

TITLE: MICROBIAL RESPIRATION OF SOIL SUBMITTED TO POTASSIUM DOSES

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ABSTRACT:

Soil respiration analysis is an important tool to estimate the release of CO₂ mainly produced by bacteria and fungi, representing an estimate of the rate of decomposition of organic matter in the soil or of some material added to it. The objective of this work was to verify the interference of potassium chloride in the basal respiration of soil cultivated with soybean. The experiment was conducted under field conditions at the Brumado farm, located in the municipality of Salto Grande - SP (22 ° 51'42.2 "S 49 ° 59'17.3" W, at altitude 399m). The doses of potassium chloride were distributed in coverage 55 days after the date of sowing of the soybean. The treatments consisted of the addition of 0; 25; 50; 75 and 100 kilograms of K₂O per hectare using potassium chloride (60% K₂O) as the source. The plots consisted of four blocks of 6 meters wide by 40 meters long for each plot, totaling 240 square meters. The soil was collected at 120 days after installation, at three points of each plot, at 0-10 cm depth, homogenized for the biological analyzes, sent to the soil microbiology laboratory at Unoeste, for analysis of soil basal respiration after 48 hours incubation. Data were submitted to analysis of variance and comparison between means using regression. The use of potassium chloride directly influenced the microbial respiratory rates, until the 50 kg dosage we can see increases in respiratory rates, however, when the doses were higher, the respiratory rate was reduced. This characteristic can be attributed due to the salinity caused by the fertilizer, the increased application may have provided stress conditions for the microbiota causing its death and consequently reduction of CO₂ release. We can conclude that doses greater than 50 kg ha⁻¹ of K₂O reduced soil microbial respiration.

Key words: Carbonic gas, microorganisms, respiratory activity, potassium chloride, fertilization.