

METHOD AND SYSTEM FOR QUANTITATIVELY DETECTING COPPER IN RICE LEAVES

ABSTRACT

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The present invention provides a method and system for quantitatively detecting copper (Cu) content in rice leaves. The method includes: obtaining rice leaf samples, laser-induced breakdown spectroscopy (LIBS) data and a true Cu content y ; establishing a simple linear regression (SLR) model of Cu emission line intensity and Cu content, and calculating a predicted Cu content y_i based on the model; establishing an exponential regression (ER) model of Cu emission line intensity and Cu content, and obtaining a maximum R_{ej} ; calculating a predicted Cu content y_j based on the model; establishing a multiple linear regression (MLR) model of Cu emission line intensity and Cu content y_d , and calculating a predicted Cu content based on the model; and establishing a linear regression model of multi-equation combination predicted content and true Cu content, and finally determining a Cu content. The method of the present invention contains mathematical relationships such as linear, exponential and non-linear relationships between the LIBS spectra and the Cu content of the rice leaves to the maximum extent. This method retards matrix interference information and thus achieves accurate quantification of the Cu content.

20 [Figure 1]