

What Is Quality. . . In a Tomato?

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Tomato defects include scarring and cracking. These causes, as well as what qualities are found in a desirable tomato, are discussed in this publication.

The vine-ripened, fresh garden tomato is strongly associated with summer. Tomatoes on hamburgers, in salads or just a plate of fresh, sliced tomatoes — all indicate summer is here.

How is tomato quality assessed? The following are key points to consider if you are selling tomatoes, growing them in a home garden, or buying tomatoes from a retail source.

1. **Blossom scar** — This should be very small and “tight.” There should be no visible “zippers” on the fruit, a defect caused when the blossom does not detach from the fruit after pollination (*Figure 1*). “Nippling” is a genetic characteristic of certain cultivars and tends to disappear in the mature fruit. It tends to become most evident when the tomatoes are subjected to stress during fruit enlargement.



Figure 1. Blossom scars in tomatoes should be small and tight (left). “Zippering” on the green tomato is caused when the blossom does not detach from the fruit after pollination.

2. **Shoulders** — “Shoulders” refers to the stem end, or top of the tomato. A tomato’s shoulders should be smooth, not rough or ridgy.

3. **Stem scar** — The stem scar should be small and smooth, with no radial cracks or openings (*Figure 2*). Generally tomatoes are packed for the commercial market without the stem since it could puncture other tomatoes during harvesting, packing and shipping. Some people market hand-packed, stem-on tomatoes to evoke “home-grown” and “vine-ripe.” These are most frequently found in local markets and farmers’ markets or as higher priced greenhouse grown tomatoes.



Figure 2. Tomato stem scars should be small and smooth (right).

4. **Cracks** — For best quality neither radial nor concentric should be present (*Figure 3*). Although some tomato cultivars, when grown under certain conditions, have a greater resistance to radial cracking, it can occur in all cultivars, particularly when a very dry period is followed by heavy rains or irrigation. Erratic soil moisture is the primary cause of cracking. Concentric cracks occur before fruit is mature, apparently due to erratic soil moisture. There is less cultivar resistance to concentric cracking. While official USDA standards for US#1 tomatoes allow a half-inch radial crack at the stem end, any cracking will result in a discount in the product price.

5. **Color** — The fruit color should be uniform with no blotches or scarring (*Figure 4*). Retail customers want well-colored fruit. Unless refrigerated, tomatoes continue to



Figure 3. Concentric cracks in tomatoes appear when a very dry period is followed by heavy rains or irrigation.



Figure 4. Tomato fruit coloring should be uniform with no blotches or scarring.

ripen after harvest. Soft, over-ripe fruit should not be sold or purchased unless the tomatoes are going to be preserved or used immediately after purchase. Wholesale buyers want a pink blush at the blossom end of the tomato. Some tomato cultivars, especially the older cultivars, have green shoulders even when mature. Others have a “uniform ripening” gene and do not have green shoulders.

6. Internal quality — Fruit locules should be filled with gel, not “puffy” with air spaces. Exposure to cold temperatures increases the likelihood of puffy fruit. High temperatures with low relative humidity also increase the chances of puffy fruit. Both extremes result in poor pollination. Excessive nitrogen also has been implicated in this disorder. Other defects include large core, gray wall and blotchy ripening, which also are associated with extremes of temperature and fertilizer as expressed by the particular cultivar grown.

7. Storage — Tomatoes should never be refrigerated or exposed to temperatures below 50°F. Low temperatures destroy the enzymes necessary for ripening, color development and flavor.

8. Flavor — Flavor is a highly subjective attribute. Some people like a more acidic tomato; others like low-acid tomatoes. Tomato cultivars of either acidity level can vary in sweetness based on growing conditions. Many volatile components (odors) contribute to the perception of flavor. These are most evident in fully ripe, warm tomatoes and vary among cultivars. In other words, a tomato picked, smelled and tasted directly from the vine on a hot day may “taste” better. For maximum flavor, tomatoes should never be refrigerated and should be served at room temperature.

9. Packaging and selling — Do not mix cultivars in a box or package, as variation in physical appearance will cause customers to question the differences. Tomatoes should be graded for uniformity in size and maturity.

A bushel basket contains 50 to 60 pounds of tomatoes. Red, ripe tomatoes, however, will not survive long at the bottom of 60 pounds of tomatoes. Place mature green or breaker stage tomatoes at the bottom, with progressively more ripe tomatoes toward the top. In three to five days the fruit in the

middle or bottom of the bushel will be red ripe. Be certain to inform buyers how you arranged the basket and why. Retail sales are usually by the pound, by the count or unit price. For example “three tomatoes for \$1.” The exception is tomatoes sold for home processing when half-bushel or bushel baskets are common.

Units for wholesale marketing of tomatoes are waxed cardboard cartons containing 20 or 25 pounds. Vine-ripe tomatoes, picked at the breaker stage or slightly later, usually are hand-packed in special two- or three-layer flats containing 15 pounds. Cherry tomatoes are packed 12 pints/flat, with a flat weighing 15-18 pounds. Plum tomatoes are packed in 12-quart baskets. Greenhouse tomatoes, generally picked at the breaker stage, are packed 15 pounds/carton in shallow cartons.

10. Cultivars — Cultivars showing promise for commercial production in this area include the ‘Daybreak’ and ‘Carnival’ for early production. Crack resistance has been good in ‘Jet Star’ and ‘Mountain Spring.’ For large fruit, try ‘Tango,’ ‘Olympic’ and ‘Merced.’ ‘Mountain Supreme’ has good fruit characteristics. ‘Carnival,’ is a sister line to ‘Celebrity,’ a good tomato for main season production.

Reference to commercial products or trade names is made with the understanding that no discrimination is intended of those not mentioned and no endorsement by University of Nebraska–Lincoln Extension is implied for those mentioned.

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**Index: Lawn and Garden
Vegetables**

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