

# EFFECT OF SEWAGE SLUDGE ON THE INCIDENCE OF CORN STALK ROT CAUSED BY *FUSARIUM*

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## INTRODUCTION

During the last decades, sewage started to be treated in order to reduce the pollution of rivers, resulting in the production of a sludge rich in organic matter and nutrients, called sewage sludge. Among the alternatives for final discarding, the agricultural use is one of the most convenient, because it combines disposal and recycling. However, using sewage sludge as a fertilizer causes alterations in the physical, chemical and biological properties of the soils. The soilborne plant pathogens are highly influenced by the way the soil is managed; thus, sewage sludge may interfere with the occurrence of diseases caused by these microorganisms.

The objective of this study was to evaluate the effect of sewage sludge on corn stalk rot, caused by *Fusarium* spp.

## MATERIALS AND METHODS

The effect of incorporation of sludge from sewage generated in two Sewage Treatment Stations (Franca and Barueri), on the incidence of corn stalk rot caused by *Fusarium* spp. was studied in a randomized block trial with three replicates, in 200 m<sup>2</sup> plots in a Red Distroferric Latosol (clayey texture). Sludges were incorporated into the soil annually at concentrations of 0, 1, 2, 4, and 8 times the recommended rate based on their nitrogen content, in five consecutive corn cultivations.

The number of plants showing symptoms of corn stalk rot was evaluated approximately 100 days after each sowing operation. *Fusarium* community in the soil was determined through the serial-dilution method. Chemical attributes of soil were correlated with disease incidence.

## RESULTS AND DISCUSSION

No plants showing symptoms of stalk rot were observed in the first corn cultivation cycle (1999). However, the incidence of the disease was high in the subsequent cultivations (Fig. 1) (1).

The sludge concentrations also showed positive correlation with the *Fusarium* community in the soil and with the electric conductivity; on the other hand, they were negatively correlated with the pH. The correlation studies between the percentage of diseased plants and the soil's chemical attributes were significant and positive, for the two sludges, for P and Ca content, CEC, Ntotal, Nnitrate, and electric conductivity; on the other hand, it was negatively correlated with the pH.

The results demonstrated the importance of applying an adequate amount of sludge and that it is necessary to monitor the occurrence of the disease in areas where the residue is continually used.

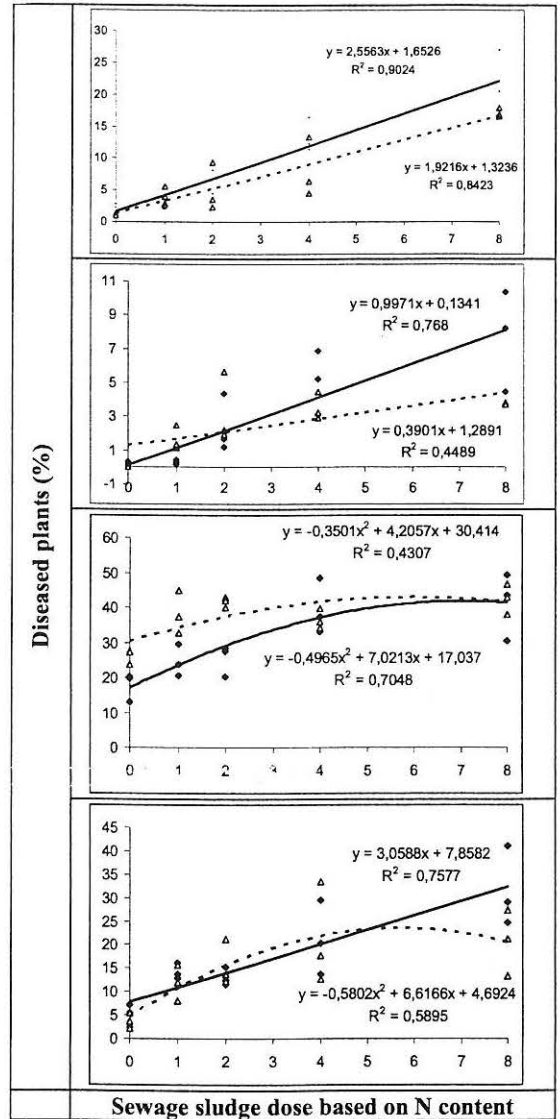


Figure 8 Effect of sewage sludge rates (— = Franca sludge; - - = Barueri sludge) on the percentage of diseased plants on the second, third, fourth, and fifth corn cultivation (from top to bottom).

## REFERENCES

- Bettiol, W. (2004). Effect of sewage sludge on the incidence of corn stalk rot caused by *Fusarium*. *Summa Phytopathologica* 30:16-22.