Abstract

The biosolids are organic materials, rich in nutrients, derived from wastewater treatment and its agricultural application is based on crop requirements for nitrogen, while avoiding the over application of heavy metals. This practice has shown to be an effective form of reusing the residual products safety. The biosolids are an excellent resource that can be used as supplementary organic fertilizer, allowing the farmer higher profits, since this material reduces the costs of chemical fertilizer and increases crop yields. One of the main problems of the municipalities with wastewater treatment plants is the final destination of the biosolids. Their deposit in sanitary fillers, the incineration and the agricultural use are the main methods of dispose; the first two methods are expensive and can become a potential source of pollutants, while the last one is gaining acceptance. In 2001, in order to adjust the optimum agronomic dose of biosolids and to reconcile their use with the potential risk of contamination with toxic metals, the application of the doses 0, 10, 20, 30 and 40 t ha-1 of biosolids, plus a control with chemical fertilizer (180-60-00) were studied in the forage maize crop at Delicias, Chihuahua, Mexico. Treatments were distributed in a latin square experimental design with six repetitions. The production of green forage, dry matter, grain and cob of forage maize obtained with chemical fertilization was in all cases lower, although statistically similar, to the one obtained with the application of 10 t ha-1 of biosolids. The application of 10 up to 40 t ha-1 of biosolids had a similar response in the evaluated yield variables. The percentage of nitrogen mineralization decreased as the rate of applied biosolids increased. The more appropriate agronomic and economic dose of digested anaerobic biosolids in forage maize production, was 10 t ha-1 on dry weight basis at the agricultural area of Delicias, Chihuahua, Mexico.

Keywords

Zea mays, contaminants, nitrogen, economic evaluation.