## PREFACE

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Recently conducted research in Alabama has demonstrated the importance of topsoil depth in crop production. As topsoil depth decreases, crop yields rapidly decrease. In many areas of the Southeast, soil erosion losses average 9 to 10 tons per acre per year. In relative values, this loss is small (less than 0.06 inch per acre) and goes unnoticed in many fields. Unfortunately, accumulated soil losses over a few years can drastically affect soil productivity. On many soils, an erosion rate of 10 tons per acre per year can reduce yield potentials 1/2 to 1 bushel per acre per year.

In addition to soil losses, the lack of conservation tillage results in tremendous quantities of water runoff. The cost of water runoff results in yield reduction every year in almost every field. It is difficult to place a dollar value on an inch of water, but the operation costs of many irrigation systems exceed \$10 per acre-inch. When irrigation is not available, the cost of water runoff can be even greater in terms of yield reductions.

In addition to soil and water losses, erosion can result in the loss of valuable nutrients that have to he replaced if economical yields are maintained. Research from several states has shown that the commercial value of nutrient losses from various conventional tillage systems can easily exceed \$15 per acre per year.

Conservation tillage is an economical method of controlling soil erosion and water runoff. In addition, results from many studies suagest that yields from conservation tillage cap be as high or higher than yields from conventional tillage systems. Unfortunately, yields in conservation tillage systems are not always as high as yields from conventional tillage systems and sometimes production costs are excessive. During the past decade, many researchers realized that problems existed with conservation tillage systems on some soils and with some crops. They also realized that possible benefits from conservation tillage warranted extensive research programs designed to identify and solve problems associated with conservation tillage.

The extensive research programs conducted in recent years have led to development of management practices that will improve the economics of conservation tillage. These studies have shown that optimum tillage systems will vary among soils, crops, and cropping systems. Some of the management practices developed included herbicide management programs that greatly reduce costs of weed control; fertilizer management techniques that, do not increase production cost, but boost yields 10 to 30%; cropping and tillage systems that reduce energy cost and in some situation eliminate the need for in-row subsoiling on hardpan soils; and cropping systems with winter legumes that reduce and/or eliminate the need for N fertilizer for summer grains and cotton.

Generally, there is a 2- to 5-year delay in transmitting data from the researcher to the agricultural community. Since there is a critical need for the limited conservation tillage data that are available, the Southeastern No-tillage Systems Conference was established to provide a rapid means for communications among researchers and the agricultural community. The proceedings associated with this conference is one method being used to rapidly transmit research data. Some of the papers in this proceedings are from relatively new, but promising projects. Since several years of supporting data are not available on these new projects, firm conclusions cannot be formulated, and care and logical thinking should be exercised in drawing interpretations from these papers. Trade and commercial names are used in some papers for the readers benefit, but they should not be considered as an endorsement or preferential treatment.

The Southeastern No-tillage Systems Conference is hosted each year by agricultural agencies, organizations, and individuals in one of the Southeastern States. It is highly supported by the land-grant universities, Agricultural Experiment Stations, Cooperative Extension Services, Soil and Water Conservation Service, Conservation Districts, Farmers Home Administration, Agricultural Stabilization and Conservation Service, Tennessee Valley Authority, agricultural industries, Farm Bureau, and other agricultural associations.