

Smart Farming: Using data to make decisions

To Till or Not to Till... (I.A.)

What does tillage mean? What is the best way to prepare a field for planting?

Tillage is a step for many farmers in preparing a field for planting. Other words for tillage include plowing or cultivating. In general, it is cutting through the soil using an implement or tool created for that use, usually an implement that is pulled behind a tractor. There are many reasons for tillage:

- to turn residue from the previous crop under the surface so it will decompose and leave nutrients in the soil
- to break the soil crust to make it favorable for planting
- to warm the soil by exposing it to the sun
- to manage weeds

Some farmers may choose to stop tilling and use no-till methods. This land management practice does not include plowing or cutting through the soil to turn it. However, this technique may require an herbicide treatment prior to planting so that any growth that has occurred before planting begins is killed off and does not compete with the crop that will be planted.

1) Read this article: "Tillage or No-Tillage: High Yields or Soil Health?" <https://www.farm-equipment.com/articles/11545-tillage-or-no-tillage-high-yields-or-soil-health> to gain an understanding of what some farmers have decided about tillage and why.

- Highlight vocabulary that you don't understand as you are reading and share those words back with the class after reading. As a group, define those words.

2) Take a look at this video: Soil Slake and Infiltration Test - Ray Archuleta https://www.youtube.com/watch?v=cx_hmse9Se8&t=325s to see some of the differences in soil structure (how the soil holds together in aggregates and pore spaces) and infiltration of rain water.

3) Read this article: "When does no-till yield more? A global meta-analysis" (<http://www.sciencedirect.com/science/article/pii/S0378429015300228>)

4) Read this blog post: <http://www.deeprooot.com/blog/blog-entries/what-is-soil-structure-and-why-is-it-important>

What would you choose?

1. Describe your decision, to till or not to till, for the purposes of this activity and list at least two pieces of evidence for your choice from the video and/or the articles.

2. Discuss and compare your decision with your table group. What are their decisions and why did they make them? What factors must be considered to make this choice?

Go to the Decision Tracker (row I.A.) to enter your decision (There is no result for this decision in this simulation, since no till requires different practices and there are trade-offs to using it.)

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