

Tomato Field Trial

Location	Block 11(South), TREC, Homestead, FL.
Experimental design	RCBD (4 replications)
Irrigation	Drip
Plot size	30 ft * 3 beds = 90 ft
Harvest unit	One bed, 30 ft, 10 plants
Total area	90 ft * 68 plots = 6,120 ft or 0.85 acre
Sorghum Sudan grass	Planted on 8/28/14(40-70 lbs/acre) and cut on 9/30/14
T-Tape drip tape	8 inches spacing, 0.34 gpm/100ft
Plastic mulch	Poly 60 X5200 white on black
Pre-plant Fertilizer application	Oct. 29
Pre-plant herbicide	Sandea at 1 oz/acre
Insecticide/Nematicide	Vydate at 2 pt/acre every two weeks by drip chemigation
Planting date	Nov. 6, 2014
Variety	Ridgerunner (<i>Lycopersicon lycopersicum</i>)
Bed spacing (center to center)	6 ft (LBF = 7,260)
Bed height	8 inches
Bed width	3 ft
Plant spacing	18 inches or 1.5 ft
Plant population	6,120 ft/1.5 ft = 4,080
(N-P ₂ O ₅ -K ₂ O) 100 lb/acre	1.24 lb/plot = 562.45 g/plot = 187.48 g/bed/plot
Row run	East-West
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Parameters to be evaluated:

- Yield: ten plants of tomato will be manually harvested three times at the mature-green stage and fruits will be graded into marketable yield size categories in the field using a portable grading table.
- Postharvest: in each tomato trial, a subsample of twenty fruits at the first harvest will be collected, washed with chlorinated water, dried, treated with ethylene and ripened at 20 °C with 85% to 90% relative humidity. After 10 to 15 days of ripening, fruit color will be rated based on Florida Tomato Committee's standards and firmness, soluble solids content, total titratable acidity will be measured.
- 6 times soil sampling every two weeks.
- 3 times tissue sampling every four weeks.
- Leachate collection every two weeks (T1, 3, 5, 6, 7, 8, 11).

Table 1. Treatments of nitrogen (N), phosphorous (P) and potassium (K) used to grow tomatoes during winter season in Homestead, FL.

Treatment	N (Urea-NH ₄ NO ₃)		P ₂ O ₅ (TSP)		K ₂ O (K ₂ SO ₄)	
	Rate (lb/acre)	Placement (banding / drip injection)	Rate (lb/acre)	Placement (banding)	Rate (lb/acre)	Placement (banding / drip injection)
T1	0	0	160	160	160	60 / 100
T2	50	0 / 50	160	160	160	60 / 100
T3	100	50 / 50	160	160	160	60 / 100
T4	150	0 / 150	160	160	160	60 / 100
T5	200	50 / 150	160	160	160	60 / 100
T6	300	150 / 150	160	160	160	60 / 100
T7	200	50 / 150	0	0	160	60 / 100
T8	200	50 / 150	60	60	160	60 / 100
T9	200	50 / 150	100	100	160	60 / 100
T10	200	50 / 150	200	200	160	60 / 100
T11	200	50 / 150	240	240	160	60 / 100
T12	200	50 / 150	160	160	0	0
T13	200	50 / 150	160	160	60	0 / 60
T14	200	50 / 150	160	160	100	40 / 60
T15	200	50 / 150	160	160	200	100 / 100
T16	200	50 / 150	160	160	240	140 / 100
T17	200	50 / 150	160	160 (broadcasting)	160	60 / 100

Fig. 1 The map of experimental plot design. The same color means the same injection.

