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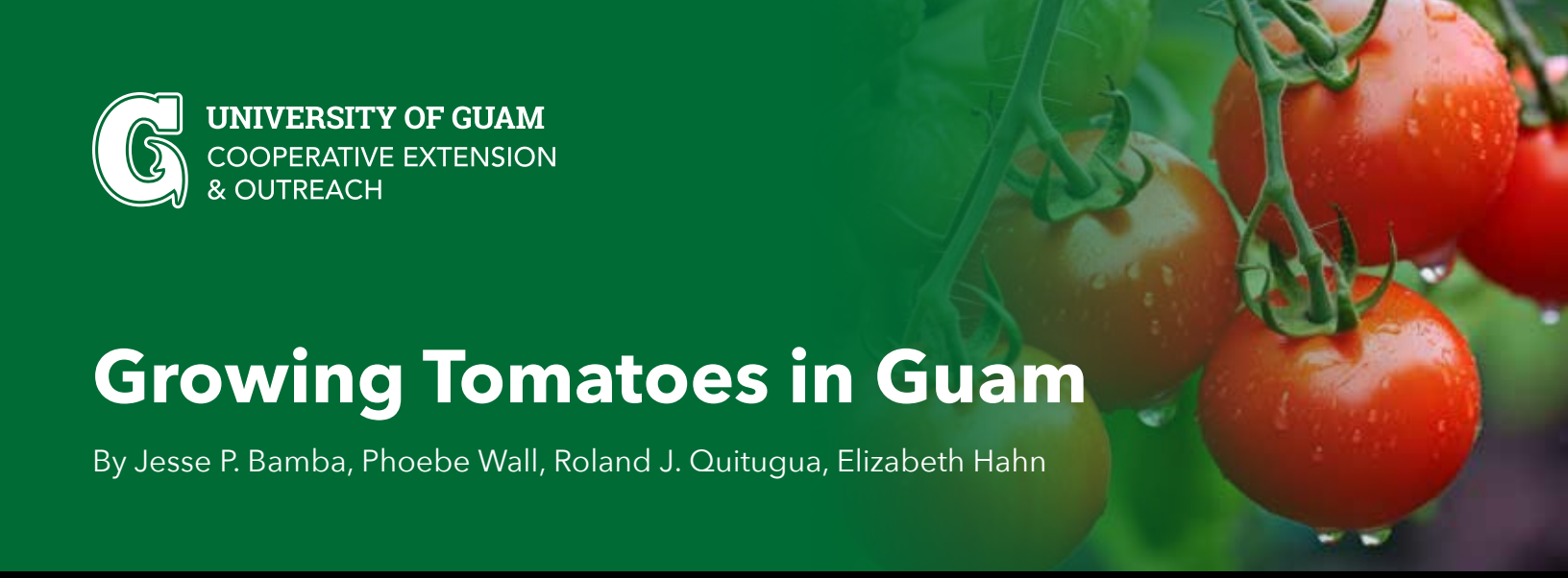

Growing Tomatoes in Guam

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Background

Tomato *(Lycopersicon esculentum)* is a perennial plant that belongs to the nightshade family (Solanaceae). It is native to Central and South America, where it has been part of the diet for centuries. The tomato first appeared in European cuisine in the 16th century, but it did not become popular there until the 18th century because of the common belief that it was poisonous. In the 1500s, most wealthy Europeans used plates and utensils made of early pewter, which has a high lead content. Since tomatoes are high in acid, they would cause the lead to leach into the food, causing lead poisoning and death among the rich. People who could not afford pewter plates used plates made of wood; consequently, they were not poisoned when they ate tomatoes. This was one of the reasons why tomatoes were eaten by poor people during that era. Now, tomatoes are one of the most popular crops grown by home gardeners.

Figure 1.
A commercial tomato farm in Guam, where tomatoes can be grown throughout the year.

Tomato, or *tumåtes* in CHamoru, can be grown throughout the year in Guam (Fig. 1). They are delicious, relatively easy to grow, and only need a small area to produce vine-ripened tomatoes. Tomato plants provide a bountiful harvest if the proper variety is planted and if it has well-drained soil whether in the ground or a container, adequate amounts of nutrients, sufficient water, appropriate light, and staking to support the plant, if needed.

Quick facts

Common name: Tomato (*Tumåtes*)

Scientific name: *Lycopersicon esculentum*

Types:

- **Determinate (bush) varieties** grow to a certain height and are generally an upright bushy plant. They produce flowers and set fruit in a short period of time (4 to 6 weeks) and then decline in vigor.
- **Indeterminate (vine) varieties** produce vines that flower and set fruit continuously throughout the season. If a cage, trellis, or stake does not support them, they will sprawl along the ground.

Time of planting: October to May

Light: Full sunlight

Soil: Well-drained

Soil pH: 6.0 to 6.8

Spacing: 24 to 48 in. (61 to 122 cm.)

Watering: Soil around the plant should be moist but not wet. Avoid watering the leaves, if possible, to reduce certain plant diseases.

Mulching: Maintain 2 to 4 in (5 to 10 cm) layer of

organic mulch extending to the edge of the leaf canopy.

Support: Stake, cage, or trellis

Fertilizer for determinate varieties:

- 2 applications of 10-20-20 fertilizer/100 sq.
- Preplant application: Before planting, thoroughly mix 1 lb. of 10-20-20 into the soil.
- When tomato starts bearing fruit, side dress with 1 lb. of 10-20-20 into soil.

Fertilizer for indeterminate varieties:

- Multiple applications of 10-20-20 fertilizer/100 sq. ft.
- Preplant application: Before planting, thoroughly mix 1 lb. of 10-20-20 into soil.
- When tomato starts bearing fruit, side dress with 1/4 lb. of 10-20-20 into the soil every two weeks.

Container growing:

- **Light**: 6 to 8 hours of full sunlight/day
- **Pot:** 4- to 5-gallon container with good drainage
- **Potting soil:** Quality potting mix
- **Spacing:** 1 tomato plant per 4- to 5-gallon container
- **Watering:** Thoroughly water 1 to 2 times a day, if needed. Keep potting mix consistently moist but not soaked.
- **Mulching:** Maintain a 2 to 4 in. (5 to 10 cm.) layer of organic mulch extending to the edge of the pot.
- **Support:** Stake or cage
- **Fertilizer:** At the time of planting, use a slow or controlled-released fertilizer for vegetables. Two weeks after planting use a water-soluble fertilizer, such as 5-10-10, once a week.

Varieties

There are hundreds of tomato varieties to pick from for your garden site and taste. When looking to purchase a tomato variety from a store or seed supplier, make sure the seed packet or description in the seed catalog describes the seed as being "heat tolerant." Heat tolerant varieties usually produce a good crop in Guam because they are well-suited for our tropical climate. Tomato varieties that are recommended and grow well on Guam (Table 1) range in size from as large as softballs (Fig. 2) to as small as cherries (Fig. 3).

Solar Fire (Fig. 2) and Season Red (Fig. 3) tomato varieties have been grown on Guam for several years and are adapted to local conditions. Both varieties are determinate in growth habit and are usually supported. Growing tomatoes in containers is also a possibility if you are limited in space (Fig. 6).

Table 1.
Commonly grown varieties in Guam.

Cherry Tomatoes	Standard Tomatoes
Juliete	N-5
Precious	N-63
Season Red	Heat Wave II
Felicity	Tasti-lee
Olivia	Spring Giant
Ornela	Solar Fire
Carmine	Solar Set
Super Sweet	

Figure 2.
"Solar Fire" tomato.

Figure 3.
"Season Red" cherry tomatoes.

Tomato culture

To successfully grow tomatoes, start with healthy seedlings.

They can be purchased from the Guam Department of Agriculture or a local garden center. You can also order heat-tolerant seeds from a reputable seed company and sow the seeds yourself. Either way, the transplant should be 6 to 8 inches (15 to 20.5 centimeters) tall before you plant it in the ground or a container. The tomato seedling should be hardened off (gradually exposed to more sunlight, wind, and uneven temperatures). It should be stocky with plenty of green leaves when it is transplanted.

Healthy tomato transplants should be planted 2 inches (5 centimeters) deeper than they are in the original pot. If the transplant is tall and lanky, plant the transplant horizontally, a few inches below the soil level with just a few leaves above the ground. Roots will develop on the buried portions of the stems. Plant them in the late afternoon and water thoroughly. For optimum growth, seedlings should be spaced 2 to 4 feet apart when planting in the ground and one plant in a 4- to 5-gallon container.

Figure 4.
Commercial production of determinate standard tomatoes.

Figure 5.
Commercial production of determinate cherry tomatoes.

Figure 6.
Determinate "Solar Fire" tomato plants grown in containers.

For Guam conditions, it is recommended that some sort of support is used for newly planted tomatoes. The most common techniques are cages, staking, and trellising. The support increases airflow, keeps the fruit from touching the soil, makes harvesting easier, and improves spraying coverage if needed.

Tomatoes need consistent soil moisture throughout the growing season. Drastic fluctuations between wet and dry soil conditions will increase fruit cracking and blossom end rot. Using a layer of 2 to 4 inches (5 to 10 centimeters) of mulch will reduce soil moisture fluctuation and help with weed control.

To maintain a healthy, fruit-producing tomato plant, some additional fertilizer is recommended. Do not add too much nitrogen during the early stages of growth; this will cause the plant to produce a lot of vegetative growth. Determinate varieties need two applications of 10-20-20 fertilizer/100 square feet. A preplant application should be added before planting by incorporating 1 lb. of 10-20-20 fertilizer into the soil. When the tomato plant starts bearing fruit, side dress with 1 lb. of 10-20-20 fertilizer/100 square feet into the soil. Indeterminate varieties need multiple applications of 10-20-20 fertilizer/100 square feet. A preplant application should be added before planting by incorporating 1 lb. of 10-20-20 into the soil. When the tomato plant starts bearing fruit, side dress with 1/4 lb. of 10-20-20 fertilizer/100 square feet into the soil every two weeks. For container growing, a slow or controlled release fertilizer should be used at the time of planting. Two weeks after planting use a water-soluble fertilizer, such as 5-10-10, once a week.

Common pests

Disease pests: Anthracnose, bacterial spot, bacterial wilt, early blight, fruit rot, tobacco mosaic virus, tomato mosaic virus, and tomato leaf curl virus.
Animal pests: Snails, slugs, rats, mice, birds, chickens, pigs, and deer.
Insect and insect-like pests: Aphids, ants, thrips, mites, caterpillars, whiteflies, leaf-footed bug, mealybugs, leafhoppers, fleahoppers, leaf miners, grasshoppers, and beetles.

Figure 7.
Cherry tomato harvest.

Harvest

It usually takes 60 to 80 days after planting until you can harvest mature fruit. To improve the flavor of your homegrown tomatoes, wait for them to fully ripen on the plant. Tomatoes can be picked early when the color starts to turn from green to red, orange, or yellow (Fig. 7). If harvested early they can mature on the countertop, but they won't have nearly as much flavor or nutrients. Once picked, the tomatoes should be stored at room temperature and eaten relatively quickly. Ripe tomatoes can be stored at 55˚F to 70˚F (12.8˚C to 21.1˚C) for a few days before the flavor, color, and texture of the tomato changes.

FOR FURTHER INFORMATION

Contact UOG Cooperative Extension & Outreach at (671) 735-2080 for help or more information. Additional publications can be found at uog.edu/extension/publications.

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