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Abstract

Poster

Major Agricultural Science

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Corn Yield Respond to Johnson-Su Bioreactor Compost Rate, Supplemental Nitrogen and Use of Glyphosate

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Applying a fungal rich compost or compost tea from the Johnson-Su bioreactor has been touted as a way to enhance fungal relations with crop roots, increase crop growth and yield, reduce reliance on synthetic fertilizers, and increase soil carbon storage. Some have purported that applying glyphosate may negatively affect fungal communities in soil and negate the benefits of the compost. If applying this compost is able to reduce the amount of supplemental nitrogen required by the crop and the practice were widely adopted, it would have immense environmental and economic benefits. Our objectives were to measure: 1) the effect of increasing rates of compost on corn yield, 2) corn yield when supplemental nitrogen was applied after compost, and 3) the effect of glyphosate on corn yield where compost had been applied. Two factorial experiments were conducted at Western Illinois University's AFL Agronomy Farm in 2021. In experiment 1 the first factor was three rates of compost (0 kg ha-1, an extract, and 227 kg ha-1) and second factor was five rates of nitrogen (0, 67, 135, 202, 269 kg N ha-1) applied at planting. In experiment 2 the first factor was compost rate (0, extract, 560, 2242, 8968 kg ha-1) and the second factor was glyphosate (0, 1.26 kg ha-1) applied to V4 corn. Increasing compost rate did not increase corn yield. Corn yield increased as nitrogen rate increased, but the application of compost or extract did not interact with nitrogen rate. Applying glyphosate had no effect on the yield of the glyphosate-resistant corn hybrid in this weed free study.