Results Summary

Assessment of biofertilisers for field-grown fresh market tomato production

Chris Monsour – Prospect Agriculture

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Site details

Location	Prospect Agriculture Research Farm 14 Kelsey Road, Bowen, Queensland 4805 Australia
GPS co-ordinates	-20.010608 S; 148.187361 E
Soil type	Sandy loam
Crop	Tomato (field-grown indeterminate)
Trial design	Randomised complete block
Replications	4
Plot size	2 rows x 10 m (50 plants per plot)
Plant spacing	40 cm
Row spacing	1.5 metres
Plant density	16,668 plants/ha
Transplant date	09/05/19
Harvest dates	8 harvests between 24/07/19 and 27/08/19
Irrigation type	Sub surface drip tape under plastic mulch

Treatments

1. Untreated control (nil N applied)
2. 100% inorganic N (103 kg N/ha)
3. 100% inorganic N (103 kg N/ha) + bacteria (Bioreactor or Flask)
4. 60% of the recommended N rate (62 kg N/ha)
5. 60% of the rec N rate (62 kg N/ha) + bacteria (Bioreactor or Flask)
6. 60% of rec N with 31 kg N/ha as Inorg + 31 kg N/ha as ecoNPK
7. 60% of rec N with 31 kg N/ha as inorg+ 31 kg N/ha as ecoNPK + bacteria (BioR or Flask)

Prospect Agriculture Pty Ltd
14 Kelsey Road, Bowen, Queensland 4805 Australia
Phone: +61 7 4785 2875 Fax: +61 7 4785 2857

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Trial site after treatments were applied and seedlings transplanted, 09/05/19

Results

Table 1. Mean tomato fruit yield for seven fertiliser treatments.

No.	Treatment	Mean no. of fruit/plant	Mean total weight of fruit/plant (kg)	Theoretical fruit yield‡ (t/ha)
1	Untreated control (nil N applied)	31.8 a	4.74	79.0
2	100% of recommended N (inorganic)	45.5 b	6.25	104.2
3	100% of rec. N as inorganic + Bacteria	44.0 b	6.47	107.8
4	60% of rec. N as inorganic	43.3 b	6.12	102.1
5	60% of rec. N as inorganic + Bacteria	44.8 b	6.66	110.9
6	30% of rec. N as inorganic + 30% of rec. N as EcoNPK	46.2 b	6.66	111.1
7	30% of rec. N as inorganic + 30% of rec. N as EcoNPK + Bacteria	45.0 b	6.44	107.3
***P*-value**		0.0099	0.1554	0.1554
LSD (5% level)		7.39	NA	NA

Means within columns followed by the same letter are not significantly different at 5% level of significance.
‡ - theoretical fruit yield = mean total weight of fruit harvested/plant x number of plants/ha (10,000/row spacing of 1.5 m/plant spacing (m))

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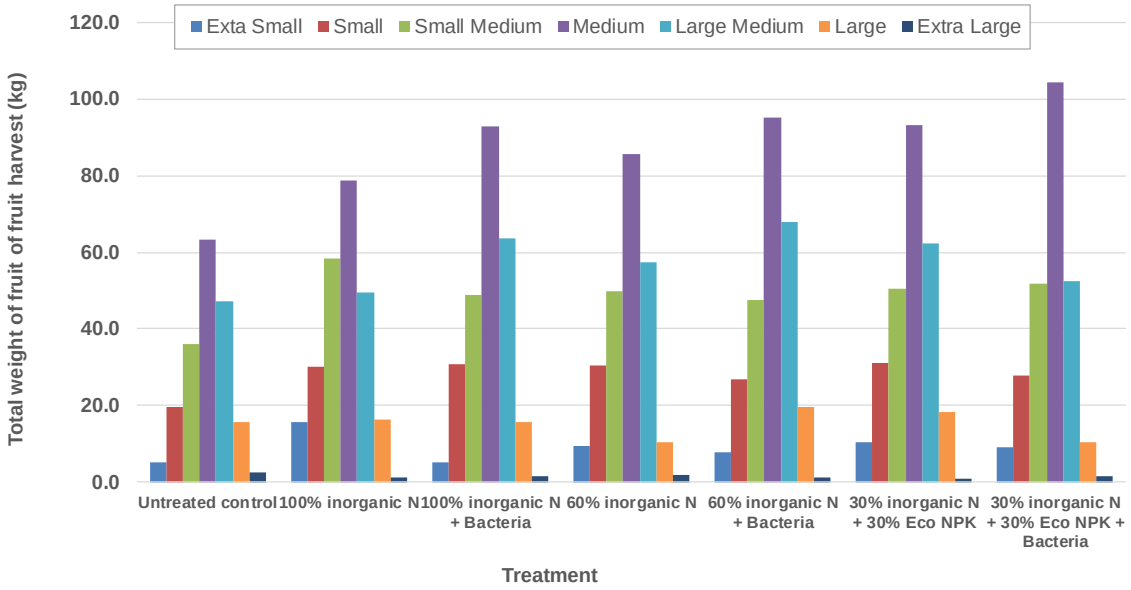


Figure 1. Total weight of fruit in each size category.

Table 2. Mean weight of tomato fruit in various size classes for seven fertiliser treatments.

No.	Treatment	Mean weight of fruit/plant in each size class (kg)						
		Extra Small	Small	Small Medium	Medium	Large Medium	Large	Extra Large
1	Untreated control	0.10	0.49	0.90	1.58	1.18	0.39	0.07
2	100% inorg N	0.33	0.75	1.46	1.98	1.24	0.41	0.03
3	100% N + Bacteria	0.12	0.77	1.23	2.32	1.59	0.39	0.04
4	60% inorg N	0.23	0.76	1.25	2.14	1.43	0.26	0.05
5	60% inorg N + Bacteria	0.19	0.67	1.19	2.38	1.70	0.49	0.03
6	30% inorg N + 30% EcoNPK	0.24	0.78	1.26	2.33	1.56	0.46	0.03
7	30% inorg N + 30% EcoNPK Bacteria	0.21	0.70	1.30	2.61	1.31	0.26	0.04
***P*-value**		0.3250	0.1671	0.1353	0.0547	0.8496	0.9357	0.9402
LSD (5% level)		NA	NA	NA	NA	NA	NA	NA

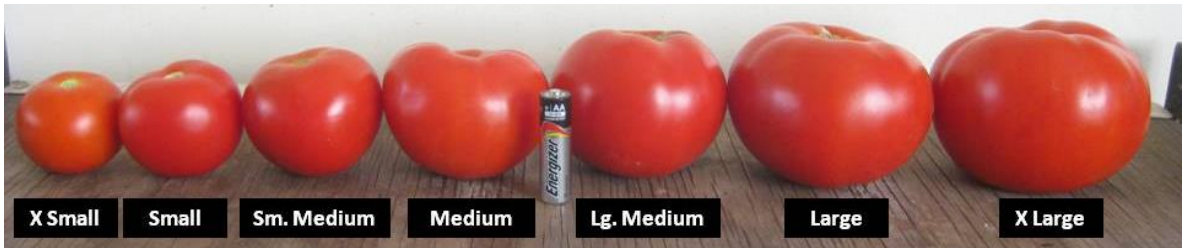
Means within columns followed by the same letter are not significantly different at 5% level of significance.
NA – not applicable since P>0.05

Table 3. Percentage of total weight of harvested fruit in each size class for seven fertiliser treatments.

No.	Treatment	Percentage of total weight (%)						
		Extra Small	Small	Small Medium	Medium	Large Medium	Large	Extra Large
1	Untreated control	3.3	11.1	19.3	33.3	23.7	8.0	1.2
2	100% inorg N	6.8	13.1	25.1	31.4	17.6	5.7	0.4
3	100% N + Bacteria	2.1	12.7	19.5	36.0	23.5	5.5	0.6
4	60% inorg N	4.0	13.6	21.5	34.3	22.1	3.9	0.8
5	60% inorg N + Bacteria	3.0	10.2	18.0	35.8	25.2	7.4	0.5
6	30% inorg N + 30% EcoNPK	4.1	12.2	19.5	35.2	22.6	6.2	0.3
7	30% inorg N + 30% EcoNPK Bacteria	3.5	10.8	20.3	40.6	20.2	4.0	0.6
***P*-value**		0.5131	0.9164	0.6698	0.0919	0.7849	0.8030	0.7045
LSD (5% level)		NA	NA	NA	NA	NA	NA	NA

Means within columns followed by the same letter are not significantly different at 5% level of significance.
NA – not applicable since P>0.05

Percentage of total weight of harvested fruit in each size class



Designated standard size classes for tomato fruit.

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