Evaluating the Impact of Soil Management on Weed Pressure in Organic and Transitioning Agricultural Ecosystems

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Organic farming is a method of agriculture that has increased in popularity over the years. Despite its many environmental benefits, organic farmers are heavily dependent on tillage, which disrupts the soil food web and the soil ecosystem. The objective of the research was to determine the impact of continuous no-tillage with multi-functional cover cropping and a soil amendment (zeolite) on weed pressure in long-term and transitioning organic farming systems with corn-soybean-spelt rotation. Results showed significantly higher weed diversity in no-tillage (NT) than conventional tillage (CT) plots. Weed abundance was highest in corn and lowest in soybean, and decreased significantly after three years of proposed soil management. The long-term organic farms had significantly higher weed diversity and richness as compared to the transitioning farms. This study has shown the potential of soil management practices, particularly no-tillage to enhance ecosystem services in organic farming systems by reducing weed pressure.

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