Mapping and Correlating Onion Pungency to Soil Characteristics

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UGA, Ag & Environmental Services Laboratories (AESL)

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Southeastern Fruit & Vegetable Conference

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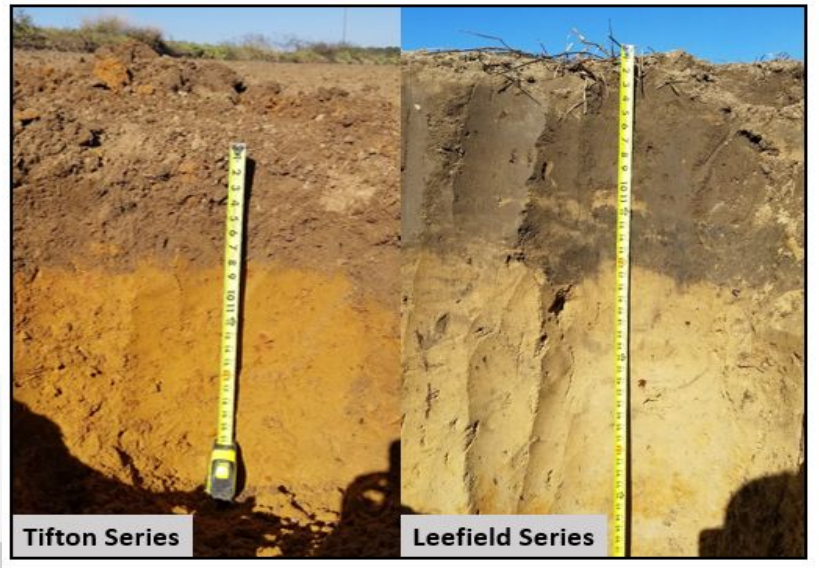
EXTENSION



Short-term

Long-te rm

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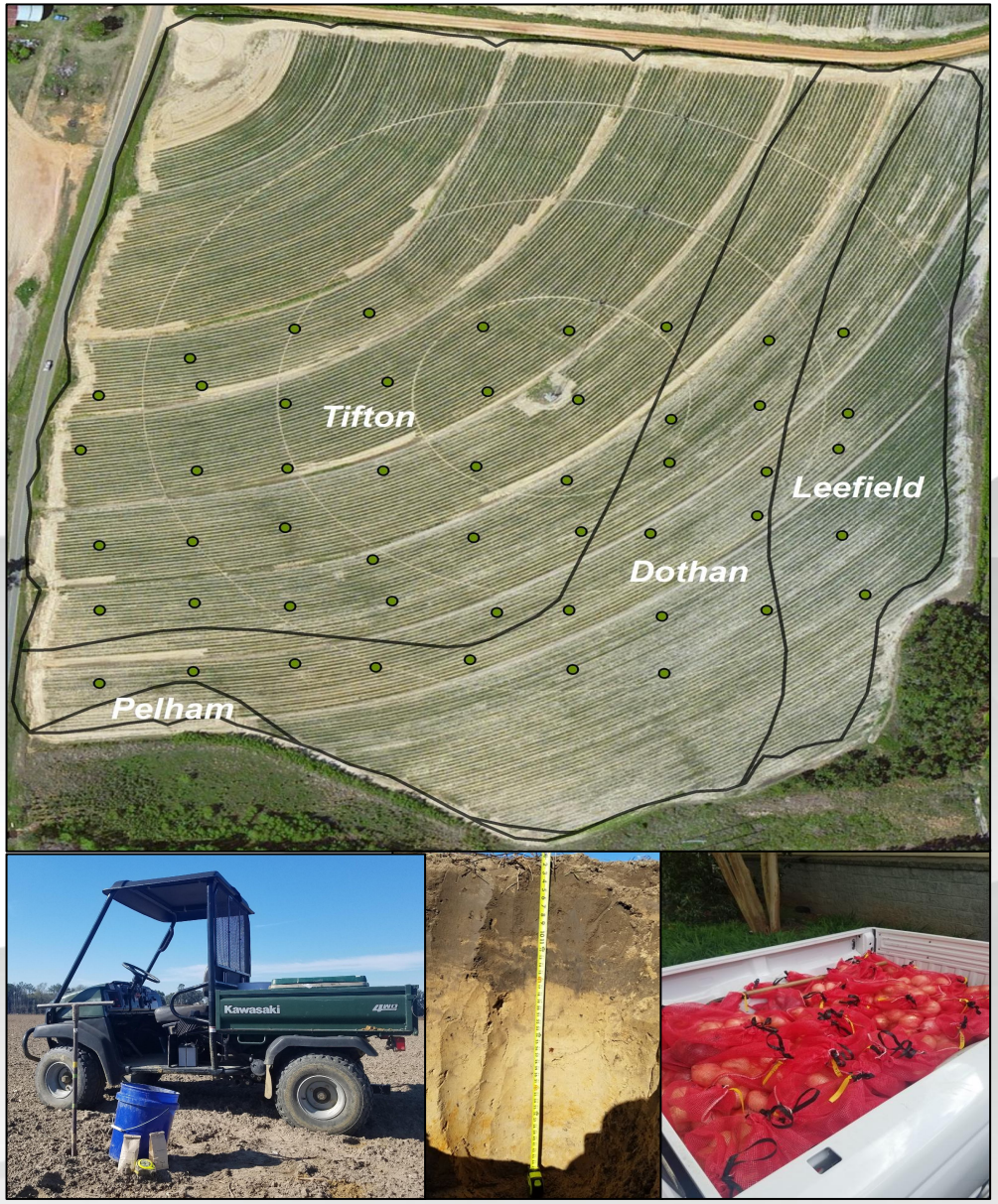

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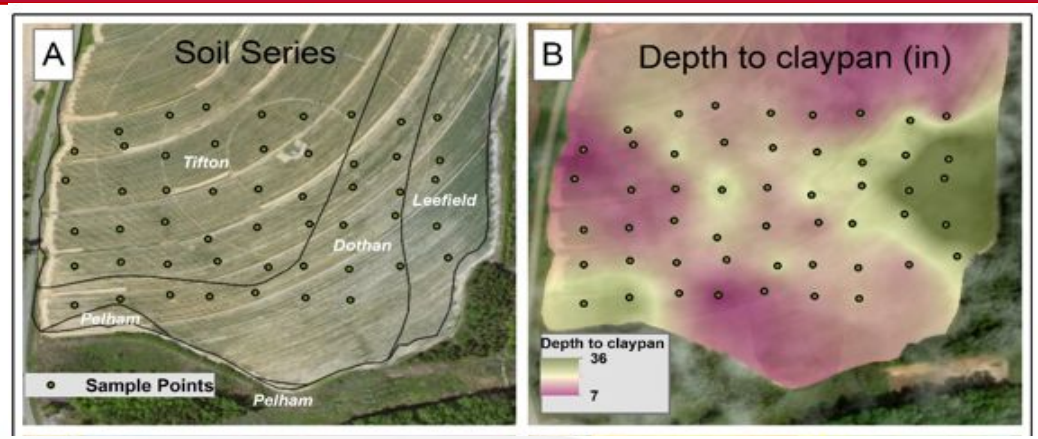

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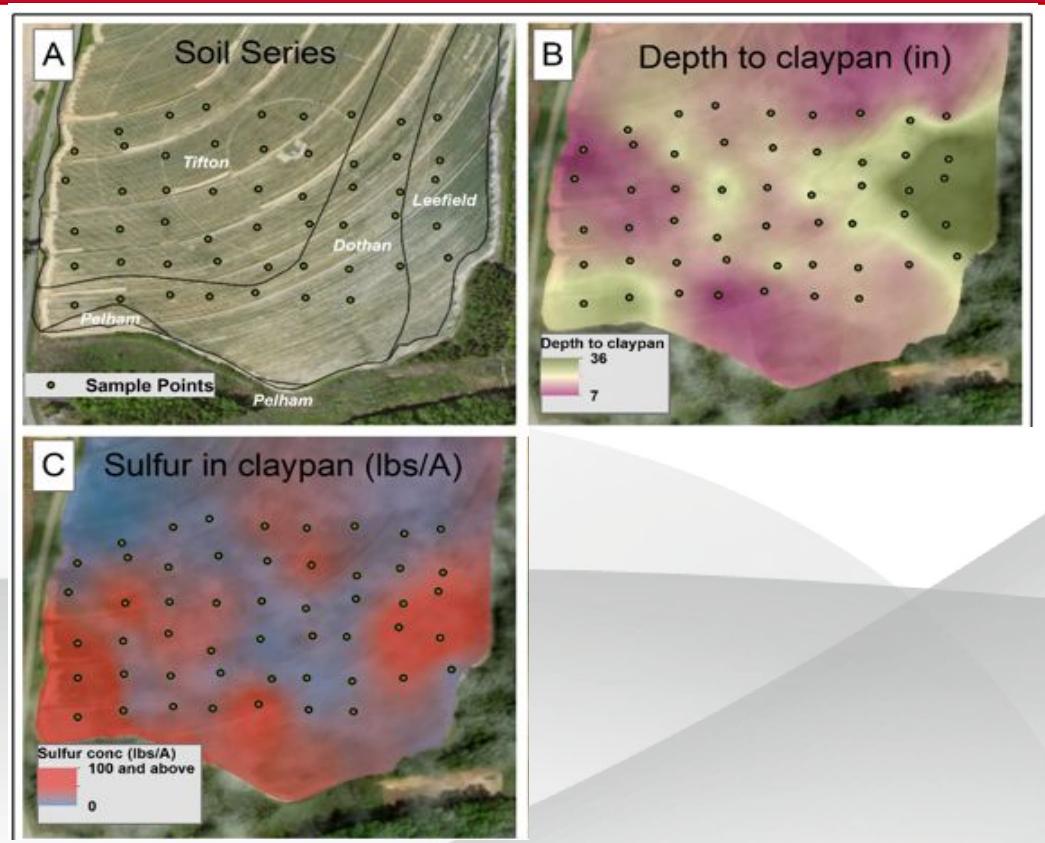

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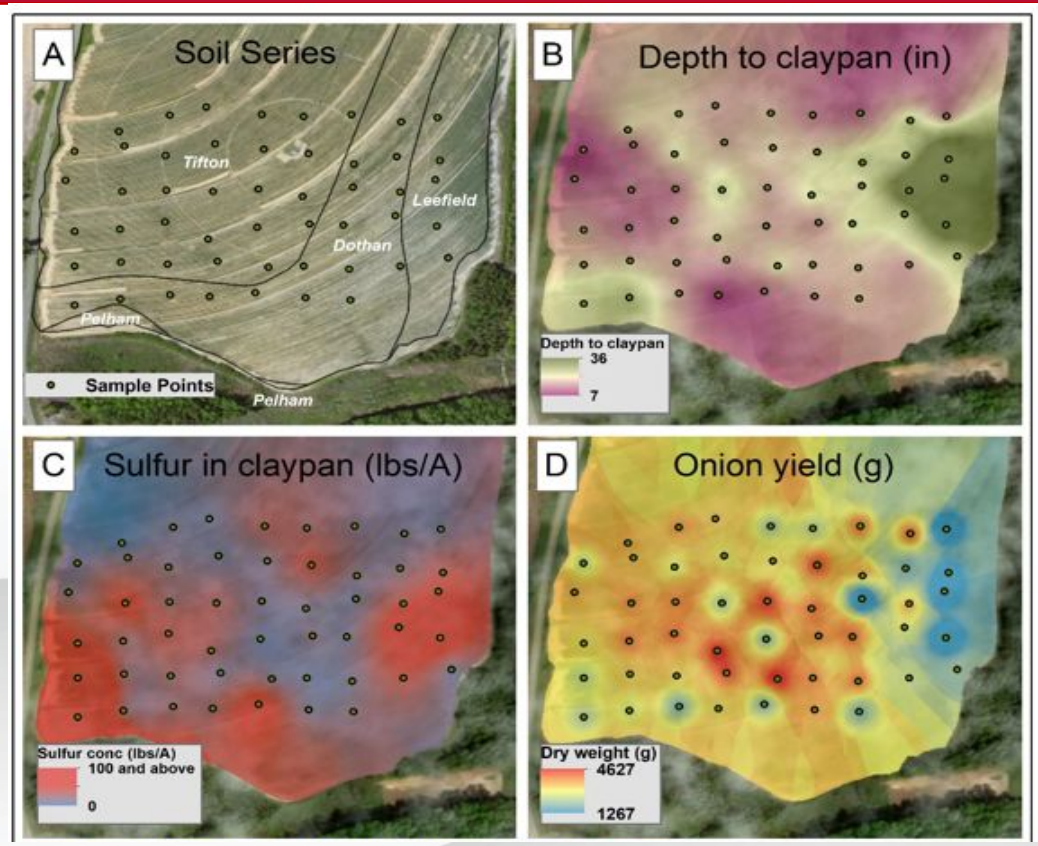

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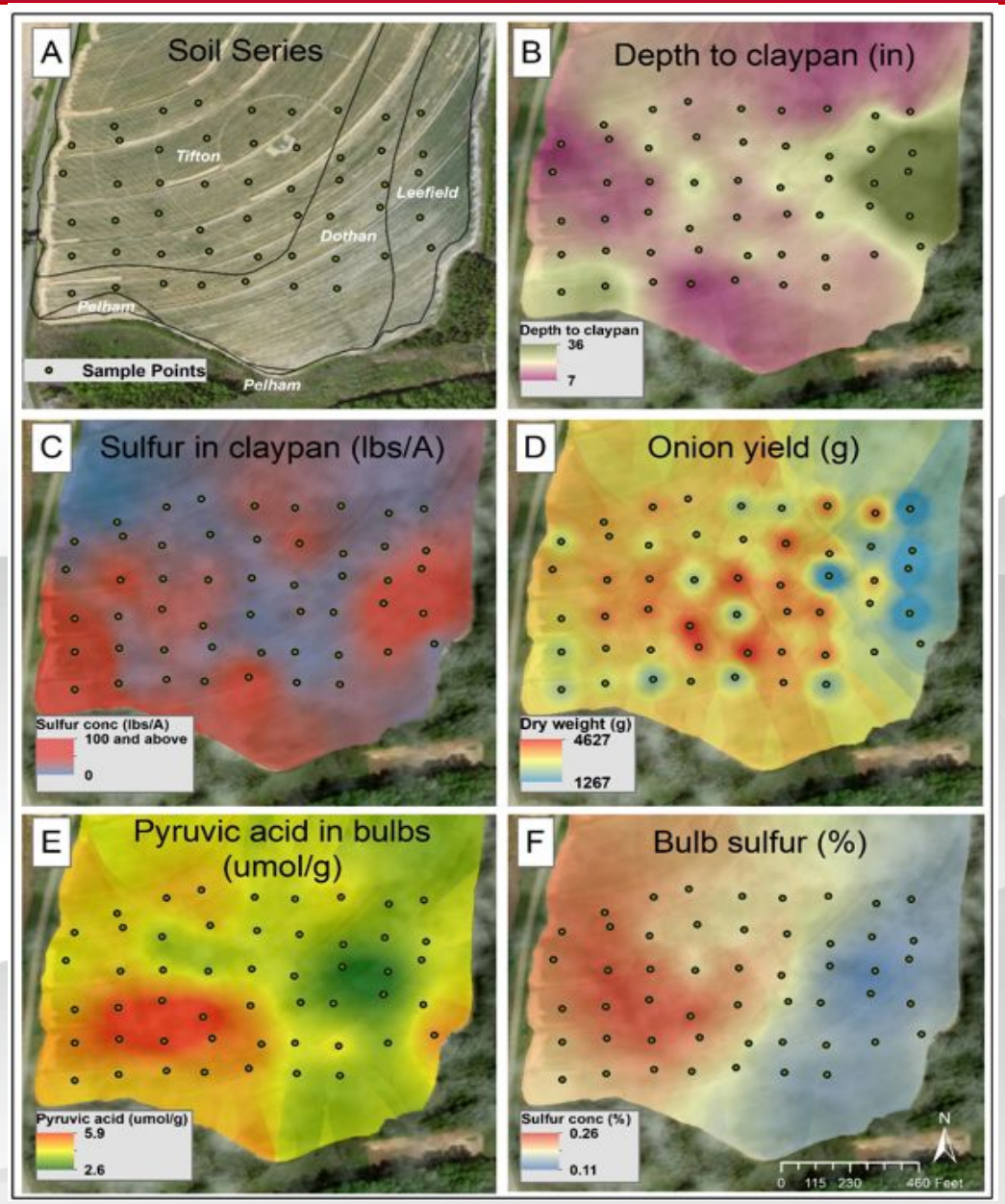

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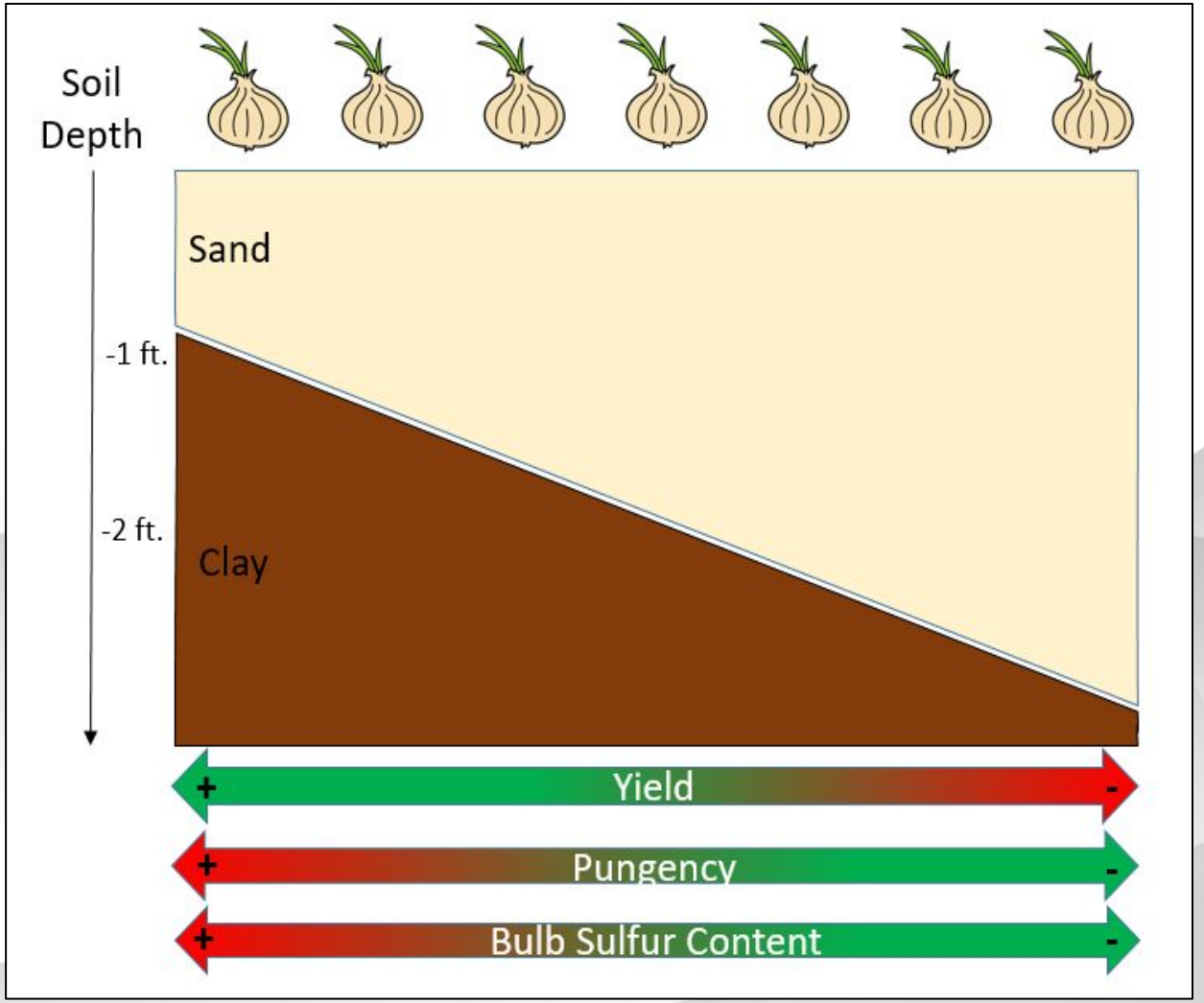

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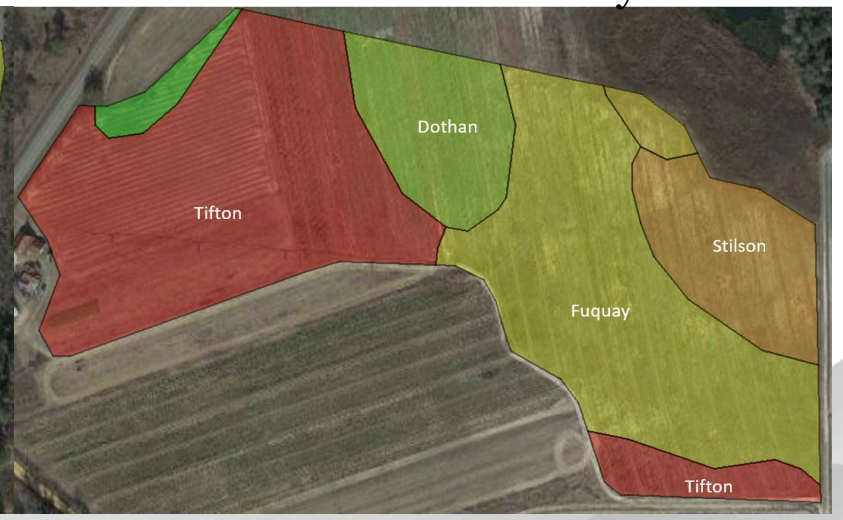
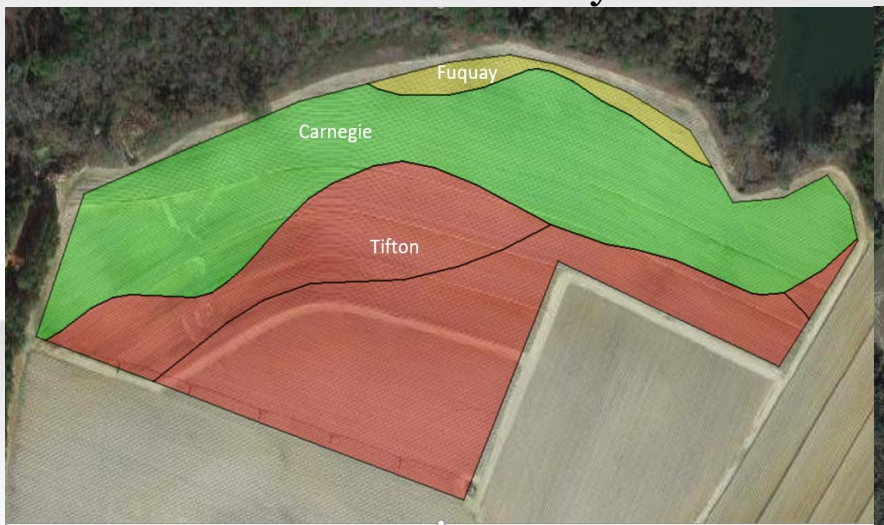
Tattnall County

Emanuel County



Toombs County



Evans County

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Depth to Claypan (cm)

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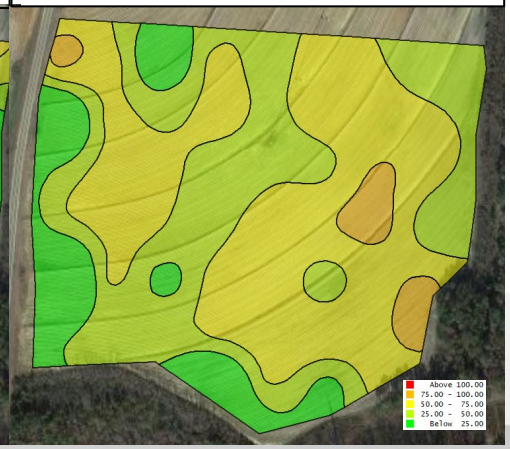
Depth to Claypan (cm)	Claypan Sulfur (ppm)
	

P=0.29

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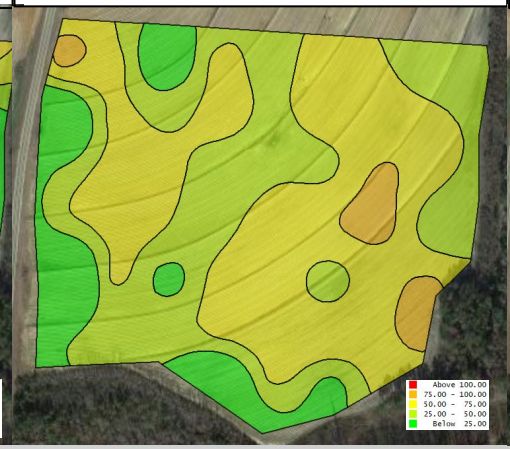
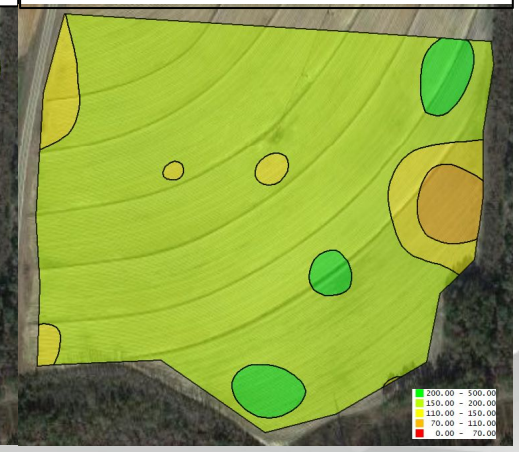
Depth to Claypan (cm)	Claypan Sulfur (ppm)	Bulb d.w. (g)
		
	P=0.29	*P*<0.05

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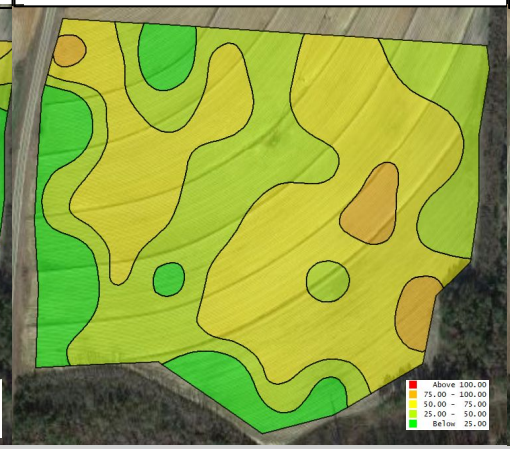
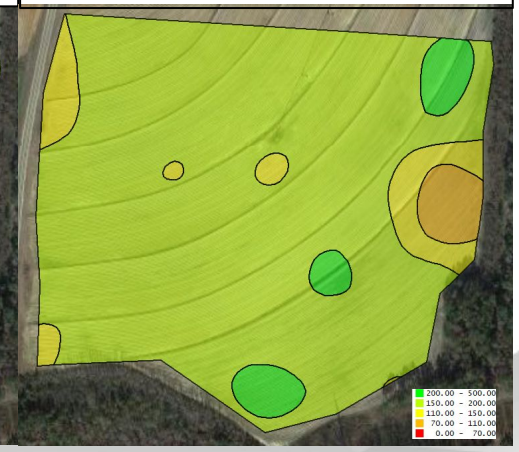
Depth to Claypan (cm)	Claypan Sulfur (ppm)	Bulb d.w. (g)
		
P=0.29		*P*<0.05

Pyruvic Acid (µmol/g)

P=0.78

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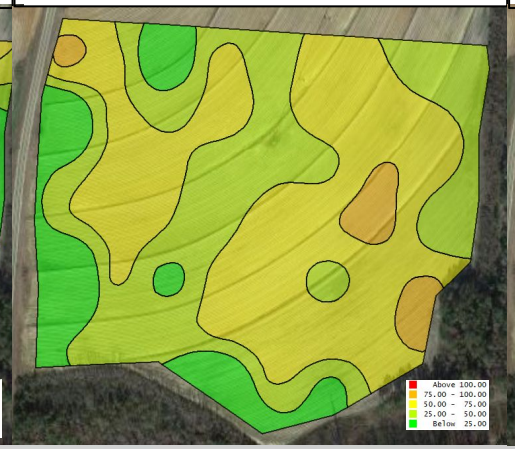
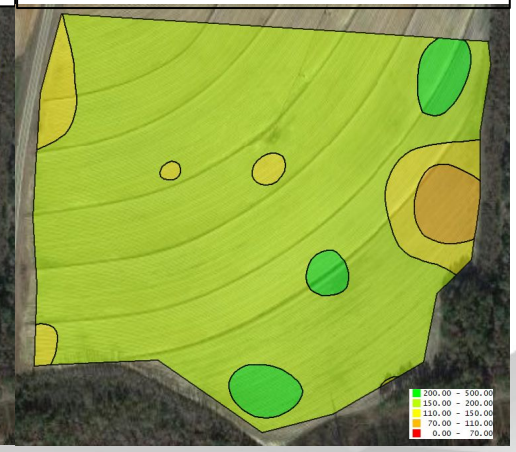
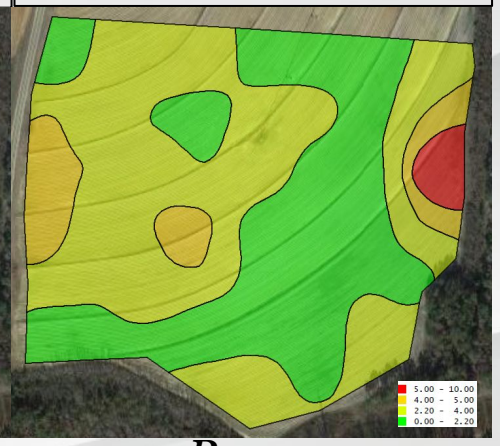
Depth to Claypan (cm)	Claypan Sulfur (ppm)	Bulb d.w. (g)
		
	P=0.29	*P*<0.05

Pyruvic Acid (µmol/g)	LF (µmol/g)
	
P=0.78	*P*=0.72

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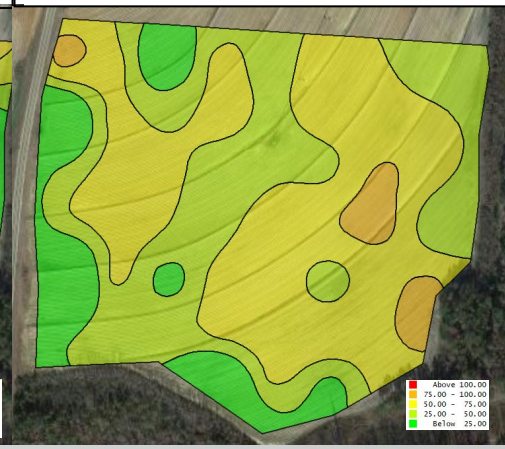
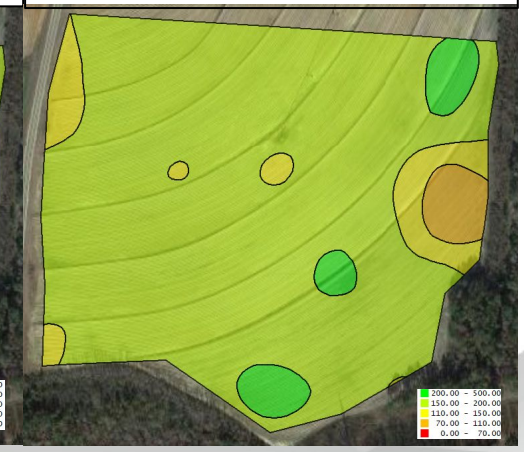
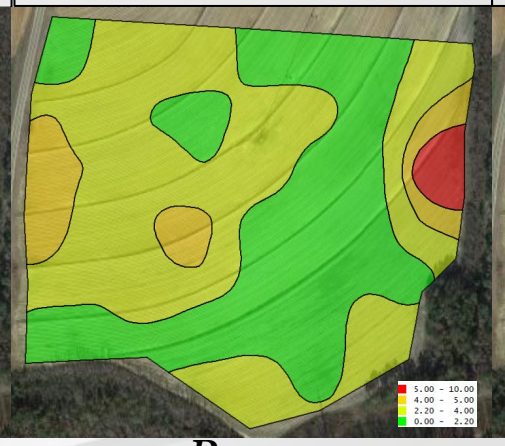
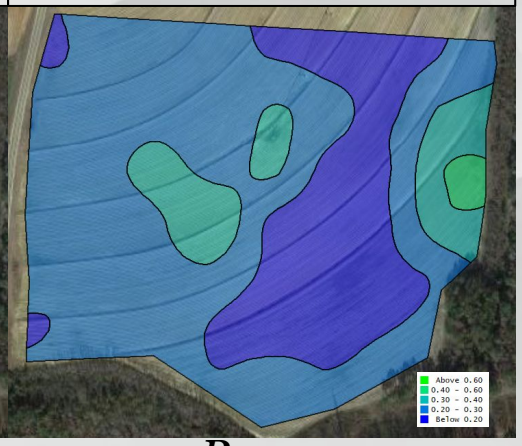
Depth to Claypan (cm)	Claypan Sulfur (ppm)	Bulb d.w. (g)
		
	P=0.29	*P*<0.05

Pyruvic Acid (µmol/g)	LF (µmol/g)	Leaf Sulfur Content (%)
		
P=0.78	*P*=0.72	*P*=0.09

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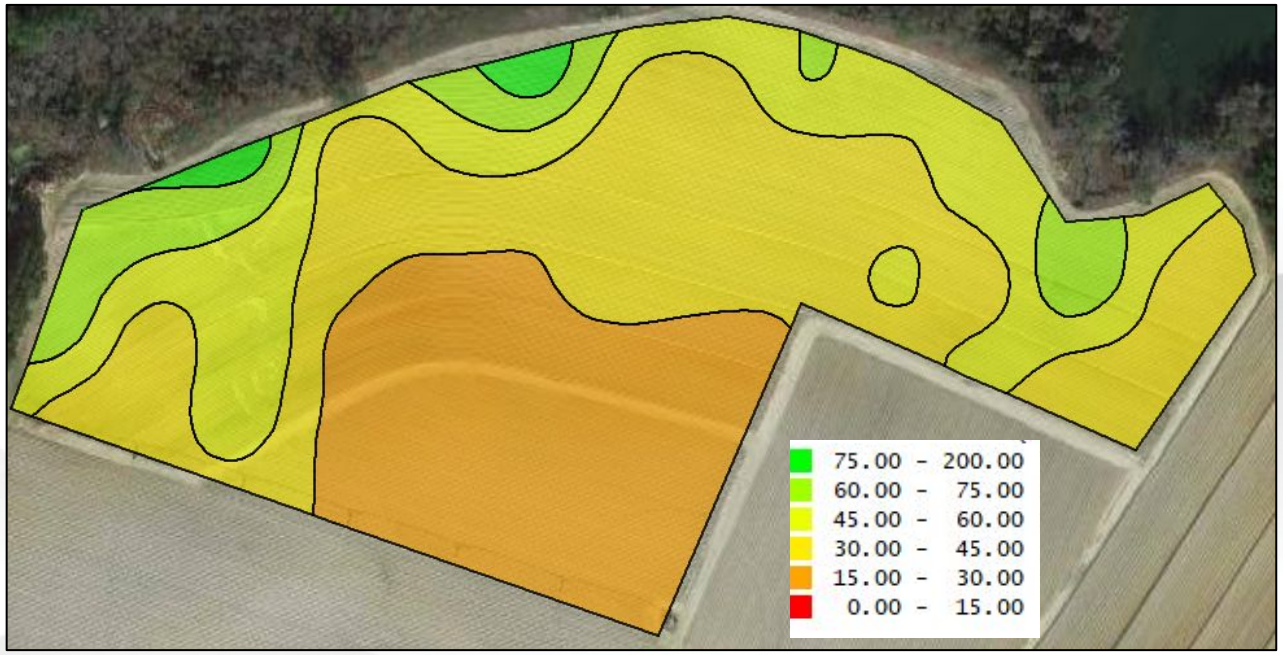
Depth to Claypan (cm)



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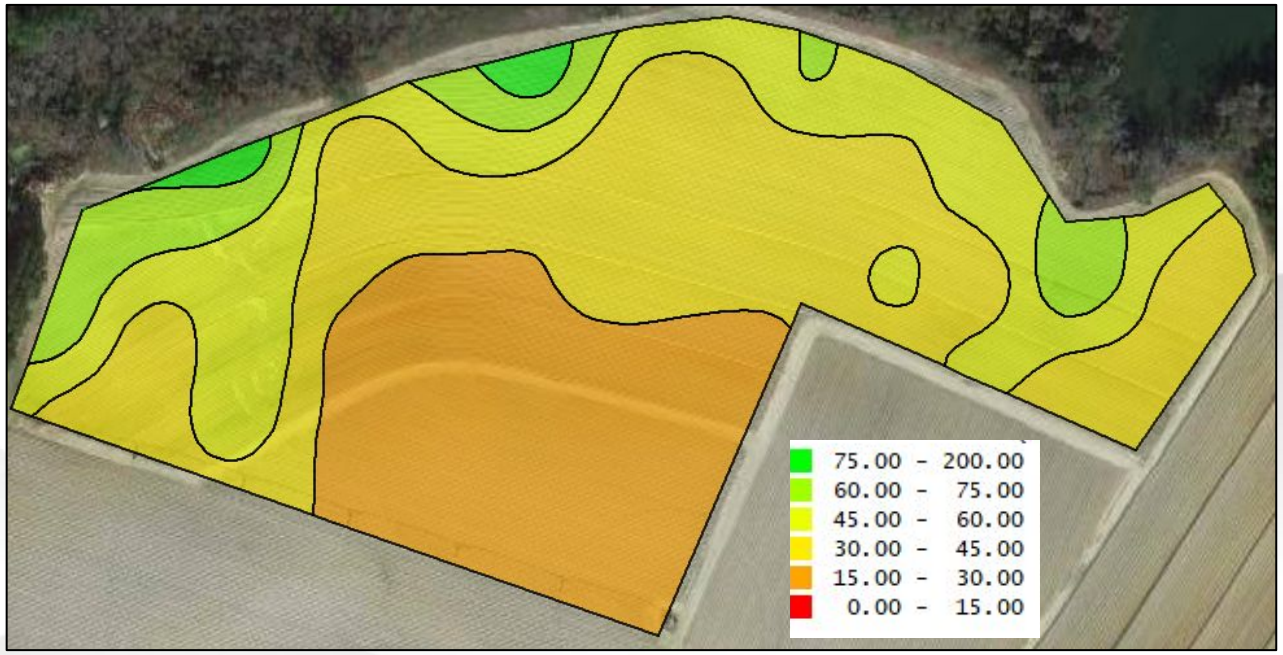
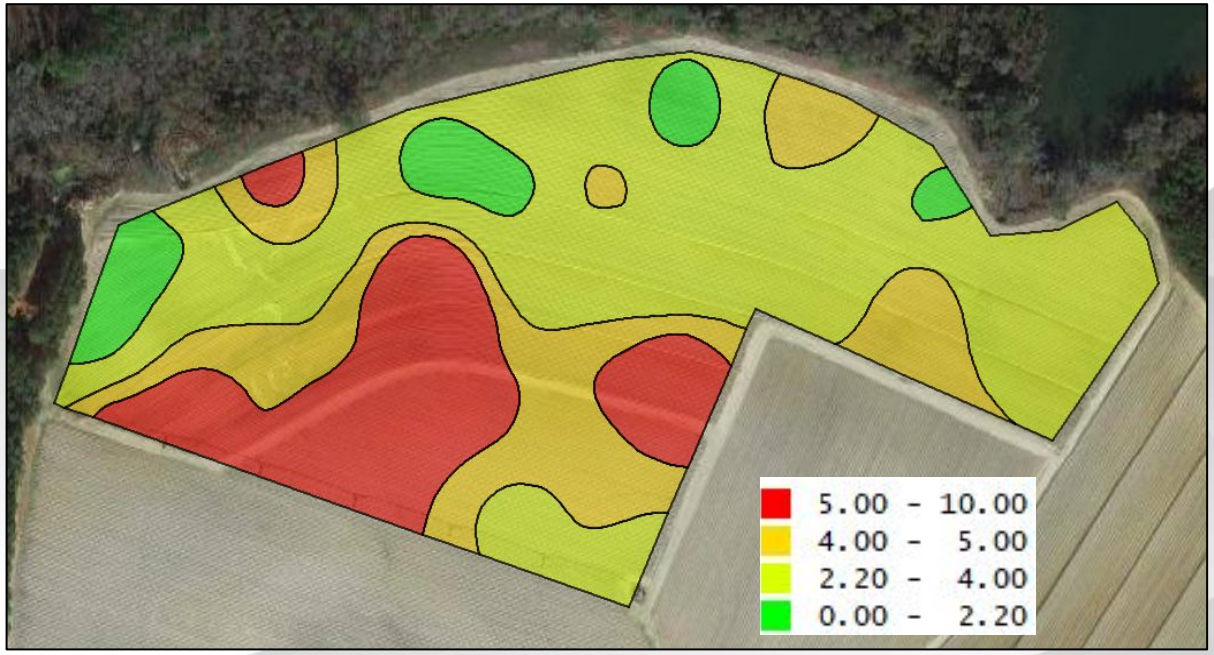
EXTENSION

Depth to Claypan (cm)



Lachrymatory Factor (µmol/g)



P<0.05

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Depth to Claypan (cm)

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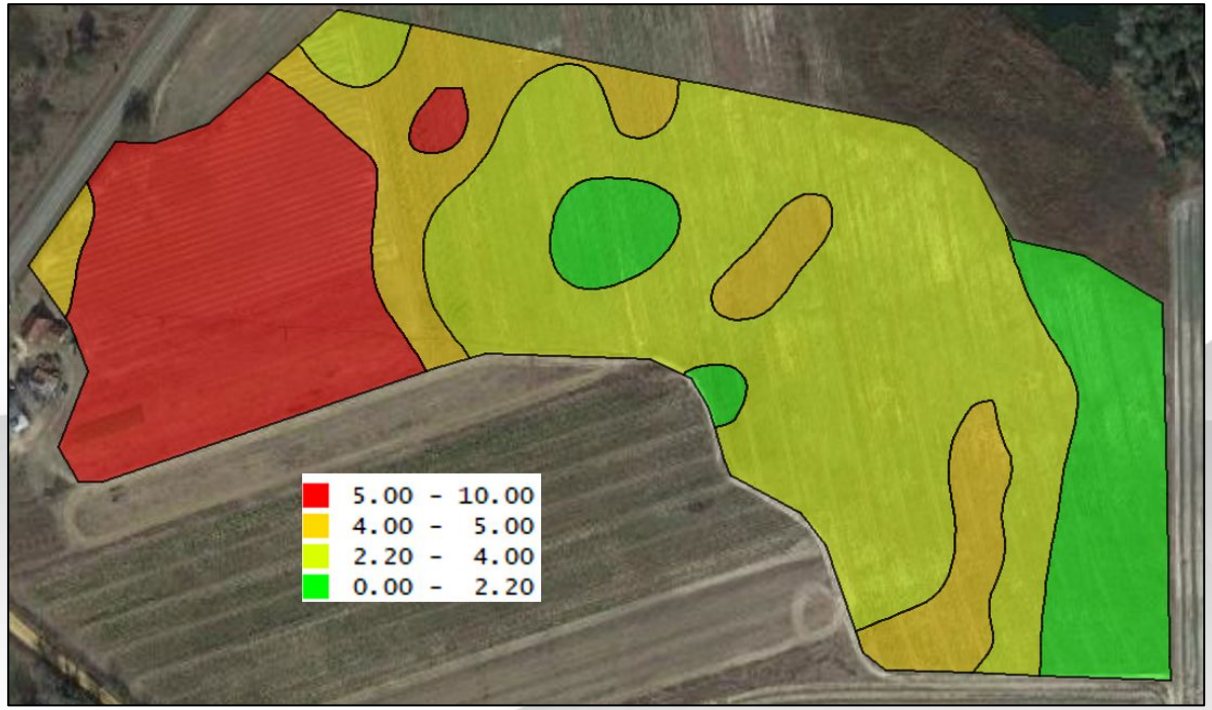
Depth to Claypan (cm)

Lachrymatory Factor (µmol/g)



$P<0.05$

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Depth to Claypan (cm)

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Depth to Claypan (cm)

Lachrymatory Factor (µmol/g)

P=0.85

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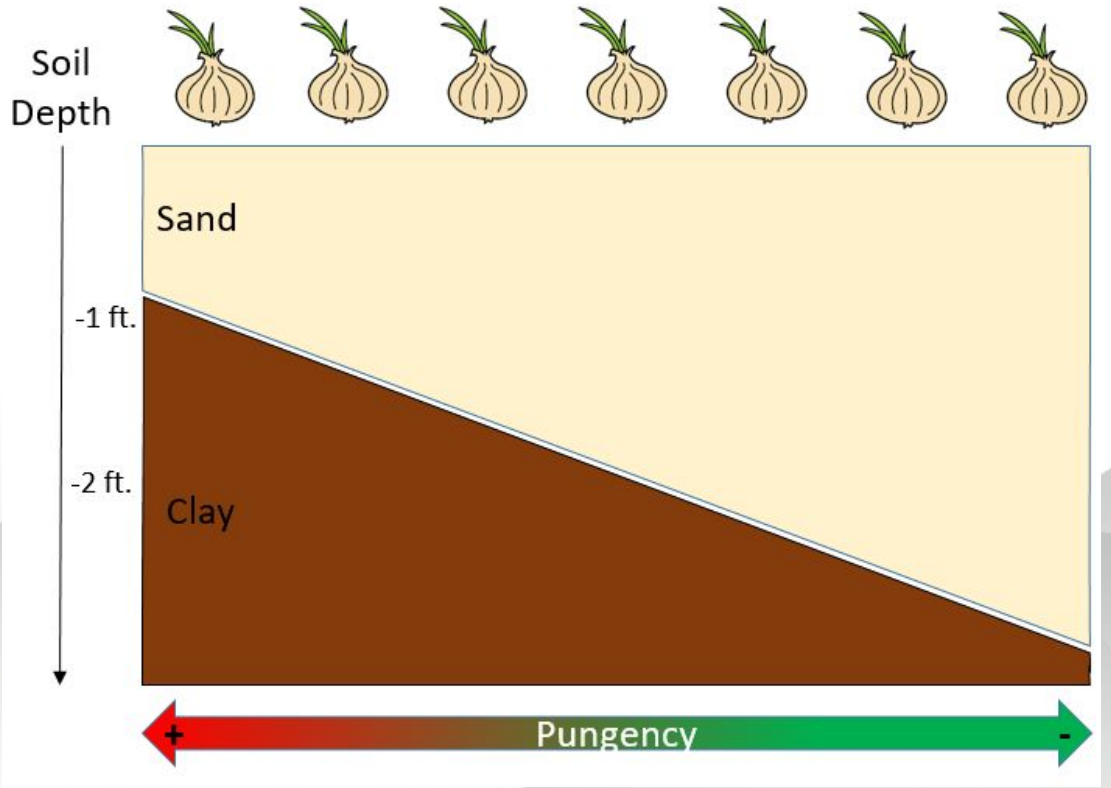

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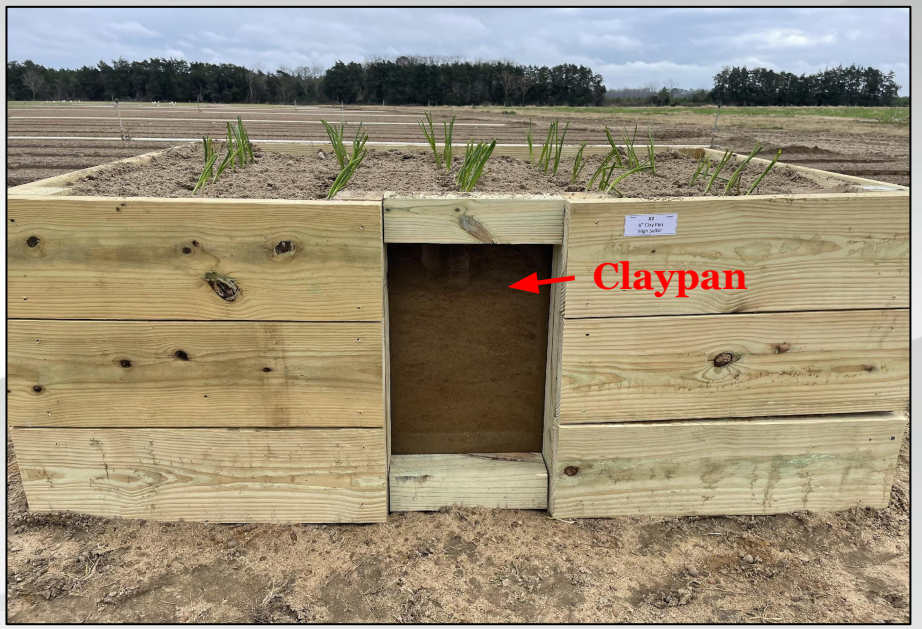

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Vidalia Onion Committee

VIDALIA® ONIONS

UGA Vidalia Onion and Vegetable Research Center

Chris Tyson, Area Onion Agent
Denny Thigpen
Daniel Clark

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Summary Statistics Table

	Depth to Claypan (cm)			Claypan Sulfur (ppm)			Bulb d.w. (g)			Pyruvic Acid (µmol/mL)			Lachrymatory Factor (µmol/mL)			Leaf Sulfur Content (%)		
Field Location	*Min*	*Max*	*Avg*	*Min*	*Max*	*Avg*	*Min*	*Max*	*Avg*	*Min*	*Max*	*Avg*	*Min*	*Max*	*Avg*	*Min*	*Max*	*Avg*
Emanual County	6	38	15	0	155	59	37	209	117	0.8	6.4	4.2	0.2	7.1	3.9	0.12	0.91	0.91
Evans County	12	18	15	1	188	64	169	252	213	2.4	4.8	3.8	3.6	6.8	5.0	0.06	0.25	0.25
Tattnall County	8	38	14	34	245	79	74	219	174	1.2	4.3	2.7	0.6	6.2	2.6	0.14	0.42	0.42
Toombs County	6	36	16	37	252	88	149	309	251	1.0	4.5	3.0	0.5	8.9	4.1	0.14	0.46	0.46

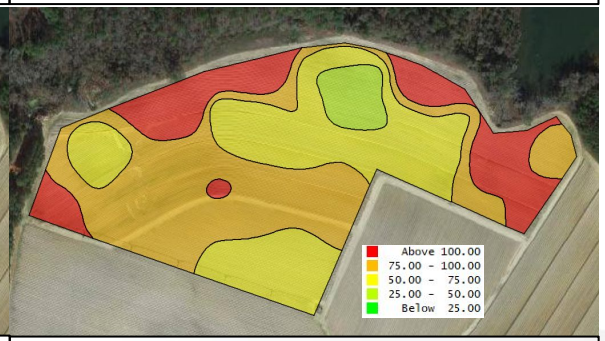
Pearson's correlation among measured attributes

	Clay Depth (cm)	Total Plant wt. (kg)	Bulb f.w.(g/bulb)	Pyruvate (µmol/g)	LF (µmol/g)	Methyls (nmol/g)	Topsoil S (lbs./A)	Claypan S (lbs./A)	Foliar S -Harvest (ppm)	Bulb S -Harvest (ppm)
Clay Depth (cm)	1.00	-0.40	-0.41	-0.04	0.05	0.11	0.13	-0.15	0.24	-0.10
Total Plant wt. (kg)		1.00	0.95	-0.07	-0.10	-0.02	0.13	-0.06	-0.30	0.06
Bulb f.w.(g/bulb)			1.00	-0.12	-0.13	-0.11	0.08	0.01	-0.33	0.03
Pyruvate (µmol/g)				1.00	0.89	0.76	0.29	0.29	0.85	0.88
LF (µmol/g)					1.00	0.80	0.28	0.33	0.84	0.88
Methyls (nmol/g)						1.00	0.18	0.20	0.76	0.77
Topsoil S (lbs./A)							1.00	0.12	0.27	0.41
Claypan S (lbs./A)								1.00	0.23	0.31
Foliar S -Harvest (ppm)									1.00	0.79
Bulb S -Harvest (ppm)										1.00

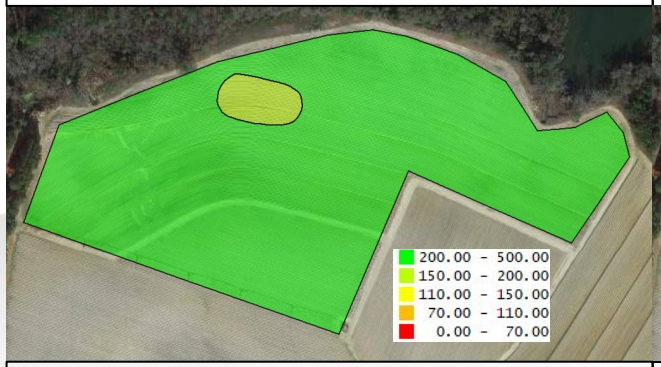
Red indicates statistically significant relationship ($P \leq 0.05$)

Depth to Claypan (cm)

Claypan Sulfur (ppm)

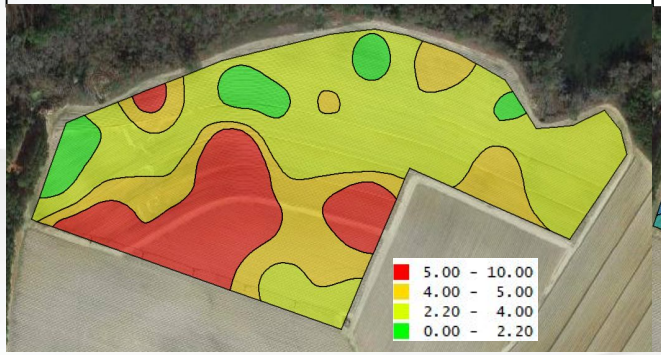


Bulb d.w. (g)

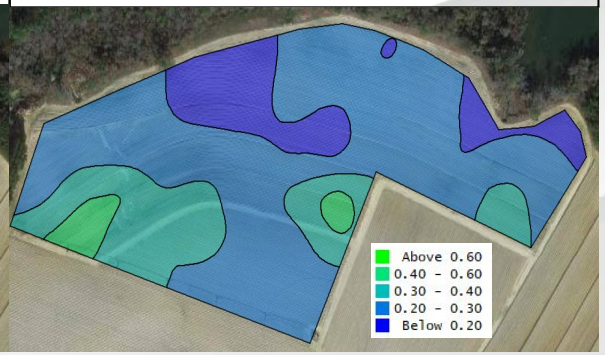


Pyruvic Acid (µmol/g)

Lachrymatory Factor (µmol/g)



Leaf Sulfur Content (%)



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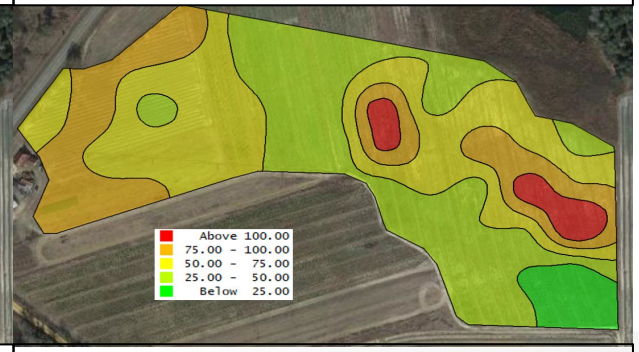
Pearson's correlation among measured attributes

	Clay Depth (cm)	Total Plant wt. (kg)	Bulb f.w.(g/bulb)	Pyruvate (µmol/g)	LF (µmol/g)	Methyls (nmol/g)	Topsoil S (lbs./A)	Claypan S (lbs./A)	Foliar S -Harvest (ppm)	Bulb S -Harvest (ppm)
Clay Depth (cm)	1.00	-0.36	-0.21	-0.24	-0.37	-0.41	-0.43	0.24	-0.29	-0.40
Total Plant wt. (kg)		1.00	0.84	0.31	0.31	0.32	0.39	0.02	0.20	0.49
Bulb f.w.(g/bulb)			1.00	0.26	0.26	0.18	0.36	0.07	0.16	0.40
Pyruvate (µmol/g)				1.00	0.62	0.48	0.46	0.30	0.66	0.68
LF (µmol/g)					1.00	0.45	0.49	0.19	0.52	0.63
Methyls (nmol/g)						1.00	0.49	-0.01	0.37	0.55
Topsoil S (lbs./A)							1.00	0.18	0.50	0.60
Claypan S (lbs./A)								1.00	0.04	0.14
Foliar S -Harvest (ppm)									1.00	0.64
Bulb S -Harvest (ppm)										1.00

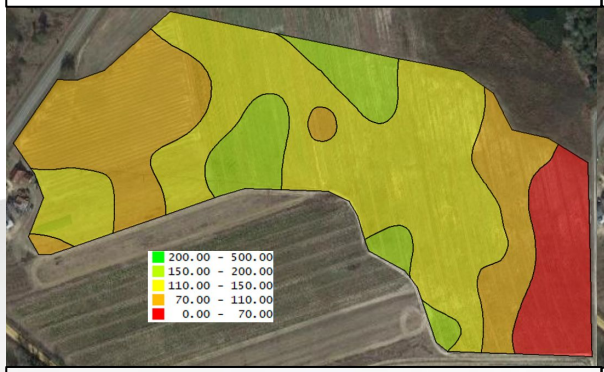
Red indicates statistically significant relationship ($P \leq 0.05$)

Depth to Claypan (cm)

Claypan Sulfur (ppm)

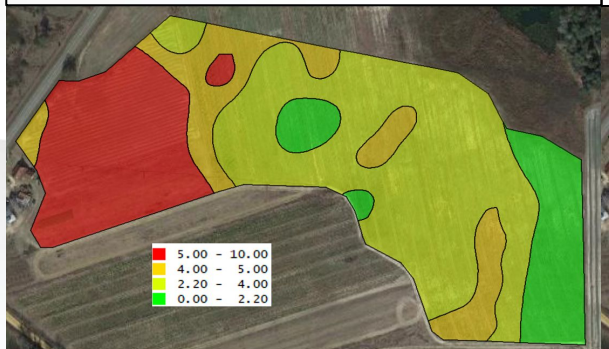


Bulb d.w (g)



Pyruvic Acid (µmol/g)

Lachrymatory Factor (µmol/g)



Leaf Sulfur Content (%)

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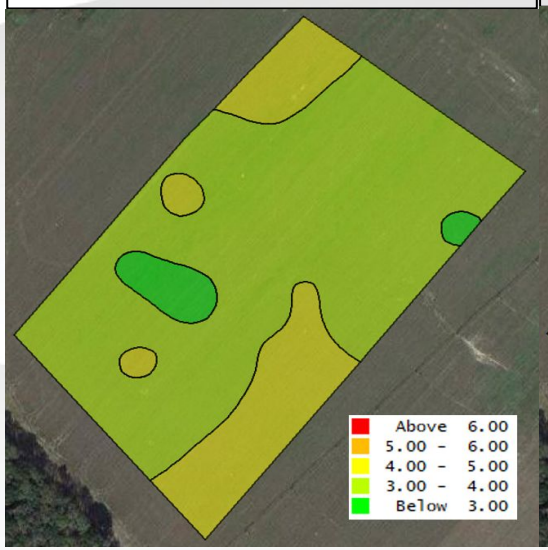
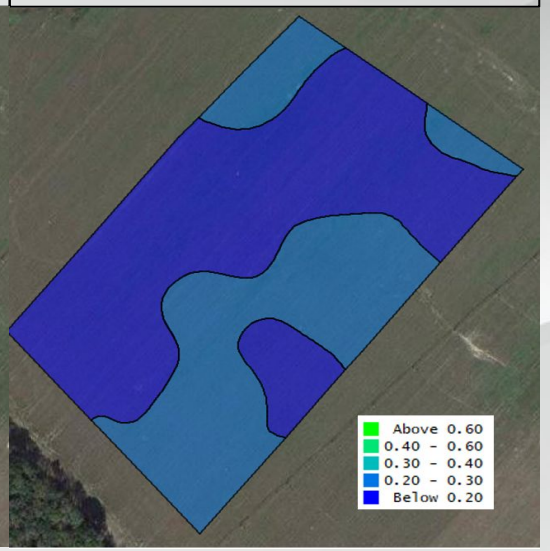
Pearson's correlation among measured attributes

	Clay Depth (cm)	Total Plant wt. (kg)	Bulb f.w.(g/bulb)	Pyruvate (µmol/g)	LF (µmol/g)	Methyls (nmol/g)	Topsoil S (lbs./A)	Claypan S (lbs./A)	Foliar S -Harvest (ppm)	Bulb S -Harvest (ppm)
Clay Depth (cm)	1.00	-0.21	-0.03	-0.39	-0.50	-0.37	-0.43	-0.07	-0.19	-0.35
Total Plant wt. (kg)		1.00	0.88	0.52	0.40	0.35	-0.02	0.04	0.44	0.61
Bulb f.w.(g/bulb)			1.00	0.25	0.11	0.23	-0.22	-0.08	0.10	0.35
Pyruvate (µmol/g)				1.00	0.84	0.62	0.29	0.29	0.72	0.87
LF (µmol/g)					1.00	0.67	0.41	0.24	0.63	0.85
Methyls (nmol/g)						1.00	0.37	0.25	0.50	0.65
Topsoil S (lbs./A)							1.00	0.23	0.27	0.30
Claypan S (lbs./A)								1.00	0.21	0.25
Foliar S -Harvest (ppm)									1.00	0.80
Bulb S -Harvest (ppm)										1.00

Red indicates statistically significant relationship ($P \leq 0.05$)

Depth to Claypan (cm)	Claypan Sulfur (ppm)	Bulb d.w. (g)
		
Pyruvic Acid (µmol/g)	LF (µmol/g)	Leaf Sulfur Content (%)
		

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Pearson's correlation among measured attributes

	Clay Depth (cm)	Total Plant wt. (kg)	Bulb f.w.(g/bulb)	Pyruvate (µmol/g)	LF (µmol/g)	Methyls (nmol/g)	Topsoil S (lbs./A)	Claypan S (lbs./A)	Foliar S -Harvest (ppm)	Bulb S -Harvest (ppm)
Clay Depth (cm)	1.00	0.11	0.09	-0.49	-0.04	-0.05	-0.54	0.27	-0.20	0.03
Total Plant wt. (kg)		1.00	0.90	0.28	-0.07	0.20	0.12	0.20	0.22	0.24
Bulb f.w.(g/bulb)			1.00	0.11	-0.11	0.15	0.01	0.04	0.23	0.26
Pyruvate (µmol/g)				1.00	0.33	0.17	0.48	-0.07	0.15	0.00
LF (µmol/g)					1.00	0.06	-0.08	0.32	0.42	-0.28
Methyls (nmol/g)						1.00	0.21	0.31	0.17	0.57
Topsoil S (lbs./A)							1.00	-0.13	0.08	0.30
Claypan S (lbs./A)								1.00	0.10	0.06
Foliar S -Harvest (ppm)									1.00	0.41
Bulb S -Harvest (ppm)										1.00

Red indicates statistically significant relationship ($P \leq 0.05$)