Table showing randomized complete block AOV table for parameters for corn

Effect of Tillage and Cropping Systems on Corn and Soybean Growth and Yield

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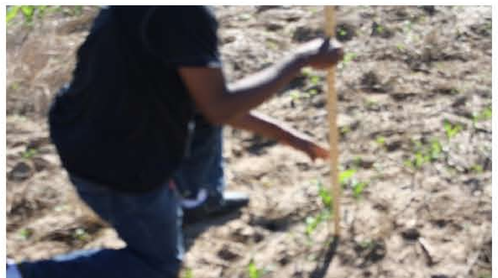
INTRODUCTION

Tillage is not just of utmost importance to farmers, it is a practice that greatly interests environmental scientists as well. It is an important subject as it is directly related to how much money and energy a farmer puts in, the yield at the end of the growing season, and the effect of the agricultural process on the environment as a whole.

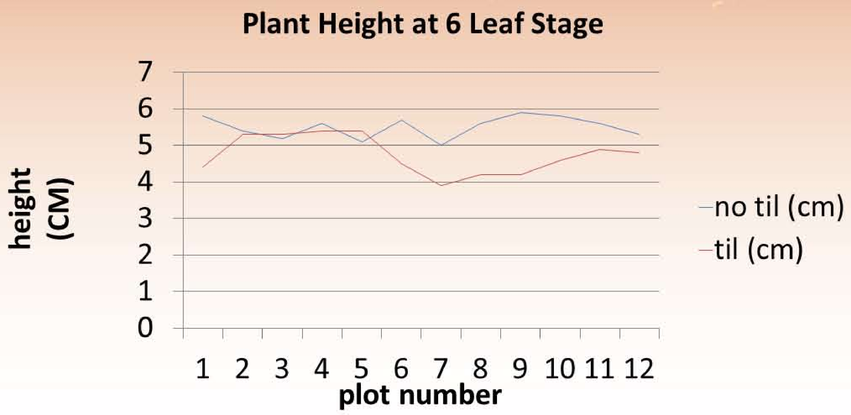
Tillage is the overturning of soil, usually to achieve homogeneity in the topsoil. It is a conventional practice that involves the utilization of a lot of energy, either from humans or from large machinery. Not only does it involve the use of a lot of energy but it also takes a lot time and money as one has to buy tractors, fuel, and pay for replacement parts and labor whenever repairs need to be done. (Garrity D.)

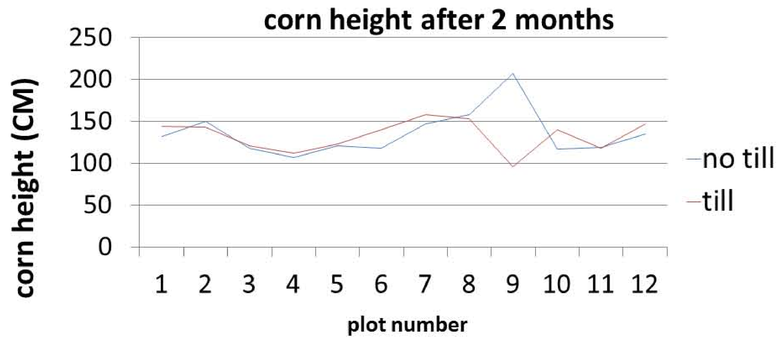
There are several advantages to tilling the soil before planting: it helps to aerate the topsoil, helps in the destruction of weeds and dries the soil if it is too wet Although these are all positive factors to consider when making the decision of whether to till or not, there are also negative effects that must be taken into consideration. For example: tillage can cause the soil to lose moisture that is needed for seeds germination, it also induces erosion. As a result of the negative effects associated with tillage, many farmers practice no-till. (Hobbs P.)

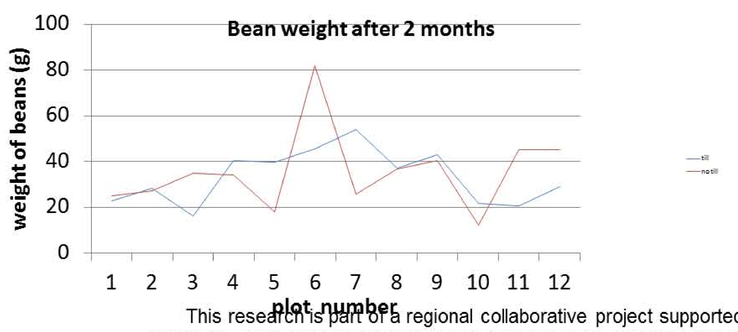
In no-till farming, the soil is left undisturbed and thus soil carbon and nitrogen is kept locked in instead of being released into the atmosphere as greenhouse gases. Also whenever it rains, a lower concentration of soil minerals end up in streams from run off. The objective of this study is to assess the effects of tillage, cover crop and rotation on corn and soybean growth and yield. (Pieri et al, 2002)



RESULTS







MATERIALS & METHODS

SAMPLE AREA: Freeman Farm in Central Missouri,

Soil: Waldron silty-clay, loamy substratum and Booker silty-clay

Laboratory Techniques:

- a 10 acre field was divided into three blocks with each block representing a replication. In each rep, 8 plots of Corn were established .
- Fertilizer was applied to the plots. One plant was taken from each plot 4 times over the growing season and the following parameters were measured: plant height, weight and area, leaf number and weight, crop weight and number.

Parameter	P value
Plant height	0.1114
Plant weight (fresh)	0.3097
Stalk weight (fresh)	0.7605
Leaf height	0.3108
Leaf number	0.4655
Leaf area	0.1581
Dry stalk weight	0.8758
Dry leaf weight	0.7609

Table 1. Growth parameters measured for corn

SUMMARY

- In first month of season, slightly better growth rate was observed in no- till as compared to tilled plots
- After the first month, there was no significant difference between the no-till and till plots for corn growth parameters.

References

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