

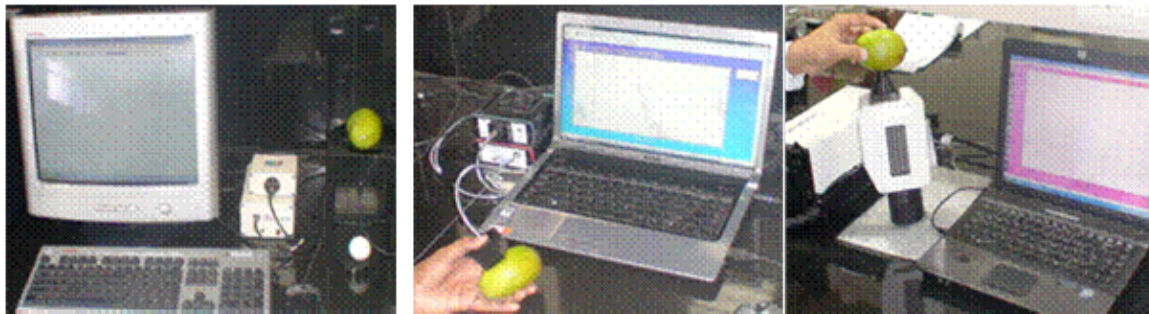
Nondestructive Quality Evaluation Laboratory

The research area of the laboratory is engineering interventions in food quality and safety assurance using nondestructive methods such as Vis/NIR spectroscopy and biosensors. The laboratory is equipped with latest technology and instruments. These instruments are employed in developing a nondestructive technique to estimate the quality parameters of mango, banana etc. The scientific/technical achievements made in the laboratory include

- Simple and common maturity index based on biochemical properties for major mango cultivars.
- Library of NIR spectra of major Indian mango cultivars.
- Identification of common bacterial and fungal strains on mango surface

➤ **NIR spectrometers:**

NIR Spectrometers are involved in Spectra acquisition and measurement of physico-chemical properties (TSS, acidity, dry matter and pH) during growth and ripening of mango fruit.



Surface Plasma Resonance Unit:

SPR is a chip based optical sensor system which allows investigation of functional nature of binding events, and provides detailed kinetic information across a wide molecular weight range including small molecules.



➤ **Quartz Crystal Microbalance (QCM) :**

It is a mass sensitive electronic device which has ability to measure very small mass changes on a quartz crystal resonator. The sensitivity of an instrument is 100 times higher than an electronic balance with sensitivity of 0.1 μg . So it can measure a mass change as small as a fraction of monolayer and a single layer of atoms.



➤ **Hunter's colorimeter:**

Hunter colorimeter can be used to measure the color of any object whose color can be measured on L,a,b scale. L measures lightness and varies from 100 for perfect white to zero for black, approximately as the eye would evaluate it. The chromaticity dimensions (a and b) give understandable designations of color as follows:

a measures redness when positive, gray when zero, and greenness when negative.
b measures yellowness when positive, gray when zero, and blueness when negative.



➤ **Refractometer:**

A refractometer determines the concentration of a solution by measuring the optical refractive index. The Refractive Index of a transparent isotropic medium may be loosely defined as the "bending" power of the medium for a ray of light obliquely incident on its surface.



➤ **Moisture Analyser:**

Moisture analyser can be used for quick and reliable determination of moisture content of liquid, pasty and solid substances using thermo gravimetric method.

