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2014 Update Mtg: Tile Drainage in Massachusetts Cranberry Production - Implementation and Best Management Practices

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SARE Tile Drainage Project Update

- Title: Tile drainage in Massachusetts cranberry production – implementation and best management practices
- Scientists: Carolyn DeMoranville, Casey Kennedy, Peter Jeranyama, Hilary Sandler, Frank Caruso
- Students: Nick Alverson (MS, UMass Amherst)

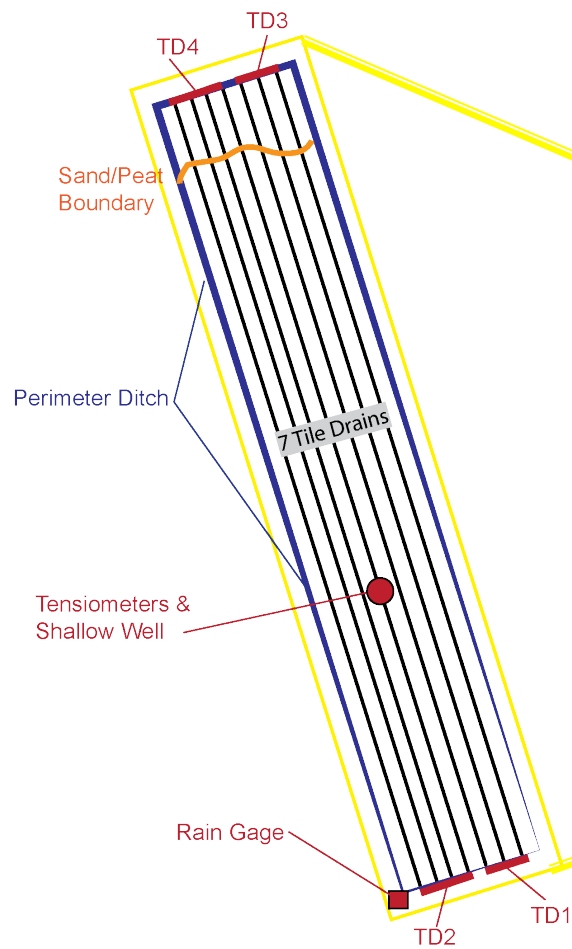
Purpose

- Develop tile drainage installations that increase agronomic benefit and reduce environmental impact
- Specific research objectives:
 1. Determine optimal horizontal drain spacing
 2. Quantify potential for elevated nitrogen and phosphorus loss in tile drainage
 3. Evaluate hydrological behavior, crop yield, fruit disease, and weed responses to drain depth

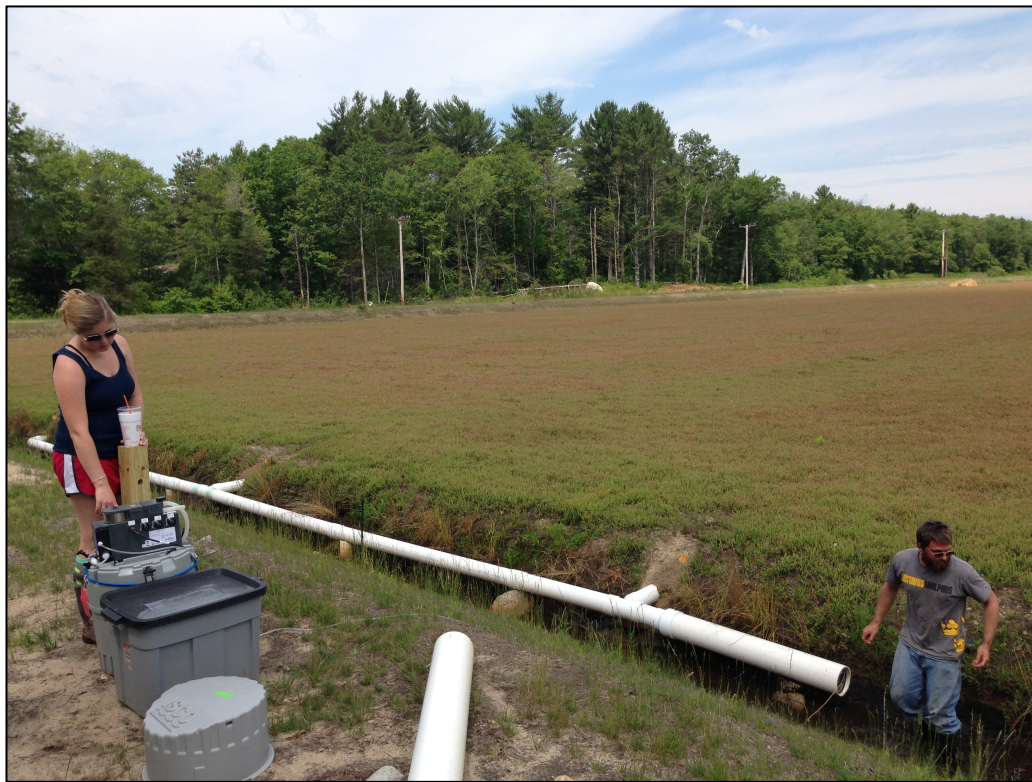
Horizontal Spacing

- Optimum horizontal spacing is 20 ft
 - Grower survey showed most common, accommodating existing buried sprinkler irrigation pipes
 - Field experimentation has confirmed that this spacing (compared to 15- or 30-foot) is associated with good plant growth and the greatest crop yield

Nutrient Monitoring



Tile Flow Monitoring

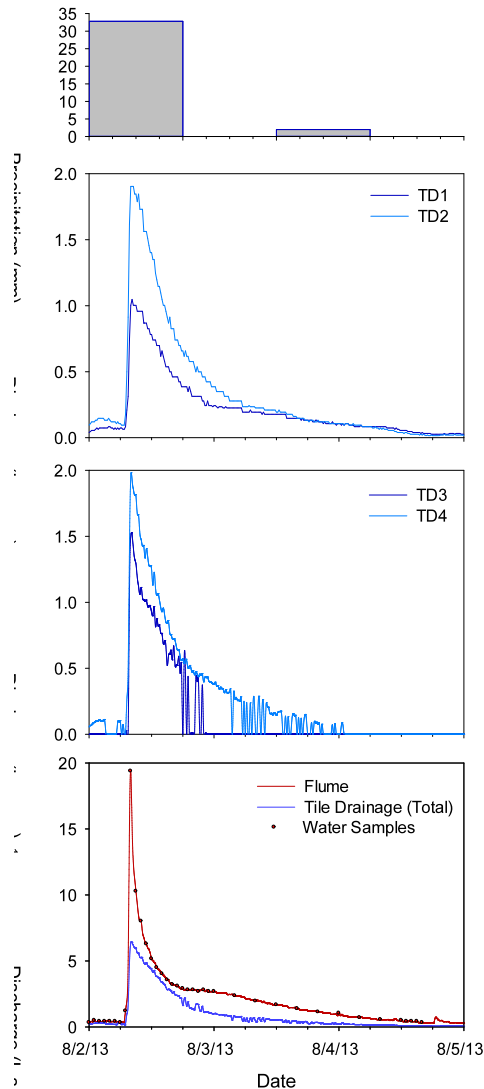


Pipes linking tile drains



Tile flow measurement

Storm Response



- Discharge from TD₃ and TD₄ ceased at 18:00 on 8/2/13, coinciding with submergence of the tiles.
- Total discharge from tiles equaled about half the discharge exiting the flume, and 1/3 of the rain deposited on the cranberry bed.

Drain Depth Study



Renovated Bog



2 Drain Depths: 6 in and 12 in



Tile Installation Design

- Block design
- 2 treatments: 6 in (red) and 12 in (blue) drain depth
- Replicated 7 times
- Measure soil moisture/tension, crop yield, fruit rot, and weeds



Looking for Grower Participants

- Would like to evaluate deeper depths, > 12 inches
- Please contact us if you're interested:
casey.kennedy@ars.usda.gov

Questions?