RIO18 21st World Congress of Soil Science
Rio de Janeiro August | 12 - 17
21 WORLD CONGRESS OF SOIL SCIENCE
Sunday 12 – Friday 17 August 2018
Rio de Janeiro, Brazil

Polyhalite efficiency as source of sulfur for soybean and cotton in Brazil

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Soybean and cotton are two important crops in Brazilian Cerrado. The management of fertilization is an essential strategy to reach higher yields and profitability, and to maintain sustainability of farmers. The aim of the researches was to evaluate the effect of the mineral fertilizer Polyhalite as a source of sulfur for soybean and cotton in Brazil. Polyhalite is a natural fertilizer extracted from a single crystal complex with two molecules of water of crystallization, the chemical formula of the mineral is: $K_2Ca_2Mg(SO_4)_4.2(H_2O)$, and it contains 19.2% of sulfur (S), 14% of potash (K_2O), 12% of calcium (Ca), 3.6% of magnesium (Mg). One important characteristic of Polyhalite is the slow release and higher availability of nutrients, especially in relation to S. Two trials were conducted at Rio Verde Foundation farm, in Lucas do Rio Verde, Mato Grosso, Brazil. Soybean trial had 6 treatments and 4 replications comparing Polyhalite, single superphosphate and pastilled elemental sulfur as sulfur sources, in broadcast or furrow application. Cotton trial had 8 treatments and 4 replications comparing Polyhalite and ammonium sulphate as sulfur sources, in broadcast application and different times of fertilization. Polyhalite was found to be viable for use in soybean fertilization, both for broadcast or furrow application, and the yields were higher than the other treatments, being an excellent source of sulfur and other nutrients for the crop. In cotton trial, better yields were with ammonium sulphate applied 20 days after sown, Polyhalite applied 5 days after sown, and Polyhalite splited at 5 and 20 days after sown. Polyhalite was an effective sulfur source to cotton fertilization, achieving yield statistically equal to other commercial sulfur sources.

Keywords: Polyhalite, sulfur, soybean, cotton

Financial Support: International Potash Intitute; ICL Fertilizers