



Report of validation test results

Kyminasi Plant Crop Booster™ with Saladette Tomatoes



Con FIRA ¡Sí es posible!

May 2023

Trial Data

- Time:
 - Sowing Date: 10/07/22
 - Transplant: 11/24/22
 - Growth and Blooming: 01/06/23
 - Blooming and fruit filling: 01/23/23
 - Harvest: 9/9/23 to 5/10/2023
- Location: Centro de Desarrollo Tecnológico “Villadiego” (Villadiego Technological Development Center) of FIRA, Mexico
- Crop: Saladette Tomato
- Varieties: Hanna and Seletto



Sap analysis in Saladette Tomato (Hanna)

Tissue analysis in greenhouses 1 (Hanna) **With treatment**

Variables	02/07/2023	02/13/2023	02/21/2023	02/27/2023	03/13/2023	03/22/2023	03/28/2023	04/03/2023	04/11/2023	04/19/2023	04/24/2023	Average
Nitrates (NO3)(ppm)	2400	3300	1800	3500	3000	3000	2000	2200	2700	2300	2900	2645
Potassium (ppm)	690	670	780	1700	2600	1900	1800	1100	1550	1200	1700	1426
Calcium (ppm)	770	950	540	960	680	858	1000	1100	1300	890	1200	932
Sodium (ppm)	80	74	80	72	78	59	70	51	42	52	65	66
Brix degrees	9	6	8	9	4.5	5	7	6	7	6	7.5	7
Chlorophyll (U.SPAD)	55	57	55	52.5	48.5	50.7	45.9	52.6	53.2	51.4	51.8	52

Tissue analysis in greenhouses 1 (Hanna) **Without treatment**

Variables	02/07/2023	02/13/2023	02/21/2023	02/27/2023	03/13/2023	03/22/2023	03/28/2023	04/03/2023	04/11/2023	04/19/2023	04/24/2023	Average
Nitrates (NO3)(ppm)	2200	2200	2200	2500	2600	3200	2700	1500	2800	1900	5900	2700
Potassium (ppm)	690	530	670	568	2900	2000	2100	1500	1200	2500	2100	1523
Calcium (ppm)	800	990	960	900	1000	970	800	1100	1000	1000	300	893
Sodium (ppm)	67	71	150	110	65	53	66	54	76	78	60	77
Brix degrees	8.5	7	7	8	7	8	7	6	10	7	4	7
Chlorophyll (U.SPAD)	55	54	52.3	51.3	47	49.8	47.8	50.7	50.5	51.8	50.1	51

Sap analysis in Saladette Tomato (Seletto)

Tissue analysis in greenhouses 1 (Hanna) **With treatment**

Variables	02/07/2023	02/13/2023	02/21/2023	02/27/2023	03/13/2023	03/22/2023	03/28/2023	04/03/2023	04/11/2023	04/19/2023	04/24/2023	Average
Nitrates (NO3)(ppm)	2200	1800	2900	2700	4200	2300	3000	3000	4300	2900	2000	2845
Potassium (ppm)	710	640	440	507	2900	1200	2000	1000	1500	1000	1300	1200
Calcium (ppm)	480	1200	780	560	1200	120	1000	890	1100	900	1900	921
Sodium (ppm)	76	45	79	75	91	78	50	45	39	39	46	60
Brix degrees	7	7.5	7	7	5.5	6.7	6	5	6	8	8.5	7
Chlorophyll (U.SPAD)	53	60	53.2	52.5	50.5	56.5	50.3	52.6	49.8	42.9	45.9	52

Tissue analysis in greenhouses 1 (Hanna) **Without treatment**

Variables	02/07/2023	02/13/2023	02/21/2023	02/27/2023	03/13/2023	03/22/2023	03/28/2023	04/03/2023	04/11/2023	04/19/2023	04/24/2023	Average
Nitrates (NO3)(ppm)	1700	3600	4300	4200	2900	1800	3200	4300	2400	2500	5000	3264
Potassium (ppm)	580	550	800	1500	2800	900	1500	1500	1400	1200	1500	1294
Calcium (ppm)	720	1400	770	870	960	850	1500	1100	1500	1000	910	1053
Sodium (ppm)	94	52	82	76	97	66	76	43	45	65	46	67
Brix degrees	7	5	8	9	5.5	7	8	7	10	7.3	7.5	7
Chlorophyll (U.SPAD)	52	58	50.3	53.1	43.3	47.2	45.3	52.3	49.3	51.2	53.9	51

Monitoring morphological parameters tomato var. Hanna

Monitoring of growth gain in Treated Zone (Hanna)

Date	Stem Width (cm)	Growth gain (cm)	Average Stem length (cm)	Chlorophyll I	Health
01/23/2023	1.12	18.75	117.00	52.53	healthy/vigorous
01/30/2023	1.08	20.00	137.00	52.77	healthy/vigorous
02/07/2023	1	22.33	159.00	57.33	healthy/vigorous
02/13/2023	1	20.17	179.80	54.82	healthy/vigorous
02/21/2023	1	25.00	204.00	58.25	healthy/vigorous
02/27/2023	1	18.67	222.67	53.45	healthy/vigorous
03/06/2023	1	20.67	243.33	54.27	healthy/vigorous
03/13/2023	1	18.17	261.50	48.78	mildew
03/20/2023	1	19.92	281.42	50.62	mildew
03/27/2023	1	17.50	298.92	50.68	mildew
04/04/2023	1	14.00	312.92	50.02	mildew

Monitoring of growth gain in Non treated Zone (Hanna)

Date	Stem Width (cm)	Growth gain (cm)	Average Stem length (cm)	Chlorophyll II	Health
01/23/2023	1.07	25.67	116.84	51.20	healthy/vigorous
01/30/2023	1.12	21.67	138.50	57.78	healthy/vigorous
02/07/2023	1	21.67	160.00	54.20	healthy/vigorous
02/13/2023	1.01	18.00	178.67	53.15	healthy/vigorous
02/21/2023	1.00	25.33	204.00	53.08	healthy/vigorous
02/27/2023	1.03	18.67	222.67	53.45	healthy/vigorous
03/06/2023	1.05	20.67	243.33	54.27	healthy/vigorous
03/13/2023	1	18.17	261.50	48.78	mildew
03/20/2023	1	19.92	281.42	50.62	mildew
03/27/2023	1	17.50	298.92	50.68	mildew
04/04/2023	1	14.00	312.92	50.02	mildew

1.02

19.6

219.8

53

1.03

20.1

219.9

52.5

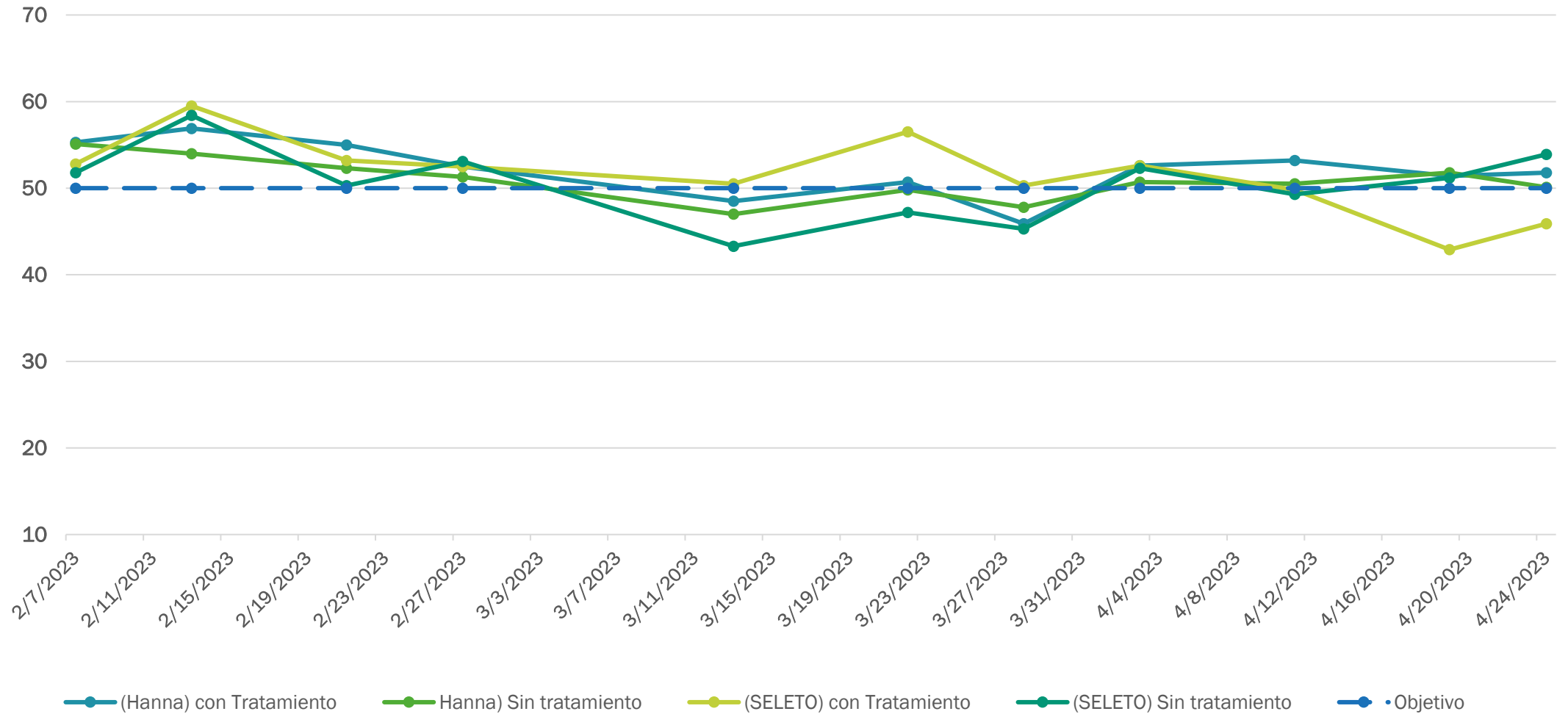
Monitoring morphological parameters tomato var. Seletto

Area with Treatment (Seletto)					
Date	Stem Width (cm)	Growth gain (cm)	Average Stem length (cm)	Chlorophyll	Health
01/23/2023	1.15	21.00	109.83	50.67	healthy/vigorous
01/30/2023	1.07	19.67	129.50	57.50	healthy/vigorous
02/07/2023	1	21.00	135.00	49.92	healthy/vigorous
02/13/2023	1.00	18.67	168.83	54.43	healthy/vigorous
02/21/2023	1.00	19.83	188.67	55.35	healthy/vigorous
02/27/2023	1.02	17.00	205.67	54.83	healthy/vigorous
03/06/2023	1.21	22.00	227.67	52.22	healthy/vigorous
03/13/2023	0.88	16.67	244.33	49.68	mildew
03/20/2023	0.86	18.83	263.17	50.53	mildew
03/27/2023	0.91	17.00	280.17	48.70	mildew
04/04/2023	0.75	18.67	298.83	49.85	mildew

Area without Treatment (Seletto)					
Date	Stem Width (cm)	Growth gain (cm)	Average Stem length (cm)	Chlorophyll	Health
01/23/2023	1.22	21.50	109.00	54.88	healthy/vigorous
01/30/2023	1.12	20.67	129.50	53.33	healthy/vigorous
02/07/2023	1	21.67	151.50	55.92	healthy/vigorous
02/13/2023	1.03	19.33	171.17	49.80	healthy/vigorous
02/21/2023	0.86	20.83	192.00	49.65	healthy/vigorous
02/27/2023	0.81	20.00	212.00	50.05	healthy/vigorous
03/06/2023	0.88	21.00	233.00	49.47	healthy/vigorous
03/13/2023	0.79	17.67	250.67	49.47	mildew
03/20/2023	0.91	19.33	270.75	50.85	mildew
03/27/2023	0.91	19.33	290.08	50.85	mildew
04/04/2023	0.82	19.50	309.58	47.98	mildew

Tomato chlorophyll measurement graph

Clorofila U.Spad



Tomato Yield

Sampling of 256 stems per treatment

Date	Hanna Quality (with treatment)				
	First (Kg)	Second (Kg)	Third (Kg)	Waste (Kg)	Total (kg)
03/09/2023	11.1	11.3	3.7	0	26.1
03/14/2023	24.6	17.8	13.7	15	71.1
03/30/2023	22.7	32.5	17.6	13	85.8
04/06/2023	22.1	27.9	20.8	17.1	87.9
04/14/2023	28.9	30.1	27.5	25.8	112.3
04/19/2023	15	30.1	25.1	28.9	99.1
04/26/2023	18.8	20.2	13.4	31.3	83.7
05/03/2023	10.7	17.2	18.1	20.7	66.7
05/10/2023	7.9	10.1	14.4	23.5	55.9
Total	161.8	197.2	154.3	175.3	688.6
Quality Percentage (%)	24	29	22	25	

Date	Hanna Quality (without treatment)				
	First (Kg)	Second (Kg)	Third (Kg)	Waste (Kg)	Total (kg)
03/09/2023	12.18	7.64	4.48	0	24.3
03/14/2023	21.7	19.7	13.7	8.86	63.96
03/30/2023	28.1	27.1	16.1	10.4	81.7
04/06/2023	21.6	30.4	21.3	19.3	92.6
04/14/2023	31	33.4	28.38	28.62	121.4
04/19/2023	16.8	21.9	19.3	27.2	85.2
04/26/2023	19.2	23.7	12.8	30.6	86.3
05/03/2023	9.7	21.1	16.4	22.5	69.7
05/10/2023	6.9	15.5	11.8	17.7	51.9
Total	167.18	200.44	144.26	165.18	677.06
Quality Percentage (%)	25	30	21	24	

Kyminasi:
24,251 kg/ha
7.3 Kg/m²

Date	Seletto Quality (with treatment)				
	First (Kg)	Second (Kg)	Third (Kg)	Waste (Kg)	Total (kg)
03/09/2023	10.18	11.34	3.74	0	25.26
03/14/2023	16.8	18.8	17.8	17.5	70.9
03/30/2023	33.2	35.7	28.6	23	120.5
04/06/2023	23.7	30.5	21.8	19	95
04/14/2023	22.7	28.4	19.2	25.8	96.1
04/19/2023	20.6	27.5	21.1	30.1	99.3
04/26/2023	18.6	24.7	29.4	22.7	95.4
05/03/2023	10	18.3	22.5	26.5	77.3
05/10/2023	6.9	12.6	17.8	19.7	57
Total	162.68	207.84	181.94	184.3	736.76
Quality Percentage (%)	22	28	25	25	

Date	Seletto Quality (without treatment)				
	First (Kg)	Second (Kg)	Third (Kg)	Waste (Kg)	Total (kg)
03/09/2023	13.12	4.58	1.76	0	19.46
03/14/2023	29.8	27.6	16.6	10.5	84.5
03/30/2023	34.3	26.7	17.1	14.1	92.2
04/06/2023	21	29.3	18.3	21	89.6
04/14/2023	24.1	30.1	24.4	27.2	105.8
04/19/2023	19.5	20.4	27.6	28.3	95.8
04/26/2023	20.4	21.6	23.5	26.3	91.8
05/03/2023	13.6	17.6	21.3	21.5	74
05/10/2023	9.2	15.5	16.3	21.4	62.4
Total	185.02	193.38	166.86	170.3	715.56
Quality Percentage (%)	26	27	23	24	

Control:
24,805 kg/ha
7.5 kg/m²

Comparison of water consumption in tomato

Area without treatment ^[1]		
Variable	Input (Its)	Output (Its)
Collected / Bag	553.78	182.39
Greenhouse volumes	1,346,793	443,564
Difference (Its)	903,229	
% recovery	33	
Water footprint (lt/kg)	36.4	

[1] 2432 issuers-bags

Area with treatment ^[2]		
Variable	Input (Its)	Output (Its)
Collected / Bag	414.63	131.29
Greenhouse volumes	1,061,453	336,102.4
Difference (Its)	725,350.6	
% recovery	32	
Water footprint (lt/kg)	30	

[1] 2560 issuers-bags

Conclusions

- In greenhouse tomatoes, no significant differences in vigor and health were identified.
- Regarding performance, the control surpassed the treatment with KPCB by 3%.
- In water productivity, a lower volume of water used for harvested production was observed, obtaining a water footprint of 30 liters per kilogram produced with KPCB, while the control averaged 36.4 liters*.

**Harvest Harmonics analysis: from our broad experience we evaluate that the tomatoes were overwatered even with the watering reduction stated here (17.6%). Watering reduction should be further optimized using our Profitability Optimization Protocol for Sustainability (POPS).*

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