

## Effect of Calcium Chloride Foliar Feed on Fruit Quality of Tomato (*Lycopersicon esculentum*)

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### Abstract

Calcium content in the fruit is related to the sugar content (brix) which is the mineral/sugar ratio of the plant cell protoplasm. Fruit firmness is an important post-harvest quality in fruit production and helps decide which fruit will be harvested, transported, stored, or marketed. An experiment was set up in Tsukuba International Training Center screen house 4 from 8<sup>th</sup> March to July 2013 with the objective to determine the effect of calcium chloride on firmness, yield and total soluble solids (TSS) and to examine the response of determinate and indeterminate tomato varieties to foliar application of calcium. A split plot experimental layout was used with variety *Animo* and *Shuho* as main factor and calcium rates (0, 1.5, 3 and 4.5 g /liter water) as sub plot replicated 3 times. Data collection started when the fruits were at maturity grade 7-8 (JA Bihoku tomato color chart). Determination of firmness was done at 4.5mm and 9mm (kg force) using a hand held penetrometer and total soluble solids using a refractometer. No significant difference was observed between the varieties for firmness ( $p = 12.7\%$ ). An increase in rate of calcium chloride had a positive impact on the firmness of fruits at 4.5mm. A positive correlation between calcium content and fruit firmness was observed as the force increased for the different tomato varieties. There was no consistent relationship between  $\text{CaCl}_2$  treatment and the TSS content of fruits. The yield was not consistent with the amount of calcium chloride rates applied. Demand for calcium is high in determinate tomato varieties than indeterminate varieties because they set their fruit within a short time.

**Keywords:** Fruit Firmness, Total Soluble Solids