Suitability of *Euonymus* spp. for box tree moth survival and development

Abigail Wiesner M.Sc. Candidate University of Guelph



- Larvae cause plant damage to **boxwood host**
- Ontario has TWO generations between May-September and overwinter as larva

Background

moth biology

Our Concerns > Research

> Results

Summary

Industry Concerns

Known host: *Buxus spp.*

Background

Our Concerns > Research

Results

Summary

Questions

Potential host: *Euonymus* spp.

Objectives

Investigate alternate host suitability of *Euonymus alatus* and *Euonymus fortunei* for BTM.

- 1. Compare preference of BTM through choice and no choice bioassays; and
- 2. Evaluate survival and development of BTM on *Euonymus* spp.

Our Concerns

Preference Bioassay

No choice:

- 3 early-instar larvae were placed in a petri-dish with a single, randomly chosen 1 cm diam. disc of plant tissue (rep. 10)
- After 48h Leaf area consumed was determined using ImageJ Software
- Mortality recorded



Our Concerns



Choice:

- 1 cm diameter disc of each plant species placed equidistant within a choice arena
- One early-instar larva was placed in the centre of the choice arena (rep. 20)
- Preference determined after
 24h based on consumed plant
 material (determined visually)

Survival Bioassay

Single Leaf (no choice):

- 3 early-instar larvae placed in a petri-dish (100 mm diameter) with a single, randomly chosen leaf
- Replicated 10 times
- Stored at 25°C (±2°C) and 16D:8L photoperiod, new leaves added every 2-5 days as needed
- Mortality recorded every 2-5 days for a total of 40 days

Whole Plant (no choice):

- 20 early-instar larvae placed per cage on single plant species
- Replicated 8 times
- Located in a greenhouse; plants regularly watered
- Mortality recorded once a week for a total of 7 weeks



Background

Results

Summary

ary

Preference Bioassay: No choice



Background

Our Concerns Research Results

Summary

Preference Bioassay: Choice





Background > Our Concerns > Research > Results > Summary > Questions

Survival Bioassay: Single Leaf



Figure . Mean (±SEM) number of larvae found alive every 2-5 days for a total of 40 days, fed one host option continuously. Different letters denote start of significant differences between treatments within each day (α =0.05) which continued until day 40.

Background

Our Concerns > Research

Results

Summary

Survival Bioassay: Whole Plant



Feeding observed on *E. alatus* at day 7

Figure . Mean (±SEM) number of larvae found alive each week for a total of 49 days, fed one host option continuously. Different letters denote significant differences between treatments starting at day 7 and continuing to day 49 (α =0.05).

Background

Our Concerns > Research

Results

Summary >

Questions

49 D

Summary

- 1. BTM's preference is to consume boxwood
 - Boxwood is more 'palatable', than either Euonymus spp. to BTM
- 2. BTM can not successfully survive or reach pupation while being fed *E. alatus* or *E. fortunei* exclusively during typical larval development under stable and semi-normal conditions

★Euonymus is NOT a suitable host for BTM and does not pose a phytosanitary risk



Background

Our Concerns > Research

Results

Summary

Acknowledgements

Thank you to all the listeners today and Thank you to the

Project Partners





Agence canadienne d'inspection des aliments



HORTICULTURAL TRADES ASSOCIATION landscape ontario.com Green for Life!





Canadian Nursery Landscape Association Association Canadienne des Pépiniéristes et des Paysagistes





ONTARIO AGRICULTURAL COLLEGE

SCHOOL OF ENVIRONMENTAL SCIENCES







Contact Abbie Wiesner: awiesner@uoguelph.ca

Advisor: Dr. Cynthia Scott-Dupree <u>cscottdu@uoguelph.ca</u>