

Columbia Reach Chiawana Smart Orchard 661 SoilOptix Report



What's Inside

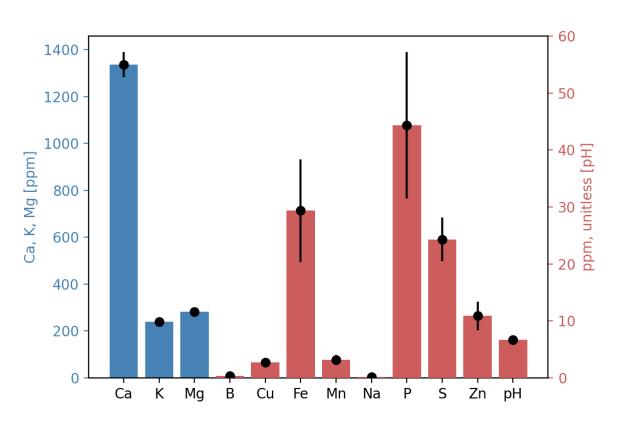
- Soil Data Summary
- Soil Maps
 - Physical Properties
 - Macronutrients
 - Micronutrients
 - Complex Models
- Appendix
 - Soil Nutrient Ratios
 - WSU Optimal Values

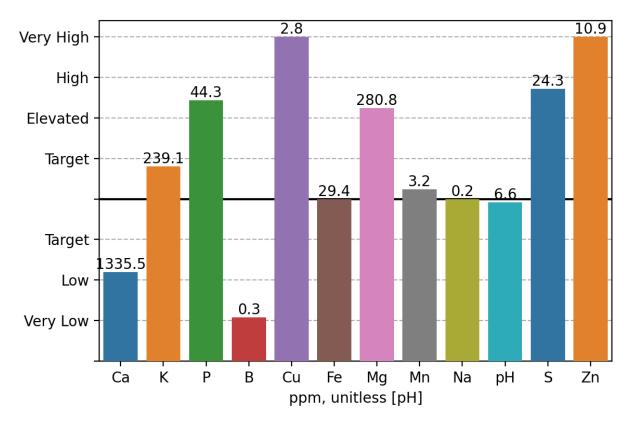




Departure From Optimal







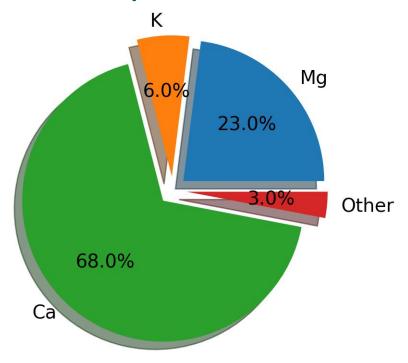
The average value of each micro and macro nutrient. The blue bars are plotted on the left axis and the red bars are plotted on the right axis.

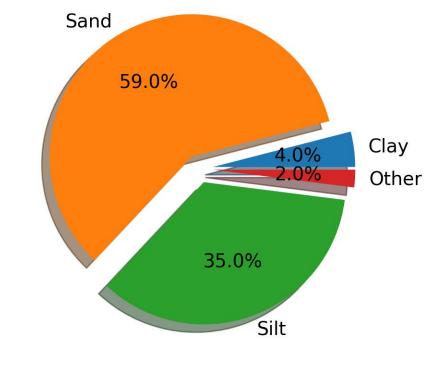
The black error bars indicate +/- 1 standard deviation around the mean.

The average value of each nutrient relative to the defined optimal ranges. The black horizontal line indicates 100%. Target ranges are 125% and 75%.

*all variables in the top two bar plots are in ppm, except pH which is unitless.

Soil Properties





Breakdown of base saturation composition percentages as a pie chart. 'Other' is calculated as: Other = 100 – (K_bse + Mg_bse + Ca_bse)

Breakdown of soil texture composition.





Soil Properties

Physical Properties

Variable	Mean	Min	Max	SD	CV	Units
CEC	10.01	8.68	11.39	0.54	5.39	meq/100g
Clay	4.34	2.32	6.43	0.82	18.89	%
Loam	40.01	35.97	43.92	1.58	3.95	%
OM	1.25	0.91	1.57	0.13	10.4	%
рН	6.63	5.81	7.49	0.36	5.43	unitless
Sand	59.99	56.08	64.03	1.58	2.63	%
Silt	35.67	29.55	41.6	2.39	6.7	%

Micronutrients

Variable	Mean	Min	Max	SD	CV	Units
В	0.34	0.17	0.47	0.04	11.76	ppm
Cu	2.75	1.52	3.88	0.31	11.27	ppm
Fe	29.35	14.31	53.01	9.04	30.8	ppm
Mn	3.19	1.65	5.85	0.85	26.65	ppm
Na	0.18	0.08	0.25	0.03	16.67	ppm
Zn	10.87	4.06	19.23	2.5	23	ppm

Complex Models

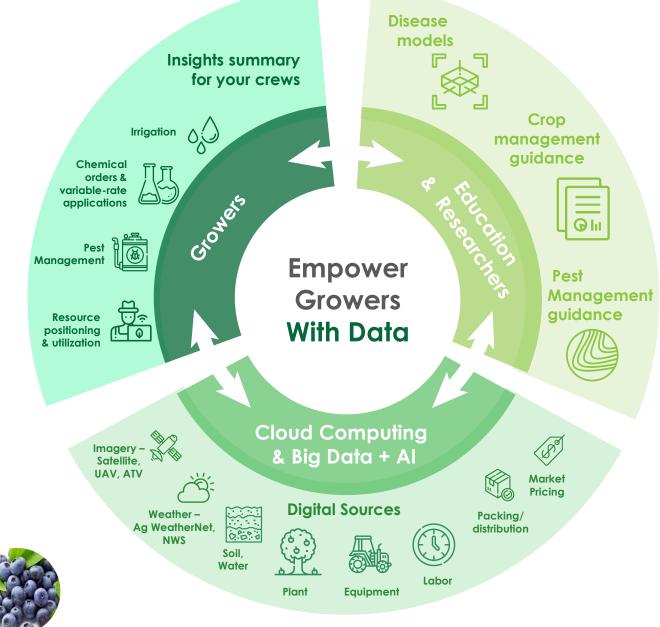
Variable	Mean	Min	Max	SD	CV	Units
Elevation	899.03	894.2	904.03	1.87	0.21	ft
Leak	8.08	7.03	9.16	0.42	5.2	unitless
PAWater	43.75	38.71	48.63	1.97	4.5	unitless
SALT	0.77	0.46	1.14	0.11	14.29	mmhos/cm
Macro I	Nutriei	nts -				

Variable	Mean	Min	Max	SD	CV	Units
Ca	1335.46	1203.34	1472.1	53.32	3.99	ppm
Ca_bse	68.07	66.39	69.06	0.49	0.72	%
K	239.06	193.81	282.62	16.23	6.79	ppm
K_bse	6.24	5.55	6.96	0.26	4.17	%
Mg	280.8	236.57	311.04	12.46	4.44	ppm
Mg_bse	23.86	22.03	26.49	0.77	3.23	%
NH4N	1.67	0.5	2.9	0.36	21.56	lbs/acre
NO3N	1.26	1.15	1.4	0.04	3.17	lbs/acre
Р	44.3	17.2	87.56	12.85	29.01	ppm
S	24.31	14.54	33.05	3.82	15.71	ppm



Ratios

- Calcium-Magnesium
- Potassium-Magnesium
- Calcium-Potassium
- Calcium-Phosphorous
- Potassium-Boron
- Potassium-Magnesium
- Manganese-Copper
- Manganese-Zinc
- Phosphorous-Copper
- Phosphorous-Manganese
- Zinc-Copper









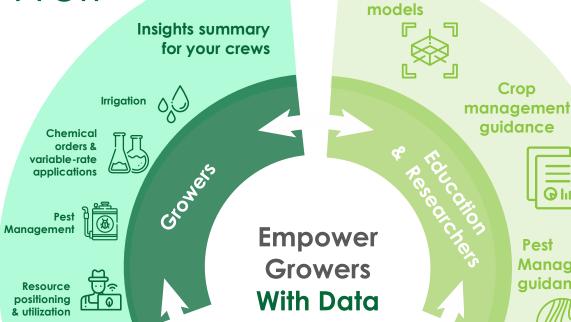




Optimal Values for Tree Fruit

Variable	unit	low	optimal	high	ppmoptimal
рН	unitless	<5	6-7.5	>8	
K	ppm	<120	150-250	>300	
Ca	meq/100g	<3	4.1-20		820-4000
Mg	meq/100g	<0.5	0.5-2.5	>2.5	60-300
Na	meq/100g		<0.5	>0.5	<115
В	ppm	<1	1-1.5	>1.5	
S	ppm	<4	9-20	>20	
Zn	ppm	<0.25	0.6-1		
Си	ppm	<0.1	0.6-1	>20	
Mn	ppm		1-5	>50	
Fe	ppm		>4.5		
Р	ppm	<10	15-40	>50	

^{*} Per Washington State University research





NWS

Cloud Computing & Big Data + Al



Disease





8

Crop

guidance

G III

Management

guidance

Pest



Plant



Equipment





Packing/ distribution







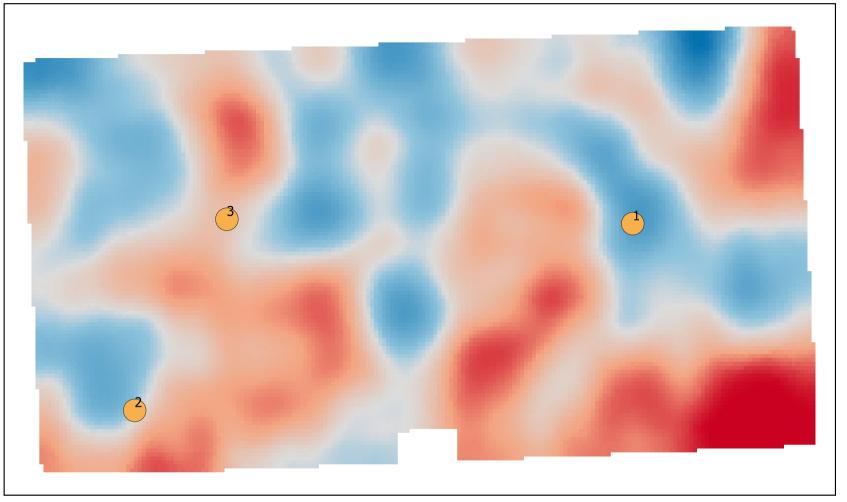


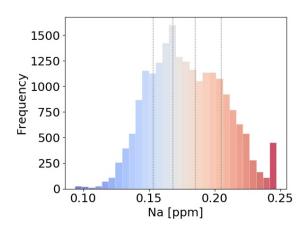


Chiawana:Na









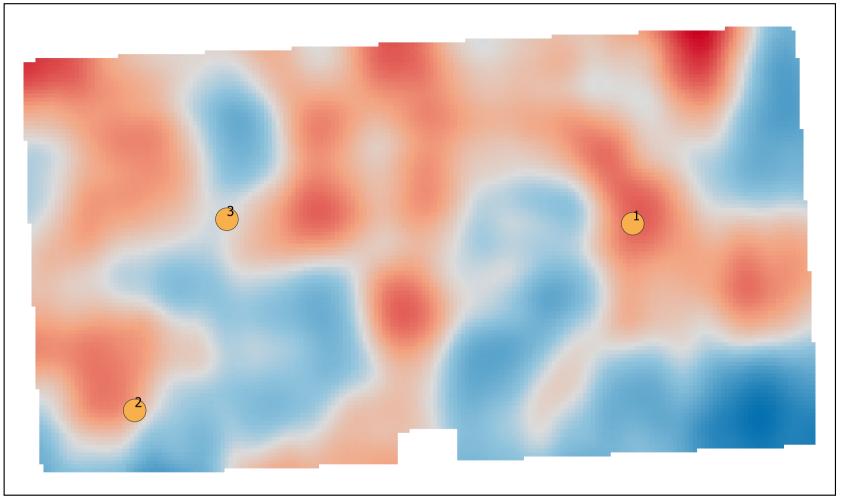
							Na [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	0.09-0.15
Columbia Reach	661	Apples	4/27/21	20.57	0.18	15	0.15-0.17
	_	-			-		0.17-0.18
							0.18-0.2
							0 2-0 25

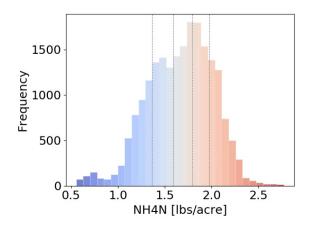
							() ()	-		4
Reach	661	Annles	4/27/21	20 57	0.18	15	0.15-0.1/			ı
reacii	001	пррісо	1/2//21	120.57	0.10	15	0.17-0.18	3	39.1	l
							0.18-0.2			
							0.2-0.25			
_				400						
0	25	50	/5	100	m		*This document is	- da	sianad	
							THIS GOCULLETT IS	s ues	siurieu	

Chiawana:NH4N









							1411	
Client	Block	Crop	Scan Date	Acres	Mean	CV		0.56-1.36
Columbia Reach	661	Apples	4/27/21	20.57	1.67	20		1.36-1.59 1.59-1.79
								1.79-1.79
								1.97-2.77

ID	NH4N
1	2.5
2	1.5
3	1.8
<u></u>	1.0

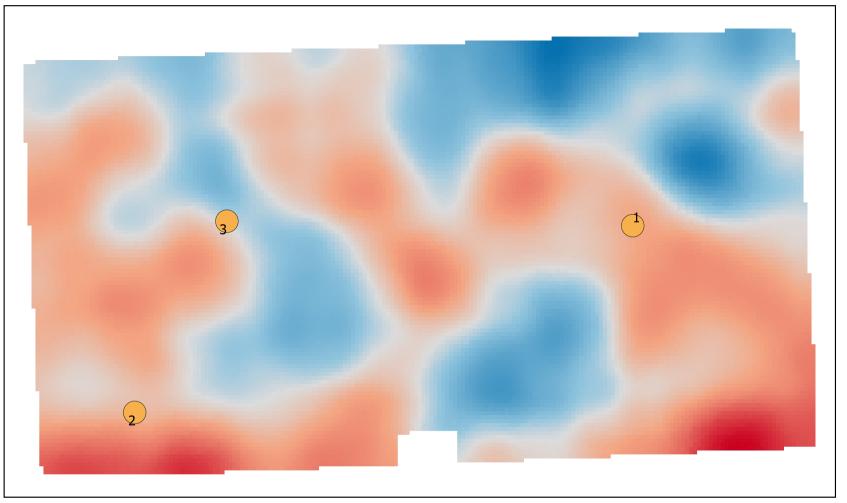
NH4N [lhs/acre]

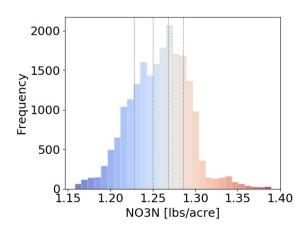
\wedge	0	25	50	75	100 m
	<u> </u>			-	—

Chiawana: NO3N









							NO3N [lbs/acre]
Client	Block	Crop	Scan Date	Acres	Mean	CV	1.16-1.23
Columbia Reach	661	Apples	4/27/21	20.57	1.26	2	1.23-1.25
							1.25-1.27
							1.29-1.39

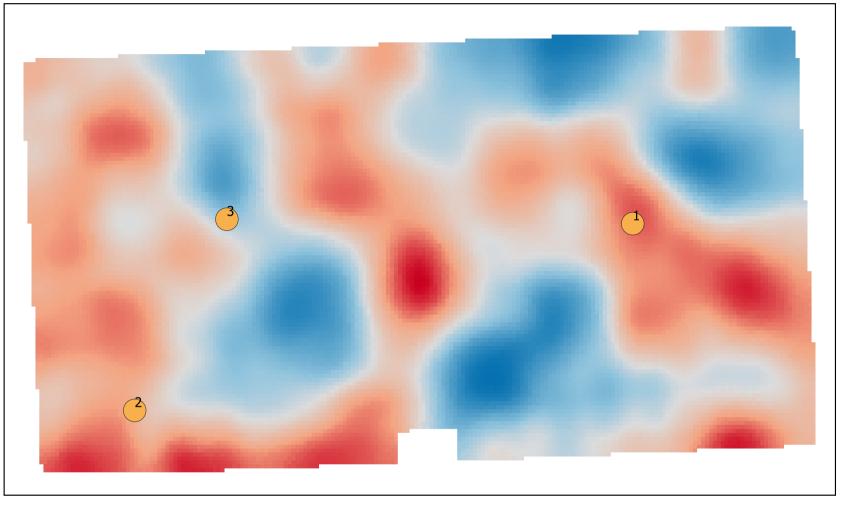
	NO3N
1	1.4
2	1.1
3	1.3

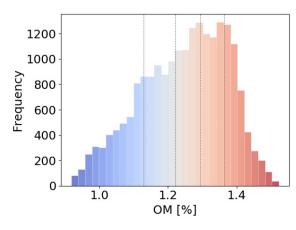
\wedge	0	25	50	75	100 m
	<u> </u>	-	-		—

Chiawana:OM









							OM [%]
Client	Block	Crop	Scan Date	Acres	Mean	CV	0.92-1.13
Columbia Reach	661	Apples	4/27/21	20.57	1.25	10	1.13-1.22
							1.22-1.29
							1.36-1.52

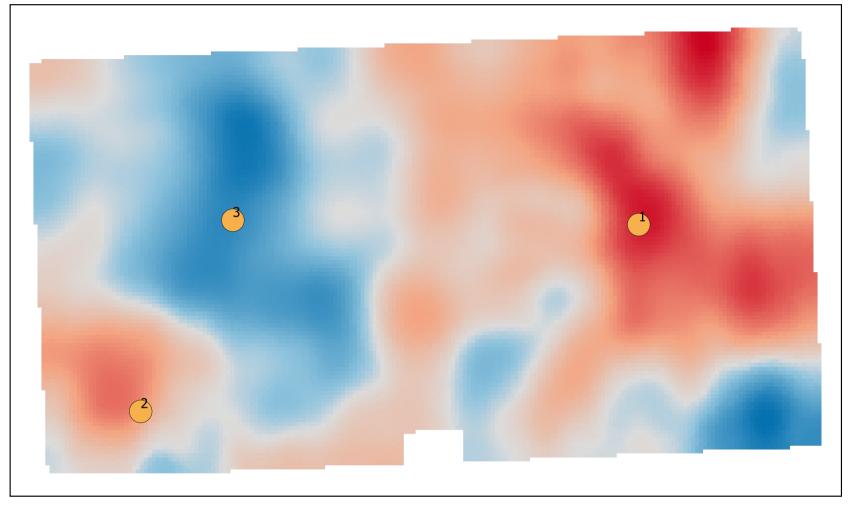
ID	ОМ	
1	1.4	
2	1.4	
3	1.1	
		l

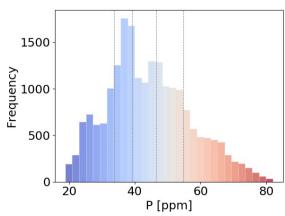
\wedge	0	25	50	75	100 m
	<u> </u>			-	——

Chiawana:P









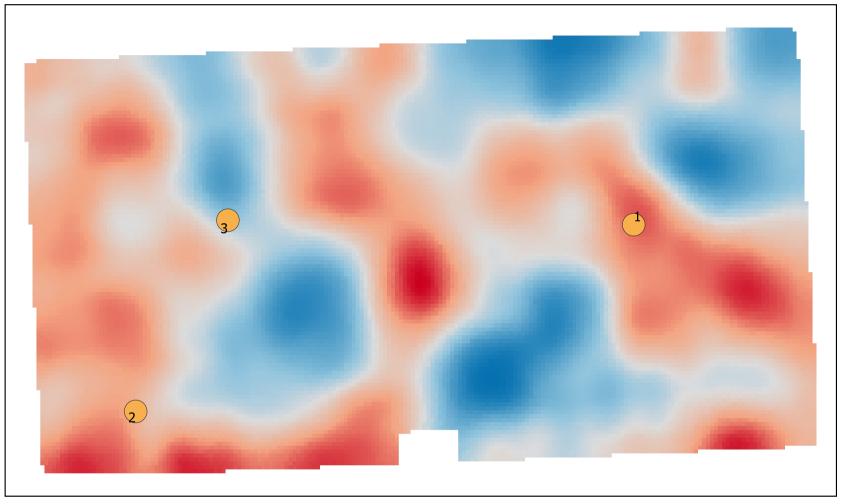
								18.82-33.67
Client		Block	Crop	Scan Date	Acres	Mean	[cv]	
Columbia R	each	661	Apples	4/27/21	20.57	44.23	28	33.67-39.23
	Coldinata (Cacil 1001 7100103 1727/21 20.37 11.23 20				39.23-46.49			
								46.49-54.73
								54.73-82.0
$\bigotimes_{\mathbb{N}}$	0 ⊢	25 ——	50 ——	75 ————	100 ı	m		*This doc "snapshot description

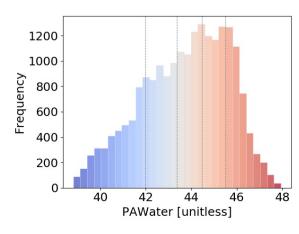
P [ppm]

Chiawana: PAWater



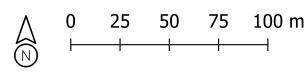






								PAWater [unitless]
Clier	nt	Block	Crop	Scan Date	Acres	Mean	CV	38.81-41.96
Colu	ımbia Reach	661	Apples	4/27/21	20.57	43.72	4	41.96-43.36
			-		-	_		43.36-44.47
								44.47-45.5
								45.5-47.93

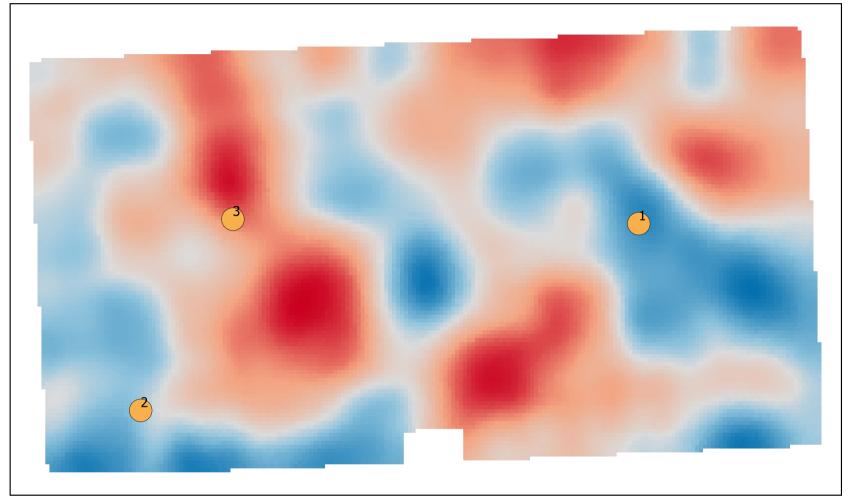
ID	PAWater
1	NAN
2	NAN
3	NAN

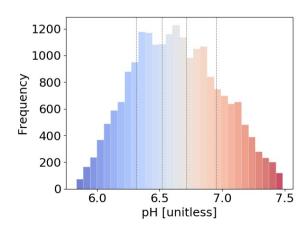


Chiawana:pH



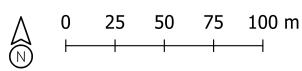






							pH [unitless]
Client	Block	Crop	Scan Date	Acres	Mean	CV	5.83-6.31
Columbia Reach	661	Apples	4/27/21	20.57	6.63	5	6.31-6.52
		-	-				6.52-6.71
							6.71-6.95
							6.95-7.48

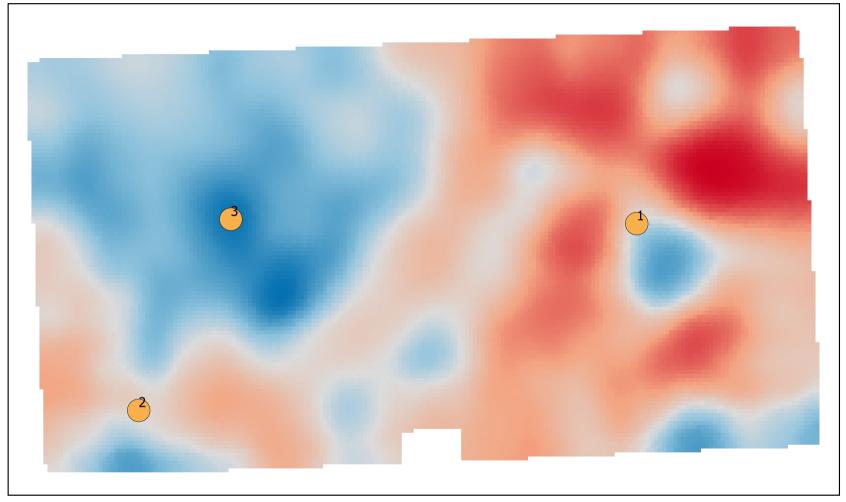
ID	рН	
1	6.0	
2	6.3	
3	7.2	
		•

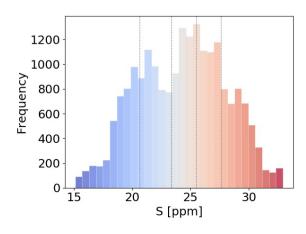


Chiawana:S









							S [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	15.11-20.65
Columbia Reach	661	Apples	4/27/21	20.57	24.28	15	20.65-23.37
							25.5-27.63
							27 63-32 04

		•					2	0 CE 22 27	12	I 25.55 I
each	661	Annles	4/27/21	20.57	24.28	15		0.65-23.37	\vdash	
eacii	001	Apples	4/2//21	20.57	24.20	13		3.37-25.5	3	6.27
							Z.	3.37-23.3		
							2!	5.5-27.63		
							2	7.63-32.94		
_										
0	25	50	75	100	m					

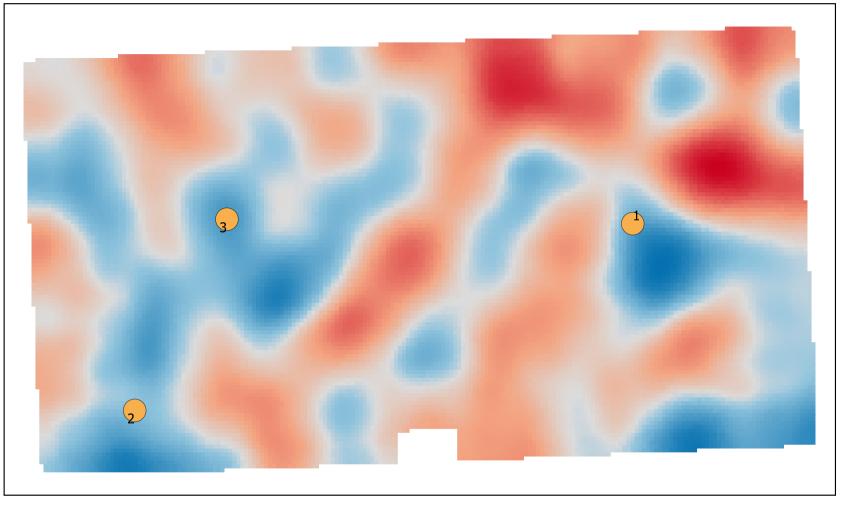
*This document is designed to provide you a "snapshot" of your field at a glance. Legend descriptions are not recommendations.

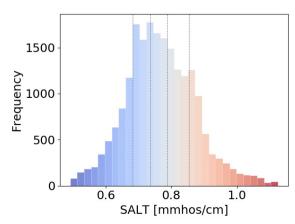
28.41

Chiawana: SALT





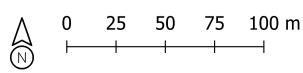




							SALT [mmhos/cm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	0.49-0.68
Columbia Reach	661	Apples	4/27/21	20.57	0.77	13	0.68-0.73
			-				0.73-0.79
							0.79-0.85
							0.85-1.12

1	NAN	
2	NAN	
3	NAN	
		ı

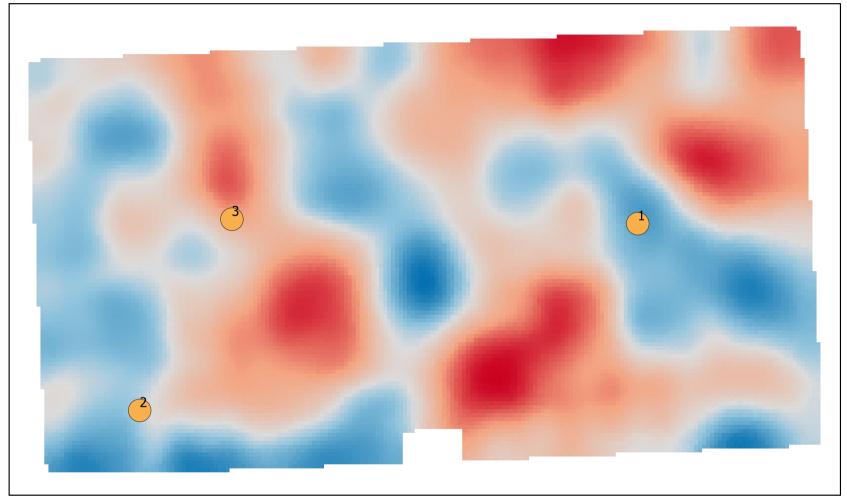
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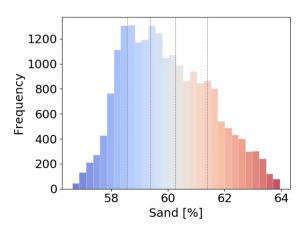


Chiawana:Sand



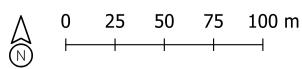






							Sand [%]
Client	Block	Crop	Scan Date	Acres	Mean	CV	56.62-58.56
Columbia Reach	661	Apples	4/27/21	20.57	59.97	2	58.56-59.38 59.38-60.26
							60.26-61.38
							61.38-63.95

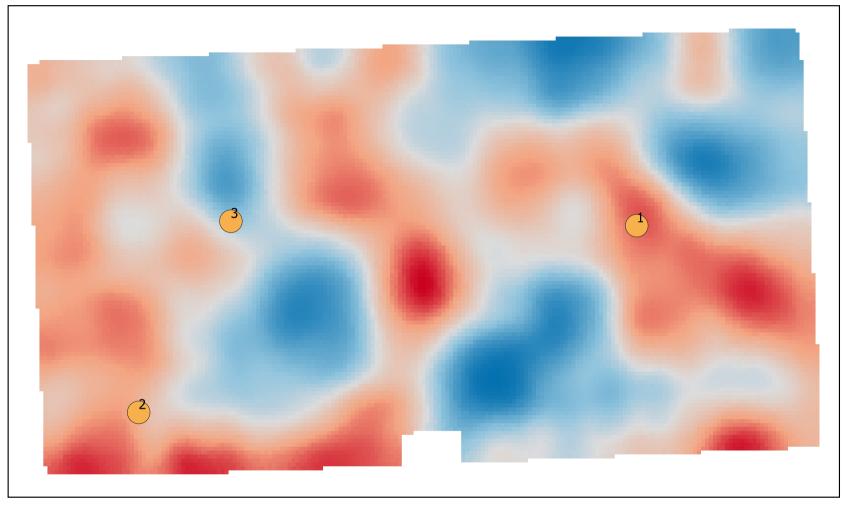
ID	Sand
1	57
2	60
3	61

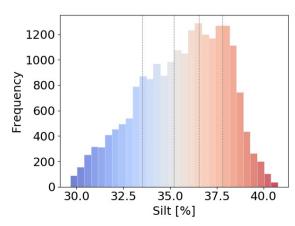


Chiawana:Silt

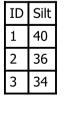


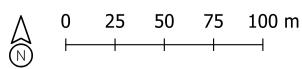






							Silt	[%]
Client	Block	Crop	Scan Date	Acres	Mean	CV		29.66-33.5
Columbia Reach	661	Apples	4/27/21	20.57	35.64	6		33.5-35.2 35.2-36.55
								36.55-37.8
								37.8-40.76

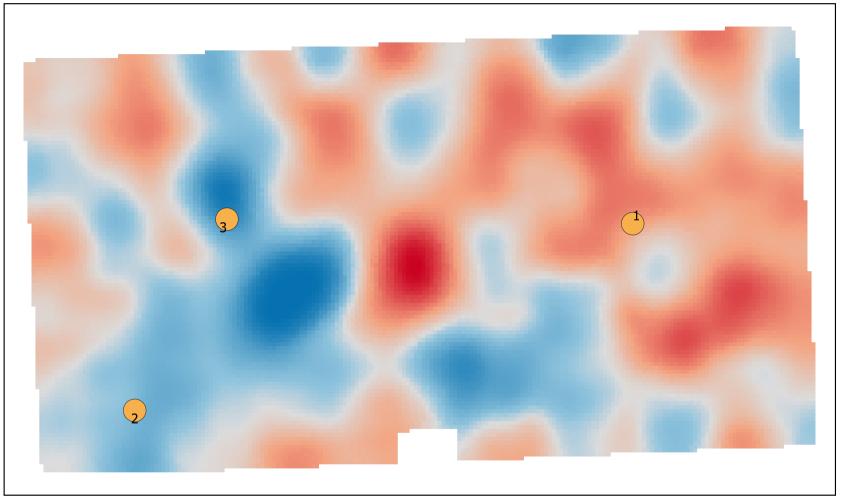


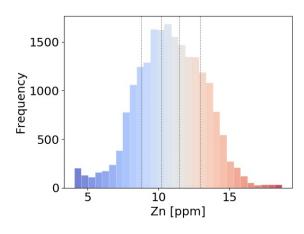


Chiawana:Zn









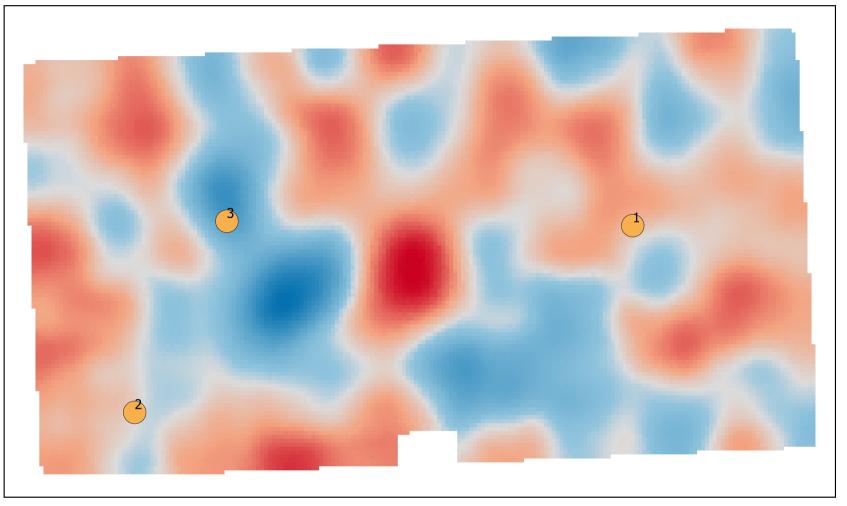
							Zn [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	4.06-8.8
Columbia Reach	661	Apples	4/27/21	20.57	10.83	22	8.8-10.19
-		-			-		10.19-11.46
							11.46-12.93
							12.93-18.71

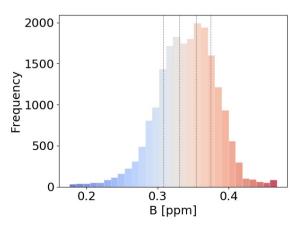
ID	Zn	
1	15.2	
2	6.9	
3	5.8	

Chiawana:B









							B [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	0.17-0.31
Columbia Reach	661	Apples	4/27/21	20.57	0.34	12	0.31-0.33
							0.35-0.38
							0.38-0.47

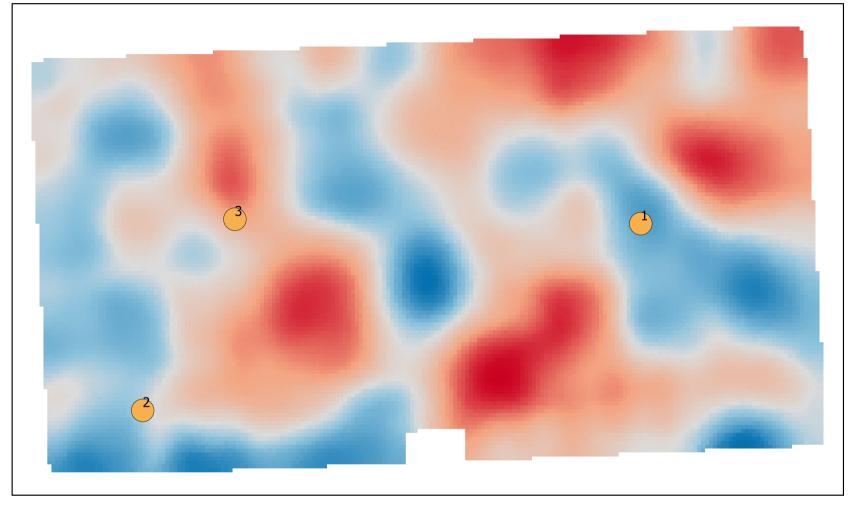
В	
0.34	
0.36	
0.23	
	0.34

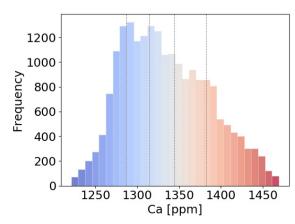
Λ	0	25	50	75	100 m
	<u> </u>			+	—

Chiawana:Ca









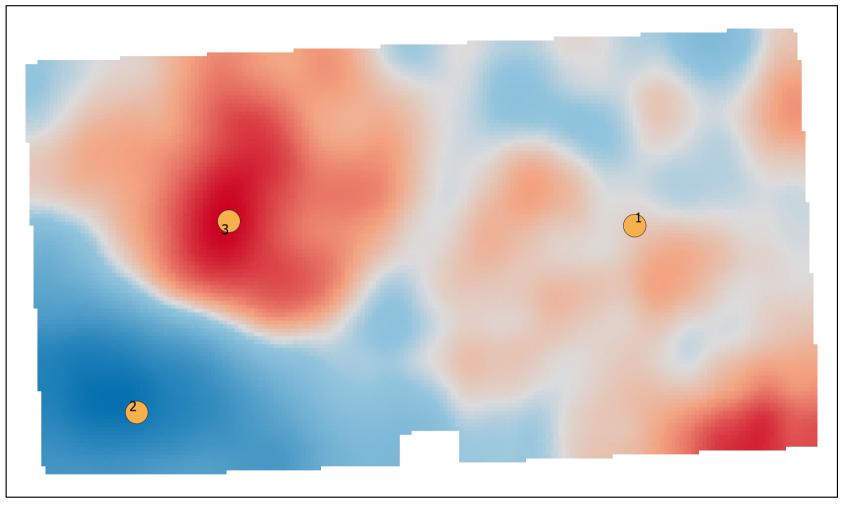
	Ca [ppm]						
Client	Block	Crop	Scan Date	Acres	Mean	CV		1220.98-1286.83
Columbia Reach	661	Apples	4/27/21	20.57	1334.6	3		1286.83-1314.58
								1314.58-1344.33
								1344.33-1382.32
	2.5	50	75	100				1382.32-1469.37

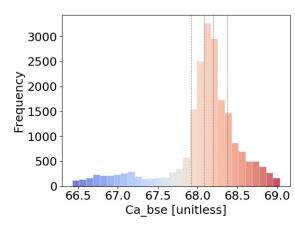
ID	Ca
1	1160.0
2	1460.0
3	1320.0

Chiawana:Ca_bse









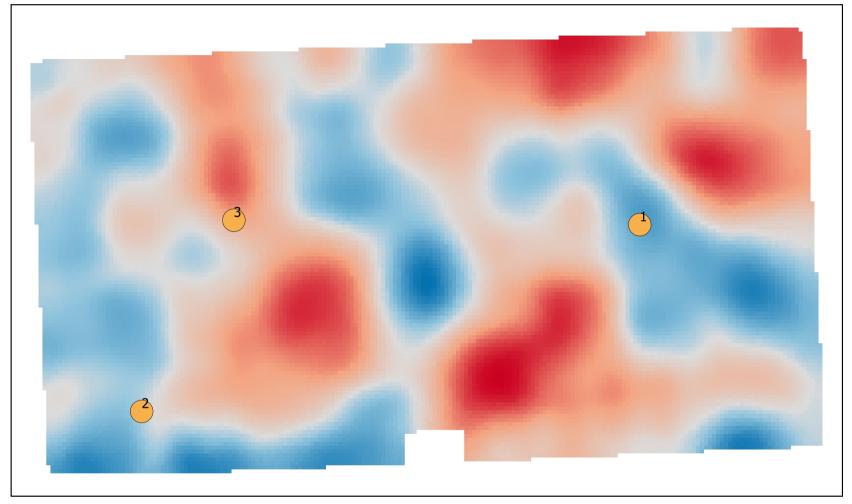
							Ca_bse [unitless]
Client	Block	Crop	Scan Date	Acres	Mean	CV	66.42-67.92
Columbia Reach	661	Apples	4/27/21	20.57	68.07	0	67.92-68.09
							68.09-68.2
							68.38-69.03

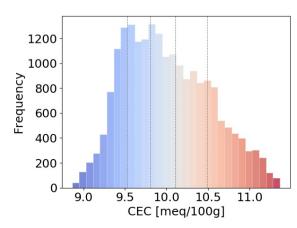
ID	Ca_bse
1	NAN
2	NAN
3	NAN

Chiawana:CEC









							CEC [meq/100g]
Client	Block	Crop	Scan Date	Acres	Mean	CV	8.86-9.53
Columbia Reach	661	Apples	4/27/21	20.57	10.01	5	9.53-9.8
							9.8-10.11
							10.49-11.37

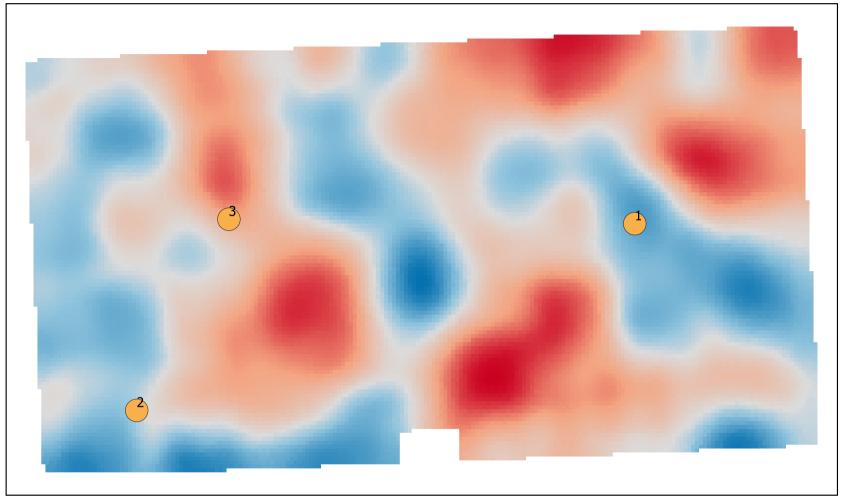
ID	CEC	
1	NAN	
2	NAN	
3	NAN	

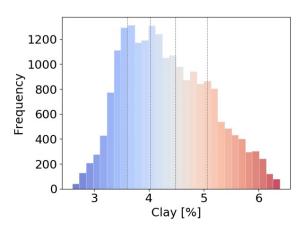
Λ	0	25	50	75	100 m
	<u> </u>	+	-	+	\dashv

Chiawana: Clay

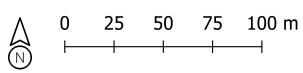








							Clay	′ [%]
Client	Block	Crop	Scan Date	Acres	Mean	CV		2.6-3.6
Columbia Reach	661	Apples	4/27/21	20.57	4.33	18		3.6-4.02
								4.02-4.48 4.48-5.06
								5.06-6.39

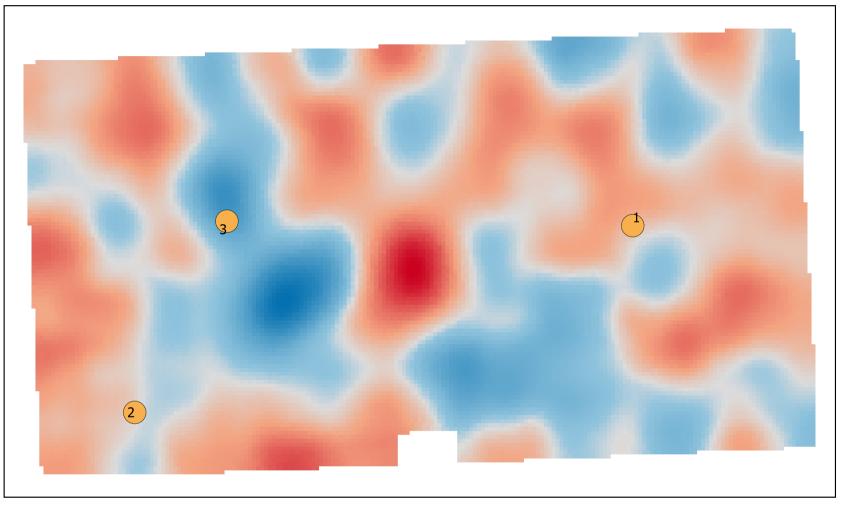


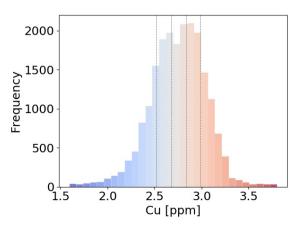
ID	Clay	
1	3	
2	4	
3	5	
		•

Chiawana:Cu









							Cu [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	1.59-2.52
Columbia Reach	661	Apples	4/27/21	20.57	2.75	10	2.52-2.68
		-			-		2.68-2.84
							2.84-2.99
							2.99-3.8

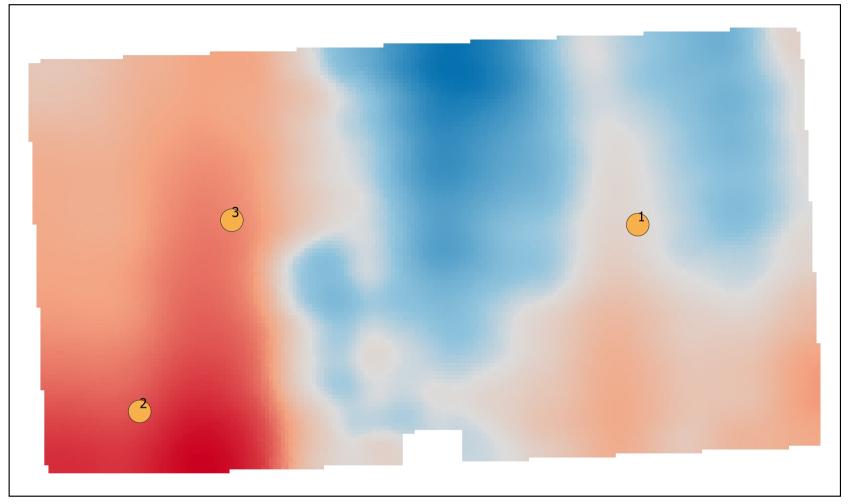
ID	Cu
1	2.4
2	3.3
3	1.9

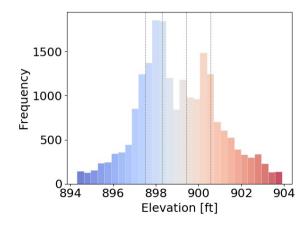
\wedge	0	25	50	75	100 m
	<u> </u>			+	

Chiawana: Elevation









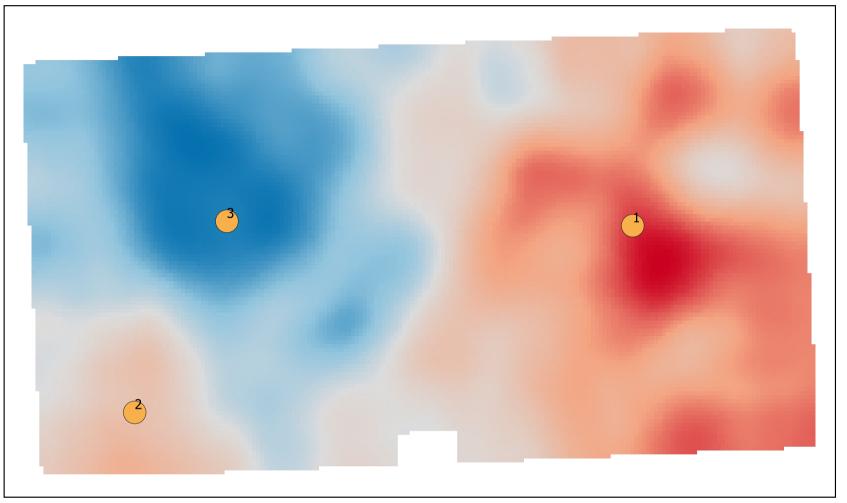
								Elev	ation [ft]
Client		Block	Crop	Scan Date	Acres	Mean	CV		894.32-897.51
Columbia	Reach	661	Apples	4/27/21	20.57	899.02	0		897.51-898.3 898.3-899.44
									899.44-900.56
									900.56-903.89
٨	0	25	50	75	100 ו	m			*This door

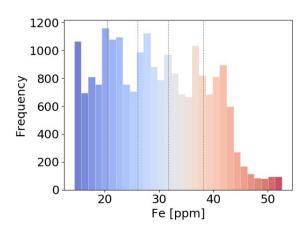
ID	Elevation
1	NAN
2	NAN
3	NAN

Chiawana:Fe

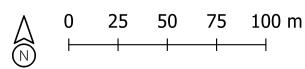








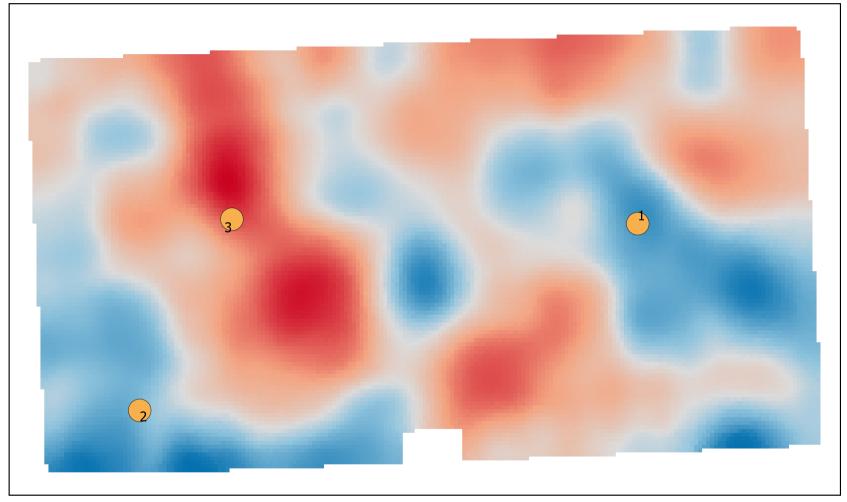
Client Block Crop Scan Date Acres Mean CV 20 45-26 1								Fe [ppm]
Columbia Boach (CC) Apples (4/37/31 20.57/30.3 20.45-20.1	Client	Block	Crop	Scan Date	Acres	Mean	CV	14.42-20.45
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Columbia Reach	661	Apples	4/27/21	20.57	29.3	30	
								26.12-31.7
<u> </u>								38.17-52.59

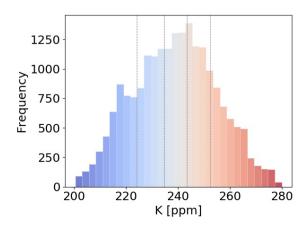


Chiawana:K









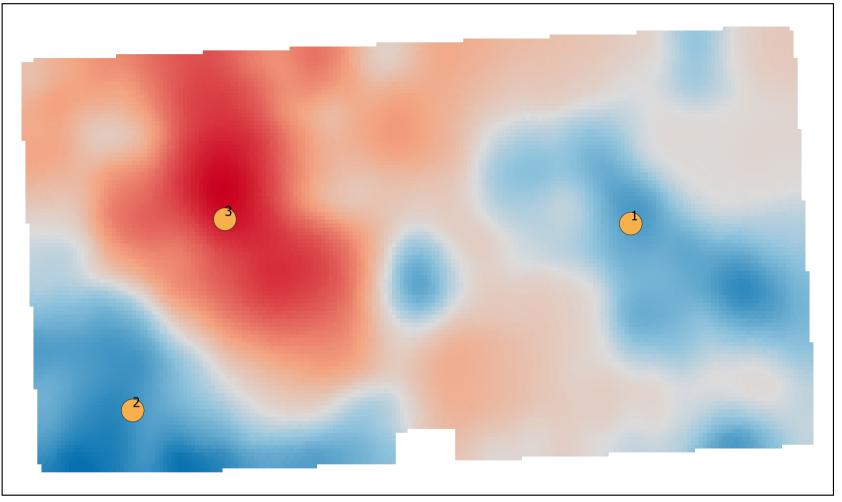
									K [ppm]
Γ	Client		Block	Crop	Scan Date	Acres	Mean	CV	200.56-224.28
	Columbia	Reach	661	Apples	4/27/21	20.57	238.87	6	224.28-234.69
									243.37-252.58
									252.58-279.88
	Λ	0	25	50	75	100	m		*This documen

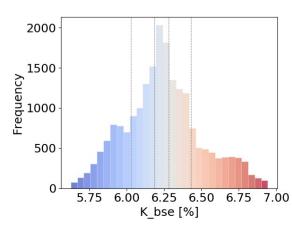
ID	K	
1	216	
2	210	
3	274	

Chiawana:K_bse



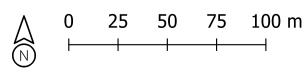






								K_b	se [%]
I	Client	Block	Cron	Scan Date	Acros	Moan	CV		5.63-6.03
			<u> </u>						6.03-6.19
	Columbia Reach	661	Apples	4/27/21	20.57	6.24	4		6.19-6.28
									6.28-6.43
									6.43-6.94

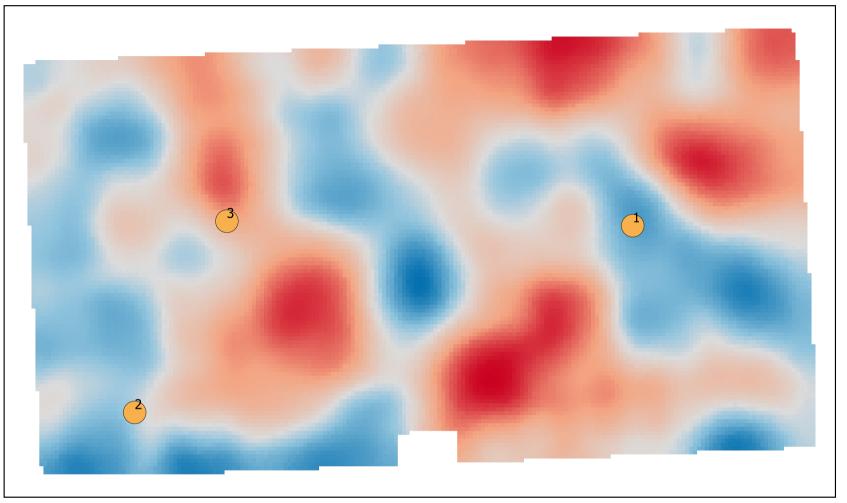
ID	K_bse
1	NAN
2	NAN
3	NAN

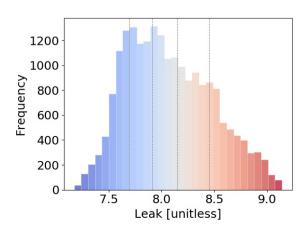


Chiawana:Leak



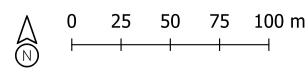






							Leak [unitless]
Client	Block	Crop	Scan Date	Acres	Mean	CV	7.17-7.69
Columbia Reach	661	Apples	4/27/21	20.57	8.07	5	7.69-7.91
		_	-				7.91-8.15
							8.15-8.45
							8.45-9.14

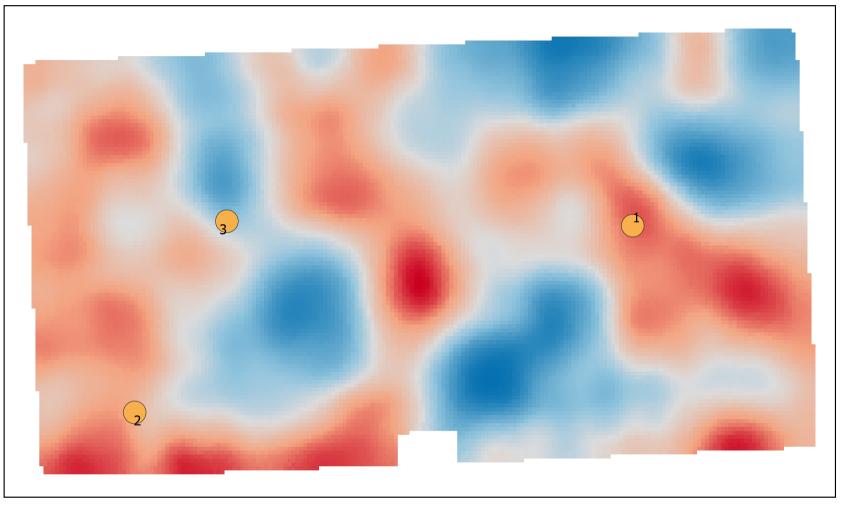
ID	Leak
1	NAN
2	NAN
3	NAN

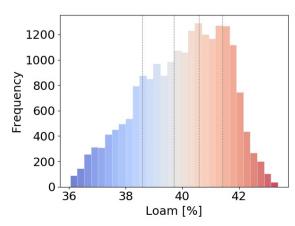


Chiawana:Loam









							Loam [%]
Client	Block	Crop	Scan Date	Acres	Mean	CV	36.05-38.58
Columbia Reach	661	Apples	4/27/21	20.57	39.99	3	38.58-39.7
							40.59-41.41

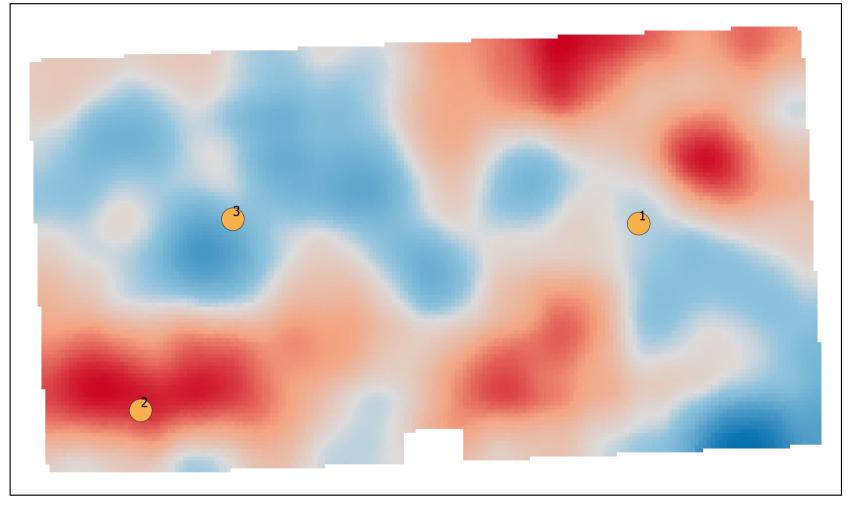
ID	Loam	
1	NAN	
2	NAN	
3	NAN	

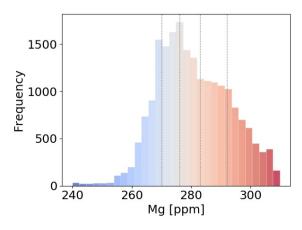
0 25 50 75 100 m

Chiawana:Mg



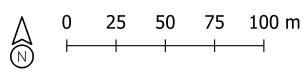






							Mg [ppm]
Client	Block	Crop	Scan Date	Acres	Mean	CV	
Columbia Reach	661	Apples	4/27/21	20.57	280.74	4	270.09-276.16
							276.16-283.0
							283.0-292.0
							292.0-309.81

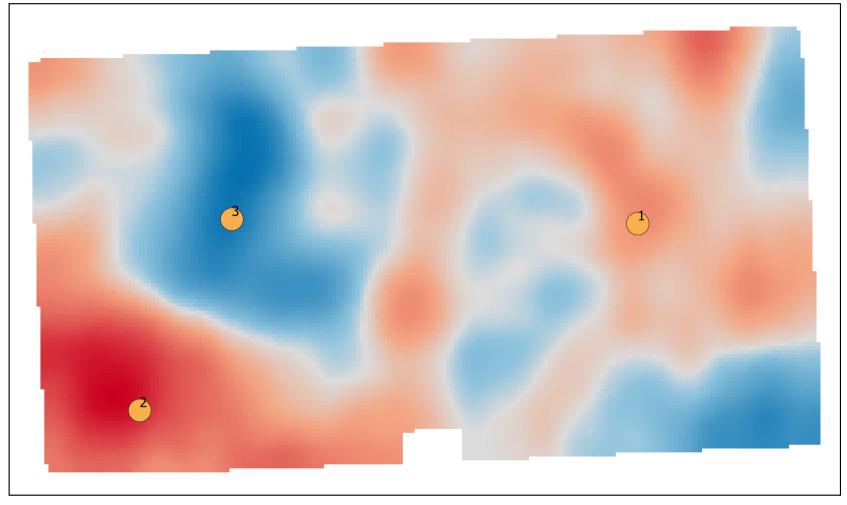
ID	Mg	
1	252.0	
2	324.0	
3	312.0	

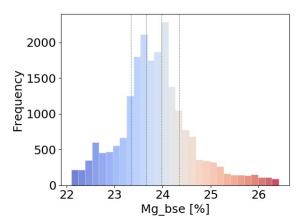


Chiawana:Mg_bse









							Mg_	_bse [%]
Client	Block	Crop	Scan Date	Acres	Mean	CV		22.1-23.34
Columbia Reach	661	Apples	4/27/21	20.57	23.86	3		23.34-23.66
								23.66-23.98
								23.98-24.35
								24.35-26.42

25

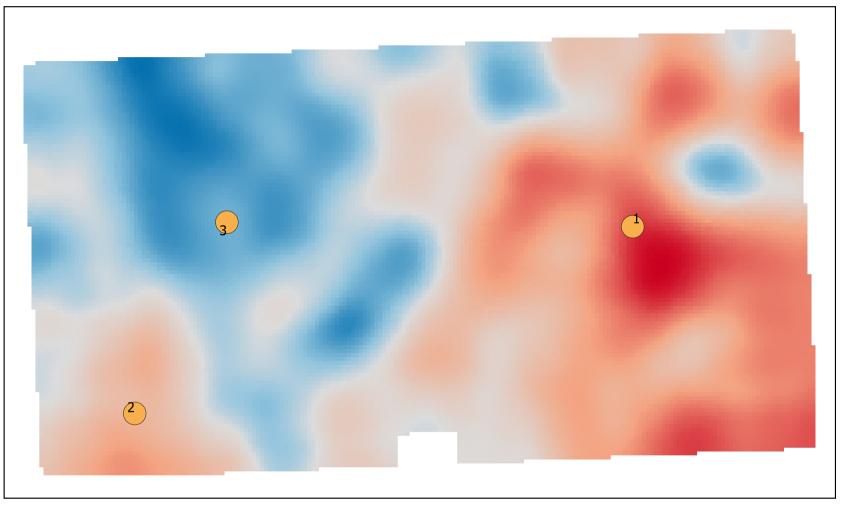
100 m

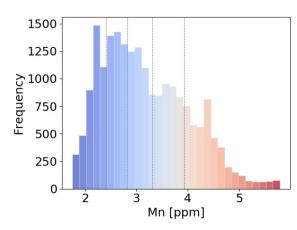
ID	Mg_bse
1	NAN
2	NAN
3	NAN

Chiawana:Mn









							Mn [ppm]		
Client	Block	Crop	Scan Date	Acres	Mean	CV	1.75-2.41		
Columbia Reach	661	Apples	4/27/21	20.57	3.18	26	2.41-2.82		
							2.82-3.31		
							3.31-3.93		
							3.93-5.79		

ID	Mn	
1	6.0	
2	4.1	
3	1.5	

0 25 50 75 100 m