

A-148

Estimation of total K content in soybean leaves as a function of water-soluble K content

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Potassium (K) is the second most absorbed and removed macronutrient by soybean crop, and low K availability in the soil influences soybean yield and grain quality. The standard method for determining plant nutritional status is the extraction of total K content (TKc) by acidic digestion. However, other tools are available for monitoring plant nutritional status, by measuring NO_3^- , Na^+ and K^+ contents in liquid extracts. Our objective was to evaluate and calibrate the portable ion meter Cardy® (Horiba, Ltda, Kyoto, Japan) for measuring the water soluble K content (WSKc) in soybean leaf samples collected in two field experiments carried out in Londrina and Alvorada do Sul, Paraná State, Brazil. During the vegetative (V4-V6) and reproductive (R2-R3 and R5) stages, we collected leaf samples to calibrate the soybean response to potassium fertilization. The WSKc did not correlate with TKc in samples taken in the vegetative stage. However, during the reproductive phase, WSKc showed positive correlation with soybean grain yield and TKc. Thus, the proposed methodology is useful for evaluating the soybean nutritional status under field conditions.