

Jutamas Kulnarumit 2010: Sugar, Starch and Quality of Sweet Corn Recombinant Inbred Lines. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Professor Jingtair Siriphanich, Ph.D. 110 pages.

Relationships between sugars, sugar content, starch content, pericarp thickness and eating quality of 89 inbred lines of sweet corn, harvested at 20 days after pollination (DAP), were studied. The results showed that the major sugar content in sweet corn was sucrose (>80%), glucose (7-8%) and fructose (4-5%). The correlation coefficient (r) between total sugar content, and a panelists' score of sweetness was positive ($r = 0.64, P < 0.001$). The correlation of sucrose and sweetness score was higher than that of glucose and fructose. Total starch content was negatively correlated with total sugar ($r = -0.56, P < 0.001$), sucrose ($r = -0.52, P < 0.001$), glucose ($r = -0.23, P < 0.004$), and fructose ($r = -0.23, P < 0.03$). The sweetness score showed negative correlation with starch content ($r = -0.46, P < 0.001$). In addition, sweetness score showed highly negative correlation with the panelists' score of pericarp thickness ($r = -0.78, P < 0.001$). However, pericarp thickness score showed only moderate positive correlation with pericarp content ($r = 0.36, P < 0.001$). The parental genotypes were found to affect sugar content of the inbred lines. Nineteen inbred lines had higher sugar content than the male parent. Ten inbred lines had lower thickness score than the male parent. Five super sweet corn inbred lines were superior over their male parent in both sugar content and thickness score.

Student's signature

Thesis Advisor's signature