

## **Field Notes:**

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### **Tillage can delay cotton maturity.**

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As we work through the years there always seems to be something that we have not considered or have not experienced that teaches us. This year we have experienced something that I will have to admit has surprised me even though it is very logical, this is the effect that tillage system has had on the maturation of cotton.

Sometimes I hesitate in mentioning my opinions about the use of tillage as we prepare the land for crops. Actually I have talked about it so much that I may have over done it. I can't help remembering my own background in farming with my dad as I was growing up and later when I farmed rice in the South Delta. My opinions began to change when I started the research for my last degree.

Very little work had been done to look at the importance of mycorrhizal fungi to the growth of cotton. During the study I came to know that cotton cannot function well without them, and that anything that affects them in turn affects the cotton plant either positively or negatively. A real surprise was that these fungi can speed up or slow down the maturation of the crop.

This year I have noticed something that had a negative impact on beneficial fungi and in turn have damaged yield, quality, and maturation of the cotton. As usual, a few growers reworked some of their fields in preparation for planting. The combination of disk and chisel implements seemed fairly standard as a way to repair damage resulting from last year's harvest. I expected some negative effect, but nothing like what has happened as the delayed crop has been damaged by an early freeze. Had these area matured normally this would not have been an issue.

The real impact hit me when I visited two growers who planted adjacent fields the same day around May 20. One field had been reworked and planted on freshly prepared soil while the other had not been tilled in about ten years since converting to no-till. The no-till field produced around 1100 pounds and the freshly tilled field less than 500. The tilled field likely had the potential to yield at least 900 pounds based on boll counts, but the balance of the bolls were hard locked as the result of the freeze.

The maturation of the tilled field was delayed by several factors. Slow emergence during the period of heavy rain and saturated soil conditions produced weak plants even though a good stand was achieved. Next, poor colonization of roots by mycorrhizal fungi in the tilled field combined with poor soil aggregation to limit the supply of nutrients and oxygen for optimal growth.

Based on a rough plant map an estimated delay of almost three weeks can be seen in the tilled field even though the two fields were planted the same day. Thankfully, the tilled area did not amount to a high percentage of the grower's crop, but it has taught us an important lesson that we will not soon forget. The value of reduced soil disturbance, improved internal drainage, and those invisible beneficial fungi have proven themselves again in a very dramatic fashion.

Reduced tillage and no-till systems have always proven themselves in dry years, but this year their value has been proven in a wet year as well. A difference of a bale or more per acre was a big surprise, even to me. It is also something I won't soon forget. Neither will the growers who have seen this happen on their farms.

Thanks for your time.