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

8 pts. 1. A field in west central Indiana was in soybeans in 2002 and in corn in 2003. The 2003 plant population was approximately 26,000 plants per acre.

   a) When should the field be (or have been) scouted in order to determine the need for a soil-applied insecticide to be applied at planting to achieve economic control of corn rootworm larvae in the 2004 corn crop which is planned for this field? Please explain this timing.

   b) Under these conditions, what is the appropriate economic threshold above which an at-plant soil insecticide should be applied to control corn rootworm larvae in the 2004 corn crop?

4 pts. 2. What combination of Black Cutworm larval development (e.g., young vs. old) and corn plant age (e.g., young vs. old seedling) would present the greatest potential for economic loss to this pest? Why?
6 pts. 3. Please note the following as they pertain to Corn growth;

a) Growth stage at which the growing point has first emerged above ground.

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

c) Visible indicator that Corn has reached the R2 growth stage.

10 pts. 4. Compare the drought tolerance of soybean yield to that of corn yield. Provide two reasons for the greater yield stability of the most drought-tolerant crop.

6 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.)
b) What is the range of Hessian Fly Free Dates for Indiana (northern to southern).

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

______________plants / square foot

b) How many inches of row length comprise one square foot of area where row width is 6 inches? Please show your work.

______________inches of row length / square foot

c) Estimate the potential yield (bushels per acre) for a winter-injured crop of wheat which, (when assessed after jointing has begun) has an average of 2 productive stems (1 main stem plus 1 tiller) per each of 18 plants per square foot. Please show your work.

9 pts. 7. The following pertain to a proposed crop of Indiana wheat;

Yield goal = 90 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.

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

_______ Lbs. N / Acre

b) What maintenance P2O5 rate should be applied?

_______ Lbs. P2O5 / Acre

c) What maintenance K2O should be applied?

_______ Lbs. K2O / Acre
8 pts.  8. At what wheat developmental stage should topdress N be applied in the Spring? Why at this stage? Please be specific and provide at least two reasons.

8 pts.  9. Note the appropriate maintenance P₂O₅ and K₂O rates for a 60 bushel per acre soybean yield. (Please show your work).

_______ Lbs. P₂O₅ / Acre

_______ Lbs. K₂O / Acre

8 pts.  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).

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

b) Mature plant height of Maturity Group II vs. that of Maturity Group III.

5 pts.  11. As plant population increases and row width decreases (for soybeans) what happens to the following characteristics? (I = increases; D = decreases).

a) Plant height
b) Lodging pressure
c) Height of lowest pod on main stem
d) Pod number per plant
e) Number of days from planting to leaf canopy closure
12. What happens to the relative yield potential of drill-row (e.g., 7 inch) compared with wide-row (e.g., 30 inch) spacing for adapted full season Soybeans as they are grown at increasingly northern latitudes (e.g., from southern Indiana to northern Indiana). Please be thorough in explaining your answer.

13. Please draw and clearly label the above ground portion of a V1 soybean plant.

14. Note a quantifiable characteristic which uniquely indicates that a soybean plant is at the;
   
   b) R 2 growth stage?
   
   c) R 4 growth stage?
   
   d) R 5 growth stage?

15. a) What is the approximate recommended seeding rate for Indiana Soybeans in drill row spacing (e.g., 6 inch row width), assuming 100% germination and establishment?
   
   ________________ Seeds per foot of row.
   
   ________________ Seeds per acre.
b) Compare the potential for irregular emergence through surface-crusted soil conditions when soybeans are seeded with a drill with 6 inch row spacing vs. when soybeans are planted in 30 inch row width.

5 pts. BONUS Assume a hoop with diameter 28 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 22. What is the estimated stand density for this field? (Please show your work).

_________ Plants / Acre

HAVE A GREAT SUMMER!
CONGRATULATIONS TO THE GRADUATES!