

## 2016 National FFA Agronomy CDE Team Event

### Explanation.

This problem is a scenario that is common when dealing with Malt Barley production. The malting company is precise on the production practice to produce what they need.

If the students accept and follow the contract they need the following :

Seed cost is \$0 if the contract is accepted and if it is not voided by not following the contract requirements.

Seed cost if the contract is voided or not accepted will be \$0.05/lb for 77,000 lbs of seed or \$3,850 (from contract)

### Fertilizer Section:

To save the most money in production they need to use anhydrous ammonia for initial nitrogen needs. Urea can be used but this cuts profits by \$1.62 an acre (taking account difference in seeding cost between the two products) \$1,037 under maximum profit.

They need (rounding to nearest 0.1 lb and nearest 0.01 ton at each mathematical step):

The soil test recommends the application of 80 lb P<sub>2</sub>O<sub>5</sub>/acre plus 80 lb K<sub>2</sub>O/acre and 8 lb S/acre at planting (all as dry fertilizer) plus 120 lbs N/acre with a yield goal of 120 bu/acre. The malt barley production contract calls for the producer to apply 60 percent of the crop's nitrogen needs at planting and the remaining 40% as a topdress application prior to tillering of the barley.

|               |                       |            |             |
|---------------|-----------------------|------------|-------------|
| MAP (11-52-0) | 153.8 pounds per acre | 49.22 tons | \$20,426.30 |
|---------------|-----------------------|------------|-------------|

**Note: At 153.8 lbs of 11-53-0/acre, MAP also will provide 16.9 lbs N/acre.**

|              |                       |            |             |
|--------------|-----------------------|------------|-------------|
| KCL (0-0-60) | 133.3 pounds per acre | 42.66 tons | \$16,850.70 |
|--------------|-----------------------|------------|-------------|

|                 |                      |            |            |
|-----------------|----------------------|------------|------------|
| AMS (21-0-0-24) | 33.3 pounds per acre | 10.66 tons | \$3,784.30 |
|-----------------|----------------------|------------|------------|

**Note: At 33.3 lbs of 21-0-0-24S/acre, the ammonium sulfate will supply 7.0 lbs N/acre.**

The contract calls for 60% of the soil test N recommendation to be applied at planting or  $(0.6 \times 120 \text{ lb N/acre} = 72 \text{ lb N/acre at planting})$ . The dry fertilizer (MAP and Ammonium sulfate) will provide 23.9 lbs N/acre (16.9+7.0) so the grower only needs to apply 48.1 lbs N/acre as anhydrous ammonia or urea depending on cost.

|                |                           |                |
|----------------|---------------------------|----------------|
| Planting costs | NH <sub>3</sub> - \$7,680 | Urea - \$7,040 |
|----------------|---------------------------|----------------|

|                            |                          |            |            |
|----------------------------|--------------------------|------------|------------|
| Anhydrous ammonia (82-0-0) | 58.7 pounds per acre     | 18.78 tons | \$8,828.48 |
| Or Urea (46-0-0)           | at 104.6 pounds per acre | 33.47 tons | \$10376.32 |

Planting with anhydrous ammonia costs \$12/acre and with dry fertilizer cost is \$11/acre so urea saves \$640 leaving net difference (extra expense for urea) of \$1,037 or \$1.62/acre

The problem calls for 40% of the total nitrogen need to be top dressed.

Urea (46-0-0) 104.3 pounds per acre    33.38 tons    \$10,347.80

Application cost - \$2,112

#### **Pest Management Selection:**

Option 2 is the only choice. The Stinger in option 1 has 18 month restriction to planting peas. Huskie Complete is not labelled for Barley.

**The pre plant burndown herbicide application** was \$12/Acre.    \$7,680

#### **The first spray (5-leaf stage) should be by ground sprayer**

Wolverine at 1.7 pts /Acre (20 acres per case)    32 cases    \$11,264

Proline 480 at 2.8 ounces /Acre    14 gallons (bill 15 gallons to make complete jug) \$7,860

Baythroid XL at 1.8 ounces /Acre    9 gallons    \$1,692

Application cost - \$2,560

#### **The second pesticide application (flag leaf stage) is by air.**

Proline 480 at 2.8 ounces /Acre    14 gallons (bill 15 gallons to complete jug) \$7,860

Baythroid XL at 1.8 ounces /Acre    9 gallons    \$1,692

Trophy Gold at 6 ounces /Acre    30 gallons    \$1,170

Application cost - \$5,120

#### **The third pesticide application (early flowering stage) is by air.**

Prosaro at 6.5 ounces /Acre    32.5 gallons    \$8,092.50

Trophy Gold at 6 ounces /Acre    30 gallons    \$1,170

Application cost - \$5,120

#### **Other Costs to Consider:**

Harvest costs - \$18 per acre    \$11,520

Baling straw - \$18.75 per acre \$12,000

Hauling (trucking) grain – There are two scenarios

If the contract is voided or rejected, the barley can only be sold as feed grain (at \$4.25/bushel) and the producer is required to assume all transportation charges for the total yield (121 bu/acre times 640 acres or 77,440 bushels) and the cost of transporting the grain to market will be \$0.11/bushel hauled in the **producer's truck for a total hauling cost of \$8,518.40** (\$0.11/bu × 77,440 bushels)

If the contract is accepted and all provisions honored then the Company will provide transportation for 65,000 bushels of produced malt barley to the Company's facility at no cost to the producer and will issue payment at \$7.35 per bushel. Any barley produced in excess of 65,000 bushels will be hauled to market at the producer's expense (\$0.11/bushel) and must be sold as feed barley at \$4.25/bushel. With a yield of 121 bu/acre, 77,440 bushels will be produced so the producer will be responsible for hauling or trucking 12,440 bushels. That **equates to \$1,368.40 in hauling or trucking expense** and must be sold as feed barley for \$4.25/bushel or \$52,870.

Hauling straw – (2.5 ton per acre × 640 acres = 1,600 tons × \$4.50 per ton = \$7,200 expense

**The following choices result in lower net profit and would be considered incorrect answers:**

| <b>Contract Violations or Choosing Not to Contract Barley for Malting</b> | <b>Scenario Price Reduction</b>                                          | <b>Grain Income New price x yd</b> | <b>Savings on Expenses</b>  |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------|-----------------------------|
| IF FUNGICIDE AT 5 LEAF IS MISSED                                          | -10%                                                                     | \$296,208.00                       | \$7,680.00                  |
| IF FUNGICIDE AT FLAG LEAF IS MISSED                                       | -10%                                                                     | \$296,208.00                       | \$7,680.00                  |
| IF NO FUNGICIDE AT EARLY FLOWERING                                        | -20%                                                                     | \$263,296.00                       | \$8,092.50                  |
| IF NO FUNGICIDES                                                          | -40%                                                                     | \$197,472.00                       | \$23,452.50                 |
| IF NO INSECTICIDE AT 5 leaf                                               | -10%                                                                     | \$296,208.00                       | \$2,560.00                  |
| IF NO INSECTICIDE AT flag leaf                                            | -10%                                                                     | \$296,208.00                       | \$1,692.00                  |
| IF NO INSECTICIDE USED                                                    | -20%                                                                     | \$263,296.00                       | \$4,252.00                  |
| IF ONLY HERBICIDES USED                                                   | -60%                                                                     | \$131,648.00                       | \$41,976.50                 |
| <b>Contract Violations or Choosing Not to Contract Barley for Malting</b> | <b>New grain income plus straw income based on price reduction above</b> | <b>Savings on Expenses</b>         | <b>Final Profit or Loss</b> |
| IF FUNGICIDE AT 5 LEAF IS MISSED                                          | \$366,608.00                                                             | \$7,680.00                         | \$374,288.00                |
| IF FUNGICIDE AT FLAG LEAF IS MISSED                                       | \$366,608.00                                                             | \$7,680.00                         | \$374,288.00                |
| IF NO FUNGICIDE AT EARLY FLOWERING                                        | \$333,696.00                                                             | \$8,092.50                         | \$341,788.50                |
| IF NO FUNGICIDES                                                          | \$267,872.00                                                             | \$23,452.50                        | \$291,324.50                |
| IF NO INSECTICIDE AT 5 leaf                                               | \$366,608.00                                                             | \$2,560.00                         | \$369,168.00                |
| IF NO INSECTICIDE AT flag leaf                                            | \$366,608.00                                                             | \$1,692.00                         | \$368,300.00                |
| IF NO INSECTICIDE USED                                                    | \$333,696.00                                                             | \$4,252.00                         | \$337,948.00                |
| IF ONLY HERBICIDES USED                                                   | \$202,048.00                                                             | \$41,976.50                        | \$244,024.50                |