



Continuing Education Self-Study Course

Soil and Water Management

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DIRECTIONS

1. Read the self-study article on pages 30-32 carefully.
2. Answer the questions by clearly marking an "X" in the box next to the best answer for each question.
3. Complete the self-study exam registration form on the back of this page.
4. Clip out this self-study examination page, fold and place in envelope.
5. Enclose a check for \$10.00 made payable to the American Society of Agronomy, for processing fees. Payment in U.S. funds only.
6. **Mail your self-study exam and fee to:**
ASA c/o CCA Self-Study Exam, 677 S. Segoe Road, Madison, WI 53711. *Please allow 60 days for processing.*
7. An electronic version of this test is also available at www.AgProfessional.com. Go to the Certified Crop Advisers section (lefthand column) and access the "CCA Advantage" link.

Influence of Long-Term Cropping Systems on Soil Physical Properties Related to Soil Erodibility

August Self-Study Examination

1. Effects of cropping systems on soil physical properties are often related to changes in:

- a. fertilizer use.
- b. herbicide use.
- c. fungicide use.
- d. tillage practices.

2. The soil surface texture examined in this experiment was a:

- a. clay loam.
- b. silt loam.
- c. sandy loam.
- d. loam.

3. Temporal variations in bulk density were due in part to:

- a. tillage and weather fluctuations.
- b. tillage and crop type.
- c. weather fluctuations and crop type.
- d. manure application rates.

4. Increases in aggregate stability were observed for the 58 to 96 mm depth compared with the 20 to 58 mm depth for the corn, wheat and rotation treatments. This may be related to:

- a. aggregate disruption from more intense wetting and drying of the soil surface.
- b. aggregate disruption from conventional tillage practices.
- c. a decrease in the bulk density of the soil.
- d. compaction at the soil surface.

5. Changing the cropping systems from continuous corn or wheat to a rotation of corn-wheat-red clover increased aggregate stability by:

- a. 10 to 16 percent.
- b. 16 to 23 percent.
- c. 23 to 40 percent.
- d. 40 to 60 percent.

6. Emphasizing the importance of selecting cropping systems that maintain plant material to control erosion, the estimated soil erosion for the corn and timothy treatments was found to be:

- a. 10.2 to 16.5 Mg ha⁻¹ yr⁻¹ and 0.1 to 0.3 Mg ha⁻¹ yr⁻¹ respectively.
- b. 14.3 to 23.0 Mg ha⁻¹ yr⁻¹ and 0.2 to 0.4 Mg ha⁻¹ yr⁻¹ respectively.
- c. 17.4 to 33.0 Mg ha⁻¹ yr⁻¹ and 0.3 to 0.7 Mg ha⁻¹ yr⁻¹ respectively.
- d. 19.0 to 42.0 Mg ha⁻¹ yr⁻¹ and 0.4 to 0.8 Mg ha⁻¹ yr⁻¹ respectively.

7. Soil shear strength increased as:

- a. organic matter increased.
- b. bulk density increased and soil erosion decreased.
- c. crop rotations added ground cover.
- d. aggregate stability and organic C content increased.



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8. The results of this study found that:

- a. soil shear strength increased as bulk density increased.
- b. as soil shear strength increases, the detachment of soil from raindrop impact decreases.
- c. soil management and cropping system have no correlation to soil aggregate stability.
- d. dead root mass decreased soil shear strength.

9. The more sensitive test to use when measuring changes in soil erodibility is:

- a. splash detachment.
- b. bulk density.
- c. wet aggregate stability.
- d. soil shear strength.

10. Findings in this study suggest that some of the changes in the resistance of soil to detachment:

- a. were significantly related to soil management and cropping systems.
- b. were related to in-situ soil properties.
- c. were related to temporal changes.
- d. were related to a decrease in root mass.



SELF-STUDY EXAM REGISTRATION FORM

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Signature of Registrant as it appears on Code of Ethics

I certify that I alone completed this self-study course and recognize that an ethics violation may revoke my CCA status.

This exam issued August 2004 expires August 2007.

SELF-STUDY EXAM EVALUATION FORM

Rating Scale: 1=Poor 5=Excellent

Information presented will be useful in my daily crop advising activities: 1 2 3 4 5

Information was organized and logical: 1 2 3 4 5

Graphics/tables were appropriate and enhanced my learning: 1 2 3 4 5

I was stimulated to think how to use and apply the information presented: 1 2 3 4 5

This article addressed the stated competency area and performance objective(s): 1 2 3 4 5

Briefly explain any "1" ratings: _____

Topics you would like to see addressed in future self-study materials: _____

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