

We all know that smell is an enormous factor in taste (if you don't believe that, try smelling bacon without eating the whole package). It's less well-studied, though inherently intuitive, that the visual aspect of food plays a huge role in shaping our perception of it. A child will recoil from a goulash, even if they like all the component parts. We automatically judge food, correctly or otherwise, by sight. If it doesn't appeal to taste, smell, and vision, we are less likely to try it. This poses a challenge for food producers.

Ensuring the health of a brand means delivering consistent product quality that appeals to all of their customers' senses. When it comes to appearance, color plays a key role in a food's appeal, and making use of a spectrophotometer for food color measurement can ensure consistency and quality in a product. And with the way food must be moved from producer to factory to distributor to retailer, maintaining that color consistency at each location can be achieved by using a technique called hitch standardization.



Measuring color with a spectrophotometer at each step of a vegetable's journey from harvest to the retailer can help a food producer maintain quality control.

Image source: Flickr user Nick Harris1

Understanding Hitch Standardization

Measuring the color of a food product at the different locations along its journey can provide a method of quality control at each step. And while making use of spectrophotometers at each location can help with the quality control, this method only works if the units in use are able to mimic each other.

The idea behind hitch standardization is to have two machines in different locations perform in the same manner. Take, for example, shellfish caught in the briny North Atlantic. These are caught on a boat, sold to a distributor, packed and shipped all over the country. At each stop, the color is measured to make sure it is up to industry standards, but at each stop, the measurements may be a

little off. By the time it gets to a seafood store in Peoria, there could be radically different measurements for the same lobster. Using hitch standardization would fix this problem, ensuring compatibility in the units at each location.

With hitch standardization, users set up one spectrophotometer as the reference unit, and other spectrophotometers then become the secondary or hitch units. A sample is measured on the reference unit and those values are duplicated on the secondary units using software, which will bias the secondary units to ensure a match. The two units need to be in the same location at the time of the hitching, helping to ensure color measurement consistency when the units later are deployed at separate locations.



Any devices used to measure the weight of objects must use the same parameters from site to site, or the consistency of the measurements cannot be trusted. The same is true for color measurement.

Image source: Flickr user woodleywonderworks

Importance of Color Measurement for Food Producers

Color consistency is a way for a food producer to ensure quality control. The producer can use a spectrophotometer as the food moves along its journey from the production facility to the retailer, discovering any spoilage or production inconsistencies and removing that food before it's delivered. Different types of foods can reveal different problems based on color measurement.

- **Fresh:** Fresh fruits, vegetables, and meats need to maintain a certain color consistency to be appealing to consumers. Americans throw away more than 35 million tons of food annually¹, often times because it [doesn't "look" right](#). If the color of raw beef or a banana is not normal, a person may assume it's spoiled and refuse to purchase it.² A tomato, for example, [goes through many stages of coloring during its ripening process](#). Unfortunately,

many people associate a tomato with either just “red” or “green,” and the gradations could make them assume spoilage.

- **Pre-packaged:** A company that makes a dried meat product, for example, has to maintain consistency in its brand, which includes color. If one batch of jerky is a bit darker than usual because the color of one ingredient is off, a consumer might think the batch contains contaminants and switch to another brand. The workers at each stage cannot accurately measure color from batch to batch through eyeball inspection alone.



Inspection of pre-packaged foods at each stage of the process from factory to retailer requires spectrophotometers using hitch standardization to maintain product consistency at each location using color measurements.

Image source: Flickr user RDECOM

Working with Hitch Standardization

Color measurement [using hitch standardization](#) will ensure that quality control readings are standardized throughout the process, as long as the samples at each location are prepared the same way. Hitch standardization cannot overcome errors with sample preparation. Providing training at each facility and making use of a specific set of standards throughout the process can help a food producer avoid errors that hitch standardization cannot necessarily fix.

Nearly [100 food producers](#) have trusted HunterLab’s spectrophotometers to handle the color measurement of their products traveling from location to location. More than 60 years of research and development of spectrophotometers makes HunterLab an easy choice for these food producers, especially in a retail environment today where consumers have more choices than ever and an abnormal color can have consumers trying another brand. To start the process of finding the right spectrophotometer for your needs, please [contact us](#) today.

1. "Americans Throw Out More Food Than Plastic, Paper, Metal, and Glass,"
<http://www.washingtonpost.com/news/wonkblog/wp/2014/09/23/americans-throw-out-more-food-than-plastic-paper-metal-or-glass/>
2. "How Food Spoils," <http://food.unl.edu/how-food-spoils>