



Corn production Boosted with Combination of No-tillage and Poultry Litter

Why Does it matter?

In the past several decades, corn production declined in the southeastern USA due to climate and soil-related limitations coupled with low corn prices. In Georgia, for example, corn acreage declined from average of 1.64 million acres in the 1970s to about 300,000 acres in 2006. Renewable bioenergy production has substantially increased the price and demand for corn in the last few years. As a result, future corn acreages are expected to be at their highest since 1944. Adoption of no-tillage and use of poultry litter as an alternative to conventional fertilizers might help corn producers in the Southeast to overcome production limitations, boost corn production, and gain economic benefit from the recent and unprecedented worldwide growth in demand and price of corn.

What was done?

In a 2001-2005 study, scientists from the Agricultural Research Service from Watkinsville, GA, and University of Georgia in Athens, GA, compared non-irrigated corn grain and dry matter yield under two tillage (conventional tillage and no-till) and two fertilizer sources (conventional fertilizer and poultry litter). Rye was grown in fall through early spring as cover crop for both tillage treatments.



What was found?

Over five years no-tillage increased grain production by 11% compared to conventional tillage, as did poultry litter by 18% compared to conventional fertilizer. No-tillage and litter combined increased grain yield 31% over five years compared to corn in conventional tillage with conventional fertilizer. No-tillage and litter also increased corn dry matter production throughout the crop season compared to conventional tillage and fertilizer. We attribute improved soil water storage and reduced drought stress due to no-tillage as a factor for the yield enhancement. Over five years, soil water content in no-tillage in the 0-4 inches depth was greater by 18.1% compared to conventional tillage.



What is the impact?

In 2008 about 6.1 million acres of corn was planted in the South yet only 50% of this used conservation tillage. The rising demand for corn might result in the conversion of marginal land into cornfields with conventional tillage methods that have proven unsustainable and resulted in natural resource degradation in the past. Our research results indicate no-tillage and poultry litter can help growers conserve and use rainfall more efficiently, reduce risk from droughts, and increase corn yields, while improving natural resource protection. Growers, extension agents, local, state and federal agencies involved in improving crop productivity, natural resource protection and alternative fuel sources would find these results very useful.

Research Team and Contact information

Cooperating Scientists:

ARS: Dinku Endale, Harry Schomberg, Dwight Fisher, Michael Jenkins, Ron Sharpe
UGA: Miguel Cabrera

Contact: Dr. Dinku Endale, 706-769-5631 x 239 Dinku.Endale@ars.usda.gov
or Dr. Harry Schomberg x 222 Harry.Schomberg@ars.usda.gov

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