

COLOR CHARTS

Introduction: Sorting by color is a simple method used to enhance the uniformity and perceived quality of certain fruits and vegetables. Citrus fruits, for example, can be sorted into color categories that receive higher or lower prices per kg depending upon their intended market.



In some cases sorting and packing by color and maturity help extend the shelf life of produce by protecting a portion of the lot from early ripening. Ripe fruits can be packed separately and sold immediately, while less mature fruits can be packed and stored for a few days before marketing.

Color charts have been developed for a wide range of types and varieties of horticultural crops, and can be purchased ready to use for many crops. If color charts are difficult to find or too expensive to purchase, then you can make a color chart for yourself using a digital camera and color printer. Creating your own color charts is especially practical when they are to be used for grading exotic crops, heirloom varieties, or for uncommonly colored varieties of more common crops.

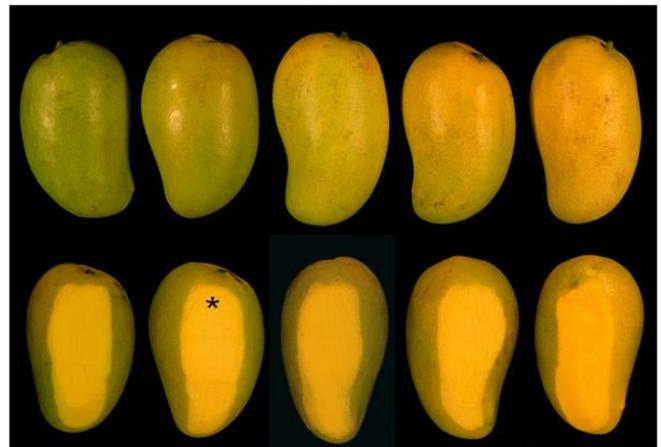
Ripeness Classes Of Tomatoes

Score	Class	Description*
1	Green	Entirely light- to dark-green, but mature
2	Breaker	First appearance of external pink, red or tannish-yellow color; not more than 10%
3	Turning	Over 10% but not more than 30% red, pink or tannish-yellow
4	Pink	Over 30% but not more than 60% pinkish or red
5	Light-red	Over 60% but not more than 90% red
6	Red	Over 90% red; desirable table ripeness



*All percentages refer to both color distribution and intensity.

Ataulfo Mango Maturity and Ripeness Stages



*Minimum stage for harvest

Source of mango color chart illustration on this page: UC Davis Postharvest Technology Center <http://postharvest.ucdavis.edu/files/259426.pdf>

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Options & Materials Needed

Color charts for many crops can be purchased from the USDA Fresh Products Branch for \$5 to \$10 per chart. UC Davis sells a color chart and rating scales publication (a CD of many types of color charts) for \$50. <http://postharvest.ucdavis.edu/Bookstore/> (Bookstore link).

To make your own color charts, good quality digital photos of selected fresh produce set against a solid, uniformly colored background can be collected to represent the 4 to 7 color stages of any type of crop. Sometimes it is possible to collect all the representative colors of the crop on one day, and take one photo, but most of the time each photo must be taken during a specific time during the ripening period. A computer program that allows you to size and set the individual photos into a common frame, and using a high quality photo printing service, will enhance the quality of the final product. Lamination of the printed image will ensure it is protected from rain, moisture or dirt when used in the field.

Costs & Benefits

The following are examples of when and why using color charts to grade fresh produce into color categories based upon stage of maturity can be cost effective and lead to increased profits.

Crop	Market value with no color sorting (mixed lot of 1000 kg)	Market value when color sorted	Relative increase in market value due to color sorting
Tomatoes in India. Mature green and Full red ripe tomatoes have low market values.	\$0.50 per kg \$500	20% Mature green \$0.30 per kg 30% Breaker/ Turning \$0.80 per kg 30% Pink / Light red \$0.80 per kg 20% Full red / ripe \$0.20 per kg Total = \$580	\$580 – 500 = \$80
Chili peppers (hot) in West Africa. Red peppers have higher market value.	\$0.80 per kg \$800	30% Green \$0.50 per kg 10% mixed red/green \$0.80 per kg 60% Fully Red \$1.10 per kg Total = \$890	\$890 - \$800 = \$90
Cucumbers in Lebanon. Dark green cucumbers have highest market value	\$1.00 per kg \$1000	10% Yellow/pale green \$0.50 per kg 50% Medium green \$1.00 per kg 40% Dark green \$1.50 per kg Total = \$1150	\$1150 - \$1000 = \$150

For further information

Small-scale postharvest handling practices: A manual for horticultural crops (Chapter 3; 5th edition 2015) http://ucanr.edu/sites/Postharvest_Technology_Center_/files/231952.pdf

Postharvest Technology Center (UC Davis) <http://postharvest.ucdavis.edu>

The Postharvest Education Foundation <http://www.postharvest.org>

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