Nondestructive determination of humic acid in compost by NIRS

Sang-Hyun Seo[1,*], XiaoRi Han[2], Rae-Kwang Cho[1] and Woo-Churl Park[1]

[1] *Kyungpook National University, Taegu, Korea*

[2] *Shenyang Agricultural University, Shenyang, Liaoning, China*

Email : wcpark@knu.ac.kr

Composting is a biological method used to transform the organic waste into stable, humified organic amendments. Humification is indicated as the key factor in improving the quality of compost, because of the importance of humic substances to soil ecology, fertility and structure, and their beneficial effects on plant growth The compost constituents vary widely, however, the degree of maturity is very important factor in compost quality. So this experiment carried out to determine the rapid estimation of the quality in cattle, pig, chicken and waste composts using near infrared reflectance spectroscopy(NIRS). Near infrared reflectance spectra of composts was obtained by InfraAlyzer 500 scanning spectrophotometer at 2-nm intervals from 1100 to 2500nm. Multiple linear regression(MLR) or partial least square regression (PLSR) was used to evaluate a NIRS method for the rapid and nondestructive determination of humic acid contents in composts. The results summarized that NIR spectroscopy can be used as a routine testing method to determine quantitatively the humic acid content in the compost samples ondestructively. Especially, we supposed that absorbance around 2300nm is related to humic acid as a factor of compost maturity. However the NIR absorption approach is empirical, it actually requires many combinations of samples and data manipulations to obtain optimal prediction.