

Fruit Maturity Evaluation

SPECTROPHOTOMETER CM-17d

Accurate and consistent fruit maturity evaluation is critical for achieving high-quality crop production and optimizing harvest efficiency. While visual inspection is still widely practiced, it is often inconsistent and influenced by personal judgement and environmental conditions.

In this case study, we explore how a research team from Japan enhanced measurement reliability and operational efficiency by adopting the Konica Minolta CM-17d Portable Spectrophotometer, demonstrating clear advantages in real field applications.



Challenges Prior to Implementation

Before adopting the CM-17d, the user relied on a portable chroma meter but faced several limitations:

- Difficulty confirming the exact measurement point
- Unstable or inconsistent numerical results
- Insufficient suitability for measuring curved or uneven fruit surfaces
- Growing demand for objective, standardized color evaluation

These challenges prompted the search for a more advanced instrument capable of providing higher accuracy, better repeatability, and stable performance across different environments.

Why the CM-17d?

The user chose the CM-17d for its superior accuracy, easy targeting, and dependable performance in real field conditions. Its stable optics and ability to measure curved fruit surfaces made it the most practical and reliable tool for maturity evaluation.

- Clear target visualization with built-in electronic viewfinder for precise alignment on small or curved surfaces.
- Consistent, repeatable results thanks to high optical stability and excellent ΔE repeatability.
- Field-ready usability with a lightweight, portable design that performs reliably indoors and outdoors.
- Accurate measurement on curved fruit using the optional 3 mm small aperture for apples, peaches, grapes, and other uneven surfaces.

User Requirements vs. CM-17d Capabilities

User Requirement	CM-17d Capability
Reliable indoor & outdoor measurement	lightweight, field-ready design
Confirm the exact measurement point	Built-in electronic viewfinder
Stable readings on curved/irregular fruit	3 mm small-aperture measurement
Efficient, large-batch testing	High-speed measurement (~0.7 sec)
High reliability and repeatability	Excellent ΔE repeatability
Full spectral evaluation	400–700 nm / 10 nm interval spectral data
Data management and analysis	SpectraMagic NX2 integration

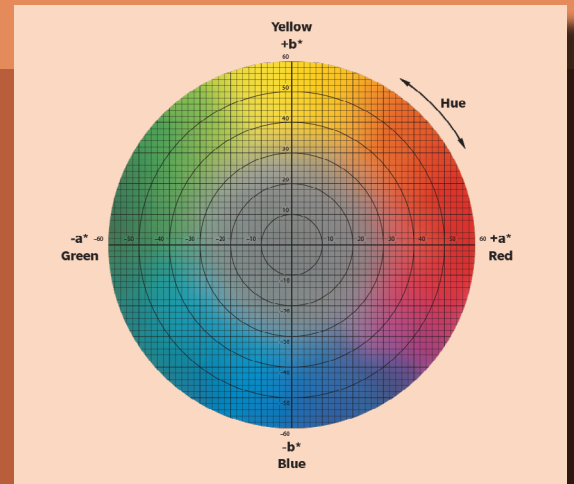


Application: Fruit Maturity Evaluation

Using colorimetric data such as L^* , a^* , b^* values, the CM-17d provides objective indicators for fruit maturity.

Typical maturity-related behaviours include:

- a^* increases as the fruit matures (greater red component)
- Hue values (H) decrease as surface coloration evolves



Your Partner in Reliable Color Evaluation

Konica Minolta Sensing provides growers and researchers with dependable, high-precision color measurement solutions. With advanced instruments such as the CM-17d and strong application support, we help ensure accurate, consistent, and objective color evaluation across field and laboratory environments.

Your trusted partner for repeatable, data-driven quality assessment. Contact Konica Minolta Sensing Singapore Pte Ltd for enquiries, product demonstrations, and expert assistance.

