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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.cropdecisions.com. Go to the Certified Crop Advisers section (left hand column) and access the "CCA Advantage" link.

Nutrient Considerations for Diversified Cropping Systems in the Northern Great Plains March Self-Study Examination

1. Increasing crop production increases the amount of plant biomass produced and returned to the soil which has the potential to:

- a. decrease soil organic matter.
- b. increase soil organic matter.
- c. reduce soil quality.
- d. overwhelm soil microbes.

2. In the northern Great Plains, nitrogen is:

- a. the least limiting of the primary nutrients.
- b. applied in the smallest amounts.
- c. required for assurance of optimum crop quality.
- d. often immobile in the soil.

3. N₂O emissions:

- a. are absorbed by the foliage of the crop.
- b. can contribute to the greenhouse gas effect.
- c. are not a concern in the northern Great Plains.
- d. counteract global warming.

4. As cropping intensity increases, annualized grain yield increases and N removal from the system:

- a. increases.
- b. decreases.
- c. stays the same.
- d. is not a concern due to N replacement by crop residue.

5. Diversified crop rotations can increase yield potential by:

- a. homogenizing weed distribution.
- b. requiring the same resources.
- c. limiting moisture to the system.
- d. influencing plant diseases.

6. The decomposing residues will tie up N rather than release it if N is below:

- a. 20 to 24 g N kg⁻¹.
- b. 24 to 28 g N kg⁻¹.
- c. 28 to 32 g N kg⁻¹.
- d. 32 to 36 g N kg⁻¹.

7. If fertilizer N is applied with high C/N ratio residue:

- a. Short-term N mineralization may be substantial.
- b. Short-term N immobilization may be substantial.
- c. N volatilization may be rapid.
- d. microbial activity will decrease.

8. Nitrate leaching may occur if nitrate is present in the soil profile:

- a. and microbial activity is high.
- b. and soil texture is very low in clay.
- c. and water moves through the profile to locations below the rooting zone.
- d. and drought conditions persist.

DETACH HERE



Continuing Education Self-Study Test

Nutrient Management Test (continued)

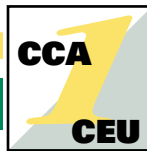


9. The amount of P removed by crops is:

- a. high relative to the total available P in most soils.
- b. small relative to the total available P in most soils.
- c. easily replaced by crop residue.
- d. inversely related to crop yield.

10. A requirement for VAM multiplication is:

- a. the presence of living plants.
- b. high soil moisture content.
- c. a year of fallow.
- d. crop diversity.



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

This exam issued March 2003 expires March 2006.

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
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This article addressed the stated competency area and performance objective(s): 1 2 3 4 5
Briefly explain any "1" ratings: _____
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