



Valencia Ecosystems Pty Ltd,
P.O. Box 5098,
South Turrumurra 2074.
NSW, AUSTRALIA

Mobile 0488 233 704

Fax 02 94026664

E peter.oconnell@valenciaecosystems.com.au

REPORT: MICROSOIL LIQUID FERTILIZERS
TITLE: PLANT HEALTH AND YIELD IN CAPSICUMS
AUTHOR: PETER O'CONNELL & MELINDA EVERETT

CLIENT: MICROSOIL PTY LTD
CLIENT PROTOCOL ID: COMMERCIAL CAPSICUM 2015
DATE: 5 AUGUST 2015
REPORT STATUS: FINAL

VALENCIA PROJECT NO.: MSL2015-001

AIM:

- I. To determine the efficacy of MICROSOIL liquid fertilizers in capsicum as compared to a standard fertilizer program of soluble fertilizers, applied to a commercial block.

METHODS:

ASSESSMENT TYPE:

Capsicum yield and quality: Yield was estimated by recording fruit weight from three sample areas per treatment. Fruit was collected during 3 picks from 90 plants per treatment, using 3 replicates per treatment (30 plants/replicate).

- Fruit of marketable size and maturity was picked and counted.
- Marked or damaged fruit was recorded.
- Total fruit weight was documented.
- Cumulative fruit number and yield was calculated.
- The weight of marketable fruit was calculated as percentage of marketable fruit x total weight of fruit.
- A box contains 8 kilograms of capsicums.
- A bin contains 168 kilograms of capsicums.
- Twenty one boxes of capsicums per bin.
- The average price paid was \$17.00 per box.

Pricing of fertilizers:

The cost of MICROSOIL Liquid fertilizers were supplied by MICROSOIL.

Client: MICROSOIL
Client Protocol ID: Commercial Capsicum-2015
Project No. MSL2015-001
Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
P.O. Box 5098,
South Turrumurra 2074.
NSW, AUSTRALIA

TREATMENTS:

TRIAL-I MICROSOIL FERTILIZER PROGRAMME

Trt No.	Treatment	Application Rate
1	Grower Standard Fertilizers	Grower rate
2	MICROSOIL Liquid Fertilizers plus reduced Grower Standard Fertilizers	Refer to appendices

Details of the fertilizer programme are given in the appendices

SITE DETAILS:

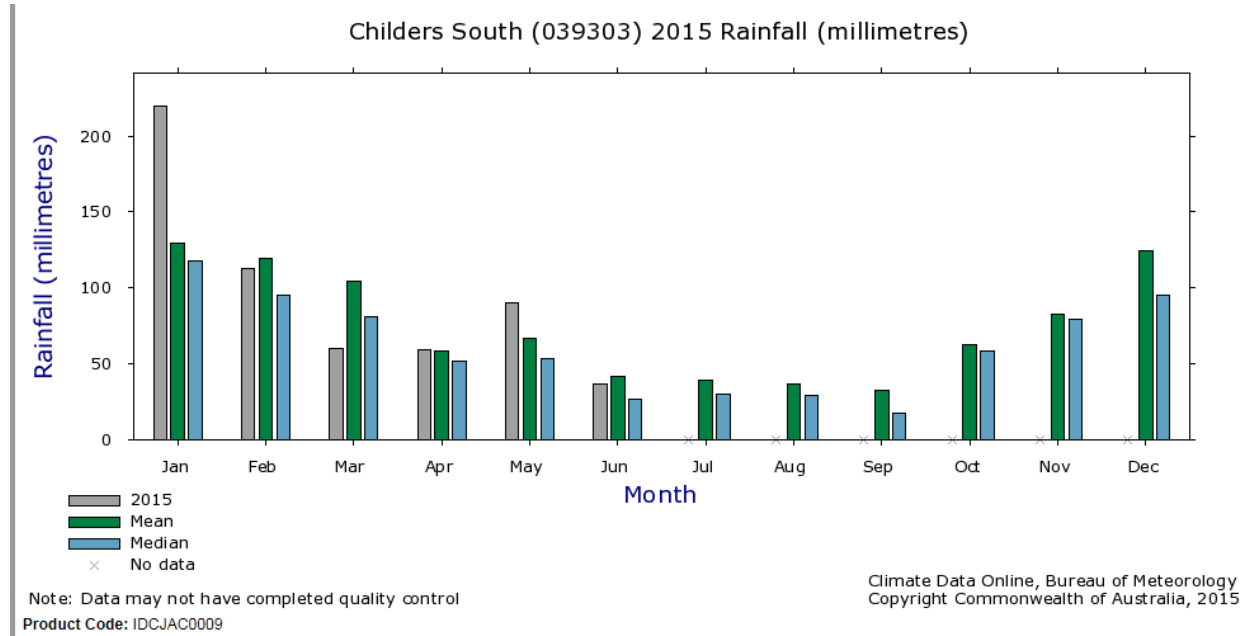
Co-operator: Steve Hawkey
Field Site: McDonalds Rd,
City: Farnsfield
State: Queensland
Country: Australia

DESCRIPTION OF CROP AND PLANTING:

Trial-I MICROSOIL
Crop capsicum
Variety Warlock
Transplanting date, field: 10-March-13
Area, ha: 2.0
Row spacing: 1.5 m
Plant spacing within row: 25 cm
Plants per hectare: 26,667

DESCRIPTION OF ENVIRONMENTAL CONDITIONS:

FIGURE 1: CHILDERS 2015 RAINFALL COMPARED TO LOCALITY MEAN AND MEDIAN RAINFALL



SOIL TYPE:

The soil type can be described as sand.

RESULTS:

TRIAL-I MICROSOIL FERTILIZER PROGRAMME

TABLE 1: CUMMULATIVE YIELD OF CAPSICUM/HA
Yield measurement from 90 plants/ treatment

	12-May		25-May		1-Jul	
	Standard	MICROSOIL	Standard	MICROSOIL	Standard	MICROSOIL
Marketable fruit weight (bins)	55	56	94	96	154	180
Marketable fruit (number '000)	39.7	40.9	62.8	64.3	91.6	107.4
Damaged fruit (number '000)	2.7	0.6	3.6	0.9	29.3	29.3
Total fruit (number '000)	42.4	41.5	66.4	65.2	120.9	136.7

Sampling basis is 30 plants per replicate x 3 replicates per treatment

TABLE 2: RESPONSE OF CAPSICUM YIELD PER HECTARE TO THE MICROSOIL FERTILISER PROGRAMME COMPARED TO THE STANDARD PROGRAMME

Yield measurement from 90 plants/ treatment

	increase	percentage
Fruit weight (bins)	+26	117%
Marketable fruit (number '000)	+15.9	117%
Damaged fruit (number '000)	0	100%
Total fruit (number '000)	+15.9	113%

Sampling basis is 30 plants per replicate x 3 replicates per treatment

TABLE 3: DOLLAR VALUE OF CAPSICUM FROM MICROSOIL AND STANDARD BLOCKS

Yield measurement from 90 plants/ treatment

	Unit	MICROSOIL	Standard
Yield	bins/ha	180	154
Value of fruit^a	\$/ha	\$ 64,260	\$ 54,978
Cost of inputs relative to standard	\$/ha	\$ 337	
Change in GM/ha	\$/ha	+ \$ 8,945	

Sampling fruit, red and green

Sampling basis is 30 plants per replicate x 3 replicates per treatment

DISCUSSION AND CONCLUSION:

GENERAL:

Capsicum variety Warlock from was planted during the March period as part of routine commercial production on this farm. General environmental conditions were similar to average.

In Trial-I Fertilizer treatments were placed through the sub-surface trickle irrigation. A standard grower fertilizer regime was compared to MICROSOIL fertilizers used to compliment the standard grower programme.

TRIAL-I MICROSOIL FERTILIZERS:

The application of Microsoil fertilizers within the nutrition programme for capsicums provided a 17% increase in yield of marketable fruit compared to the standard fertilizer programme. The use of the MICROSOIL fertilizers meant an increase in \$337/ha to supplement the standard nutrition programme. Due to the sizeable yield increase, this provided a substantial improvement in gross margin of \$8,945 (Table 3, assumed price of \$17/box).

Client: MICROSOIL
 Client Protocol ID: Commercial Capsicum-2015
 Project No. MSL2015-001
 Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
 P.O. Box 5098,
 South Turrumurra 2074.
 NSW, AUSTRALIA

TABLE 4: MICROSOIL FERTILIZER PROGRAMME, CAPSICUM

	Fertilizer Product	Rate		N	P	K	S	Ca	Mg	Zn	B
		Ha	Unit								
Preplant	Nitrophoska Blue	480		57.60	24.96	67.68	28.80	20.64	5.76		
Preplant	Kate K	250		8.75	4.50	10.00	5.75	12.88	1.70		
Week 1	<i>Magnesium Sulfate</i> 13.3.15	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>MICROSOIL Cropstarter</i> 13.3.15	40	L/Ha	1.80	2.20	0.96	0.40				
Week 2	<i>Magnesium Sulfate</i> 20.3.15	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>Microturf Pro K Silica</i> 17.3.15	5				0.25					
	<i>MICROSOIL Cropstarter</i> 22.3.15	20		0.90	1.10	0.48	0.20				
	<i>Micromix</i> 21.3.15	10	L/Ha								
Week 3	<i>MICROSOIL Advance PGR</i> 27.3.15	0.25	L/Ha								
	<i>Microturf Pro Cal Boron</i> 24.3.15	25	L/Ha	2.50	0.00	0.02		2.50			0.40
	<i>Magnesium Sulfate</i> 23.3.15	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>MICROSOIL Cropstarter</i> 26.3.15	20	L/Ha	0.90	1.10	0.48	0.20				
Week 4	<i>Potassium Nitrate</i> 1.4.15	25	Kg/Ha	3.25	0.00	9.50		0.00			
	<i>Microturf Pro Cal Boron</i> 31.3.15	25	L/Ha	2.50	0.00	0.02		2.50			0.40
	<i>Magnesium Sulfate</i> 30.3.15	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>Microturf Pro K Silica</i> 3.4.15	5				0.25					
	<i>Microturf Pro Zinc</i> 2.4.15	20	L/Ha	0.84	0.12	0.00		0.00		0.84	

Client: MICROSOIL
 Client Protocol ID: Commercial Capsicum-2015
 Project No. MSL2015-001
 Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
 P.O. Box 5098,
 South Turrumurra 2074.
 NSW, AUSTRALIA

	Fertilizer Product	Rate		N	P	K	S	Ca	Mg	Zn	B
		Ha	Unit								
Week 5	<i>MICROSOIL Advance PGR 10.4.15</i>	0.25	L/Ha								
	<i>Potassium Nitrate 7.4.15</i>	25	Kg/Ha	3.25	0.00	9.50		0.00			
	<i>Calcium Nitrate + Boron 8.4.15</i>	50	Kg/Ha	7.50				10.50			0.15
	<i>Magnesium Sulfate 9.4.15</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>MICROSOIL Cropstarter 6.4.15</i>	20	L/Ha	0.90	1.10	0.48	0.20				
Week 6	<i>Potassium Nitrate 11.4.15</i>	50	Kg/Ha	6.50	0.00	19.00		0.00			
	<i>Microturf Pro Cal Boron 13.4.15</i>	30	L/Ha	3.00	0.00	0.02		3.00			0.48
	<i>Magnesium Sulfate 12.4.15</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>Micromix</i>	5	L/Ha								
Week 7	<i>Potassium Nitrate 20.4.15</i>	50	Kg/Ha	6.50	0.00	19.00		0.00			
	<i>Calcium Nitrate + Boron 17.4.15</i>	50	Kg/Ha	7.50				10.50			0.15
	<i>Magnesium Sulfate 24.4.15</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>Microturf Pro Zinc 18.4.15</i>	20	L/Ha	0.84	0.12	0.00		0.00		0.84	
Week 8	<i>Potassium Nitrate 26.4.15</i>	50	Kg/Ha	6.50	0.00	19.00		0.00			
	<i>Calcium Nitrate + Boron 28.4.15</i>	50	Kg/Ha	7.50				10.50			0.15
	<i>Magnesium Sulfate 30.4.15</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50		
	<i>Micromix 7.5.15</i>	5	L/Ha								
Week 9	<i>Potassium Nitrate 7.5.15</i>	25	Kg/Ha	3.25	0.00	9.50		0.00			
	<i>Miriate Potash 9.5.15</i>	50	Kg/Ha			25.00					
	<i>Calcium Nitrate + Boron 3.5.15</i>	75	Kg/Ha	11.25				15.75			0.23
	<i>Magnesium Sulfate 7.5.15</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50		
	<i>Microturf Pro Zinc 7.5.15</i>	20	L/Ha	0.84	0.12	0.00		0.00		0.84	

Client: MICROSOIL Client Protocol ID: Commercial Capsicum-2015 Project No. MSL2015-001 Date: 5 August 2015	Valencia Ecosystems Pty Ltd, P.O. Box 5098, South Turrumurra 2074. NSW, AUSTRALIA
---------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------

Fertilizer Product		Rate		N	P	K	S	Ca	Mg	Zn	B
		Ha	Unit								
Week 10	<i>Potassium Nitrate 11.5.15</i>	25	Kg/Ha	3.25	0.00	9.50		0.00			
	<i>Miriate Potash 17.5.15</i>	50	Kg/Ha			25.00					
	<i>Calcium Nitrate + Boron 15.5.15</i>	75	Kg/Ha	11.25				15.75			0.23
	<i>Magnesium Sulfate 13.5.15</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50		
	<i>Micromix 13.5.15</i>	5	L/Ha								
Week 11	<i>Potassium Nitrate 20.5.15</i>	25	Kg/Ha	3.25	0.00	9.50		0.00			
	<i>Miriate Potash 24.5.2015</i>	50	Kg/Ha			25.00					
	<i>Calcium Nitrate + Boron 20.5.2015</i>	75	Kg/Ha	11.25				15.75			0.23
	<i>Magnesium Sulfate 22.5.15</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50		
	<i>MICROSOIL Cropstarter 19.5.15</i>	20	L/Ha	0.90	1.10	0.48	0.20				
Week 12	<i>Miriate Potash 31.5.15</i>	50	Kg/Ha			25.00					
	<i>Calcium Nitrate + Boron 29.5.15</i>	50	Kg/Ha	7.50				10.50			0.15
	<i>Magnesium Sulfate 2.6.15</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50		
	<i>Micromix 26.5.2015</i>	5	L/Ha								
Week 13	<i>Miriate Potash 8.6.2015</i>	75	Kg/Ha			37.50					
	<i>Microturf Pro Cal Boron 4.6.2015</i>	25	L/Ha	2.50	0.00	0.02		2.50			0.40
	<i>MICROSOIL Cropstarter 6.6.2015</i>	10	L/Ha	0.45	0.55	0.24	0.10				
Week 14	<i>Miriate Potash 9.6.15</i>	50	Kg/Ha			25.00					
				185	37	348	70	133	33	3	3

Client: MICROSOIL
 Client Protocol ID: Commercial Capsicum-2015
 Project No. MSL2015-001
 Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
 P.O. Box 5098,
 South Turrumurra 2074.
 NSW, AUSTRALIA

TABLE 5: GROWER STANDARD FERTILIZER PROGRAMME, CAPSICUM

	Fertilizer Product	Rate		N	P	K	S	Ca	Mg	B
		Ha	Unit							
Preplant	Nitrophoska Blue	480		57.60	24.96	67.68	28.80	20.64	5.76	
Preplant	Kate K	250		8.75	4.50	10.00	5.75	12.88	1.70	
Week 1	Magnesium Sulfate	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	Mega Kelp	5	L/Ha							
Week 2	Magnesium Sulfate	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	Micromix	5	L/Ha							
Week 3	Calcium Nitrate + Boron	25	Kg/Ha	3.75				5.25		0.08
	Magnesium Sulfate	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	Mega Kelp	5	L/Ha							
Week 4	Potassium Nitrate	25	Kg/Ha	3.25	0.00	9.50		0.00		
	Calcium Nitrate + Boron	25	Kg/Ha	3.75				5.25		0.08
	Magnesium Sulfate	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	Boron	2	Kg/Ha							0.42
	Micromix	5	L/Ha							
Week 5	Potassium Nitrate	25	Kg/Ha	3.25	0.00	9.50		0.00		
	Calcium Nitrate + Boron	50	Kg/Ha	7.50				10.50		0.15
	Magnesium Sulfate	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	Mega Kelp	5	L/Ha							

Client: MICROSOIL
 Client Protocol ID: Commercial Capsicum-2015
 Project No. MSL2015-001
 Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
 P.O. Box 5098,
 South Turrumurra 2074.
 NSW, AUSTRALIA

	Fertilizer Product	Rate		N	P	K	S	Ca	Mg	B
		Ha	Unit							
Week 6	<i>Potassium Nitrate</i>	50	Kg/Ha	6.50	0.00	19.00		0.00		
	<i>Calcium Nitrate + Boron</i>	50	Kg/Ha	7.50				10.50		0.15
	<i>Magnesium Sulfate</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	<i>Micromix</i>	5	L/Ha							
Week 7	<i>Potassium Nitrate</i>	50	Kg/Ha	6.50	0.00	19.00		0.00		
	<i>Calcium Nitrate + Boron</i>	50	Kg/Ha	7.50				10.50		0.15
	<i>Magnesium Sulfate</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	<i>Mega Kelp</i>	5	L/Ha							
Week 8	<i>Potassium Nitrate</i>	50	Kg/Ha	6.50	0.00	19.00		0.00		
	<i>Calcium Nitrate + Boron</i>	50	Kg/Ha	7.50				10.50		0.15
	<i>Magnesium Sulfate</i>	25	Kg/Ha	0.00	0.00	0.00	3.25	0.00	2.50	
	<i>Micromix</i>	5	L/Ha							
Week 9	<i>Potassium Nitrate</i>	25	Kg/Ha	3.25	0.00	9.50		0.00		
	<i>Miriate Potash</i>	50	Kg/Ha			25.00				
	<i>Calcium Nitrate + Boron</i>	75	Kg/Ha	11.25				15.75		0.23
	<i>Magnesium Sulfate</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50	
	<i>Mega Kelp</i>	5	L/Ha							
Week 10	<i>Potassium Nitrate</i>	25	Kg/Ha	3.25	0.00	9.50		0.00		
	<i>Miriate Potash</i>	50	Kg/Ha			25.00				
	<i>Calcium Nitrate + Boron</i>	75	Kg/Ha	11.25				15.75		0.23
	<i>Magnesium Sulfate</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50	
	<i>Micromix</i>	5	L/Ha							

Client: MICROSOIL
 Client Protocol ID: Commercial Capsicum-2015
 Project No. MSL2015-001
 Date: 5 August 2015

Valencia Ecosystems Pty Ltd,
 P.O. Box 5098,
 South Turrumurra 2074.
 NSW, AUSTRALIA

	Fertilizer Product	Rate		N	P	K	S	Ca	Mg	B
		Ha	Unit							
Week 11	<i>Mega Kelp</i>	5	L/Ha							
	<i>Potassium Nitrate</i>	25	Kg/Ha	3.25	0.00	9.50		0.00		
Week 12	<i>Miriate Potash</i>	75	Kg/Ha			37.50				
	<i>Calcium Nitrate + Boron</i>	50	Kg/Ha	7.50				10.50		0.15
	<i>Magnesium Sulfate</i>	15	Kg/Ha	0.00	0.00	0.00	1.95	0.00	1.50	
	<i>Micromix</i>	5	L/Ha							
Week 13	<i>Miriate Potash</i>	75	Kg/Ha			37.50				
	<i>Calcium Nitrate + Boron</i>	25	Kg/Ha	3.75				5.25		0.08
	<i>Mega Kelp</i>	5	L/Ha							
Week 14	<i>Miriate Potash</i>	50	Kg/Ha			25.00				
				185	29	357	68	149	33	2