Articles

The National Soil Tilth Laboratory: An Introduction

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Mission

The concept of the National Soil Tilth Laboratory (NSTL) was proposed in 1959 in Senate Document 59. Entitled “Facility Needs—Soil and Water Conservation Research,” the document laid out the need for an agency which emphasized soil structure and stressed application of the basic breakthroughs into practical field techniques.

Efforts of the Iowa Congressional Delegation, especially Representative Neal Smith, allowed that original concept to come into being. In 1986, the planning and construction of an 82,000 square foot laboratory began on the Iowa State University campus. Thirty years elapsed from the conception of the laboratory until its dedication in July 1989.

In the laboratory’s beginning, the areas of study targeted (i) the study of the forces which bind soil particles and create good soil structure, (ii) the determination of amounts and kinds of tillage needed to produce good soil tilth, (iii) the chemical characterization of the organic soil constituents and microbial transformations responsible for good tilth, and (iv) the minimal amount of organic matter required for reasonably good tilth. The results of these studies were to be applied to the erodibility of soils; the water economy of soils, including runoff, water intake, and evaporation; increased plant growth, crop yields, and fertilizer use; efficient use of crop residues; and improved methods of preparing seedbeds.

The original concepts of the research laboratory have not diminished in importance over the past 30 yr. Our approach to solving them, however, has changed. Today our emphasis on interdisciplinary research allows us to approach agricultural problems from a different angle—in fact, many different angles—as we research not for research’s sake, but rather for the benefit of agriculture.

The real history of the NSTL thus begins with the scientific staff and research program as they take form and start to address problems on the agricultural horizon that are pertinent today.

Research Facilities

The NSTL is in its final stages of completion as scientists are added to the staff and their individual laboratories are set up. The NSTL houses 20

1Material adapted from the National Soil Tilth Laboratory 1991 Progress Report. Copies of the complete report can be obtained by writing the author.

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