ABSTRACT

PREDICTION OF PROTEIN CONTENT OF WHEAT WITH NEAR INFRARED REFLECTANCE SPECTROSCOPY

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New technologies to determine some properties, which affect the plant growth more accurately and economically, and plant parameters, have been developed as an alternative method to traditional methods in the recent years. Near-Infrared Spectroscopy (NIRS) which was developed for that aim is one of the techniques for obtaining inexpensive and rapid plant data for agricultural and environmental use.

In this study it is aimed to develop a new methodology based on the principle of measuring the reflections by using the Near-Infrared Spectroscopy (NIRS) and to compare the obtained results with the laboratory and the traditional analyses results of the 12 different wheat cultivars of protein content which are cultivated in Trakya of Marmara region.

The analysis for the 12 different wheat cultivars were protein content related with the hectoliter, protein rate, gluten, gluten index, moisture, sedimentation value and other protein analysis. In addition to this, there were used the milled wheat samples for obtaining the reflection results in the laboratory.

The Partial Least Square (PLS) regression analysis was used in order to determine the calibration equation between the reflection results and the plant protein contents which were obtained by the traditional method in the laboratory.

The results of this study demonstrated the feasibility of using Near Infrared Spectroscopy (NIRS) to rapidly and accurately (r^2=0,82) measure nitrogen and protein content of wheat.

Keywords:
Near-Infrared Spectroscopy (NIRS), wheat, nitrogen, protein content.