ROCKY MOUNTAIN CCA SELF-STUDY EXAMINATION

DIRECTIONS
1. Clearly mark an “X” in the brackets next to the best answer to each question. Complete evaluation form and registration form.
2. Tear out this page and place in envelope along with a $15 check (processing fee) payable to the American Society of Agronomy (or fill out credit card information). Payment in U.S. currency only.
3. Mail self-study exam and fee to: ASA c/o CCA Self-Study Exam, 677 S. Segoe Road, Madison, WI 53711.

A passing exam score (70%) is worth 1.5 Rocky Mountain CEU’s in soil and water management.

QUESTIONS

1. Water always flows from
   [   ] a. Wet soil to dry soil  [   ] c. Higher potential energy to lower potential energy
   [   ] b. Dry soil to wet soil  [   ] d. Lower potential energy to higher potential energy

2. When water flows through large soil macropores, and bypasses large areas of soil, this phenomenon is referred to as:
   [   ] a. Dispersion  [   ] c. Saturated flow
   [   ] b. Hydraulic conductivity  [   ] d. Preferential flow

3. Which of the following pesticides would persist in the soil the longest under normal field conditions?
   [   ] a. Dicamba  [   ] c. Picloram
   [   ] b. Malathion  [   ] d. 2,4-D

4. Hydraulic conductivity generally decreases as
   [   ] a. Soil water ‘potential energy’ increases  [   ] c. Infiltration rates increase
   [   ] b. Soil water content decreases  [   ] d. Soil water ‘potential energy’ decreases

5. A pesticide with a high $K_{OC}$ value will
   [   ] a. Sorb weakly to soil colloids  [   ] c. Persist for long periods of time in soil
   [   ] b. Sorb strongly to soil colloids  [   ] d. Degrade quickly in soil

6. Which of the following soil conditions is most prone to compaction?
   [   ] a. A soil at field capacity  [   ] c. A soil at permanent wilting point
   [   ] b. A frozen soil  [   ] d. A highly aggregated soil

7. Which of the following soils would most likely have the greatest initial infiltration (assume preferential flow is not a factor and the soils are dry)?
   [   ] a. Sandy loam  [   ] c. Silt
   [   ] b. Clay loam  [   ] d. Loam

8. In general, the rate of water infiltration into a dry soil is initially
   [   ] a. Lower than infiltration into a wet soil  [   ] c. Much lower than it is at steady state
   [   ] b. Higher than infiltration into a wet soil  [   ] d. Similar to that of infiltration into a wet soil

9. When all applied irrigation water infiltrates the soil, the infiltration rate is
   [   ] a. Equal to the rate of water being applied  [   ] c. Greater than the rate of water being applied
   [   ] b. Less than the rate of water being applied  [   ] d. Inversely proportionate to the rate of water being applied

10. An advantage of using $K_{OC}$ over $K_D$ to measure a pesticide’s general ability to sorb to soil is
    [   ] a. $K_{OC}$ is highly dependent of soil type
    [   ] b. $K_{OC}$ does not take into account the influence of organic carbon on sorptivity
    [   ] c. $K_{OC}$ is independent of soil type
    [   ] d. $K_{OC}$ is easier to measure
11. Heavy axle loads typically cause  
[ ] a. Surface compaction  [ ] c. Sub-surface compaction  
[ ] b. Preferential flow  [ ] d. Freeze/thaw processes

12. Compared to the no-rip treatments, results from a Montana study, found infiltration rates after 1 hour following spring thaw on the rip tilled soils to be approximately  
[ ] a. 7 times less  [ ] c. 10 times less  
[ ] b. 23 times greater  [ ] d. 5 times greater

13. Which of the following pesticides would you expect to have the lowest leaching potential, based on the properties given?  
[ ] a. Pesticide W: half-life: 90 days; water solubility: 420 ppm; \( K_{OC} \): 16 µg/g  
[ ] b. Pesticide X: half-life: 60 days; water solubility: 50 ppm; \( K_{OC} \): 100 µg/g  
[ ] c. Pesticide Y: half-life: 7 days; water solubility: 0.1 ppm; \( K_{OC} \): 10,000 µg/g  
[ ] d. Pesticide Z: half-life: 300 days; water solubility: 620 ppm; \( K_{OC} \): 150 µg/g

14. For preventing pesticide leaching, flood irrigation works best when coupled with which type of pesticide application?  
[ ] a. Surface  [ ] c. Incorporated  
[ ] b. Chemigation  [ ] d. Foliar

15. A hydrophobic soil  
[ ] a. Infiltrates water quickly  [ ] c. Repels water  
[ ] b. Has a high hydraulic conductivity  [ ] d. Is prone to pesticide leaching

What suggestions (general and specific) do you have to improve future modules?

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

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SELF-STUDY EXAM REGISTRATION FORM—— FOR ROCKY MOUNTAIN CCA CREDIT

Name: ________________________________

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City, State, Zip: ________________________________

CCA Certification #: __________________ Credit Card Type and # _____________________________

Expiration Date: __________________ Name on Card: _____________________________

A $2.00 Processing Fee will be added to all credit card charges.

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

______________________________________________________
Signature of registrant as it appears on Code of Ethics

______________________________________________________
Date