

Application of aquaphotomics for vegetable quality assessment

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Purpose of the experiment

Development of quality assessment model of plants in a hydroponic installation.

Materials and methods

Samples: Shiso and basil.

Measure 2-leaf-samples from each kind once every two days for 2 months. 30 mold-basils were temporarily collected during the period.

Measure leaf on 2 or 3 random places, depending on size (5 consecutive spectrum for each position) at room temperature 24~28 °C.

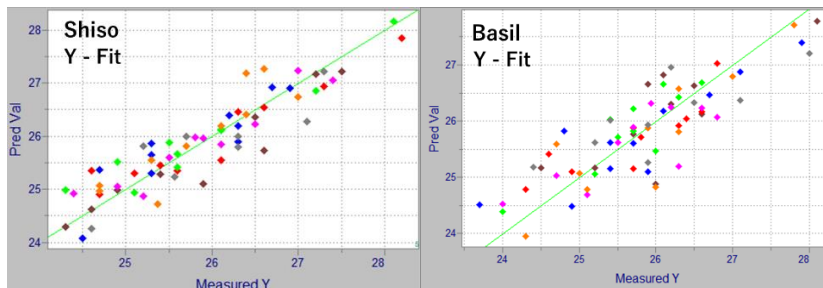
Instrument: Hammamatsu photonics NIRspectrometer

- ◆ measurement range : 881nm – 1715nm
- ◆ wavelength step : 1.4nm
- ◆ diffused reflectance with white panel

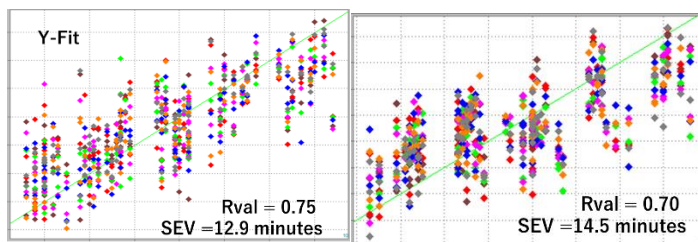
Results and discussion

PLS model for sample-leaf temperature.

Shiso : SEV = 0.38°C Rval = 0.916 Basil : SEV = 0.51°C Rval = 0.84



PLS model for freshness (time after harvesting the leaves, range: from 15minutes to 90 minutes)



Shiso leaves

Basil leaves

After applying those basil prediction model to 30 **mold**-basils, the prediction accuracy (SEP) was considerably worse than healthy one`s SEV.

Conclusion

Near Infrared Spectroscopy has been successfully used for measurement of leaf temperature and freshness of 2 different plant species. Mold of the leaves decreases the accuracy of prediction and this finding can be further used for mold diagnosis.

Reference

- *Jinendra B, et al. (2010) Near infrared spectroscopy and aquaphotomics: Novel approach for rapid in vivo diagnosis of virus infected soybean. Biochem Biophys Res Commun 397(4):685-690.*