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Microbial Communities as growth engines for Greece

Book of Abstracts

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Monitoring of the degradation of imazalil in a laboratory-scale immobilized cell bioreactor

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The fruit processing industry produces annually large amounts of wastewaters worldwide. In particular, various effluents contain high concentrations of post-harvest fungicides, including the imidazole fungicide imazalil, which is commonly used in post-harvest handling of citrus and banana. However, the biodegradation potential of imazalil in bioreactor systems remains unknown. In the current study, the biodegradation potential of imazalil was examined in an immobilized cell biosystem through the implementation of a comprehensive physicochemical analysis in the influent and the effluent of the bioreactor. In parallel amplicon next generation sequencing was employed to monitor the bacterial community composition in the immobilized biomass. Indeed, the acclimatized biomass was capable of reducing imazalil concentration over 80% under prolonged hydraulic retention time. It is concluded that the immobilization of the slow degraders in the Siran carriers permitted the effective reduction of this systemic post-harvest fungicide.

Keywords: fruit processing wastewater, imazalil, postharvest fungicide, immobilized cell bioreactor

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