

Section 10 Teachers

Land Use CDE will be Oct. 7, 2009 hosted by the Iroquois County SWCD. The contest will begin at 10:00 am. Thad has several sites in mind and all would be within 10 minutes of Central H.S. So we will meet at Central H.S. 9:30 am. To help the CDE run smoothly, Thad would like to have slope sites set when we arrive. We will have a soil scientist this year to help with the officials scoring. This will give Thad the time to set things up that morning. So, I need your help getting 5 stadia rods in tenth inch increments to use on the 7th. I would probably need those here at the H.S. by Oct. 5 and he will pick them up here. I will need the number of participants by Oct. 1, so cards and score sheets can be prepared ahead of time.

Things each student will need to bring:

- Clipboards
- Pencils (scantron cards will be used)
- Hand levels
- Trowel or putty knife
- Color charts

Things provided to each student:

- Scantron cards
- Tables for scoring
- ZZ factors
- Length of slope for calculating C value
- Percent slope for calculating C value
- Water bottles
- Stadia rods
- Measuring devices for soil depth
- 25 ft. slope lengths

We will be scoring the contest later that night during LTS at KCC. We should be done with the contest and ready to leave at noon if all goes well. If you have any questions or would like copies of the tables and score sheets we will use please let me know. They will be the same as last year.

Bill Bretzman



Group Leader Instructions

1. Collect practice pit scorecard from each member in your group and when you get their practice pit scorecard you may give them their contest packet. Packet should contain: a purple table sheet, an orange scorecard, and 4 scantron cards labeled Pit 1 -4 that are color coded.
Students do not need or should not have any other papers with them if they do please take them.
2. When all papers are collected and packets have been distributed. Take your group to the pit number that is the same as you group number. (example group #1 would start at Pit #1)
3. Once you get to your designated pit Place the laminated chart for determining C factor near the soil pit.
4. When all groups are ready we will sound a horn and students may begin. They will have 20 minutes to complete that pit on the scantron card. Instruct all students to use the correct scantron card that matches the pit that they are judging. They are also color coded to make it easier for you to check that they are using the correct card. Pit #1 is blue, Pit #2 is yellow, Pit #3 is green, Pit #4 is red.
5. Supervise the group. No one should be talking or comparing answers. All students must be working independently. If they are not take their cards.
6. Collect all scantron cards making sure they are the correct pit and put them into your pit envelope. Make sure you have all cards then advance to the next pit.
(example: pit #1 goes to 2 and so on. Pit #4 will go to #1.)
You will have 5 minutes before you start the next pit.
7. Continue this process through all 4 pits and return to the loading area after all cards are in the envelopes. Please bring the stadia rods, water bottles, fence posts, flags etc. with you when you are finished. Turn in your score sheet envelopes to Bill Bretzman before you leave.



LAND-USE SCORECARD

(106 POINTS)

Site No. _____
School No. _____
Student No. _____

(Use the scantron form for parts I – IV)

I. LANDSCAPE CHARACTERISTICS

1. PERCENT SLOPE

- | | |
|-------------------------------|--------------------------------|
| A. 0-2% (nearly level) | E. 15-20% (moderately steep) |
| B. 2-5% (gently sloping) | AB. 20-30% (steep) |
| C. 5-10% (moderately sloping) | AC. More than 30% (very steep) |
| D. 10-15% (strongly sloping) | |

II. SOIL PROFILE CHARACTERISTICS

2. THICKNESS OF PLOW OR SURFACE LAYER, DEGREE OF EROSION & DEPOSITION

- A. More than 9", no evidence of subsoil mixing; none to slight erosion
- B. 3" to 9", may have up to 50% subsoil mixing; moderate erosion
- C. Less than 3", plow layer may be mostly subsoil; severe erosion
- D. 8" to 20" deposition; layer of different color or texture than buried surface soil

3. COLOR AND PERCENT OF ORGANIC MATTER IN PLOW (SURFACE) LAYER

Color	Av. % Organic Matter
A. very dark	5
B. dark	3 ½
C. moderately dark	2 ½
D. light	2
E. very light	1 ½

4. PRESENCE OF GRAYISH A2 HORIZON

- A. Grayish A2 horizon present
- B. Grayish A2 horizon not present

5. SUBSOIL COLOR

- A. Brown or yellowish brown; no gray mottling
- B. Brown or yellowish brown; gray or gray mottling below 24"
- C. Gray and brown mottled
- D. Gray or olive gray; may have a few brown mottles
- E. Does not apply

TEXTURE

6. PLOW LAYER

Soil texture group

- A. Coarse (loamy sand, sand, also includes gravel and gravelly loam)
- B. Moderately coarse (fine sandy loam and sandy loam)
- C. Medium (silt loam, loam, silt, very fine sandy loam)
- D. Moderately fine (silty clay loam, clay loam, sandy clay loam)
- E. Fine (clay, silty clay, sandy clay)

7. SUBSOIL

8. SUBSTRATUM

- AB. Bedrock (limestone, shale or sandstone)
- AC. Organic material (peat, muck)
- AD. Horizon not present in exposed profile

SOIL STRUCTURE

9. PLOW LAYER

Type of structure (or particle arrangement)

- A. Single grain
- B. Massive
- C. Granular
- D. Platy
- E. Blocky
- AB. Prismatic or columnar
- AC. Horizon not present in exposed profile

10. SUBSOIL



III. ASSOCIATED SOIL FEATURES

11. INTERNAL DRAINAGE AND AERATION

A. Well drained
B. Moderately well drained
C. Somewhat poorly drained
D. Poorly and very poorly drained
E. Does not apply
12. SURFACE RUNOFF

A. Rapid
B. Medium
C. Slow
D. Areas subject to ponding
E. Areas subject to flooding
13. PERMEABILITY (ease of water and air movement)

A. Rapid
B. Moderate
C. Slow
14. SOIL DEPTH (favorable for root growth)

A. Deep, more than 36"
B. Moderately deep, 20"-36"
C. Shallow, less than 20"
15. AVAILABLE WATER HOLDING CAPACITY

A. Very high, more than 12"
B. High, 9" to 12"
C. Moderate, 6" to 9"
D. Low, 3" to 6"
E. Very low, less than 3"

IV. SOIL USE AND MANAGEMENT

SOIL LOSS EQUATION (10 points)

C value is _____ (write this value on scantron in appropriate spot)

SOIL MANAGEMENT (24 points)

Mark the maximum amount of tillage that could be used for each rotation

	Rotation	Does Not Apply	SYSTEM OF TILLAGE & PERCENT OF RESIDUE AT PLANTING									
			Fall Plow	Spring Plow	Chisel or Large Disk				Zero (or Row-Till)			
					20%	30%	40%	50%	70%	80%	90%	60%
16.	Continuous Corn	A.	.36 B	.29 C	.21 D	.18 E	.15 AB	.12 AC	.09 AD	.06 AE	.05 BC	.03 CD
17.	Corn-Soybeans	A.	.41 B	.35 C	.28 D	.24 E	.20 AB	.19 AC	.10 AD	.09 AE	BC	CD
18.	Corn-Soybeans-Grains	Small A.	.30 B	.25 C	.18 D	.15 E	.13 AB	.11 AC	.05 AD	.04 AE	BC	CD
19.	Corn- Soybeans-grain-Meadow	Small A.	.17 B	.13 C	.10 D	.09 E	.08 AB	.08 AC	.03 AD	.02 AE	BC	CD
20.	Restricted Use Pasture, Hayland, Woodland, or Wildlife	Y	N									
		A.	B.									

V. NONAGRICULTURAL USE

Limiting Factors

A. Slight B. Moderate C. Severe

Homesite

Septic Tank

Filter Field

21.

22.

23.

24.

25.

26.

27.

28.

29.

30.

Factor

Percent Slope

Internal Drainage & Aeration

Flooding or Ponding

Soil Depth

Permeability

Degree of Limitation

31.

Final Degree

Homesite

A.

B.

C.

Slight

Moderate

Severe

32.

Septic Tank

Filter Field

A.

B.

C.

(Mark the most limiting value for each)



TABLES FOR SOIL JUDGING

Table 2. Inches of Available Water Holding Capacity Per Inch of Soil

Soil Texture group	Available Water Holding Capacity Range	Average
	inches/in.	inches/in.
Fine	.15 - .20	.20
Moderately fine	.20 - .25	.25
Medium	.20 - .30	.30
Moderately coarse	.10 - .20	.15
Coarse	less than .10	.05
Organic soils (peat and muck)	less than .25	.15

Table 3. Estimating Available Water Holding Capacity for Soil Judging in Illinois.

Horizon	Texture	Thickness of horizon (inches)		Inches of available water	
				Per inch of soil material	In soil horizon
A	Medium	18	X	.30	= 5.4
B	Moderately fine	18	X	.25	= 4.5
C	Medium	24	X	.30	= 7.2
Total	-----	60		--	17.1

In estimating available water holding capacity, use the soil depth for rooting up to a maximum of 60 inches.

Table 4.

VALUES OF THE TOPOGRAPHIC FACTOR, LS, FOR SPECIFIC COMBINATIONS OF SLOPE LENGTH AND STEEPNESS

Percent Slope	Slope Length (feet)							
	25	50	75	100	150	200	300	400
0-2% (Nearly level)	.091	.104	.117	.130	.138	.160	.180	.195
2-5% (Gently sloping)	.210	.268	.310	.344	.398	.441	.570	.567
5-10% (Moderately sloping)	.416	.492	.721	.833	1.02	1.13	1.45	1.67
10-15% (Strongly sloping)	.988	1.39	1.71	1.97	2.42	2.79	3.41	3.94
15-20% (Moderately steep)	1.57	2.22	2.72	3.14	3.85	4.44	5.44	6.23
20-30% (Steep)	2.04	2.88	3.53	4.08	5.00	5.77	7.07	8.16



Table 1. Relationship of soil texture, bedrock, and percent slope to surface runoff.

Surface runoff	Texture of finest textured horizon in upper 36"			Bedrock at less than 36"
	Coarse and moderately coarse	Medium and moderately fine	Fine	
	% Slope	% Slope	% Slope	
Rapid	More than 30%	More than 12%	More than 7%	More than 7%
Medium	12 to 30%	4 to 12%	2 to 7%	2 to 7%
Slow	0 to 12%	0 to 4%	0 to 2%	0 to 2%
None	-----Depressions and floodplains -----			-----

Table 5. Degree Soil Factors Limit Soil Use for Homesites.

Soil Factor	Degree of Limitation		
	None to slight	Moderate	Severe
Percent slope	0 - 7	7 - 12	More than 12
Internal drainage and aeration	Well drained	Moderately well and somewhat poorly drained	Poorly drained
Flooding or ponding	No hazard from pond- ing or flooding	-----	If subject to ponding or flooding.
Soil depth to bedrock	More than 36"	-----	36" or less
Permeability	Moderate	-----	Slow - Rapid

Table 6. Degree Soil Features Limit Soil Use for Septic-Tank Filter Fields.

Soil Factor	Degree of Limitation		
	None to slight	Moderate	Severe
Percent slope	0 - 7	7 - 12	More than 12
Internal drainage and aeration	Well drained	Moderately well drained	Somewhat poorly drained or poorly drained
Flooding or ponding	No hazard from flooding or ponding	-----	If subject to ponding or flooding
Soil depth	More than 36"	-----	36" or less
Permeability	Moderate	-----	Slow - Rapid (Pollution hazard to water supplies)

Chapter _____

Individuals: (First 5 make up your team)

1. _____

2. _____

3. _____

4. _____

5. _____

Alternates:

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

