Results of a qualitative trial of tomato varieties in an Auckland home food garden (warm temperate zone)

Or: what golden/orange tomato varieties grow well in Auckland, New Zealand?

By Heather Powell

Abstract

Golden/orange tomatoes are high in a readily absorbed form of lycopene and some grew as readily as red forms in an Auckland, New Zealand home food garden. This trial compared 15 varieties of orange, red, yellow, green and black forms for vegetative growth, fruit quality and quantity. Of the golden/orange varieties, 'Moonglow' provided large harvests from vigorous vines over an extended time. Cherry varieties – 'Sweet 100' and 'Baxter's Early Bush Cherry' [both red forms] provided tasty fruit for an extended harvest with minimal care. Other varieties performed less well.

Plants covered with insect mesh nets were protected from insects, strong wind, cross-pollination, and contributed to quality fruit production.

Background

Tomato varieties range in colour from standard red through yellow, orange, purple to black. Research by Mark Christensen, Heritage Food Crops Research Trust, into lycopene availability noted that orange tomatoes have a different form of lycopene [tetra-cis-lycopene] than red ones [trans-lycopene]. Lycopene from raw orange tomatoes is readily absorbed by our digestive systems whereas red ones need to be cooked for the lycopene to be absorbed. We, along with many people, eat a lot of fresh tomatoes so this was interesting information.

I wished to trial orange tomato varieties. Many orange varieties are heritage/heirloom varieties with thin skin and are unavailable commercially here.

As a member of Auckland Seed Savers, I saw an opportunity to add to the diversity of varieties and maintain seed lineages of quality nutritional varieties appropriate for conditions here. I could grow these varieties and add new seed to the seedbank and information about the varieties I trialled. I could also taste-test the unknown orange varieties and (hopefully) grow quality fruit which we liked to eat.

Home food gardeners have different requirements for their crops than commercial growers:

- Extended harvests are preferable.
- Hand-picking rather than by machine so skin strength and ability to withstand hard knocks is of low importance.
- Shelf-life is less important when storage occurs on the plants in the garden.
- Ability to select for nutrient levels and taste
- Ability to resolve pest and disease issues in different ways.

Expanding options for home food gardeners in their choice of varieties played a part in my decision to record results of our experiment.

Method

This qualitative experiment is indicative only, lacking replication or absolute identical conditions. It does however replicate conditions found in home gardens, with all their diversity, so is useful to provide some indications.

I acquired seed of orange varieties from Bristol's Seeds, in Whanganui, and grew a collection in our small yard in South Auckland. I also grew other tomato varieties for comparison.

We had lived in the house for 1 year. The small yard is terraced and slopes gently facing North East (morning sun here). Soil is clay base and we have focussed on improvement with compost, mulch, liquid (organic) fertilizer, worm juice, lime (a long way to go yet so results are representative of many home garden soil states).

Each seedling's planting hole was given a large spoon of milk powder [to provide high calcium levels to minimise blossom end rot] prior to planting and the seedling was gently watered in.

Stakes and support cages up to 2m [6 feet] tall were installed.

Seedlings were initially surrounded by plastic bags for protection from cold, wind, and pests. These were removed when plants out-grew them.

Insect mesh nets protected 4 varieties from pests, strong winds and to minimize cross pollination.

All seedlings were fed and watered regularly.

When the weather turned warm and humid [mould inducing weather] I checked regularly and, if I noticed any beginning, I gave a spray of 1:10 milk in water with a pinch of bicarbonate of soda and 1 drop detergent/ litre. This resolved fungal issues and we lost no plants directly to fungal disease. Any diseased leaves were removed regularly to maintain general health of the plants. Some plants seemed more susceptible to disease than others.

Results

Table 1: Results of tomato trial in an Auckland home food garden 2014-15.

Tomato variety	Rating for vibrancy of vegetative growth	Rating for quality of fruit produced	Relative quantity of fruit produced	Early/mid/late fruiting	Comments
Moonglow (beefsteak type)	+++++	+++++	++++++	Started early and still producing in April!	Inside insect mesh cage. Best and longest cropper Delicious flavour
Orange flesh Purple Smudge	+++	+++	+++	Later	In insect mesh cage.
Tangella	+	+	+		Fruit split whereas no other variety's fruit did so
Amish Orange Sherbet (beefsteak type)	++++	+++	++	Late! April-May	Late small crop of very large fruit from a vigorous vine.
Amish Yellowish Orange Oxheart	++	+	+	Mid	Poor growth and crop
Aunt Gerties Gold (beefsteak type)	++++	++	+++	Mid	One plant under net fruited later than one not netted which grew enormously, needing extra supports even though it was diseased and pest infested.
Branscombe Orange	+	++	+	Mid	Poor growth and fruit production
Small Sweet Orange (cherry)	+	+	+	Mid-late	Poor growth and fruit production
Other varieties grown nearby					
Tangerine (orange variety)	+	+	+	Mid	Green shield bugs [Stink bugs] sucked juices from the fruit severely
Green zebra	++	++	++	Mid-late	Won a taste test by 'Diggers Seeds' so we tried it. They were tasty fruit.
Clementine [yellow cherry]	+++	+++	+++	Mid-late	Prolific – many clusters, each with many fruit on a vigorous vine
Black cherry	++++	++++	++++	Mid-late	Many tasty fruit on a large vigorous vine
Red tomato varieties grown					
Baxter's Early	+++	+++	+++	Early-mid	A good bush variety (<lm

Bush cherry					tall) with a constant supply of fruit for a long time.
Sweet 100	+++	+++	+++	Early-mid	A nice red cherry. A staking variety which sprawls if uncontained. Tasty fruit.
Self-sown red varieties from compost	+++	++	+++	Mid	Were left to grow where they emerged. For red ordinary tomatoes, they were good ones

Analysis:

It's amazing how different the outcomes were.

Some plants grew really well in size, leaf production, vigour and apparent health. Some grew poorly. These appeared unrelated to whether the variety was bush or staking.

Some fruited well, some poorly - not necessarily related to vegetative growth.

Some began fruiting early (in early summer) whereas some only began fruiting in late autumn (which extended our harvest).

Plants inside fine mesh cages grew better than those unprotected. The mesh also protected plants well from wind which was a big factor later in the season for unprotected plants. Plants of 'Moonglow' in full sun all day in a cage did best. 'Moonglow' growing unprotected were later to fruit and less productive. The variety 'Moonglow' was a wonderful success this year - with strong, vigorous vegetative growth producing an abundance of large, meaty, tasty fruit.

Plants of 'Orange Flesh Purple Smudge' (good growth and fruit), Amish Orange Sherbet (a beefsteak variety with just a few huge fruit; juicy and delicious) grew against a wall with morning sun were slower to grow and fruit in their cage; yet this was beneficial as they fruited into autumn, extending our harvest.

'Aunt Gerties Gold' had exceedingly vigorous vegetative growth, even unprotected, yet suffered much from disease and sucking pests making fruit dry and hard.

Cherry type tomatoes, Sweet 100 (a vigorous vine produced sweet fruit over an extended harvest, even unprotected although the vine suffered from mould growth)and Baxter's Early Bush cherry (a smaller bush variety consistently produced fruit over a long time). Yellow Clementine gave prolific fruit of OK flavour.

The rest produced sparse growth and poorer crops.

Discussion

To account for the diversity in the results, it would appear that either some seeds were better quality than others, or different varieties were adapted to different conditions. Some were similar to Auckland; some not:

- hotter/ cooler
- rain /dry
- wind / sheltered
- long summer / short summer (seasons) early / late so day length becomes important
- latitudes - high / low
- altitude - high / low
- unique soil types, etc so different use of minerals in each form

Growing them altogether in our yard - some felt at home and flourished. Some didn't.

If I'd only planted 1 or 2 plants and they cropped poorly, I might think the problem was me, or our yard or 'I can't grow tomatoes'. Home gardeners often give themselves as the cause of poor outcome. Poor crop productivity can have many other causes as noted above.

Education of home food gardeners about varieties needs and requirements would expand confidence in ability to grow a home food garden for good yields. This report explores some of these issues as a step towards increased confidence of home food gardeners.

To everyone who has grown food crops in their garden, if there is a good crop - excellent - conditions in the plot were good for that crop at that time. It's really useful info for all people trying to grow this crop. Insights are helpful - was the year hotter than normal/ cooler; wetter / drier; windy / calmer?

If a crop produced poorly then the conditions do not match the ancestral conditions to which that variety is adapted. This is also important information.

Often really excellent feeding can overcome the mismatch of other conditions. To grow a variety outside its preferred conditions and get good production, it needs feeding really well, with ongoing care. This is true for any type of crop - not only tomatoes.

Another issue is that each season is different each year. Sometimes summer is early and dry; sometimes late and cool. Growing a number of varieties means there is a higher probability that at least one will do well that year and give a yield, no matter what the weather. This variety may not necessarily be one which did well previously.

As climate changes, warmer conditions will favour different varieties than have provided a yield in the past. More extreme weather events also impact home food garden yields – lower growing varieties may be less wind-affected for example. Characteristics by which varieties to grow are chosen may change over time.

Summary

- To me, all this is precious information about varieties which grow well in one area [at least this year]. I'd love to see more results shared for home garden productivity.
- Golden/orange 'Moonglow' was a wonderful success this year.
- Red cherry type tomatoes, Sweet 100 and Baxter's Early Bush cherry, provided extended harvests of quality fruit.
- Growing a range of varieties within assorted local micro-climates extends the harvest and provide resilience of supply no matter what the weather.
- Insect mesh covers contribute to growing quality tomatoes and extending the season.
- Making available more information about varieties, their needs and their characteristics could improve home garden productivity as well as enjoyment of food gardening.

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