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REPORT: MICROSOIL LIQUID FERTILIZERS

TITLE: PLANT HEALTH AND YIELD IN ZUCCHINI'S

AUTHOR: PETER O'CONNELL & MELINDA EVERETT

CLIENT: MICROSOIL PTY LTD

CLIENT PROTOCOL ID: COMMERCIAL ZUCCHINI-2014

DATE: 10 NOVEMBER 2014

REPORT STATUS: FINAL

VALENCIA PROJECT NO.: MSL2014-001

AIM:

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

METHODS:

ASSESSMENT TYPE:

Zucchini yield and quality: Yield was assessed by recording the bins of zucchini produced by each of the commercial blocks.

Additionally fruit was collected on 3 occasions over a six day period from 30 plants per treatment, using 3 replicates per treatment. Fruit of marketable size and maturity was picked and counted. Cumulative fruit number and yield was calculated.

The dollar value of the fertilizer programs was calculated using;

- The assumed grower's price is \$20 per box
- There are 28 boxes per bin which is equivalent to \$560 per bin
- MICROSOIL liquid fertilisers used in the trial are valued at \$409.60/ha

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TREATMENTS:

Trt No.	Treatment	Application Rate
1	Grower Standard Fertilizers	Grower rate
2	Grower Standard Fertilizers MICROSOIL Liquid Fertilizers	Grower rate Recommended rate

Fertilizer application dates and rates applied are provided in the appendices

SITE DETAILS:

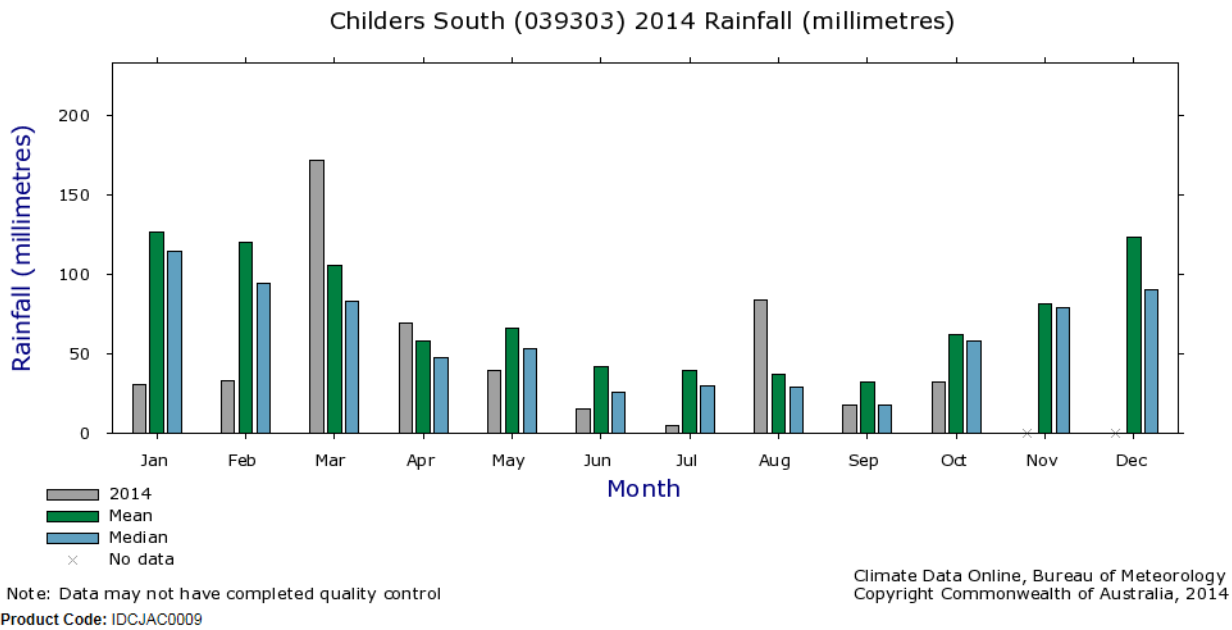
Co-operator: Steve Hawkey
Field Site: McDonalds Rd,
City: Farnsfield
State: Queensland
Country: Australia

DESCRIPTION OF CROP AND PLANTING:

	MICROSOIL	Standard
Crop	zucchini	zucchini
Variety	Regal black	Regal black
Transplanting date, field	20-May-14	7-Jun-14
Area, ha	1.86	1.91
Row spacing	1.5 m	1.5 m
Plant spacing within row:	61 cm	61 cm
Plants per hectare	10,900	10,900

DESCRIPTION OF ENVIRONMENTAL CONDITIONS:

FIGURE I: CHILDERS 2014 RAINFALL COMPARED TO LOCALITY MEAN AND MEDIAN RAINFALL



SOIL TYPE:

The soil type can be described as sand.

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RESULTS:

TABLE 1: YIELD OF ZUCCHINI TAKEN FROM 30 PLANTS (3 REPLICATES) PER TREATMENT

MICROSOIL Programme					Standard Programme				
Part Assessed		fruit	fruit			fruit	fruit		
Assessment Type		weight	count			weight	count		
Assessment Unit		Kg	number			Kg	number		
Date	Site				Date	Site			
10-Jul-14	Bay 2	Row 5	3.5	23	07-Aug-14	Bay 2	Row 5	2.1	12
	Bay 4	Row 5	1.9	14		Bay 6	Row 5	2.6	21
	Bay 7	Row 5	4.6	26		Bay 8	Row 6	2.2	16
13-Jul-14	Bay 2	Row 5	2.6	15	10-Aug-14	Bay 2	Row 5	1.3	12
	Bay 4	Row 5	3.3	22		Bay 6	Row 5	1.8	17
	Bay 7	Row 5	2.2	16		Bay 8	Row 6	0.8	8
16-Jul-14	Bay 2	Row 5	5.0	33	13-Aug-14	Bay 2	Row 5	6.7	43
	Bay 4	Row 5	4.5	30		Bay 6	Row 5	5.8	34
	Bay 7	Row 5	5.1	33		Bay 8	Row 6	5.8	41
Sum			32.7	212				29.1	204
Average			3.6	24				3.2	23
% of Standard			113%	104%				100%	100%

TABLE 2: YIELD OF ZUCCHINI IN BINS TAKEN FROM TAKEN FROM MICROSOIL OR STANDARD BLOCKS

MICROSOIL			Standard		
Day	Date	Bins	Day	Date	Bins
0	05-Jul-14	2.5	0	02-Aug-14	3.0
3	08-Jul-14	2.0	3	05-Aug-14	6.0
6	11-Jul-14	4.5	6	08-Aug-14	6.0
9	14-Jul-14	3.5	8	10-Aug-14	6.0
12	17-Jul-14	6.0	10	12-Aug-14	4.0
15	20-Jul-14	4.5	12	14-Aug-14	4.0
18	23-Jul-14	5.0	14	16-Aug-14	4.0
21	26-Jul-14	9.0	17	19-Aug-14	8.0
24	29-Jul-14	6.0	19	21-Aug-14	8.0
27	01-Aug-14	10.0	21	23-Aug-14	8.0
30	04-Aug-14	12.5	23	25-Aug-14	3.0
33	07-Aug-14	7.0	25	27-Aug-14	3.0
36	10-Aug-14	2.0	27	29-Aug-14	4.0
38	12-Aug-14	5.0	29	31-Aug-14	4.0
40	14-Aug-14	5.0	31	02-Sep-14	4.0
42	16-Aug-14	4.0	33	04-Sep-14	4.0
45	19-Aug-14	3.0	35	06-Sep-14	3.0
47	21-Aug-14	3.0	37	08-Sep-14	2.0
49	23-Aug-14	3.0	39	10-Sep-14	2.5
51	25-Aug-14	3.0	41	12-Sep-14	2.5
53	27-Aug-14	2.0	43	14-Sep-14	3.0
55	29-Aug-14	1.3	45	16-Sep-14	2.0
57	31-Aug-14	1.0	47	18-Sep-14	2.0
59	02-Sep-14	1.0	49	20-Sep-14	1.0
Sum		105.8			97.0
Bins/ha		56.9			50.8
% of Standard		112%			100%

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

	Unit	MICROSOIL	Standard
Yield	bins/ha	56.9	50.8
Value of fruit ^α	\$/ha	\$31,864	\$28,448
Cost ^β of inputs relative to standard	\$/ha	+ \$410	
Change in GM/ha	\$/ha	+ \$3,006	

^α Pricing assumptions

- \$20 per box
- 28 boxes/bin
- \$560 per bin

^β Cost of MICROSOIL Liquid fertilizers supplied by MICROSOIL

DISCUSSION AND CONCLUSION:

GENERAL:

Zucchini variety Regal Black from Seminis® was planted during the May-June period as part of routine commercial production on this farm. General environmental conditions were drier than average.

Fertilizer treatments were placed through the sub-surface trickle irrigation. A standard grower fertilizer regime was compared to MICROSOIL fertilizers plus the standard grower programme.

The result of incorporating the MICROSOIL fertilizers with the standard fertilizer program was a 12-13% yield increase above the Standard fertilizer regime. The difference in yield recorded by the bins collected per hectare was also supported by measuring fruit yield on a small plot replicated basis.

The MICROSOIL treated block resulted in an increase in 6 bins/ha of zucchini. At the assumed price of \$560/bin this would mean a superior gross margin of three thousand dollars per hectare as a result of including the MICROSOIL liquid fertilizers.

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APPENDICES:

TABLE 4: SITE FERTILIZER RECORDS

Week	MICROSOIL programme					Standard programme				
	Day	Date	Product	Qty	Unit	Day	Date	Product	Quantity	Unit
1	0	20-May-14	planting			0	07-Jun-14	planting		
2	10	30-May-14	MSL-Calcium & Zinc	40	L	9	16-Jun-14	Magnesium sulphate	50	Kg
	13	02-Jun-14	MSL-Crop starter	40	L	12	19-Jun-14	Magnesium sulphate	50	Kg
			Magnesium sulphate	50	Kg			Mega Kelp	10	L
3	16	05-Jun-14	Magnesium sulphate	50	Kg	14	21-Jun-14	Magnesium sulphate	50	Kg
			Mega Kelp	10	L			MAP	50	Kg
			MSL-Calcium & Zinc	40	L			Micromix	10	L
	18	07-Jun-14	MSL-Crop starter	40	L	16	23-Jun-14	KNO3	50	Kg
			Magnesium sulphate	50	Kg	18	25-Jun-14	CaNO3	50	Kg
			MAP	50	Kg	20	27-Jun-14	KNO3	50	Kg
			Micromix	10	L					
	20	09-Jun-14	KNO3	50	Kg					
4	22	11-Jun-14	CaNO3	50	Kg	22	29-Jun-14	CaNO3	50	Kg
	24	13-Jun-14	KNO3	50	Kg	24	01-Jul-14	Magnesium sulphate	50	Kg
	26	15-Jun-14	CaNO3	50	Kg			MAP	50	Kg
								Mega Kelp	10	L
					26	03-Jul-14	CaNO3	50	Kg	

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Week	MICROSOIL programme					Standard programme				
	Day	Date	Product	Qty	Unit	Day	Date	Product	Quantity	Unit
5	28	17-Jun-14	Magnesium sulphate	50	Kg	28	05-Jul-14	KNO3	100	Kg
			MAP	50	Kg	30	07-Jul-14	CaNO3	50	Kg
			Mega Kelp	10	L	32	09-Jul-14	Magnesium sulphate	50	Kg
			MSL-Maxx	2	L			MAP	50	Kg
	30	19-Jun-14	CaNO3	50	Kg			Micromix	10	L
	32	21-Jun-14	KNO3	100	Kg	34	11-Jul-14	CaNO3	100	Kg
	34	23-Jun-14	CaNO3	50	Kg			Boron	4	Kg
6	36	25-Jun-14	Magnesium sulphate	50	Kg	36	13-Jul-14	KNO3	100	Kg
			MAP	50	Kg	38	15-Jul-14	CaNO3	100	Kg
			Micromix	10	L	40	17-Jul-14	Magnesium sulphate	50	Kg
			MSL-Crop starter	80	L		MAP	50	Kg	
			MSL-Calcium & Zinc	80	L		Mega Kelp	10	L	
			MSL-Pro K Sil	10	L					
			MSL-Nplus	20	L					
	CaNO3	100	Kg							
	38	27-Jun-14	Boron	4	Kg					
			KNO3	100	Kg					
40	29-Jun-14	KNO3	100	Kg						

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Week	MICROSOIL programme					Standard programme									
	Day	Date	Product	Qty	Unit	Day	Date	Product	Quantity	Unit					
7	42	01-Jul-14	CaNO3	100	Kg	42	19-Jul-14	CaNO3	100	Kg					
			MSL-Crop starter	80	L	44	21-Jul-14	KNO3	100	Kg					
			MSL-Calcium & Zinc	80	L	46	23-Jul-14	CaNO3	100	Kg					
			MSL-Pro K Sil	10	L	48	25-Jul-14	Magnesium sulphate	50	Kg					
			MSL-Nplus	20	L			MAP	50	Kg					
			MSL-Maxx	2	L			Micromix	10	L					
	44	03-Jul-14	Magnesium sulphate	50	Kg										
			MAP	50	Kg										
			Mega Kelp	10	L										
	46	05-Jul-14	CaNO3	100	Kg										
48	07-Jul-14	KNO3	100	Kg											
8	50	09-Jul-14	CaNO3	100	Kg						50	27-Jul-14	CaNO3	100	Kg
			MSL-Crop starter	40	L						52	29-Jul-14	KNO3	100	Kg
			MSL-Nplus	40	L						54	31-Jul-14	CaNO3	100	Kg
	52	11-Jul-14	Magnesium sulphate	50	Kg										
			MAP	50	Kg										
			Micromix	10	L										
54	13-Jul-14	CaNO3	100	Kg											

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Week	MICROSOIL programme					Standard programme				
	Day	Date	Product	Qty	Unit	Day	Date	Product	Quantity	Unit
9	56	15-Jul-14	KNO3	100	Kg	56	02-Aug-14	Magnesium sulphate	50	Kg
	58	17-Jul-14	CaNO3	100	Kg			MAP	50	Kg
	60	19-Jul-14	Magnesium sulphate	50	Kg			58	04-Aug-14	Mega Kelp
			MAP	50	Kg	CaNO3	100			Kg
	62	21-Jul-14	CaNO3	100	Kg	60	06-Aug-14	KNO3	100	Kg
10	64	23-Jul-14	KNO3	100	Kg	64	10-Aug-14	Magnesium sulphate	50	Kg
			MSL-Crop starter	40	L			MAP	50	Kg
			MSL-Nplus	40	L			Micromix	10	L
	66	25-Jul-14	CaNO3	100	Kg	66	12-Aug-14	CaNO3	100	Kg
	68	27-Jul-14	Magnesium sulphate	50	Kg	68	14-Aug-14	KNO3	100	Kg
			MAP	50	Kg					
		Micromix	10	L						
11	70	29-Jul-14	CaNO3	100	Kg	70	16-Aug-14	CaNO3	100	Kg
	72	31-Jul-14	KNO3	100	Kg	72	18-Aug-14	Magnesium sulphate	50	Kg
	74	02-Aug-14	CaNO3	100	Kg			MAP	50	Kg
			Magnesium sulphate	50	Kg			Mega Kelp	10	L
	76	04-Aug-14	MAP	50	Kg	74	20-Aug-14	CaNO3	100	Kg
			Mega Kelp	10	L	76	22-Aug-14	KNO3	100	Kg

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Week	MICROSOIL programme					Standard programme				
	Day	Date	Product	Qty	Unit	Day	Date	Product	Quantity	Unit
12	78	06-Aug-14	CaNO3	100	Kg	78	24-Aug-14	CaNO3	100	Kg
	80	08-Aug-14	KNO3	100	Kg	80	26-Aug-14	Magnesium sulphate	50	Kg
	82	10-Aug-14	CaNO3	100	Kg			MAP	50	Kg
										Micromix
					82	28-Aug-14	CaNO3	100	Kg	
13	84	12-Aug-14	Magnesium sulphate	50	Kg	84	30-Aug-14	KNO3	100	Kg
			MAP	50	Kg	86	01-Sep-14	CaNO3	100	Kg
			Micromix	10	L	88	03-Sep-14	Magnesium sulphate	50	Kg
	86	14-Aug-14	CaNO3	100	Kg			MAP	50	Kg
	88	16-Aug-14	KNO3	100	Kg			Mega Kelp	10	L
90	18-Aug-14	CaNO3	100	Kg	90	05-Sep-14	CaNO3	100	Kg	
14	92	20-Aug-14	Magnesium sulphate	50	Kg	92	07-Sep-14	KNO3	100	Kg
			MAP	50	Kg	94	09-Sep-14	CaNO3	100	Kg
			Mega Kelp	10	L	96	11-Sep-14	Magnesium sulphate	50	Kg
	94	22-Aug-14	CaNO3	100	Kg			MAP	50	Kg
	96	24-Aug-14	KNO3	100	Kg			Micromix	10	L
15	98	26-Aug-14	CaNO3	100	Kg	98	13-Sep-14	CaNO3	100	Kg
	100	28-Aug-14	Magnesium sulphate	50	Kg	100	15-Sep-14	KNO3	100	Kg
			MAP	50	Kg	102	17-Sep-14	CaNO3	100	Kg
			Micromix	10	L	104	19-Sep-14	Magnesium sulphate	50	Kg
										MAP
							Mega Kelp	10	L	