

High Tunnel Heirloom Tomato Variety Trial

West Florida Research and Education Center – Jay, FL



Table 1. Experimental Conditions

Experimental Design	CRBD (4 reps)
Irrigation	Drip tape
Plot size	13 ft 5 in
Plants Harvested per Plot	9
Planting Date	8/26/2015
Bed Spacing	5 ft.
Plant population per Acre	5,808
Plant Spacing	18 in
Bed Width	22 in
Row run	North - South
1st Harvest Date	10/29/2015
Planting to 18th Harvest	18 weeks

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Five varieties of heirloom tomatoes were grown with four replications in a high tunnel system using plasticulture and fertigation. A 10-10-10 preplant fertilizer was applied in an amount estimated to provide 40% of crop needs (80 lb/A nitrogen). In addition 13-2-13 water soluble fertilizer was applied as needed through injection into the drip irrigation system. Petiole sap testing was performed at various times throughout the trial to determine if nitrogen and potassium levels were in line with University of Florida IFAS recommendations for field tomatoes and the fertilizer applications were adjusted as needed.

Three metal y-frame trellis supports were installed at the ends and middle of the high tunnel structure with each side of the y-frame suspended over a row so that each frame would support two rows. Metal wire was strung with turn-buckles between the supports allowing the wires to be tightened as the weight of the plants increased. Transplants were planted August 26, 2015. Once the plants were established they were trained to the trellis system using nylon hangers, clipping the plants to the string as they continued to grow and leaning and lowering the plants as they passed the top of the trellis wire. Suckers were clipped and flower clusters were kept to 4-6 flowers. A 50% shade cloth was used from August to the end of October. The first harvest was on October 29, 2015, eight weeks after transplant, and fruit was harvested through the first of January, approximately eight weeks. Fruit was harvested at the breaker stage twice a week. Fruit was weighed and graded as #1's, #2's, and culls with local, direct-to-consumer fresh market sales in mind.

Early in the trial there was a small amount of *Lepidoptera* damage. *Bacillus thuringiensis* was sprayed in order to prevent further damage. Trap crops of sorghum and sunflower were planted at the north and south ends of the tunnel. The trap crops worked very well in intercepting leaf-footed bugs (*Leptoglossus spp.*). As a result of the use of these traps crops very few leaf-footed bugs were observed in the production area. Production was limited as a result of the fungal disease Leaf Mold (*Fulvia fulvum*). When symptoms were discovered the crop was treated with the OMRI-listed fungicides Serenade and Copper Hydroxide. The disease was suppressed but not eradicated from the trial.

At the end of production 1453 tomatoes were harvested. The results were a total of 1145 lbs.: 729 lbs. of #1's, 344 lbs. of #2's, and 81 lbs. of culls. Final harvest was January 8, 2016.

The data were analyzed to determine if any cultivars yielded significantly higher than others and would be good choices for fall high tunnel production for local growers. The data showed no differences between the five cultivars.

German Johnson yielded ~64 lbs/plot of 9 plants. This cultivar could potentially yield ~34,000 lb/A. Previous trials have shown the top hybrid varieties to yield as much as ~60,000 lb/A in a high tunnel system using organic production methods. A grower would need to command a premium price to justify growing an heirloom cultivar in this system. There is great potential for high tunnel tomato production in northwest Florida. These cultivars show great promise but should be used on a trial basis until several years of data can show a consistent performance in the system. Other cultivars need to be trialed in the system as well.

A special thanks to Johnny's Select Seeds for providing the seeds for the trial.

Table 2. High Tunnel heirloom tomato cultivar trial – Jay, FL 2015.

	Total Number ^z	Total Weight ^z	No. 1 fruit ^{zy}	No. 2 fruit ^z	Culls ^z
'Striped German'	58.8	48.740	27.985	16.522	3.779
'Black Krim'	81.3	57.978	37.490	16.067	4.418
'Cherokee Purple'	80.8	56.959	37.354	17.416	4.358
'Great White'	74.0	58.557	36.253	19.285	3.240
'German Johnson'	68.5	64.091	43.166	16.800	4.534

^zMeans were not significantly different (P=.05, LSD)

^yGrades were determined with local direct sales in mind: