



# Management effects on soil physical properties in long-term tillage studies in Kansas

## August Self-Study Examination

1. Compared to native uncultivated soils, the soil organic carbon levels of cultivated Great Plains soils are about
- a. 50% of original content.
  - b. 60% of original content.
  - c. 70% of original content.
  - d. 80% of original content.
2. Advantages of no-till systems for crop production include all of the following EXCEPT
- a. water conservation.
  - b. the possibility of more frequent cropping.
  - c. larger diameter stable aggregates.
  - d. drier seedbeds due to less residue.
3. A factor associated with improvements in soil structure is that they
- a. depend on the use of a crop rotation.
  - b. may take many years to establish measurable differences.
  - c. occur only when soil organic matter content exceeds 4%.
  - d. are measured by incremental increases in soil loam content.
4. A feature of a soil water characteristics curve is that it
- a. charts runoff during heavy rainfall.
  - b. differentiates the water use patterns of various crops and rotations.
  - c. describes soil water status between periods of saturation and drought.
  - d. can help determine the sources of water contamination.
5. An objective of this research was to
- a. quantify changes in soil physical properties.
  - b. test different tillage systems across soil types and environments.
  - c. monitor changes in soil particle sizes.
  - d. assess the effects of tillage on key environmental quality indicators.
6. A characteristic of the study sites was that there were
- a. uniform tillage treatments across locations.
  - b. seven locations across Kansas.
  - c. native shortgrass prairie plots at one location.
  - d. four levels of tillage intensity.
7. The greatest differences among tillage treatments were noted
- a. at the 0 to 5 cm depth.
  - b. in subsoil bulk density.
  - c. for waterholding capacity.
  - d. when primary tillage occurred in fall.
8. A result of nitrogen additions to cereal crop-dominated cropping systems was
- a. changes in water-holding capacity.
  - b. lower yields.
  - c. increases in soil organic carbon.
  - d. corresponding decreases in soil phosphorus and potassium.
9. Overall study results among locations included
- a. a low correlation between soil organic carbon and water holding capacity.
  - b. the development of an E horizon with intensive tillage.
  - c. an association of stable soil aggregates and manure applications.
  - d. bulk density values that were impacting yields.
10. Productivity differences among soils in drier climates or droughty years are most influenced by
- a. infiltration and evaporation potential.
  - b. north vs. south slope aspect.
  - c. tillage depth.
  - d. soil pH differences.

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## DIRECTIONS

1. Read the self-study article on pages 40-42 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.
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**This exam issued August 2006 expires August 2009.**

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**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: \_\_\_\_\_