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A PORTABLE, NEAR INFRARED INSTRUMENT FOR THE EVALUATION OF SOME QUALITY PARAMETERS IN TOMATO

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Tomato is an important vegetable grown worldwide; its quality (taste) is mostly judged by its combination of sourness (titratable acids) and sweetness (total

soluble solids). Moreover, the presence of the so-called "nutraceutical" compounds in vegetables is more and more important; in fact, tomato fruit is appreciated as an important source of anti-tumoral compounds such as lycopene and β -carotene. Most instrumental techniques to measure these constituents are destructive, involve a considerable amount of manual work and are not applicable to continuous systems.

In recent years, research has been focused on the development of non-destructive measurement techniques for measuring various quality attributes (Chen & Sun, 1991; Jha & Matsuoka, 2000). Amongst these, near infrared (NIR) spectroscopy is a well-established technique for constituent analysis of agricultural and food products (Bull, 1991) as it has many advantages when compared with classical chemical and physical analytical methods: NIR spectroscopy has a short measuring time; with limited sample preparation; it is chemical-free and it can easily be used in continuous quality evaluation.

The use of NIR portable instruments in tomato could allow the evaluation of important parameters in different steps of the ripening process, the contemporary evaluation of several parameters with only one reading and, for some compounds, the simple, quick and cheap evaluation if compared to the classic methods of analysis (e.g. lycopene determination).

The first results showed a very good correlation between lycopene content and some specific wavelengths.