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2019 FFA Agronomy Team Event Answer Sheet

Please answer the following questions, indicate your choice where appropriate, or complete the calculations.

Type your answers in the blue highlighted boxes

Question 1. Summarize in three or more bullet points what your FFA Chaper consulting team has been hired to do by Wayne Trace Farms?

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-
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Question 2. Give a concise statement of what problem or problems Wayne Trace Farms faces?

Question 3. What option did you advise Wayne Trace Farms to choose with respect to the following:

Cultivar Selection: **Choose one Plenish cultivar and one non-Plenish cultivar**

Plenish Cultivar **Non-Plenish Cultivar**

Why did you choose these two cultivars?

Fertlizer Application Method: Which would you choose variable rate by zone or one rate across all zones.

Answer:

How many bags of seed will be used to plant the zones using variable rate technology?

Which preemergence herbicide or herbicides was the best choice?

For event Purposes Only
2019 FFA Agronomy Team Event Answer Sheet

Seed Costs:

Assumptions to use: Seed will cost $65.00/bag
A bag of seed contains 140,000 seeds.
Zone 1 is 10.36 acres in size and will be seeded at 140,000 seed per acre
Zone 2 is 5.26 acres in size and will be seeded at 180,000 seed per acre
Zone 3 is 15.12 acres in size and will be seeded at 160,000 seed/acre

Calculations:	**Acres x**	**Seed/acre**	equals # seed/zone	divided by seed per bag		Bags
Zone 1	10.36	140,000		140,000	equals	
Zone 2	4.09	180,000		140,000	equals	
Zone 3	15.12	160,000		140,000	equals	
Totals	29.57			140,000	equals	

Since you can't buy just a fraction of a bag, Wayne Trace Farms will need to buy how many bags and this will cost how much money if each bag costs $65.00?

Number of bags needed:

Cost of seed:

Planting Costs:

Assumptions: Field has 29.57 acres
Field will be planted no-till with a split row planter on 15 inch rows

No. Acres	Cost per acre for No-till Planting	Total Cost
29.57		

Fertilizer Costs:

Phosphorus Fertilizer

Any Plenish Cultivar

Option 1: Apply the soil test recommended fertilizer using variable rates based on the Zones.

Acres		Soil Test P	Yield Level	Recommended lbs P_2O_5/ac	lbs MAP/ac	Total needed in tons/zone	Cost
10.36	Zone 1	22 ppm	78.1 bu/ac				
4.09	Zone 2	46 ppm	33.5 bu/ac				
15.12	Zone 3	30ppm	46.1 bu/ac				
Total:							

Option 2: Apply the recommended fertilizer over the entire field using the composite soil test data.

Acres	Composite	Soil Test P	Yield Level	lbs P_2O_5/ac	lbs MAP/ac	Tons MAP needed	Field Cost
29.57	sample	29 ppm	55.6 bu/ac				

Question 4. For a Plenish cultivar, would it be more economical to use variable rate fertilization or go with a composite rate across all Zones?

Answer:

For event Purposes Only
2019 FFA Agronomy Team Event Answer Sheet

Fertilizer Costs Continued:

Phosphorus Fertilizer

Any Non-Plenish Cultivar

Option 1: Apply the soil test recommended fertilizer using variable rates based on the Zones.

				Recommended		Total needed	
Acres		Soil Test P	Yield Level	lbs P_2O_5/ac	lbs MAP/ac	in tons/zone	Cost
10.36	Zone 1	22 ppm	82.2 bu/ac				
4.09	Zone 2	46 ppm	35.3 bu/ac				
15.12	Zone 3	30ppm	48.5 bu/ac				
Total:							

Option 2: Apply the recommended fertilizer over the entire field using the composite soil test data.

					Recommended		Tons MAP	
	Acres	Composite	Soil Test P	Yield Level	lbs P_2O_5/ac	lbs MAP/ac	needed	Field Cost
Total:	29.57	sample	29 ppm	58.5 bu/ac				

Question 5. For a non-Plenish cultivar, would it be more economical to use variable rate fertilization or go with a composite rate across all Zones?

Answer:

Potassium Fertlizer

Any Plenish Cultivar

Option 1: Apply the soil test recommended fertilizer using variable rates based on the Zones.

		CEC	Soil Test		Recommended		Tons 0-0-60	
Zone	Acres	meq/100 g	ppm K	Yield Level	K_2O/ac	lb 0-0-60/ac	needed	Cost
Zone 1	10.36	9.6	125	78.1 bu/ac				
Zone 2	4.09	15.7	185	33.5 bu/ac				
Zone 3	15.12	20.1	130	46.1 bu/ac				
Total								

Option 2: Apply the recommended fertilizer over the entire field using the composite soil test data.

		CEC	Soil Test		Recommended		Tons 0-0-60	
	Acres	meq/100 g	ppm K	Yield Level	K_2O/ac	lb 0-0-60/ac	needed	Cost
Composite	29.57	19.1	137	55.6 bu/ac				

Question 6. For a Plenish cultivar, would it be more economical to use variable rate fertilization or go with a composite rate across all Zones for K fertilizer?

Answer:

For event Purposes Only
2019 FFA Agronomy Team Event Answer Sheet
Potassium Fertizer Continued

Any Non-Plenish Cultivar

Option 1: Apply the soil test recommended fertilizer using variable rates based on the Zones.

Zone	Acres	CEC meq/100 g	Soil Test ppm K	Yield Level	Recommended K_2O/ac	lb 0-0-60/ac	Tons 0-0-60 needed	Cost
Zone 1	10.36	9.6	125	82.2 bu/ac				
Zone 2	4.09	15.7	185	35.3 bu/ac				
Zone 3	15.12	20.1	130	48.5 bu/ac				
Total								

Option 2: Apply the recommended fertilizer over the entire field using the composite soil test data.

	Acres	CEC meq/100 g	Soil Test ppm K	Yield Level	Recommended K_2O/ac	lb 0-0-60/ac	Tons 0-0-60 needed	Cost
Composite	29.57	19.1	137	58.5 bu/ac				

The cost to spread the P and K fertilizer is equal to 29.57 acres times $7.25/acre or

Question 7. For a Plenish cultivar, would it be more economical to use variable rate fertilization or go with a composite rate across all Zones for K fertilizer?

Answer:

Question 8. Determine the choice of preemergence herbicide to include with the burndown program and calculate the cost of the burndown + preemerge program.

Note: The burndown + preemerge combination will be sprayed at 15 gallons of spray per acre.

Burndown Program:

Product	Rate/acre	Field size acres	Cost/unit	Total cost
Buccaneer Plus	32 fl. oz.	29.57	$0.09/oz	
Weedone 2,4-D LV6	12 fl. oz.	29.57	$0.15/oz	
Dicamba HD	8 fl. oz.	29.57	$0.36/oz	
Spray grade Ammonium sulfate	8.5 lb/100 gal spray	15gal/ac x 29.57 ac	$0.25/lb	

Burndown Product Cost

Preemgence Product Cost from below

Total

Preemergenc herbicide choices are one or more of the following: 8 oz/ac of Trivence, 4.5 oz/ac of Fierce XLT, and 1.3 pt/acre of Metolachlor (Me-Too-Lachlor)

To make your choice just fill out the rate, acres, cost/unit, and total cost columns for the herbicide or combination of herbicides that you think are the most correct choice for the grower

Product choices and combinations--Choose only ONE	Rate/acre	Field size Acres	Cost/unit	Total cost
8 oz/ac Trivence				
4.5 oz/ac Fierce XLT				
8 oz/ac Trivence plus 1.3 pt/ac Me-Too-Lachlor				

Only one of these lines should be filled in

Total cost of your choice for preemergence:

For event Purposes Only
2019 FFA Agronomy Team Event Answer Sheet

Question 9. In the highlighted box below, please explain any restrictions or requirements that the use of the burndown combination will entail. What is the target weed in this program?

R3 Post-emergence Spray Decision and Choices

Assumptions for R3 Spray Treatment:

Application cost is $6.50/acre
Field acreage is 29.57 acres
Spray at 20 gallons of solution per acre
The R3 growth stage is beginning pod
R3 spray application will increase yield by 7 bu/ac
If you do or don't choose to apply the R3 spray, the yields given in the scenario will NOT change so do not make any adjustments to the yield assumptions

Based on the weed, disease, and insect pressure expected (see Scenario) choose which of the following products you should include in the spray solution to be applied at the R3 stage of soybean development.

Write in space below either Exclude or Include for each choice

Approach Prima at 5 fl oz/acre (Include or Exclude)
Lambda Select at 3 fl oz/acre (Include or Exclude)
Buccaneer Plus at 32 fl oz/acre (Include or Exclude)
Spray Grade Ammonium Sulfate at 8.5 #/100 gallons (Include or Exclude)

Calculate below the TOTAL COST of Product Only for the products you said to include above.

Product	Rate	Acres	Cost/unit	Total Product Cost
Approach Prima	5 fl oz/ac	29.57	$1.58/fl oz	
Lambda Select	3 fl oz/ac	29.57	$0.65/fl oz	
Buccaneer Plus	32 fl oz/ac	29.57	$0.09/fl oz	
S. G.Ammonium Sulfate	8.5 #/100 gal spray	29.57	$0.25/#	
Application Cost		29.57	$6.50/ac	
		Total Cost of R3 Spray		

Note: If you use Amm Sulfate, you'll use 591.4 gallons needing 50.27 lbs of AS

For event Purposes Only
2019 FFA Agronomy Team Event Answer Sheet

Question 10. Explain why you included or excluded each product from the R3 spray.

Product	
Approach Prima	
Lambda Select	
Buccaneer Plus	
Spray Grade Ammonium Sulfate	

Question 11. How many bushels per acre at $8.98 and/or $9.38 /bushel will it take to cover the cost of R3?

Profit/Loss and Breakeven Costs

	Acres	$/ac	Total cost		
Cost of combining soybean crop	29.57	$31.50			

	Total # of bushels	$/bu/mile	# miles to terminal	Transportation cost
Cost of hauling Plenish soybean	1643.16	$0.005	14.1	
Cost of hauling non-Plenish soybean	1729.29	$0.005	9.1	

Income:	Bushels Yield/acre	Acres	Total # of bushels	Price Paid	Income
Plenish cultivar	55.5686	29.57	1643.16	$9.38	
Non-Plenish cultivar	58.4812	29.57	1729.29	$8.98	

Production factors:	Cost for field: Plenish Cultivar	Non-Plenish Cultivar
Cost of seed	$0.00	$0.00
Cost to plant no-till soybeans	$0.00	$0.00
Cost of P fertilizer applied	$0.00	$0.00
Cost of K fertilizer applied	$0.00	$0.00
Cost of spreading dry fertilizer	$0.00	$0.00
Cost of burndown + preemerge	$0.00	$0.00
Cost of R3 Spray program	$0.00	$0.00
Cost to combine the field	$0.00	$0.00
Cost to haul crop to terminal	$0.00	$0.00
Total Production Cost	$0.00	$0.00
Breakeven for Plenish soybean expressed as bu/ac	bu/ac	bu/ac
Net Profit for Plenish cultivar	$0.00	
Net Profit for non-Plenish cultivar		$0.00

Question 12. Would you advise Wayne Trace Farms to accept the contract to grow Plenish soybeans?

Answer: