

A Yield Comparison of No-Till and Tillage Farms

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Introduction

The Kansas Farm Management Association (KFMA) program started keeping track of whether a farm is a no-till farm over 5 years ago. This effort started in the central regions first but now all the regions tag farms as no-till whenever all crop production takes place as no-till. There could be some minor exceptions such as a spot compaction abatement but in general, tillage is not used on farms labeled as no-till.

Farms labeled as tillage farms employ some level of tillage on an on-going basis. There is a wide range of production practices that would cause a farm to be placed into the tillage category. Some tillage farms might use tillage for all crops while other tillage farms might use tillage only for certain crops and plant other crops as no-till. The important distinction for tillage farms is that the soil is disturbed at some point in the crop rotation cycle.

The KFMA program also tracks acres planted to a specific crop and the number of bushels produced. Thus it is easy to calculate a yield per acre for the major Kansas crops (corn, soybeans, wheat, grain sorghum). Since we also know whether a farm is no-till or not, it is straightforward to compare yields for no-till farms versus farms that practice some tillage.

In this paper, yields per acre of corn, soybeans, wheat, and grain sorghum are compared across the three regions that have kept track of the tillage status of farms for the last five years. These KFMA regions include: North Central, South Central, and Northeast. There are approximately twice as many farms that are not no-till as there are no-till farms. The three regions in this paper all have

enough farms growing corn, soybeans, and wheat to do a yield comparison. However, the Northeast region doesn't have enough farms growing grain sorghum to do a comparison for that specific crop.

Results

Corn yields (Figures 1, 2, and 3) - no-till corn yields were equal to or greater than yields from farms not considered to be no-till. In the North Central and the South Central regions, no-till yields were almost identical to the corn yields from farms practicing tillage while in the Northeast, no-till yields were often 20 bushels higher than tillage farms.

Soybean yields (Figures 4, 5, and 6) - the no-till soybean yields were equal to or greater than yields from tillage farms. There are probably more yield differences with soybean yields than there were with corn yields. The North Central region saw yield advantages of 4 to 8 bushels for no-till farms in all years except for 2013 when the yields were nearly identical. The South Central region saw yield advantages for no-till farms of around 4 bushel per acre except for 2014. The Northeast region saw the biggest yield differences with no-till production of soybeans. The yield advantage of no-till in this region ranged from 6 to 12 bushels per acre.

Wheat yields (Figures 7, 8, and 9) - no-till wheat yields were at least equal to the yields from tillage farms. However, there weren't the consistent advantages for no-till as seen with corn and soybeans. The biggest advantage for no-till wheat appears to be in the South Central region where no-till wheat yields were higher than yields from farms with conventional tillage in three out of the five years.

Grain sorghum yields (Figures 10 and 11) - no-till farms had consistently higher yields than tillage farms. Yield advantages ranged from 10 to 30 bushels per acre in the two regions with enough farms for comparison.

Conclusions

This paper examines the yield per acre of corn, soybeans, wheat, and grain sorghum for no-till farms and tillage farms. In nearly every case the average yield from a no-till farm was higher than the average yield from a tillage farm for the same region and crop. Left unanswered though is why no-till farms have higher yields. Is it because no-till production actually produces greater yields or is there something about the no-till

producers that leads to higher yields. In other words, if the no-till producers were producing crops using tillage, would their tillage yields also be higher than average?

The reason why no-till has higher yields may not actually matter in practice. If the higher yields are from no-till production actually being more productive, then all producers should give no-till some consideration. If the higher yields from no-till production are because of superior management, then all producers should consider why the top producers have switched to no-till production. Profitability and costs will be examined in future publications.

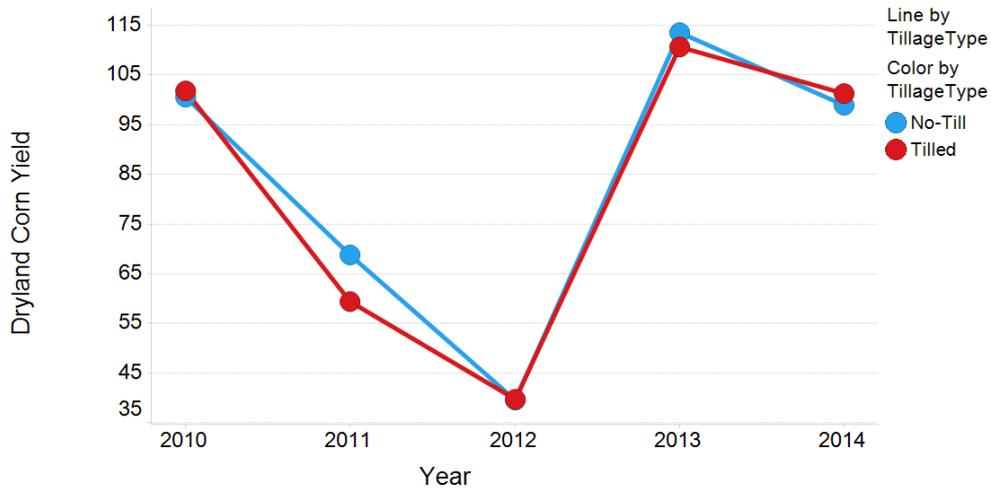


Figure 1. – Comparison of No Till and Tilled Dryland Corn Yields for North Central

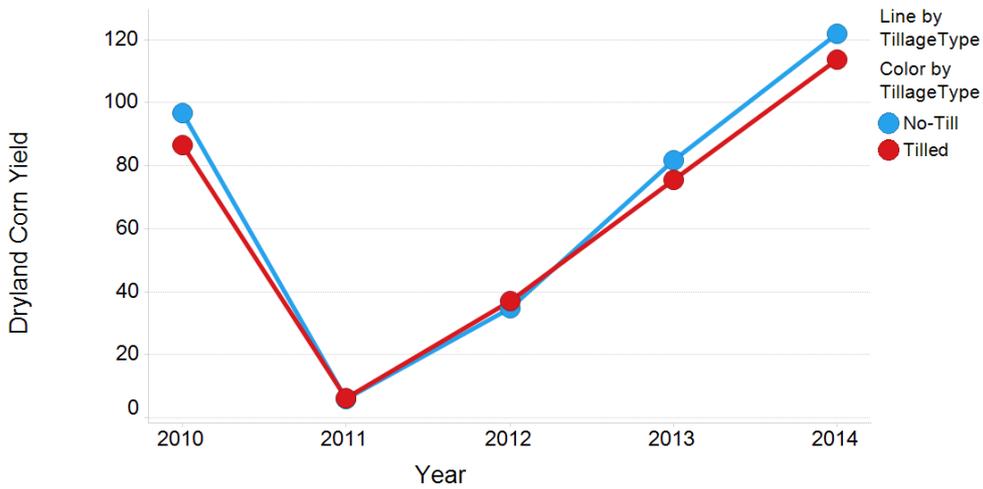


Figure 2. – Comparison of No Till and Tilled Dryland Corn Yields for South Central

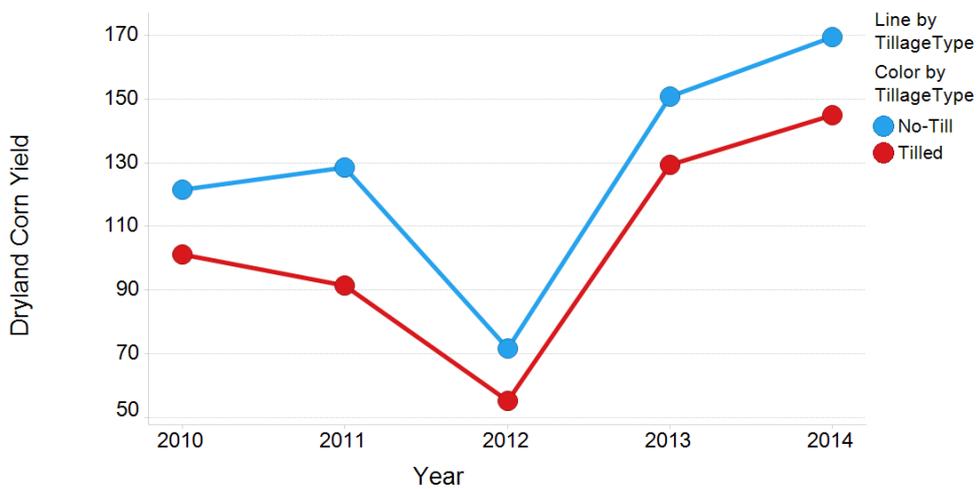


Figure 3. – Comparison of No Till and Tilled Dryland Corn Yields for Northeast

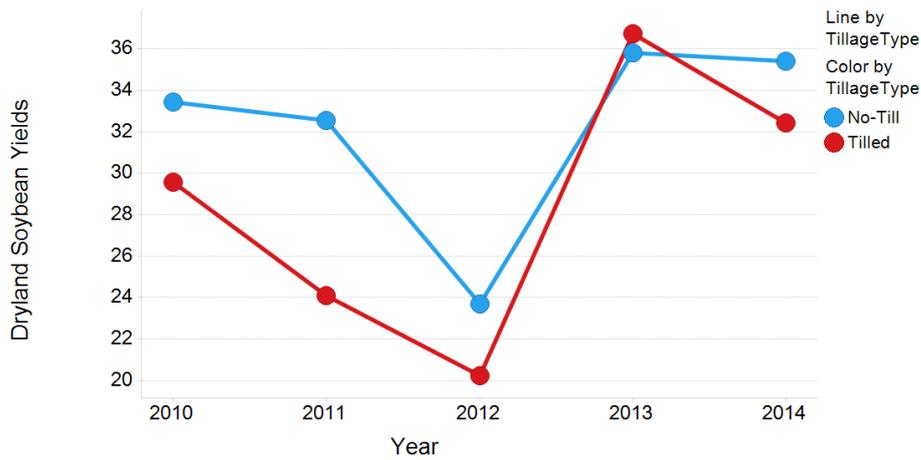


Figure 4. – Comparison of No Till and Tilled Dryland Soybean Yields for North Central

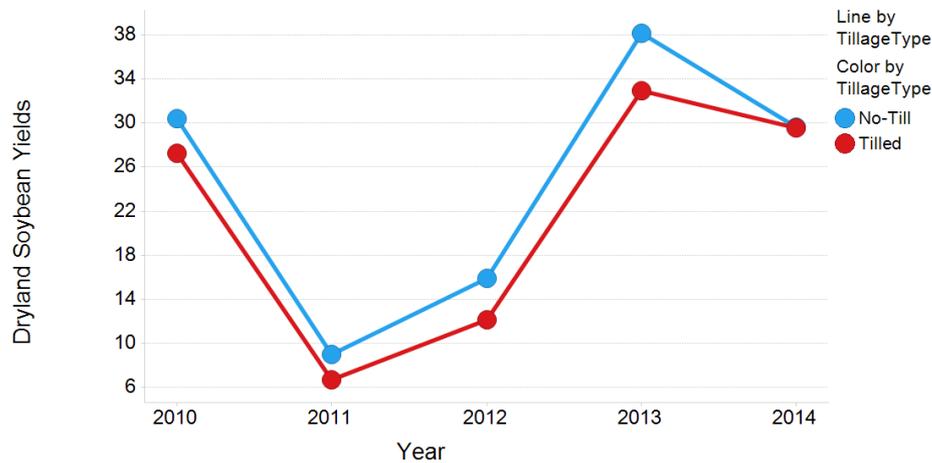


Figure 5. – Comparison of No Till and Tilled Dryland Soybean Yields for South Central

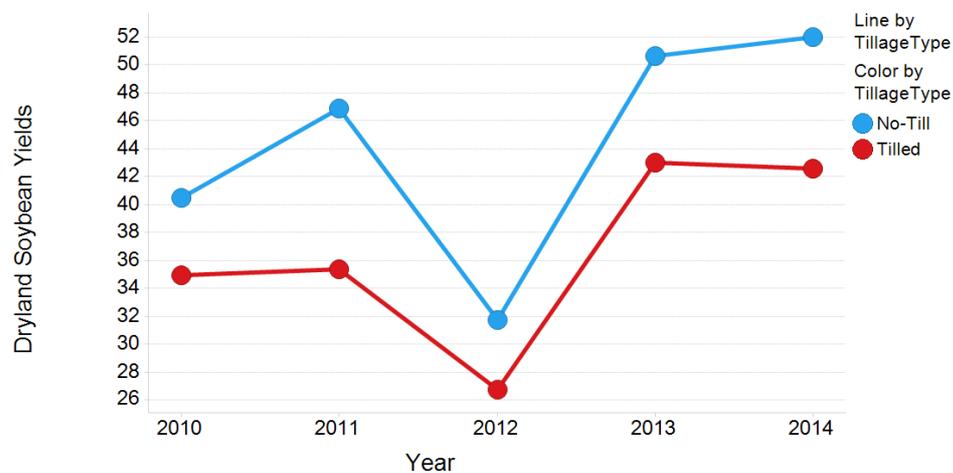


Figure 6. – Comparison of No Till and Tilled Dryland Soybean Yields for Northeast

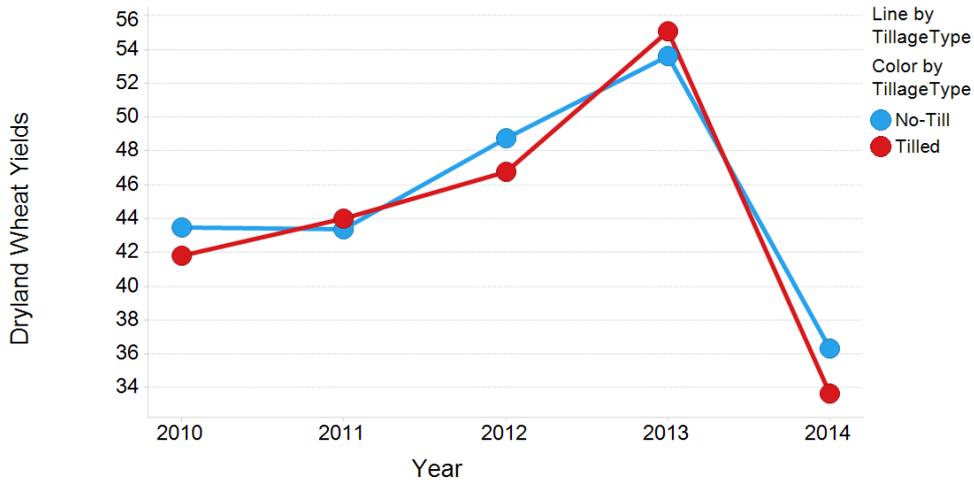


Figure 7. – Comparison of No Till and Tilled Dryland Wheat Yields for North Central

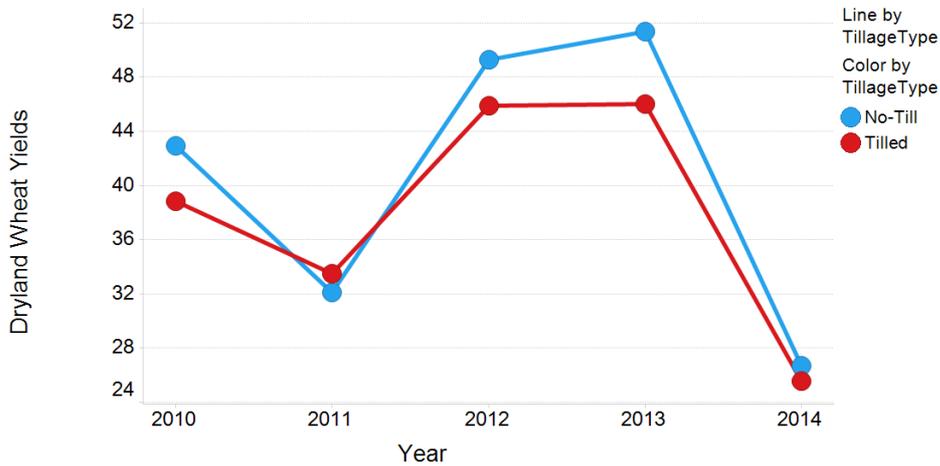


Figure 8. – Comparison of No Till and Tilled Dryland Wheat Yields for South Central

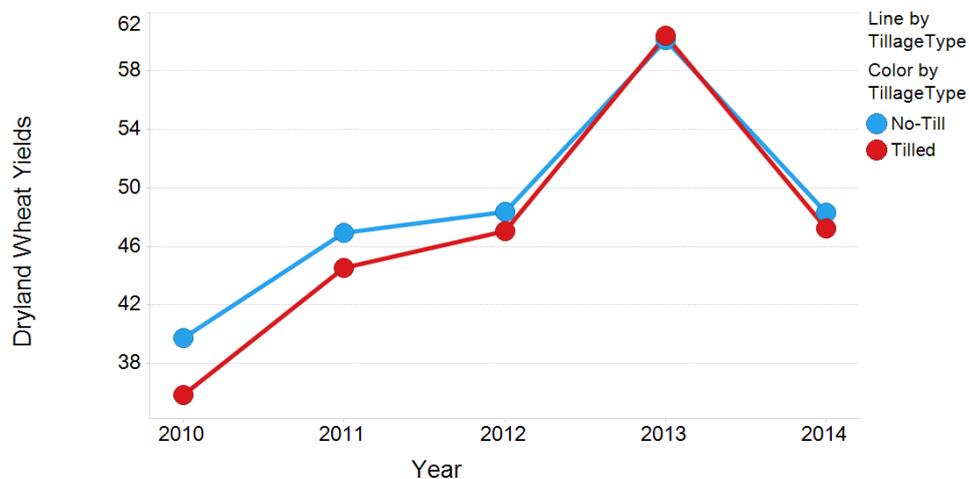


Figure 9. – Comparison of No Till and Tilled Dryland Wheat Yields for Northeast

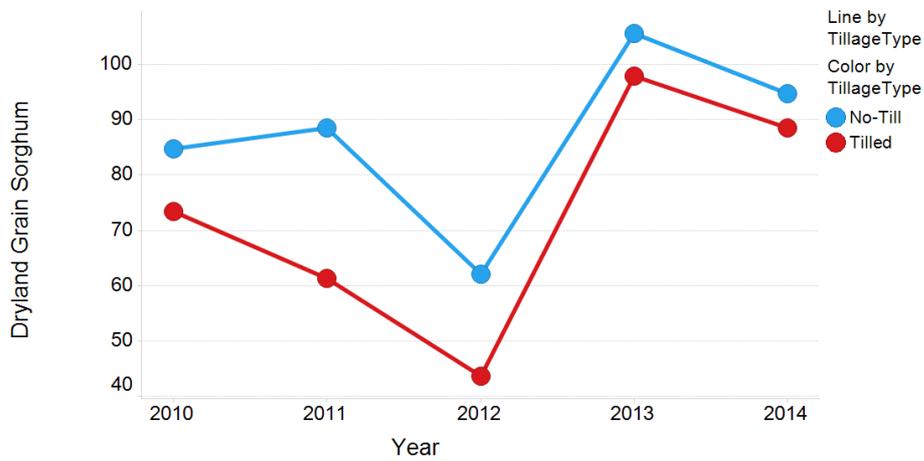


Figure 10. – Comparison of No Till and Tilled Dryland Grain Sorghum Yields for North Central

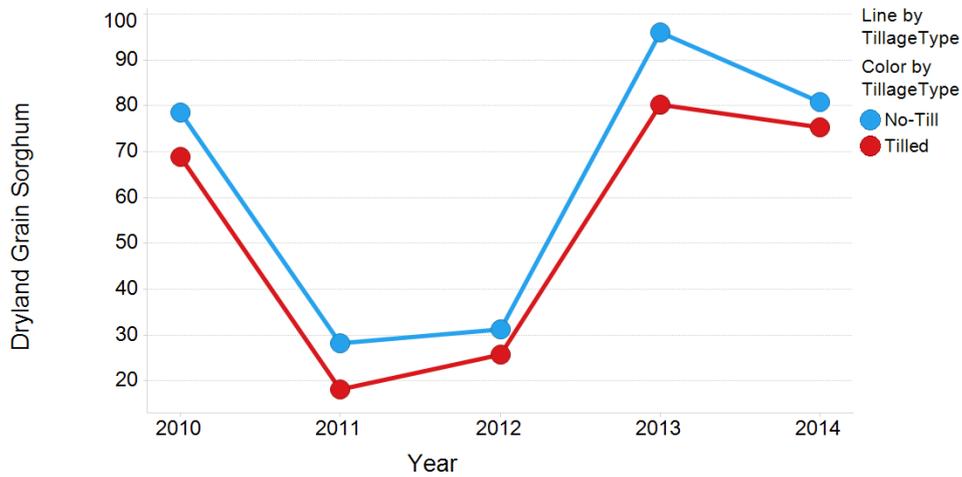


Figure 11. – Comparison of No Till and Tilled Dryland Grain Sorghum Yields for South Central