**NIRS**

**Technical Overview**

The Electromagnetic Spectrum

Visible ~ 400 - 700 nm

NIR ~ 1100 - 2500 nm

**Human Color Vision**

Light is absorbed by the rose at a wavelength equivalent to the color red.

As light enters the eye, it strikes the receptor cells of the retina called the rods and cones.

**Absorbance**

\[ A_{\lambda} = -\log_{10} \left( \frac{S_{\lambda} - D_{\lambda}}{R_{\lambda} - D_{\lambda}} \right) \]

**NIR Spectrum**
CHEMOMETRICS:
THE APPLICATION OF MATHEMATICAL
AND STATISTICAL METHODS FOR
ANALYSIS OF CHEMICAL DATA

Chemometrics
Mathematical, statistical, graphical or symbolic methods to
improve the understanding of chemical information.
Useful at any point in an analysis, from the first conception of
an experiment until the data is discarded.

An Introduction to Chemometrics - Definitions / B A Rock, 469D, 7-
1119 / Jun 5 1997

Fecal Chemistry
Bonds of:
Carbon
Oxygen
Nitrogen
Hydrogen

Diet Quality
Crude Protein
Dig. Org. Matter

DIET-FECAL PAIRS

NIR Spectrum

Predicted Diet
Crude Protein
Digestible Organic Matter

Y = β₀ + β₁x + ε

Have a great day!