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

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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
- 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
Tile Flow Monitoring

Pipes linking tile drains

Tile flow measurement
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
- 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?