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Res. Agr. Eng.

Dalias P., Polycarpou P.:

Decomposition of the

biodiesel by-product, crude glycerol, in soil

Res. Agr. Eng., 60 (2014): 17-23

The disposal of crude glycerol, the biodiesel by-product, may become an economic or environmental problem in cases where no trading of this material is possible. This study aimed at evaluating the decomposability in soil of the unpurified glycerol fraction taken after the transesterification of oil using sodium hydroxide as a catalyst. The immediate effect of glycerol incorporation was a considerable increase in soil pH. In soil samples characterized by low biological activity this pH increase did not permit microbial development although the time lag before the growth of microorganisms feeding on glycerol was shortened after the addition of a nitrogen inorganic source. On the contrary, in soils with higher organic matter content and active microbial communities, excess alkalinity was rapidly eliminated and glycerol C mineralization progressed with a relatively high rate reaching 53% of initial C added after 2.5 months of incubation when an inorganic nitrogen source was available. It is concluded that results allow for further consideration of the possibility of spreading glycerol on soil or including it in compost piles.

Keywords:

glycerine; C mineralization; soil respiration

[fulltext]