

POSTER ABSTRACT

TRANSFER OF CMS NITROGEN AND POTASSIUM TO SOIL WITH AND WITHOUT A TRASH BLANKET: RESULTS OF A POT STUDYVAN ANTWERPEN R^{1,3}, MILES N^{1,2}, MAKORO P¹ AND WETTERGREEN T¹¹South African Sugarcane Research Institute, P/Bag X02, Mount Edgecombe, 4300, South Africa²School of Agricultural, Earth and Environmental Sciences, University of KwaZulu-Natal, P/Bag X01, Scottsville, 3610, South Africa³Department of Soil, Crops and Climate Sciences, University of the Free State, P O Box 339, Bloemfontein 9300, South Africarianto.van.antwerpen@sugar.org.za neil.miles@sugar.org.za**Abstract**

Condensed molasses stillage (CMS) is widely used as a source of potassium (K) in the sugar industry. However, concerns have been raised regarding the possible deleterious effects of CMS on soil properties. This poster describes results from a pot trial that investigated the effects of CMS on soil properties and subsequent plant growth. CMS treatments (no CMS, CMS at 150 kg K/ha and CMS at 150 kg K/ha + 120 kg N/ha) were applied in combination with a surface cover treatment (bare vs trashed) and two simulated rainfall regimes (5 and 15 mm). CMS treatments were applied six weeks, three weeks or one day before simulated rainfall. After two weeks, sorghum (indicator crop) was planted in each pot and harvested eight weeks later. During the eight week period, the sorghum received an additional 33 mm of water. Soil samples were taken one day after simulated rainfall, immediately before the crop was planted, and after the crop was harvested. Samples were analysed for pH, N (inorganic) and K. Results showed that soil N and K applied via CMS were greatly reduced in the presence of the trash blanket; irrigating up to 48 mm water distributed over four applications was apparently insufficient to transfer all nutrients applied with CMS through the trash to the soil. CMS resulted in a small, though significant lowering of soil pH, an effect which was more marked for CMS fortified with N. Significant increases in sorghum N and K contents accompanied the application of CMS, irrespective of trash treatment. The outcomes of this work are being further assessed in two field trials.

Keywords: CMS, N, K, pH, trash, irrigation, sorghum