



The Top 10 Best Practices: Harvesting & Postharvest Tomato Edition

T. Casey Barickman, Ph.D.
Associate Research Professor
Mississippi State University



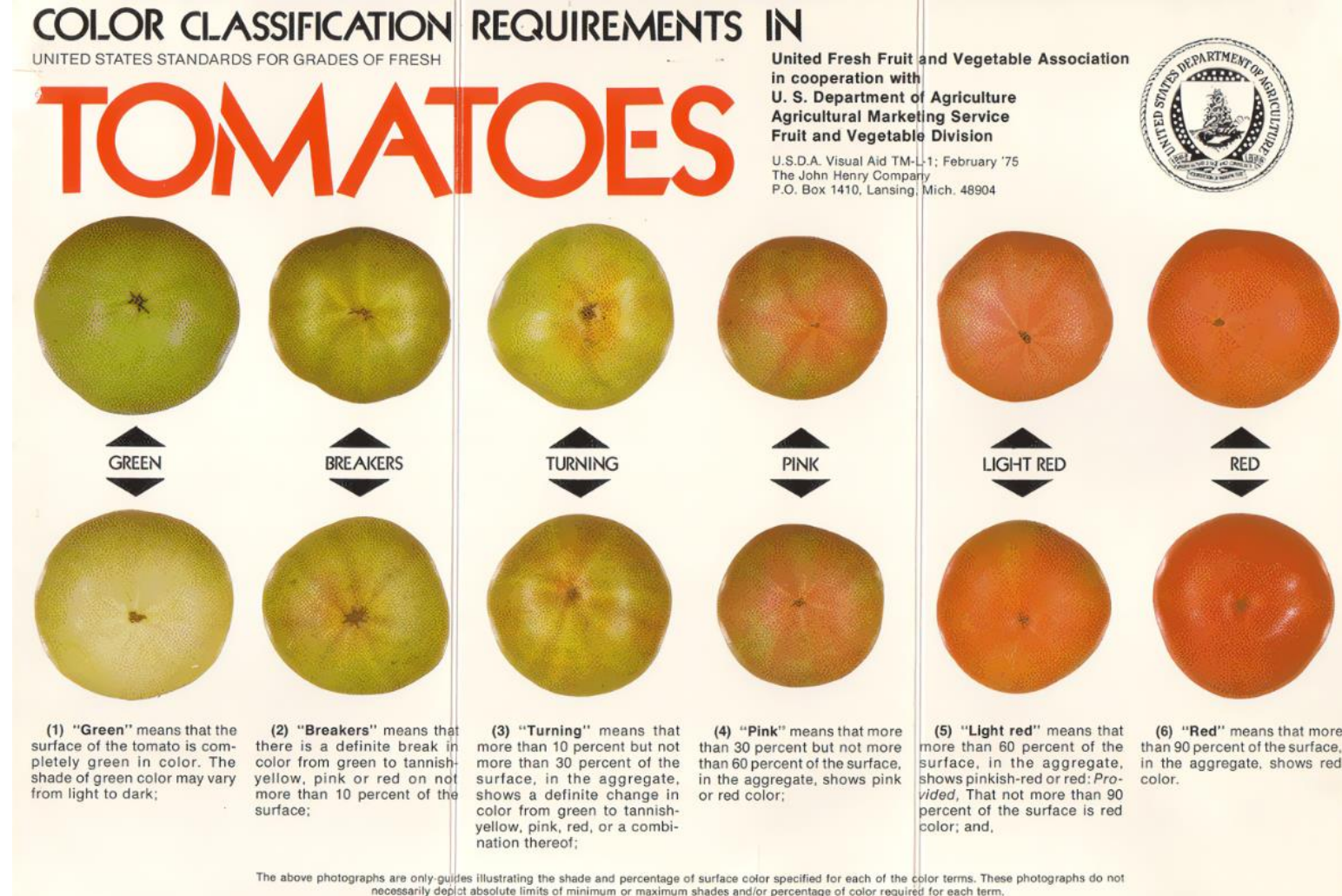
Tomato Outlook

- Fresh tomatoes top 3
 - \$\$ in MO
- Expensive to produce
- Consumer favorite



Tomato Fruit Maturity

- USDA Classifications – Tomato Fruit
 - Commercial, wholesale
 - Green
 - Market, direct to consumer
 - Rest of the classification



Tomato Harvest

- Commercial tomato producers
 - Harvest at “mature-green” stage
 - Difficult to judge externally
 - Sample, internal examination
- Commercial operations
 - Ripened with ethylene gas



Commercial - Wholesale



- USDA tomato maturity – Green
 - Harvesting tomato fruit when green
 - Gassing in large chambers with ethylene

Market and Direct to Consumer

- Producers harvest tomato fruit
 - Turning to Red stage
 - Tomato fruit can self ripen
- Ultimately depends on producers' market
- Holding period



The Great Debate

- When to harvest?
- Two sides of the story
 - Vine Ripened
 - Produce the best flavor
 - Turning – Light Red
 - Produce as good of flavor at vine ripened





Tips: Best Tomato Harvest

- Harvest your tomatoes frequently
 - Redirect energy to produce and ripen more fruit
- Dream of vine ripened tomato
 - Leads to increased susceptibility to pest and disease
- Tomatoes will continue to ripen and produce the same quality of flavor



Tips: Best Tomato Harvest

- Harvest tomatoes free of blemishes
 - Reduce the quality and aesthetics
 - Increases chance of fungal rots
- Use fruit for value added products

Tips: Best Tomato Harvest

- Remove all diseased, mishappened, or otherwise cull fruit
 - As soon as they are discovered in the field
 - Reduced the buildup and spread of pathogens
- Harvesting bins should be wide, shallow, and stackable
 - Avoid excessive weight of the tomato fruit on each other
 - Cause bruising at the bottom
 - 18" for red and 26" for green



Tips: Best Tomato Harvest

- When to harvest all your tomatoes
 - Temperatures < 50 or > 90
 - Adverse weather conditions
 - Increase in pest and disease pressure



Tips: Best Tomato Harvest

- Keep you hands clean (nitrile, latex gloves)
 - Remember: Handling directly consumed food, it's the law to wash you hands after using the restroom!
- Be thorough when harvesting.
- Do not squeeze or bruise the fruit or allow fingernail to penetrate the fruit skin.
- Over filling your hands will increase damage.
- Do not put culls in with good fruit.
- Never drop or throw fruit.
- Slowly transfer picked fruit into final packing boxes.



Tips: Postharvest



Tips: Postharvest

- If water is not necessary in the packing process, do not use it.
 - Increases likelihood of postharvest diseases.
- If needing to wash tomato fruit for vendor, wash in chlorinated water as they move over a set of soft brush rollers.
 - Change water frequently to avoid build-up of pathogens.



Tips: Postharvest

Table 1. Size classification of tomatoes.

Size Designation	Diameter (inches)	
	Minimum*	Maximum**
Extra small	1-28/32	2-4/32
Small	2-4/32	2-9/32
Medium	2-9/32	2-17/32
Large	2-17/32	2-28/32
Extra large	2-28/32	3-15/32
Maximum large	3-15/32	---

* Will not pass-through a round opening of the designated diameter when the tomato is place with the greatest transverse diameter across the opening.

** Will pass through a round opening of the designated diameter at any position.



Tips: Postharvest

- Tomatoes must be graded to achieve uniform shape, color, and size.
- Growers typically pack in 5 x 6, 6 x 6, 6 x 7, and 7 x 7 numeric sizes into jumble-packed fiberboard cartons to a net weight of 25 lbs.
- Tomatoes packed into single layer cartons



Tips: Postharvest

- Tomatoes are chilling sensitive.
 - Depends on temperature and exposure time.
- Immediate and thorough postharvest cooling.
 - Aids greatly in maintaining quality and substantially lengthens shelf life.
- Place in cool room/container in loosely stacked bins.
 - Helps to get cool air to fruit and remove the heat.





Tips: Postharvest

- Reduce the field heat ASAP
- Forced air cooling inside an insulated room/storage container.
 - CoolBot, air conditioner
 - Plenty of air flow
 - High humidity 85-95%



Tips: Postharvest

- Ideally want to store tomatoes at approximately 50-60 degrees.
- Mature green (breaker) tomatoes
 - 58-60 degrees store for best quality
 - Stored at 55 degrees, often develop decay and fail to ripen
 - Optimum temp for ripening is 65-70 degrees
 - Above 80 degrees, will ripen but eating quality significantly reduced
- Light red tomatoes
 - Stored 2 wks or longer at 50-55 degrees, can store below 50 for very short period of time.
 - Below 50 can cause chilling injury.
 - Proper temperature control is critical to quality and shelf life.



Stages of Ripening In Heirloom Tomatoes

- | | |
|-------------------|--|
| 1. Immature Green | 5. Pink- we usually pick at this stage |
| 2. Mature Green | 6. Light Red |
| 3. Breaker | 7. Red |
| 4. Turning | |



Tips: Postharvest

- Do not use water in the grading process unless necessary
 - Use chlorinated water and change it frequently
- Grade and pack like-sized tomatoes together
- Reduce field heat as soon as possible
- Ripen tomato fruit at 70 degrees
- Stored fruit at 50-60 degrees
- Storing below recommended temperature causes chilling injury and low fruit quality.



Questions?

T. Casey Barickman, Ph.D.
t.c.barickman@misstate.edu