

Assessment of the N- and P-fertilization effect of Black Soldier Fly (Diptera : Statiomyidae) by-products on m maize

Bachelorarbeit in dem Fachgebiet Ökologischer Landbau und dem Fachgebiet Agrartechnik

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Abstract

With the recent and prognosticated development of the BSF production industry, the valuation of its by-products, foremost of BSF residues (frass), is getting more economic and ecological importance. In a 10-week pot trial with maize, the N- and P-fertilizing effects of three by-products of the BSF production (frass, larval skins, adult flies) were assessed. Fertilizer analyses were carried out and compared with a compilation of frass analyses collected from the industry. Plant/height, growth stage and leaf chlorophyll were monitored during growth as well as nutrient, physiological and yield parameters at harvest date. Ground flies had the highest N-fertilizing effect of all by-products and had a similar effect as commercial mineral and organic fertilizers used as controls, whereas its proportion of the BSF production systems' output is low. Frass is quantitatively the most important by-product but showed comparably low N—fertilization effects. The utilized frass as well as most of the collected samples can be characterized as composite fertilizers with a nearly even N : P₂O₅ : K₂O ratio and high dry mass contents. For a more accurate assessment of the proposed valuation as a fertilizer, the variety of beneficial effects related to insect frass and/or chitin that are reported in literature should be investigated further, as they could define additional possible applications. Phytotoxic effects, as suggested by other authors, were not observed at the present application rates, however, the crops, application modalities and post-processing methods for an occurrence are a field of further research.