There are 15 questions plus a bonus question, each of which requires a short answer. Please be concise. Best wishes for your success!

1. 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.

4 inches  
2 inches  
15 inches  
3 inches  
1 inches

2 pts  a) The actual seeding rate for this row segment is

_________ seeds/acre

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

2 pts  c) What yield loss due to poor precision is likely at this level of planting precision?

______ bushels per acre.
2. A field in west central Indiana was in corn in 2004 and in soybeans in 2005.  
3 pts. When and how should the field be scouted (or when and how should the field have been scouted) in order to determine the need for a soil-applied insecticide or a Bt rootworm hybrid at planting in 2006 to achieve economic control of corn rootworm larvae in that corn crop?

3 pts. b) Under these conditions, what is the appropriate economic threshold above which an at-plant soil insecticide should be applied or a Bt rootworm hybrid should be planted to control corn rootworm larvae in the 2006 corn crop?

3. Please note the following as they pertain to Corn growth;

3 pts. a) Procedure to correctly identify V stage when the lower leaves have been removed by a hail storm or other means.

3 pts. b) Visible indicator that Corn has reached the R4 growth stage.

10 pts. 4. Compare the drought tolerance of soybean yield to that of corn yield and provide two reasons for the greater yield stability of the most drought-tolerant crop.
4 pts. 5. a) What is the optimum seeding date for Soft Red Winter Wheat in the
Midwestern U.S.? (Note: Your answer should apply equally well to any location
in the Soft Wheat area.)

4 pts.  b) Please explain the reasoning behind this seeding date goal and include
in your discussion an explanation of what happens when wheat is seeded
too early and when it is seeded too late.

2 pts. 6. a) What is the optimum established stand density for Soft Red Winter Wheat in
Indiana?

__________________ plants / square foot

2 pts.  b) You are seeding wheat using a drill with an 8 inch spacing between rows.

In calibrating the drill you uncover row segments to check actual seeding rate.
How many inches of row distance at 8 inch row width constitute one square foot
as you express your seeding rate on a seeds per square foot basis? Please show
your work for full credit.

2 pts.  c) Estimate the potential yield (bushels per acre) for a crop of wheat which, (when
assessed after jointing has begun) has an average of 2 productive stems (1 main
stem plus 1 tillers) per each of 20 plants per square foot. Please show your work
for full credit.
7. The following pertain to a proposed crop of Indiana wheat;

Yield goal = 100 bushels per acre

Previous crop = 60 bushels of soybeans per acre

20 pounds of N are to be applied per acre at seeding with the balance of N to be applied as a topdressing in the Spring.

2 pts. a) What Spring topdressed N rate is appropriate to recommend?

_______ Lbs. N / Acre

2 pts. b) What maintenance P2O5 rate should be applied?

_______ Lbs. P2O5 / Acre

2 pts. c) What maintenance K2O should be applied?

_______ Lbs. K2O / Acre

2 pts. 8. At what wheat developmental stage should topdress N be applied in the Spring?

4 pts. Why at this stage? Please be specific and provide at least two reasons.

9. Note the appropriate maintenance P2O5 and K2O rates for a 70 bushel per acre soybean yield. (Please show your work).

3 pts.  ________ Lbs. P2O5 / Acre

3 pts.  ________ Lbs. K2O / Acre
10. Compare a Maturity Group II vs. a Maturity Group III indeterminate soybean variety with respect to each of the following (assume both are planted on the same day at the same location in central Indiana, in the same row width and at the same population).

3 pts. a) Flowering date of Maturity Group II vs that of Maturity Group III.

3 pts. b) Which (Maturity Group II vs that of Maturity Group III) is better adapted to more northern latitudes?

11. Describe two visible differences evident between an Indeterminate and a Determinate soybean variety of comparable relative maturity group III planted on the same date in central Indiana. Please explain your answer for each.

3 pts. a)

3 pts. b)

4 pts. 12. Assume a hoop with diameter 29 inches has been used to estimate stand counts in a drilled soybean field. The average plant density in the area surrounded by the hoop was 19. What is the estimated stand density for this field? (Please show your work).

8 pts. 13. Is there a greater average yield advantage for drill-row (e.g. 7 inch row width) vs. wide row (e.g. 30 inch) soybeans in northern Indiana or in southern Indiana? Why? Please assume that properly adapted soybean varieties are planted in a timely fashion for full season growth in both locations and that other factors such as plant available water are not limiting.
14. Note a quantifiable definitive characteristic which uniquely indicates that a soybean plant is at each of the following;

2 pts. a) R1 growth stage?

2 pts. b) R 2 growth stage?

2 pts. c) R 4 growth stage?

2 pts. d) R 5 growth stage?

15. a) What is the approximate recommended established population for Indiana Soybeans in drill row spacing (e.g. 6 inch row width)?

4 pts. _______________ plants per acre _______________ plants per foot of row

b) What is the approximate recommended established population for Indiana Soybeans in wide row spacing (e.g. 30 inch row width)?

4 pts. _______________ plants per acre _______________ plants per foot of row

5 pts. BONUS. What rule of thumb can be used to indicate whether a decrease in soybean row width (e.g. from 30 inches down to 7 inches) is likely to produce a potential yield increase in a given situation, assuming other factors such as plant available water are not limiting? Please explain your answer.

HAVE A BLESSED AND MERRY CHRISTMAS!
CONGRATULATIONS TO THE GRADUATES!