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Effect of Continuous Treatment of Mixed Organic Fertilizer With Food Waste on the Growth of Lettuce

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[Abstract]

According to data from the Ministry of Environment, food waste accounted for 27% of the nation's household waste in 2020, and 4.67 million tons of food waste is being discharged per year. According to the Food Waste Direct Landfill Prohibition Act, food waste must be incinerated, composted, fodder, and decomposed before landfilling. The cost of incineration and landfilling of food waste is considerable. Therefore, through the process of turning food waste into fertilizer, we are going to investigate the limit of crop application and the change in the growth of crops during continuous use of food waste fertilizer. This study investigated the growth of lettuce such as shoot length, root length, leaf number, fresh weight, and dry weight after treating lettuce with food waste dry powder mixed fertilizer. The experiment was carried out continuously in 2021 (1st year) and 2022 (2nd year), and the treatment groups were set to No Treatment (NT), Chemical Fertilizer (CF), Mixed Fertilizer (MF×1), and Mixed Fertilizer×2 (MF×2), was repeated 3 times. As a result of the 1st year growth survey, there was no significant difference between NT and CF in the case of shoot length, but MF×1 and MF×2 were significantly decreased compared to NT. Root length was not significantly different in all treatment groups. As for the leaf number, there was no significant difference between NT and MF×1, but CF and MF×2 were significantly decreased compared to NT. In fresh weight, MF×1 and MF×2 were significantly decreased compared to NT, and in the case of dry weight, there was no significant difference between NT, MF×1, and MF×2. As a result of the 2nd year growth survey, there was a significant difference in CF and MF×2 in leaf number, but there was no significant difference in all treatment groups with respect to shoot length, root length, fresh weight, and dry weight. Through continuous additional research, it is necessary to confirm the change in soil composition and the growth of crops due to food waste fertilizer treatment.

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