NO-TILL AND REDUCED TILLAGE PRODUCTION IN THE NORTHERN PIEDMONT OF NORTH CAROLINA

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ABSTRACT

Reduced tillage production of corn and soybeans has become predominant in the Northern Piedmont of North Carolina. Initial research and reasoning for reduced tillage was based on preventing soil erosion on the highly erodible soils of the area. Additional research has quantified the benefits of reduced tillage on rainfall penetration and moisture availability, soil compaction and the resulting yield benefits. Current research grower experience and grower experimentation are centered on reduced tillage economic benefits (reduced labor, equipment, time, etc.), long-term benefits, selective tillage and fine-tuning reduced tillage management practices.

SUMMARY

Reduced tillage production of corn and soybeans has become predominant in the Northern Piedmont of North Carolina. Grower adoption of reduced tillage production of wheat has been slower to occur but continues to increase. Only a limited amount of no-till tobacco has been produced in the northern piedmont area of North Carolina. Initially the impetus for reduced tillage was primarily to prevent soil erosion, which is quite important in this area due to the soil type and slope of much of the cropland. In order to gain increased adoption of reduced and no-till production additional research and ultimately the further benefits of rainfall penetration and moisture availability, reduced soil compaction and the resulting yield benefits were quantified and stressed to growers. More recent research and grower experience has dealt with the positive changes on soil tilth due to long term no-till, economic benefits (reduced labor, equipment, time, etc.), selective tillage or minimal soil disturbance tillage (98% residue remains) and fine tuning reduced tillage management practices.

Growers are managing their reduced tillage production in order to build soil organic matter, improve soil tilth and to provide ideal planting conditions. Growers are also using selective tillage. Many fields in the northern piedmont are small and often bordered by trees. Tillage with a no-till ripper around the borders of a field to sever tree roots and to reduce compaction due to truck traffic around borders may be quite beneficial. Some no-till rippers will leave 98% residue. A no-till corn planter will often cause more soil disturbance than this type of ripper. Growers are managing their production inputs for reduced tillage and are managing the benefits of reduced tillage (improved root development and increased moisture availability) to help alleviate limiting factors to yield (i.e. hot, dry conditions during grain fill for corn). Reduced tillage has become a standard practice. Today, growers are fine-tuning the inputs and other related practices as they relate to reduced tillage and they are using the options and benefits of reduced tillage to address the factors that are limiting yield.