

Masters Theses 1896 - February 2014

Off-campus UMass Amherst users: To download campus access theses, please use the following link to [log into our proxy server](#) with your UMass Amherst user name and password.

Non-UMass Amherst users: Please talk to your librarian about requesting this thesis through interlibrary loan.

Theses that have an embargo placed on them will not be available to anyone until the embargo expires.

Use of Short-Term Floods as an Additional Management Strategy for Controlling Dodder (*Cuscuta gronovii* Willd.) in Commercial Cranberry Production

[Download](#)

[SHARE](#)

[James M. O'Connell, University of Massachusetts - Amherst](#)

[Follow](#)

Document Type

Open Access

Degree Program

Plant & Soil Sciences

Degree Type

Master of Science (M.S.)

Year Degree Awarded

2010

Month Degree Awarded

May

Keywords

Dodder, flooding, cranberry, nonchemical controls, weeds

Abstract

Dodder (*Cuscuta gronovii* Willd.) is a weed of serious concern to cranberry (*Vaccinium macrocarpon* Ait.) growers. It develops vigorously and has a long-lived seed bank. Cranberries are a perennial crop and therefore strategies available to growers of annual crops are not practical. Herbicides, the primary management tool for dodder, although effective, have a narrow window of application and extended seedling emergence after applications can result in escapes. This project examined the effect of water temperature on dodder seed germination and the use of short-term floods (less than 72 hr) for dodder management.

Experiments investigated the effect of water temperature on dodder seed germination. Studies, ran twice, submerged dodder seed in water for 0 to 48 hr at 10, 15, and 20 C in one experiment (simulating spring water

Enter search terms:

in this series

[Advanced Search](#)

[Notify me via email or RSS](#)

[Browse](#)

[Collections](#)

[Disciplines](#)

[Authors](#)

[Author Corner](#)

[Author FAQ](#)

[Links](#)

[University Libraries](#)

[UMass Amherst](#)

[Contact Us](#)

temperatures) and 0 to 48 hr at 15, 20, and 25 C in a separate experiment (simulating summer water temperatures). In Run 1, the effect of temperature on percent seed germination varied by flood duration; and by temperature alone in Run 2. Percent seed germination however, always fell within normal ranges (35-59%), indicating that flooding may not impact seed germination.

Two 1-yr field studies were conducted to evaluate the use of short-term floods (24 to 48 hr) for managing dodder in cranberries. Two scenarios were simulated: cranberry beds with no emergent weed populations (cranberries alone) and cranberries with emergent weed populations (cranberries with additional host). There were three flood durations (0, 24, and 48 hr) and four flood initiations (1 to 4 wk after first seedling emergence). In 2006, mean percent germination from seeds incubated in Petri dishes was lower for seeds submerged 3 and 4 wk after first emergence (AFE) for the 48-hr flood durations. In 2007, mean percent germination for seeds submerged for 24 and 48-hr decreased for floods initiated at 4 wk AFE. Flooding 4 wk AFE resulted in lowest mean attachment ratings in both years and lowest mean dodder biomass on cranberry in the 2007 cranberry and tomato study, suggesting later flood initiation may provide better dodder management.

Advisor(s) or Committee Chair
Sandler, Hilary A.

This page is sponsored by the [University Libraries](#).

© 2009 [University of Massachusetts Amherst](#) • [Site Policies](#)