2006

Research Update Meeting 2006 - Insect Management 2006

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Insect Management

Anne Averill

Blackheaded fireworm

Sparganothis fruitworm

Cranberry fruitworm

MANAGEMENT REVIEW 2006

- Outline
  - Status of compounds
  - Efficacy of compounds/new options
  - Management recommendations
  - Watch for new pest insects
- Research highlights

AVAUNT
not available in 2006!!!

- Previously allowed owing to Emergency Exemption for weevil outbreaks
- Weevil outbreaks very rare now; no longer any emergency
- Avaunt is moving through regular channels for full label; perhaps in 2007

ACTARA

- *This is it* – only choice for Lorsban-resistant cranberry weevil

- Zone II restricted
- BUT: only option for resistant weevil: apply in Zone II *with approval letter* through Cranberry Station and adhere to Zone II requirements

ACTARA
for cranberry weevil management

- Effective against spring & summer weevils
- No caterpillar control seen (e.g. Spag, BHF)

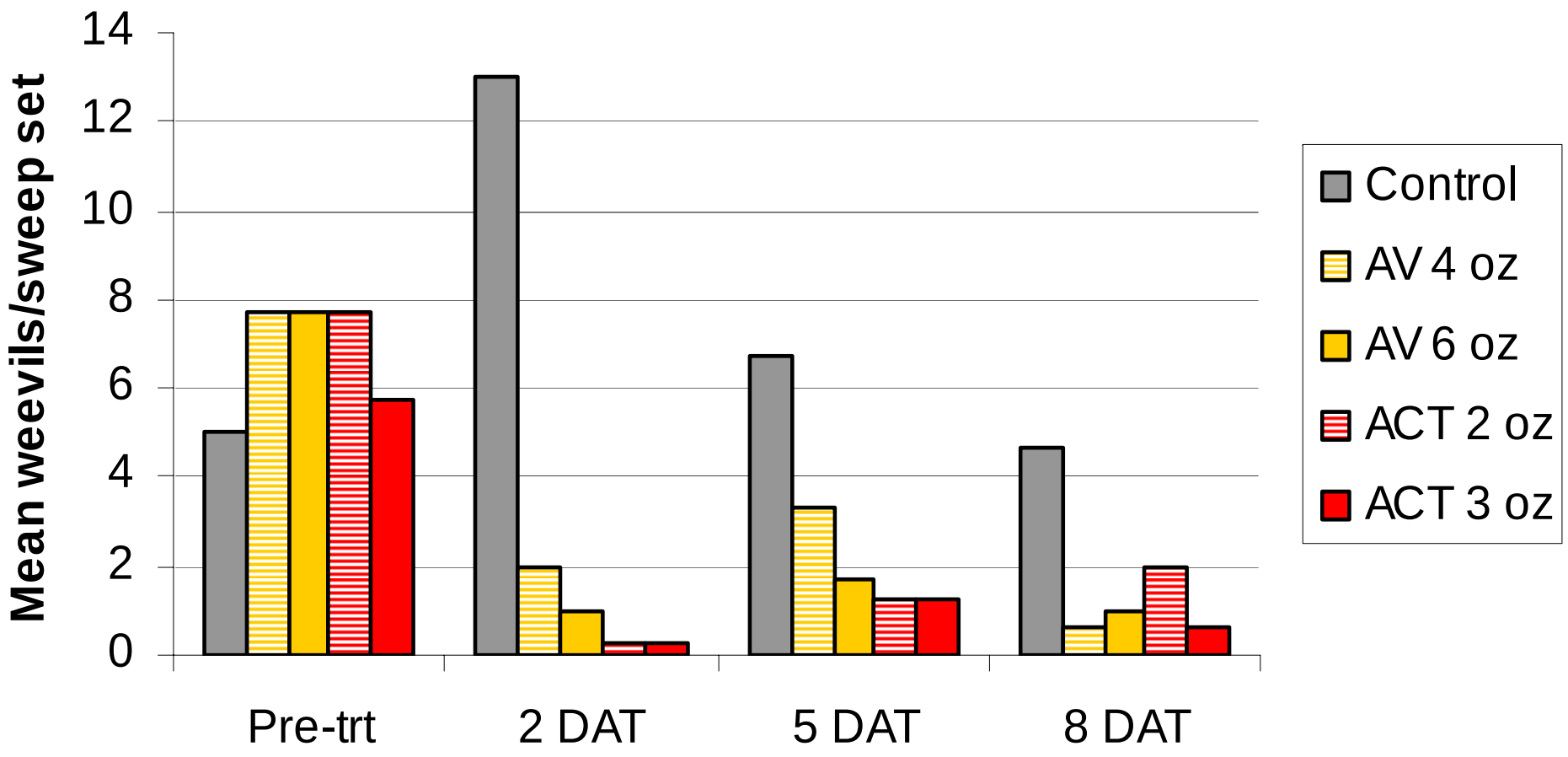
ACTARA

- RATE: 2-4 oz/A per application

Does a lowered rate of Actara give control?

- 2005 field trial
  - Treatments
    - Avaunt: 6 oz (full rate), 4 oz
    - Actara: 2 oz and 3 oz
    - Control (no spray)

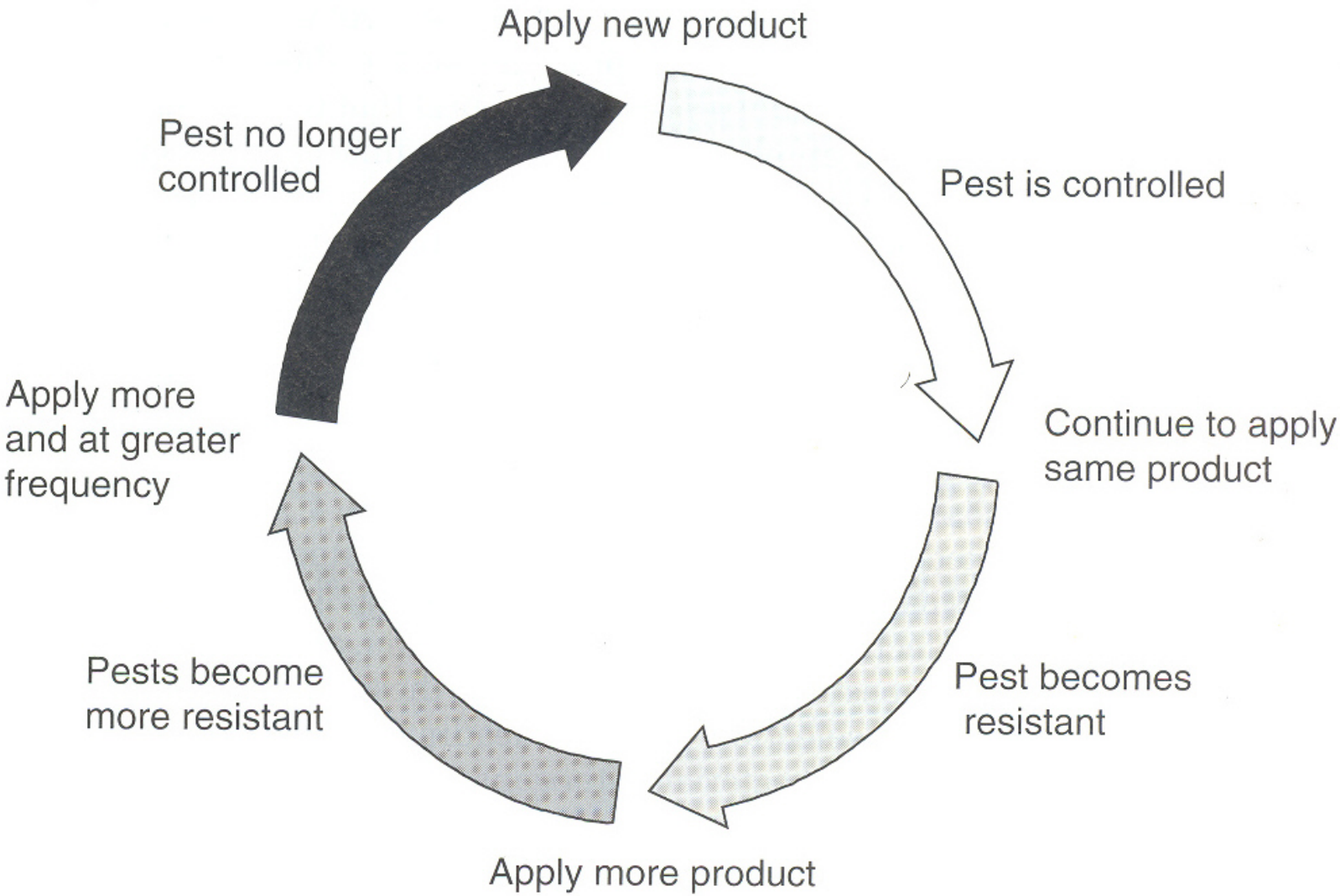
Venturi tank mixer/sprayer used in field trials to mimic chemigation



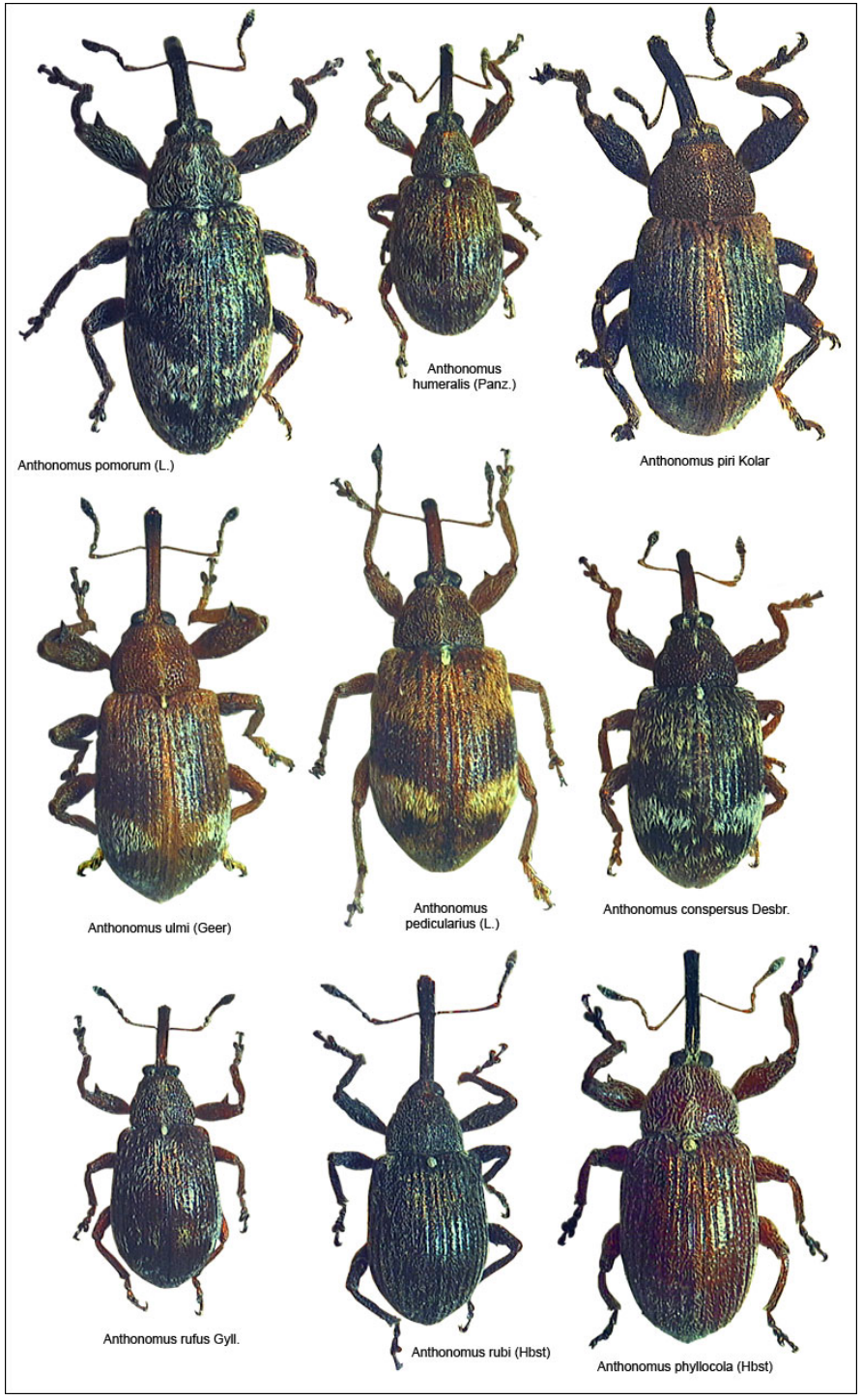
Cranberry weevil: 2005 large-plot trial

ACTARA

- Good reports from growers using 2 or 3 oz
- 8 oz/A/season: if require multiple applications to manage weevil, lowered rate approach is needed



Pesticide treadmill and weevil


Anthonomus pomorum (L.)
Anthonomus humeralis (Panz.)
Anthonomus piri Kolar
Anthonomus ulmi (Geer)
Anthonomus pedicularius (L.)
Anthonomus conspersus Desbr.
Anthonomus rufus Gyll.
Anthonomus rubi (Hbst)
Anthonomus phyllocola (Hbst)

Pepper weevil

Strawberry clipper

What strategies are used elsewhere?

Cotton boll weevil

CRANBERRY WEEVIL

- Attract weevils to area using attractive plant volatiles plus pheromone
  - E.g LASH = “Lure And Spray Headland”

CRANBERRY WEEVIL

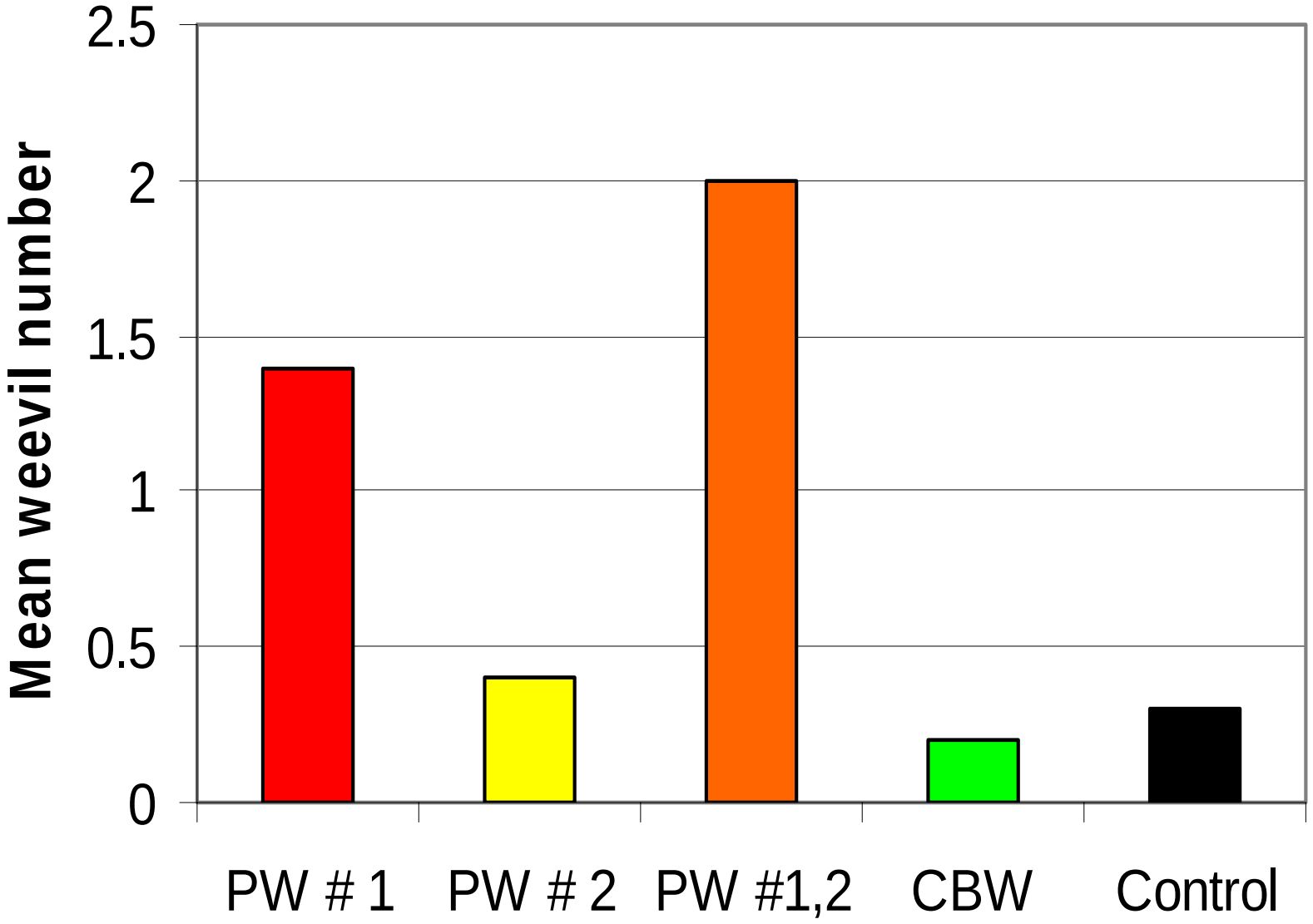
- Attractive host plant volatiles

Traps baited with damaged foliage capture more weevils

CRANBERRY WEEVIL

- Pheromones?
  - Weevil relatives use similar compounds, different blends
  - Field trial: traps baited with
    - pepper weevil pheromone
      - » Component 1
      - » Component 2
    - cotton boll weevil

Yellow sticky panel baited with pheromone



PW: pepper weevil pheromone
CBW: cotton boll weevil pheromone

NEXT STEPS

- Already shown that blueberry floral volatiles are attractive
- Identify/synthesize attractive compounds: Cooperative project now set with chemists
- Develop strategy to draw spring weevils to aggregation area and treat

BLACKHEADED FIREWORM

Target small larvae

- Sweep in early May
- Young larvae hard to see in net
- Intrepid, Diazinon cmpds of choice

INTREPID: NO ZONE II USE

- ***Intrepid has Zone II restrictions***
- Because there are other options that work, Intrepid cannot be used in Zone II areas

SPRAY TIMINGS
Confirm and Intrepid

- ASAP when average of 1-2 larvae detected by sweep/scan

- Pheromone trap timing
  - 3 weeks after *ONSET* of flight, again 10 days later

SPRAY TIMINGS

Diazinon, SpinTor, Orthene (1st gen;May/June only)

- ASAP when larvae detected by sweep/scan
- Pheromone trap timing
  - 10-14 days after *PEAK* moth flight

CRANBERRY FRUITWORM

SCREEN: REDUCED-RISK OPTIONS FOR CRANBERRY FRUITWORM

- Avaunt activity good in 2005 field trial (300 GPA)
- Two numbered DuPont compounds evaluated

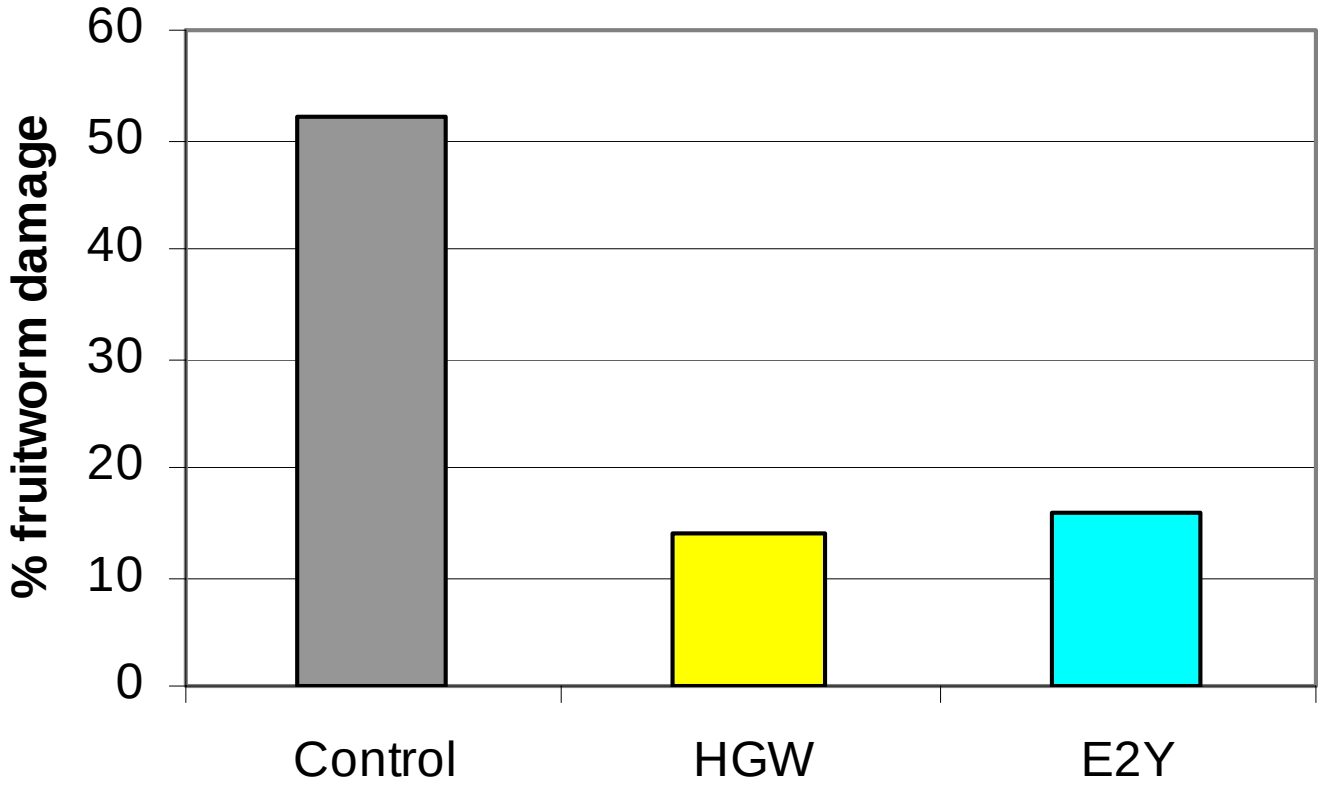
FRUITWORM—lab screen

- In lab, moths laid eggs on uprights
- Upright treatments
  - Control (nothing)
  - HGW
  - E2Y

Treatment	% larval mortality	% dead eggs	% slight surface feeding
Control	48.0	3.8	12.1
HGW	100	17.9	3.0
E2Y	99.1	17.5	11.5

FRUITWORM – FIELD TRIAL

- Plots (with background infestation) seeded with fruitworm eggs.
- Single low-gallonage spray.



CRANBERRY FRUITWORM

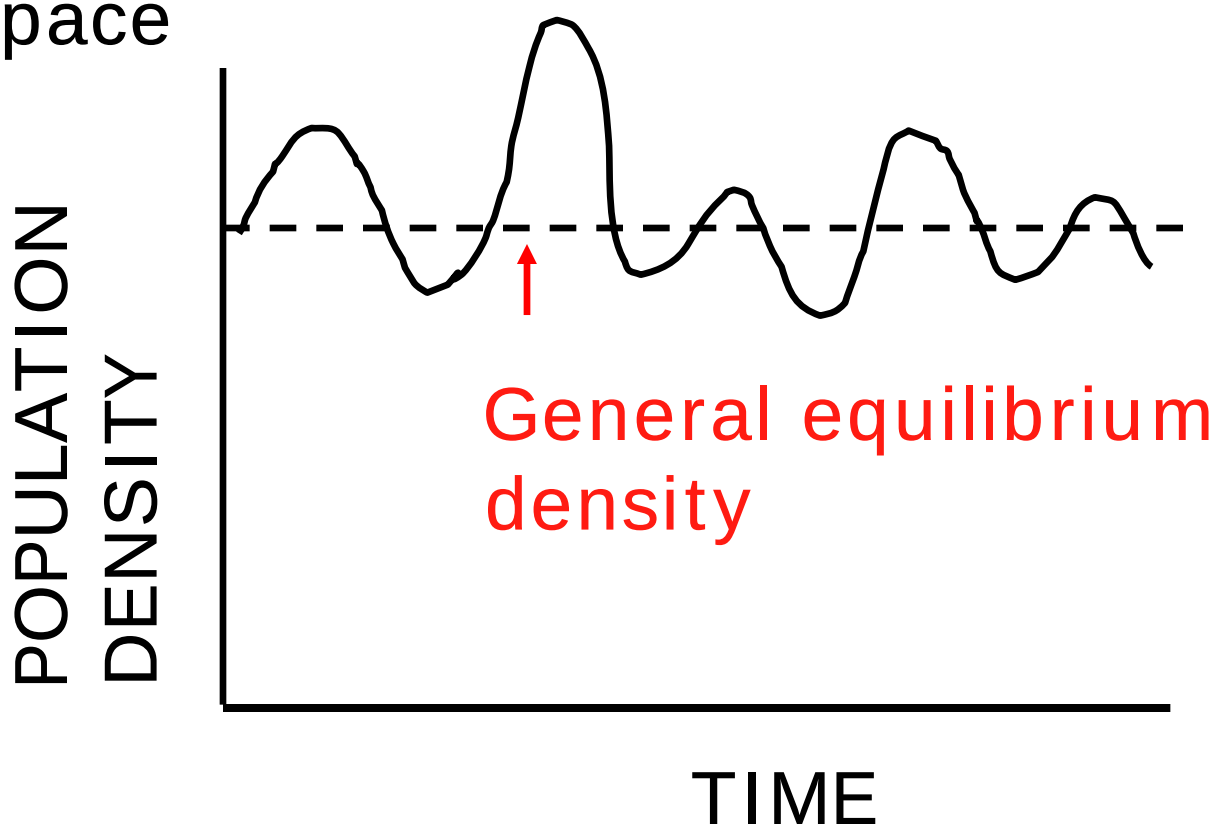
- Control requires multiple sprays and excellent timing
- First spray most important
- Intrepid an ‘iffy’ choice

- Heavy and lengthy flights observed
- Overwintering survivorship high owing to snow cover?

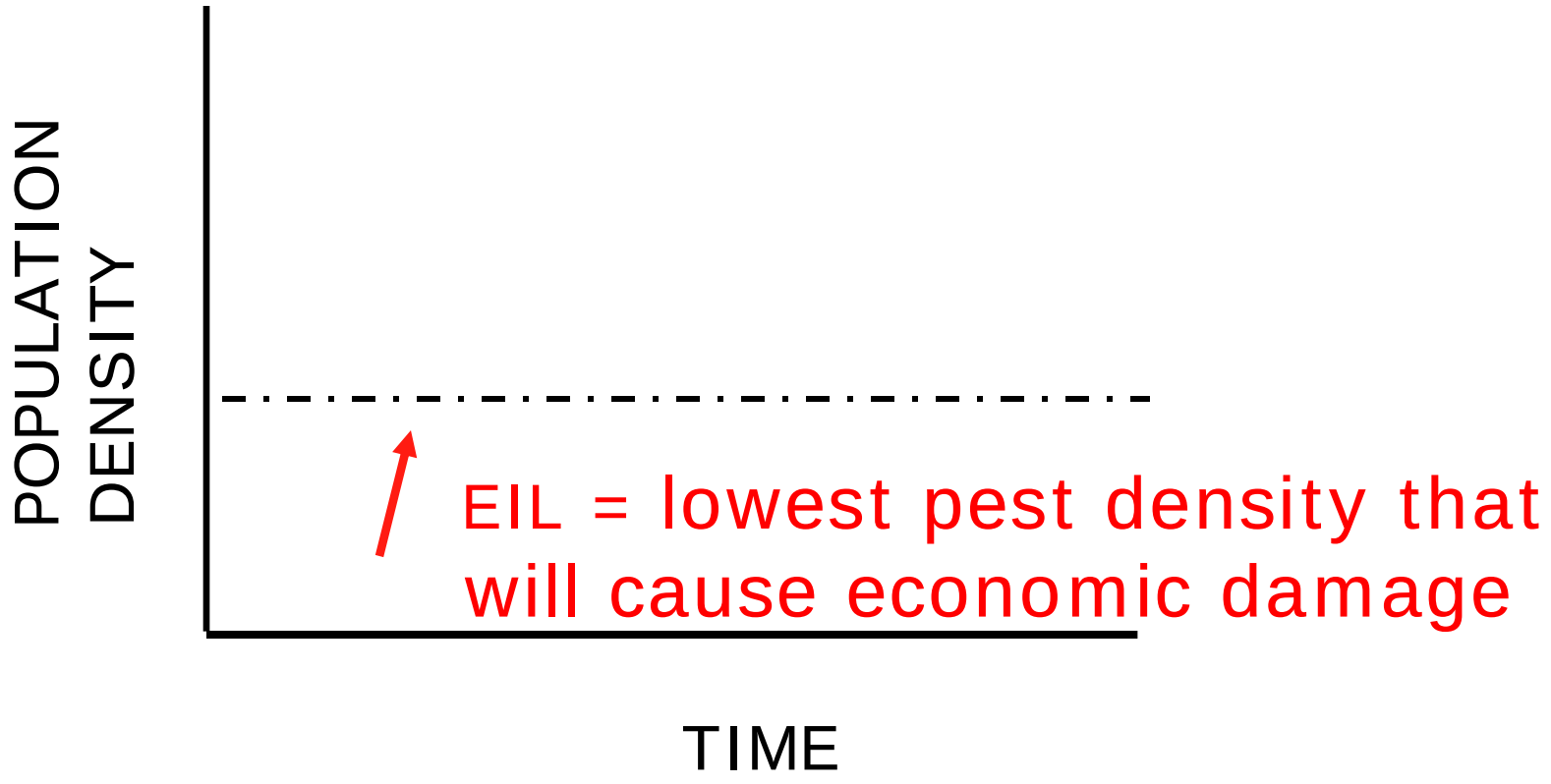
WHY IS FRUITWORM SUCH A PROBLEM some years?

POPULATION REGULATION

- Natural enemies
- Food
- Space

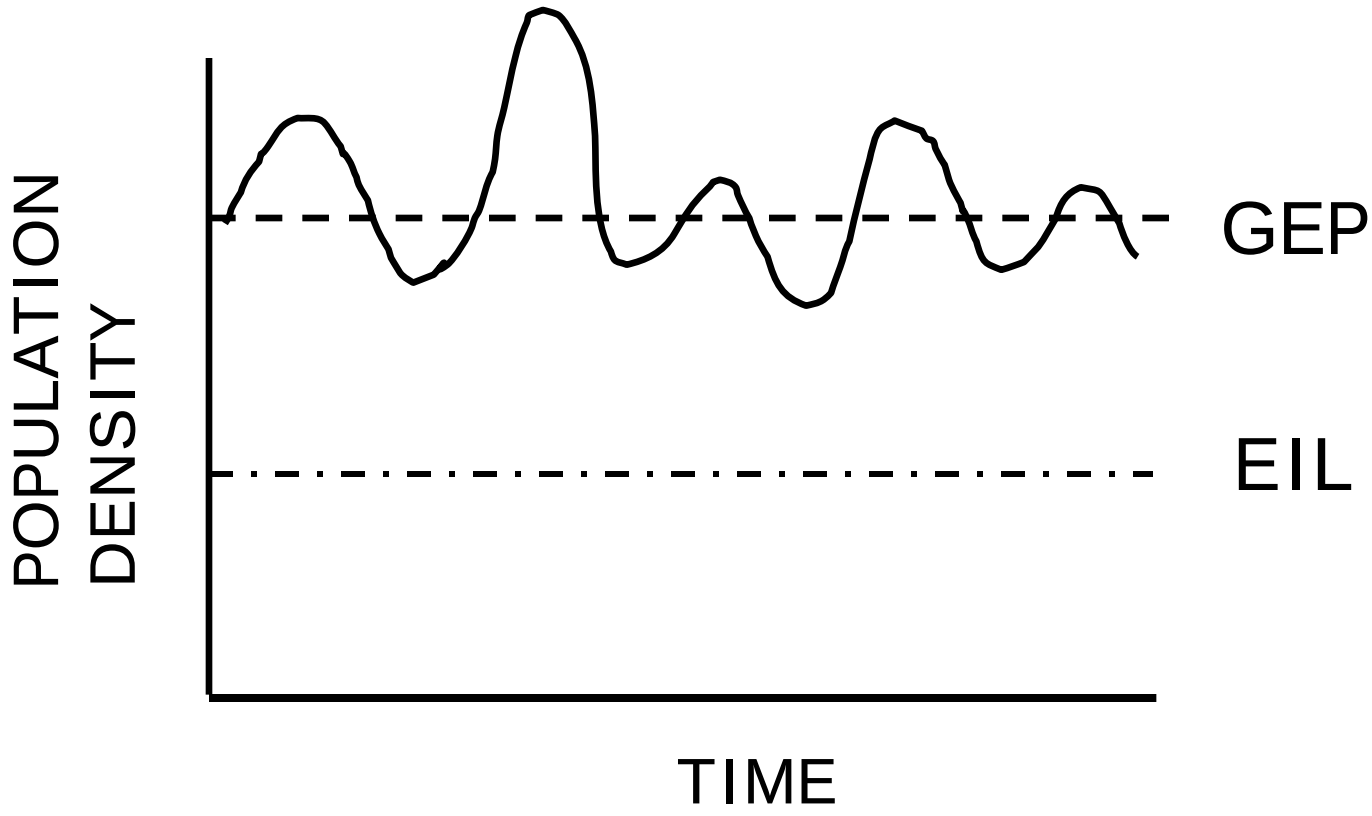


PEST MANAGEMENT AND ECONOMIC DECISIONS

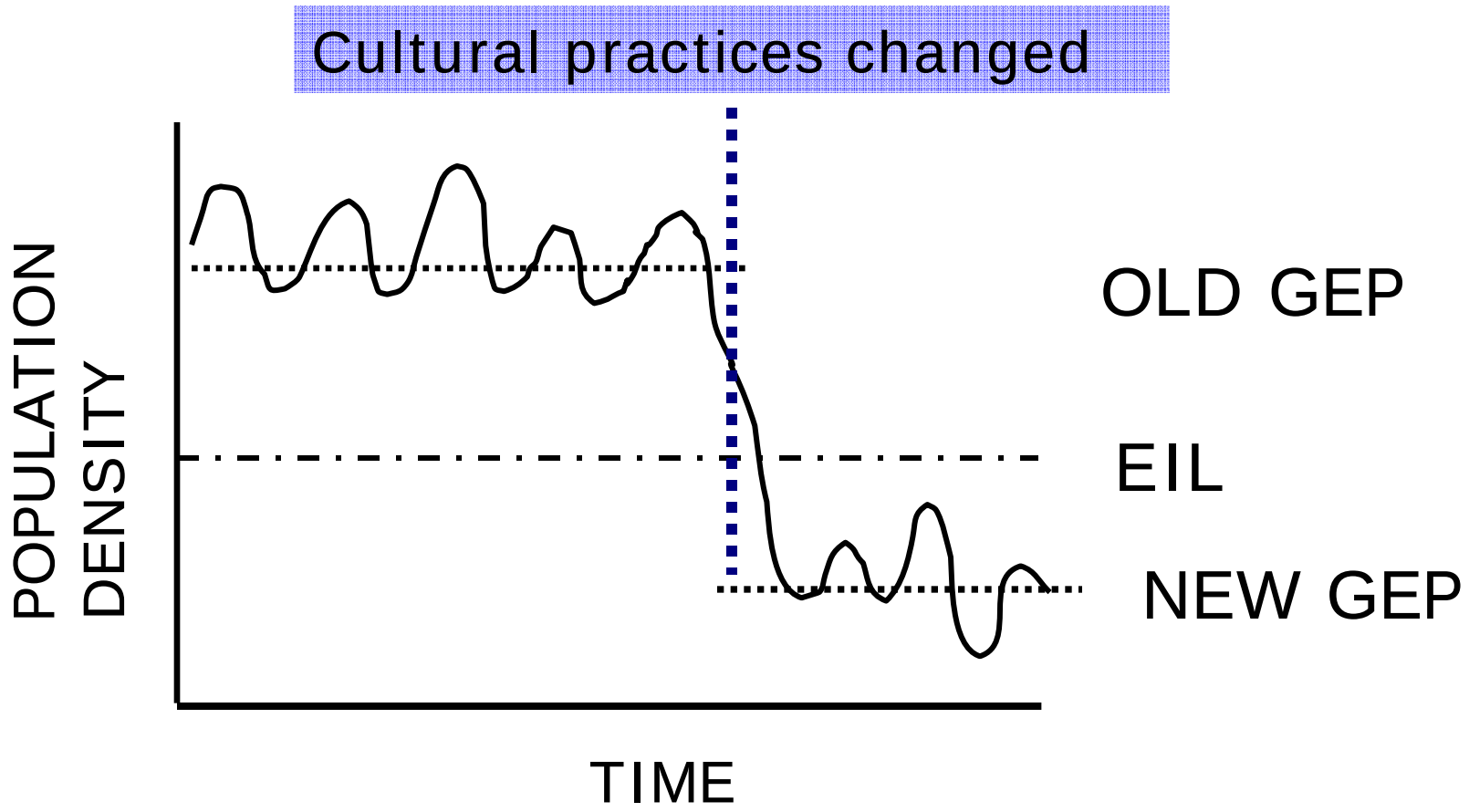


SEVERE PEST:

GEP (average density) LIES ABOVE EIL (density that will cause economic loss)



REDUCE NUMBERS
STRATEGY: sanding, flooding



WINTER MOTH

WINTER MOTH--background

- New ID in MA
- Serious problems reported in MA blueberry
- Extensive defoliation in Plymouth Co.

- Many thanks to Bob Childs of UMASS Extension for materials used here

WINTER MOTH:
A NEW PEST ON CRANBERRY?

- Picked up in cranberry sweeps
- Suspect damage
  - Report of serious early bud damage from unknown cause
- In lab trials, completed development on cranberry

WINTER MOTH

- Native to Europe
  - So: natural enemies (e.g. diseases, predators) left behind
  - Result: outbreaks
- In Nova Scotia, Pacific NW
  - reported in BC cranberry

WINTER MOTH—life cycle

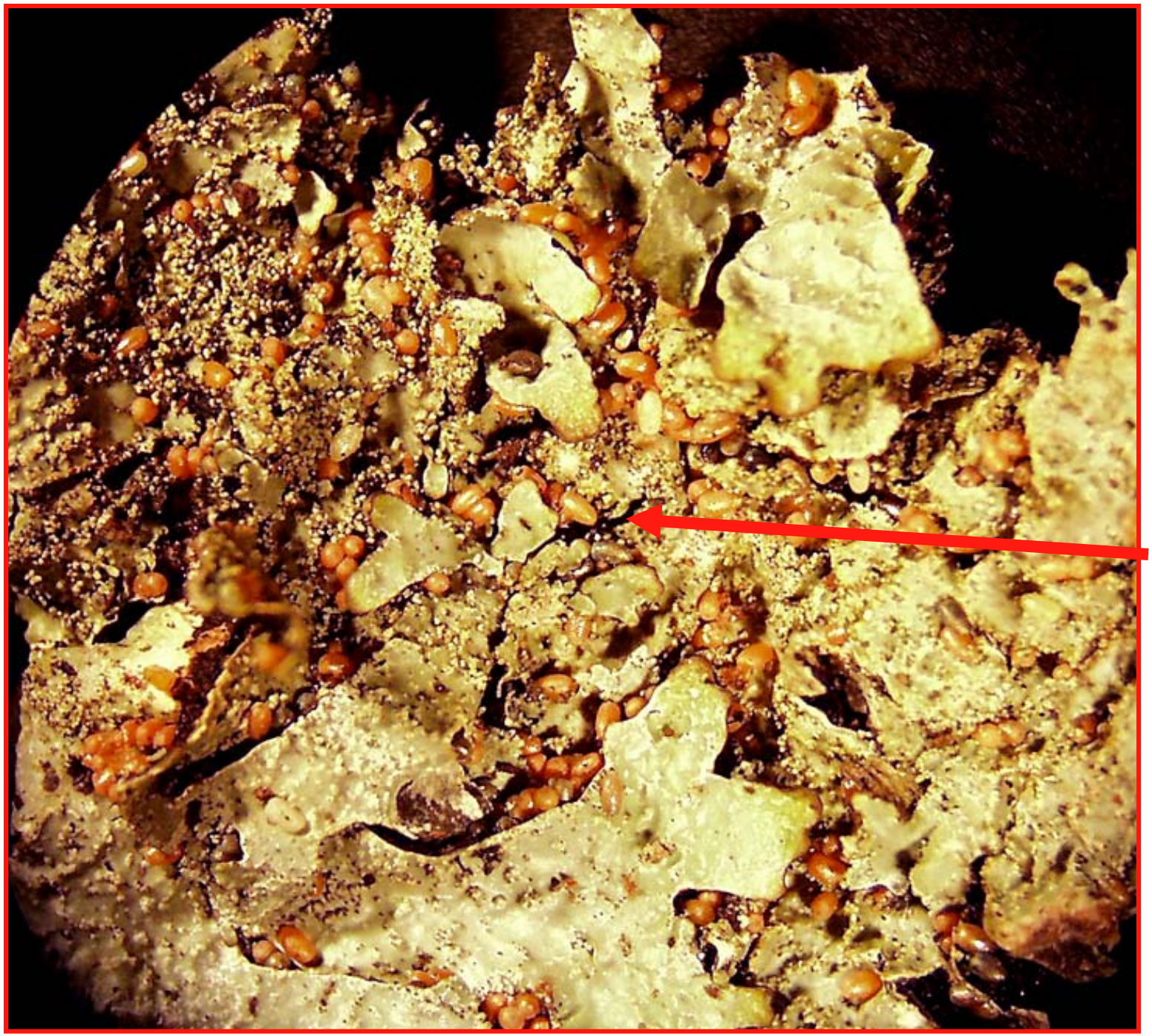
- Eggs hatch anywhere from late March to mid-April

- Larvae “weasel” into buds and feed
  - --Hard to detect
  - --Move from bud to bud

Free-feed on foliage once buds open

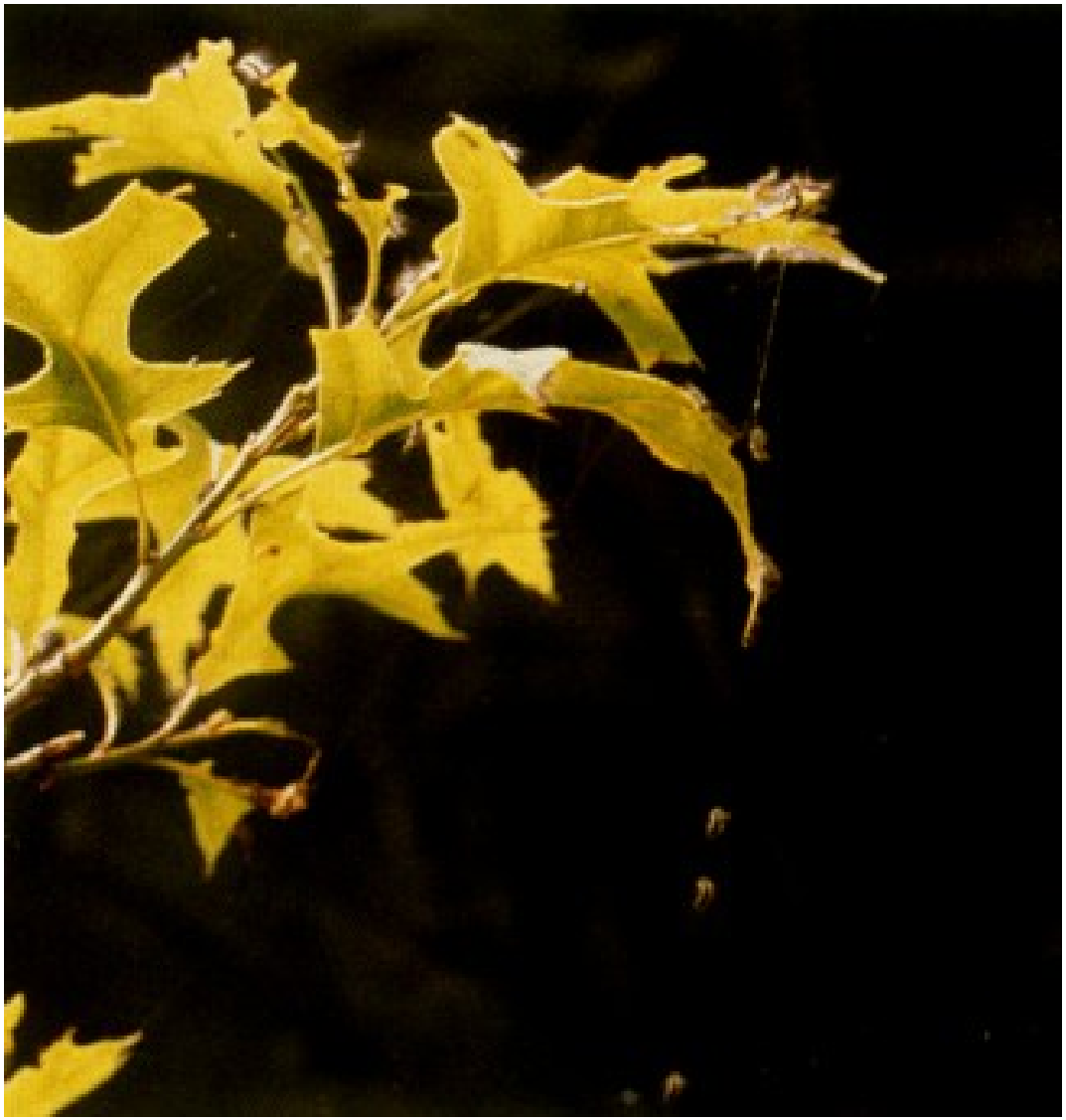
Female is flightless

Flight: mid to late November >>


EGGS

WINTER MOTH--management

- Observed male flight?—check these areas with net
- Monitor in <u>early</u> spring



Larvae
may balloon
onto bogs

Is it winter moth or blackheaded fireworm?

Is it winter moth or blackheaded fireworm?

Winter Moth ID

Looks just like blackheaded fireworm but it is an ‘inchworm’ or ‘looper with two pairs of anal prolegs

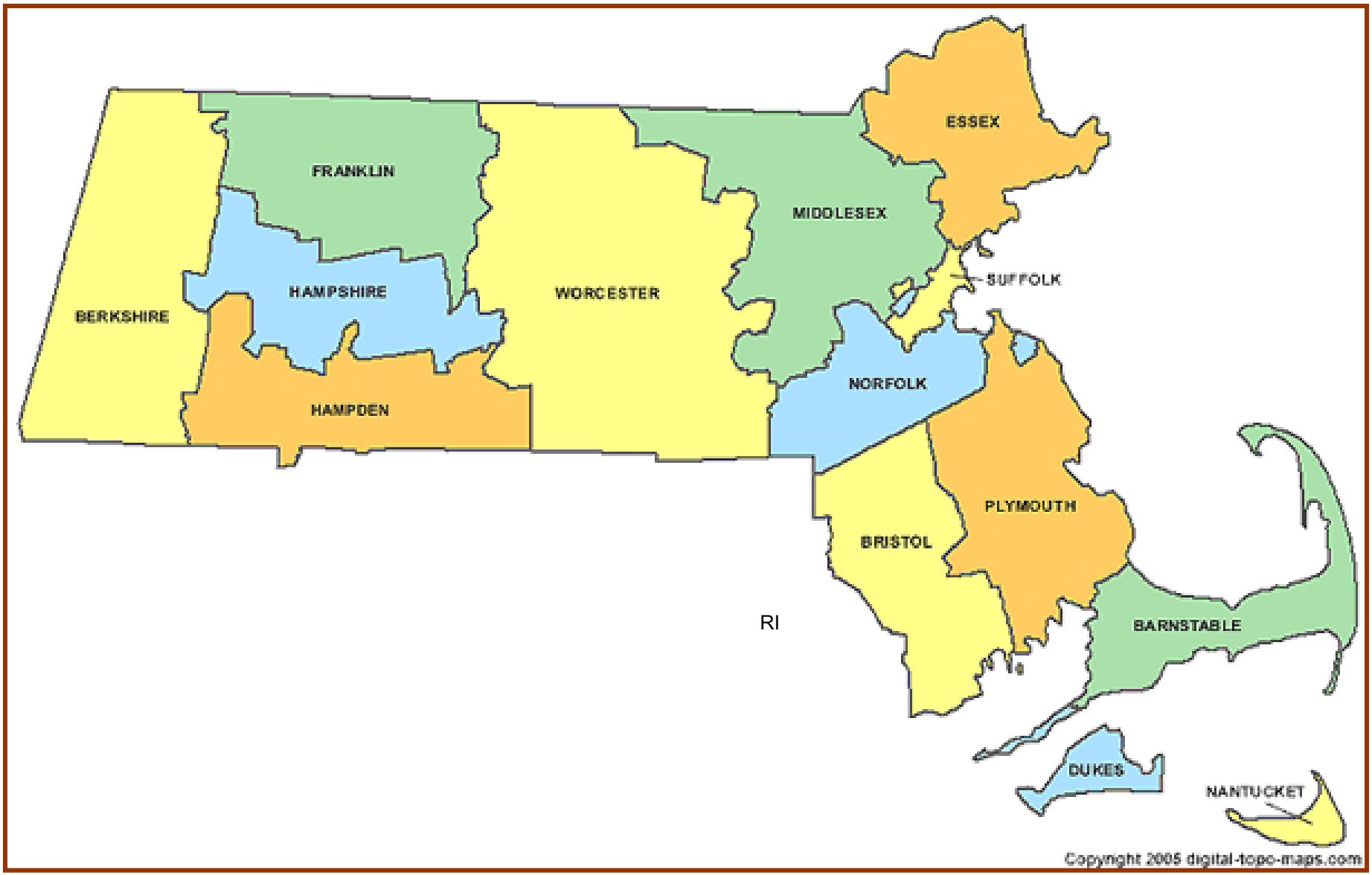
WINTER MOTH

- Once detected (when feeding on leaf surface) should be no problem to manage

- Intrepid, SpinTor, Diazinon, maybe Sevin, Bt-based options e.g. Dipel

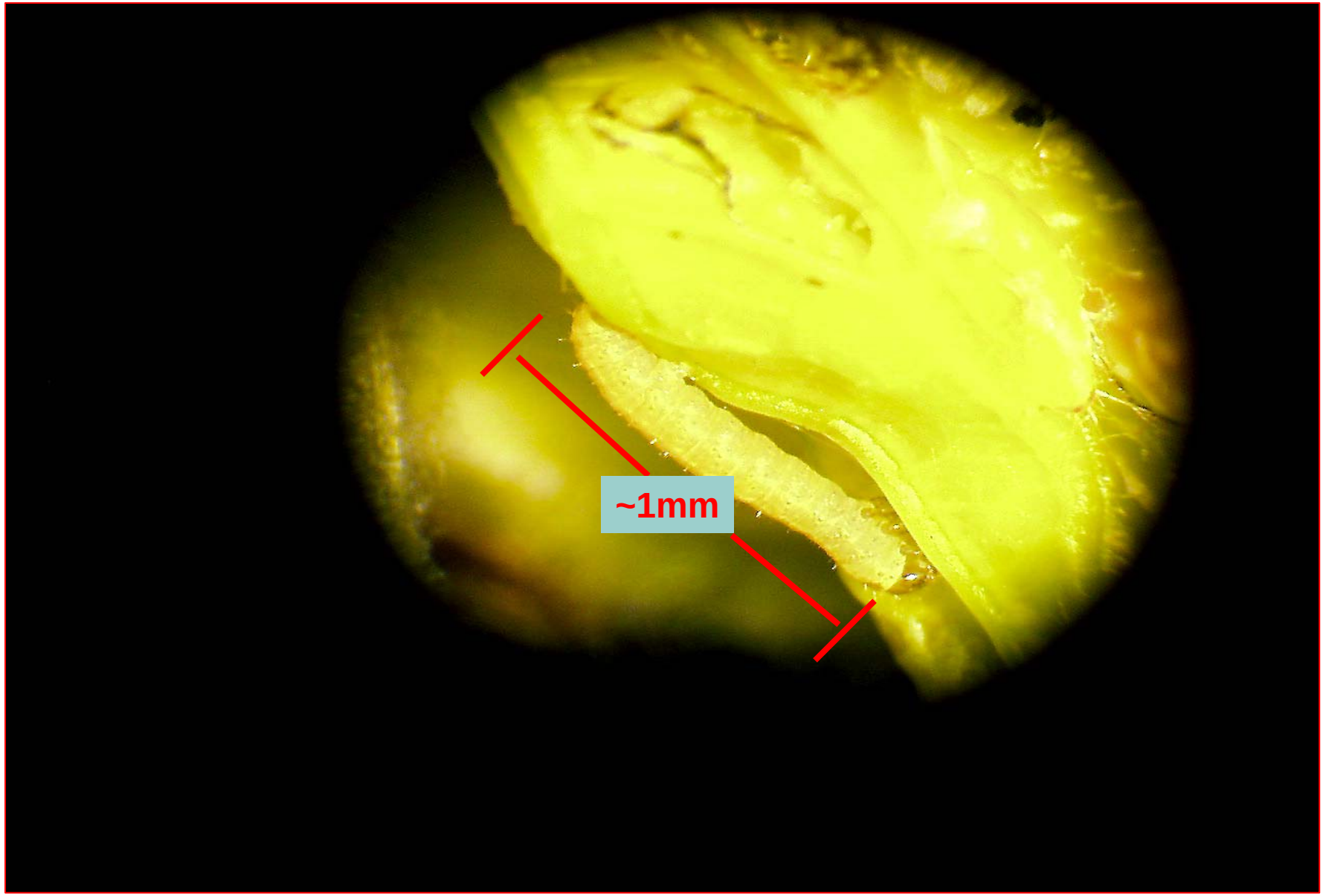
UMASS fact sheets

- Winter moth
  - Go to www.umassgreeninfo.org
  - Click on “FACT SHEETS”
  - Click on “INSECTS AND MITES”
  - Click “DEFOLIATORS”
  - Scroll down to “WINTER MOTH”



Plymouth County thought to be epicenter

Trap lines to establish distribution across the bog habitat


~1mm

Insects in crop systems: management based on cost of treatment

- Direct pests
  - Damage harvested plant part
- Lowest EILs

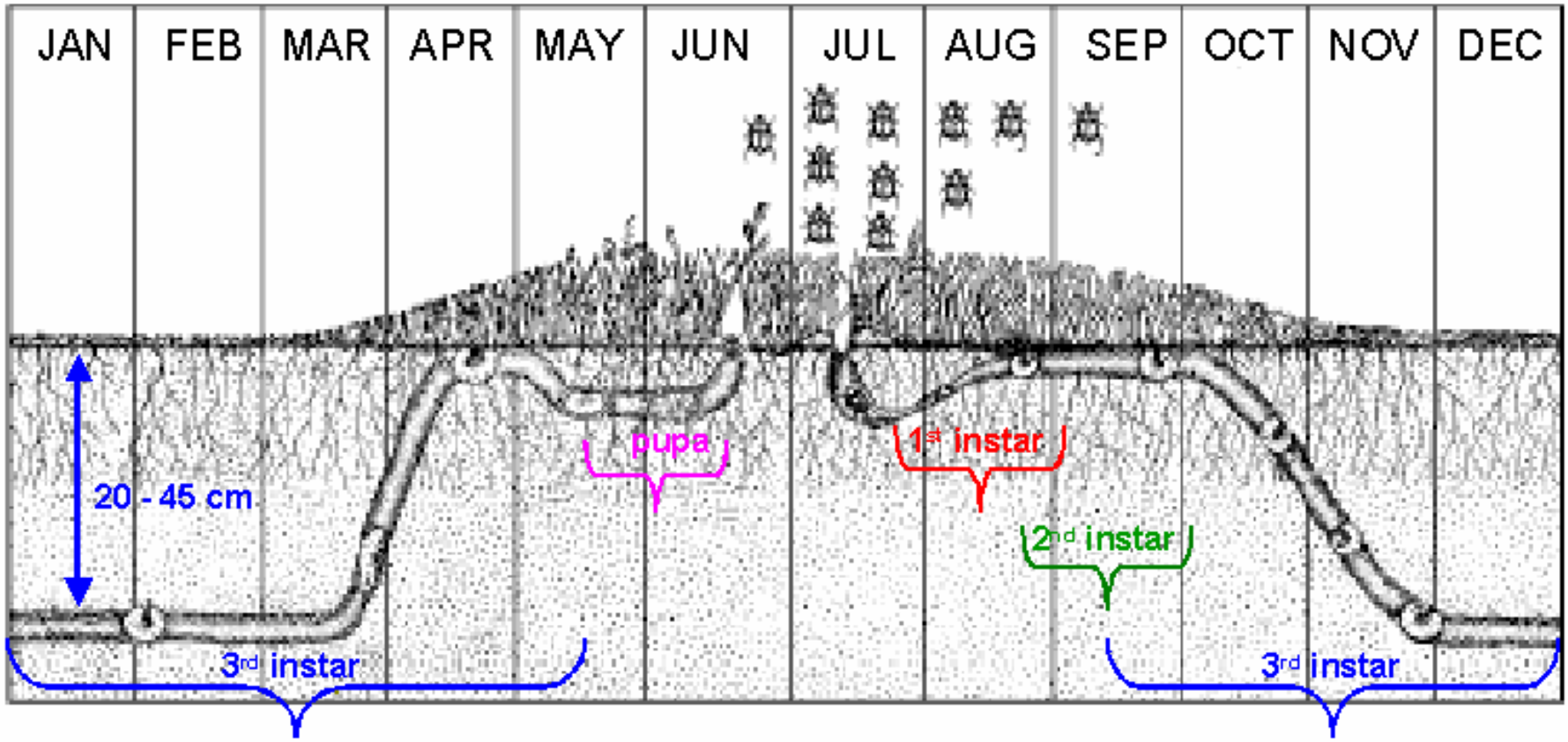
- *Anomala (=Exomala) orientalis*, Coleoptera: Scarabaeidae

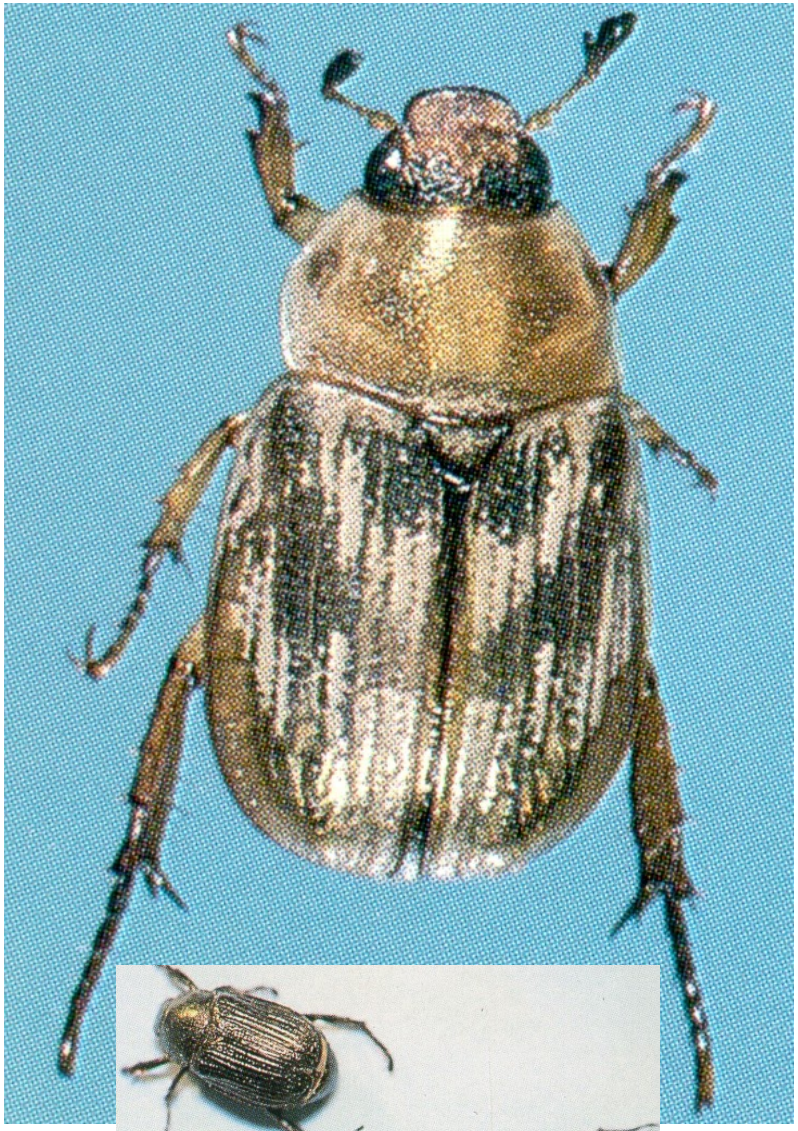
- Pest in larval stage

- Turf, ornamentals, cranberry, blueberry, strawberry, sweet potatoes

Damage

Oriental beetle lifecycle





Oriental beetle

Anomala (=Exomala) orientalis

Regionally important pest in Northeast. But most important in NJ!

Grubs feed on roots of turfgrasses, blueberries, ornamentals, strawberries.

Adults cause no serious damage.