

Title           New observation of nondestructive evaluation for sweetness in apple fruit using near infrared spectroscopy

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### **Abstract**

The study was carried out to investigate the factors effects on brix and possibility of non-destructive evaluation for sweetness in apples by near infrared (NIR) spectroscopy. Correlation coefficients ( $R$ ) between brix and total sugar contents was 0.66 and  $R$  between brix and moisture contents was 0.8. But no clear relationship between brix and free sugar contents (0.03 for fructose, 0.34 for glucose, 0.39 for sucrose and 0.65 for sorbitol) was found. Brix was effected on not only total sugar but also moisture contents. MLR analysis for free and total sugar contents of apple, multiple correlation coefficients ( $R$ ) and standard error of prediction ( $SEP$ ) were 0.75% and 0.86% for fructose, 0.84 and 0.26% for glucose, 0.86 and 0.33% fro sucrose, 0.93 and 0.18% for sorbitol and 0.8 and 0.81% for total sugar. MLR analysis for sweetness score, which was calculated with sweetness index (sucrose 1.0 as standard),  $R$  and  $SEP$  were 0.8 and 0.82% in range 12.83-17.63. In conclusion, the sweetness score of apple fruits can be determine by NIR spectroscopy.