

## Systems of Liquid Organic Fertilizer Application with Respect to Environmental Impact

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**Abstract :** The use of organic fertilizer is increasing nowadays, and the application must be conducted accurately to provide the right benefits for plants and maintain soil health. Improper application of fertilizers can cause problems for both plants and the environment. This study investigated the liquid organic fertilizer application, particularly digestate, varied into different application doses concerning mitigation of adverse environmental impacts, improving water infiltration ability, and crop yields. The experiment was established into eight variants with different digestate doses, conducted on emission monitoring and soil physical properties. As a result, the digestate application with shallow injection (5 cm in depth) was confirmed as an appropriate technique for applying liquid fertilizer into the soil. Gas emissions resulted in low concentration and declined gradually over time, obviously proved from the experiment conducted under two measurements immediately after application and the next day. Applied various doses of liquid digestate fertilizer affected the emission concentrations of NH<sub>3</sub> volatilization, differing significantly and decreasing about 40% from the first to second measurement. In this study, winter wheat crop production significantly increases under digestate application with additional N fertilizer. This study suggested the long-term application of digestate to obtain more alteration of soil properties such as bulk density, penetration resistance, and hydraulic conductivity.

**Keywords :** liquid organic fertilizer, digestate, application, ammonia, emission

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