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

Casey Kennedy
USDA ARS, Casey.Kennedy@ARS.USDA.GOV

Carolyn J. DeMoranville
University of Massachusetts - Amherst, carolynd@umass.edu

Peter Jeranyama
UMass Cranberry Station, peterj@umass.edu

Hilary A. Sandler
University of Massachusetts - Amherst, hsandler@umass.edu

Frank L. Caruso
UMass Cranberry Station, fcaruso@umass.edu

See next page for additional authors

Follow this and additional works at: http://scholarworks.umass.edu/cranberry_extension

Part of the Agriculture Commons, and the Horticulture Commons

Recommended Citation
Retrieved from http://scholarworks.umass.edu/cranberry_extension/173

This Article is brought to you for free and open access by the Cranberry Station Outreach and Public Service Activities at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Cranberry Station Extension meetings by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.
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)
- 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
Nutrient Monitoring

Established Beds (Renovated)

Recently Renovated

Water Source

Conventional Beds

Rain Gage

Tensiometers & Shallow Well

Perimeter Ditch

Sand/Peat Boundary

Tile Drains

TD1

TD2

TD3

TD4
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?