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## INFLUENCE OF NITROGEN AND POTASSIUM FERTILIZATION ON MINERAL COMPOSITION OF KIWIFRUIT

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### Abstract:

Physiological disorders during fruit storage are common, leading to important losses of marketable yield, and can be strongly affected by the mineral composition of fruits at harvest. The present study was conducted for three years and was based on experimental data obtained from a fertilizer trial arranged as a completely randomized block design, with three replications, established in an orchard in the Portuguese Region of Bairrada. The aim was to evaluate the influence of nitrogen and potassium fertilization on the yield and fruit mineral composition of *Actinidia deliciosa* 'Hayward'. Three levels of nitrogen (30, 60 and 90 kg ha<sup>-1</sup> N) and four levels of potassium (0, 45, 90 and 135 kg ha<sup>-1</sup> K<sub>2</sub>O) were used, arranged into 12 experimental treatments. Nitrogen and potassium were applied annually, since 2004. Total yield and its distribution according to fruit size and deformed fruits were evaluated from each plot. A sample of 16 fruits of each marketable fruit size was taken from each plot and analysed for mineral composition. The supply of 90 kg ha<sup>-1</sup> N significantly increased nitrogen and sulphur fruit concentration, as compared to the application of 30 or 60 kg ha<sup>-1</sup> N. Conversely, the lowest level of nitrogen led to the highest potassium, zinc and boron fruit concentration. Fruit potassium concentration was significantly increased by potassium fertilization. A significant NxK fertilization interaction was observed on fruit calcium concentration. The lowest calcium concentration was found in experimental treatments N<sub>3</sub>K<sub>2</sub> and N<sub>3</sub>K<sub>3</sub> (with the highest level of nitrogen fertilizer (90 kg ha<sup>-1</sup> N, associated with 90 kg ha<sup>-1</sup> K<sub>2</sub>O and 135 kg ha<sup>-1</sup> K<sub>2</sub>O). Fruits from plants fertilized with the highest nitrogen rate showed higher N/Ca and K/Ca ratios than those fertilized with 30 kg ha<sup>-1</sup> N. The application of 90 kg ha<sup>-1</sup> K<sub>2</sub>O also caused a significant increase in fruit K/Ca ratio, although without significant differences from the highest potassium application level (135 kg ha<sup>-1</sup> K<sub>2</sub>O).