2021 LUBBOCK COUNTY TOMATO VARIETY TRIAL

Texas A&M AgriLife Extension

WHY A TRIAL

One of the most frequently asked questions from Lubbock backyard gardeners is, "What is the best tomato for Lubbock?". Our climate is so different than other parts of the state, that it makes our region's ability to grow edible plants unique and in need of further study. In order to accurately respond with the most up-to-date information, a variety trial as close as possible mimicking a backyard garden is the only way to provide this information.

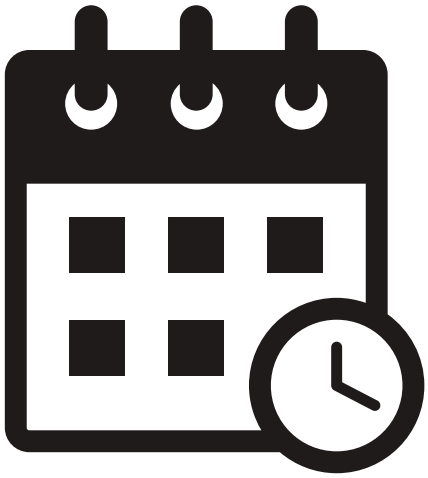
WHAT IS A VARIETY TRIAL

Our variety trial consists of experiments by which a set of locally purchased tomato cultivars is assessed to make overall recommendations for Lubbock County gardeners. This variety trial report includes detailed information about yield, growing style, and quality traits for the varieties evaluated. High performing varieties will be added to recommended vegetable variety lists and shared in other educational manners.

WHO DID THE TRIAL

This tomato variety trial was designed by Christina Reid, Lubbock County Extension Horticulture Agent. Volunteers from the Lubbock Master Gardeners Association, Growing Together Texas, Texas A&M Research Center at Lubbock, and the South Plains Food Bank GRUB Farm all played integral roles in these experiments and are greatly appreciated.

WHEN WAS THE TRIAL



Tomatoes are warm season vegetable plants and, therefore, need to be planted after the danger of freezing temperatures is over- on average April 15 in Lubbock County. In 2021, we had a late freeze on April 17 and lingering low temperatures, so planting of the locally purchased tomato transplants occurred on April 26. The warm seasonal temperatures continued on without a freeze well past the average first freeze date of October 31, so trial data was collected until November 1 in order to not skew the average length of the growing season.

WHERE WAS THE TRIAL

With the focus of the tomato variety trial being to mimic how Lubbock County gardeners grow tomatoes and gather results, tomatoes were grown in various locations in various growing styles including in the ground and in a high tunnel. Thank you to the South Plains Food Bank GRUB Farm for donating usage of a high tunnel in exchange for tomato fruit donations.

HOW WAS THE TRIAL CONDUCTED

Plant growing details will be broken down by growing style and location.

South Plains Food Bank GRUB Farm High Tunnel

The high tunnel measures 31'x96' with open ends on the north and south. It sits on native, un-amended and highly compacted sandy soil with numerous weeds present. After several early season mowings, (4) 182' rows of drip line irrigation is added (91' run then loop back around) and tied into the farm's well water. On April 25, the irrigation system was left on for many hours to deeply saturate the soil in preparation for planting the next day.

Tomato plant varieties were purchased in sets of (4) from local nurseries and big box stores at random, except to not duplicate, in either 4" pots or a six pack dependent on availability. Once varieties became scarce in stores, others grown from seed by volunteers were added into the high tunnel growing style trial. On April 26, tomato transplants were planted 2' on center directly in the soil between the irrigation rows and each plant received (4) 1 gallon per hour irrigation emitters on the drip line. No soil additives or amendments were made. No fertilizer nor other plant stimulate was ever applied. No mulch nor weed suppression was ever applied. The plants were then watered in until the root zones were adequately wet.

One experiment that originated at planting time in the high tunnel was the use of different caging styles. Tomato plants are actually vines and require a support system to keep them off the ground in order to lower pathogen and pest stressors. Row A had typical 2' round galvanized metal tomato cages- 1 per plant to simply provide plant support. Row B also had typical 2' round galvanized metal tomato cages but the sides were wrapped in plastic from top to bottom in hopes to provide some wind protection. Row C had a Florida weave type system consisting of metal T posts every 10' and strong twine woven between each plant and then tied to the T post. Row D had no support system at all and plants were allowed to grow on the ground freely.

Example of caging style on Row A

Example of caging style on Row B

Example of caging style on Row C

Example of caging style on Row D

Even though we experienced more rainfall and cooler than average temperatures in the spring, the drip irrigation ran approximately every 3 days for 1.5 hours as the high tunnel plastic blocked most rainfall from entering the interior of the tunnel. Weeds immediately became an issue and removal by hand and tool began a daily chore. Both irrigation and weeding schedules continued throughout the season.

Our first harvest occurred on June 18, 2021 and varieties harvested were all cherries- (2) Chocolate Cherry, (5) Orange Zinger, (1) Sugar Rush, and (7) Sungold. Harvesting continued to occur twice a week until October, then down to once a week.

As mentioned, weeds were a constant problem without the use of mulch or herbicides. Weeds invite and harbor pests that can spread pathogens, and can make working amongst your plants miserable. One such pest that found its way into the high tunnel was the army worm. These small caterpillars did major damage in mid July and warranted the use of an insecticide labeled for both army worms and tomato plants in order to save the crop. Three applications were needed to fully eradicate the pest from the trial site.

With the large amount of rainfall, Blossom End Rot (BER) became an issue early in the season with varieties planted close to the sides of the high tunnel. Blossom End Rot by definition is caused by calcium deficiency but in our area calcium is easily tied up in the soil by irregular watering patterns, such as those brought by substantial constant heavy rains over a long period of time. Eventually, once the weather evened out, BER also faded away and the effected plants produced healthy fruits. No intervention was needed.

Another problem caused by the large amount of rainfall was fruit cracking. Fruit cracking can be caused by the rapid uptake of water by the fruit, or by fruits and plants that grow too quickly because of excessive nitrogen. With sandy soil, no fertilizer applications, and the timing of the cracked fruits, we can conclude the cause to be the large amount of rainfall. The plants quickly recovered and produced normal fruits after the heavy storm season passed.

Army worm pest

WEEDS!

La Roma with Blossom End Rot

RESULTS

The results of the trial in the high tunnel are quite astonishing considering no soil amendments were ever applied, no fertilizers or other plant stimulants were ever applied, and the plants were only given a pesticide treatment when danger of loosing the entire crop was present. Here are the results starting with the top producer by weight yield.

1. 'Red Rocket'

This determinate variety was grown locally from seed. This compact, bushy plant produced 46.2 lbs. and 177 of almost blemish free 8-10oz. fruit. While not an early producer in our trial, even though it is noted to be 60 days, the first harvest was 7/15/21. Its production was average to strong through the heat of the summer and really took off like a rocket once the heat broke in mid September. These plants were purposely up rooted on 11/1/21 to end the trial with 30 green tomatoes and covered in flowers. It was one of my favorite tasting tomatoes and I was excited to be harvesting such heavy yields so late into the season from it.

2. 'Celebrity'

This semi-determinate variety was purchased locally and used as a control since it is an old standard, basic variety to grade other varieties off of. It produced 45.301 lbs. and 213 8-10oz. fruit. Resistant to verticillium wilt (V), fusarium wilt (F), nematodes and tobacco mosaic virus (ToMV) and true to its 70-day timeline, our first harvest from it was 7/9/21. It did stall production at the peak of the summer heat but quickly set fruit again in mid September. These plants were purposely up rooted on 11/1/21 to end the trial with 10 green tomatoes and several flowers.

3. 'Delicious'

This interdeterminate variety was was purchased locally and was the biggest surprise of the whole trial! It produced multiple incredibly large, some over a pound, with fruit on the same plant. As listed, the fruit can be 14-48oz. and we found this to be true, even in Lubbock! What was disappointing was even listed at 77 days, we did not get our first harvest until 9/8/21. It produced 35.423 lbs. and 80 fruits from 9/8/21 to 11/1/21, so perhaps this variety should be grown as a fall crop in Lubbock. These plants were purposely up rooted in 11/1/21 with one large, almost 1 lb., green fruit.

4. 'Super Fantastic'

This interdeterminate variety was purchased locally. It produced 30.05 lbs. and 138 10 oz. fruit- although most of our harvest was considerably smaller than 10 oz.. Resistant to verticillium wilt (V), fusarium wilt (F), and nematodes, the plants did not begin to produce until 8/2/21 but then continued heavily through the fall.

5. 'Black Krim'

This interdeterminate heirloom variety was purchased locally. This leggy, unruly plant produced 29.996 lbs. and 92 8 oz. fruit dark maroon beefsteak- most with blemishes. The first harvest was 8/5/21, staying true to its 90-day label. The plant suffered greatly from blight and spider mites but had a huge harvest on 9/1/21 with 78 fruits. Even with green shoulders, the highly lobed fruits were easy to see when harvesting.

6. 'Shady Lady'

This determinate variety was grown locally from seed and produced 28.744 lbs. and 87 6-10 oz. fruit on relatively compact plants. Resistant to verticillium wilt (V), fusarium wilt (F), and true to its 73-day timeline, our first harvest was 7/15/21. It did produce steadily throughout the whole season. Make sure to use a mulch with this variety as it tends to set fruit near the ground.

7. 'Bushy Early Girl'

This determinate variety was grown locally from seed and lived up to its EARLY name with the first harvest on 7/1/21. It produced 28.528 lbs. and 166 fairly blemish free 6 oz. fruit. Resistant to verticillium wilt (V), fusarium wilt (F), nematodes and tobacco mosaic virus (ToMV), I would definitely grow this for early tomatoes in Lubbock.

8. 'Phoenix'

This determinate variety was grown locally from seed and produced 27.549 lbs. and 102 crack resistant 10-12 oz. fruits. Resistant to verticillium wilt (V), alternaria stem canker (Aal), gray leaf spot (Ss) and verticillium wilt (V) and true to its 72-day timeline, our first harvest from it was 7/19/21. Fruit quality suffered greatly from army worm outbreak.

9. 'Jet Star'

This interdeterminate variety was purchased locally and produced 27.062 lbs. and 123 crack-resistant, low acidity 8-9 oz. fruit. Resistant to verticillium wilt (V), fusarium wilt (F), its harvest was sizeable starting 9/1/21 onwards. Even though this plant is interdeterminate, it stayed relatively compact and manageable.

10 .'Cherokee Purple'

This interdeterminate heirloom variety was purchased locally. It did take all of 90 days and more to produce 24.08 lbs. and 74 10-12 oz. beautifully colored fruit - with the first harvest being 9/3/21 . I found it incredibly difficult to see the fruit because of its green shoulders blending in well with foliage and weeds. Taste is best when fruit is left to fully ripen on the vine.

11.'Orange Zinger'

This interdeterminate variety was locally purchased and produced 21.764 lbs. and 948 1.5-2 oz. true orange, crack resistant fruit. Resistant to tomato mosaic virus (ToMV) and fusarium wilt (F), and true to its 60-day timeline, it was one of the first varieties harvested on 6/18/21. Despite taste challenges, I could make out the citrusy aromas and a gingery zing! I will continue to grow this new to me variety in my garden.

12.'La Roma'

This determinate variety was grown locally from seed and had its first harvest on 7/12/21 with major Blossom End Rot damage from late spring storms. It produced 21.269 lbs. and 151 5-8 oz. fruit great for canning or sauce and eventually outgrowing the BER. Resistant to fusarium wilt (F) and tobacco mosaic virus (ToMV), this tomato was up rooted on 11/1/21 with 25 green fruits.

13. 'Sugar Rush'

This interdeterminate variety was purchased locally and produced 19.584 lbs. and 1498 dewdrop-shaped, grape tomato .5-1 oz. fruits. Despite being one of the first varieties harvested on 6/18/21, this plant succumbed to blight very quickly and was up rooted on 9/16/21.

14.'Lemon Boy'

This bright yellow interdeterminate variety was purchased locally, produced 18.451 lbs. and 110 7-8 oz. fruit. Resistant to nematodes, alternaria stem canker (Aal), tobacco mosaic virus (TMV), gray leaf spot (Ss), tomato spotted wilt virus (TSWV) verticillium wilt (V), and fusarium wilt (F). Despite its 75-day label, this tomato did not produce until 9/3/21 and produced huge amounts until 10/8/21 when it quickly retreated. These fruits were highly visible in the garden and easy to harvest!

15 . 'Chocolate Cherry'

This interdeterminate heirloom variety was purchased locally and was one of my favorites aesthetically! It was one of the early varieties to produce on 6/18/21 and produced a total of 18.437 lbs. and 819 1.5-2 oz. stunning fruit. I found it difficult to tell when fruits were ripe since shoulders were deep purple and only undersides turned red when ripe. These plants were purposely up rooted in 11/1/21 with 55 green fruit.

16.'Mr. Stripey'

This interdeterminate heirloom variety was locally purchased and produced 17.822 lbs. and 30 14-48 oz. beefsteak blemished fruit. This plant struggled with with blight and every fruit was blemished but it was able to produce in the month of September only.

17.'Red Snapper'

This determinate variety was grown locally from seed and had its first harvest on 7/12/21. It produced 17.559 lbs. and 80 8-10 oz. fruit. Resistant to alternaria stem canker (Aal), gray leaf spto (Ss), tomato spotted wilt virus (TSWV), verticillium wilt (v), tomato yellow leaf curl virus (TYLCV), and fusarium wilt (F), this tomato was up rooted on 11/1/21 with 7 green fruits.

18. 'Sungold'

This popular interdeterminate variety was purchased locally and produced 17.528 lbs. and 1491 1-2 oz. fruits. Despite being one of the first varieties harvested on 6/18/21, the yellow to orange fruits crack easily and often so watch your water schedules. This variety is resistant to tomato mosaic virus (ToMV) and fusarium wilt (F). This is variety often found in grocery stores and farmers markets.

19.'Champion'

This interdeterminate variety was purchased locally and produced 16.88 lbs. and 101 6-8 oz. fruit. Resistant to nematodes, tobacco mosaic virus (TMV), verticillium wilt (V), tomato yellow leaf curl virus (TYLCV) and fusarium wilt (F). True to its 65-day label, this tomato first produced on 7/12/21 but had a huge harvest on 9/3/21 with 71 fruits.

20. 'Campari'

This interdeterminate cocktail variety was grown from seed locally and was one of my favorites for flavor and appearance! Despite its 80-day label, it was one of the earlier varieties to produce on 6/24/21 and produced a total of 16.094 lbs. and 326 2-4 oz. stunning fruit. Resisistant to tobacco mosaic virus (TMV), this variety is also found in grocery stores and used by high-end chefs. My favorite for making pizza sauce! These plants were purposely up rooted in 11/1/21 with 6 green fruit.

21. 'Mountain Spring'

This determinate variety was grown locally from seed and produced 15.101 lbs. and 54 8-10 oz. fruit. Resistant to cracking, blossom end rot (BER), verticillium wilt (v), and fusarium wilt (F), I had hoped this variety would have trialed better. It produced in July, and then again September-October.

22. 'Siletz'

This determinate early variety was grown locally from seed and had its first harvest on 7/15/21. It produced 10.552 lbs. and 85 7-10 oz. parthenocarpic (seedless) fruit. Resistant to verticillium wilt (v), and fusarium wilt (F), I was disappointed with its fruit quality and appearance.

23. 'Super Sweet 100'

This popular interdeterminate variety was purchased locally and produced 6.196 lbs. and 995 1 oz. fruits on long branched clusters. Despite being one of the earlier varieties harvested on 7/1/21, the small red fruit has a high sugar content. Resistant to verticillium wilt (v) and fusarium wilt (F). This is variety often found in grocery stores and farmers markets.

24. 'Heatmaster'

This determinate variety was grown locally from seed and produced 2.046 lbs. and 15 7 oz. fruit. Despite being resistant to nematodes, alternaria stem canker (Aal), gray leaf spot (Ss), verticillium wilt (V), and fusarium wilt (F), it had major issues with blight and was up rooted on 8/1/21.

25. 'Black Prince'

This interdeterminate heiloom variety was purchased locally, even with a description meant for cooler climates. It really struggled from transplanting and only produced a total of 1.282 lbs. and 11 2-5 oz. fruit.

Caging style on Row A- this style of caging did provide adequate plant support.

Caging style on Row B- this style of caging did provide adequate plant support and wind protection.

Caging style on Row C- this style of plant support created sprawling, unruly plants that didn't not aid in weed control or harvesting. Several layers of twine was needed to support plants. DO NOT RECOMMEND!

Caging style on Row D- this lack of plant support aided in the decline of plants, poor production, improper weed control and foot traffic damage. DO NOT RECOMMEND!