

Maluma Day 2017



“Despite all our achievements we owe our existence to a six-inch layer of topsoil and the fact that it rains” — Farm equipment association of Minnesota and South Dakota





**DID YOU KNOW?
YOU COULD
WRITE THE
NEXT CHAPPIES
DID YOU KNOW?**

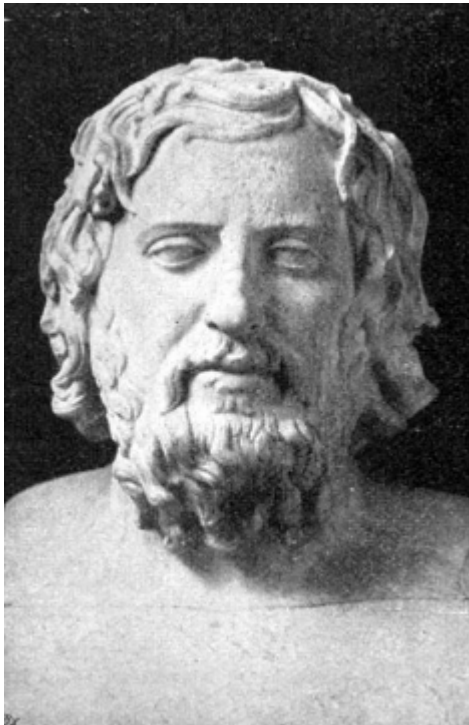


Did You Know?

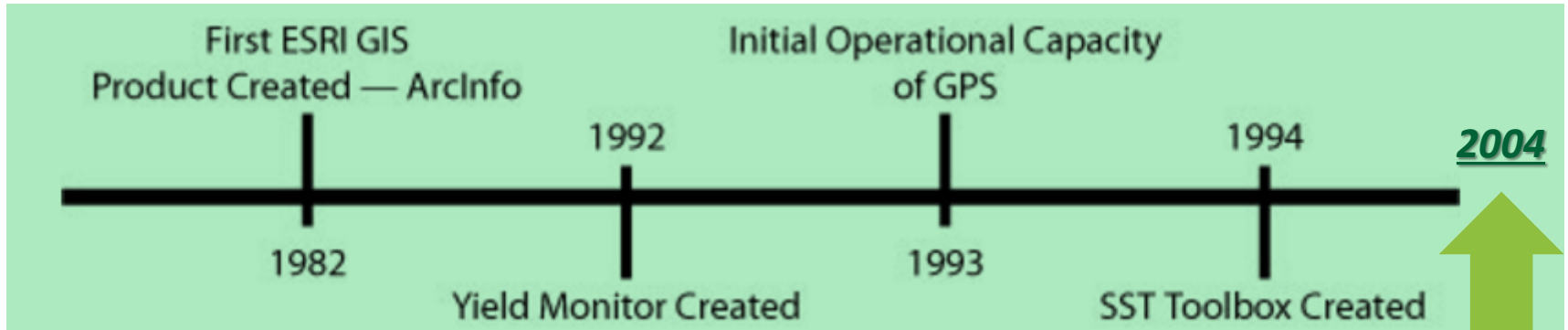


“To be a succesful farmer, one must first know the nature of the soil”

Xenophon, Oeconomicus, 400 B.C



Precision Farming Timeline



Did You Know?

DID YOU KNOW?
YOU COULD
WRITE THE
NEXT CHAPPIES
DID YOU KNOW?



Before its time.....

GPS Tracking Device
James Bond
Goldfinger
1964

Content

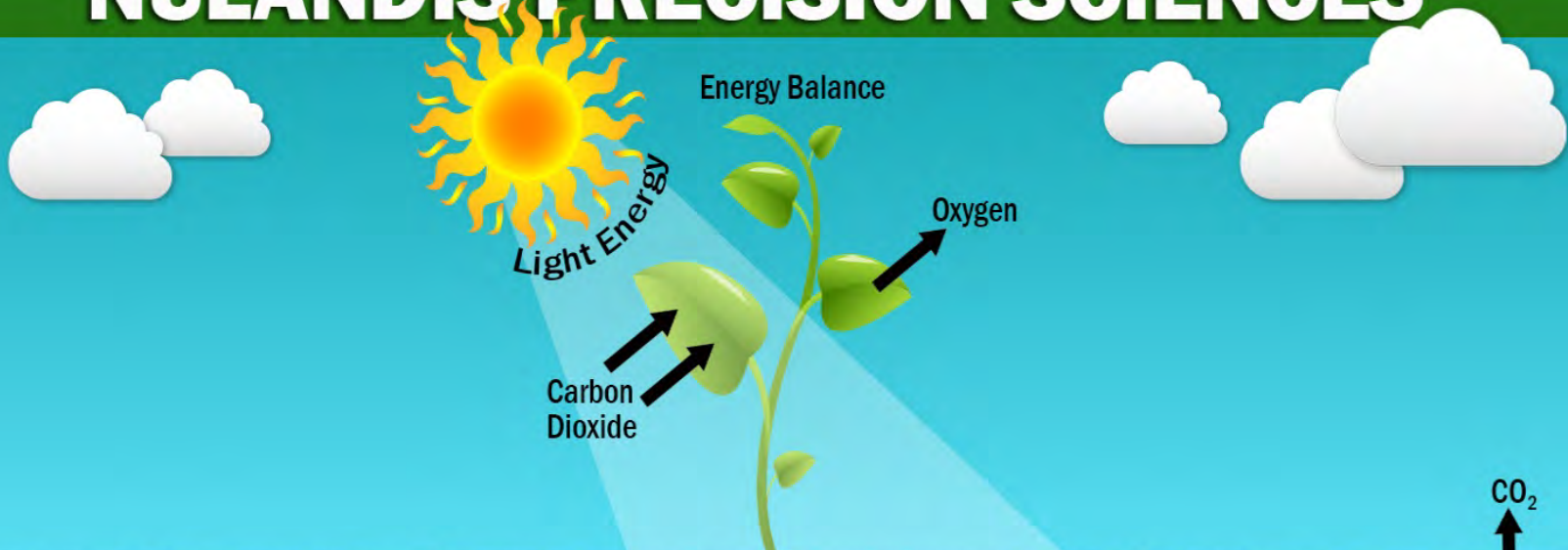
Where does NPS fit in?

Why have NPS in the Nu-way?

How do we do what we do?

What do we offer??

NULANDIS PRECISION SCIENCES



Soil Wealth

N

Soil Nutrition

P

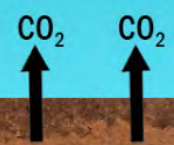
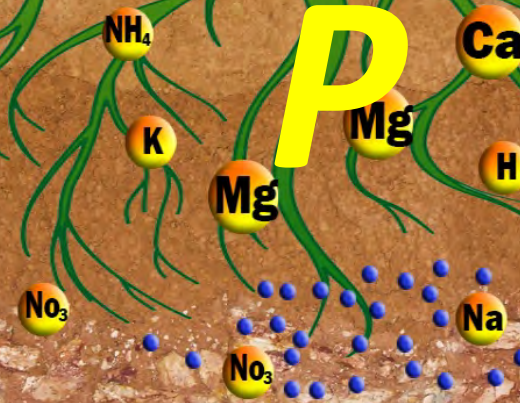
Soil Biology

S

Soil Classification

Soil Chemical Analysis

Biological Analysis



WHY??

Understanding our most precious resource; leading to unlocking it's full potential

“Any fool can know. The point is to understand.” – Albert Einstein

HOW??

Look, see, discover

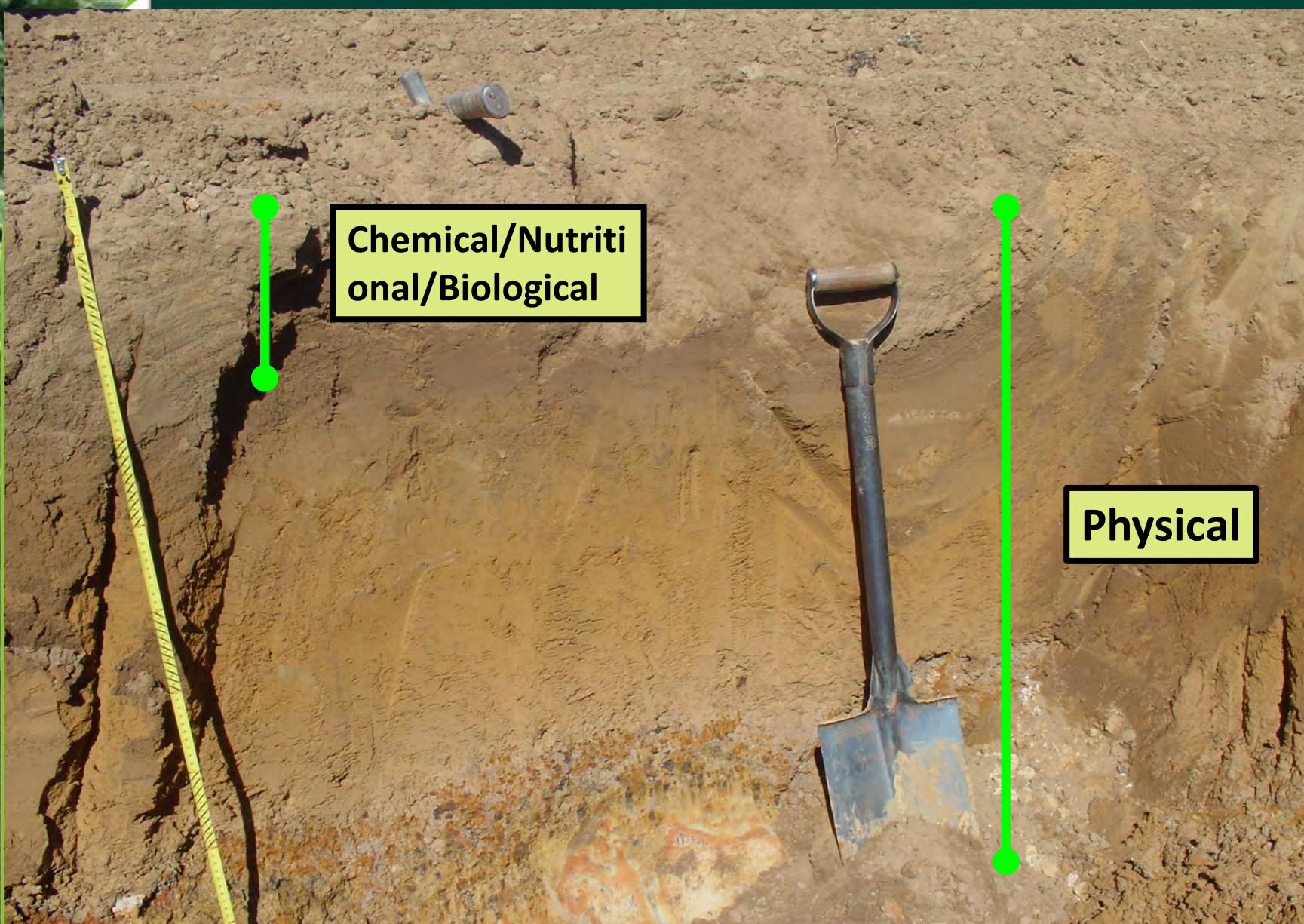
Soil physical properties

Soil chemical properties

Soil biological properties (Randolf)

NDVI

HOW??



The image shows a vertical soil profile with a yellow measuring tape on the left and a shovel on the right. A small metal can is at the top. Two green vertical lines with circular endpoints indicate measurement ranges. The top line is labeled 'Chemical/Nutritional/Biological' and the bottom line is labeled 'Physical'. The soil shows a reddish-brown layer at the bottom.

Chemical/Nutritional/Biological

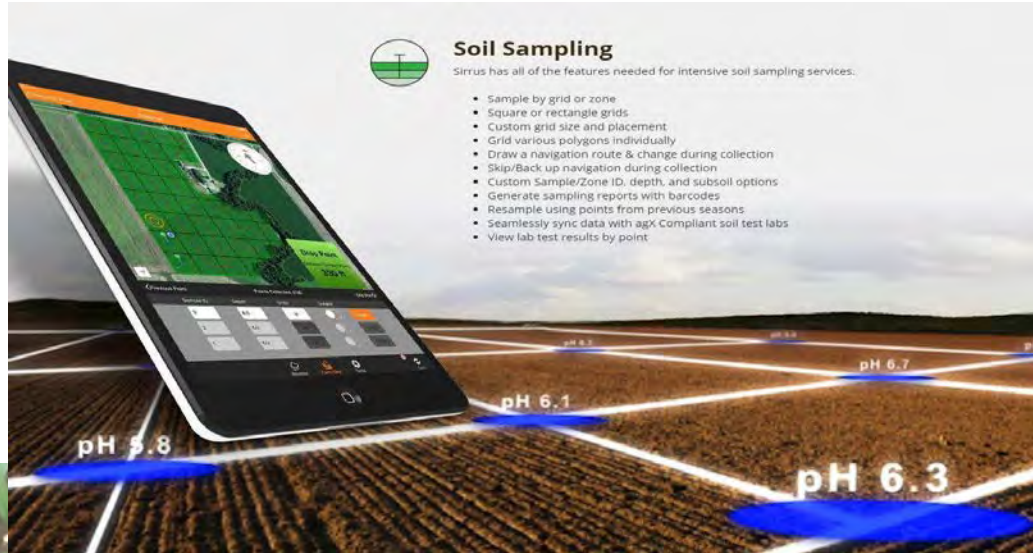
Physical

Soil Classification



1899

Soil Classification



Soil Sampling

Sirrus has all of the features needed for intensive soil sampling services:

- Sample by grid or zone
- Square or rectangle grids
- Custom grid size and placement
- Grid various polygons individually
- Draw a navigation route & change during collection
- Skip/Back up navigation during collection
- Custom Sample/Zone ID, depth, and subsoil options
- Generate sampling reports with barcodes
- Resample using points from previous seasons
- Seamlessly sync data with agX Compliant soil test labs
- View lab test results by point



Grondfisiese Klassifikasie



Soil Sampling

Sirrus has all of the features needed for intensive soil sampling services.

- Sample by grid or zone
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- View lab test results by point



Soil Classification

What we look at:

- Colour
- Texture
- Structure
- Weathered material
- Colour Variation
- Bulk Density Variances
- NON-DIAGNOSTICS e.g SILT LAYERING
- Presence of free calcium
- Stone Fraction%
- Sand Fraction Properties

Soil Classification



Conclusions and Recommendations:

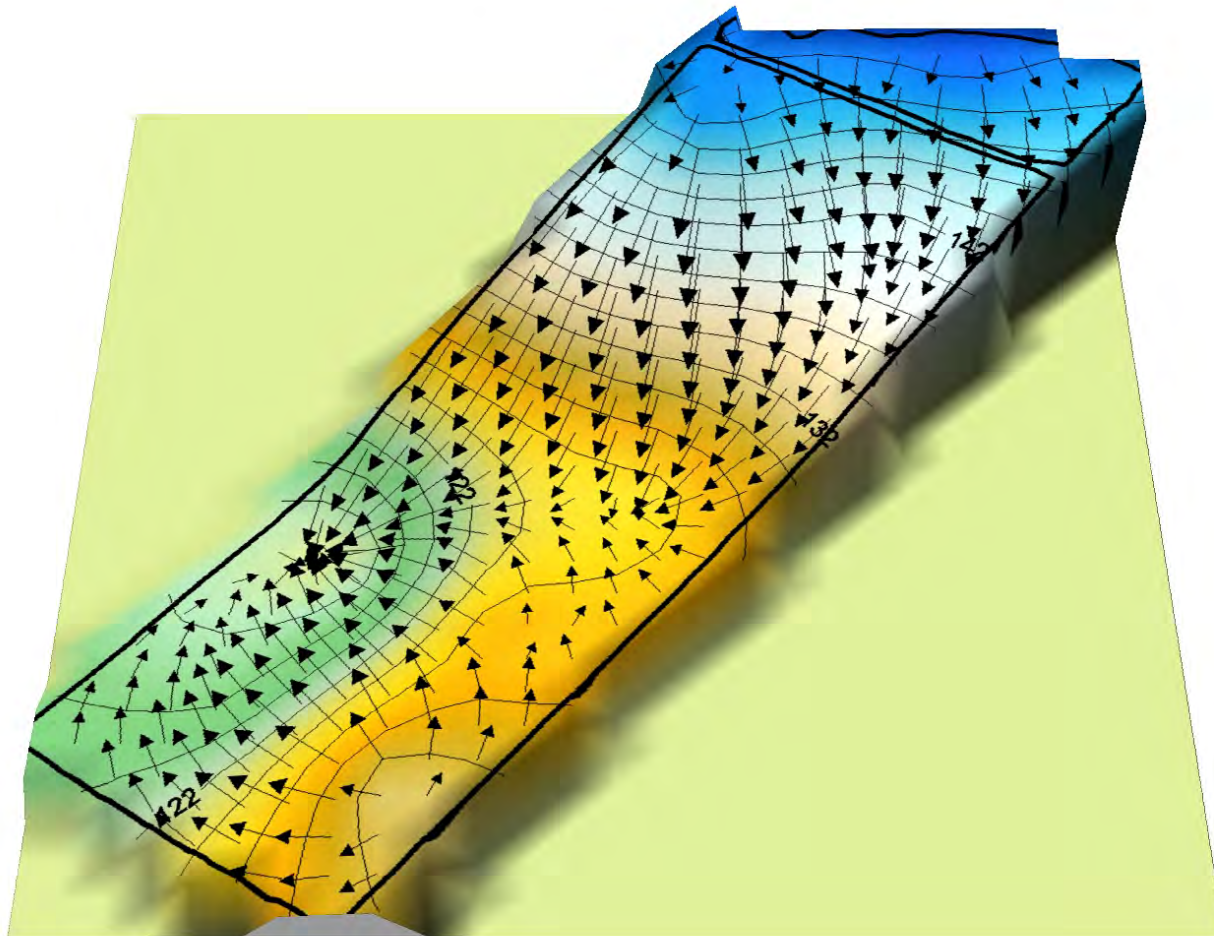
- *Drainage*
- *Fertilizer Strategy*
- *Irrigation Suitability*
- *Irrigation Strategy*
- *Best Tillage Practice*
- *Tillage Depth*
- *Water Holding Capacity*
- *Ridging Suitability and Depth*

Soil Classification



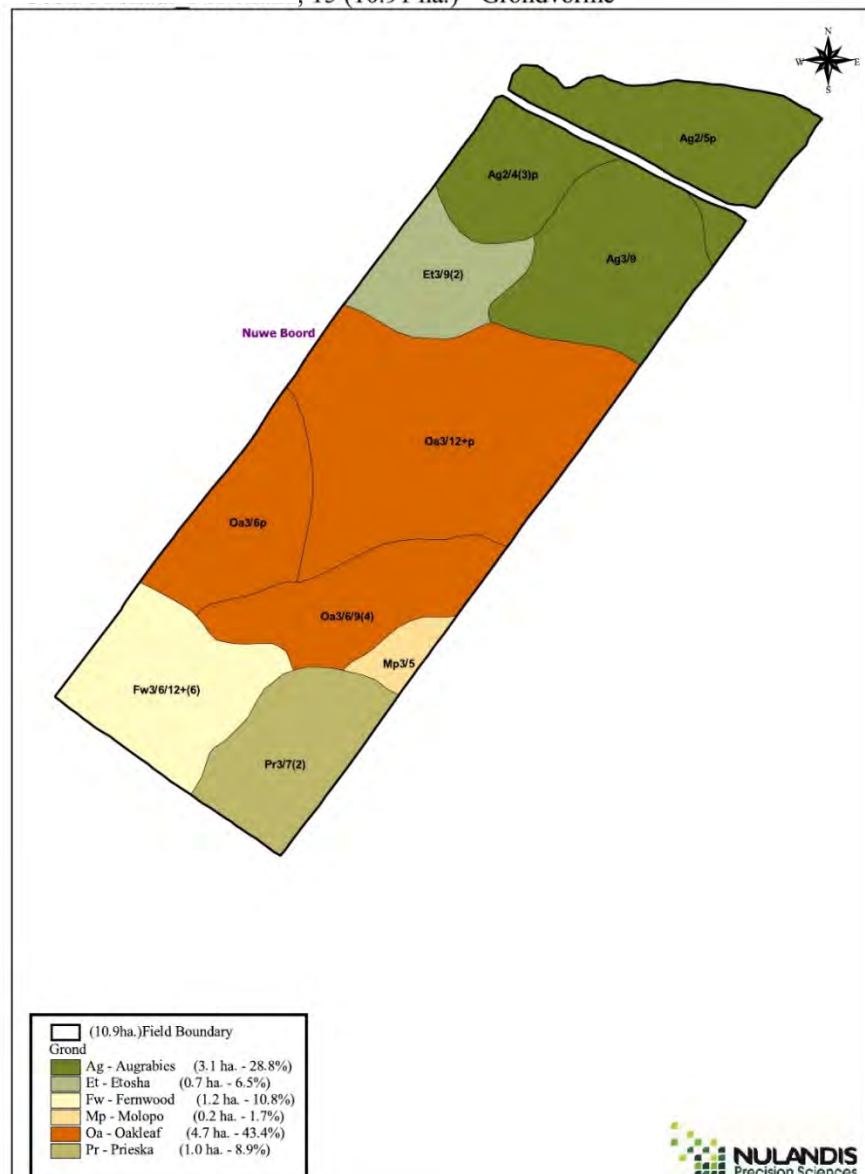
Soil Classification

Topografie -



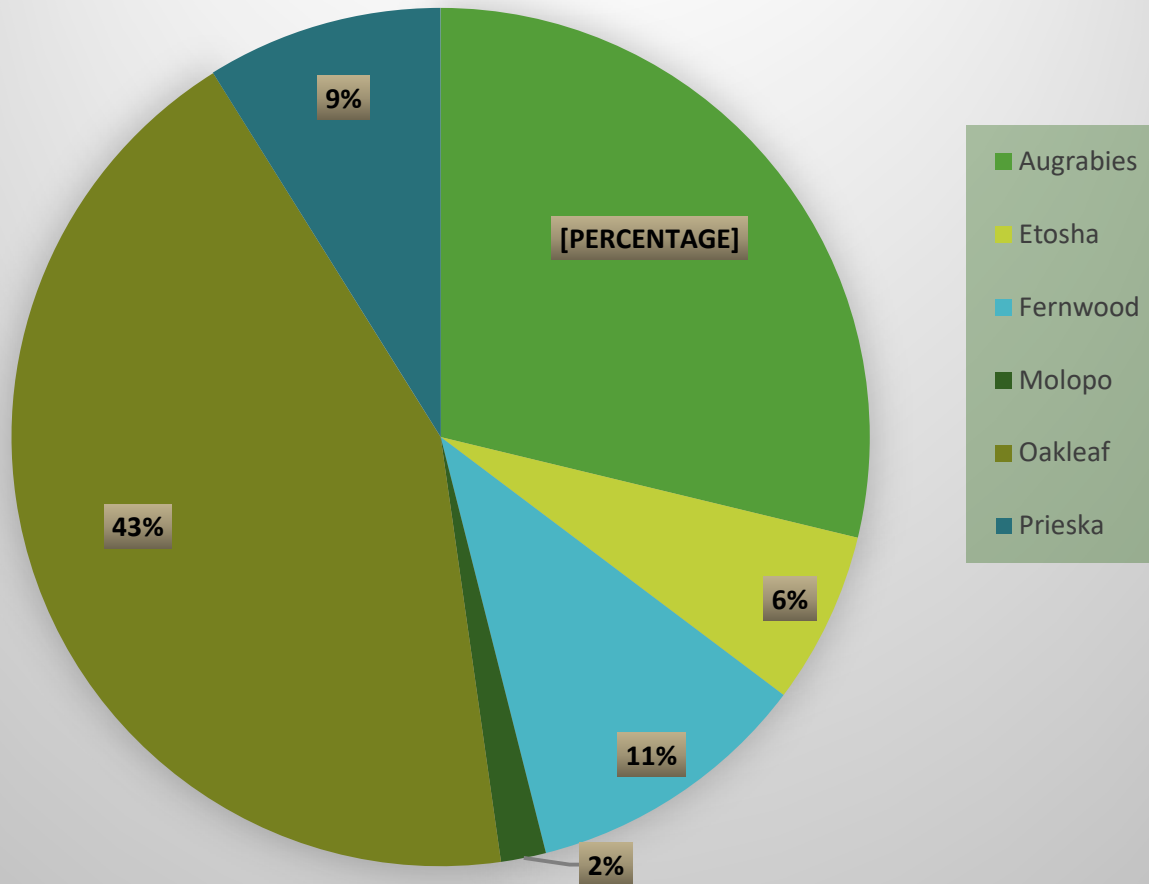
Soil Classification

; 15 (10.91 ha.) - Grondvorme



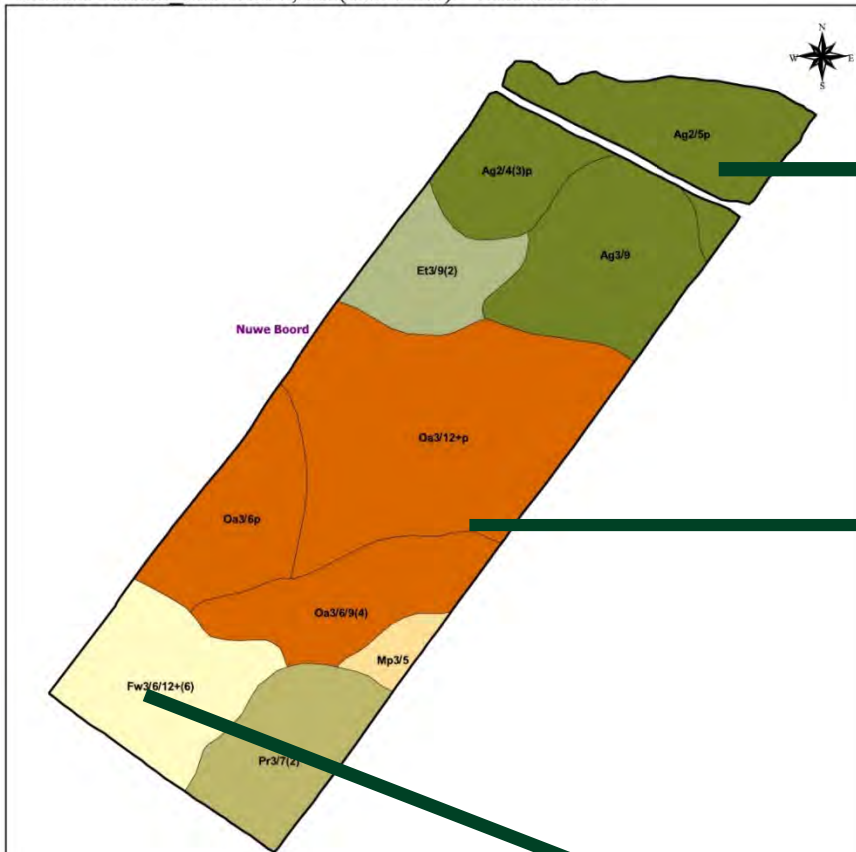
Soil Classification

Voorstelling van gronde geklas

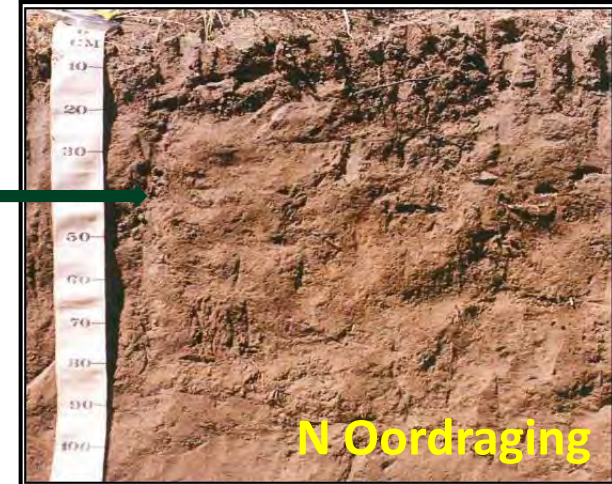


Grondfisiese Klassifikasie

Costa Pitsiladi Portokalia; 15 (10.91 ha.) - Grondvorme

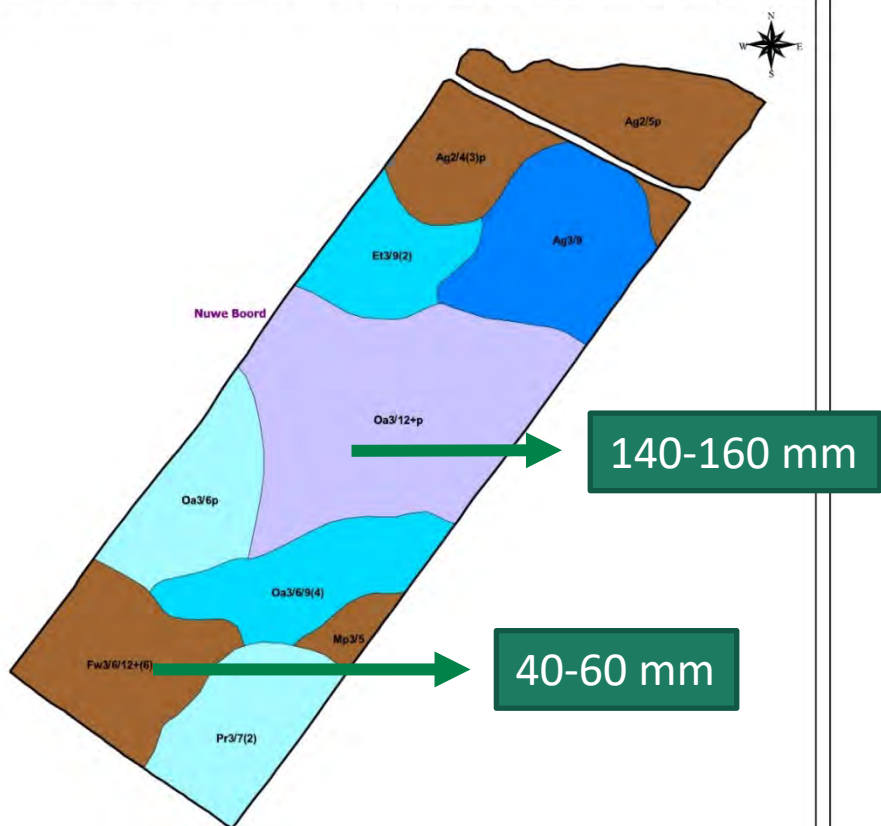


	(10.9ha.)Field Boundary
Grond	
	Ag - Augrabies (3.1 ha. - 28.8%)
	Et - Etosha (0.7 ha. - 6.5%)
	Fw - Fernwood (1.2 ha. - 10.8%)
	Mp - Molopo (0.2 ha. - 1.7%)
	Oa - Oakleaf (4.7 ha. - 43.4%)
	Pr - Prieska (1.0 ha. - 8.9%)

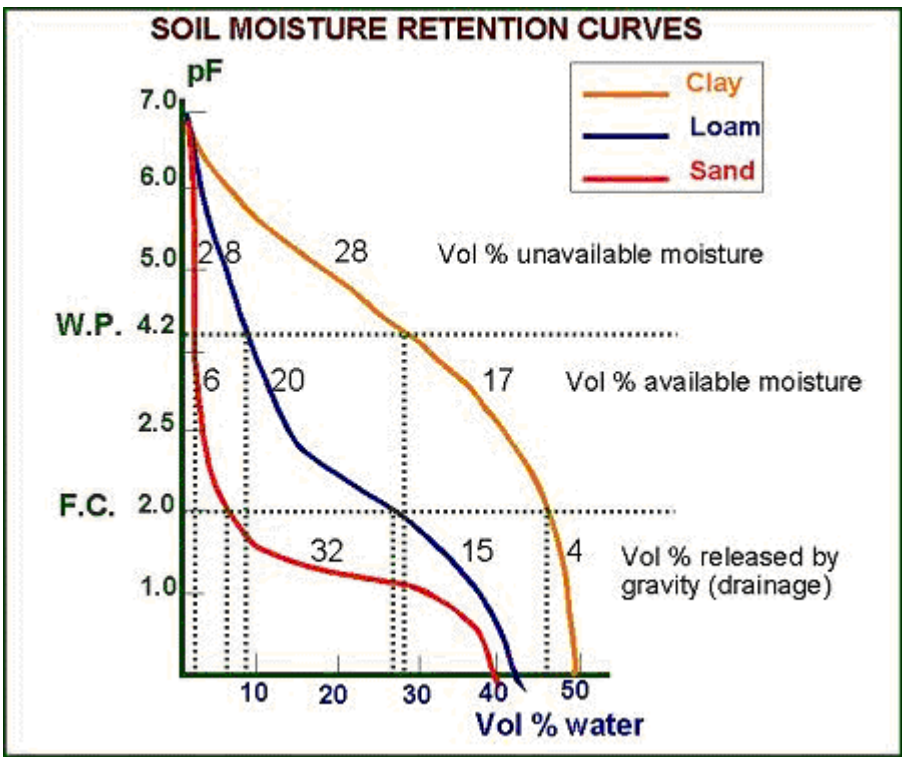


PAWC

15 (10.91 ha.) - Plant Beskikbare Water Kapasiteit



(10.9ha.)Field Boundary	
Grond	
0 - 20mm	(0.0 ha. - 0.0%)
20 - 40mm	(0.0 ha. - 0.0%)
40 - 60mm	(3.2 ha. - 29.1%)
60 - 80mm	(1.9 ha. - 17.5%)
80 - 100mm	(1.7 ha. - 15.7%)
100 - 120mm	(1.3 ha. - 12.1%)
120 - 140mm	(0.0 ha. - 0.0%)
140 - 160mm	(2.8 ha. - 25.6%)
160 - 180mm	(0.0 ha. - 0.0%)
180 - 200mm	(0.0 ha. - 0.0%)
200 - 220mm	(0.0 ha. - 0.0%)
220 - 240mm	(0.0 ha. - 0.0%)
240 - 260mm	(0.0 ha. - 0.0%)
260 - 280mm	(0.0 ha. - 0.0%)



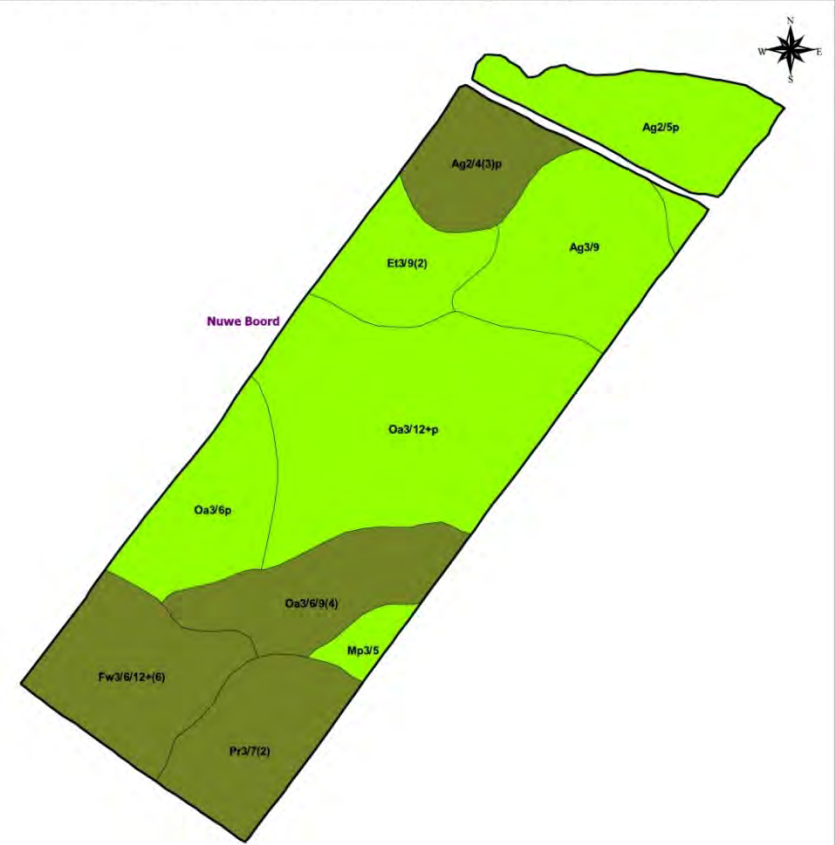
Irrigation

15 (10.91 ha.) - Besproeiings Geskiktheid



	(10.9ha.)Field Boundary
Grond	
	Uitstekend (2.8 ha. - 25.6%)
	Goed (3.0 ha. - 27.8%)
	Aanvaarbaar (5.1 ha. - 46.6%)
	Nie-Geskik (0.0 ha. - 0.0%)

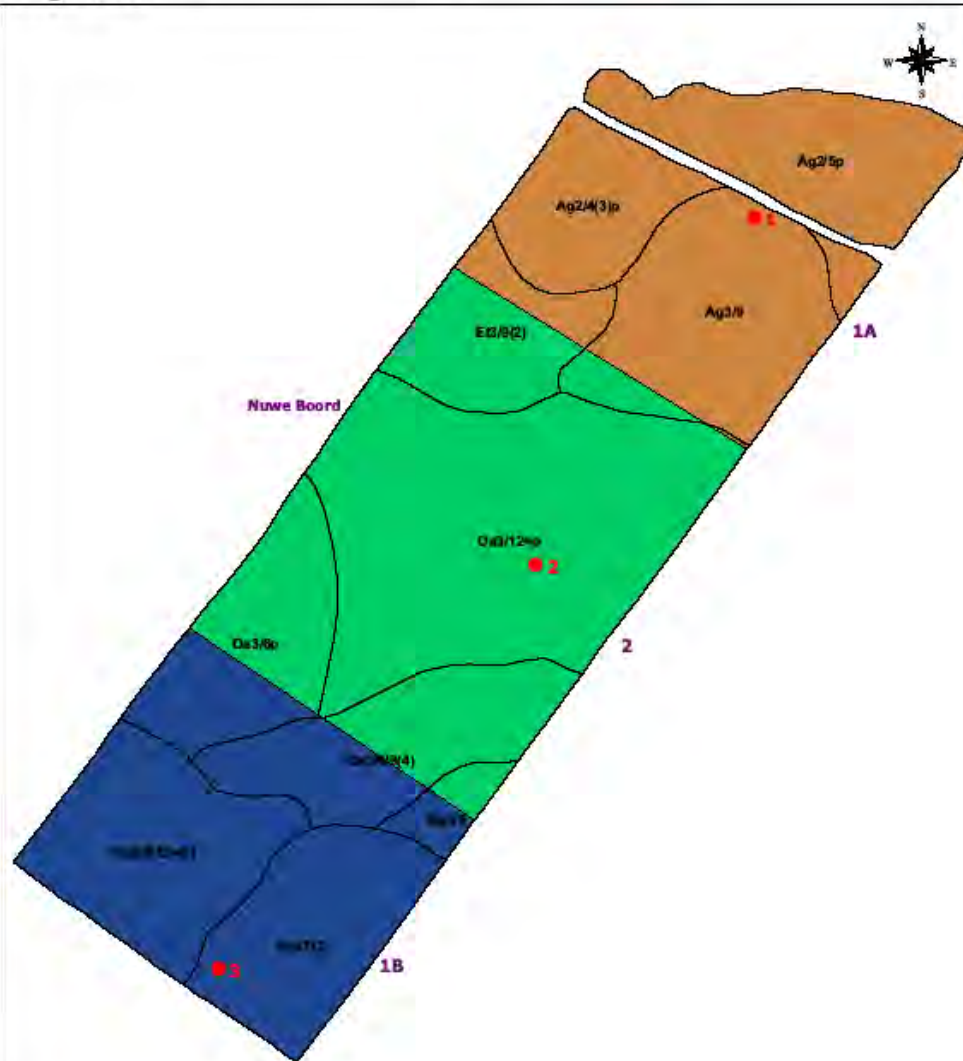
15 (10.91 ha.) - Besproeiings Skedulering



	(10.9ha.)Field Boundary
Grond	
	Volgens Probe (7.1 ha. - 64.7%)
	Pulse (3.9 ha. - 35.3%)

; 15 (10.91 ha.) - Besproeiings Uitleg en Posisies van

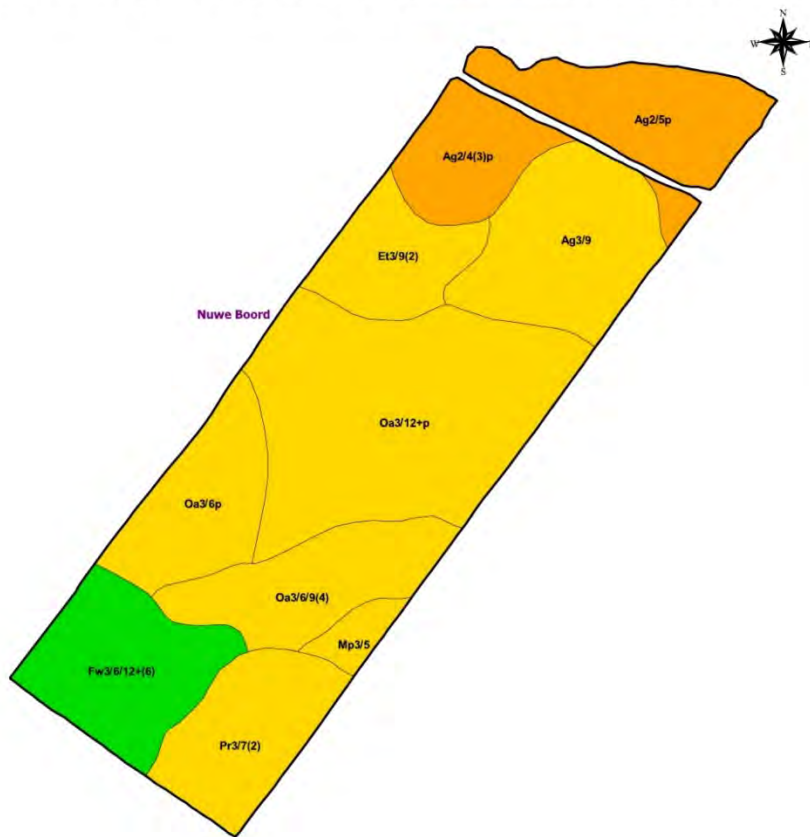
Vog Probes



	(10.9ha.)Field Boundary
	Vog Probes Posisies
	Grond
Besproeiings Uitleg	
	1A (3.2 ha. - 29.4%)
	2 (4.6 ha. - 42.5%)
	1B (3.1 ha. - 28.2%)

Soil Preperation

15 (10.91 ha.) - Maksimum Bewerkings Diepte



Grond	
0 - 10	(0.0 ha. - 0.0%)
10 - 20	(1.8 ha. - 16.7%)
20 - 30	(7.9 ha. - 72.5%)
30 - 40	(0.0 ha. - 0.0%)
40 - 50	(0.0 ha. - 0.0%)
50 - 60	(1.2 ha. - 10.8%)
60 - 70	(0.0 ha. - 0.0%)
70 - 80	(0.0 ha. - 0.0%)
80 - 90	(0.0 ha. - 0.0%)
90 - 100	(0.0 ha. - 0.0%)

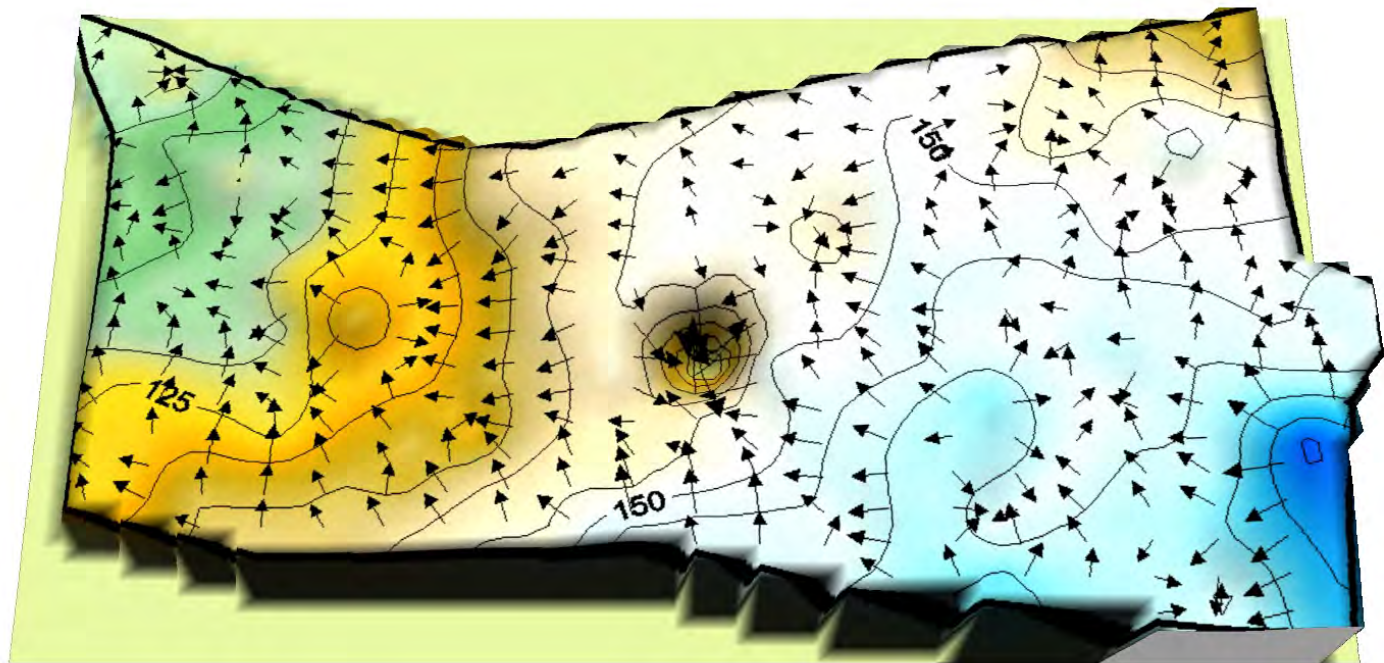
15 (10.91 ha.) - Bewerkings Strategie



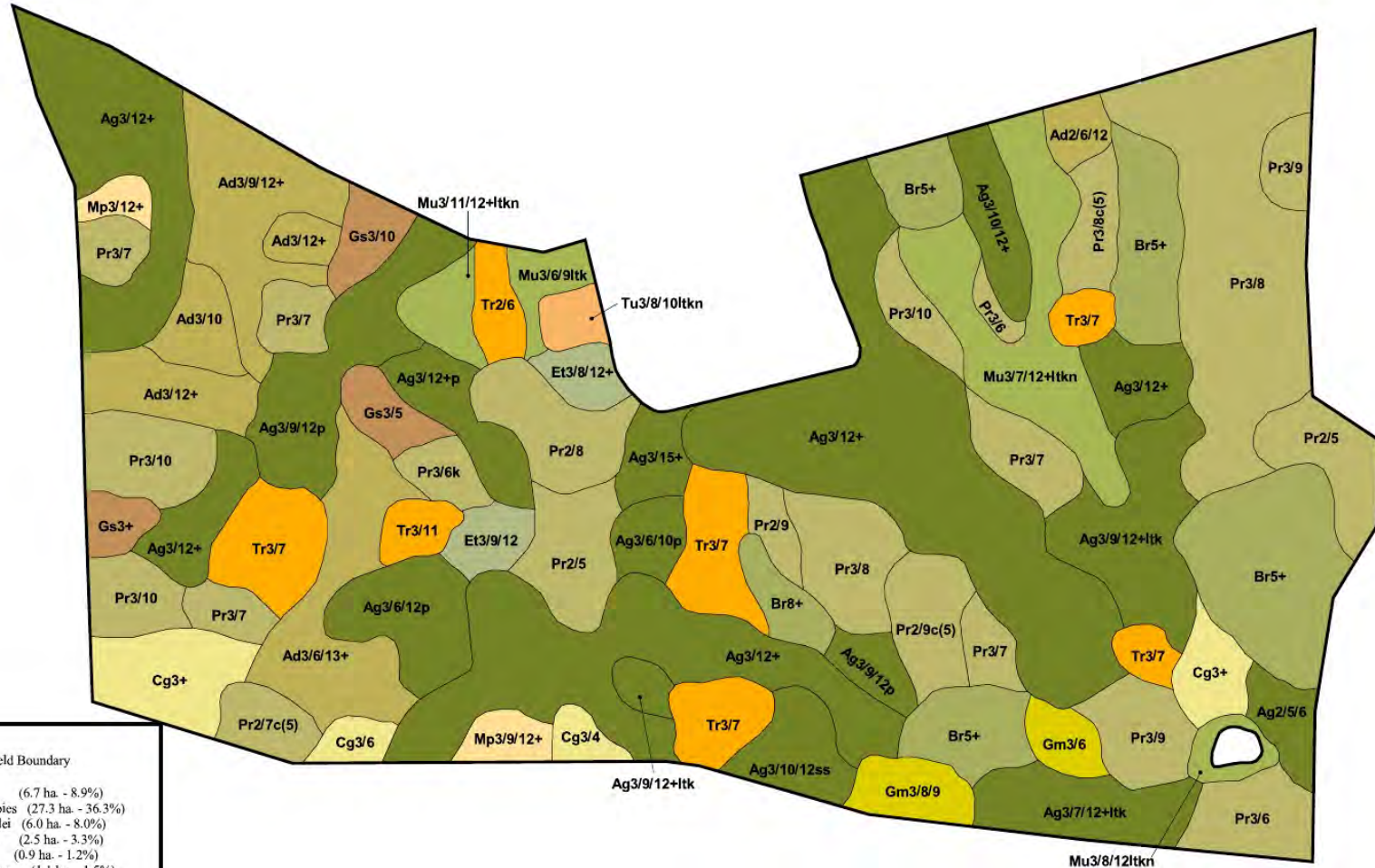
Grond	
Meng en Operd	(5.8 ha. - 53.0%)
Operd	(5.1 ha. - 47.0%)

Soil Classification

Topografie -



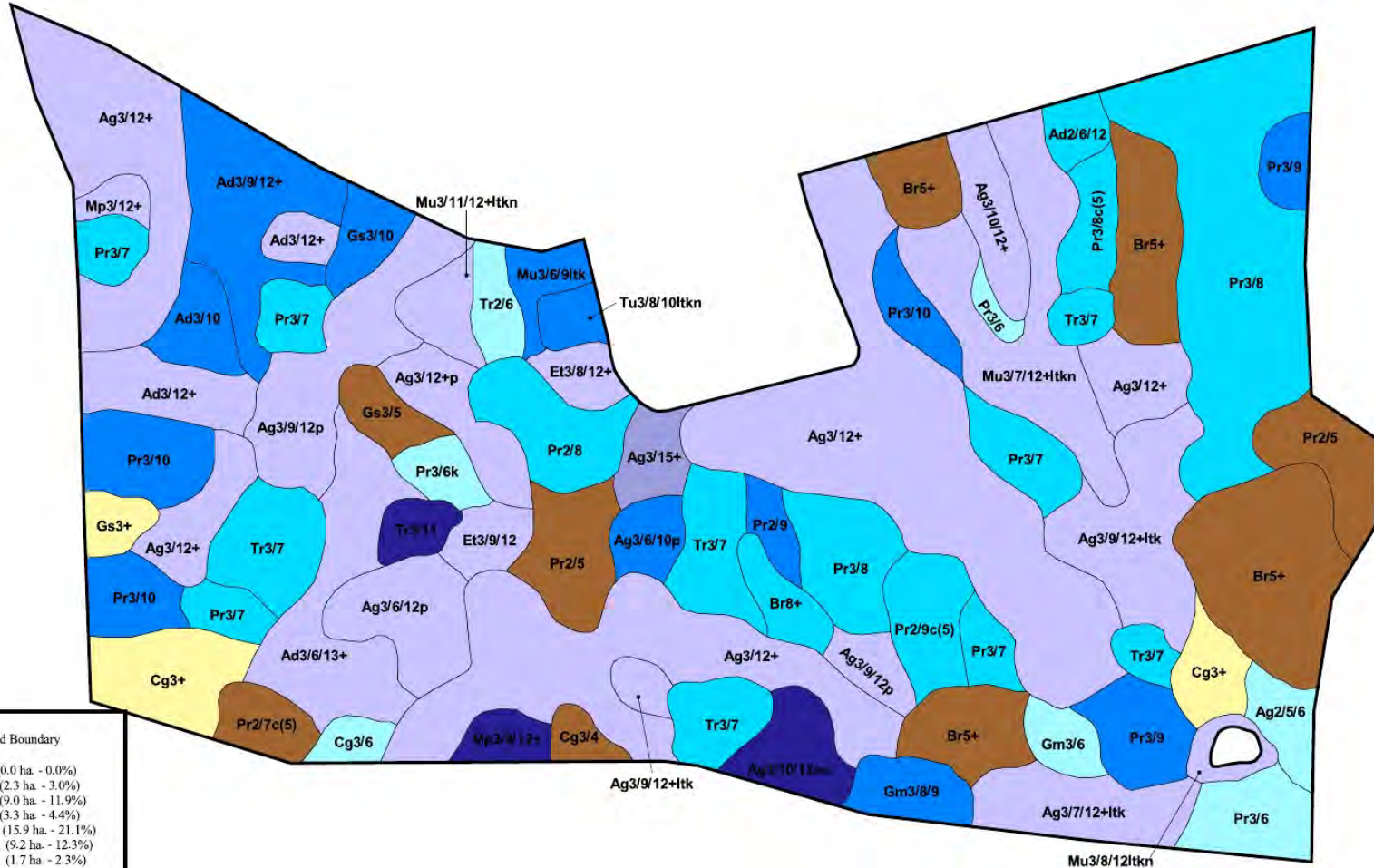
Hartmanshoop; 16 (75.29 ha.) - Grondvorme



Grond	
[Black outline]	(75.3ha.) Field Boundary
[Dark Green]	Ad - Addo (6.7 ha. - 8.9%)
[Medium Green]	Ag - Augrabies (27.3 ha. - 36.3%)
[Light Green]	Br - Brandvlei (6.0 ha. - 8.0%)
[Yellow-Green]	Cg - Coega (2.5 ha. - 3.3%)
[Light Yellow]	Et - Etosha (0.9 ha. - 1.2%)
[Yellow]	Gm - Gamoep (1.1 ha. - 1.5%)
[Light Orange]	Gs - Glenrosa (1.4 ha. - 1.9%)
[Orange]	Mp - Molopo (0.7 ha. - 0.9%)
[Light Green]	Mu - Montagu (4.3 ha. - 5.7%)
[Medium Green]	Pr - Prieska (19.7 ha. - 26.1%)
[Orange]	Tr - Trawal (4.3 ha. - 5.7%)
[Light Orange]	Tu - Tukululu (0.4 ha. - 0.5%)



Hartmanshoop; 16 (75.29 ha.) - Plant Beskikbare Water Kapasiteit

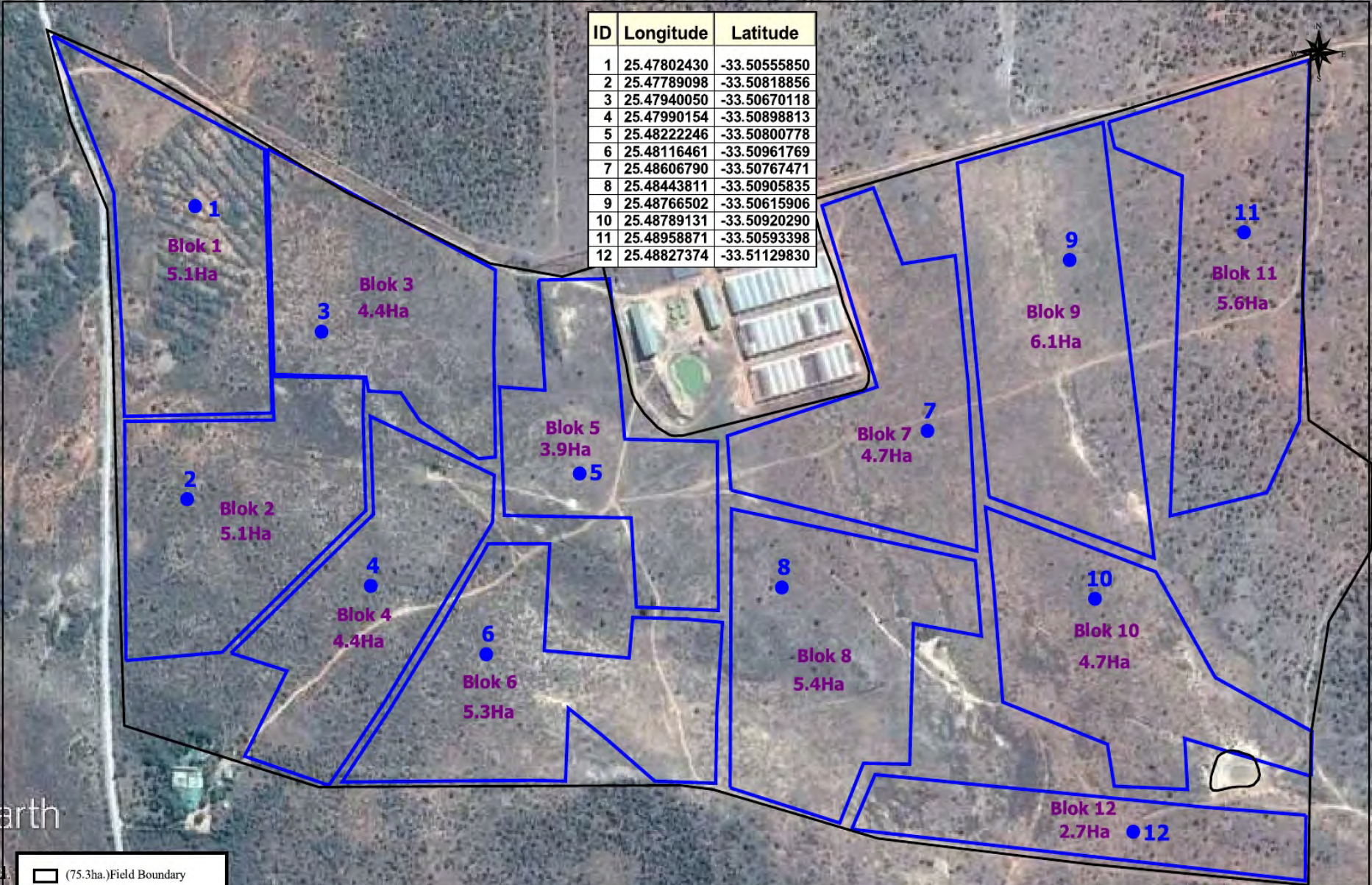


(75.3ha.) Field Boundary	
Grond	
0 - 20mm	(0.0 ha. - 0.0%)
20 - 40mm	(2.3 ha. - 3.0%)
40 - 60mm	(9.0 ha. - 11.9%)
60 - 80mm	(3.3 ha. - 4.4%)
80 - 100mm	(15.9 ha. - 21.1%)
100 - 120mm	(9.2 ha. - 12.3%)
120 - 140mm	(1.7 ha. - 2.3%)
140 - 160mm	(33.4 ha. - 44.3%)
160 - 180mm	(0.6 ha. - 0.8%)
180 - 200mm	(0.0 ha. - 0.0%)
200 - 220mm	(0.0 ha. - 0.0%)
220 - 240mm	(0.0 ha. - 0.0%)
240 - 260mm	(0.0 ha. - 0.0%)
260 - 280mm	(0.0 ha. - 0.0%)



Hartmanshoop; 16 (75.29 ha.) - Inspeksiepunte

ID	Longitude	Latitude
1	25.47802430	-33.50555850
2	25.47789098	-33.50818856
3	25.47940050	-33.50670118
4	25.47990154	-33.50898813
5	25.48222246	-33.50800778
6	25.48116461	-33.50961769
7	25.48606790	-33.50767471
8	25.48443811	-33.50905835
9	25.48766502	-33.50615906
10	25.48789131	-33.50920290
11	25.48958871	-33.50593398
12	25.48827374	-33.51129830



(75.3ha.)Field Boundary
● Inspeksiepunte
 (57.4ha.)Voorgestelde Blokke

PROBE PLASING BESLUIITE



HIERDIE IS GOEIE LUCK



© 2005 BULLOCK

HIERDIE IS KAKKERLAK



IDEES
VOL
VREES

© 2005 BULLOCK

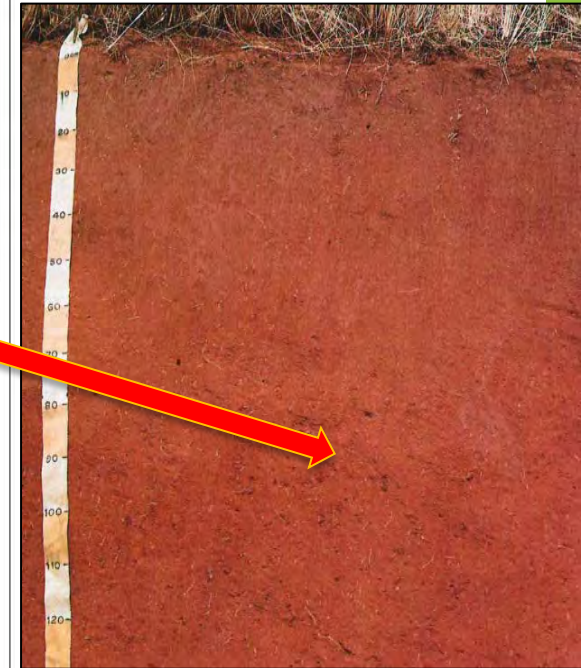
Soil and Water Management

Westleigh 1.2m



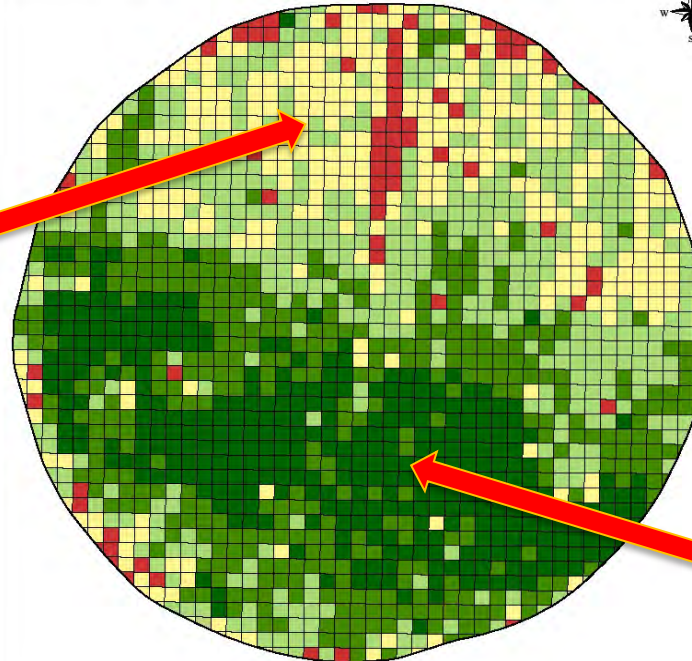
PAWC = 168mm

Hutton 1.2m



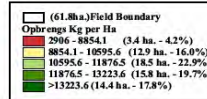
PAWC = 132mm

Pivot 1; 07 (61.81 ha.) - Maize Yield Map



Date: May 21, 2012
 Field Name: Pivot 1; 07
 Grower Name: Farmsecure
 Total Hectares: 61.81
 Field Boundary Start Location:
 Latitude: -27.03302752
 Longitude: 28.24164981

Crop: Maize
 Min. Dry_yld: 2906.01 Kg./ha.
 Max. Dry_yld: 15095.32 Kg./ha.
 Avg. Dry_yld: 11706.98 Kg./ha.
 Crop Hectares: 61.76 ha.
 Total Dry_yld: 727689 Kg.
 # Yield Observations: 1635



Soil Chemical Grids



Soil Sampling

Sirrus has all of the features needed for intensive soil sampling services.

- Sample by grid or zone
- Square or rectangle grids
- Custom grid size and placement
- Grid various polygons individually
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- Skip/Back up navigation during collection
- Custom Sample/Zone ID, depth, and subsoil options
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- View lab test results by point



pH 5.8

pH 6.1

pH 6.2

pH 6.7

pH 6.3

Traditional Sampling



A Field = 100 ha

Surface Area = 1 000 000 m²

Top 30cm soil = 0.3 meter

Volume of soil thus = +/- 300 000 m³

Bulk Density = 1 (sandy soil higher +/- 1.4)

Mass = Volume x Density

300 000 tons of soil

Average Soil Sample = 250-500 gram

Lab analysis < 100 gram

Soil Chemical Grids



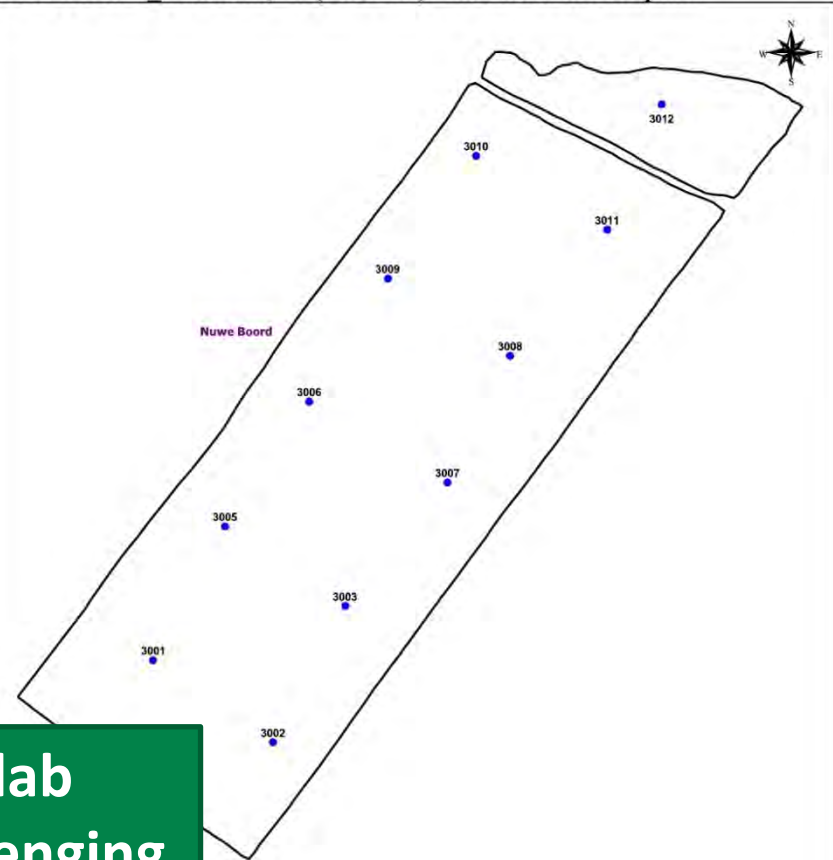
Soil Sampling

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- View lab test results by point



16 (10.91 ha.) - Bo Grond Monsterpunte



Individuele monsters gaan na die lab
Elkeen word ontleed – geen vermenging

□ (10.9ha.) Field Boundary
● Chemie Punte



Early Work

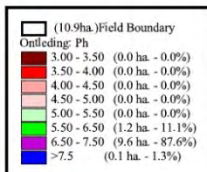
One of the first records of quick soil tests for an assay of soil fertility is that of Daubeny in England in 1845 (6). He suggested the terms “active” and “dormant” to express the more and less soluble nutrient constituents of a soil, respectively. The solvent used for ex-

Soil Chemical Grids

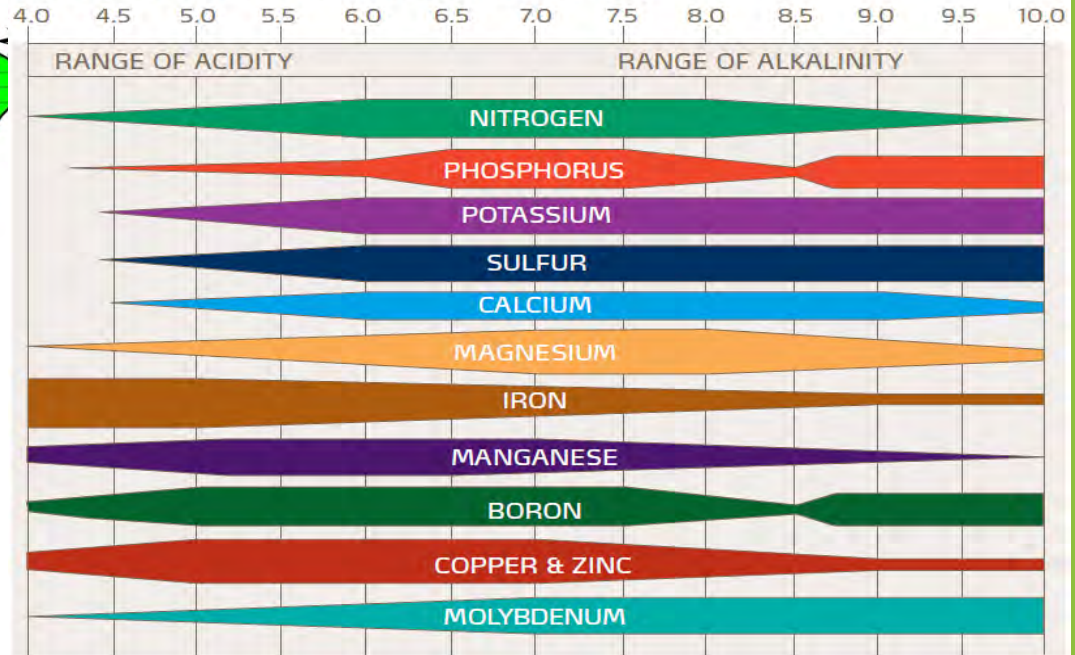
16 (10.91 ha.) - Ontleding: pH (KCl)



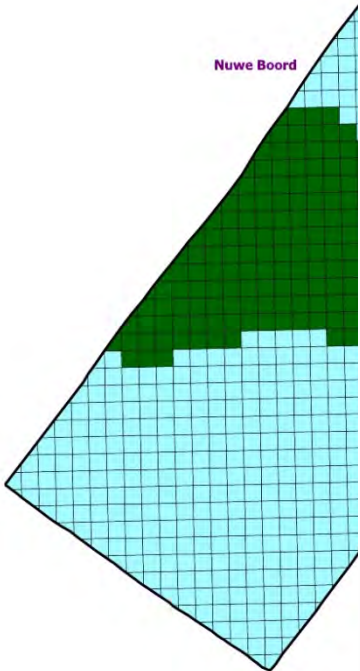
Date: May 18, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Ph: 6.10
 Maximum Ph: 7.50
 Average Ph: 6.70



The Influence of Soil pH on Nutrient Availability

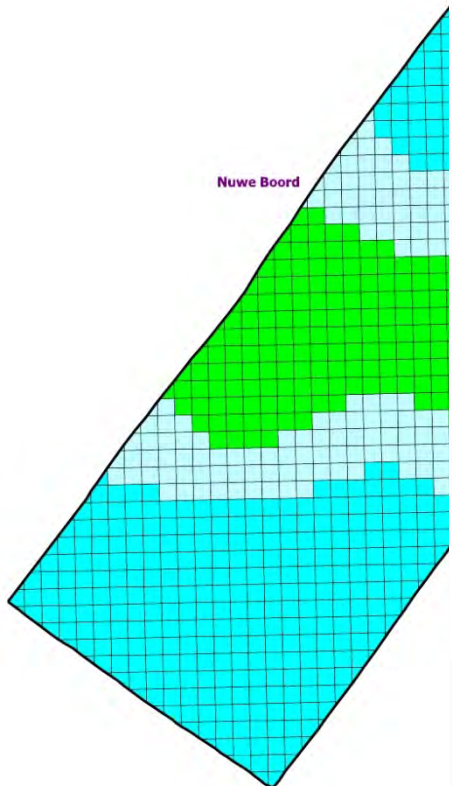


16 (

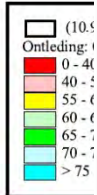


Date: May 18, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Ca: 1211
 Maximum Ca: 3784
 Average Ca: 1850

16 (10.91 h

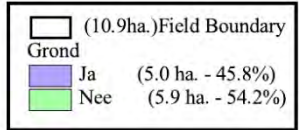


Date: May 19, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Ca_pers: 65
 Maximum Ca_pers: 87
 Average Ca_pers: 75



; 15 (10.91 ha.) - Kalsium Karbonaat Teenwoordig in

Profiel

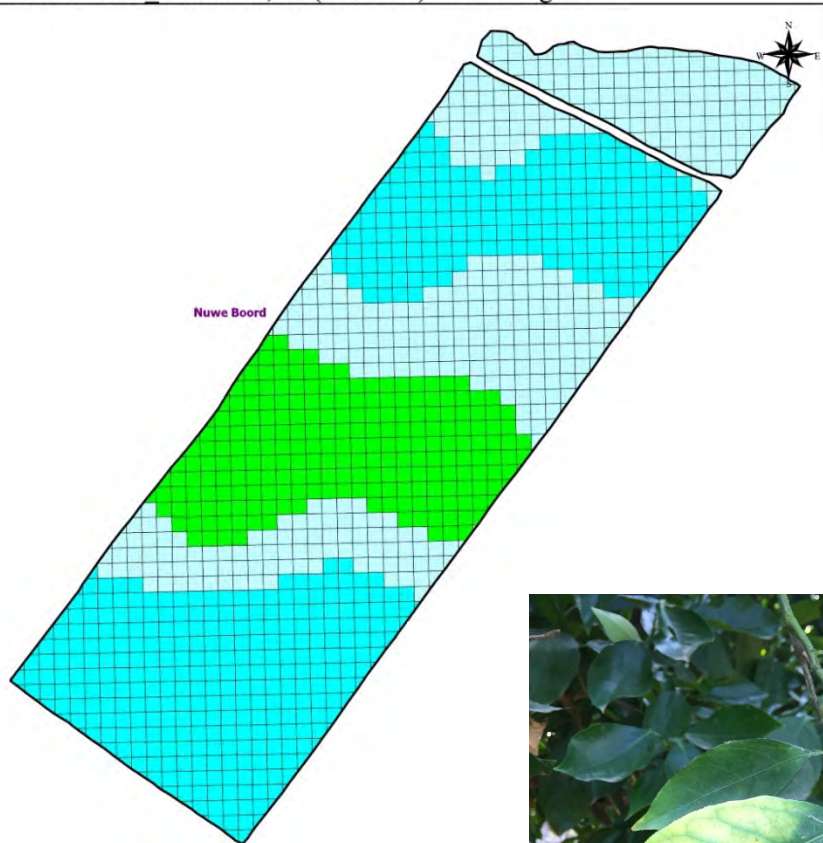


Soil Chemical Grids

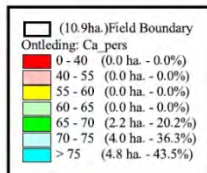


Soil Chemical Grids

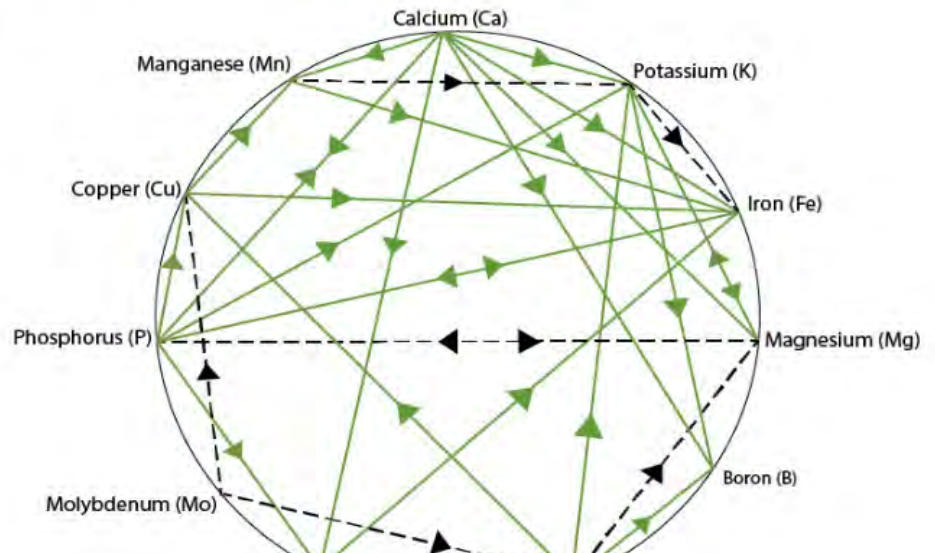
16 (10.91 ha.) - Ontleding: Ca%

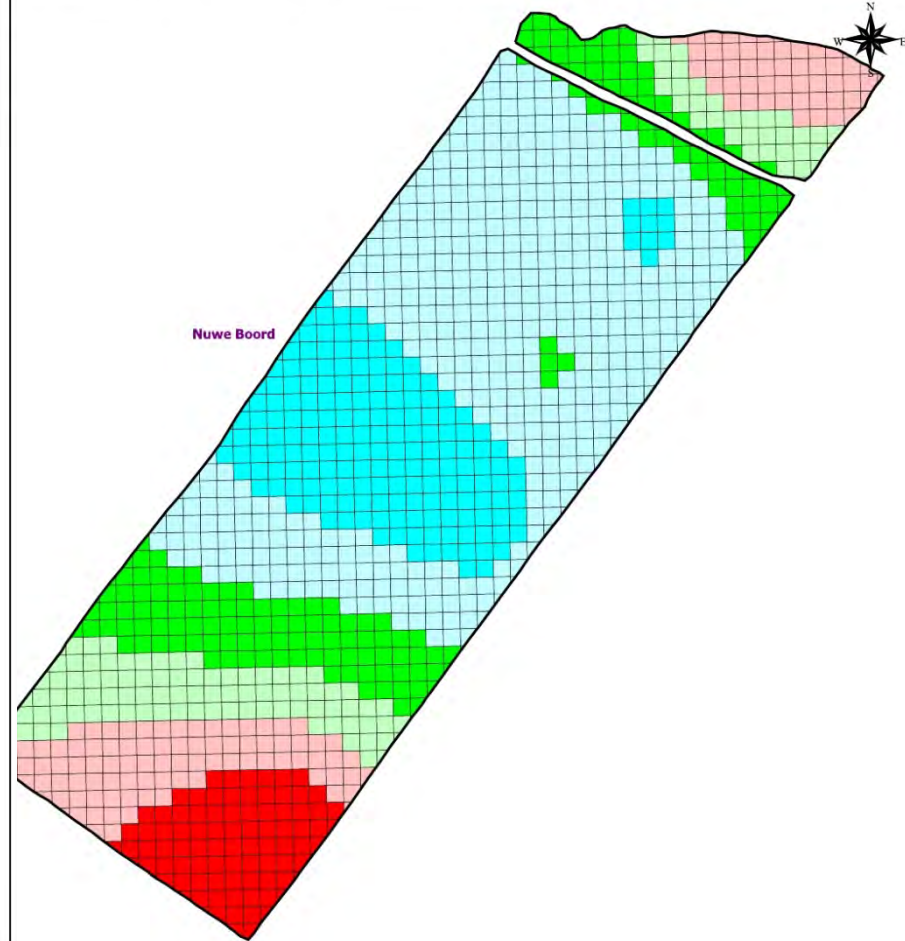
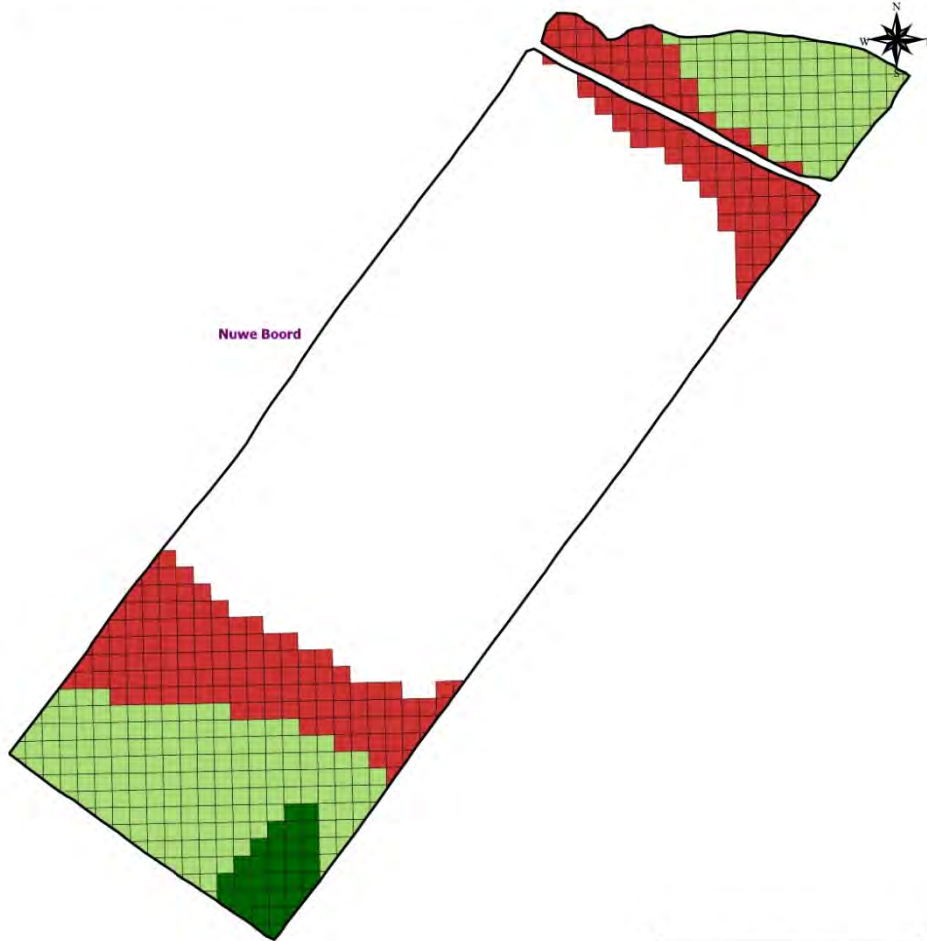


Date: May 19, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Ca_pers: 65
 Maximum Ca_pers: 87
 Average Ca_pers: 75



Mulder's chart allows us to see the how nutrients in the soil can influence the availability and uptake of each other.





(10.9ha.)Field Boundary
K2SO4 Recommendation

- 50 (1.9 ha. - 17.5%)
- 50 - 100 (2.2 ha. - 20.2%)
- 100 - 150 (0.3 ha. - 2.7%)

(10.9ha.)Field Boundary
Ontleding: K_pers

- 0 - 3 (0.8 ha. - 7.2%)
- 3 - 5 (1.3 ha. - 11.8%)
- 5 - 7 (1.2 ha. - 10.6%)
- 7 - 10 (1.5 ha. - 13.9%)
- 10 - 13 (4.4 ha. - 40.0%)
- 13 - 18 (1.8 ha. - 16.5%)
- 18 - 30 (0.0 ha. - 0.0%)
- > 30 (0.0 ha. - 0.0%)

Equation Used: _K2SO4

Date: May 26, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832

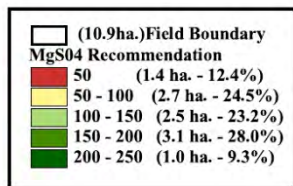
Application Estimates:
 Product: K2SO4
 Min. Rate: 50.0 Kg./ha.
 Max. Rate: 150.0 Kg./ha.
 Avg. Rate: 80.9 Kg./ha.
 Total K2SO4: 360.7 Kg.
 Total K2SO4 (100%): 360.7 Kg.
 Number of Hectares to be Applied: 4.42 Hectares



May 19, 2016
 Name: Costa Pitseladi_Portokalia; 16
 Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Hectares: 10.91
 Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 Number of Observations: 1224
 Number of K_pers: 1
 Number of K_pers: 15
 Number of K_pers: 9



Costa Pitsiladi Portokalia; 16 (10.91 ha.) - Magnesium-Sulfaat (MgS04)



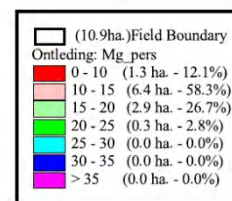
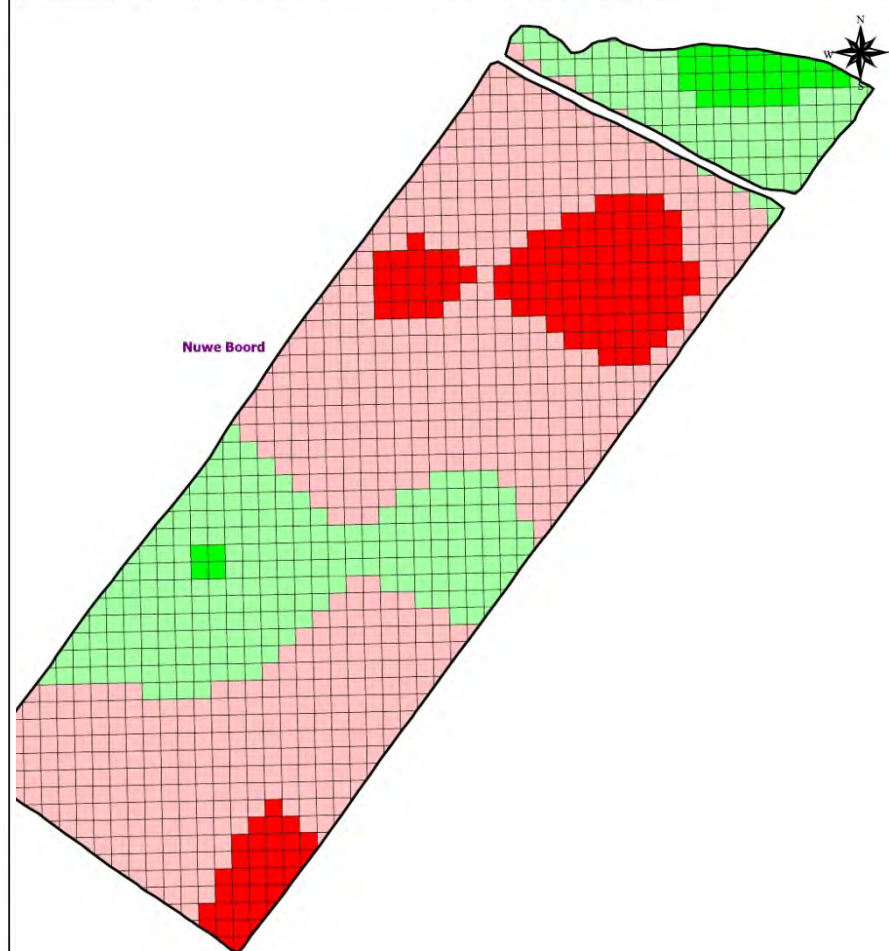
Equation Used: _MGSO4

Date: May 26, 2016
 Field Name: Costa Pitseladi_Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832

Application Estimates:
 Product: MgS04
 Min. Rate: 50.0 Kg./ha.
 Max. Rate: 250.0 Kg./ha.
 Avg. Rate: 147.4 Kg./ha.
 Total MgS04: 1582.7 Kg.
 Total MgS04 (100%): 1582.7 Kg.
 Number of Hectares to be Applied: 10.65 Hectares



Pitseladi Portokalia; 16 (10.91 ha.) - Ontleding: Mg%



May 19, 2016
 Name: Costa Pitseladi_Portokalia; 16
 Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 Observations: 1224
 Sum Mg_pers: 8
 Average Mg_pers: 22
 Maximum Mg_pers: 14



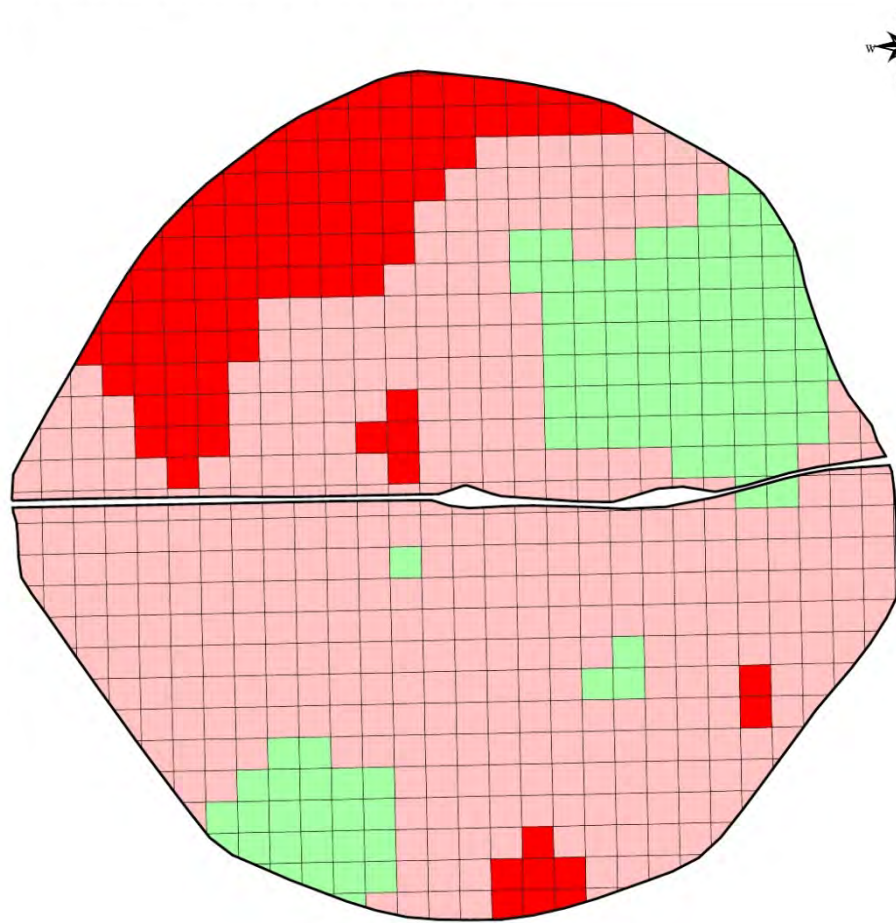
Soil Chemical Grids



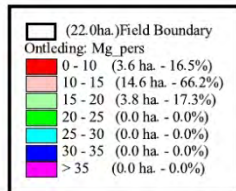
VRT



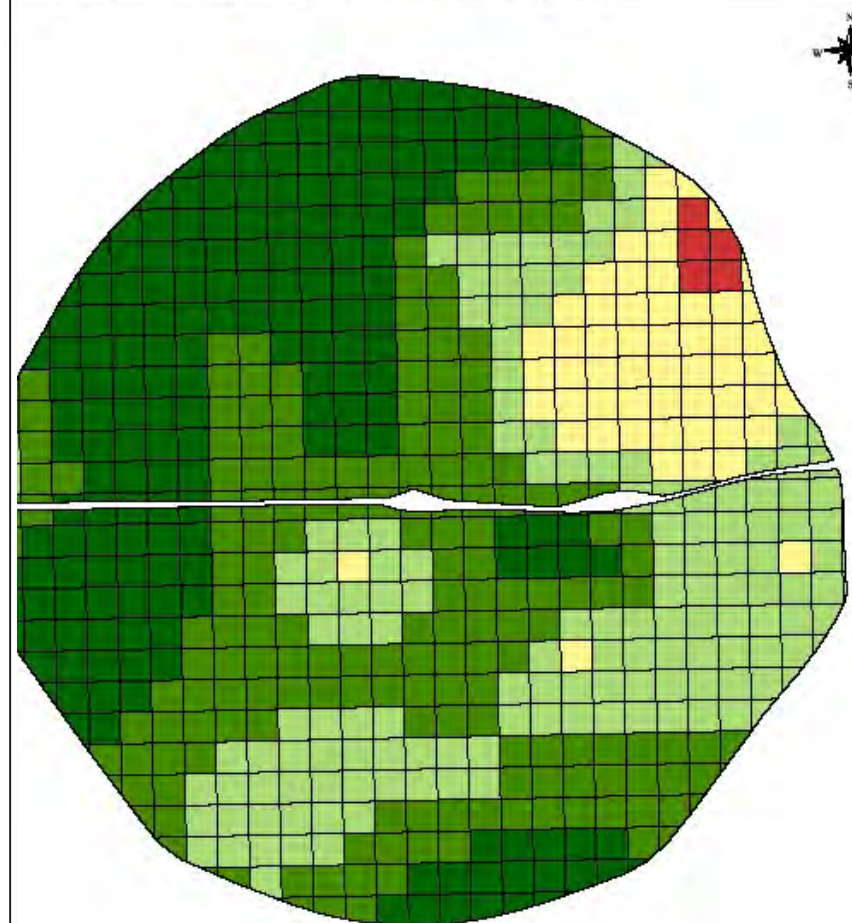
Boord 16; 16 (22.04 ha.) - Ontleding: Mg%



Date: May 19, 2016
 Field Name: Boord 16; 16
 Farm Name: Skuurkloof
 Client Name: JB Ferreira Boerdery
 Total Hectares: 22.04
 Field Boundary Start Location:
 Latitude: -33.74426266
 Longitude: 24.80626165
 No. of Observations: 645
 Minimum Mg_pers: 5
 Maximum Mg_pers: 18
 Average Mg_pers: 13



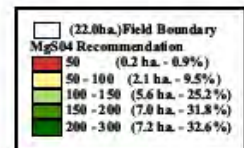
16; 16 (22.04 ha.) - Magnesium-Sulfaat (MgS04)



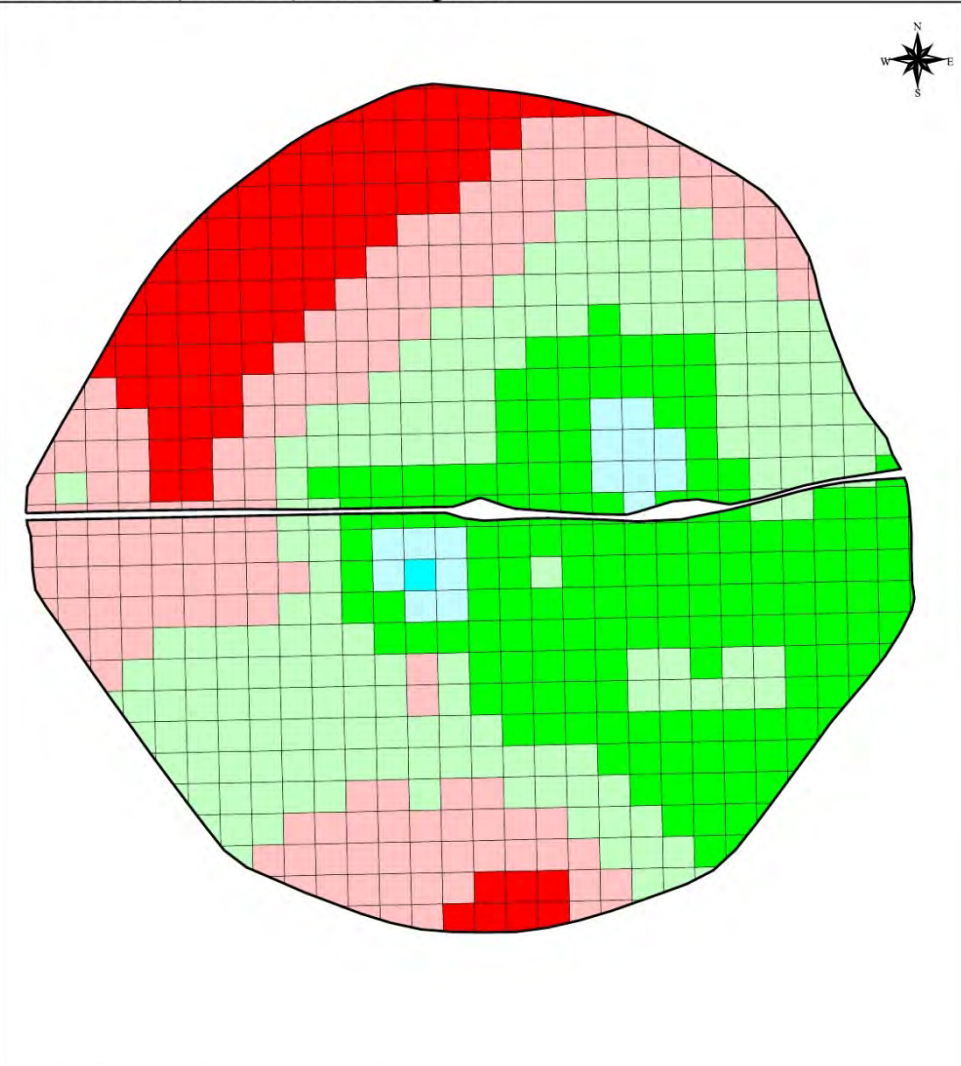
Product Used: MgS04

Date: May 26, 2016
 Farm: Boord 16; 16
 Farm Name: Skuurkloof
 Client Name: JB Ferreira Boerdery
 Total Hectares: 22.04
 Field Boundary Start Location:
 Latitude: -33.74426266
 Longitude: 24.80626165

Application Estimates:
 Product: MgS04
 Min. Rate: 50.0 Kg/ha.
 Max. Rate: 300.0 Kg/ha.
 Avg. Rate: 199.2 Kg/ha.
 Total MgS04: 4369.2 Kg.
 Total MgS04 (100%): 4369.2 Kg.
 Number of Hectares to be Applied: 22.03 Hectares



Boord 16; 16 (22.04 ha.) - Ontleding: K%

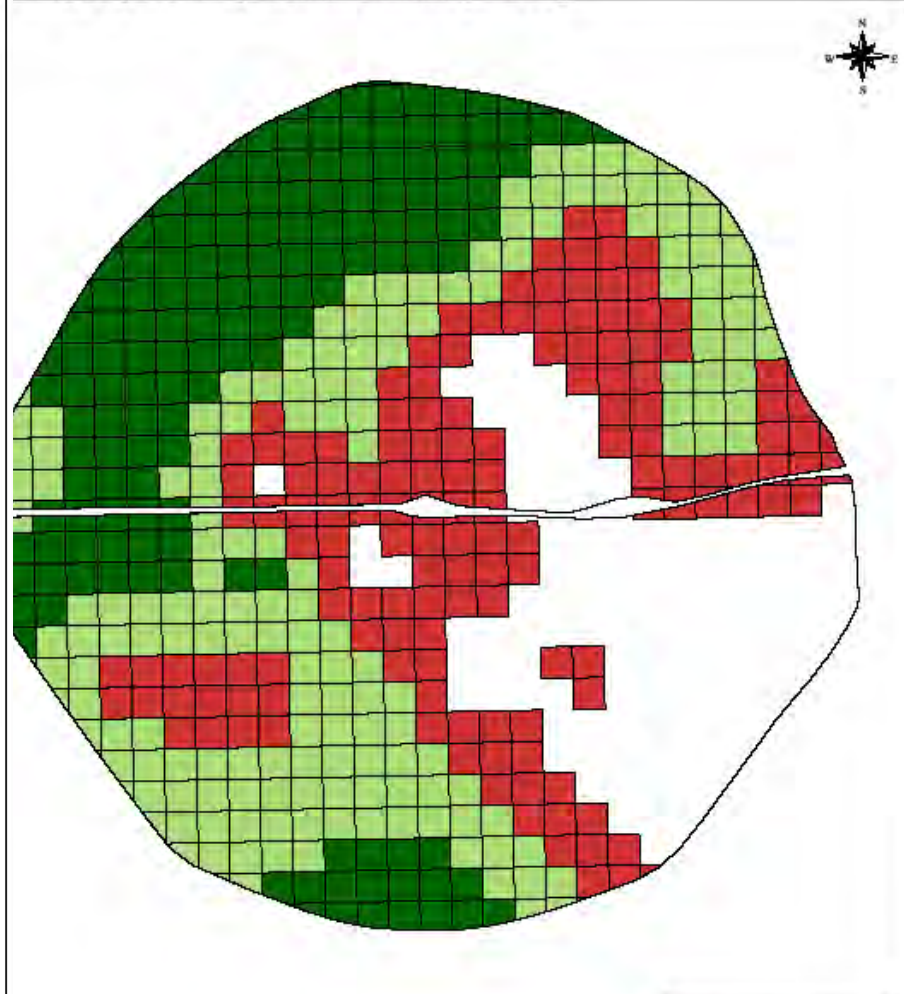


Date: May 19, 2016
 Field Name: Boord 16; 16
 Farm Name: Skeurkloof
 Client Name: JB Ferreira Boerdery
 Total Hectares: 22.04
 Field Boundary Start Location:
 Latitude: -33.74426266
 Longitude: 24.80626165
 No. of Observations: 645
 Minimum K_pers: 1
 Maximum K_pers: 14
 Average K_pers: 6

Field Boundary	
Ontleding: K_pers	
0 - 3	(3.1 ha. - 14.0%)
3 - 5	(5.4 ha. - 24.6%)
5 - 7	(6.9 ha. - 31.1%)
7 - 10	(6.0 ha. - 27.3%)
10 - 13	(0.6 ha. - 2.8%)
13 - 18	(0.0 ha. - 0.2%)
18 - 30	(0.0 ha. - 0.0%)
> 30	(0.0 ha. - 0.0%)



d 16; 16 (22.04 ha.) - Kalium-Sulfaat (K2SO4)



Product Used: K2SO4
 May 26, 2016
 Name: Boord 16; 16
 Name: Skeurkloof
 Client Name: JB Ferreira Boerdery
 Hectares: 22.04
 Boundary Start Location:
 Latitude: -33.74426266
 Longitude: 24.80626165

Application Estimates:	
Product:	K2SO4
Min. Rate:	50.0 Kg/ha.
Max. Rate:	150.0 Kg/ha.
Avg. Rate:	100.3 Kg/ha.
Total K2SO4:	1760.3 Kg.
Total K2SO4 (100%):	1760.3 Kg.
Number of Hectares to be Applied:	17.551 Hectares

Field Boundary	
K2SO4 Recommendation	
50	(5.5 ha. - 25.2%)
50 - 100	(6.4 ha. - 28.9%)
100 - 150	(5.6 ha. - 25.6%)



Grondchemiese Grids



Total Savings

MgSO₄

R356 /ha

K₂SO₄

R700 /ha

Total

R1056 /ha

TOTAL SOIL EVALUATION

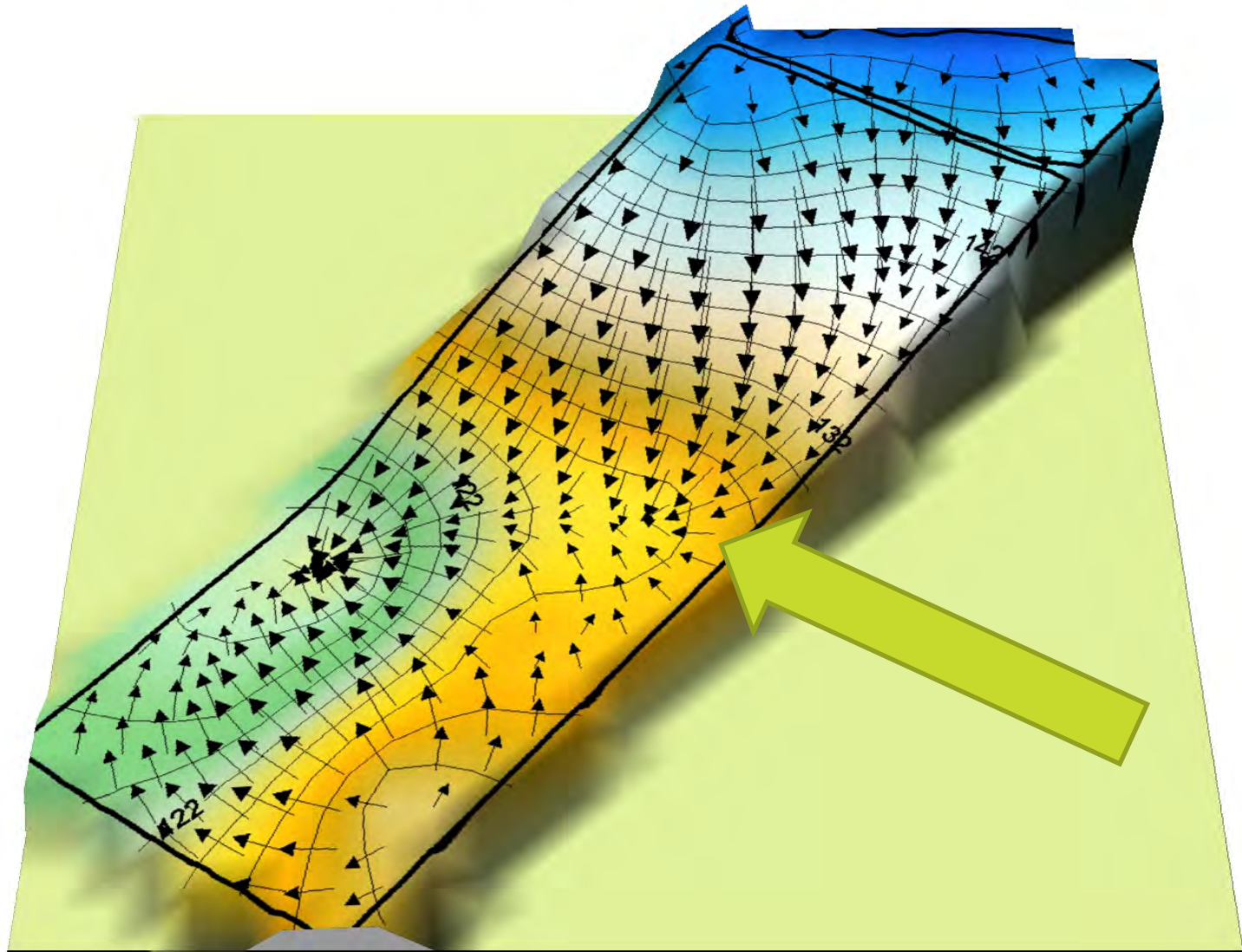
R850 /ha

Netto Position

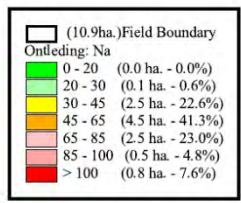
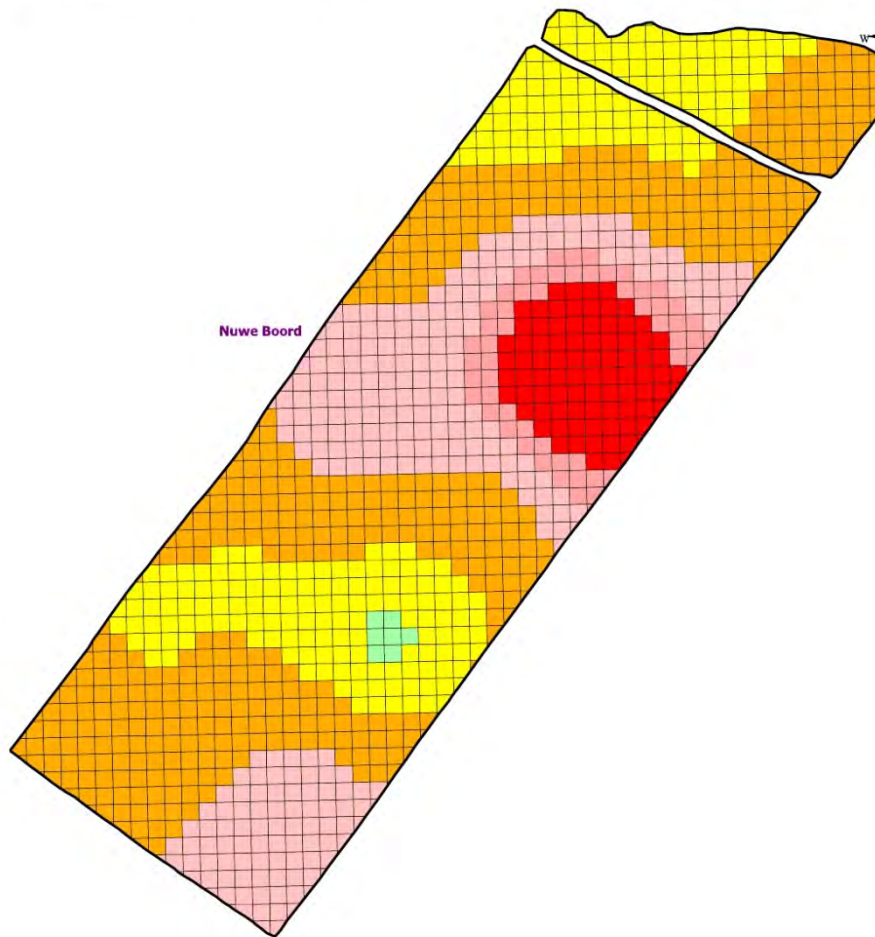
R206 /ha

(VRT)

Topografie -



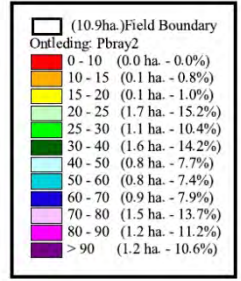
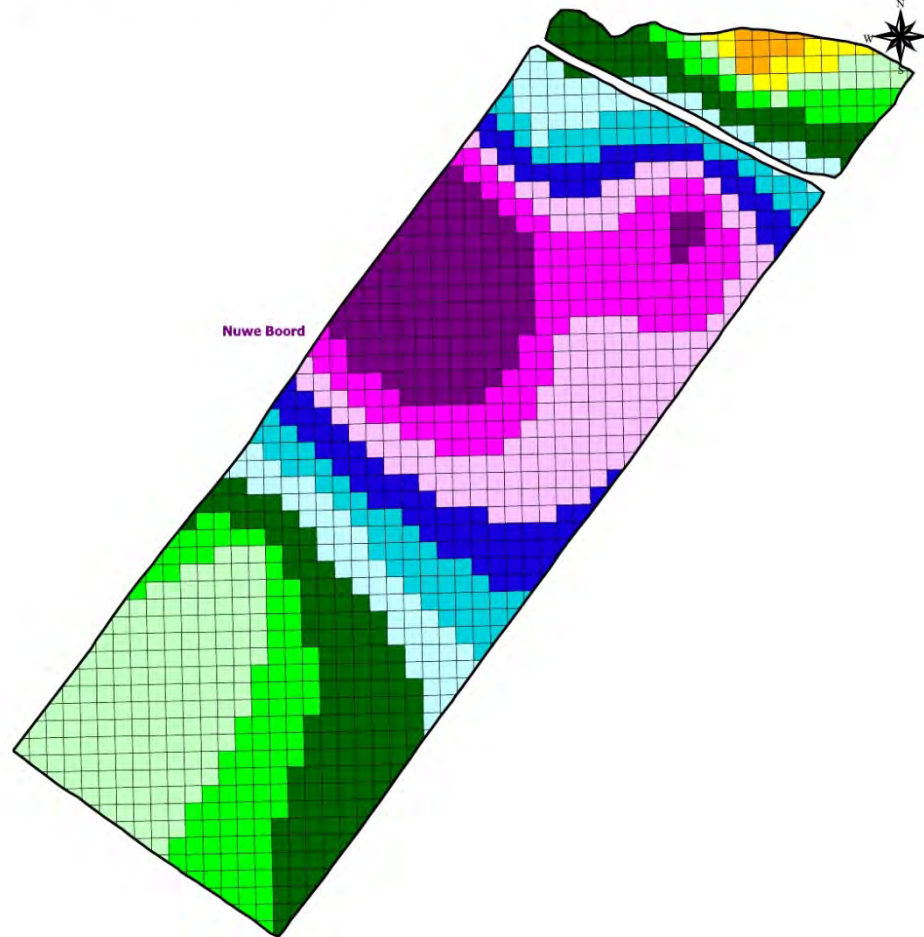
16 (10.91 ha.) - Ontleding: Na (mg/kg)



Date: May 18, 2016
 Field Name: Costa Pitseladi Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Na: 26
 Maximum Na: 146
 Average Na: 61



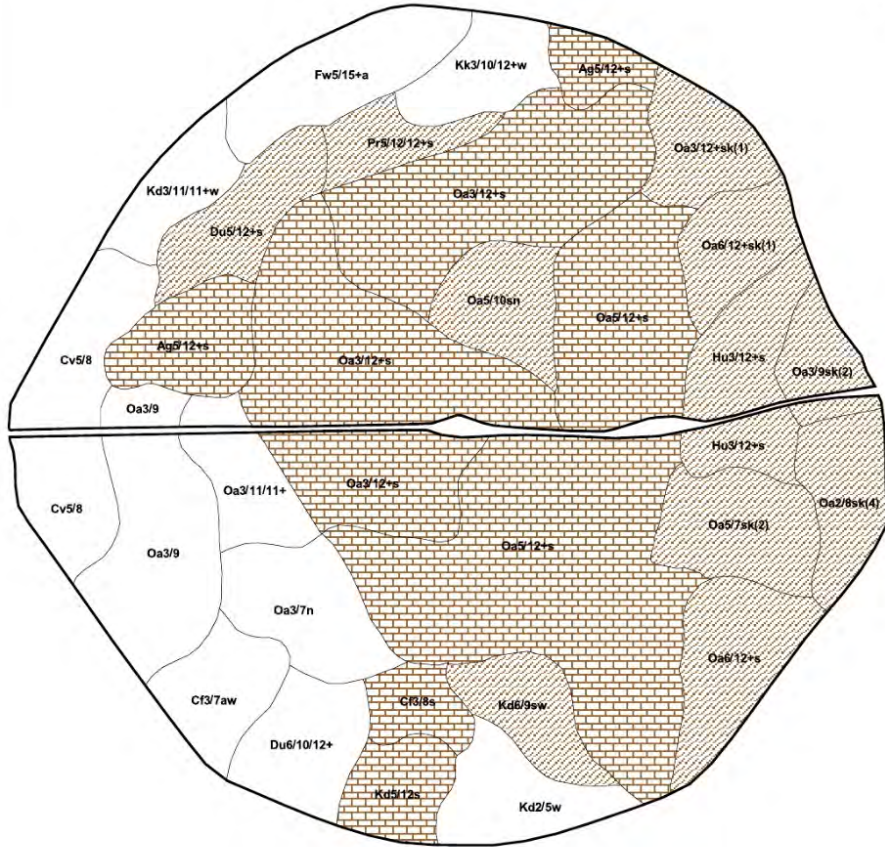
16 (10.91 ha.) - Ontleding: P (Bray2) (mg/kg)



Date: May 18, 2016
 Field Name: Costa Pitseladi Portokalia; 16
 Farm Name: Portokalia_Chemie
 Client Name: Costa Pitseladi
 Total Hectares: 10.91
 Field Boundary Start Location:
 Latitude: -33.73805660
 Longitude: 24.78508832
 No. of Observations: 1224
 Minimum Pbray2: 12
 Maximum Pbray2: 135
 Average Pbray2: 54



Boord 16; 16 (22.04 ha.) - Slik Prominensie

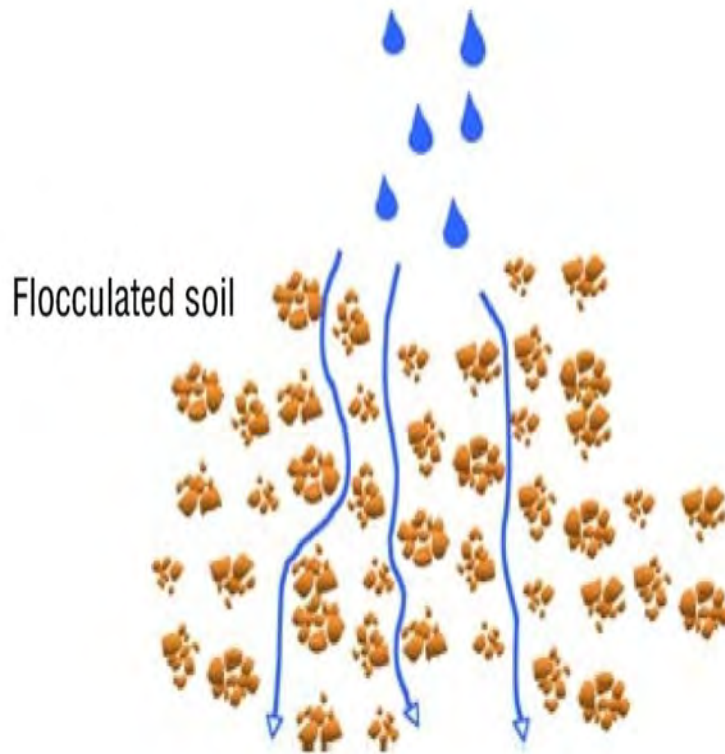


	(22.0ha.)Field Boundary
Grond	
	Prominent (5.9 ha. - 26.7%)
	Matig (9.5 ha. - 43.3%)
	Onder Ontwikkel (0.0 ha. - 0.0%)
	Afwecsig (6.6 ha. - 30.0%)

COMPACTION



Soil Compaction

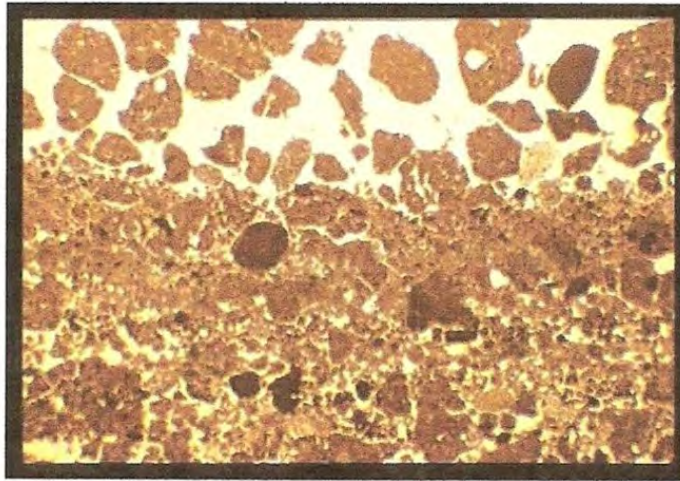


Calcium

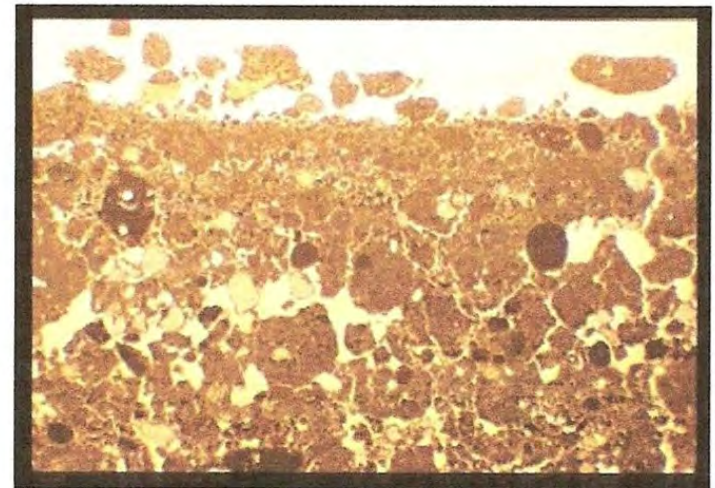


**Magnesium/
Sodium**

Soil Compaction



a



b

5. Photomicrographs of the Catlin soil treated with a) Ca and b) Mg. Frame width equals 11.5 mm. Pores are seen as yellow and aggregates as brown.

Calcium

2.5 - 4

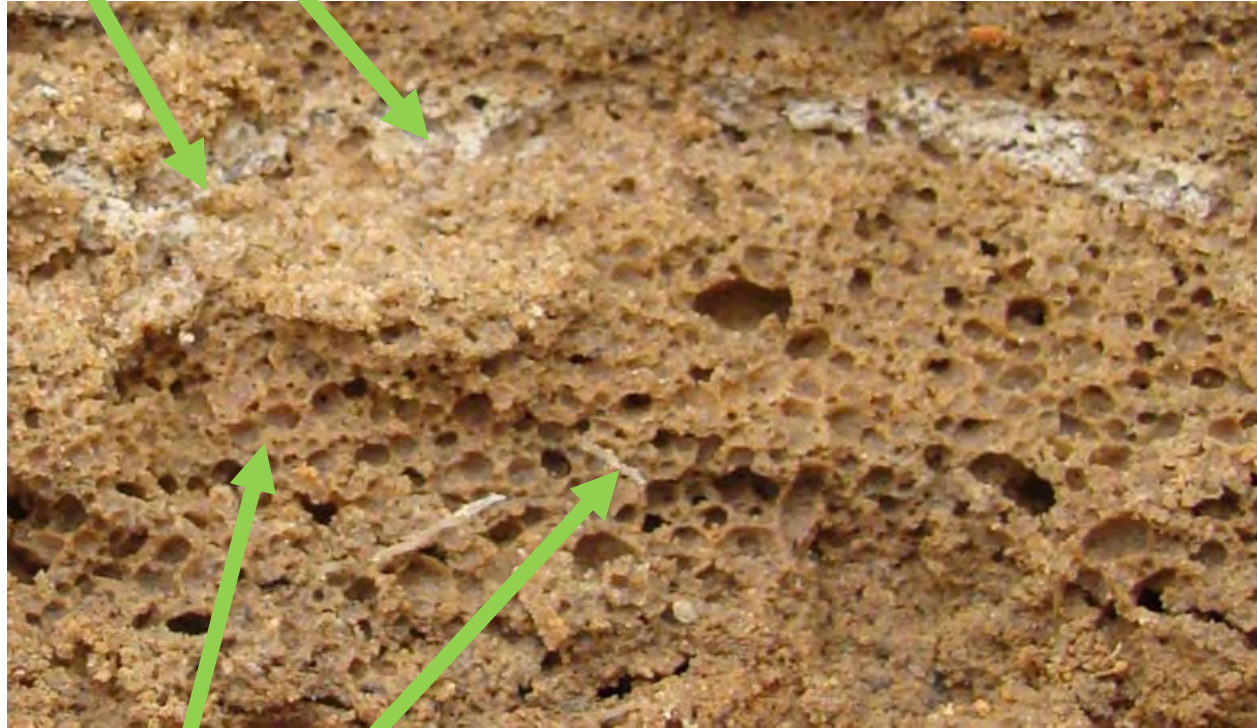


Magnesium

1

Grondkompaksie

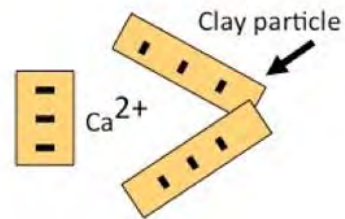
Gypsum Applied



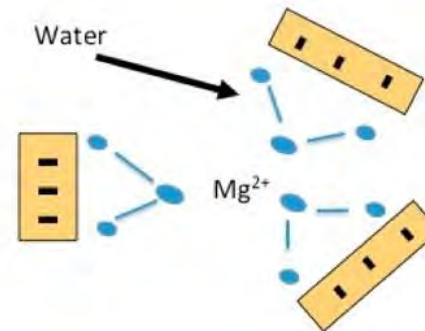
Floculation

Soil Structure

Flocculated



Dispersed



Soil Compaction

Normally we would try to manage this kind of scenario with (usually large) quantities of gypsum/lime

Often with limited efficacy - WHY?

For these to work we need it to:

- *Dissolve*
- *Move*

Thus needing lots of water

Though compacted soils show limited movement

DeKompakt

- ✓ **WATERSOLUBLE CALCIUM SOURCE**
- ✓ **SURFACTANT**
- ✓ **HIGH QUALITY FULVIC ACID**

Fulviensuur (with Surfactant)

Magic Component



“BURST TECHNOLOGY”



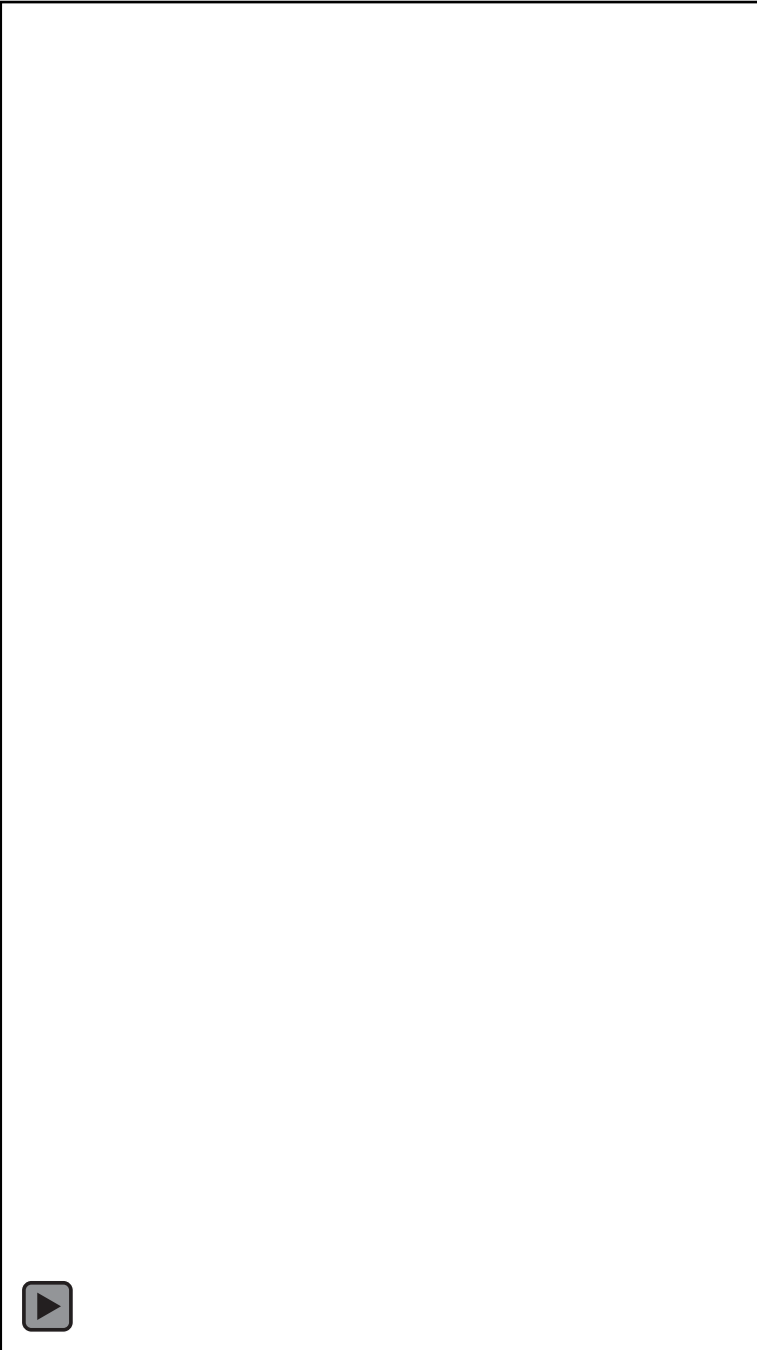
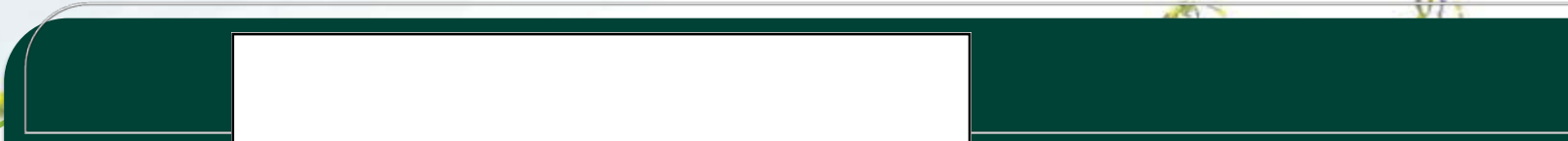
CEC = ± 1400

Ave Soil = KUK 5-25



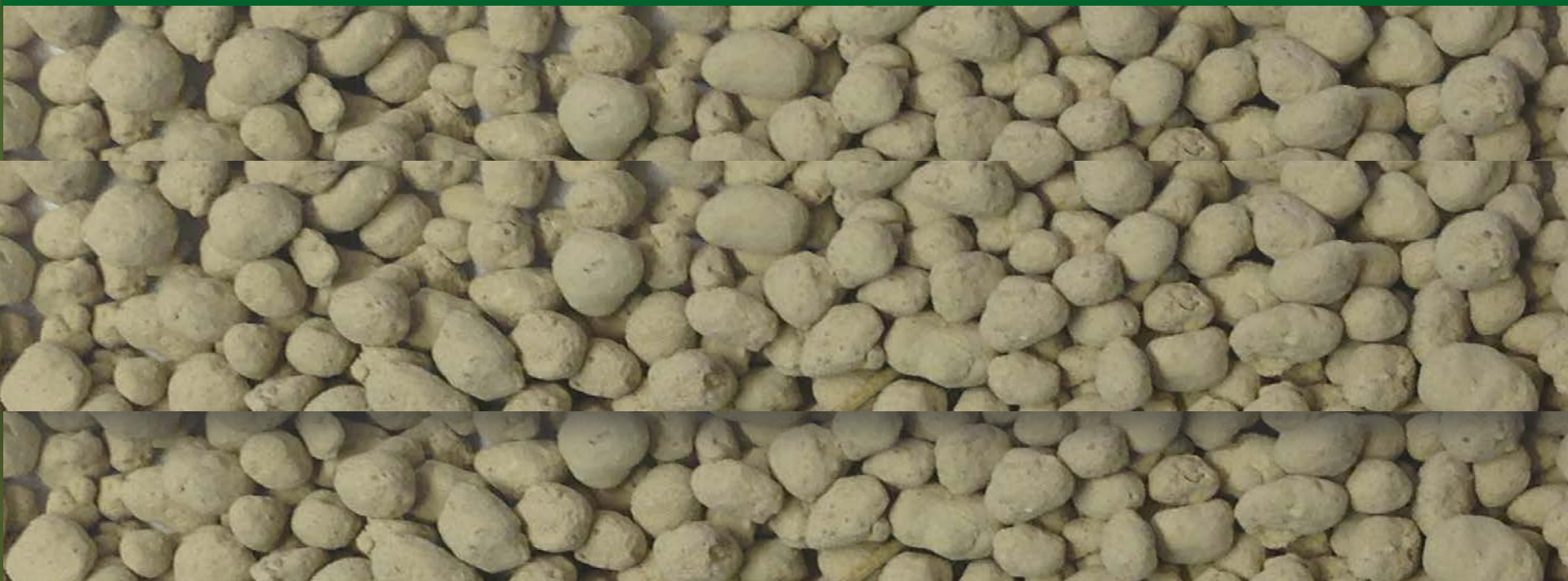
Dekompakt - Benefits

- **Flocculate Soil**
- **Optimise soil aeration and water infiltration**
- **Displaces Na and move it out of the root zone**
- **Aids in soil health**
- **Additional source of Calcium and Nitrogen**
- **Soil pH unmoved**



EcoGRL

Granular Reactive Limestone



EcoGRL - FEATURES

EcoGRL Typical Specification	
Chemical Analysis	
Calcium	39.6%
Calcium carbonate	87.3%
Magnesium	1.13%
Magnesium carbonate	3.27%
Fe2O3	0.97%
K2O	0.19%
Moisture	1.8%
Granulometry	95%
Particle size distribution	
>1.0mm	0%
0.5mm – 1.0 mm	0%
0.25mm – 0.5mm	0%
0.15mm – 0.25mm	5%
0.075mm – 0.15mm	16%
<0.075mm	78%
Particle size effectiveness (PSE)	90%
Calcium Carbonate Equivalent (CCE)	92.9%
Effective Calcium Carbonate Equivalent (ECCE)	83.1%



NU test[®]

nutrient uptake

**When you don't know the answer
to an exam question,
but you refuse to leave it blank.**

VIA 955AG.COM

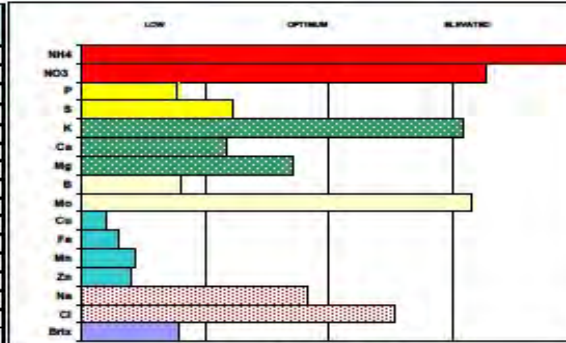


Client Name:	Nardu Odendaal
Paddock/Block:	Pivot Goed
Agronomist:	Rupert Vermaas
Report date:	12/12/2016
Growth stage (GS):	4.4

Nviro Business Hub
Unit no 6
Ou Wapad street
IFAFI
hartbeespoort

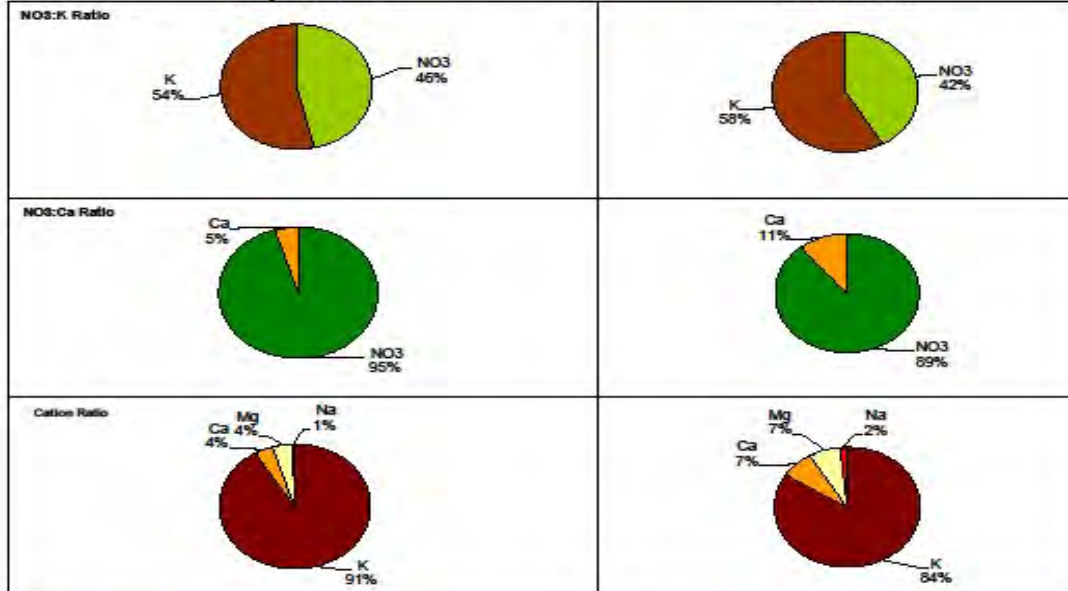
Results [ppm]:

NUTRIENT	RESULT	STATUS
Ammonium - NH4	64.5258	
Nitrate - NO3	8688.338	Elevated
Phosphorus - P	91.4063	Marginal
Sulphur - S	71.4862	Satisfactory
Potassium - K	10103.43	High
Calcium - Ca	427.995	Satisfactory
Magnesium - Mg	474.187	Satisfactory
Boron - B	0.6384	Low
Molybdenum - Mo	0.084638	Optimum
Copper - Cu	0.3799	Low
Iron - Fe	0.72415	Low
Manganese - Mn	1.02039	Low
Zinc - Zn	0.47678	Low
Sodium - Na	57.2334	Satisfactory
Chloride - Cl	2590.359	Moderately saline
brix %	3.7	Moderate



Analysis Results

Desirable Result



Analysis by AgVita Analytical

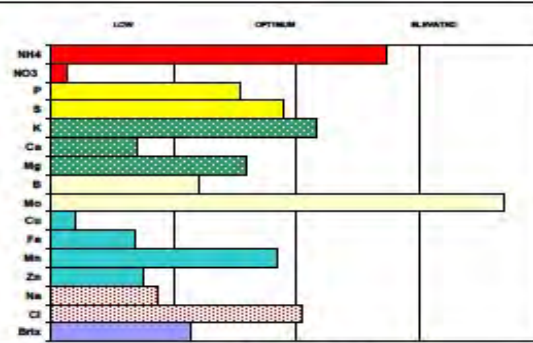
The information within this report should be used as part of a crop-monitoring program and under consideration of particular production conditions. Desirable levels are derived from ongoing research carried out by AgVita Analytical Pty. Ltd. The interpretation of analytical results presumes specific sampling, sample handling, extraction and analytical procedures. Results may be incompatible with interpretation advice developed via different procedures. AgVita Analytical Pty. Ltd and its employees or agents will not be liable for any loss or damage arising from application or interpretation of the data supplied. Please seek guidance on local interpretations and recommendations from your agronomist.

Client Name:	Nardu Odendaal
Paddock/Block:	Pivot Sleg
Agronomist:	Rupert Vermaas
Report date:	12/12/2016
Growth stage (GS):	4.4

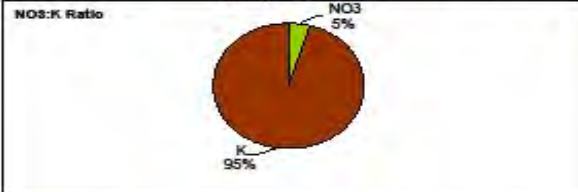
Nviro Business Hub
Unit no 6
Ou Wapad street
IFAFI
Harlbeespoort

Results [ppm]:

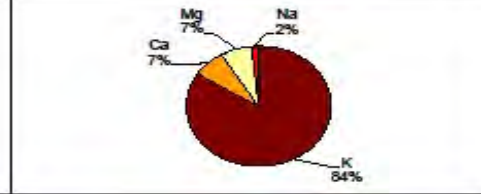
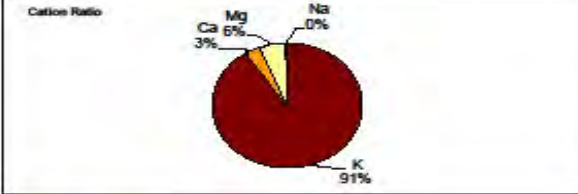
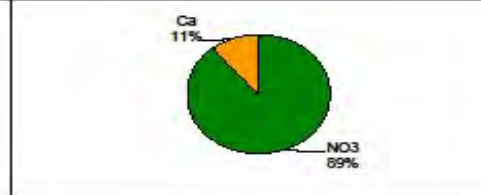
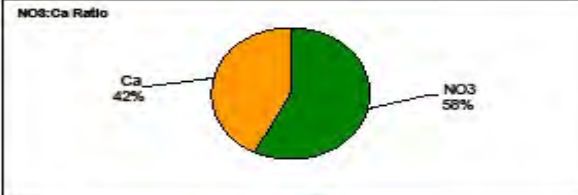
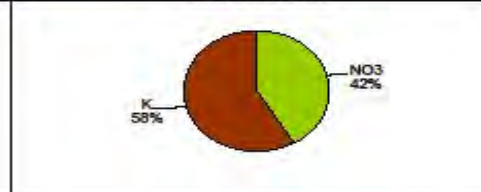
NUTRIENT	RESULT	STATUS
Ammonium - NH4	40.9962	
Nitrate - NO3	347.1791	Low
Phosphorus - P	182.042	Satisfactory
Sulphur - S	110.828	Satisfactory
Potassium - K	7104.825	Optimum
Calcium - Ca	255.183	Low
Magnesium - Mg	443.536	Satisfactory
Boron - B	0.9592	Marginal
Molybdenum - Mo	0.099184	Optimum
Copper - Cu	0.40918	Low
Iron - Fe	1.63033	Marginal
Manganese - Mn	4.43141	Satisfactory
Zinc - Zn	0.9123	Low
Sodium - Na	26.9583	Satisfactory
Chloride - Cl	2093.07	Moderately saline
brix %	5.4	Satisfactory



Analysis Results



Desirable Results



Analysis by AgVita Analytical
The information within this report should be used as part of a crop-monitoring program and under consideration of particular production conditions. Desirable levels are derived from ongoing research carried out by AgVita Analytical Pty. Ltd. The interpretation of analytical results presumes specific sampling, sample handling, extraction and analytical procedures. Results may be incompatible with interpretation advice developed via different procedures. AgVita Analytical Pty. Ltd and its employees or agents will not be liable for any loss or damage arising from application or interpretation of the data supplied. Please seek guidance on local interpretations and recommendations from your agronomist.

Nutrient Uptake Test

- *Wet Tissue Analysis - Realtime*
- *Results within 48 hrs*
- *Quick reaction applications*
- *Growth Stage Specific Norms*
- *Key Ratios*
- *Easy Interpretation*

- *Relatively Expensive*
- *Logistics - Fresh*

- *Dry Matter Analysis*
- *Results often more than 1 working week*
- *Follow-up applications in a different GS*
- *Single set of norms*
- *DRIS Norms*
- *Only minimum value interpretations*

- *Relatively Inexpensive*
- *Easy Logistics*

Growth Stage Specific Norms

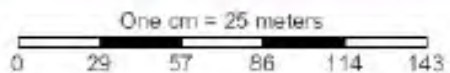
AVOCADO		
Avocado	Dormant	9
Avocado	Pre Flower	5
Avocado	Fruit set	6
Avocado	1st Fruit drop	6.9
Avocado	2nd Fruit drop	7.1
Avocado	Fruit sizing	7.5
Avocado	Fruit fill	8
Avocado	Harvest	8.5

GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kalium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/06/05
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
≤ 0.1	(0.00 ha)
0.1 - 0.2	(0.00 ha)
0.2 - 0.3	(0.00 ha)
0.3 - 0.4	(0.00 ha)
0.4 - 0.5	(0.00 ha)
0.5 - 0.6	(0.35 ha)
0.6 - 0.7	(1.86 ha)
0.7 - 0.8	(2.79 ha)
0.8 - 0.9	(0.00 ha)
> 0.9	(0.00 ha)

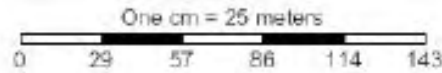


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/06/29
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
■	≤ 0.1 (0.00 ha)
■	0.1 - 0.2 (0.00 ha)
■	0.2 - 0.3 (0.00 ha)
■	0.3 - 0.4 (0.00 ha)
■	0.4 - 0.5 (0.20 ha)
■	0.5 - 0.6 (0.51 ha)
■	0.6 - 0.7 (1.17 ha)
■	0.7 - 0.8 (3.12 ha)
■	0.8 - 0.9 (0.00 ha)
■	> 0.9 (0.00 ha)

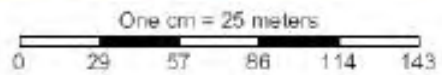


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensle JB
Field: R 2 Poly Kallum Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/08/09
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
≤ 0.1	(0.00 ha)
0.1 - 0.2	(0.00 ha)
0.2 - 0.3	(0.00 ha)
0.3 - 0.4	(0.04 ha)
0.4 - 0.5	(0.11 ha)
0.5 - 0.6	(0.27 ha)
0.6 - 0.7	(1.35 ha)
0.7 - 0.8	(1.75 ha)
0.8 - 0.9	(1.49 ha)
> 0.9	(0.00 ha)

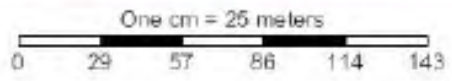


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/08/24
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
≤ 0.1	(0.00 ha)
0.1 - 0.2	(0.00 ha)
0.2 - 0.3	(0.00 ha)
0.3 - 0.4	(0.00 ha)
0.4 - 0.5	(0.00 ha)
0.5 - 0.6	(0.23 ha)
0.6 - 0.7	(1.09 ha)
0.7 - 0.8	(3.19 ha)
0.8 - 0.9	(0.50 ha)
> 0.9	(0.00 ha)

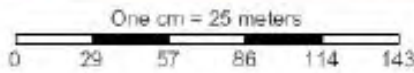


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallum Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/09/25
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
≤ 0.1	(0.00 ha)
0.1 - 0.2	(0.00 ha)
0.2 - 0.3	(0.04 ha)
0.3 - 0.4	(0.08 ha)
0.4 - 0.5	(0.20 ha)
0.5 - 0.6	(0.78 ha)
0.6 - 0.7	(0.92 ha)
0.7 - 0.8	(2.97 ha)
0.8 - 0.9	(0.00 ha)
> 0.9	(0.00 ha)

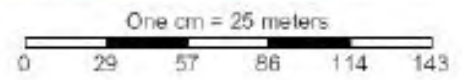


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/12/06
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
0.1 - 0.1	(0.04 ha)
0.1 - 0.2	(0.03 ha)
0.2 - 0.3	(0.02 ha)
0.3 - 0.4	(0.02 ha)
0.4 - 0.5	(0.10 ha)
0.5 - 0.6	(0.24 ha)
0.6 - 0.7	(1.93 ha)
0.7 - 0.8	(2.62 ha)
0.8 - 0.9	(0.00 ha)
> 0.9	(0.00 ha)



GeoSys NDVI 5m



Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/12/14
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha

Absolute NDVI	
≤ 0.1	(0.00 ha)
0.1 - 0.2	(0.00 ha)
0.2 - 0.3	(0.06 ha)
0.3 - 0.4	(0.11 ha)
0.4 - 0.5	(0.73 ha)
0.5 - 0.6	(0.52 ha)
0.6 - 0.7	(0.89 ha)
0.7 - 0.8	(2.89 ha)
0.8 - 0.9	(0.00 ha)
> 0.9	(0.00 ha)



One cm = 25 meters
0 29 57 86 114 143

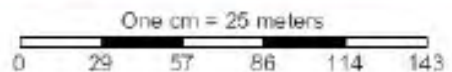


GeoSys NDVI 5m

Grower: JB Ferreira
Farm: Patensie JB
Field: R 2 Poly Kallium Proef
Field Area: 5.00ha
Season: 2016
Acquisition Date: 2016/12/16
Imagery Provider: GeoSys
Resolution: 5 m
Coverage Area: 5.00 ha



Absolute NDVI	
0.0 - 0.1	(0.02 ha)
0.1 - 0.2	(0.04 ha)
0.2 - 0.3	(0.04 ha)
0.3 - 0.4	(0.03 ha)
0.4 - 0.5	(0.17 ha)
0.5 - 0.6	(0.42 ha)
0.6 - 0.7	(3.46 ha)
0.7 - 0.8	(0.82 ha)
0.8 - 0.9	(0.00 ha)
> 0.9	(0.00 ha)



Thank you



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