Fragments					
		Total			Sand				Silt				Int. III (0.02-0.002)	Int. II (0.2-0.002)	(2-0.1)	2-2	2-19	19-76
		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	0.02-0.002	Pct. of < 2 mm						
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							
		Bulk density											Water content			pH		
Depth (in.)	6A1a Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	g/cc			Pct.			6C1a (1:1) H <sub>2</sub> O							
					Pct.	Pct.	Pct.	Pct.	Pct.	Pct.								
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				6H1a	CEC					5C3 Sum Cations Pct.							
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acidity meq/100g	5A3a Sum Cations						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  
55362 16+ inches. Light bluish gray weathered, calcareous shale with laminations and pockets of weathered calcareous sandstone. Soil material, in place, has brownish yellow and pale yellow splotching.

Notes: Color of soil moist unless otherwise stated.



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.

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 Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total			Sand					Silt			2A2 > 2	2-19	19-76
		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)			
Pct. of < 2 mm													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	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content		pH				
	Organic carbon Pct.	Nitrogen Pct.				g/cc	g/cc	g/cc	Pct.	Pct.	4B2 Bar Pct.	8C1a (1:1) H <sub>2</sub> O			
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	50.1	1.1							14.7	7.7		
20-38	0.31			47.1	1.9							12.2	7.7		
Depth (in.)	Extractable bases				meq/100 g	Base saturation									
	Ca	Mg	Na	K		Pct.	Pct.								
0-4															
4-8															
8-13															
13-20															
20-38															
Depth (in.)	a Free carbonates present in all horizons.														

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 TYPE Patton LOCATION Fulton County, Kentucky  
silt loam

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)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
0-8	Alp	0.1a	0.3a	0.1a	0.2a	1.3	81.6	16.4	50.5	32.5	-	sil
8-17	Al2	0.1a	0.1a	0.1a	0.2a	1.1b	79.3	19.1	49.1	31.4	-	sil
17-23	Al3	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
pH		ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS			
8Cl1a	1.5	1:10	6A1a ORGANIC CARBON %	6B1a NITRO-GEN %	C/N	Fe <sub>2</sub> O <sub>3</sub> %	CoCO <sub>2</sub> equivalent %	1/10 ATMOS. %	1/3 ATMOS. %	4B2 15 ATMOS. %		
5.9			1.28	0.117	11	1.0					7.9	
6.1			1.02	0.093	11	0.7					10.0	
6.3			0.73	0.070	10	1.1					8.9	
6.6			0.32			1.6					13.5	
7.0			0.17			1.5					11.8	
7.1			0.13			1.2	<0.1				10.2	
5A1a CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc		EXTRACTABLE CATIONS 5B1a				BASE SAT. NH <sub>4</sub> OAc EXCH.	Base Sat. % on Sum Cations	Bulk Density				
6N2b Ca	6O2b Mg	6H1a H	6P2a No	6Q2a K				Air Dry	30 cm.	O.D.		
milliequivalents per 100g. soil						5C1	5C3	4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
15.0	9.6	4.0	5.2	0.1	0.4	94	73	5.1	1.56 <sup>c</sup>	23.9	1.45 <sup>c</sup>	1.57 <sup>c</sup>
18.3	12.0	5.6	4.5	0.1	0.3	98	80	2.9	1.48	28.0	1.34	1.47
16.1	10.0	5.6	3.6	0.1	0.3	99	82					
21.2	12.3	8.7	3.1	0.1	0.5	102	87	3.8	1.72	25.6	1.48	1.70
20.4	12.1	8.9	2.2	0.1	0.5	106	91					
17.7	10.7	7.7	2.4	0.1	0.4	107	89	2.6	1.65	26.3	1.50	1.64

a. Many Fe-Mn? concr.  
b. Few Fe-Mn? concr.  
c. Single clod determination

PATTON SILT LOAM6609y-98-3

Location: Fulton County, Kentucky, 250 feet west and 335 feet north of SE corner; SW $\frac{1}{4}$  of Sec. 31; T18N; R34W; 1/3 mile east of Ky.239 on Ky. 116. Photo ADV-98-28.

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. E. Zimmerman, November 1, 1960.

LINCOLN

<u>LAB NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14375	A <sub>1p</sub>	0-8 inches	Very dark brown (10YR 2/2), crushed color very dark grayish brown (10YR 3/2), silt loam; moderate fine granular structure; very friable; few dark brown concretions; abundance of small roots; pH 6.0; abrupt smooth boundary.
14376	A <sub>2</sub>	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 <sub>13</sub>	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 <sub>g</sub>	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 <sub>g1</sub>	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 <sub>g2</sub>	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 <sub>g3</sub>	63-70 inches	Similar to above horizon, except slightly coarser textured. (Not sampled)

Remarks:

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

Colors given for moist soil.

Soil correlation samples collected from profile.

Reaction determined by Soiltex.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Patton LOCATION Fulton County, Kentucky  
silt loam

SOIL NOS. S60Ky-38-4 LAB. NOS. 14381-14386  
General Methods: 1A, 1B1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
0-10	Alp	0.2a	0.3a	0.1a	0.2a	1.2b	80.8	17.2	47.4	34.7	-	sil
10-16	Al2	0.3a	0.6a	0.3a	0.4a	1.3b	75.0	22.1	45.3	31.2	-	sil
16-21	Bg1	0.2a	0.5a	0.4a	0.5a	1.1b	68.6	28.7	40.7	29.3	-	sic1
21-27	Bg2	0.1a	0.2a	0.2a	0.4a	1.0b	66.8	31.3	39.2	28.8	-	sic1
27-46	Cg1	0.2a	0.3a	0.2a	0.4a	1.4b	73.6	23.9	43.9	31.3	-	sil
46-65	Cg2	<0.1	0.3a	0.3a	0.4a	1.5b	78.8	18.7	47.4	33.1	-	sil
	pH	ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS			
3Cl	1:5	6A1a	6B1a			Fe <sub>2</sub> O <sub>3</sub> %	CoCO <sub>2</sub> equiv-olent		1/10 ATMOS.	1/3 ATMOS.	4B2 15 ATMOS.	
1:1		ORGANIC CARBON	NITRO-GEN	C/N	6Cl		%		%	%	%	
6.3		1.42	0.121	12	1.0		<0.1				8.8	
6.5		1.03	0.086	12	1.0						11.1	
6.6		0.68	0.065	10	1.2						13.9	
6.7		0.46	0.049	9	1.1						15.3	
7.1		0.31			1.3						11.9	
7.1		0.17			1.5		<0.1				10.0	
5A1a	EXTRACTABLE CATIONS					5B1a	BASE SAT. %	Bulk Density				
CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc	6N2b	6O2b	6H1a	6P2a	6Q2a	NH <sub>4</sub> OAc EXCH.	Base Sat. % on Sum Cations	Air Dry		30 cm.		O.D.
	Ca	Mg	H	Na	K	5C1	5C3	4B5 % M.	4A1b g/cc	4B3 % M.	4A1c g/cc	4A1h g/cc
	← milliequivalents per 100g. soil →											
17.4	13.4	3.9	4.3	0.1	0.3	102	80	4.0	1.56	25.9	1.40	1.56
19.3	14.2	4.5	4.6	0.1	0.3	99	80	3.7	1.58	32.0	1.44	1.58
22.2	14.8	7.9	3.8	0.1	0.4	104	86					
24.3	16.3	9.6	3.4	0.1	0.4	109	88	3.9	1.67c	27.4	1.41	1.62c
20.9	14.1	8.6	2.2	0.1	0.3	110	91					
17.3	11.2	7.1	1.9	0.1	0.5	109	91	2.6	1.64	26.4	1.49	1.64

a. Many Fe-Mn? concr.  
 b. Few Fe-Mn? concr.  
 c. Duplicate clods exceed the confidence limit of ± 0.05 and range to ± 0.07 g/cc

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 Mad Creek Bridge, 4-1/2 miles east of Hickman. Photo ADV-5P-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 <sub>1p</sub>	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 <sub>12</sub>	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 <sub>1p</sub> ; abundance of small roots; pH 7.0; clear smooth boundary.
14383	B <sub>g1</sub>	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 <sub>g2</sub>	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 <sub>g1</sub>	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 <sub>g2</sub>	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 <sub>g3</sub>	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 Spiltex.

SOIL Russellville silt loam SOIL Nos. 58137-56-14 LOCATION Jefferson County, Kentucky

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

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total				Sand				Silt			2A2 > 2 Pct.	2-19 Pct.	19-76 Pct.
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)			
Pct. of $\leq 2$ mm															
0-8	Ap <sup>d</sup>	81.5	13.5	0.2 <sup>a</sup>	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	-- <sup>c</sup>	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 <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content			pH	
						g/cc	g/cc	g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	6C1a (1:1) H <sub>2</sub> O	6C1a (1:1) H <sub>2</sub> O	
													Pct.
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
15-21	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								6.3
100-104	0.09				1.8					15.2			4.4

Depth (in.)	Extractable bases				6H1a Ext. Acid- ity meq/100g	6C2 5A3a Sum Cat- ions	Base saturation	
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K			5C3 Sum Cat- ions Pct.	Pct.
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<sub>2</sub>O<sub>2</sub> 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  
 58127 0 to 8 inches. Dark yellowish brown (10YR 3/4) silt loam; moderate medium granular structure; very friable; discontinuous remnants of A2, brown (10YR 4/3) silt loam were detected in lower 2 inches; pH 7.0; abrupt smooth boundary.

B21  
 58128 8 to 15 inches. Brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; noticeable clay skins; friable; common medium pores; pH 6.0; clear smooth boundary.

B22  
 58129 15 to 21 inches. Strong brown (7.5YR 5/6) coarse silty clay loam; moderate medium angular blocky structure; patchy brown (7.5YR 4/4) clay skins; few medium pores; friable; pH 5.0; abrupt smooth boundary.

B3  
 58130 21 to 26 inches. Yellowish brown (10YR 5/6) with a few fine faint grayish brown (10YR 5/2) mottles; coarse silty clay loam; moderate medium and fine subangular blocky structure; weak clay skins; friable; few dark brown concretionary stainings; few medium pores; pH 5.0; abrupt smooth boundary.

B3ml  
 58131 26 to 32 inches. Brown (10YR 4/3) with common fine distinct grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) mottles; silt loam; weak coarse angular blocky structure; slightly compact in place, friable when disturbed; common small black concretions; pH 5.5; gradual wavy boundary.

B3m2  
 58132 32 to 42 inches. Brown (10YR 5/3) with common fine distinct light brownish gray (10YR 6/2) and gray (10YR 5/1) mottles; silt loam; weak medium angular blocky structure; compact in place, friable when disturbed; few pockets of gray silty clay; pH 5.5; gradual wavy boundary.

B3m3  
 58132 42 to 49 inches. Light yellowish brown (10YR 6/4) with a few fine faint grayish brown (2.5Y 5/2) mottles; silt loam; coarse platy structure; compact in place, friable when disturbed; abundant black concretions up to 10 mm. in size; pH 5.5; gradual smooth boundary.

C11  
 58134 49 to 64 inches. Variegated, yellowish brown (10YR 5/6); dark red (2.5YR 3/6) and gray (10YR 6/1) silty clay; massive; firm; common black concretionary stainings; pH 5.6; clear smooth boundary; pickup in clay indicates strong limestone influence in this horizon.

C12  
 58135 64 to 76 inches. Variegated yellowish brown, light olive brown, red, and gray clay; massive; firm, plastic when wet; common black concretionary staining; pH 6.5.

D  
 58136 76 to 110 inches. Variegated, light yellowish brown (2.5Y 6/4), dark red (2.5YR 3/6) and gray (N/6) clay; firm, plastic when wet; common black stainings and small black concretions; pH 6.5; sampled with can auger.

Subsample  
 58137 26 to 60 inches. Tongues of grayish brown (2.5Y 5/2) silty clay extend for several feet from 26 inches downward as part of polygonal system. 3 inch cap with 1 1/2 to 4 inch vertical faces. A subsample of the silty clay was taken from the B3ml.

Notes: Very coarse polygonal structure was very noticeable.

SOIL Russellville silt loam SOIL Nos. 857Ky-56-18 LOCATION Jefferson County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 58163-58171

Depth (In.)	Horizon	IB1b Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand					Silt			2A2 > 2	2-19	19-76	
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)				
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				
Pct. of < 76mm																
Depth (In.)	6A1a Organic carbon Pct.	6B2a Nitrogen Pct.	C/N	Carbonate as CaCO <sub>3</sub> Pct.	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content		pH					
						g/cc	g/cc	g/cc	4B1c Pct.	4B2 Pct.	8C1a (1:1) H <sub>2</sub> O					
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				
44-53	0.04				2.7				20.8	10.4		4.3				
53-97	0.05				3.5				24.1	13.4		4.5				
97-115+	0.05				5.3					16.6		4.6				
Depth (In.)	Extractable bases				6H1a Ext. Acidity msp/100g	5A3a Sum Cations	CEC	Base saturation								
	6W2a Ca	6O2b Mg	6P2a Na	6Q2a K				5C3 Sum Cations Pct.	Pct.							
0-8	5.2	0.9	tr.	0.1	4.9	11.2			56							
8-15	4.6	1.4	tr.	0.2	5.1	11.3			55							
15-21	4.0	2.3	0.1	0.3	6.3	12.8			51							
21-31	3.6	2.6	0.1	0.2	7.0	13.5			48							
31-37	2.4	2.4	0.1	0.2	8.2	13.3			38							
37-44	1.5	2.3	0.1	0.2	9.5	13.6			30							
44-53	1.1	2.5	0.1	0.2	10.6	14.5			27							
53-97	1.6	3.4	0.1	0.2	11.4	16.7			32							
97-115+	4.8	3.4	0.1	0.2	9.4	17.9			47							
Depth (In.)	a: All sand fractions except Ap horizon consisted mainly iron oxide concretions.															

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 gray (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.
- B3u  
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 was not sampled. Gray silty clay (N/5) tongues begin in the B3m1 and extend downward along polygon faces to about 97 inches. Width varies from about 1 1/2 inches at top tapering to zero. Color taken moist unless otherwise stated.

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											Coarse fragments						
		Total			Sand					Silt			Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)	2A2 > 2	2-19	19-76	
		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	Pct. of < 2 mm	Pct.							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		Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH	8C1b (1:1) H <sub>2</sub> O
	Organic carbon	Nitrogen		C/N							
	Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.		
0-10	0.04										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				6H1a	CEC		Base saturation
	6W2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid-ity	5A3a Sum Cat-ions	5C3 Sum Cat-ions Pct.	
	meq/100 g						Pct.	Pct.
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.)							

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.

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	IB1b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total		Clay (< 0.002)	Very coarse (2-1)	Sand				Silt		Int. II (0.2-0.02) (2-0.1)	2A2 > 2	2-19	19-76
		Sand (2-0.05)	Silt (0.05-0.002)			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)				
Pct. of < 2 mm															
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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		6C1a (1:1) H <sub>2</sub> O		
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.		Pct.	
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				6H1a Ext. Acid-ity meq/100 g	CEC		Base saturation		5C3 Sum Cations Pct.	Pct.				
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum Cations		Pct.	Pct.						
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: Sequatchie fine sandy loam  
 Soil No.: S54Ky-51-11  
 Location: Henderson County, Kentucky; two miles east of Alzey, photo DKZ-8G-90  
 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.

SOIL Sequatchie fine sandy loam SOIL Nos. 857Ky-56-11 LOCATION Jefferson County, Kentucky

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

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments						
		Total			Sand					Silt			2A2 > 2	2-19	19-76				
		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)			
Pct. of < 2 mm													Pct.	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	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content		pH	
	Organic carbon Pct.	Nitrogen Pct.				g/cc	g/cc	g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	8C1a (1:1) H <sub>2</sub> O	
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				6H1a Ext. Acidity mag/100 g	CEC		Base saturation	
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum	Sum	5C3 Sum	Cat-ions Pct.
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	

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 TYPE Sharkey LOCATION Fulton County, Kentucky  
 silty clay

SOIL NOS. S60ry-38-7 LAB. NOS. 14400-14405

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

DEPTH INCHES	HORIZON	PARTICLE-SIZE DISTRIBUTION (in mm.) (per cent)										TEXTURAL CLASS	
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2		
		2-1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2		
0-4	Alp1	<0.1	0.1a	0.1a	0.4a	0.8a	58.3	40.3	10.1	49.3	-	sic/sic1	
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		ORGANIC MATTER				Free Iron	6Elc		MOISTURE TENSIONS				
8Cl1a	1:5	1:10	6Ala ORGANIC CARBON	6Bl1a NITROGEN	C/N	Fe <sub>2</sub> O <sub>3</sub> %	CaCO <sub>3</sub> equiv- alent	1/10 ATMOS.	1/3 ATMOS.	4B2 15 ATMOS.			
1:1			%	%		6Cl1a	%	%	%	%			
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			
5Ala	EXTRACTABLE CATIONS					5Bl1a	BASE SAT. %	Base Sat. %	Bulk Density				
CATION EXCHANGE CAPACITY	6N2b Ca	6O2b Mg	6H1a H	6P2a Na	6Q2a K	NH <sub>4</sub> OAc EXCH.	on Sum	5C3	Air Dry	30 cm.	O.D.		
NH <sub>4</sub> OAc	milliequivalents per 100g. soil					5Cl	Cations	5C3	4B5 % M.	4A1b g/cc	% M.	g/cc	g/cc
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.

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 <sub>1pl</sub>	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 <sub>1p2</sub>	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 <sub>g1</sub>	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 <sub>g2</sub>	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 <sub>g3</sub>	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 <sub>g4</sub>	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 C<sub>g3</sub> 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 profiles.

Colors given are for moist soil.

Reaction determined by Soiltext.

SOIL SURVEY LABORATORY Lincoln, Nebr. August 1961

SOIL TYPE Sharkey LOCATION Fulton County, Kentucky  
silty clay

SOIL NOS. S60Kv-38-8 LAB. NOS. 14406-14411  
 General Methods: 1A, 1E1a, 2A1, 2B

DEPTH INCHES	HORIZON	PARTICLE SIZE DISTRIBUTION (in mm.) (per cent)										TEXTURAL CLASS
		VERY COARSE SAND	COARSE SAND	MEDIUM SAND	FINE SAND	VERY FINE SAND	SILT	CLAY	3A1		2A2	
		2.1	1-0.5	0.5-0.25	0.25-0.10	0.10-0.05	0.05-0.002	< 0.002	0.2-0.02	0.02-0.002	> 2	
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		ORGANIC MATTER				Free Iron	MOISTURE TENSIONS					
8C1a	1:5	1:10	6A1a	6B1a	C/N	Fe <sub>2</sub> O <sub>3</sub>	6E1c	1/10 ATMOS.		1/3 ATMOS.	4B2	
1:1			ORGANIC CARBON %	NITROGEN %		6C1a	CaCO <sub>3</sub> equivalent %	%	%	%	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	EXTRACTABLE CATIONS					5B1a	BASE SAT. %	Bulk Density				
CATION EXCHANGE CAPACITY NH <sub>4</sub> OAc	6N2b	6O2b	6H1a	6P2a	6Q2a	NH <sub>4</sub> OAc EXCH.	on Sum	Air Dry		30 cm.		O.D.
	Ca	Mg	H	Na	K	5C1	5C3	4B5 % M.	4A1b g/cc	% M.	g/cc	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			
26.3	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? concn.												

SHARKEY SILTY CLAY86OKY-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. Ruffman and W. H. Zimmerman, November 2, 1960.

LINCOLN

<u>LAB. NO.</u>	<u>HORIZON</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
14406	A <sub>1p1</sub>	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 <sub>1p2</sub>	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 <sub>g1</sub>	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 <sub>g2</sub>	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 <sub>g3</sub>	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 <sub>g4</sub>	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 <sub>g3</sub> horizon; few small roots; pH 7.5; gradual smooth boundary.
	C <sub>g5</sub>	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 No. 86OKY-38-7. The slickensides angle about 15 degrees off horizontal plane.

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.

Reaction determined by Soiltex.

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	L81b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total				Sand				Silt			2A2 > 2	2-19	19-76
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)			
Pct. of < 2 mm													Pct. of < 76mm		
0-9	A <sub>p</sub>		67.2	12.9	5.7	4.1	2.2	3.4	4.5		46.5	27.3	18		
9-14	A <sub>2</sub>		66.6	16.1	5.2	3.5	1.88	3.1	3.7		46.1	26.2	23		
14-17	B <sub>1</sub>		66.0	16.8	4.5	3.8	1.9	3.1	3.9		46.6	25.1	31		
17-22	B <sub>3m1</sub>		65.4	16.9	5.4	3.7	1.8	2.1	4.7		45.3	25.7	26		
22-27	B <sub>3m2</sub>		63.6	19.3	5.2	3.5	1.8	2.9	3.7		44.4	24.6	25		
27-37	B <sub>3m3</sub>		60.3	23.6	5.5	3.1	1.7	2.6	3.2		42.4	22.7	30		
37-52+	B <sub>3m4</sub>		44.8	36.2	5.5	3.6	2.1	3.5	4.3		32.8	18.3	38		
Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density		Water content			pH				
	Organic carbon Pct.	Nitrogen Pct.				4A1e Bar g/cc	4A1h Oven-dry g/cc	4A3a Field Moisture Pct.	4B1c Bar Pct.	4B2 15 Bar Pct.		8C1a (1:1) H <sub>2</sub> O			
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 5B1a				6B1a Ext. Acidity mag/100 g	CEC		5A3a Sum Cations	Base saturation						
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K		Sum	Cations		5C3 Sum Cations Pct.	Pct.					
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 gradually from 40 percent in upper portion to 70 percent in lower portion of this horizon; gray streaks (about 15mm) between polygonal structure units.

Notes: Colors described with moist soil.

SOIL Tarklin cherty silt loam SOIL Nos. 859Ky-5-6 LOCATION Barren County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59416-59422

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments		
		Total				Sand				Silt			2A2 > 2	2-19	19-76
		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)	Int. III (0.02-0.002)	Int. II (0.2-0.02)	(2-0.1)			
Pct. of <= 2 mm												Pct.	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	28.0	41.2	3.4	4.5	3.6	11.0	7.7		21.4	22.0		31		
Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density		Water content		pH					
	Organic carbon Pct.	Nitrogen Pct.				4A1e 1/3 Bar g/cc	4A1h Oven-dry g/cc	4B1c 1/3 Bar Pct.	4B2 15 Bar Pct.	8C1c (2:1) H <sub>2</sub> O	8C1a (1:1) H <sub>2</sub> O				
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				6H1a	CEC		Base saturation							
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid-ity meq/100	5A3a Sum Cat-ions		5C3 Sum Cat-ions Pct.	Pct.						
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.)															

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-42-151  
 Vegetation and land use: Cultivated field, at present in spring oats and clover  
 Slope and land form: Nearly level (1 to 2 percent slope) terrace position, but also influenced by local 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.
- B3m2  
 59420 23 to 33 inches. Light olive brown (2.5Y 5/4) mottled with common medium faint light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6) silty clay loam; massive; firm and compact; few small chert fragments; several large (2 inch) dark brown and black concretions which contain occasional very small quartz crystals; boundary clear and smooth.
- B3m3  
 59421 33 to 43 inches. Mottled light brownish gray (2.5Y 6/2) and brownish yellow (10YR 6/6) and light olive brown (2.5Y 5/4) heavy silt loam; massive; firm and very compact in place; abundance (60 percent) of medium and some coarse (up to 2 inch size) chert; iron manganese concretions with some embedded quartz crystals; clear, smooth boundary.
- C  
 59422 43 to 49 inches. Mottled brownish yellow (10YR 6/6) and strong brown (7.5YR 5/6) and pale red (2.5YR 6/2) clay; 60 percent coarse fragments; some chert and quartz but mostly large iron manganese concretions with embedded small quartz crystals; very firm; sticky and plastic when wet; very compact.

Notes: Colors described with moist soil.

SOIL Tarklin cherty silt loam SOIL Nos. 559Ky-5-7 LOCATION Barren County, Kentucky

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

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments			
		Total			Sand					Silt			2A2 > 2	2-19	19-76	
		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)
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
Pct. of < 76mm																
Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a	Bulk density			Water content			pH				
	Organic carbon	Nitrogen			Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	4A1e	4A1h	4B1c	4B2	pH	pH					
	Pct.	Pct.			Pct.	1/3 Bar	Oven-dry	1/3 Bar	15 Bar							
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				6H1a	CEC		Base saturation								
	6N2d	6O2b	6P2a	6Q2a	Ext. Acid-ity	5A3a	Sum Cations	Base saturation								
	Ca	Mg	Na	K	meq/100 g	meq/100 g		5C3	Sum Cations	Pct.						
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-42-25

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 compact; abundance (30 percent) of small rounded chert fragments (1/4 to 2 inches in size); several medium reddish and dark yellowish brown concretions; a few roots; clear, smooth boundary.
- C  
59430 45 to 53+ inches. Mottled yellowish brown (10YR 5/4) and light brownish gray to light yellowish brown (2.5Y 6/2-6/4) gritty light silty clay loam; massive; firm and compact in place; approximately 50 percent rounded chert from 1/2 to 2 inches across.

Notes: Colors described with soil moist.

SOIL Tarklin cherty silt loam SOIL Nos. 859Ky-5-8 LOCATION Barren County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 59431-59438

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Course fragments		
		Total				Sand				Silt			2A2 ≥ 2	2-19	19-76
		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)	Int. III (0.05-0.02)	Int. II (0.02-0.002)	(2-0.1)			
Pct. of $< 2$ mm													Pct. of $< 76$ mm		
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	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a	Bulk density		Water content		pH		6C1a (1:1) H <sub>2</sub> O			
	Organic carbon	Nitrogen			Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	4A1e	4A1h	4B1c	4B2						
	Pct.	Pct.	Pct.	Pct.	g/cc	1/3 Bar	Oven- dry g/cc	Pct.	1/3 Bar	15 Bar					
0-7	0.90	0.114	8		1.6	1.36	1.39		21.7	7.0		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				6H1a	CEC				Base saturation					
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid- ity meq/100g	5A3a Sum Cat- ions			5C3 Sum Cat- ions Pct.		Pct.				
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				

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 compact; many medium size (from 1/2 to 1 1/2 inches) chert fragments; some noticeable coarse sand grains; noticeable black concretionary material and stainings along some ped surfaces; some fine root and worm channels some of which are filled with material from upper horizons; a few fine roots; clear gradual boundary.
- B3m2  
 59436 32 to 39 inches. Coarsely mottled light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) with some gray (N/6) clay loam; weak coarse angular blocky structure to massive; firm and compact; a few small chert fragments; noticeable black concretionary material and stainings on some ped surfaces; many small round black concretions; sand grains appear coarse; small and medium worm channels are common; clear smooth boundary.
- C11  
 59437 39 to 47 inches. Yellowish brown (10YR 5/6) mottled with common medium distinct light brownish gray (2.5Y 6/2) sandy clay loam; very weak coarse angular blocky structure to massive; firm and compact; some yellowish brown (10YR 5/4) on some of the macro-structure ped surfaces; some black concretionary staining along some ped surfaces; little or no chert in this horizon; clear smooth boundary.
- C12  
 59438 47 to 54+ inches. Brown to strong brown (7.5YR 4/4-5/6) mottled with common medium distinct gray (N/6) and yellowish brown (10YR 5/4) sandy clay to sandy clay loam; massive; firm with a few moderate medium angular blocky structure peds within the mass; reddish brown (2.5YR 4/4) thick clay films on these few peds; no chert; the sand fraction is coarse; clear smooth boundary.

Notes: Colors described with moist soil.

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	Size class and particle diameter (mm) <u>3A1</u>											Coarse fragments		
		Total				Sand				Silt			2A2 Pct.	2-19 Pct. of -< 75mm	19-76
		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)			
0-8	Ap		67.0	26.9	1.4	1.7	0.8	1.0	1.2 <sup>a</sup>		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	0.4	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	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>	Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O		
					Pct.	Pct.	Pct.	g/cc	g/cc	g/cc	Pct.	Pct.		Pct.	
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				6H1a	CBC					Base saturation				
	6N2a Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid- ity	5A3a Ext. Cat- ions					5C3 Sum Cat- ions	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.														

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.

B<sub>2</sub>  
 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.

B<sub>3m</sub>  
 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.

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 Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total					Sand						Silt		2A2 > 2 Pct.	2-19 Pct.	19-76 Pct. of < 76mm
		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)				
		Pct. of $<$ 2 mm															
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				Bulk density			Water content			pH						
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>													
	Pct.	Pct.		Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.		SC1a (1:1) H <sub>2</sub> O					
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						CEC		Base saturation								
	6M2d	6O2b	6P2a	6Q2a	6H1a	6A3a											
	Ca	Mg	Na	K	Ext. Acid- ity mg/100 g	Sum Cat- ions			5C3 Sum Cat- ions Pct.	Pct.							
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								

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 0 to 7 inches. Brown (10YR 5/3) friable silt loam mottled with grayish brown (2.5Y 5/2);  
 55438 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,  
 brown concretions are present; abrupt, smooth boundary; strongly acid.

B2 7 to 14 inches. Mottled brown (10YR 5/3), light brownish gray (2.5Y 6/2), and strong brown  
 55439 (7.5Y 5/6), friable silty clay loam; mottles are many, fine and medium, distinct; moderate,  
 medium, angular blocky structure; plastic, slightly sticky when wet; clear, smooth boundary;  
 strongly acid.

B3m 14 to 26 inches. Olive brown (2.5Y 4/4), very firm clay mottled with grayish brown (2.5Y 5/2)  
 55440 and strong brown (7.5YR 5/6); mottles are common, fine and distinct; strong, medium, angular  
 blocky structure; plastic and sticky when wet; few small, soft, brown concretions; few small  
 live roots and medium size decayed roots; clear, smooth boundary; medium acid.

C 26 to 60 inches. Olive brown (2.5Y 4/4) very firm clay mottled with olive gray (5Y 4/2)  
 55441 and yellowish brown (10YR 5/8); mottles are common, fine and distinct; strong, coarse,  
 angular blocky structure; plastic and sticky when wet; many soft, brown concretions in upper  
 four inches becoming fewer with depth. The matrix becomes more yellowish brown with depth.  
 Reaction ranges from neutral in upper part to mildly alkaline below 50 inches, becoming  
 calcareous at 55 inches; lime nodules are common below 55 inches.

Notes: Color of soil moist unless otherwise stated.

SOIL Uniontown silt loam SOIL Nos. S54Ky-51-14 LOCATION Henderson County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55423-55427

Depth (in.)	Horizon	1B1b Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total				Sand				Silt			2A2 ≥ 2	2-19	19-76		
		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)	
Pct. of < 2 mm													Pct. of < 76mm				
0-8	Ap		83.9	13.9	0.1	0.2	0.2	0.3	1.4				35.8	49.8			tr.
8-12	B1		68.1	30.9	-	0.1	0.1	0.1	0.7				29.8	39.0			-
12-21	B2		65.6	33.1	-	-	0.1	0.2	1.0				30.1	36.6			-
21-25	B3		72.5	26.0	-	-	0.1	0.2	1.2				29.6	44.2			-
25-48+	C		79.8	18.0	0.8	0.4	0.1	0.1	0.8				32.0	48.6			tr.
Depth (in.)	6A1a				Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O				
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>													
	Pct.	Pct.		Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.							
0-8	0.76												6.2				
8-12	0.28												4.8				
12-21	0.30												5.1				
21-25	0.28												7.0				
25-48+	0.24												8.0				
Depth (in.)	Extractable bases 5B1a				6H1a Ext. Acid-ity meq/100 g	5A3a Sum Cat-ions	CFC	Base saturation									
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K				5C3 Sum Cat-ions Pct.	Pct.								
0-8	7.4	1.6	tr.	0.1	3.4	12.5			73								
8-12	8.1	3.5	0.3	0.3	9.7	21.9			56								
12-21	9.9	5.6	0.3	0.3	8.4	24.5			66								
21-25	10.6	5.8	0.4	0.2	1.3	18.3			93								
25-48+	Calcareous																
Depth (in.)																	

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 3 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 3 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.

SOIL Uniontown silt loam SOIL Nos. S54Ky-51-15 LOCATION Henderson County, Kentucky  
SOIL SURVEY LABORATORY Beltsville, Maryland LAB. Nos. 55428-55433

Depth (in.)	Horizon	LF1b Size class and particle diameter (mm) 5A1											Coarse fragments			
		Total											2A2 > 2	2-19	19-76	
		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)
Pct. of < 2 mm											Pct.	Pct. of < 76mm				
0-9	Ap	85.2	12.2	0.4	0.6	0.4	0.3	0.9 <sup>a</sup>		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				Bulk density			Water content			pH		8C1a (1:1) H <sub>2</sub> O			
	Organic carbon	Nitrogen	C/N	Carbonate as CaCO <sub>3</sub>												
	Pct.	Pct.		Pct.	g/cc	g/cc	g/cc	Pct.	Pct.	Pct.						
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				6H1a	CEC							Base saturation			
	6N2d Ca	6O2b Mg	6P2a Na	6Q2a K	Ext. Acid-ity meq/100 g	5A3a Sum Cat-ions							5C3 Sum Cat-ions Pct.	Pct.		
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.															

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) clay skins are prominent. Mottles are many, fine, distinct. There are a few small, round, brown concretions. Peds in this layer appear slightly vesicular; gradual, smooth boundary; mildly alkaline.
- C  
 55433 35 to 74+ inches. Mottled yellowish brown (10YR 5/8), light olive brown (2.5Y 5/6), and light brownish gray (2.5Y 6/2) calcareous, very friable silt loam. Weak, fine and medium, angular blocky structure. A few irregular shaped lime nodules one to two inches in diameter occur at 43 inches.

Notes: Old root channels filled with a grayish brown silt loam from surface horizon extend through the B1, B21, and B22 horizons. Color of soil moist unless otherwise stated.

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 Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total				Sand					Silt		2A2 > 2	2-19	19-76		
		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)	
Pct. of < 2 mm																	
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	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub>	Bulk density			Water content		pH		8C1a (1:1) H <sub>2</sub> O				
	Organic carbon Pct.	Nitrogen Pct.				g/cc	g/cc	g/cc	4B1c Pct.	4B2 Pct.							
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 5B1a				6H1a Ext. Acidity meq/100g	CEC								Base saturation			
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum	Cat-ions							5C3 Sum Cat-ions Pct.	Pct.		
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.)	<p>a. 5897 - major part of the C horizon</p> <p>b. 5898 - bands of fine sandy loam in C horizon</p>																

Soil type: Wheeling silt loam  
 Soil No.: S57Ky-56-10  
 Location: Jefferson County, Kentucky, Ernest Nell 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. Sub-horizons 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.

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	1B1D Size class and particle diameter (mm) 3A1											Coarse fragments				
		Total				Sand				Silt			2A2 > 2	2-19	19-76		
		Sand (2-0.05)	Silt (0.05- 0.002)	Clay ( $\lt$ 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)	Int. III (0.05-0.02 0.002)	Int. II (0.2-0.02)	(2-0.1)					
Pct. of $\lt$ 2 mm													Pct.	Pct. of $\lt$ 76mm			
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					-	
Depth (in.)	6A1a	6B2a	C/N	Carbonate as CaCO <sub>3</sub>	6C1a Ext. Iron as Fe <sub>2</sub> O <sub>3</sub> Pct.	Bulk density			Water content		pH		8C1a (1:1) H <sub>2</sub> O				
	Organic carbon Pct.	Nitrogen Pct.								4B1e 1/3 Bar Pct.	4B2 15 Bar Pct.						
0-8	1.31	0.124	10		1.8				19.7	9.8			7.0				
8-12	0.24				2.5				21.6	10.5			6.6				
12-21	0.18				2.5				22.0	12.8			5.0				
21-32	0.14				1.1				21.6	10.6			4.8				
32-41	0.15				1.8				19.6	8.4			4.5				
41-49	0.09				2.4				18.3	7.1			4.6				
49-51	0.11				2.2				11.6	4.2			4.8				
51-55	0.09				2.7				14.3	7.6			4.6				
55-72	0.09				2.2				12.6	4.4			4.7				
Depth (in.)	Extractable bases 5B1a				6H1a Ext. Acid- ity meq/100 g	CEC								Base saturation			
	6M2d Ca	6O2b Mg	6P2a Na	6Q2a K		5A3a Sum								5C3 Sum Cations Pct.	Pct.		
0-8	11.2	1.0	tr.	0.6	2.3	15.2								85			
8-12	8.5	1.0	tr.	0.3	3.3	13.2								75			
12-21	6.5	1.3	tr.	0.3	5.9	14.0								58			
21-32	4.5	1.4	tr.	0.3	6.7	12.9								48			
32-41	3.5	1.7	tr.	0.3	7.2	12.7								43			
41-49	2.0	1.4	tr.	0.2	6.5	10.2								36			
49-51	1.4	1.0	tr.	0.2	4.8	7.4								35			
51-55	2.3	1.9	tr.	0.2	6.3	10.8								42			
55-72	1.7	1.2	tr.	0.2	4.2	7.3								42			
Depth (in.)																	

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; massive; friable; few large pores, common medium pores; pH 5.0.

Notes: Color taken moist unless otherwise stated. C11, C12, and C13 had old voids filled with translocated materials deposited in bands on wall. Bulk of material is grayish brown or light olive brown silty clay loam with outer coat being iron oxidation products.

