Research

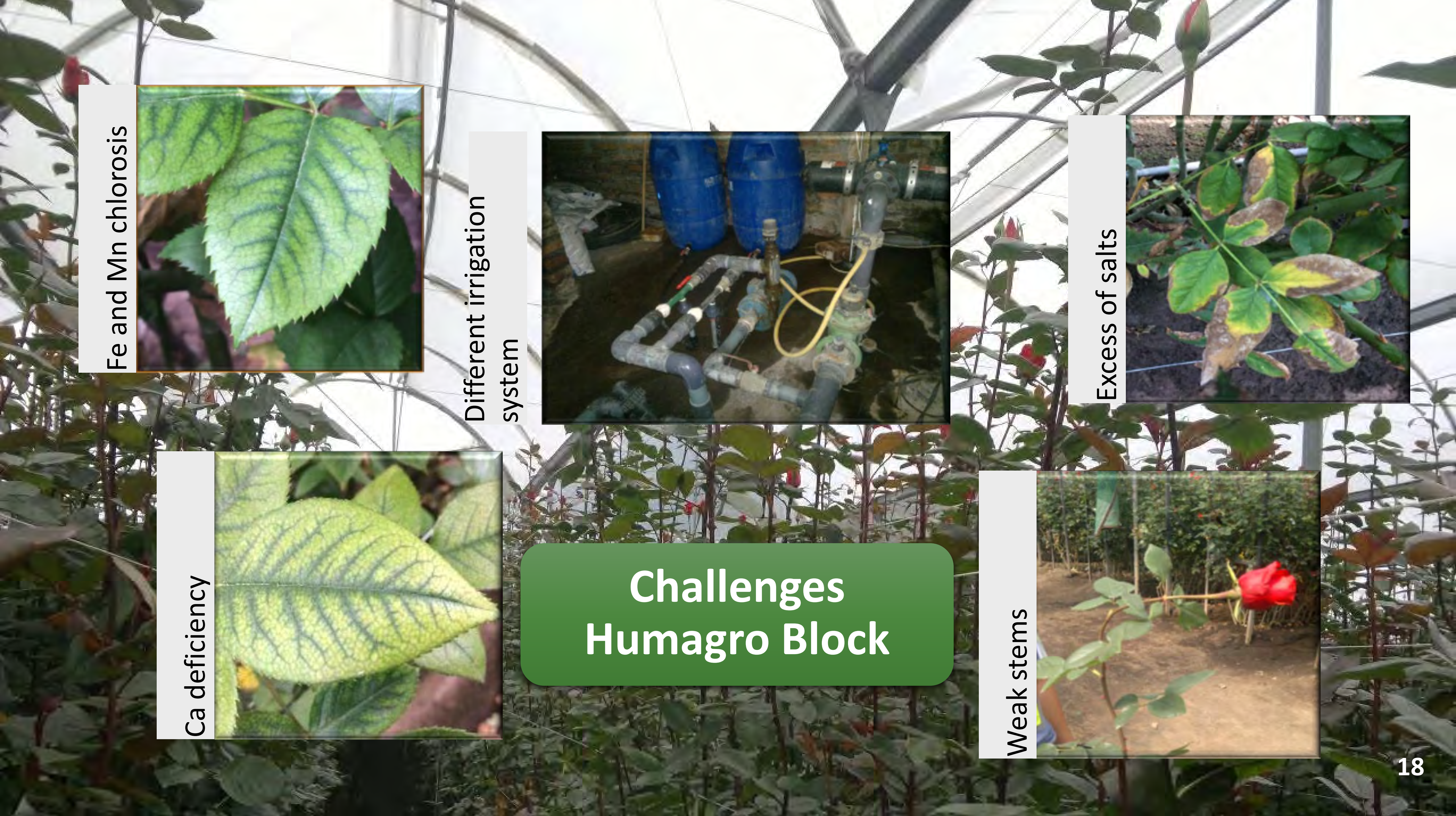
PLANTATION 1.
Huma Gro vs Conventional Fertirrigation

- Location: Machachi - Ecuador
- meters above sea level: 2880 meters above sea level
- Mean Temp.: 13 °C
- Mean Rainfall: 1572 mm/year

- Crop: Roses
- Variety: Nina
- Starting date: November 10th, 2015
- Treatments:
  - **HUMA GRO® fertirrigation. Block 41**
  - Conventional fertirrigation. Block 44

Block 41.

Technician: Yurakuna **Santiago Taipe**


Fe and Mn chlorosis
Different irrigation system
Excess of salts
Ca deficiency
Challenges
Humagro Block
Weak stems

PLANTATION 1
Nutritional Requirement

element	unit	Huma Gro	Conventional
NH4+	meq	1,449	1.57
NO3-2	meq	10,180	10.52
SO4-2	meq	2,820	4.17
P	meq	1,763	0.88
K+	meq	4,092	3.84
Ca++	meq	5,455	4.99
Mg++	meq	2,860	4.28
Fe	meq	0,075	0.07
Mn	meq	0,045	0.06
Zn	meq	0,026	0.03
Cu	meq	0,021	0.03
B	meq	0,087	0.11
Mo	meq	0,008	0.00

g/Ha/day

	HUMA GRO	Conventional Fertilizer
N	75.61	281.25
P2O5	11.80	125.49
K20	16.88	360.21
Ca	13.95	205.29
Mg	3.30	99.89
S	5.61	143.86
Fe	1.29	3.40
B	0.27	0.80
Mo	0.02	0.33
Zn	1.50	2.00
Cu	0.09	1.60
Mn	0.73	3.34
Co	0.01	0.00

L product/Ha/day

CALCIUM	> 1,0	1.58
COMOL	1.5	0.01
SULFUR	1.6	0.00
IRON	2.5 - 30.5	0.22
Z MAX	2.5 - 3.5	0.19
COPPER	2.8	0.00
MANGANESE	3.5 - 4.5	0.07
44 MAG	5.0 - 5.5	0.66
BORON	6.5 - 7.5	0.05

L product/Ha/day

PHOS MAX	< 1.5	0.24
SUPER NITRO	7.5 - 8.0	1.58
SUPER K	12.5 - 13.5	0.42
NITRIC ACID	< 1.5	1.19

BIO HUMA NETICS

yurakuna

HUMA GRO

Harvesting Nature's Science™

K product/Ha/day

Calcium Nitrate	10.80
Fe-EDDHA	0.57
Potassium Nitrate	3.04
Ammonium Molybdate	0.01

K product/Ha/day

Nitric Acid	1.19

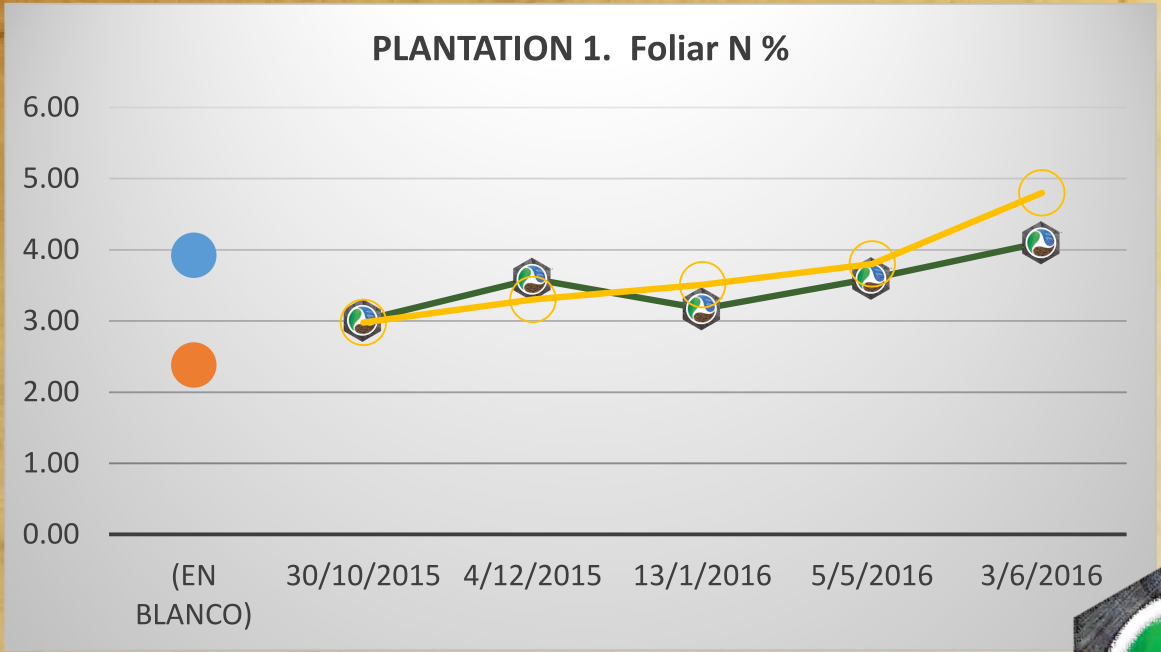
K product/Ha/day

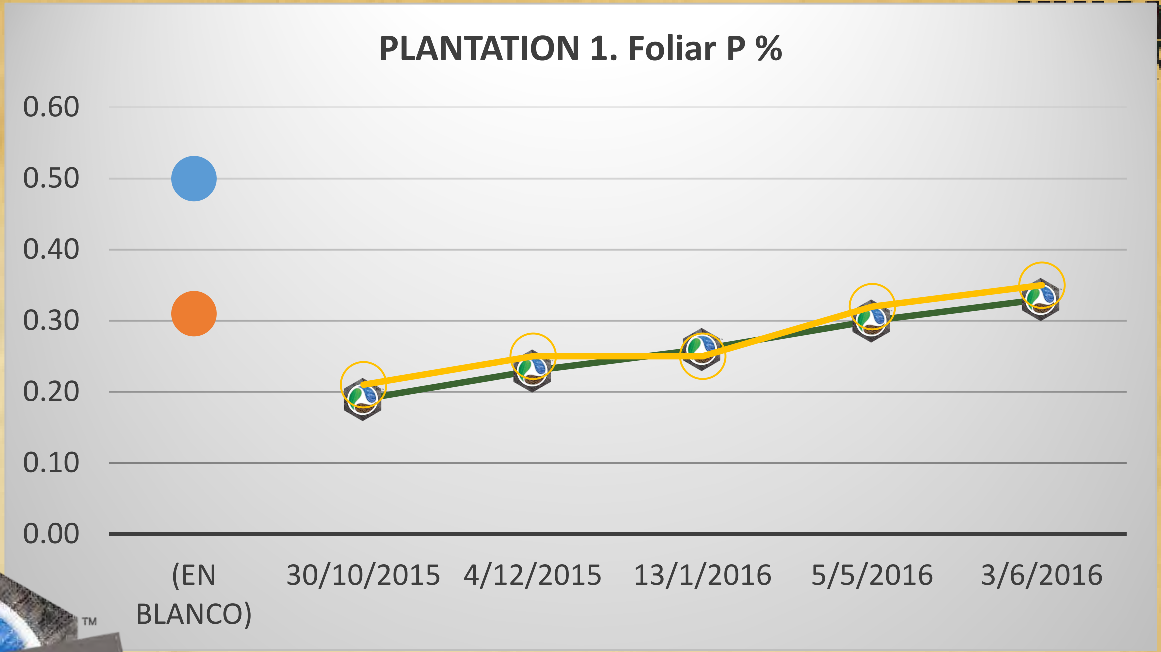
Mn-EDTA	0.26
Zn-EDTA	0.13
Cu-EDTA	0.11
Potassium Nitrate	3.04
Monopotassium Phosphate	2.37
Magnesium Sulphate	10.28
Borax	0.07

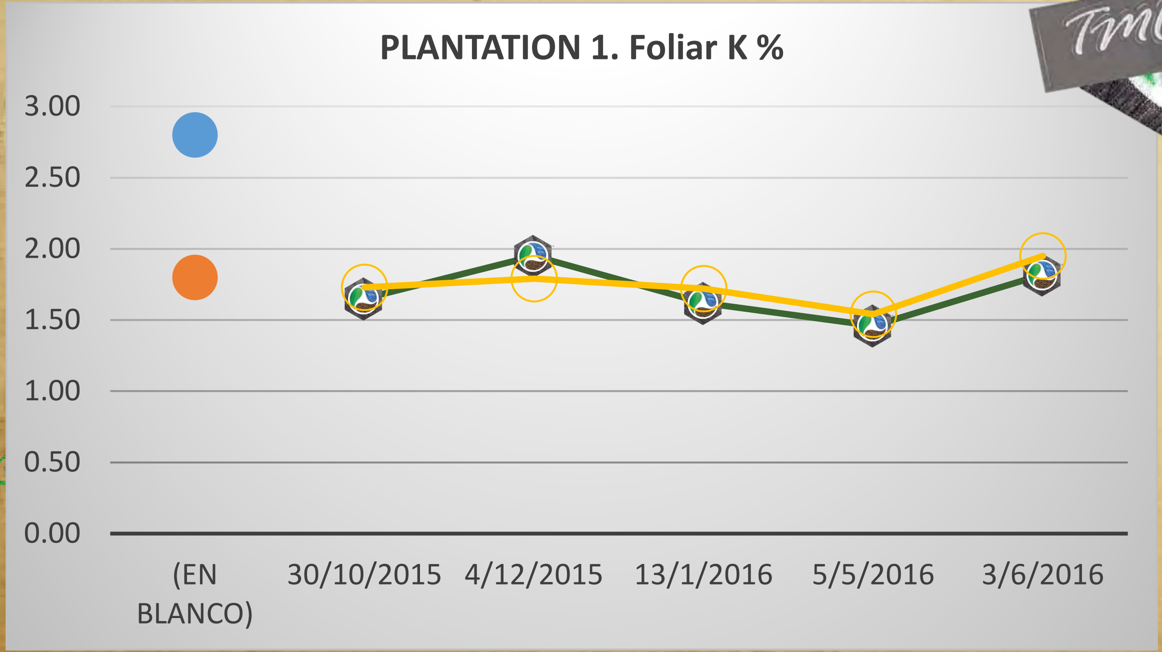
Conventional Fertilizer

PLANTATION 1. Roses. Nina variety. Machachi: Ecuador 2015-2016 100% HUMAGRO Fertirrigation

FOLIAR CONTENT %-ppm. Agrarprojekt 2015-2016	N %	P %	K %	Ca %	Mg %	S %	B ppm	Fe ppm	Zn ppm	Cu ppm	Mn ppm
OPTIMUM MAXIMUM											
	3.92	0.50	2.80	1.80	0.39	0.32	60.00	151.00	52.00	16.00	148.00
OPTIMUM MINIMUM											
	2.38	0.31	1.80	1.00	0.24	0.22	30.00	56.00	20.00	4.00	60.00
NINA											
CONVENTIONAL											
10/30/2015	2.98	0.21	1.73	0.82	0.25	0.18	69.90	232.00	77.40	4.00	97.90
12/4/2015	3.30	0.25	1.79	0.93	0.31	0.20	66.20	145.00	72.20	4.50	97.40
1/13/2016	3.51	0.25	1.72	1.10	0.32	0.19	74.80	200.00	54.00	8.30	84.80
5/5/2016	3.80	0.32	1.54	1.01	0.30	0.19	76.00	102.00	84.00	2.10	59.00
6/3/2016	4.80	0.35	1.95	1.17	0.36	0.25	105.00	112.00	69.00	1.60	74.00
HUMAGRO											
10/30/2015	3.01	0.19	1.65	0.84	0.27	0.20	70.00	220.00	87.20	4.00	81.60
12/4/2015	3.59	0.23	1.95	0.89	0.33	0.23	67.20	193.00	90.20	4.50	78.00
1/13/2016	3.17	0.26	1.62	0.96	0.37	0.23	86.20	220.00	104.00	7.80	86.20
5/5/2016	3.60	0.30	1.46	1.03	0.33	0.23	86.00	93.00	92.00	1.70	37.00
6/3/2016	4.10	0.33	1.82	1.17	0.37	0.32	130.00	121.00	236.00	2.10	29.00

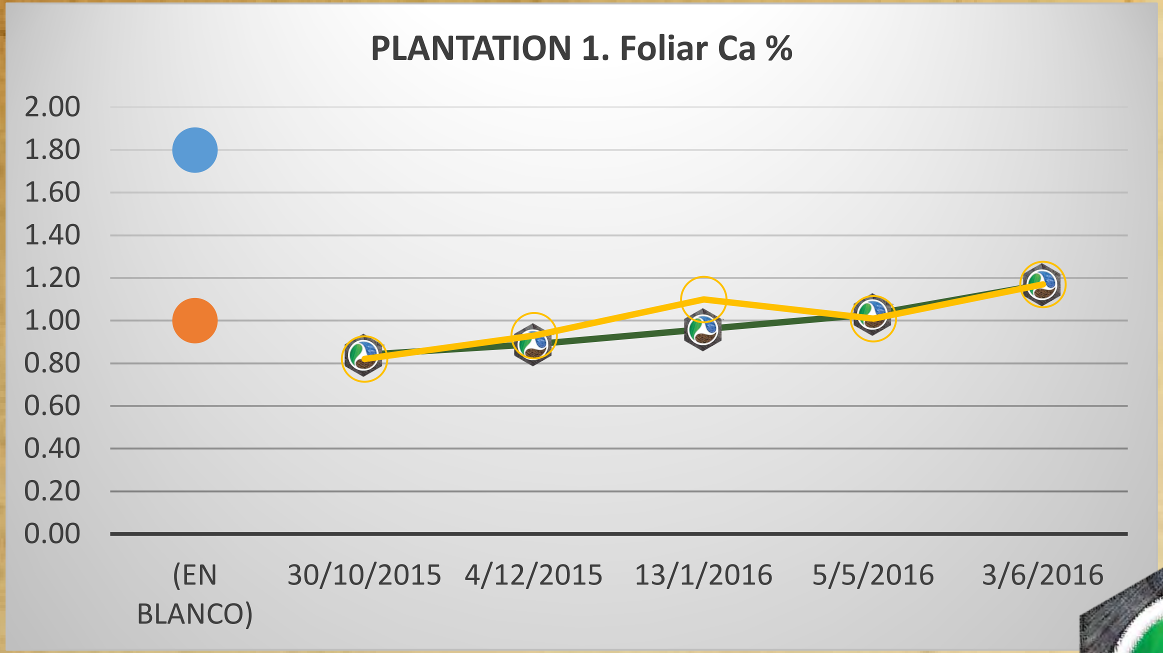


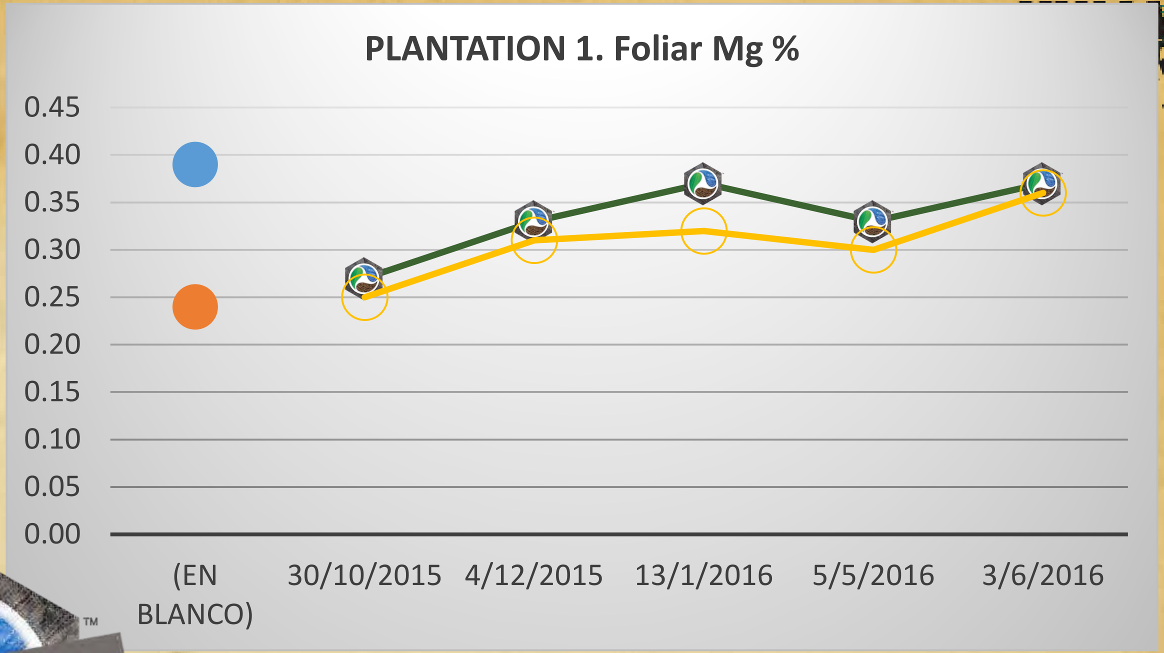


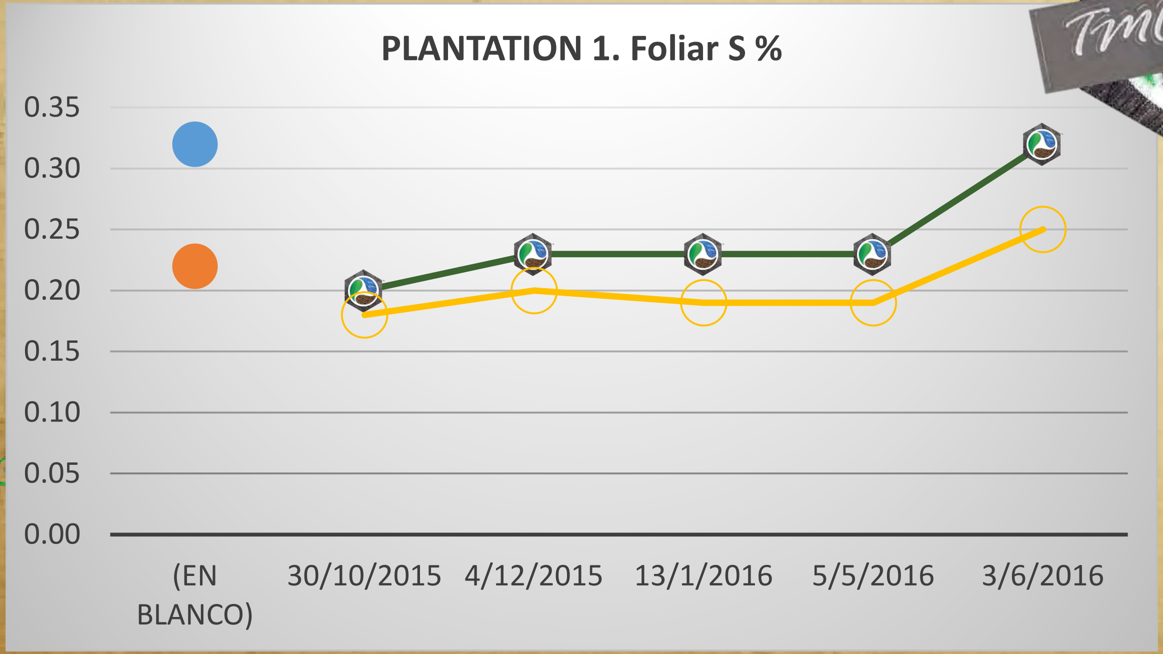


PLANTATION 1. Roses. Nina variety.
Machachi: Ecuador 2015-2016
100% HUMAGRO Fertirrigation

During 8 months

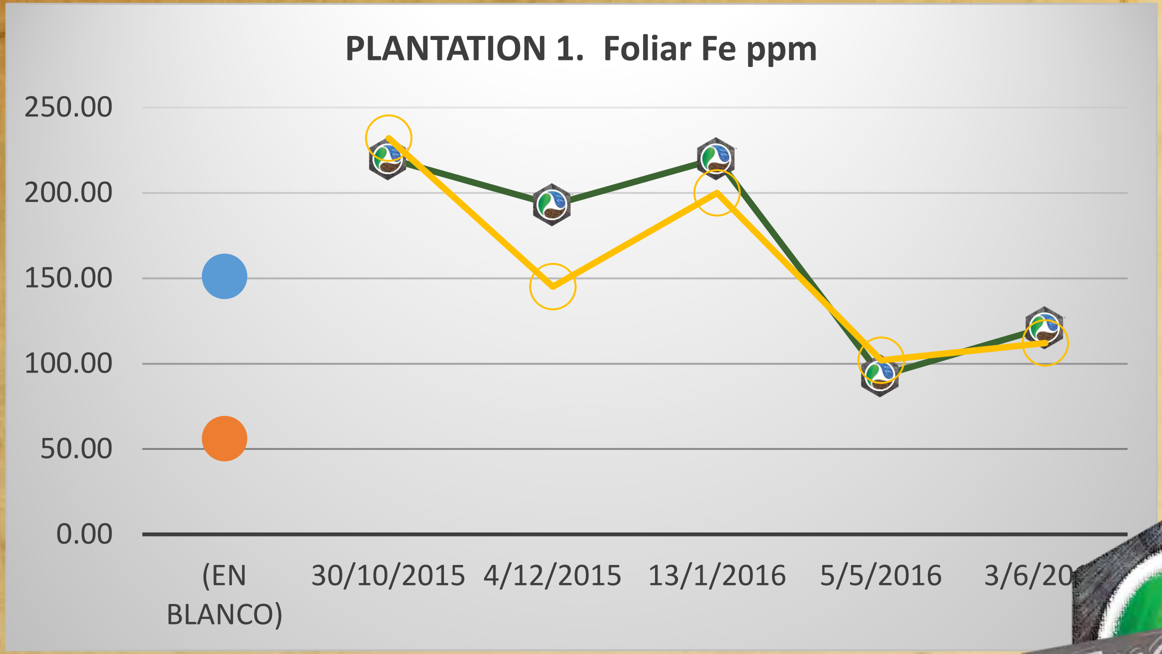


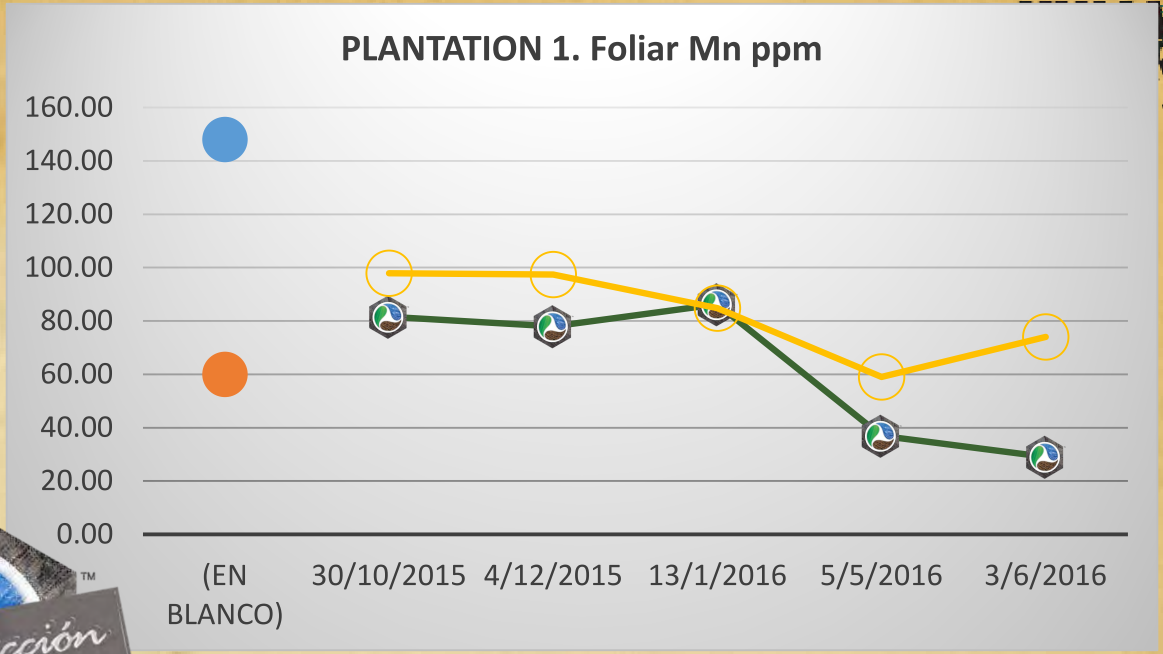


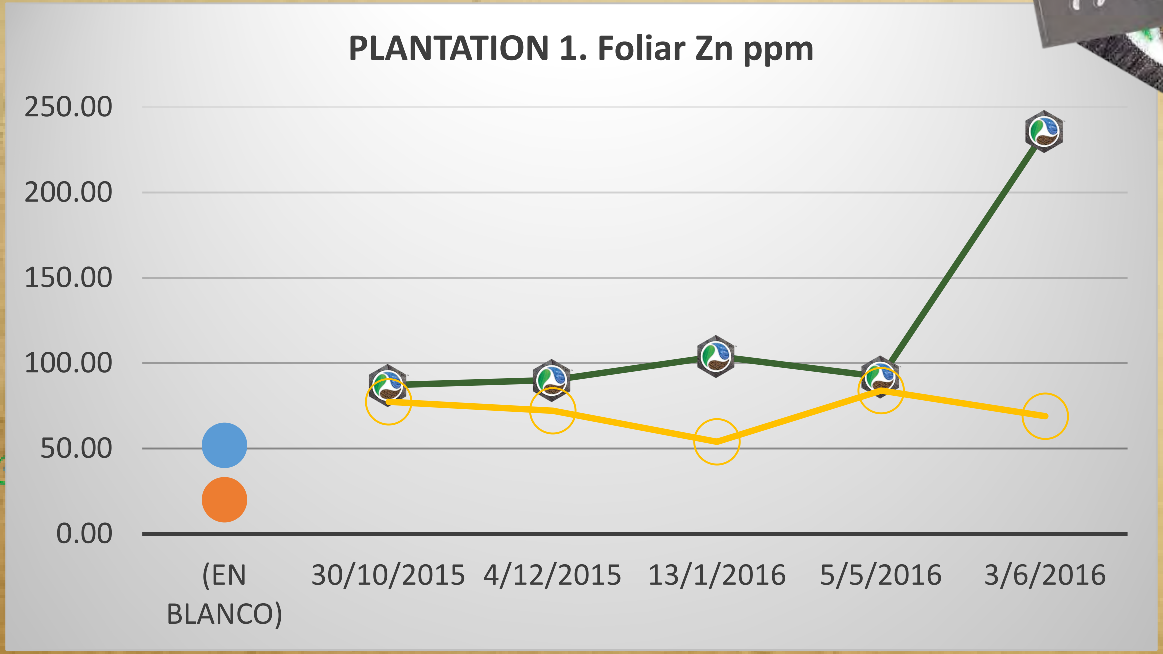


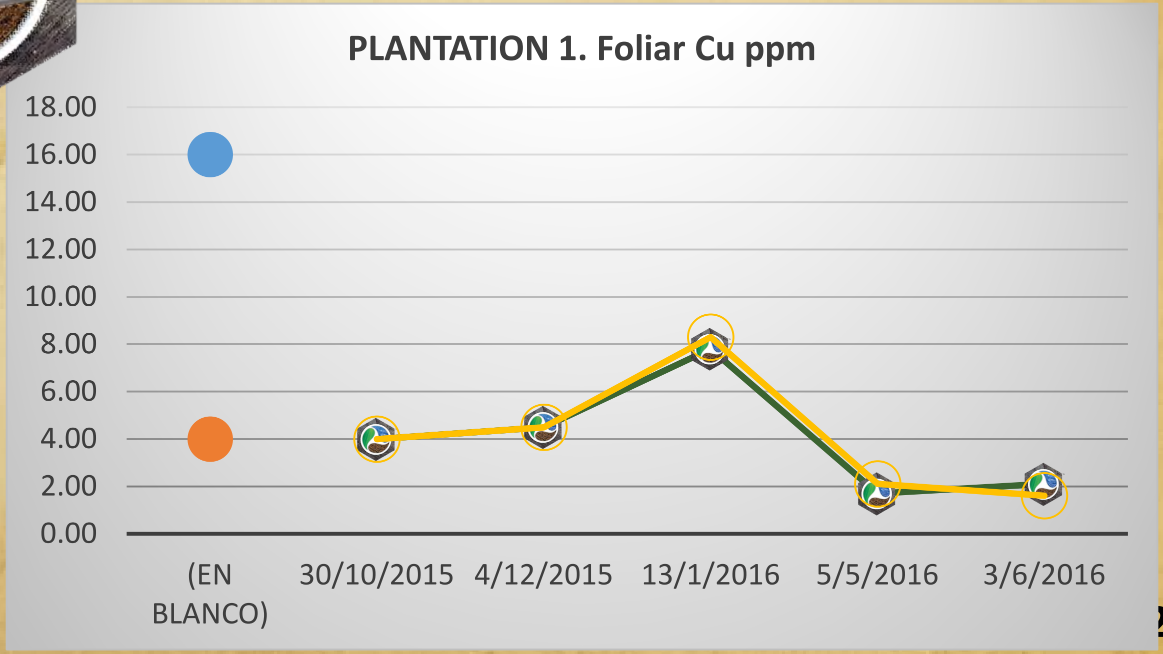
PLANTATION 1. Roses. Nina variety.
Machachi: Ecuador 2015-2016
100% HUMAGRO Fertirrigation

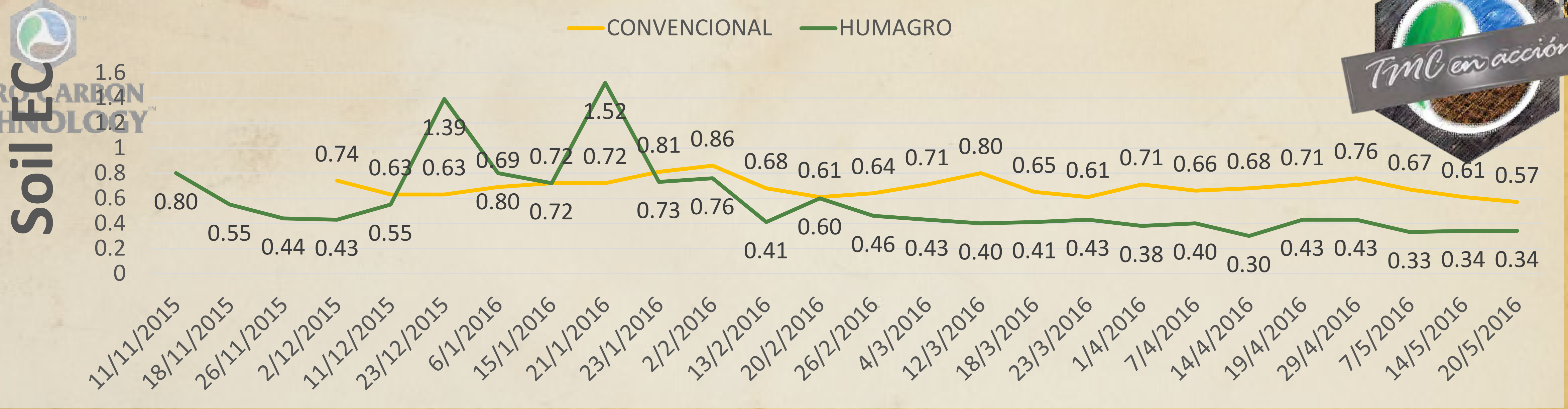
During 8 months

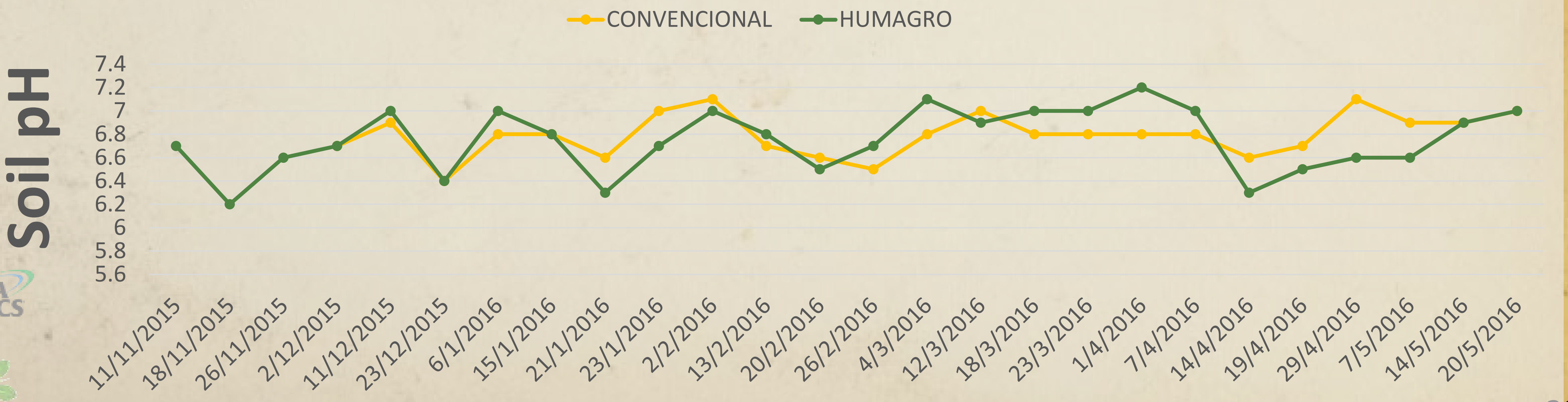

PLANTATION 1. Foliar Fe ppm
250.00
200.00
150.00
100.00
50.00
0.00
(EN BLANCO)
30/10/2015
4/12/2015
13/1/2016
5/5/2016


PLANTATION 1. Foliar Mn ppm
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
(EN BLANCO)
30/10/2015
4/12/2015
13/1/2016
5/5/2016
3/6/2016


PLANTATION 1. Foliar Zn ppm
250.00
200.00
150.00
100.00
50.00
0.00
(EN BLANCO)
30/10/2015
4/12/2015
13/1/2016
5/5/2016
3/6/2016

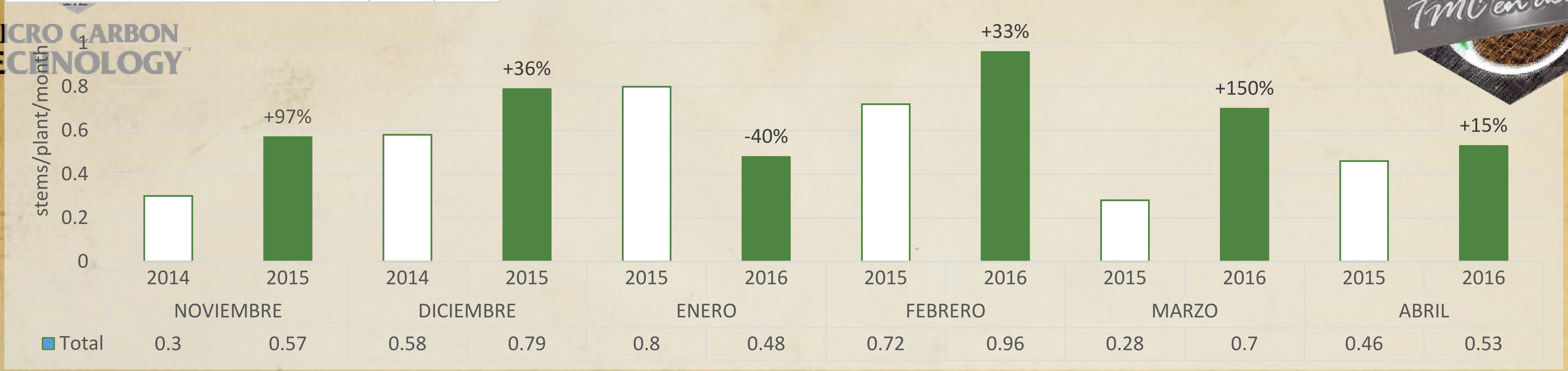

PLANTATION 1. Foliar Cu ppm
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
(EN BLANCO)
30/10/2015
4/12/2015
13/1/2016
5/5/2016
3/6/2016



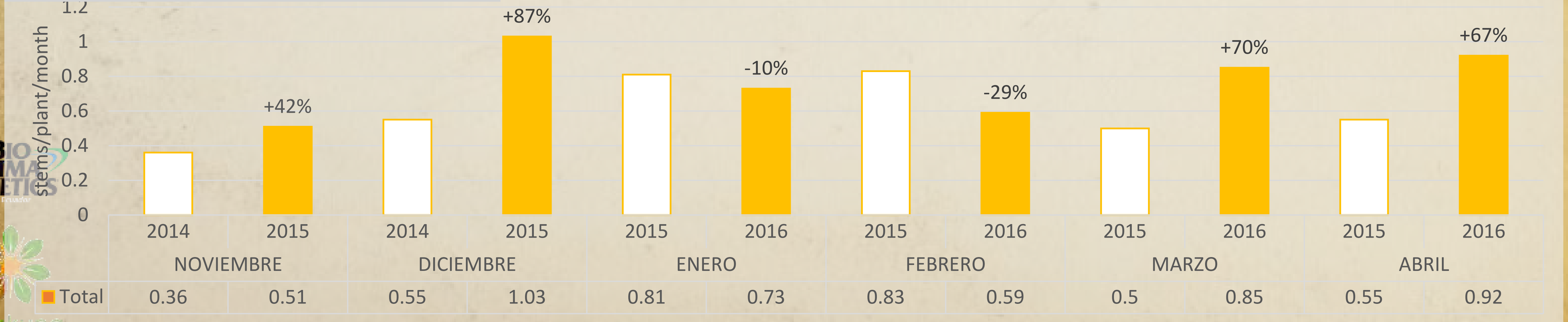


Saturated soil paste 2:1 relation. Water reservoirs

VALENTIN RUSO MADRES 2015	0,57	
VALENTIN RUSO MADRES 2016	0,67	18%



VALENTIN RUSO MADRES 2015	0,67	
VALENTIN RUSO MADRES 2016	0,77	15%



Achievements Humagro Block

Humagro allowed to **maintain** and **improve bud** quality

Bud size (cm) Harvest point		
	Humagro	Conventional
Jan 16	5.43 cm	5.60 cm
Jun 16	5.50 cm	5.09 cm

Humagro allowed more and better developed **homogeneous sprouting**

Sprouting after 1 month of pinch (%) Average 10 stems	
Humagro	90%
Conventional	70%

Humagro Block. 220 days

Conventional block. 220 days

Humagro Block. 1 month sprouts

Conventional block. 1 month sprouts

- Considerable salt reduction in soil.
- Similar nutrient absorption by the plant. LESS IN SOIL, BUT IN THE PLANT, THOUGH (higher efficiency)
- Money savings in production and quality, and reducing nutrient loss in soil.

CONVENTIONAL

- Soil contamination due to salts' excess.
- Higher plant effort to absorb soil nutrients. EXTRA ENERGY SPENDING
- Loss of money due to low nutrient efficiency. MORE IN SOIL TO GET RESULTS

EFFECT OF THREE FERTILIZATION PROGRAMS USING MICRO CARBON TECHNOLOGY IN THE PRODUCTIVITY, QUALITY AND PROFITABILITY OF THREE ROSE VARIETIES (Rose sp.)
Thesis for pre-degree

AUTHOR: Katherine Lizbeth Morejón Tapia
RESEARCH CENTRE: Escuela Politecnica del Ejercito (Army Polytechnic School). ESPE
FLOR MACHACHI PLANTATION: Eng. Julio Mancheno
BIO HUMA NETICS Ecuador

Machachi 2016

- Location: Machachi - Ecuador
- meters above sea level: 2880 meters above sea level
- Mean Temp.: 13 °C
- Mean Rainfall: 1572 mm/year

Goals

- Assess quality and productivity agronomic variables for the varieties under study.
- Determine nutritional content of treatments under study.
- Perform a cost-benefit analysis of the treatments under study in order to determine the best alternative for crop management.

Rose crop requirement (meq/L)

Element	Unit	2016
N	meq	6.000
SO4-2	meq	1.800
P	meq	0.800
K+	meq	1.200
Ca++	meq	2.000
Mg++	meq	0.020
Fe	meq	0.011
Mn	meq	0.052
Zn	meq	0.020
Cu	meq	0.010
B	meq	0.001
Mo	meq	0.003

Product volume (ml) with Micro Carbon Technology

Element	Program 1	Program 2	Program 3
Flow m3/day	**11.20**	**11.90**	**10.73**
	ml/ m^3		
N	90.00	108.00	126.00
P	6.40	8.80	11.20
K	7.20	8.40	9.60
Mg	0.24	0.34	0.44
Ca	20.00	22.00	24.00
Fe	1.65	1.93	2.20
Mn	5.19	6.49	7.79
Zn	0.70	0.90	1.10
B	0.03	0.04	0.05

Results

Assessed variables average

* Statistical importance in orthogonal comparisons. A statistical model COMPLETE AT-RANDOM BLOCKS was used in a divided plot with 3 repetitions.

Treatment	Description	Cycle Duration	Stem Length	Bud Length	Exportable Productivity
		Days	cm	mm	stems/plant/month
T1	Freedom x Program 1	78.02	59.85*	52.75	0.84
T2	Freedom x Program 2	76.27	71.22	53.63	1.07
T3	Freedom x Program 3	76.00	69.97	52.21	1.11
T4	Vendela x Program 1	78.30	56.44	56.97	1.31
T5	Vendela x Program 2	78.19	56.68	57.22	1.81
T6	Vendela x Program 3	79.05	62.40	57.29	1.62
T7	Mondial x Program 1	78.96*	57.82*	51.80*	0.87
T8	Mondial x Program 2	81.08	61.95	56.78	1.14
T9	Mondial x Program 3	82.81	68.91	56.80	0.85
Theoretical	Freedom		70-90	57.00	0.73
	Vendela		50-60	55.00	1.20
	Mondial		60-80	61.00	0.75

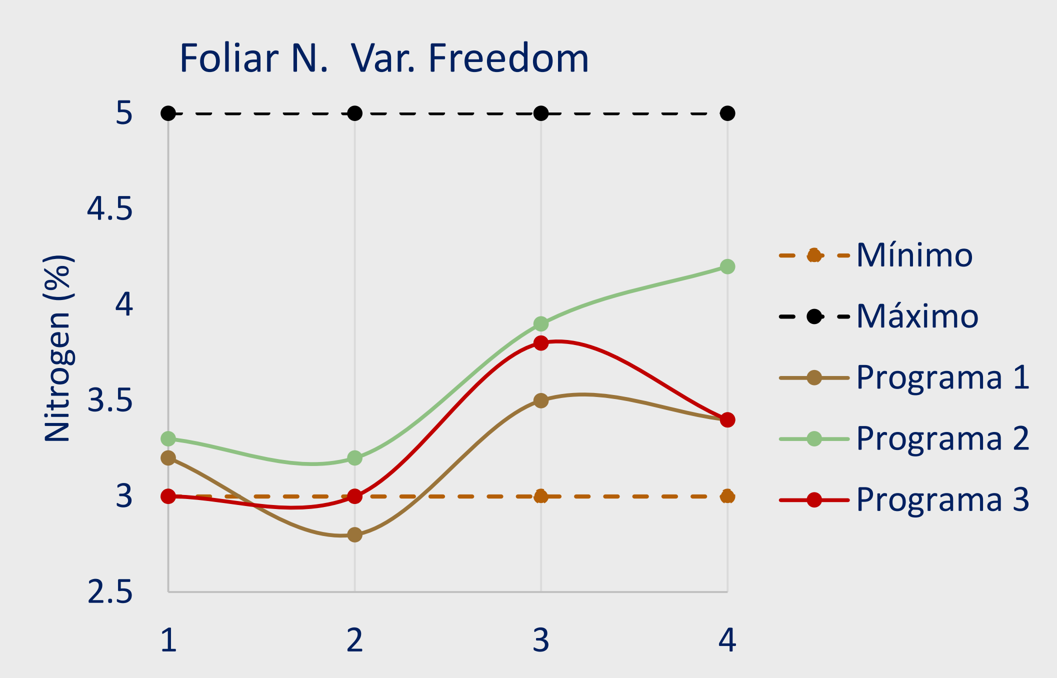
MICRO CARBON TECHNOLOGY

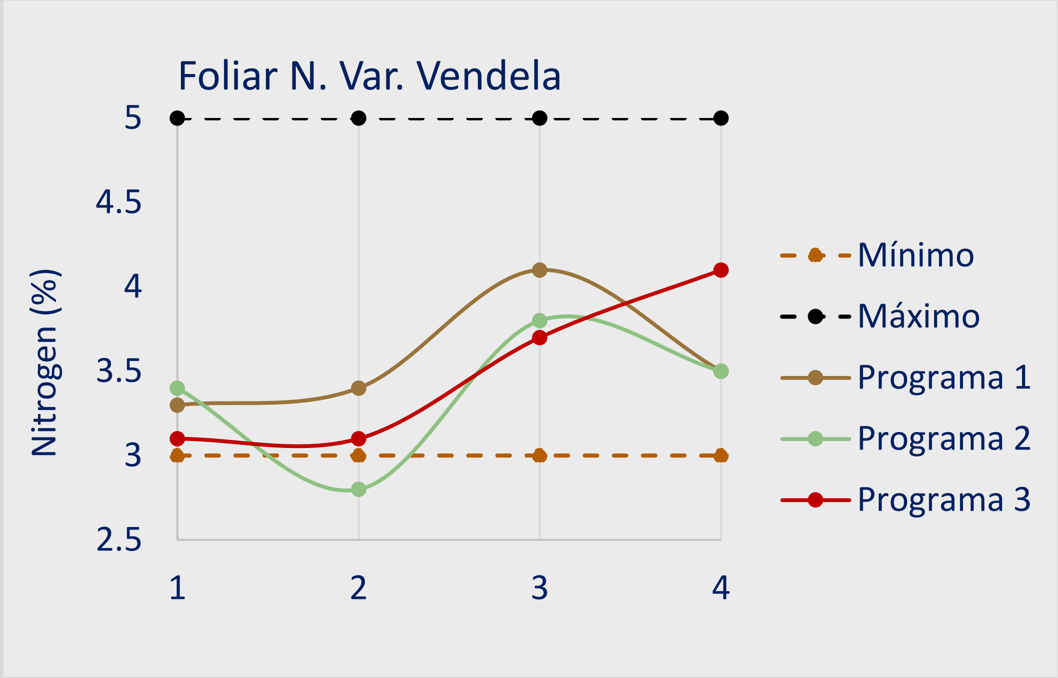
HUMA GRO
Harvesting Nature's Science

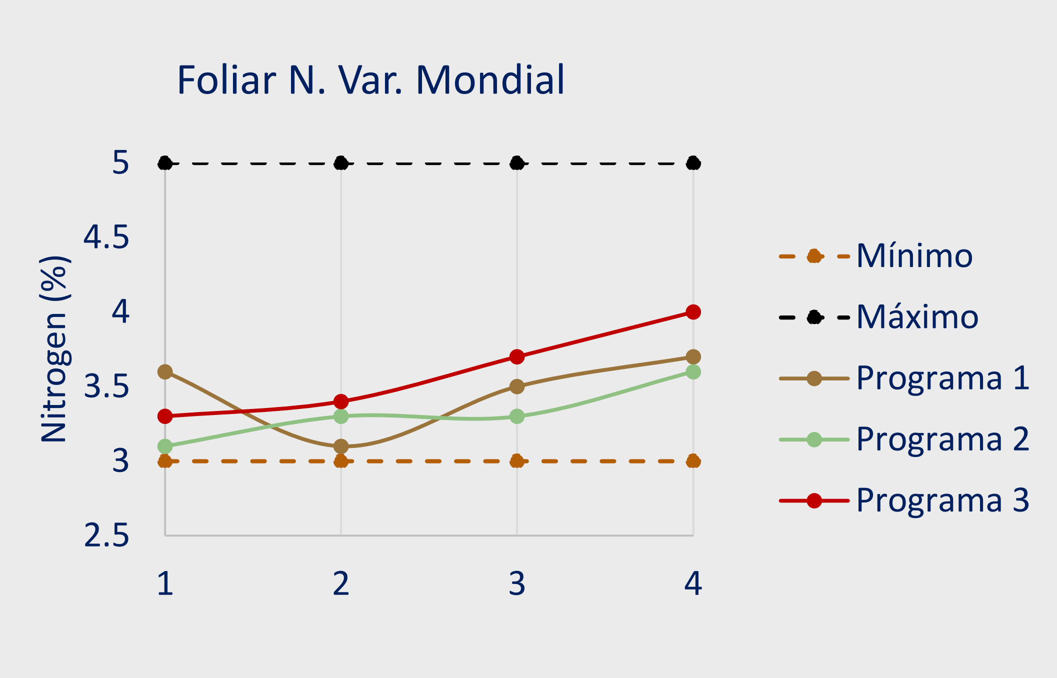
Results

Marginal Rate of Return

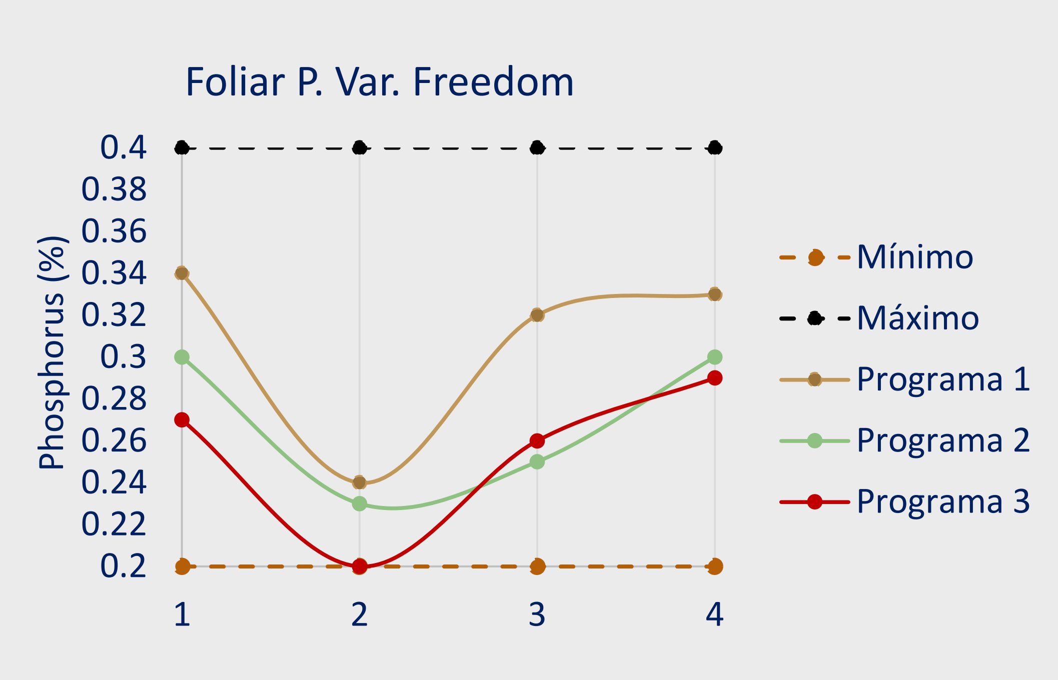
Variety	Program	Treatment	Marginal Variable Cost ($) ha/day	Marginal Net Benefit ($) ha/day	Marginal Rate of Return ($) ha/day
Freedom	Program 2	T2	7.40	108.00	14.60
Vendela	Program 2	T5	7.42	239.58	32.29
Mondial	Program 2	T8	7.42	126.98	17.11

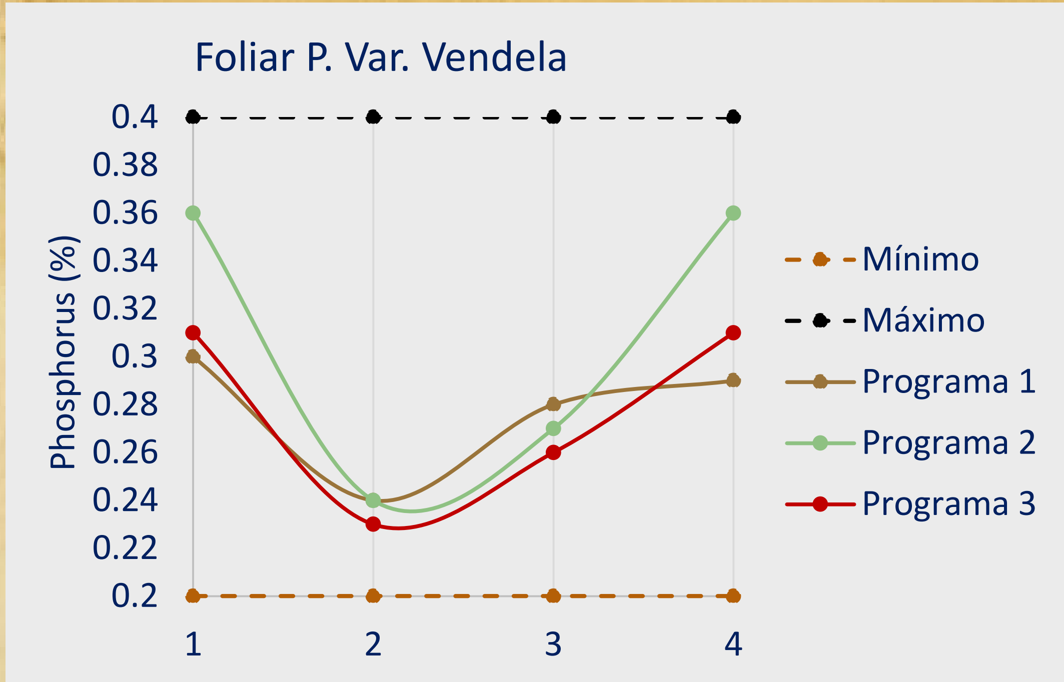


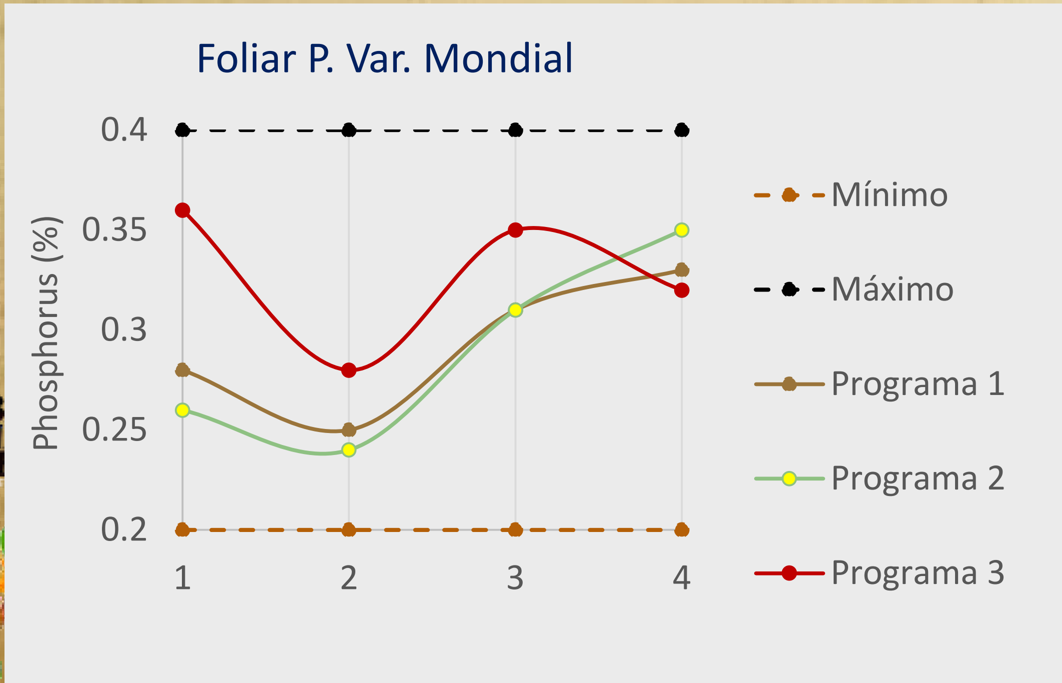




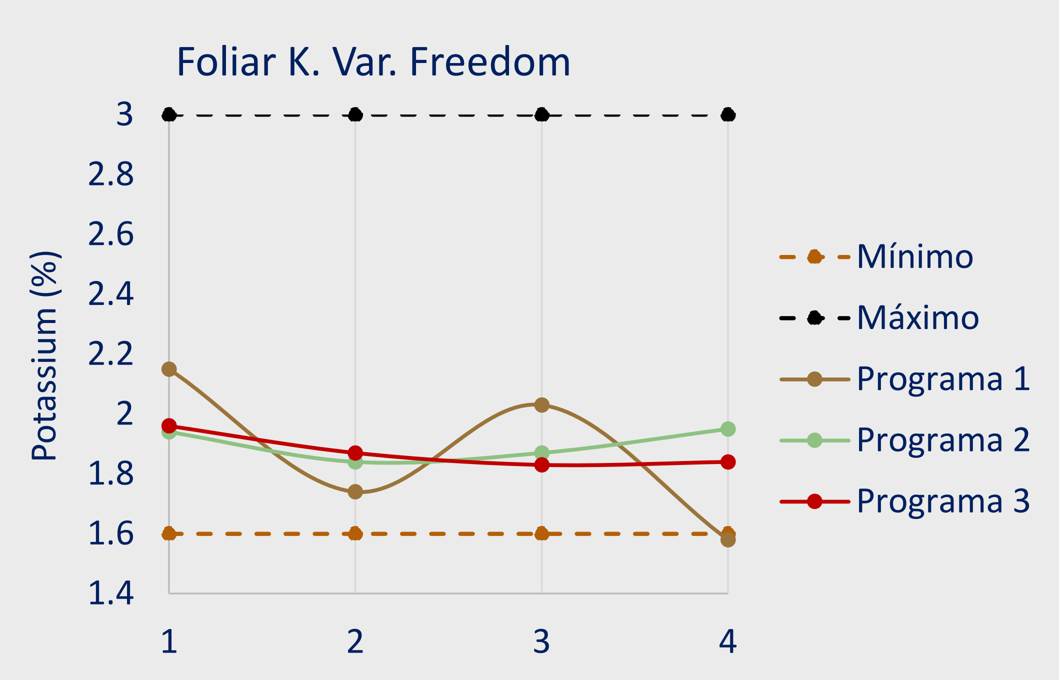
Plantation 2 Foliar Analyses Nitrogen (%)

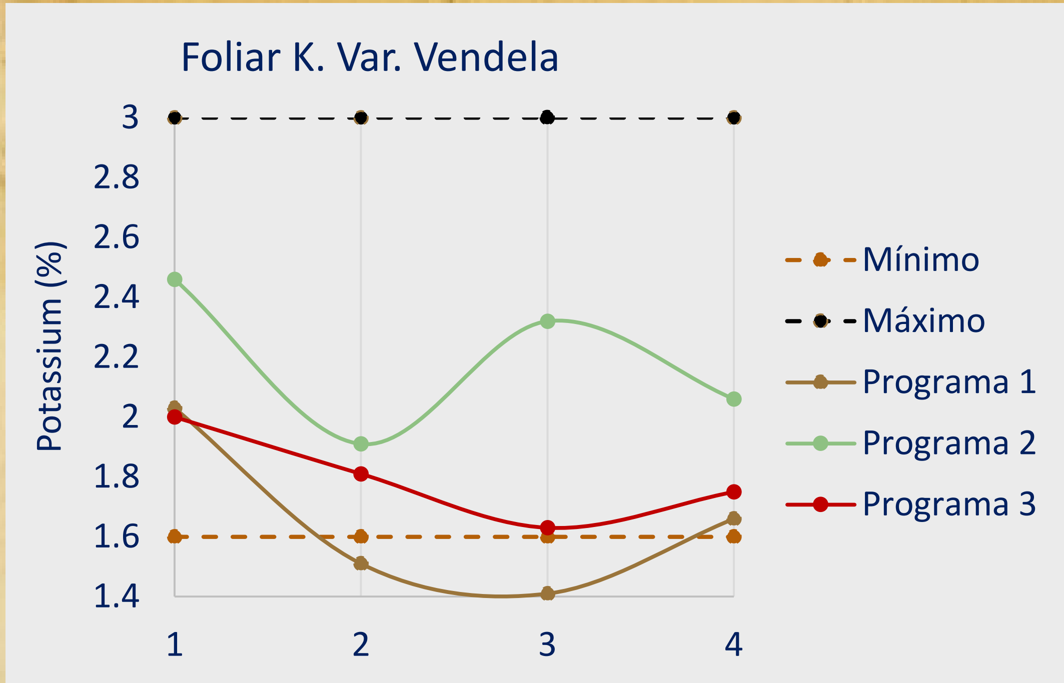


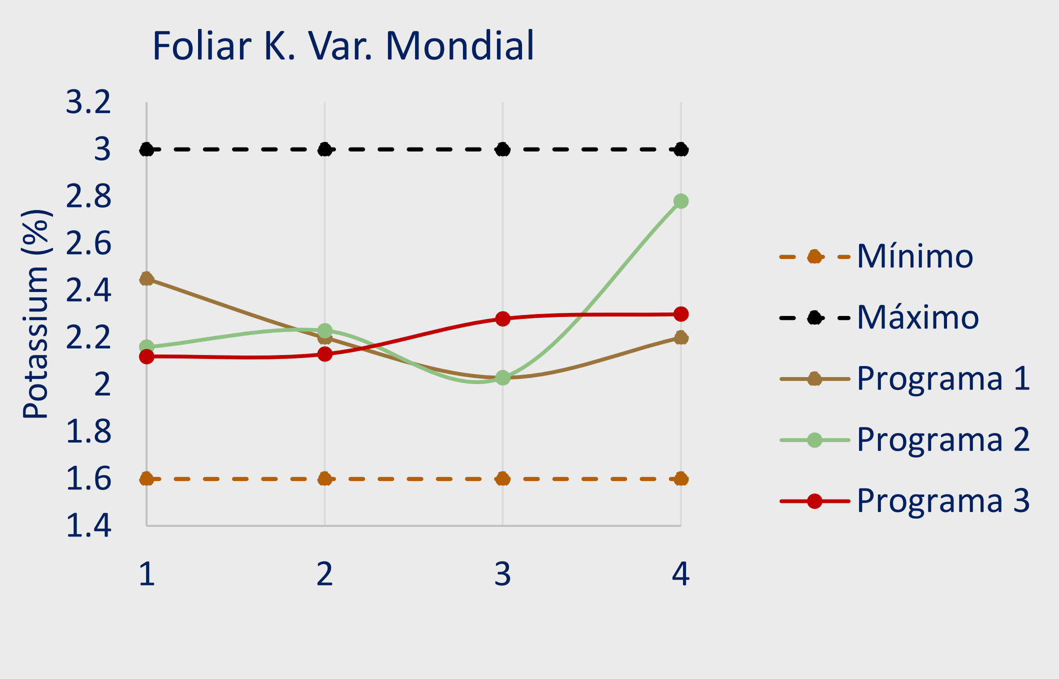




Plantation 2
Foliar Analyses
Phosphorus %







Plantation 2 Foliar Analyses Potassium %

Conclusions

- The fertilization programs did not influence on the cycle duration. The results of this variable were attributed to the high temperatures (higher than 28° C) during the study period.

- For Freedom and Mondial varieties, the Fertilization Programs 2 and 3 showed a longer stem and bigger bud, with respect to Program 1.

- The largest number of exportable stems per hectare/day for the Freedom variety was obtained with Program 3 (2786 stems ha^(−1)); for the Vendela variety, Program 2 (4521 stems ha^(−1)), and for the Mondial variety, Program 2 (2850 stems ha^(−1).)

- The highest productivity for the Freedom variety was obtained with Program 3 (1.11 stems per plant monthly); for Vendela, with Program 2 (1.81 stems per plant monthly), and for Mondial, with Program 2 (1.14 stems per plant monthly.)

Conclusions

- The nitrogen, calcium and magnesium foliar content for the three varieties is within the optimum levels, being Program 3 the one with the highest concentration, with respect to Programs 1 and 2.

- As far as foliar potassium and phosphorous content is concerned, Program 2 is the one with the highest concentration, with respect to Programs 1 and 3 in the three varieties.

- In Freedom, Vendela and Mondial varieties, Program 2 was the best economic alternative, with a marginal rate of return of $14.6, $32.29 and $17.11, respectively.

- **Implement the Fertilization Program 2 within the fertirrigation process as it was the program with higher productivity, quality and profitability for rose crop, Freedom, Vendela, and Mondial varieties.**

Extremely efficient nutrition for crops: micro-nutrients

MICRO CARBON TECHNOLOGY

CALCIUM (8-0-0 + 10 Ca)

Additional Foliar Ca Contribution

Maximum calcium assimilation and translocation. It increases stem resistance, and reduces fungal disease susceptibility by compacting leave cells making its entry difficult.

NO fito

							Foliar Ca %			Difference %	
Varieties	Date	Treatment	Concent. Ca %	Prod. dose cc/L	Water volume L/bed	Ca DOSE gr/ha	0HDA	24HDA	48HDA	24 HDA	48 HDA
Señorita Cayambe	Jul-2015	CALCIUM	10%	0.6	8	106	1.21	1.19	1.52	-2%	26%
		EDTA chelate	10%	0.6	8	106	1.24	1.30	1.23	5%	-1%
Hermosa Cayambe	Jun-2015	CALCIUM	10%	0.3	15	99	1.56	1.76	1.97	13%	26%
		Amino acid	6%	0.6	15	119	1.79	1.90	2.11	6%	18%
Metalica Cayambe	Jul-2015	CALCIUM	10%	1	12	264	1.09	1.29	1.39	18%	28%
		Amino acid	10%	1	12	264	1.24	1.21	1.19	-2%	-4%
High Yellow Machachi	Oct-2015	CALCIUM	10%	0.6	5	66	1.33	1.35	1.69	2%	27%
		Amino acid	6%	1	5	66	1.58	1.18	1.10	-25%	-30%

Technician Yurakuna **Tania Moscoso**

Z MAX ®

(0-0-0 + S, Cu, Mn, Zn)

Foliar micros corrector

Its components are essential in chlorophyll, enzyme system, photosynthesis, breathing, and auxin and indolebutyric acid production.

Trial Features

Area:	Cayambe
Trial Starting Date:	11/5/2015
Water Volume:	10 liters/bed
Frequency	Weekly
Application Method:	foliar
Number of Applications:	2
VARIETY:	SWITTNESS

Treatments

TREATMENT	cc-g commercial product/L	L-Kg commercial product/Ha
Z-MAX low dose	0.5	1.1
Z-MAX medium dose	0.75	1.65
Z-MAX high dose	1.0	2.2
ABSOLUTE WITNESS		

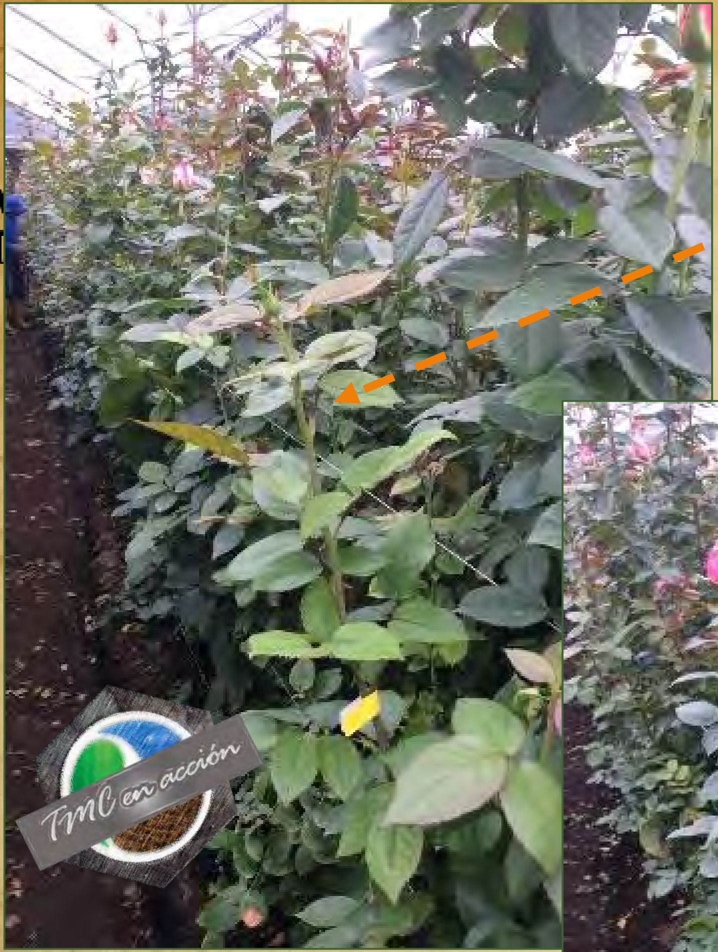
Technician Yurakuna **Tania Moscoso**

MICRO CARBON TECHNOLOGY

HUMA GRO
Harvesting Nature's Science

BIO HUMA NETICS

yurakuna



Leaf color and size recovery

NO fito

Foliar Laboratory Analysis

	Fe mmol	Zn mmol	Mn mmol
OPTIMUM MINIMUM	60	18	30
OPTIMUM MAXIMUM	200	100	200

Row labels	**Fe ppm**	**Zn ppm**	**Mn ppm**
WITNESS	93	72	99
Z MAX 0.5 cc LOW DOSE	121	89	96
Z MAX 0.75 cc MEDIUM DOSE	136	134	116
Z MAX 1 cc HIGH DOSE	133	144	100

Optimum management of plant physiology

MICRO CARBON TECHNOLOGY™

BREAK OUT®

(4-14-2)

Root Formation

Maximum yield without hormones. Huma Gro® phenological enhancers are optimum to make the plant produce its own hormones naturally.

Trial Features

Area:	Machachi
Trial Starting Date:	6/17/2016
Water Volume:	60 liters/bed
Frequency	Weekly
Application Method:	drenching
Number of Applications:	5
VARIETY:	SWITTNESS

Treatments

PRODUCT	DOSE L/Ha	FREQUENCY	APPLICATIONS NO.
BREAK OUT® (4-14-2)	3	weekly	5
Conventional (9-45-11) + Hormones	2	weekly	8

Nutritional Contribution

	CONTENT %				
	N	P2O5	K20	Mg	S
BREAK OUT®	**4%**	**14%**	**2%**	**0%**	**0%**
Conventional	9%	45%	11%	0.6%	0.8%

	NUTRITIONAL CONTRIBUTION g/Ha				
	N	P2O5	K20	Mg	S
BREAK OUT®	120	**420**	**60**	**0**	**0**
Conventional	180	900	220	12	16

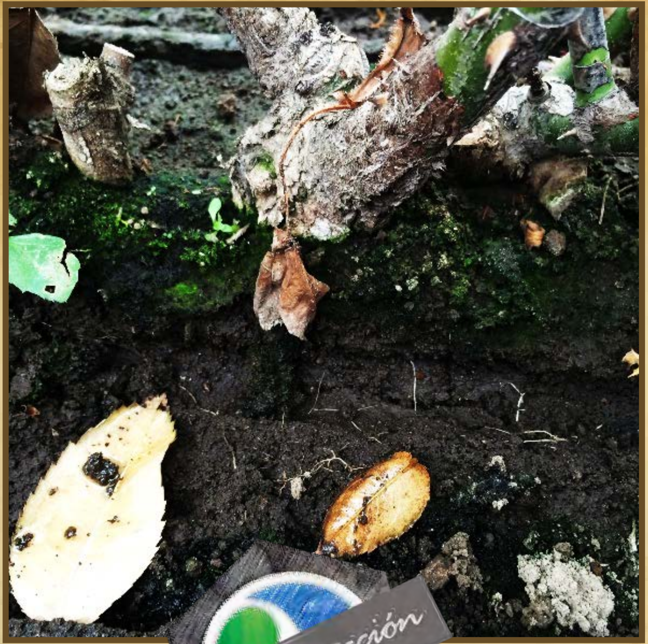
Technician Yurakuna **Santiago Taipe**

MICRO CARBON TECHNOLOGY

BREAK OUT®

3 L/Ha x 5

73% of drip emitters area with surface roots.



BREAK OUT. JUL 22, 2016

BREAK OUT. JUL 22, 2016

Conventional. JUL 22, 2016

Conventional. JUL 22, 2016

Conventional

2 Kg/Ha x 6

33% of drip emitters area with surface roots.

Visible formation of surface roots
More porous soil in the surface

Poor formation of surface roots

BREAK OUT® (4-14-2)

VITOL® (6-12-3 + S, Fe, Mn, Zn)

CALCIUM (8-0-0 + 10 Ca)

Root Formation

Treatments

HUMAGRO 1	**BREAK OUT**	**1 L/ha**
	MICRO F	0.5 L/ha
	CALCIUM	0.5 L/ha
HUMAGRO 2	**BREAK OUT**	**1 L/ha**
	VITOL	0.5 L/ha
	CALCIUM	0.5 L/ha
WITNESS	CONVENTIONAL + HORMONES	1 L/ha

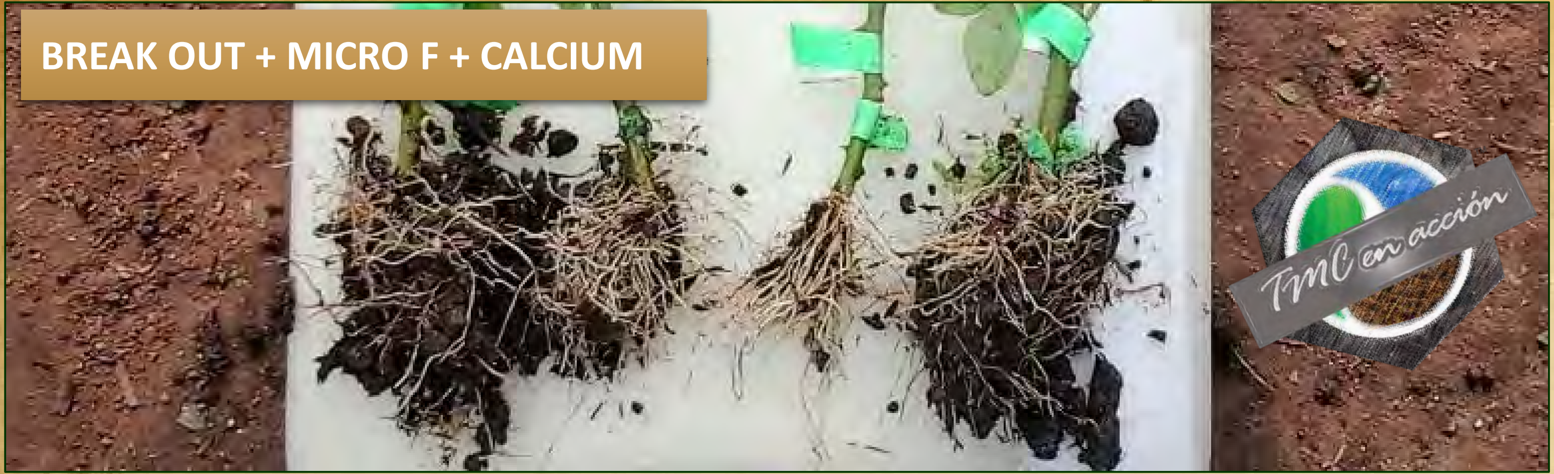
Trial Features

Area:	Cayambe
Trial Starting Date:	04/23/2015
Water Volume:	80 liters/bed
Frequency:	Weekly
Application Method:	drenching
Number of Applications:	4
VARIETY:	PATTERNS

Nutritional Contribution

	HUMAGRO 1 g/ha	HUMAGRO 2 g/ha	WITNESS g/ha
N	8.0	12	5
P2O5	16.5	22	22
K20	2.0	4	16
Ca	5.0	5	0
S	0.0	0.5	0
Fe	0.1	0.05	0
Zn	0.0	0.025	0
Mn	0.0	0.025	0

Technician Yurakuna **Tania Moscoso**



BREAK OUT	1 L/ha	60% Height increase
MICRO F	0.5 L/ha	
CALCIUM	0.5 L/ha	

Witness	1 L/ha	42% Height increase

BREAK OUT	1 L/ha	62% Height increase
VITOL	0.5 L/ha	
CALCIUM	0.5 L/ha	

BREAK OUT + MICRO F + CALCIUM

- More homogeneous plants.
- Good root development, more root hair formation.
- Healthier, whiter and turgid roots.
- Less diseases development such as downy roots and oidium.

CONVENTIONAL HORMONES

NO fito

BREAK OUT + VITOL + CALCIUM

- More homogeneous plants.
- Good root development, more root hair formation.
- Healthier, whiter and turgid roots.
- Less diseases such as downy roots and oidium.

BREAK OUT® (4-14-2)

VITOL® (6-12-3 + S, Fe, Mn, Zn)

Buds Formation

Trial Features

Area: Amaguaña
Trial Starting Date: 07/26/2016
Water Volume: 8 liters/bed
Frequency: Weekly
Application Method: foliar
Number of Applications: 4
VARIETY: WHITE OHARA

Treatments

Product	Dose L/ha	Dose cc/L	Water volume/bed	Application Method	Frequency
BREAK OUT	1	0.5	8	Foliar, lower and medium third	Weekly
VITOL	1	0.5	8	Foliar, lower and medium third	Weekly

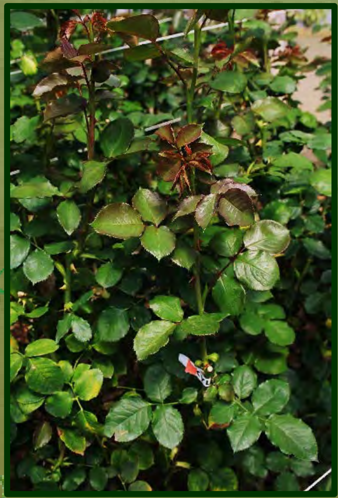
Technician Yurakuna **Santiago Taipe**

18% longer stem

14% larger stem diameter

92% of stems with flower buds

BREAK OUT® 1 L
+
VITOL 1 L

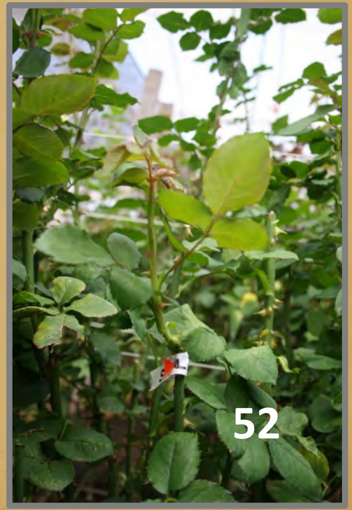


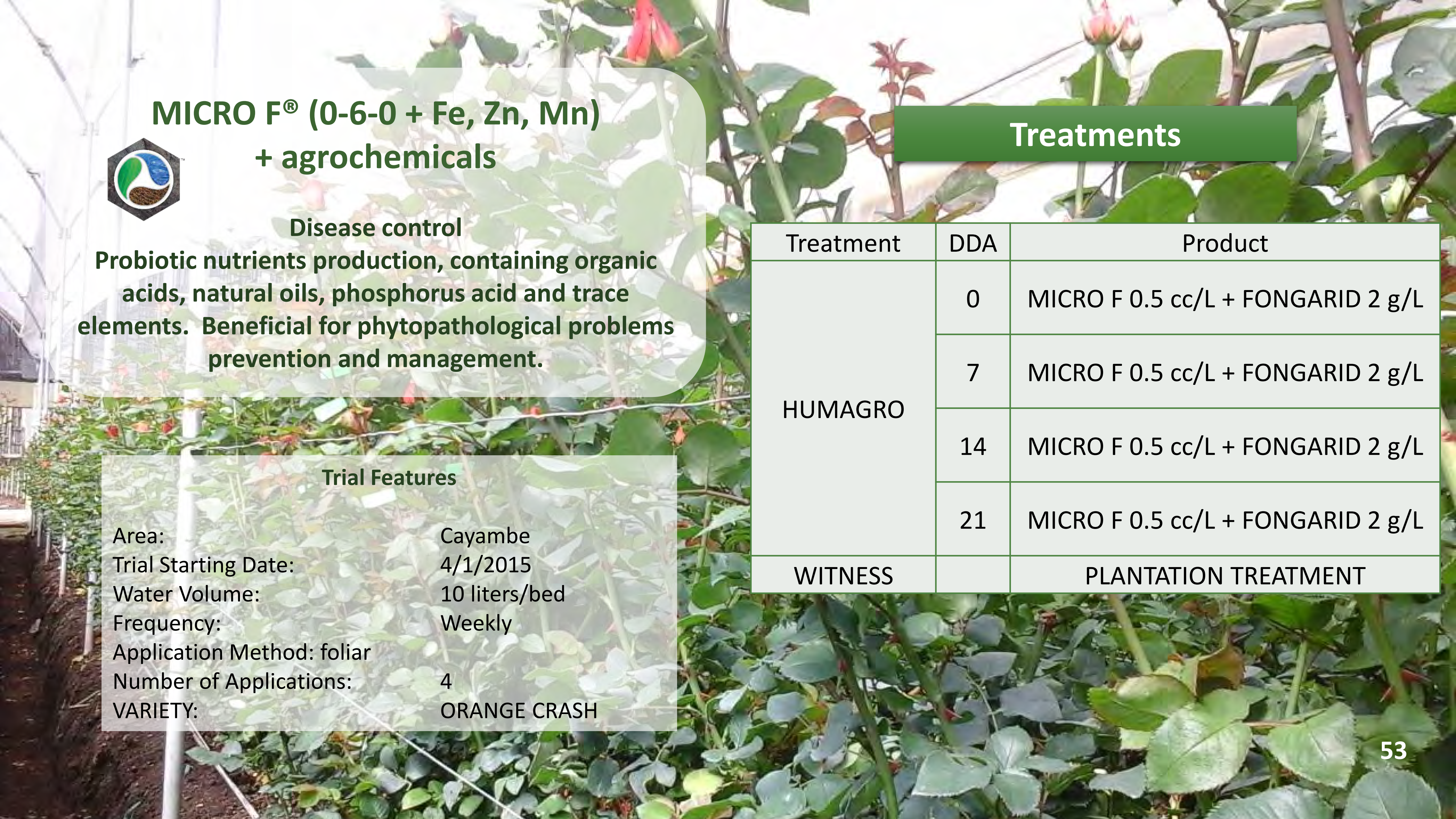
NO fito

HUMA GRO
Harvesting Nature's Science

73% of stems with flower buds

ABSOLUTE WITNESS





MICRO F® (0-6-0 + Fe, Zn, Mn) + agrochemicals

Disease control

Probiotic nutrients production, containing organic acids, natural oils, phosphorus acid and trace elements. Beneficial for phytopathological problems prevention and management.

Trial Features

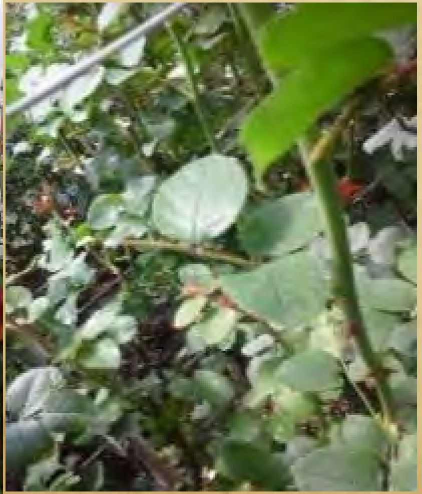
Area:	Cayambe
Trial Starting Date:	4/1/2015
Water Volume:	10 liters/bed
Frequency:	Weekly
Application Method: foliar	
Number of Applications:	4
VARIETY:	ORANGE CRASH

Treatments

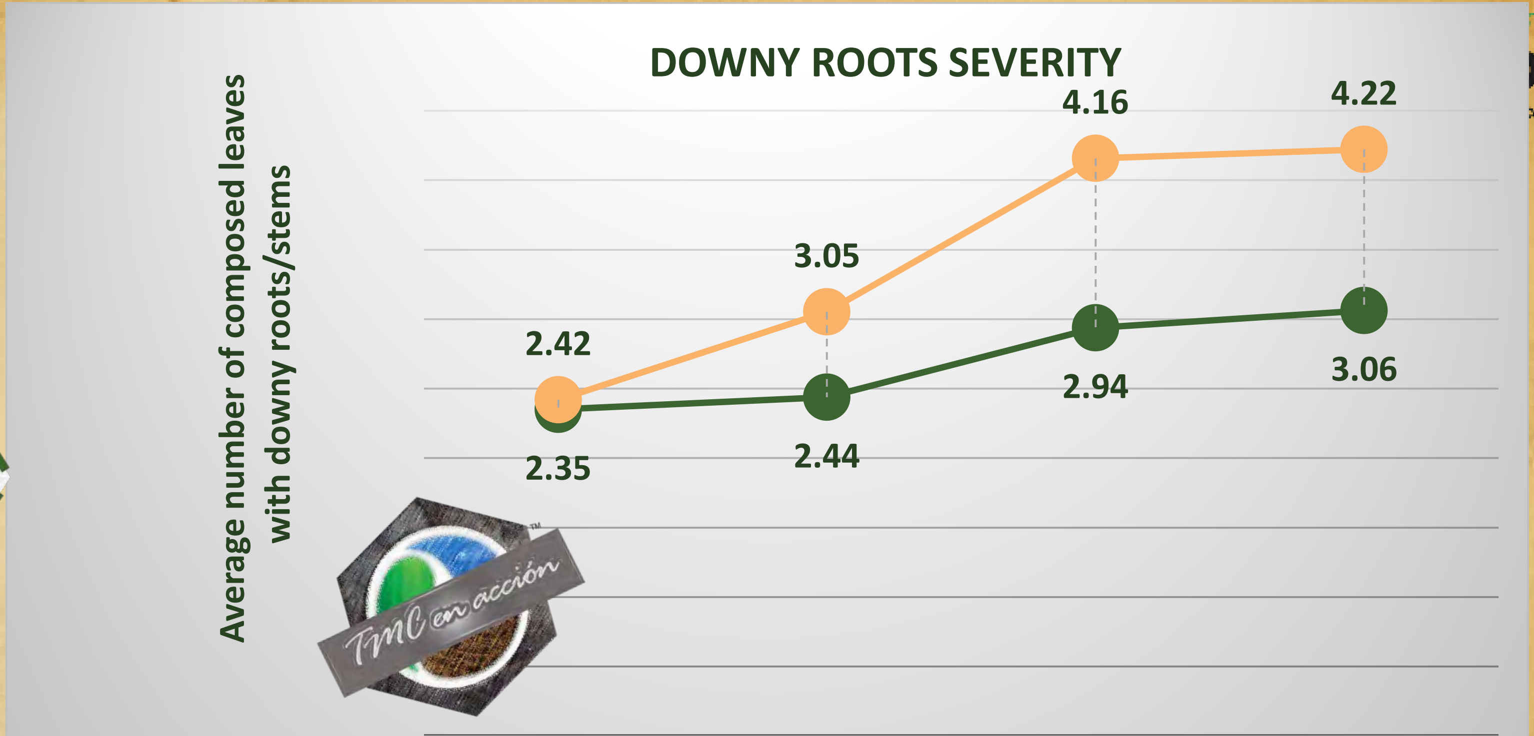
Treatment	DDA	Product
HUMAGRO	0	MICRO F 0.5 cc/L + FONGARID 2 g/L
	7	MICRO F 0.5 cc/L + FONGARID 2 g/L
	14	MICRO F 0.5 cc/L + FONGARID 2 g/L
	21	MICRO F 0.5 cc/L + FONGARID 2 g/L
WITNESS		PLANTATION TREATMENT

MICRO F®
+ agrochemicals

agrochemicals

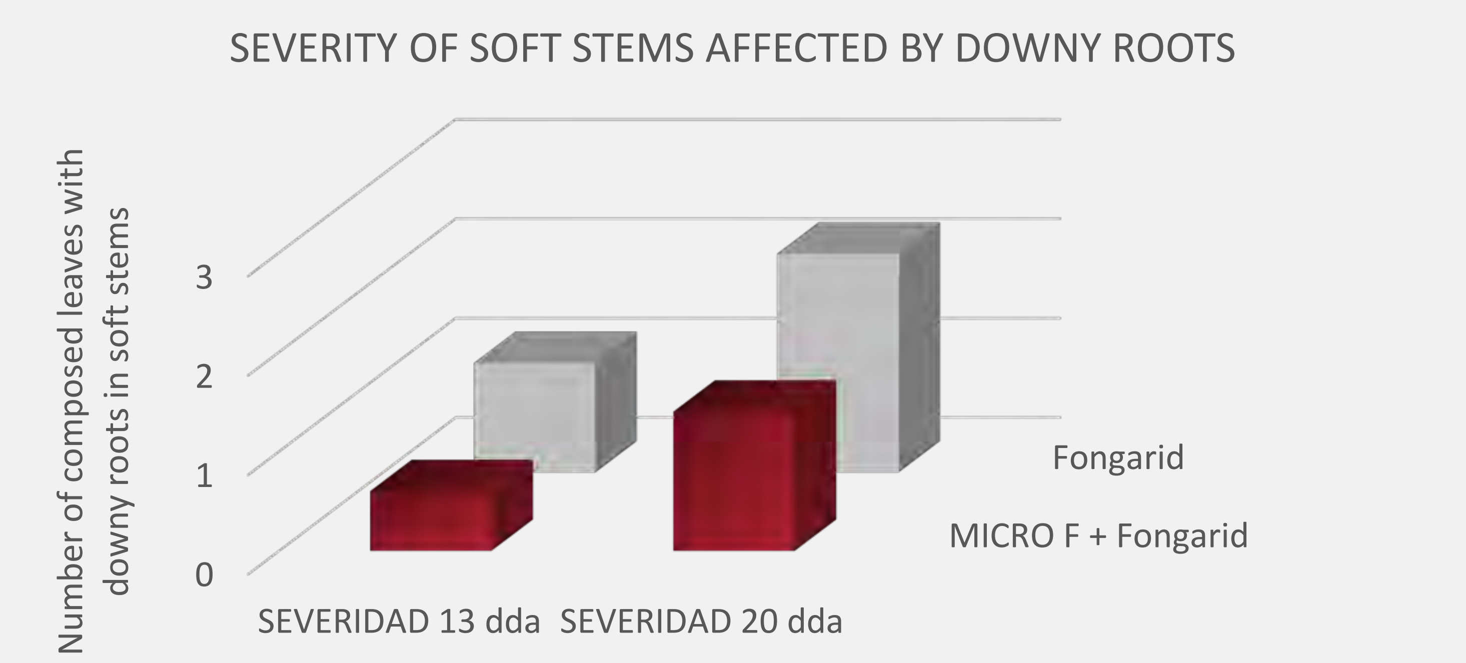


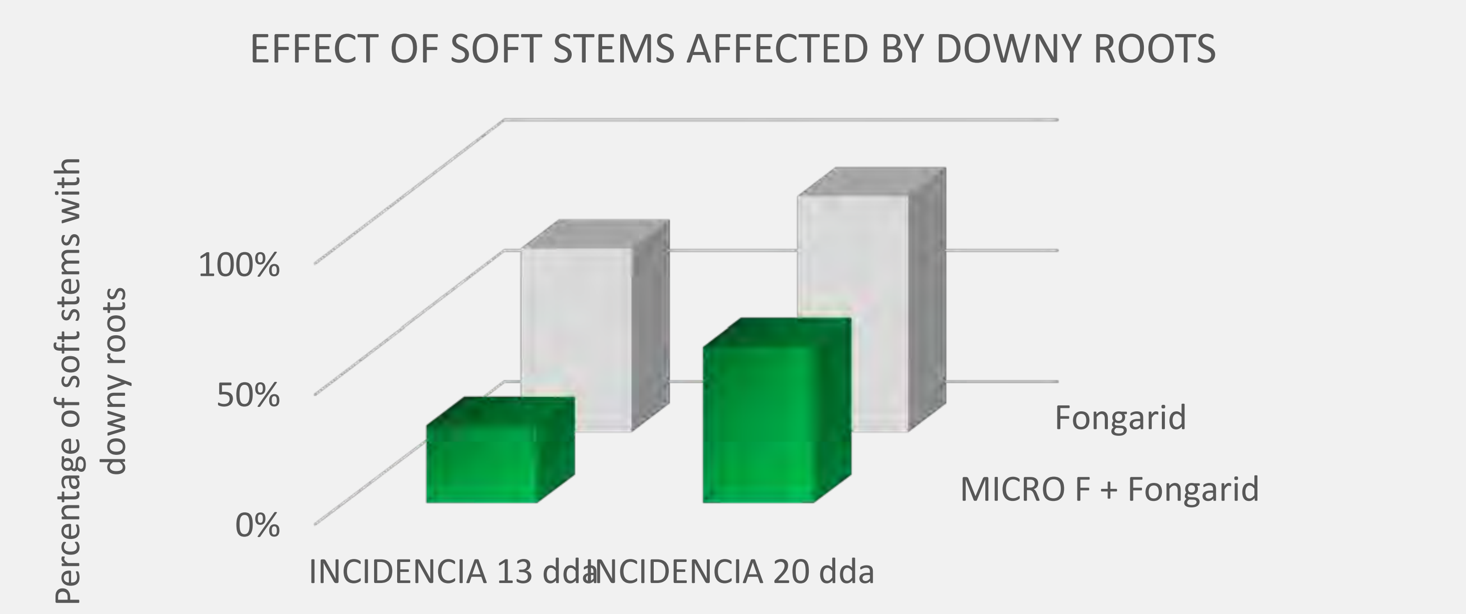
DOWNY ROOTS SEVERITY



	0 DDA	3 DDA	7 DDA	9 DDA
MICRO F + Fongarid	2.35	2.44	2.94	3.06
Fongarid	2.42	3.05	4.16	4.22

MICRO F + Fongarid showed 35 % less composed leaves with downy roots.

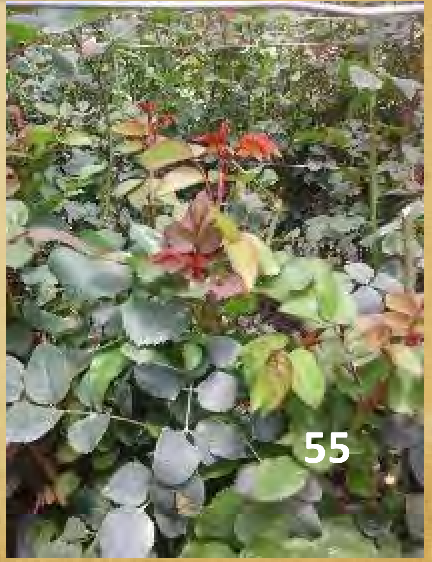




MICRO F®
+ agrochemicals

MICRO F + Fongarid showed 50% less severity in soft stems after at least 3 applications.

agrochemicals



Extremely efficient nutrition for crops: macro-nutrients

LUCKY 7® (7-7-7 + Mg, S, B, Cu, Fe, Mn, Zn, Co)

+ CALCIUM

Designed to nourish and correct the deficiencies in any type of crop and ornamentals in a wide range of conditions.

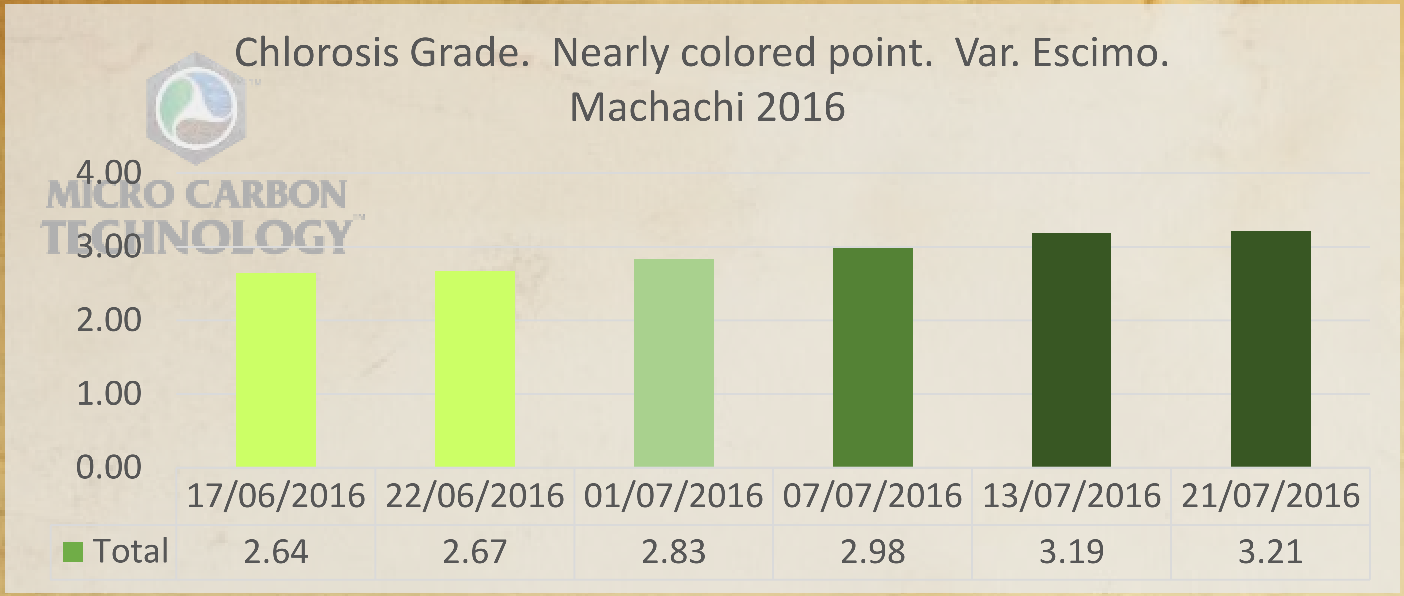
Trial Features

Area:	Machachi
Trial Starting Date:	6/15/2016
Water Volume:	4,3 m-3 in an area of 600 m2
Frequency:	Weekly
Application Method:	Fertirrigation
Number of Applications:	27
VARIETY:	ESCIMO

Treatments

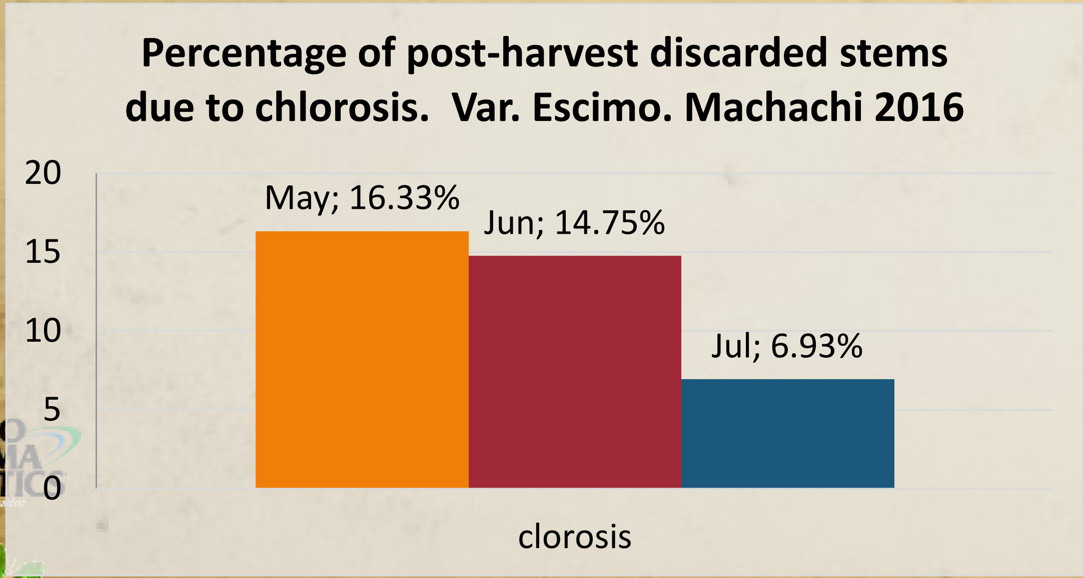
PRODUCT	DOSE L/Ha	FREQUENCY
LUCKY 7®	3	Daily, fertirrigation
CALCIUM	3	Daily, fertirrigation

Technician Yurakuna **Santiago Taipe**



- **Chlorosis Range**

The supplementary applications to the fertirrigation of Lucky 7 + Calcium considerably reduced the chlorosis in the Escimo variety, which is a productive and very leafy variety.



Technician Yurakuna **Santiago Taipe**

HUMA GRO
Harvesting Nature's Science

BIO HUMA NETICS

yurakuna

Sap Measurement

Sap Analysis

- Electrical Conductivity (theoretical 12-15 ms/cm)
  - Concentration of solids absorbed by the plant
- pH (theoretical 5-6)
  - Low. Cation disequilibrium.
  - High. Anion deficiency.
- Brix grades (theoretical 7-9)
  - High concentration. Good nutritional state
  - Low concentration. Lack of nutrient transformation

Row labels	EC	PH	BRIX	NO3	K	Ca	Na	T
SOFT STEM	5.1	5.3	6.2	200.0	6800.0	20.0	130.0	24.1
CHICKPEA BUD STEM	7.4	5.2	6.0	300.0	7200.0	47.0	47.0	26.7
NEARLY COLOURED BUD STEM	7.8	5.3	6.0	2500.0	7200.0	31.0	61.0	25.4
HARVEST BUD STEM	6.3	5.4	4.8	420.0	5700.0	36.0	62.0	26.1

Row labels	EC	PH	BRIX	NO3	K	Ca	Na	T
NEARLY COLOURED BUD STEM	7.8	5.3	6.0	2500.0	7200.0	31.0	61.0	25.4
NEARLY COLOURED BUD PETIOLE			8.4	9900.0	9900.0	37.0	120.0	

Row labels	N %	P %	K %	Ca %	Mg %	Na %	S %	B ppm	Cu ppm	Fe ppm	Mn ppm	Zn ppm
OPTIMUM MAXIMUM	3.92	0.50	2.80	1.80	0.39	0.05	0.32	60.00	16.00	151.00	148.00	52.00
OPTIMUM MINIMUM	2.38	0.31	1.80	1.00	0.24	0.04	0.22	30.00	4.00	56.00	60.00	20.00
HUMAGRO+CONVENTIONAL	**4.06**	**0.39**	**1.71**	**1.20**	**0.26**	**0.05**	**0.22**	**75.30**	**4.85**	**174.50**	**103.50**	**52.90**

Foliar Laboratory Analysis

Sap Field Analysis

FACTOR	7/18/2016	7/25/2016	8/1/2016	8/8/2016	8/22/2016	8/15/2016	8/29/2016	9/5/2016	9/12/2016	9/19/2016	9/26/2016	AVERAGE
EC (ms)	6.39	5.48	6.11	6.17	6.99	6.37	6.40	7.42	6.71	7.42	6.30	**6.52**
PH	5.50	5.30	5.30	5.20	4.90	5.30	5.30	5.40	5.40	5.60	5.40	**5.33**
BRIX (%)	6.00	6.40	6.80	6.40	6.60	7.00	6.20	6.80	6.20	6.40	6.40	**6.47**
T (C°)	17.10	19.00	19.20	19.40	24.20	18.80	21.90	18.20	17.40	15.00	19.70	**19.08**
Ca (ppm)	22.00	59.00	73.00	71.00	36.00	50.00	25.00	26.00	26.00	28.00	22.00	**39.82**
K (ppm)	4200.00	9900.00	9900.00	5900.00	4500.00	5300.00	6300.00	5800.00	7100.00	8500.00	5900.00	**6663.64**
Na (ppm)	210.00	35.00	38.00	47.00	19.00	42.00	190.00	47.00	37.00	44.00	51.00	**69.09**
NO3 (ppm)	250.00	610.00	550.00	890.00	570.00	820.00	130.00	200.00	260.00	190.00	390.00	**441.82**

100% HUMA GRO PLANTATION

FACTOR	UNIT	HUMAGRO
EC	ms	7.12
PH	(white)	5.30
BRIX	%	6.80
T	C°	14.90
Ca	ppm	80.00
K	ppm	6300.00
Na	ppm	38.00
NO3	ppm	170.00

HUMA GRO + CONVENTIONAL PLANTATION

FACTOR	UNIT	CONVENTIONAL	HUMAGRO+ CONVENTIONAL
EC	ms	5.78	6.40
PH		5.20	5.30
BRIX	%	6.00	6.80
T	C°	28.00	25.70
Ca	ppm	71.00	43.00
K	ppm	7800.00	8800.00
Na	ppm	60.00	100.00
NO3	ppm	400.00	290.00

THANK YOU

GRACIAS ARIGATO SHUKURIA DANKSCHEEN TASHAKKUR ATU YAQHANYELAY SUKSAMA EKHMET MEHRBANI GRAZIE MAAKE KOMAPSUMNIDA GOZAIMASHITA EFCHARISTO JUSPAXAR PALDIES BOLZÏN MERCI BIYAN SHUKRIA TINGKI

SPASSIBO SNACHALHUYA NUHUN CHALTU WABEEJA MAITEKA YUSPAGARATAM HUI DHANYAVADAAD ANIHA ATTO MERSI SPASIBO DENKAUJA NENACHALHYA UNALCHEESH GUI HATUR EKOJU SIKOMO MAKETAI MINMONCHAR SANCO MERASTAWHY GAEJTHO TAVTAPUCH MEDAWAGSE AGUYJE FAKAAUE LAH BAIKA

Eficiente

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