

## Background:

Excess moisture has caused significant agricultural loss over the past decade. Tile drainage as a water management strategy is growing in popularity but there is limited research as to optimal designs in clay soil and the economic payback of these designs. The PESAI research site has installed different tile configurations in heavy clay soil for research.

## Objective:

To monitor differences between 15' spaced tile, 45' spaced tile, and no tile (check) in:

- Water table behaviour
- Crop phenology
- Crop maturity
- Yield
- Drainage water volume
- Nutrient transport

## Results:

- Total drainage volume outflow was below measureable levels (minimal)
- No difference in nutrient transport
- Drainage water from 45' treatments had higher salt concentration, but these plots also had higher salt levels
- 15' spacing treatments had a lower water table overall during the season and reacted much more quickly to rainfall compared to 45' treatments or no tile
- During frequent periods of light rain (Sept/Oct), there was a foot of difference in the water table between each treatment
- No difference in yield (expected in a year when moisture stress is not a limiting factor in production)
- Rainfall this year was significantly less than average

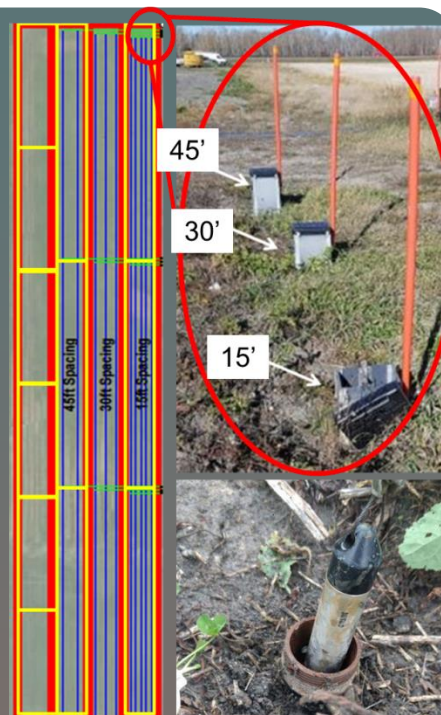


Figure 1: Layout of test site (left); control structures upper right); level loggers for monitoring water table depth (lower right)

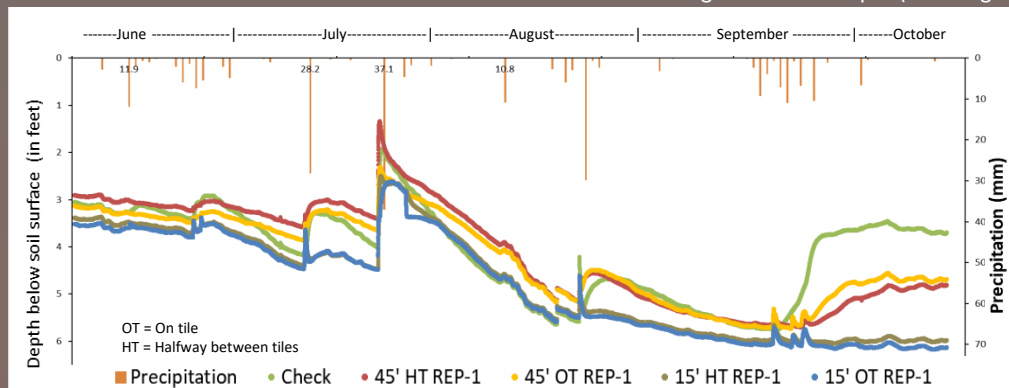


Figure 2: Depth of the water table from the surface throughout the season correlated with precipitation

## Site Information:

**Soil type:** Fyala series, Class 3, poorly drained, 72% clay at the surface  
**Seasonal Precipitation:** 77% of normal \*  
**Crop grown:** Soybeans  
**Planting date:** June 2  
**Harvest date:** Oct 16  
**Average Yield:** 16 bu/ac  
**Water table depth/drainage volume measurements :** Every 15 min  
**Water quality samples & crop maturity:** Weekly  
**Statistical Analysis:** Minitab  
 \*May 1-Aug 31

## Partners:

This project was funded by Growing Forward 2, but would not have been possible without support from:

