

Tiling Research Project

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Introduction

During the 1990s, southern Iowa producers faced several years of wet growing seasons. Many producers were forced to abandon wet fields in 1992 and 1993 and yields were reduced in 1996, 1998, and 1999 from late planting due to wet soils. Drainage classifications of soils in southern Iowa range from poorly drained to moderately well drained. Most efforts at draining soils have been aimed at surface drainage. Little effort has been made to drain the southern Iowa soils using the subsurface drainage tile common in other areas of the state. Many producers feel that the effects of pattern tiled, subsurface drainage would be short-lived and not effective on southern Iowa's heavy clay soils. The pattern tile is also expensive. Little research has been conducted on the effects of subsurface drainage on southern Iowa soils using modern plastic tile, Global Positioning Systems (GPS), Geographical Information Systems (GIS), and laser-guided installation. The purpose of this project was to examine the long-term effects of subsurface, pattern tiling on yield, duration, and economics in southern Iowa soils.

Materials and Methods

The plot design is a split plot, randomized complete block with four replications. Treatments include: control (no tile), tile installed with a pull-type plow and a self propelled plow, and tile installed with two different trenching machines. The field was surveyed using GPS and the tile line location and grade determined with GIS. Four-inch, perforated plastic tile lines were installed on 40 foot centers and 500 foot lengths in August 2000. Tile mains consist of six-inch, non-perforated tile. Initial installation depth was three feet with a minimum of a 0.1 percent grade. Soil in the tiled field is classified as Edina, a dark colored, poorly drained soil formed under prairie, occurring on nearly level uplands. Wetness is a major management challenge because of Edina's subsoil which is very slowly permeable (high in clay). Grades will be checked in the spring of 2001. Yield data will be collected over the next 6-10 years on 10 foot widths both above and between tile lines using GPS and a yield monitor.

Approximately \$22,000 of tile and labor were donated to the tiling project and over 125 individuals attended the two day field installation demonstrations.