

CAI, Congreso Argentino de AgroInformática

A Method to Construct Fruit Maturity Color Scales based on Support Vector Machines for Regression: Application to Olives and Grape Seeds

Felipe Avila³, Marco Mora^{1,3*}, Miguel Oyarce³, Alex Zuñiga³, Claudio Fredes^{2,3}

¹ Department of Computer Science, Universidad Católica del Maule, Talca, Chile
marcoantoniomoracofre@gmail.com

² Department of Agricultural Science, Universidad Católica del Maule, Curicó, Chile
cfredes@uclm.cl

³ Laboratory of Technological Research in Pattern Recognition, Avenida San Miguel 3605, Talca, Chile
<http://www.litrp.cl>

Keywords: Color scales, Fruit maturity, Support Vector Regression

Color scales are a powerful tool used in agriculture for estimate maturity of fruits. Fruit maturity is an important parameter to determine the harvest time. Typically, to obtain the maturity grade, a human expert visually associates the fruit color with a color present in the scale. In this paper, a computer-based method to create color scales is proposed. The proposed method performs a multidimensional regression based on Support Vector Regression (SVR) to generate color scales. The experimentation considers two color scales examples, the first one for grape seeds, the second one for olives. Grape seed data set contains 250 samples and olives data set has 200 samples. Color scales developed by SVR were validated through K-fold Cross Validation method, using mean squared error as performance function. The proposed method generates scales that adequately follow the evolution of color in the fruit maturity process, provides a tool to define different phenolic pre-harvest stages, which may be of interest to the human expert.

Acknowledgment: This research is financed by the research project FONDEF IDEA en 2 Etapas ID15i10142 2015 “Estimación del Contenido de Aceite en Olivas en base a Tecnologías no Destructivas” (Estimation of Olive Oil Content based on Non Destructive Technologies), Scientific and Technological Development Support Fund (FONDEF), National Commission for Scientific and Technological Research (CONICYT), Government of Chile.

Publicado originalmente en: Avila, F., Mora, M., Oyarce, M., Zuñiga, A., Fredes, C.: A Method to Construct Fruit Maturity Color Scales based on Support Vector Machine for Regression: Applications to Olives and Grape Seeds, *Journal of Food Engineering* 162 (2015) 9-17. <http://dx.doi.org/10.1016/j.jfoodeng.2015.03.035>.