There are 14 questions (plus a bonus question) worth a total of up to 100 points possible. Please be concise.

6 pts.  1. A seed corn production field is scheduled to produce the single cross hybrid A X B (A is the seed parent). Previous experience with these inbreds indicates that inbred B reaches pollen shed about 50 Growing Degree Days (GDD) quicker than inbred A reaches silking. Please note two ways that a seed corn production manager might deal with this difference in inbred developmental rates in order to best accomplish the intended cross in this field?

   a)

   b)

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

4 pts  4. Describe in general how and why recommended planting depth changes for corn planted on April 20 versus May 20 in central Indiana.
10 pts.  5. 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.  6. Explain the reasoning behind each of the following recommendations for Fall application of nitrogen;

a) Only use ammonia or ammonium forms of N.

b) Apply only on soils below 50 degrees F.

c) Consider using N-Serve.

d) Apply at relatively northern latitudes.

e) Apply only on soils with C.E.C. greater than 10 meq/100 grams.
The following information pertains to questions 7, 8, and 9

Corn Yield Goal: 210 bu/acre

Previous Crop: 53 bu/acre soybeans

P₁ Soil Test: 20 ppm available P/acre (No Buildup Required)

K Soil Test: 140 ppm exchangeable K/acre (No Buildup Required)

C.E.C. = 18 meq / 100 grams of soil

15 pounds of N are to be applied per acre at planting as a starter.

The remainder of N fertilizer is to be applied a few days prior to planting as anhydrous ammonia (NH₃ at 82% N content).

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

7 pts. 7. 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:

7 pts. 8. Annual maintenance P₂O₅ (pounds P₂O₅ per acre):

2 pts. Total annual pounds 0-46-0 per acre to apply maintenance rate of P₂O₅:

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

2 pts. Total annual pounds 0-0-60 per acre to apply maintenance rate of K₂O.

4 pts. 10. At the latitude of Central Indiana, what is the approximate yield penalty (Bu / Acre) for each day of delay in planting during the last ten days of the month of May?
11. 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
7 inches
5 inches
10 inches
2 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.

9 pts. 12. A given field in west central Indiana was in soybeans in 2003 and corn in 2004. The 2004 plant population for corn 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 2005 corn crop? 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 2005 corn crop?

c) Assume the field will be going back to soybeans in 2006 and then to corn in 2007. Assume you will be using sticky traps in the 2006 soybeans. What is the economic threshold for the possible use of an at plant soil applied corn rootworm insecticide for the 2007 corn crop?
4 pts.  13. You are uncertain as to the potential for Corn Rootworm larval feeding on roots in another west central Indiana corn field. Corn follows a previous crop of soybeans in this field. You noticed a few Corn Rootworm beetles amongst the soybeans last year but didn’t get a measure of how many were present. Rather than going ahead with a soil application of insecticide at planting this year, you decide to scout for larvae during the first week of June this season (or whenever you begin to see Lightning Bug activity). What is the correct Corn Rootworm larvae economic threshold for a dry sample of one 7 inch soil cube at the base of each of several representative plants?

3 pts.  14. What is the three part general economic threshold for Black Cutworm control in corn (i.e. level of damage, number of live larvae per 100 plants and size of larvae)?

   a) 
   b) 
   c) 

2 pts. What combination of black cutworm larval development (e.g. young vs. old) and plant age (e.g. young vs. old seedling) would present the greatest potential for economic loss to this pest? Why?

5 pts. BONUS Is Fall moldboard plowing to completely bury last year’s corn residue in a particular 100 acre field, an effective control measure to prevent Corn Rootworm larvae feeding on corn roots in that field in the following year? Why or why not?