

- TWIN "N" TRIAL IN
PROCESSING
ORGANIC TOMATOES
MORNING STAR

CENTRAL VALLEY,
CALIFORNIA
SUMMER 2023

See video on  YouTube



Morning Star # 5043

Central Valley, California

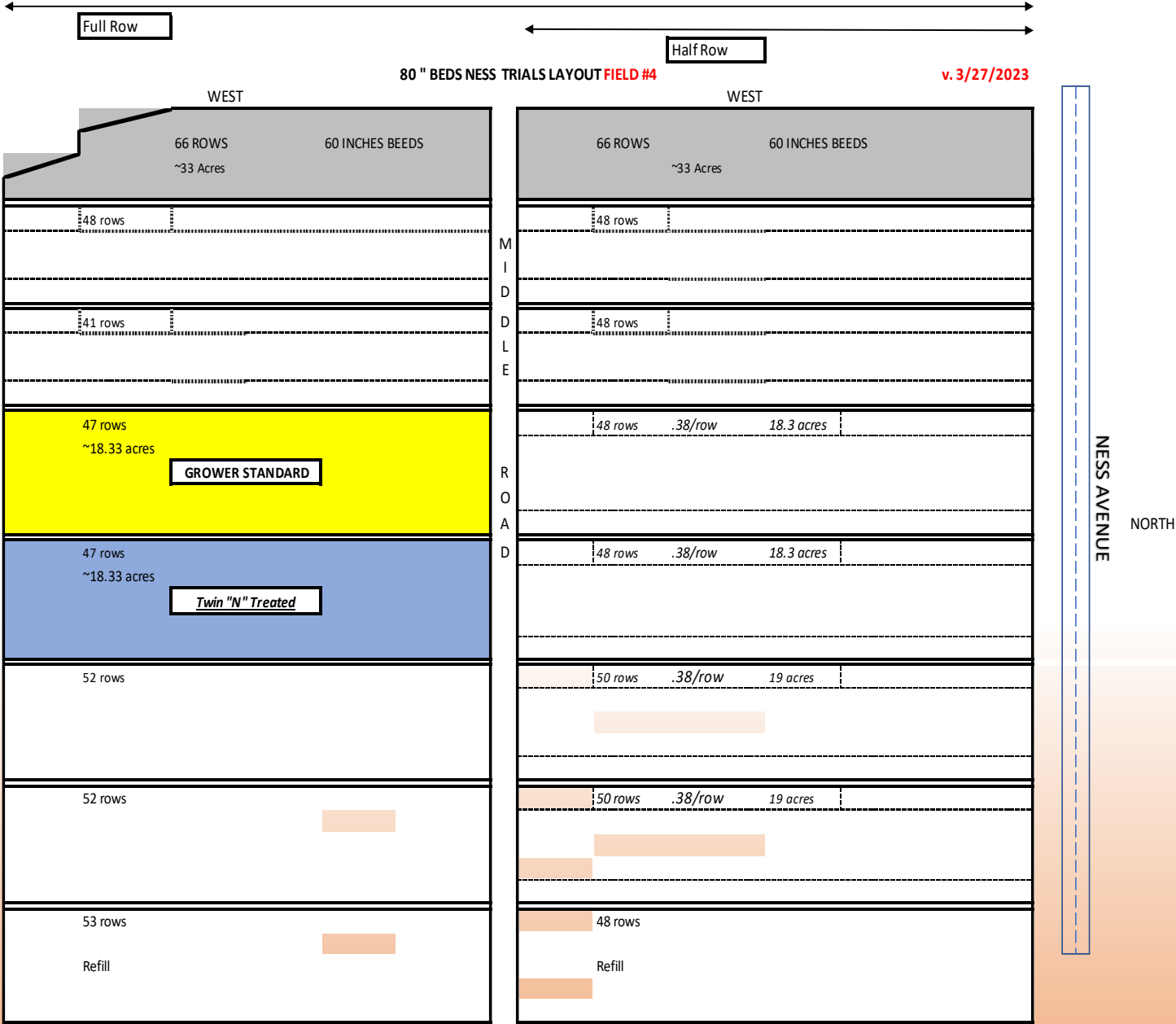
Presentation prepared by Hector Rochin, Trial Agronomist

RESPONSE TO TWIN "N" FERTILIZER (MICROBIAL BIO-FERTILIZER) AS A
FIXER OF ATMOSPHERIC NITROGEN TO IMPROVE NITROGENOUS
COMPOUNDS IMMEDIATELY AVAILABLE FOR THE PLANT.

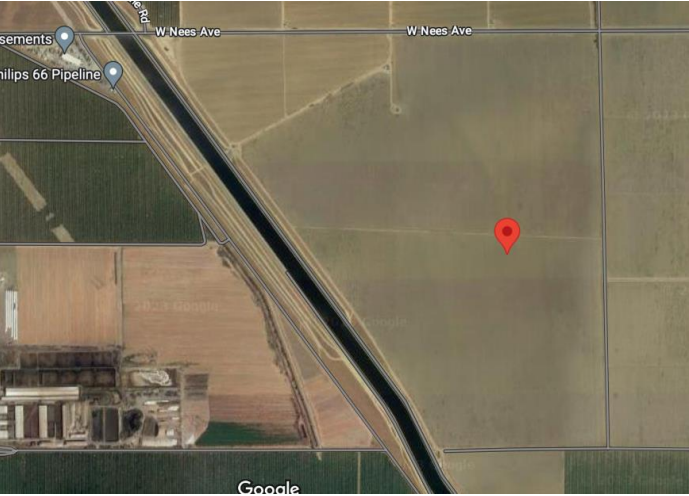
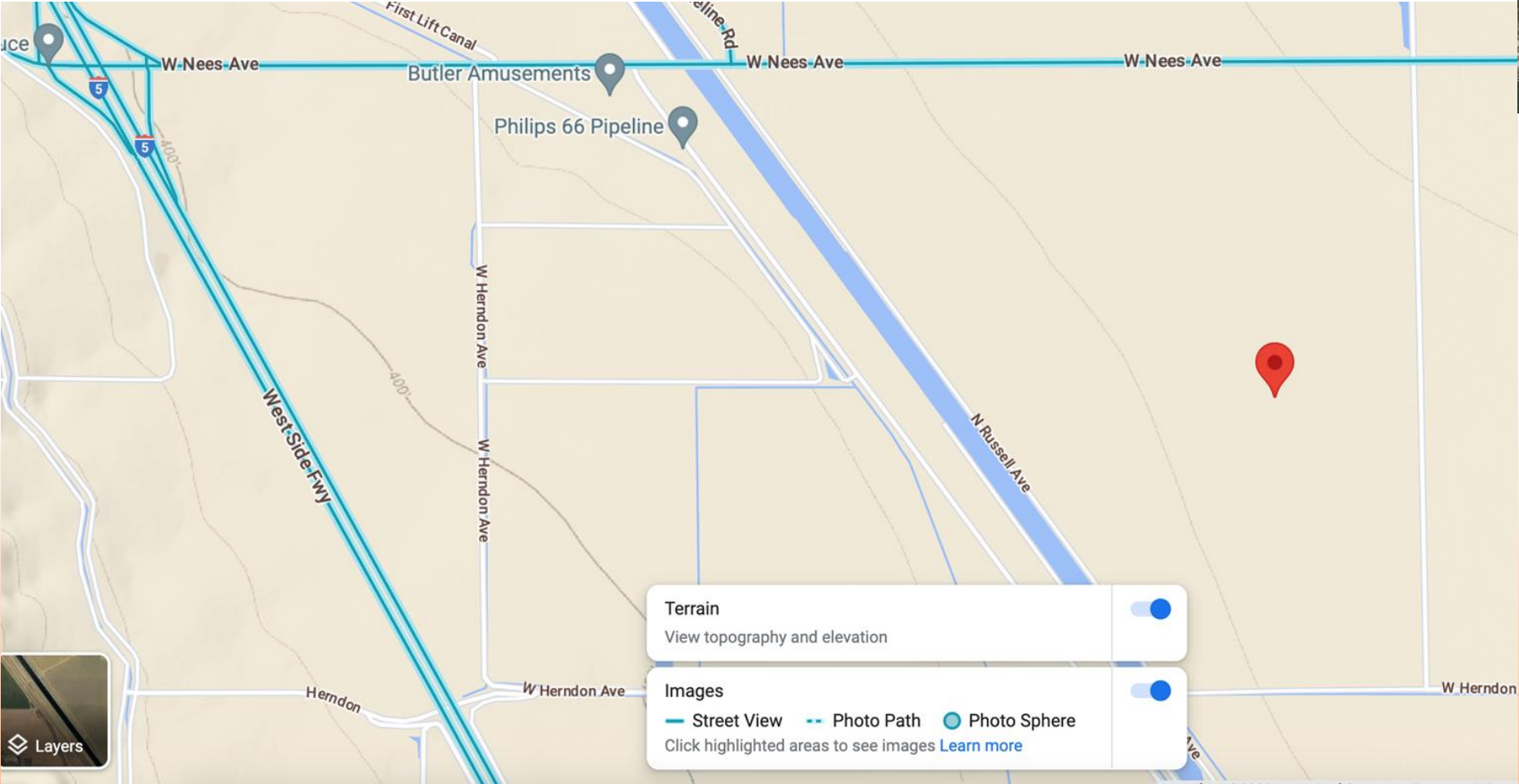
- Application Protocol:
 - * Regular Fertilizer Program with **25% Organic Nitrogen** reduction Plus **Twin"N"**.
 - *Control: Regular organic fertilizer program by the Grower.
- 1) Apply Twin"N" 3 weeks after transplanting.
 - 2) Apply Twin"N" 8 weeks after transplanting
- ***Soil and Tissue Analysis for Trial and Control.**
 - ** Before Start the trial collect **soil sample from the location of the Block.**
 - ** Before and after each application collect **samples of petioles to compare any results.**
 - ** Collect yield data after harvest:
 - Fruit samples & Lab analysis for soluble solids.
 - Measure of Fruit quality and Brix.
 - Harvest weight for each block.

NOTE: PLEASE REFER TO (to be added) FOR A VIDEO CLIP RELATED TO THIS TRIAL

TWIN "N" NEES RANCH
ORGANIC PROCESSING
TOMATOES MORNING STAR -
2023



TWIN "N" NEES RANCH
ORGANIC PROCESSING
TOMATOES MORNING
STAR - 2023



- Planted Date: 4/24/2023
-
- VALVE SIZE: 18.33 ACRES
-
- Irrigation System: TYPHOON 990
- GPH: 0.16
- EMITTER SPACING: 12"
- APPLICATION RATE: 0.040"/Hr.
- GPM/Ac: 18 PLANT DISTRIBUTION:
- VALVE: 47 ROWS
- LENGTH OF ROW: 0.39 ACRES
- BED WIDTH: 80"
- FLOW RATE: 0.16 GPH
- PSI: 10
- TWIN"N" RATE PER VALVE: **2** APPLICATIONS
- EACH APPLICATION **1.5** BOTTLE.
(1 BOTTLE STANDARD RATE FOR 12 AC)

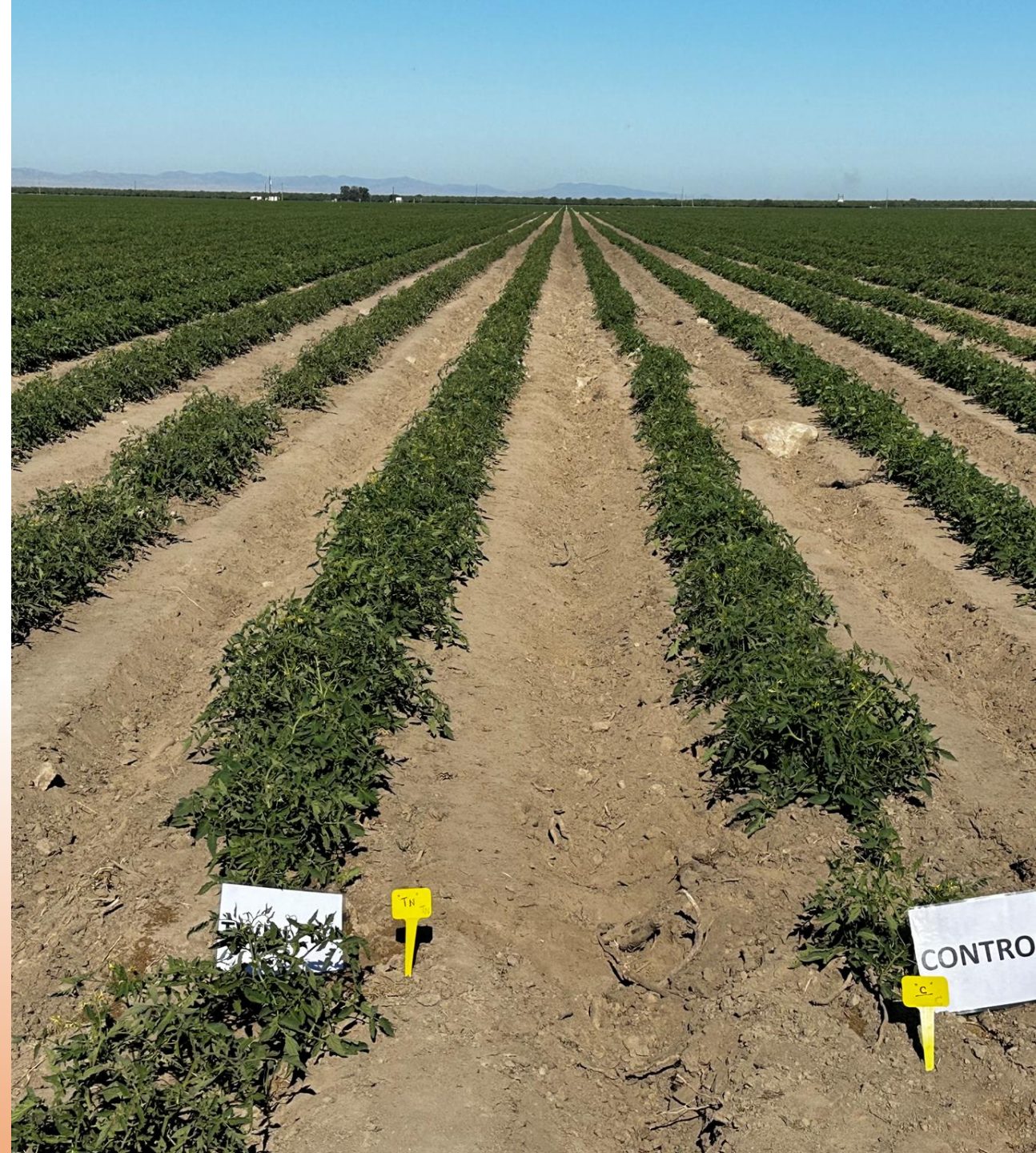
**TWIN"N" NEES RANCH
ORGANIC PROCESSING TOMATOES
MORNING STAR-2023**

TWIN "N" NEEDS
RANCH ORGANIC
PROCESSING
TOMATOES
MORNING STAR -
2023





TWIN "N"
NEES RANCH ORGANIC TOMATOES



Infrared Image



Infrared Image



ANALYTICAL REPORT – SOIL 12 INCHES



ANALYTICAL REPORT - SOIL



Sample Code:	5-23/027630	Received at:	AGQ USA
Analysis Type:	5-SB-US-0003	Analysis Center:	AGQ USA
Sample Type:	AGRONOMIC SOIL	Sampling Date/Hour:	05/01/2023
Control Unit:	TWIN-N	Start Date:	05/05/2023
Sampled By:	Client (*)	Finalized Date:	05/11/2023
Description(*):	12" - SOILS - TREATED	Contract:	QMT-US23050 0019
Client (*):	CHANDRAPPA GANGAIAH	Third party(*):	---
		Address(*):	2009 N WALLING LANE CLOVIS 93619

PHYSICAL PROPERTIES - GRANULOMETRY

Parameter	Result	Soil compaction risk	Method	SOP
Texture	Clay Loam		Densitometry	PE-2127
Clay	36 %		Densitometry	PE-2127
Silt	28 %		Densitometry	PE-2127
Sand	36 %		Densitometry	PE-2127

FERTILITY

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Ammonium Nitrogen	8.20	ppm						PS-5013	
N Available Calcium	3,026	ppm						PS-5013	
N Available Magnesium	875	ppm						PS-5013	
N Available Phosphorus Olsen	39.0	ppm						PS-5013	
N Available Sodium	239	ppm						PS-5013	
N Nitric Nitrogen	20.6	ppm						PS-5013	
N Organic Matter	1.13	%						PS-5013	
N pH	7.40							PS-5013	
N Potassium	348	ppm						PS-5013	
N E.C.	0.42	mmhos/cm						PS-5013	

MICROELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Boron	2.21	ppm						PS-5013	
N Copper	1.30	ppm						PS-5013	
N Iron	8.00	ppm						PS-5013	
N Manganese	9.10	ppm						PS-5013	
N Zinc	1.30	ppm						PS-5013	

EXCHANGE COMPLEX

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Cationic Exchange Capacity (CEC)	24.0	meq/100 g						PS-5013	

CATION RATIOS:

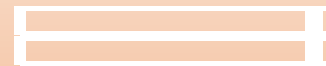
% Available Bases

• Ca Disp. (72%/73%) • Mg D(28%/21%) • Na D(0%/6%)

Ideal



Real



5/01/2023

Control



N-NH4 – 8.50 PPM
N-NO3 – 13.8 PPM
Organic N – 0.92 PPM

Twin”N”



N-NH4 – 8.20 PPM
N-NO3 – 20.6 PPM
Organic N – 1.13 PPM



ANALYTICAL REPORT - SOIL



Sample Code:	5-23/027631	Received at:	AGQ USA
Analysis Type:	5-SB-US-0003	Analysis Center:	AGQ USA
Sample Type:	AGRONOMIC SOIL	Sampling Date/Hour:	05/05/2023
Control Unit:	TWIN-N	Start Date:	05/05/2023
Sampled By:	Client (*)	Finalized Date:	05/11/2023
Description(*):	24" - SOILS - CONTROL	Contract:	QMT-US23050 0019
Client (*):	CHANDRAPPA GANGAIAH	Third party(*):	---
		Address(*):	2009 N WALLING LANE CLOVIS 93619

PHYSICAL PROPERTIES - GRANULOMETRY

Parameter	Result	Soil compaction risk	Method	SOP
Texture	Sandy Clay Loam		Densitometry	PE-2127
Clay	22 %		Densitometry	PE-2127
Silt	22 %		Densitometry	PE-2127
Sand	56 %		Densitometry	PE-2127

FERTILITY

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Ammonium Nitrogen	4.90	ppm						PS-5013	
N Available Calcium	3,587	ppm						PS-5013	
N Available Magnesium	620	ppm						PS-5013	
N Available Phosphorus Olsen	6.00	ppm						PS-5013	
N Available Sodium	313	ppm						PS-5013	
N Nitric Nitrogen	11.0	ppm						PS-5013	
N Organic Matter	0.30	%						PS-5013	
N pH	8.20							PS-5013	
N Potassium	134	ppm						PS-5013	
N E.C.	0.72	mmhos/cm						PS-5013	

MICROELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Boron	1.69	ppm						PS-5013	
N Copper	0.50	ppm						PS-5013	
N Iron	4.00	ppm						PS-5013	
N Manganese	< 1.00	ppm						PS-5013	
N Zinc	0.30	ppm						PS-5013	

EXCHANGE COMPLEX

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Cationic Exchange Capacity (CEC)	24.4	meq/100 g						PS-5013	

CATION RATIOS:

% Available Bases

• Ca Disp. (72%/79%) • Mg D(28%/14%) • Na D(0%/7%)

Ideal



Real



ANALYTICAL REPORT – SOIL 24 INCHES



ANALYTICAL REPORT - SOIL



5/01/2023

Sample Code:	5-23/027632	Received at:	AGQ USA		
Analysis Type:	5-SB-US-0003	Analysis Center:	AGQ USA		
Sample Type:	AGRONOMIC SOIL	Sampling Date/Hour:	05/01/2023	Reception Date:	05/05/2023
Control Unit:	TWIN-N	Start Date:	05/05/2023	Finalized Date:	05/11/2023
				Contract:	QMT-US23050 0019
Sampled By:	Client (*)	Third party(*):	---		
Description(*):	24" - SOILS - TREATED				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

PHYSICAL PROPERTIES - GRANULOMETRY

Parameter	Result	Soil compaction risk	Method	SOP
Texture	Clay Loam		Densitometry	PE-2127
Clay	34 %		Densitometry	PE-2127
Silt	26 %		Densitometry	PE-2127
Sand	40 %		Densitometry	PE-2127

FERTILITY

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Ammonium Nitrogen	7.10	ppm						PS-5013	
N Available Calcium	3,567	ppm						PS-5013	
N Available Magnesium	936	ppm						PS-5013	
N Available Phosphorus Olsen	7.00	ppm						PS-5013	
N Available Sodium	326	ppm						PS-5013	
N Nitric Nitrogen	37.0	ppm						PS-5013	
N Organic Matter	0.80	%						PS-5013	
N pH	7.70							PS-5013	
N Potassium	207	ppm						PS-5013	
N E.C.	1.02	mmhos/cm						PS-5013	

MICROELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Boron	1.63	ppm						PS-5013	
N Copper	0.90	ppm						PS-5013	
N Iron	6.00	ppm						PS-5013	
N Manganese	< 1.00	ppm						PS-5013	
N Zinc	0.40	ppm						PS-5013	

EXCHANGE COMPLEX

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Cationic Exchange Capacity (CEC)	27.2	meq/100 g						PS-5013	

CATION RATIOS:

% Available Bases

● Ca Disp. (72%/74%) ● Mg D(28%/19%) ● Na D(0%/7%)



Control



N-NH4 – 8.50 PPM

N-NO3 – 13.8 PPM

Organic N – 0.92 PPM

Twin"N"



N-NH4 – 7.10 PPM

N-NO3 – 37.0 PPM

Organic N – 0.80 PPM



ANALYTICAL REPORT - SOIL



Sample Code:	5-23/027631	Received at:	AGQ USA		
Analysis Type:	5-SB-US-0003	Analysis Center:	AGQ USA		
Sample Type:	AGRONOMIC SOIL	Sampling Date/Hour:	05/01/2023	Reception Date:	05/05/2023
Control Unit:	TWIN-N	Start Date:	05/05/2023	Finalized Date:	05/11/2023
				Contract:	QMT-US23050 0019
Sampled By:	Client (*)	Third party(*):	---		
Description(*):	24" - SOILS - CONTROL				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

PHYSICAL PROPERTIES - GRANULOMETRY

Parameter	Result	Soil compaction risk	Method	SOP
Texture	Sandy Clay Loam		Densitometry	PE-2127
Clay	22 %		Densitometry	PE-2127
Silt	22 %		Densitometry	PE-2127
Sand	56 %		Densitometry	PE-2127

FERTILITY

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Ammonium Nitrogen	4.90	ppm						PS-5013	
N Available Calcium	3,587	ppm						PS-5013	
N Available Magnesium	620	ppm						PS-5013	
N Available Phosphorus Olsen	6.00	ppm						PS-5013	
N Available Sodium	313	ppm						PS-5013	
N Nitric Nitrogen	11.0	ppm						PS-5013	
N Organic Matter	0.30	%						PS-5013	
N pH	8.20							PS-5013	
N Potassium	134	ppm						PS-5013	
N E.C.	0.72	mmhos/cm						PS-5013	

MICROELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Boron	1.69	ppm						PS-5013	
N Copper	0.50	ppm						PS-5013	
N Iron	4.00	ppm						PS-5013	
N Manganese	< 1.00	ppm						PS-5013	
N Zinc	0.30	ppm						PS-5013	

EXCHANGE COMPLEX

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Method	SOP
N Cationic Exchange Capacity (CEC)	24.4	meq/100 g						PS-5013	

CATION RATIOS:

% Available Bases

● Ca Disp. (72%/79%) ● Mg D(28%/14%) ● Na D(0%/7%)



ANALYTICAL REPORT- PLANT MATERIAL



ANALYTICAL REPORT- PLANT MATERIAL



Sample Code:	V-23/032719	Received at:	AGQ USA		
Analysis Type:	V-CO-0000	Analysis Center:	AGQ USA		
Sample Type:	TOMATOE LEAVES	Sampling Date/Hour:	06/07/2023	Reception Date:	06/15/2023
Place/Ranch:	TWIN N ORGANICS	Start Date:	06/16/2023	Finalized Date:	06/21/2023
				Contract:	QMT-US23060 0111
Sampled By:	CRISTIA.	Third party(*):	----		
Description(*):	TREATED - TOMATE				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

MACRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Potassium	2.69	%		2.90		5.00		ICP-OES	PEC-009
Nitrogen	5.81	%		4.40		6.60		Elemental Analyser	PEC-034
Phosphorus	0.576	%		0.250		0.750		ICP-OES	PEC-009
Calcium	2.39	%		1.00		3.00		ICP-OES	PEC-009
Magnesium	0.652	%		0.400		0.600		ICP-OES	PEC-009
Sulfur	0.91	%						ICP-OES	PEC-009

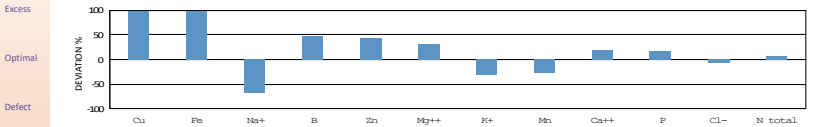
MICRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Iron	243	mg/kg		40.0		200		ICP-OES	PEC-009
Manganese	103	mg/kg		40.0		250		ICP-OES	PEC-009
Copper	27.4	mg/kg		5.00		20.0		ICP-OES	PEC-009
Zinc	50.0	mg/kg		20.0		50.0		ICP-OES	PEC-009
Boron	63.0	mg/kg		25.0		60.0		ICP-OES	PEC-009
* Molybdenum	< 1.00	mg/kg						ICP-OES	PEC-009

PHYTOTOXIC ELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
* Chloride	11,652	mg/kg		10,000		15,000		CFA	PE-336
Sodium	637	mg/kg		1,000		3,000		ICP-OES	PEC-009

SUMMARY OF PRINCIPAL BOUNDS (DOP)



NOTE

Note: The results in this report reflect the state in which the sample was received by the laboratory. Total or partial reproduction of this report is prohibited without express written consent. The uncertainties are calculated and can be available upon request. AGQ is not responsible for the information provided by the client, associated with sampling and other descriptive data, marked with (*)
(*) Parameter Not accredited by IAS TL-509

OBSERVATIONS (*):

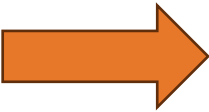
DATE ISSUED: 06/21/2023

Ravinder Kaur

Ravinder Kaur

6/07/2023

Control



Nitrogen 6.08 %

Twin"N"



Nitrogen 5.81 %



ANALYTICAL REPORT- PLANT MATERIAL



Sample Code:	V-23/032720	Received at:	AGQ USA		
Analysis Type:	V-CO-0000	Analysis Center:	AGQ USA		
Sample Type:	TOMATOE LEAVES	Sampling Date/Hour:	06/07/2023	Reception Date:	06/15/2023
Place/Ranch:	TWIN N ORGANICS	Start Date:	06/16/2023	Finalized Date:	06/21/2023
				Contract:	QMT-US23060 0111
Sampled By:	CRISTIA.	Third party(*):	----		
Description(*):	CONTROL - TOMATE				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

MACRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Potassium	2.59	%		2.90		5.00		ICP-OES	PEC-009
Nitrogen	6.08	%		4.40		6.60		Elemental Analyser	PEC-034
Phosphorus	0.546	%		0.250		0.750		ICP-OES	PEC-009
Calcium	2.01	%		1.00		3.00		ICP-OES	PEC-009
Magnesium	0.627	%		0.400		0.600		ICP-OES	PEC-009
Sulfur	0.75	%						ICP-OES	PEC-009

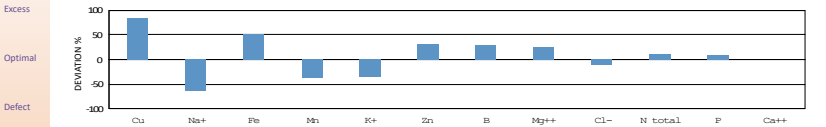
MICRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Iron	181	mg/kg		40.0		200		ICP-OES	PEC-009
Manganese	92.6	mg/kg		40.0		250		ICP-OES	PEC-009
Copper	22.8	mg/kg		5.00		20.0		ICP-OES	PEC-009
Zinc	46.3	mg/kg		20.0		50.0		ICP-OES	PEC-009
Boron	55.3	mg/kg		25.0		60.0		ICP-OES	PEC-009
* Molybdenum	< 1.00	mg/kg						ICP-OES	PEC-009

PHYTOTOXIC ELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
* Chloride	11,111	mg/kg		10,000		15,000		CFA	PE-336
Sodium	685	mg/kg		1,000		3,000		ICP-OES	PEC-009

SUMMARY OF PRINCIPAL BOUNDS (DOP)



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OBSERVATIONS (*):

DATE ISSUED: 06/21/2023

Ravinder Kaur

Ravinder Kaur

ANALYTICAL REPORT- PLANT MATERIAL



ANALYTICAL REPORT- PLANT MATERIAL



7/27/2023

Sample Code:	V-23/042910	Received at:	AGQ USA		
Analysis Type:	V-CD-0000	Analysis Center:	AGQ USA		
Sample Type:	TOMATO LEAVES	Sampling Date/Hour:	07/26/2023	Reception Date:	07/26/2023
		Start Date:	07/27/2023	Finalized Date:	07/31/2023
				Contract:	QMT-US23060 0111
Sampled By:	CHRISTICA	Third party(*):	---		
Description(*):	TWIN "N" ORGANIC TREATED - TOMATO				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

MACRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Potassium	2.49	%						ICP-OES	PEC-009
Nitrogen	4.84	%						Elemental Analyser	PEC-034
Phosphorus	0.382	%						ICP-OES	PEC-009
Calcium	0.91	%						ICP-OES	PEC-009
Magnesium	0.534	%						ICP-OES	PEC-009
Sulfur	1.31	%						ICP-OES	PEC-009

MICRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Iron	98.4	mg/kg						ICP-OES	PEC-009
Manganese	56.3	mg/kg						ICP-OES	PEC-009
Copper	16.4	mg/kg						ICP-OES	PEC-009
Zinc	32.0	mg/kg						ICP-OES	PEC-009
Boron	96.3	mg/kg						ICP-OES	PEC-009
* Molybdenum	< 1.00	mg/kg						ICP-OES	PEC-009

PHYTOTOXIC ELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
* Chloride	1,982	mg/kg						CFA	PE-336
Sodium	1,060	mg/kg						ICP-OES	PEC-009

SUMMARY OF PRINCIPAL BOUNDS (DOP)



NOTE

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(*) Parameter Not accredited by IAS TL-S09

DATE ISSUED: 07/31/2023

Ravinder Kaur

Ravinder Kaur

OBSERVATIONS (*):



ANALYTICAL REPORT- PLANT MATERIAL



Control

Nitrogen 4.11 %

Sample Code:	V-23/042911	Received at:	AGQ USA		
Analysis Type:	V-CD-0000	Analysis Center:	AGQ USA		
Sample Type:	TOMATO LEAVES	Sampling Date/Hour:	07/26/2023	Reception Date:	07/26/2023
		Start Date:	07/27/2023	Finalized Date:	07/31/2023
				Contract:	QMT-US23060 0111
Sampled By:	CHRISTICA	Third party(*):	---		
Description(*):	TWIN "N" ORGANIC CONTROL - TOMATO				
Client (*):	CHANDRAPPA GANGAIAH	Address(*):	2009 N WALLING LANE CLOVIS 93619		

MACRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Potassium	2.23	%						ICP-OES	PEC-009
Nitrogen	4.11	%						Elemental Analyser	PEC-034
Phosphorus	0.329	%						ICP-OES	PEC-009
Calcium	2.50	%						ICP-OES	PEC-009
Magnesium	0.518	%						ICP-OES	PEC-009
Sulfur	1.15	%						ICP-OES	PEC-009

MICRONUTRIENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
Iron	106	mg/kg						ICP-OES	PEC-009
Manganese	95.7	mg/kg						ICP-OES	PEC-009
Copper	17.7	mg/kg						ICP-OES	PEC-009
Zinc	28.0	mg/kg						ICP-OES	PEC-009
Boron	104	mg/kg						ICP-OES	PEC-009
* Molybdenum	< 1.00	mg/kg						ICP-OES	PEC-009

PHYTOTOXIC ELEMENTS

Parameter	Result	Units	Very low	Low	Normal	High	Very high	Technique	SOP
* Chloride	2,689	mg/kg						CFA	PE-336
Sodium	1,164	mg/kg						ICP-OES	PEC-009

SUMMARY OF PRINCIPAL BOUNDS (DOP)



NOTE

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(*) Parameter Not accredited by IAS TL-S09

DATE ISSUED: 07/31/2023

Ravinder Kaur

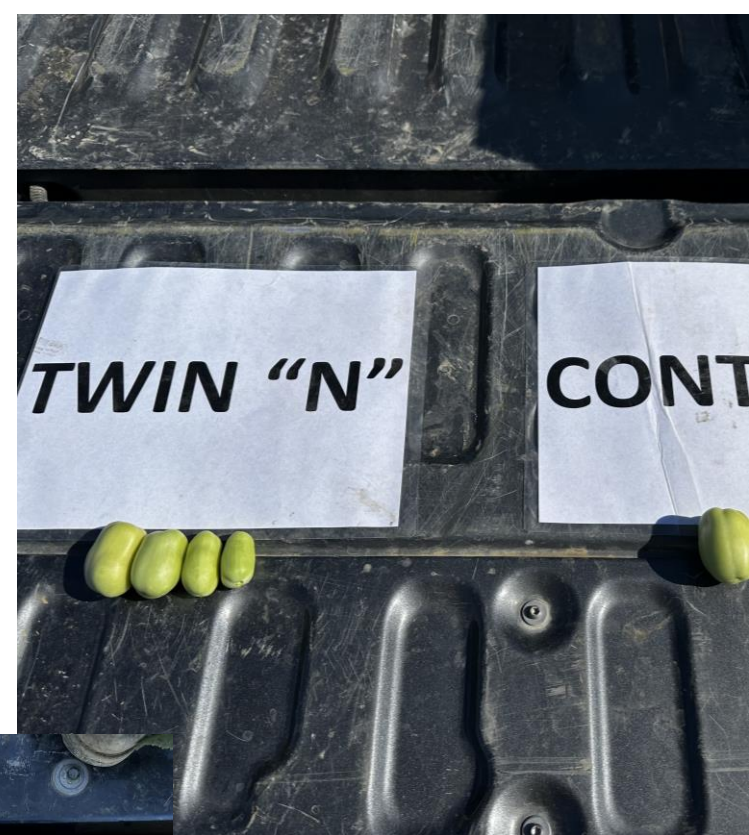
Ravinder Kaur

OBSERVATIONS (*):





TWIN "N" ORGANIC
PROCESSING
TOMATOES MORNING
STAR-2023





8/4/2023

~~Control~~

TWIN "N" CONTROL

Hector R. Rehn.

Treated

	TWIN "N"	CONTROL
Red	40	26
Pink	17	23
Breaker		
Green	80	61
BER.	3	49
L.U.	5	7
Kick-out size	44	46
Totals	189	212

Treated Control

TWIN N PLOT HAD REDUCED BLOSSOM END ROT



TWIN "N"
NEES ORGANIC TOMATOES

HARVEST (9/06 @ 9/08/2023)

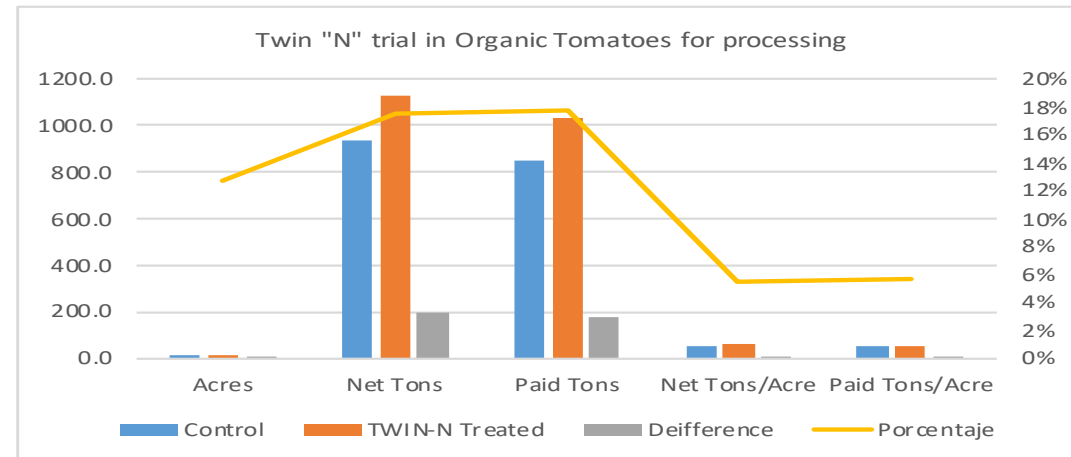




NEES ORGANIC RANCH / MORNING STAR-2023

Ness Organic Ranch
Season-2023
Harvest Report

Trial	Acres	Net Tons	Paid Tons	Net Tons/Acre	Paid Tons/Acre
Control	16.6	932.3	850.5	56	51
TWIN-N Treated	19.0	1,131.0	1,033.8	59	54
Deifference	2.4	198.7	183.3	3.3	3.1
Porcentaje	13%	18%	18%	6%	6%



Nees 5043 (Rochin)															
Trial	Number of Loads	Acres	Net Tons	Paid Tons	Net Tons/Acre	Paid Tons/Acre	Worm %	Mold %	Green %	MOT %	LU %	Hue Color	Agtron Color	Brix	pH
Rochin TWIN-N Control	33	16.6	932.3	850.5	56	51	0.0%	3.6%	3.5%	0.8%	1.4%	20	24	5.5	4.5
Rochin TWIN-N Treated	41	19.0	1,131.0	1,033.8	59	54	0.0%	3.1%	3.5%	1.0%	1.0%	20	24	5.3	4.5



HARVEST (9/06 @ 9/08/2023) COST BENEFIT-ANALYSIS REPORT

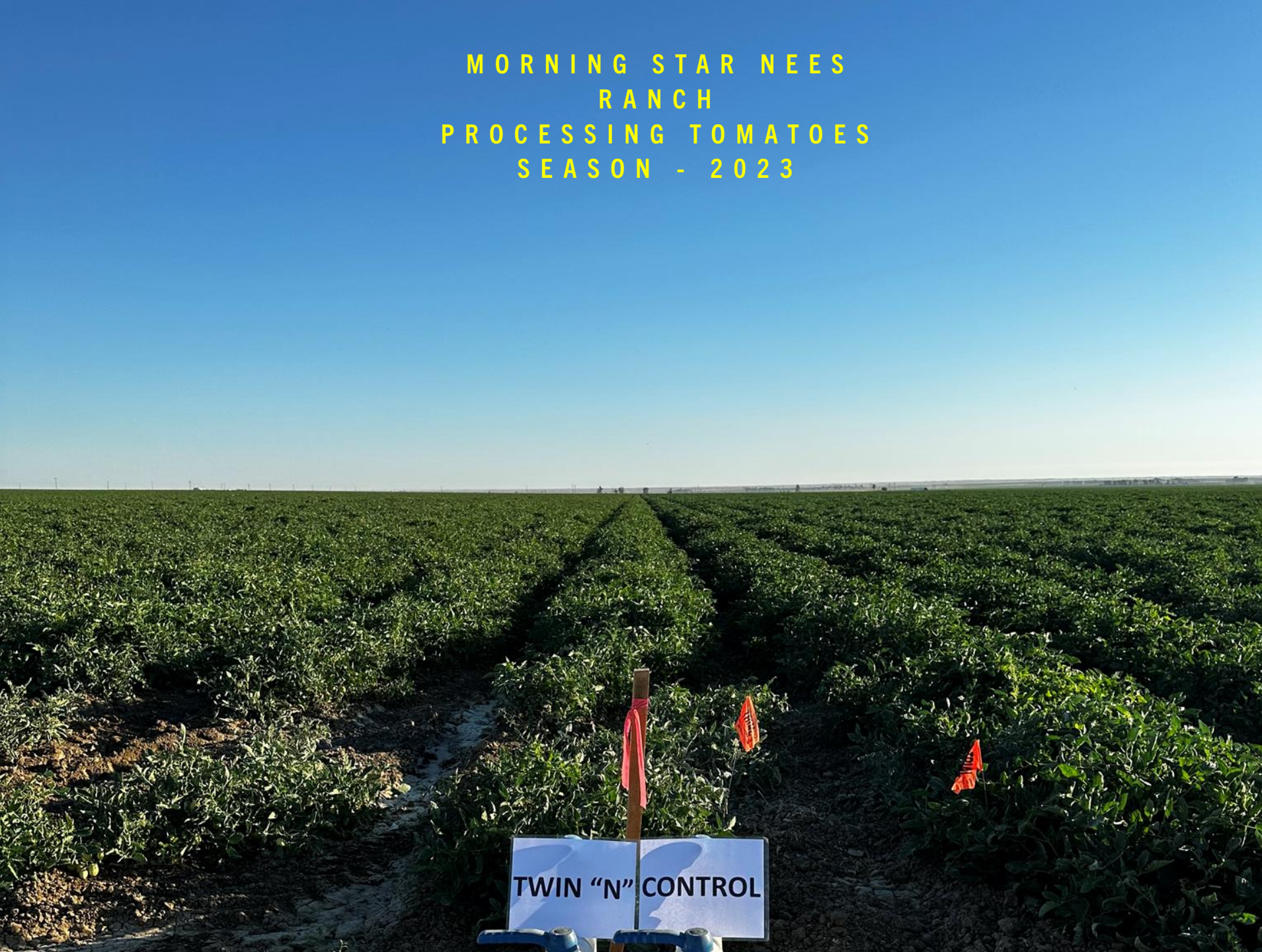


Trial	Acres	Paid Tons/Acre	Amount Paid per Ton	Total Amount Paid
Control	16.6	51	\$190.00	\$9,734.32
TWIN-N Treated	19.0	54	\$190.00	\$10,321.42
Deifference	2.4	3.1		\$587.11
Porcentaje	13%	6%		6%

Twin"N" (1 Bottle)					
Bottle	Acres	Cost Unit	Cost/Acre	# Applications	Treatment Cost
1	12	\$430.00	\$35.83	2	\$71.66
Profit per Acre	\$587.11	Treatment Cost	\$71.66		
Profit per Acre after Treatment Cost/Acre			\$515.45		

NOTE: THE COST-BENEFIT CALCULATION DOES NOT INCLUDE THE REDUCED COSTS OF ORGANIC FERTILISER IN THE TWIN N PLOTS

MORNING STAR NEES
RANCH
PROCESSING TOMATOES
SEASON - 2023



MORNING STAR NEEDS RANCH

PROCESSING TOMATOES SEASON - 2023



FILLING THE
FRUIT
CAVITY



MORNING STAR NEES RANCH PROCESSING TOMATOES SEASON – 2023

CONCLUSION

This trial was conducted on a commercial processing tomato farm. Two applications of Twin N provided a 6% yield increase in marketable fruit from a crop receiving a 25% reduction in organic fertilizer rate.

This increase in yield, combined with a substantial reduction in organic fertilizer costs, resulted in a useful increase in profitability for the grower.

TwinN is supplied by Mapleton Agri Biotech Pty Ltd, Australia. www.mabiotec.com
For enquiries in USA contact dewhops2@gmail.com, 509-961-2288, www.dewhops.com
For enquiries in California contact Chandra Gangaiah, 559-396-6255, gc6@hawaii.edu