

ABSTRACT

What does research really say about occasional strategic tillage in long-term no-till systems?

No-till is an unparalleled farming system to reduce soil erosion, conserve soil and water, improve near-surface soil properties, and reduce production costs, among other services. However, no-till farming may come with some challenges, including the development of herbicide-resistant weeds, soil compaction, soil C stratification, nutrient (i.e., P) stratification, acidification, and nutrient runoff. Despite the use of companion practices such as cover crops and diversified crop rotations, some challenges can still persist under long-term no-till farming. This leads to the question: would one-time or occasional strategic tillage be a tool to ameliorate the challenges with long-term no-till management? Strategic tillage could be a potential tool, but the concern is that it could reverse all the benefits gained after many years of no-till adoption. It is well recognized that it takes decades, if not centuries, to rebuild soil and restore soil C and other soil ecosystem services. Thus, this presentation will discuss the implications of occasional strategic tillage of long-term no-till systems for managing weeds, soil C, crop yields, soil health, and other soil ecosystem services based on the available research information. It will specifically address: what does field research really say about occasional strategic tillage in long-term no-till systems?