For Event Purposes Only—2018

2018 Team Problem Scenario:

A clothing manufacturer has approached cotton producers in Georgia to provide them with high grade cotton for a signature line of designer jeans. They will pay a $0.15 per pound of lint **premium (above the contracted sales price of $0.73/lb lint)** on cotton that meets certain quality standards. The producer comes to you, his consultant, for advice as the whether he has the potential to make more money knowing there will be trade-offs with input costs and field selection. He wants to try it on just one field. Your job will be to provide him with options on whether it should be done and if so, what changes in production would need to occur. You have two fields in mind that have potential to grow the quality of cotton that the manufacturer requires.

Characteristics of each field are below.

Field Condition	Hodges Field	Peterson Field
Land rent	$150/A	$100/A
Field size	73 A	56 A
Historical Yield	Use 2017 yields from variety trial table	Use 2017 yields from variety trial table
Irrigation	Yes	Yes
Prevailing Wind Dir.	From the SW	From the SW
Neighbor's crops	Liberty Link cotton to the east; tobacco and Liberty Link soybeans to the northeast; and woods to the south.	Corn to the northeast; Xtend Soybeans to the east; and woods to the south.
Nematodes	Yes	No
Soil type	Loamy Sand	Deep Sand (req 2 additional irrigations)
Weeds (Weeds will be less than 4" in height at each post application)	Glyphosate resistant Palmer amaranth, Glyphosate resistant marestail/horseweed, morningglory, goosegrass, crabgrass	Glyphosate resistant Palmer amaranth, Glyphosate resistant marestail/horseweed, morningglory, goosegrass, crabgrass
Insects	Early season thrips, bollworms, late season green and brown stinkbugs	Early season thrips, bollworms
Tillage	Strip till	Conventional till
Previous Crop	Corn for Grain	Grain Sorghum

You have been provided with certain reference materials such as the Georgia pest control recommendations, product labels, and a Word document with certain costs listed.

Additional information is provided on page 2 and 3.

Additional Information:

Before this offer, you had contracted to sell your cotton for $0.73/lb lint.

After planting, you average 1 irrigation event every three weeks until 2 weeks before defoliation. The Peterson field requires 2 more irrigation events than Hodges. You plan to defoliate Oct 6th.

Planting date for both fields is April 27th.

Planting population = 5 acres/50 lb bag

Cotton seed:

Variety	*2016 Yield*	*2017 Lint Yield lb/A*	*Lint fraction %*	*Length (in.)*	*Strength g/tex*	*Micronaire Units*	*HVI Trash % area*	*Price/Bag $*
DP 1234 B2XF	1723	1639	0.44	1.19	30.6	4.4	1.0	$620
ST 5678 GLT	1663	1520	0.44	1.14	31.8	4.4	0.7	$550
DG 8910 B2XF	1520	1438	0.43	1.13	29.4	4.4	1.0	$600
GA 1112	1441	1450	.44	1.16	31.5	4.6	0.9	$200
ST 1314 GLT	1673	1474	.43	1.18	32.9	4.1	1.1	$575

B2XF – cotton that can tolerate over the top applications of glyphosate, Liberty, and Xtendimax (glyphosate + dicamba) herbicides, and BollGuard II for bollworm control.

GLT – cotton that can tolerate over the top applications of glyphosate and Liberty herbicides and Twinlink technology for bollworm control.

No suffix: Conventional cotton = 10 insect sprays

LibertyLink cotton and soybeans are genetically modified to be tolerant to Liberty and glyphosate herbicides.

Xtend cotton is genetically modified to be tolerant to Liberty, glyphosate, and dicamba herbicides.
Xtend soybeans are genetically modified to be tolerant to glyphosate and dicamba.
Note: Broadleaf crops are extremely sensitive to herbicides that contain dicamba unless they have been genetically modified to be tolerant.

Additional information is provided on page 3.

Tillage:

Strip tillage requires a burndown application of herbicides with the spray rig to control weeds at least 30 days prior to planting

(The strip till planter does many operations in one pass. It will subsoil and till the furrow row, open the seed furrow, apply in-furrow products and/or fertilizers, drop the seed into the furrow, close the furrow, and apply pre-emergent herbicides with a broadcast boom mounted on the back of the planter. It requires significantly more horsepower to pull this implement across the field.)

Conventional tillage does not require a burndown treatment but requires 4 trips across the field with a conventional tillage rig to prepare for planting.

(The conventional planter will open the seed furrow, deliver seed and any in-furrow products or fertilizer, close the furrow and apply pre-emergent herbicides with a broadcast boom mounted on the back of the planter.)

Use the highest recommended rate of crop protection products for the pest you are trying to control.

Crop Protection Products and their Cost:

Product	Active Ingredient	Use	Cost/Unit	Cost/ounce
Admire Pro	Imidacloprid	In-furrow insecticide	$166.40/gal	$1.30
Baythroid	Pyrethroid	Foliar insecticide	$152.00/gal	$1.19
Bidrin	Organophosate	Foliar insecticide	$141.00/gal	$1.10
Brigade	Pryrethroid	Foliar insecticide	$ 95.00/gal	$0.74
Cotoran	Flumeturon	Residual herbicide	$ 48.00/gal	$0.38
Direx	Duron	Residual herbicide	$ 17.98/gal	$0.14
Dual II Magnum	s-metolachlor	Residual herbicide	$ 78.00/gal	$0.61
Enlist Duo	Glyphosate + 2,4-D choline salt	Post emergent herbicide or preplant burndown	$ 25.00/gal	$0.20
Liberty	Glufosinate	Post emergent herbicide	$ 52.00/gal	$0.41
Reflex	Fomesafen	Residual herbicide	$ 46.00/gal	$0.36
Roundup	Glyphosate	Post emergent herbicide	$ 18.00/gal	$0.14
Velum Total	Fluopyram + Imidacloprid	In-furrow nematicide/insecticide	$241.92/gal	$1.89
Warrant	Acetochlor	Residual herbicide	$ 24.00/gal	$0.19
Xtendimax	Glyphosate + Dicamba	Post emergent herbicide	$ 55.00/gal	$0.43

Soil Test Information is on page 4-5.

Fertilizer Availability and Cost of Fertility and other Operations are on Page 6-7.

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AgroLabs, Inc.
Soil Report Summary and Recommendations

Note: For these fields, multiple samples (0 to 6 inch depth) were submitted but the analyses within a field were very similar across the zones sampled so the data presented below is the average of the samples for each field. All samples of a single field were in the same category and therefore a single recommendation is reported for each field.

Hodges Field—Loamy Sand Soil

Sample ID/Lab #	Soil pH 1:1	Buffer pH	Organic Matter %	Lime Require-ment	Mehlich 3 Phosphorus		Potassium		SO_4-S*	
					ppm P	Rating	ppm K	Rating	ppm	Rating
42101	6.3	6..5	<1	0 ton/A	55	Medium	47	Low	15	Low

Sample ID/Lab #	Calcium		Magnesium		Zinc		Manganese		Boron	CEC
	ppm Ca	Rating	ppm Mg	Rating	ppm Zn	Rating	ppm Mn	Rating	ppm B**	meq/100g
42101	750	High	91	Optimum	10.6	Optimum	34.7	Optimum	2.25	5.7

***Georgia recommends about 10 lb S/acre as preplant or with the sidedress N application**.
****Georgia recommends two foliar applications of 0.25 lb B/acre** (total of 0.5 lb B) to be **applied between 1st square and 1st bloom**.

Recommendation for Hodges Field:
Apply 45 lbs P_2O_5/acre preplant. **All P and non-foliar K should be applied preplant broadcast**
Apply 45 lbs K_2O/acre at preplant. **Do NOT fall apply P & K**

For N rate, see table below: Note: For irrigated cotton, apply N via the irrigation system.

Yield Goal lb lint/acre	Recommended Nitrogen Rate lb N/acre
≤ 750	60
≤1000	75
≤1250†	90
≥1500†	105
Increase N rate by 25% if:	Cotton planted on Deep Sand (>18 inches to subsoil clay) Cotton following cotton Field has a history of poor cotton stalk growth
Decrease N rate by 25% if:	Cotton following soybeans or peanuts Cotton following a good stand of winter legume cover crop Field has a history of excessive or rank cotton vegetative growth

†Lint yield assumes irrigation is used

Other Nitrogen considerations:

Always apply N in split applications with 30 lb N/acre applied broadcast prior to planting and the remainder applied as sidedress or via fertigation (between 1st square and 1st bloom but near 1st square if the plants are pale green or growing slowly).

Do not apply any N after the 3rd week of bloom. Use of liquid 28-0-0-5S is strongly recommended for sidedress N/S application or through the irrigation system.

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AgroLabs, Inc.
Soil Report Summary and Recommendations

Peterson Field—Deep Sand Soil

Sample ID/Lab #	Soil pH 1:1	Buffer pH	Organic Matter %	Lime Require-ment	Mehlich 3 Phosphorus		Potassium		SO_4-S*	
					ppm P	Rating	ppm K	Rating	ppm	Rating
43010	6.3	6..5	0.75	0 ton/A	53	Medium	44	Low	10	Low

Sample ID/Lab #	Calcium		Magnesium		Zinc		Manganese		Boron	CEC
	ppm Ca	Rating	ppm Mg	Rating	ppm Zn	Rating	ppm Mn	Rating	ppm B**	meq/100g
43010	650	High	76	Optimum	8.4	Optimum	21.1	Optimum	1.00	3.7

***Georgia recommends about 10 lb S/acre as preplant or with the sidedress N application**.
****Georgia recommends two foliar applications of 0.25 lb B/acre** (total of 0.5 lb B) to be **applied between 1st square and 1st bloom.**

Recommendation for Peterson Field:
Apply 45 lbs P_2O_5/acre preplant. **All P and non-foliar K should be applied preplant**
Apply 45 lbs K_2O/acre preplant. **Do NOT fall apply P & K**
For deep sand soils only, apply 2 foliar applications of 4.4 lb K_2O/acre in 5 gallons or more of water as an aerial application during 1st bloom to the 4th week of bloom to prevent K deficiencies. **Use granular KNO_3 dissolved in water.**

For N rate, see table below: Note: For irrigated cotton, apply N via the irrigation system.

Yield Goal lb lint/acre	**Recommended Nitrogen Rate lb N/acre**
≤ 750	60
≤1000	75
≤1250†	90
≥1500†	105
Increase N rate by 25% if:	Cotton planted on **Deep Sand (>18 inches to subsoil clay)** Cotton following cotton Field has a history of poor cotton stalk growth
Decrease N rate by 25% if:	Cotton following soybeans or peanuts Cotton following a good stand of winter legume cover crop Field has a history of excessive or rank cotton vegetative growth

†Lint yield assumes irrigation is used

Other Nitrogen considerations:
Always apply N in split applications with 30 lb N/acre applied broadcast prior to planting and the remainder applied as sidedress or via fertigation (between 1st square and 1st bloom but near 1st square if the plants are pale green or growing slowly).
Do not apply any N after the 3rd week of bloom. Use of liquid 28-0-0-5S is strongly recommended for sidedress N/S application or through the irrigation system.

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Available Fertilizers, Analysis, and Prices per Ton

Grade	Fertilizer Name	Price
10-15-15	Mixed blended fertilizer	$340/ton
30-0-0	Liquid Urea Ammonium Nitrate Solution Density is 10.83 lb/gallon or 3.249 lb N/gallon UAN	$328/ton
28-0-0-5S	Thiosulfate, liquid, 11.1 lb/gallon	$280/ton
45-0-0	Urea, prilled	$345/ton
18-46-0	DAP (diammonium phosphate)	$525/ton
13-0-46	Potassium nitrate	$660/ton
0-46-0	Triple superphosphate	$450/ton
0-0-60	Muriate of Potash	$425/ton
Solubor (20.5% Boron)		$109.88 for a 50 lb bag
0-0-0	Calcitic Limestone	$45/ton applied
0-0-0	Dolomitic Limestone	$52/ton applied

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Cost for Field Operations

Irrigation	$8.90/acre
Strip Tillage Planter	$18.00/acre
Conventional Tillage Rig	$12.00/acre
Conventional Tillage Planter	$8.00/acre
Spraying—Pesticide Ground Rig	$10.00/acre
Spraying—Pesticide Aerial	$17.00/acre
Fertilizer Application—Dry (for both at planting or preplant applications)	$9.50/acre
Fertilizer Application—Liquid	$8.00/acre
Foliar Application—ground rig	$8.00/acre
Foliar as Aerial Application (low gallonage)	$17.00/acre
Fertilizer Application—Sidedress	$10.50/acre

Fertigation of sidedress N/S [Liquid nitrogen fertilizer (Urea ammonium nitrate solution with or without thiosulfate) through Irrigation System]—No additional cost (included with water charge) Fertigation can also be used as one of the two recommended boron applications if applied with the liquid nitrogen fertilizer without incurring an application cost.

Lime Application (includes the lime)	$45/ton/Calcitic and $52/ton/Dolomitic limestone