RESPONSE OF SUGARCANE TO N IN FIELDS NOT FERTILIZED IN THE PREVIOUS THREE YEARS

Oliveira, C.A.1; Cantarella, H.2; Montezano, Z.F.3; Vitti, A.C.4; Vargas, V.P.5; Rossetto, R.4; Dias, F.L.F.4

1-MS Student, Soils and Environ. Res. Center, IAC, Brazil, cybeliveira@hotmail.com; 2-Researcher, Soils and Environ. Res. Center, IAC, Brazil, cantarella@iac.sp.gov.br; 3-Pos-doc, Soils and Environ. Res. Center, IAC, Brazil, zaqueu@iac.sp.gov.br ; 4-Researcher, APTA, Piracicaba, Brazil, acvitti@apta.sp.gov.br; 5-PhD Student, Soils and Environ. Res. Center, IAC, Brazil,, vitorpvargas@hotmail.com; 6- Researcher, APTA, Piracicaba, Brazil, raffaella@apta.sp.gov.br; 7- Researcher, APTA, Piracicaba, Brazil, fabio@apta.sp.gov.br.

The possibility that biological nitrogen fixation (FBN) may supply part of the N to the sugarcane plant is causing some farmers to stop or reduce fertilizer N application. The objective of the study was to evaluate the stems and shoots yields, the concentrations and content of nutrients in sugarcane, in areas fertilized and unfertilized with N for three years. Three areas of high fertility Nitosols at Aparecida Farm, located in Mogi Mirim, SP Brazil, were selected. In this farm several fields received PK fertilizers but not N in the last three years. Controlled plots in the midst of the fertilized areas received 100 kg ha^{-1} N as urea. In three fields with uniform plant stands, replicated (4) plots of fertilized and non fertilized adjacent areas, consisting of four cane rows 15 m long, were harvested and the dry mass and nutrient contents of the above ground parts of the plants were evaluated. Stalk yields from non-fertilized areas varied from 75 to 91 t ha^{-1} (fresh weight), with an average yield of 85 t ha^{-1}. The corresponding figures for the fertilized plots were 92 to 97 t ha^{-1}, with an average of 95 t ha^{-1}, significantly higher than those of the non fertilized plots. The N concentration in stalks (1.4 x 2.3 g kg^{-1}) and stalk dry matter yields (25.3 x 29.0 t ha^{-1}) were also higher in the fertilized areas. In addition, the N content of shoots and N exported by stalks were lower in non fertilized areas (48 kg ha^{-1} and 35 kg ha^{-1}, respectively) than for the fertilized areas (75 kg ha^{-1} and 66 kg ha^{-1}, respectively). The data showed that the lack of N application is causing the yields and N content of the plants to decrease and that the natural N fixing microbiota could not supply all the N needed by sugarcane in these fields.

Keywords: *Saccharum* spp; nitrogen; BNF

Supported by AGRISUS Foundation