

Investigation of the Effect of Anaerobic Digestate on Antifungal Activity and in Different Parameters of Maize

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Abstract : Pakistan is an agricultural country. The increasing population leads to an increase in demand for food. A large number of crops are infected by different microbes, and nutrient deficiency of soil adversely affects the yield of crops. Furthermore, the use of chemical fertilizers like Nitrogen, Phosphorus, Potassium (NPK) Urea, and Diammonium phosphate (DAP) and pesticides have environmental consequences. Therefore, there is an urgent need to explore alternative renewable and sustainable biofertilizers. Maize is one of the top growing crops in Pakistan, but it has low yield compared to other countries due to deficiency of organic matter, widespread nutrients deficiency (phosphorus and nitrogen), unbalanced use of fertilizers and various fungal diseases. In order to get rid of all these disadvantages, Digestate emerged as a win-win opportunity for the control of a few plant diseases and a replacement for the chemical fertilizers. The present study was designed to investigate the effect of Anaerobic digestate on Antifungal Activity and in different parameters of Maize. The antifungal activity, minimum inhibitory concentration (MIC), and minimum fungicidal concentration (MFC) against selected phytopathogens (*Colletotrichum coccodis*, *Pythium ultimum*, *Phytophthora capsici*, *Rhizoctonia solani*, *Bipolaris oryzae* and *Fusarium Fujikuroi*) were determined by microtiter plate method. The effect of various fertilizers in different growth parameters height, diameter, chlorophyll, leaf area, biomass, and yield were studied in field experiments. The extracts from anaerobic digestate have shown antifungal activity against selected phytopathogens, the highest activity was noted against *P. ultimum*, the MIC activity was high in case of *P. ultimum* and *B. oryzae*. The present study concludes that anaerobic digestate have a positive effect on maize growth and yield as well as an antifungal activity which can be potentially a good biofertilizer.

Keywords : anaerobic digestate, antifungal activity, MIC, phytopathogens

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