

Name _____

AGRONOMY 375
EXAM II

April 3, 2009

There are 15 questions (plus a bonus question) worth a total of up to 100 points possible. Please be concise.

- 6 pts. 1. Note three ways by which pollination by specified parent lines is controlled in a hybrid seed corn production field.
- a)
 - b)
 - c)
- 4 pts. 2. Why is seed corn typically harvested at high moisture (e. g. at 30 %) and on the ear (vs. shelled)? Please note two reasons.
- a)
 - b)
- 5 pts 3. A corn hybrid is listed as 120 days relative maturity from planting to physiological maturity. How would this hybrid be listed in terms of GDD relative maturity? (please show your work for partial credit)
- _____ GDD relative maturity
- 2 pts. 4. Note two farmer-specific crop system management components which could impact the relative performance of corn hybrids (these illustrate the concept that the most useful corn hybrid performance trials for a given producer are those conducted on or near their farm using their own or very similar management).
- a)
 - b)
- 4 pts 5. Describe in general how and why recommended planting depth changes for corn planted on April 20 versus May 20 in central Indiana.

- 10 pts. 6. Briefly describe five factors which contribute to increased yield and / or profit potential for corn planted early (e.g. April 29 vs. May 15) in central Indiana.
- a)
 - b)
 - c)
 - d)
 - e)
- 10 pts. 7. Explain the specific reasoning behind the each of the following conditions which are recommended as prerequisites when considering a possible Fall application of nitrogen fertilizer. (Please note that this question continues on the next page.)
- a) Use ammonium (e.g. anhydrous or DAP) fertilizer forms only.
 - b) Soil temperature at or below 50 degrees F.
 - c) Fall apply N only at northern latitudes.
 - d) Fall apply N only on soils with C.E.C. greater than 10.
 - e) Fall apply only on well drained soils

The following information pertains to questions 8, 9, and 10. Please show your work.

Corn Yield Goal: 225 bu/acre

Previous Crop: 60 bu/acre soybeans

P₁ Soil Test: 20 ppm available P/acre

K Soil Test: 150 ppm exchangeable K/acre

C.E.C. = 16 meq / 100 grams of soil

11 – 52 – 0 will be Fall applied to meet the requirement and to provide some of the fertilizer N requirement. The remainder of N fertilizer is to be applied as side dressed anhydrous ammonia (NH₃ at 82% N content) within the first 30 days after planting.

Please make the appropriate fertilizer recommendations for next year's corn crop (include your calculations for partial credit).

7 pts. 8. Annual pounds P₂O₅ per acre:

2 pts. Total annual pounds 11-52-0 per acre:

7 pts. 9. Annual K₂O (pounds per acre):

2 pts. Total annual pounds 0-0-60 per acre.

7 pts. 10. a) Total pounds of commercial fertilizer N to be applied per acre.

2 pts. b) Pounds of anhydrous ammonia (NH₃ at 82% N content) to be side-dressed per acre:(Please remember to consider N coming from 11-52-0 in your calculations).

- 4 pts. 11. Note an example of conditions where a pre-sidedress nitrate soil test (PSNT) might be a meaningful tool to use in determining sidedressed N rate for corn.
- 8 pts. 12. Note two advantages for side dressing N for corn during the first 30 days of growth as opposed to the application of N in the preceding Fall or pre-plant in the Spring.
- a)
- b)
- 4 pts. 13. Note two conditions where the application of P_2O_5 or K_2O as a side-banded "starter" may be expected to produce a yield increase greater than a broadcast application at the same P_2O_5 or K_2O fertilizer rate.
- a)
- b)
- 4 pts. 14. In Central Indiana what Spring conditions are recommended to be met to indicate that corn planting may now begin?

15. A portion of a row is uncovered to check planter calibration in the field. The following distances are recorded between successive seeds in this row segment. Row width is 30 inches. Please show your work.

1 inch
 8 inches
 5 inches
 12 inches
 9 inches

- 4 pts. a) The actual seeding rate for this row segment is

_____ seeds/acre

- 4 pts. b) What level of standard deviation (from uniform spacing) is presented in this row segment?

- 4 pts. c) What yield loss due to poor precision (above the theoretically possible level of precision for a well operated and maintained planter) is likely at this level of planting precision?

_____ bushels per acre.

- 5 pts. BONUS Please note two crop management strategies which may be used to lessen and/or slow the development of herbicide resistant weeds within a corn / soybean production environment.

a)

b)