

## TECHNOLOGY RESEARCH AND EQUIPMENT DEVELOPMENT OF FLESH TRANSLUCENCY NONDESTRUCTIVE DETECTION IN PINEAPPLES

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Translucency has seriously jeopardized the pineapple industry in recent years, and it is of great significance to explore a nondestructive detection method for translucency in pineapple to ensure the marketed fruits, guide the post-harvest treatment, and promote the industrial upgrading. In this study, we used a self-constructed pineapple visible/near-infrared spectroscopic nondestructive intelligent detection platform, equipped with detectors covering different wavelength bands to sample pineapple samples. The results show that the models of 400-1,100 nm can correctly determine 98.51% of the pineapple translucency training set and 91.18% of the validation set; the models of 900-1,700 nm can correctly determine 100% of the pineapple translucency training set and 62% of the validation set; the models of 400-1,700 nm can correctly determine 100% of the pineapple translucency training set and 62% of the validation set; and the models of 400-1,700 nm can correctly detect the pineapple translucency training set and 62% of the validation set. The model with 400-1,700 nm has a correct callback rate of 100% for the pineapple translucency training set and 91.18% for the validation set, and both PCA and PLSR results show that 400-1,700 nm can slightly improve the detection effect of 400-1,100 nm. Considering of application cost and efficiency, a practical detection of translucency was suggested to use the 400-1 100 nm spectrum that combined with SG + SNV + PNN modeling in industrial production. The intelligent sorting equipment was developed based on the nondestructive detection technology, which provides a new approach for pineapple translucency nondestructive sorting in industry.

Keywords: nondestructive testing, modeling, pineapple, translucency, equipment development