



University of
Massachusetts
Amherst

Research Update Meeting 2005 Insects

Item Type	article;article
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Download date	2026-03-13 14:38:04
Link to Item	https://hdl.handle.net/20.500.14394/8728



CRANBERRY MANAGEMENT UPDATE

The return of blackheaded fireworm





Figure: Sheila Fitzpatrick

Fireworm is not a cranberry/blueberry specialist

Host plants include:

- blueberry
- evergreen blueberry
- cowberry
- apple
- cherry
- ornamentals





- 1159 **holly tortrix** *Rhopobota naevana*
(Hübner, [1817])
- aka **blackheaded fireworm**

FIREWORM MANAGEMENT IS STRAIGHTFORWARD

Recommendations

- **TARGET** young larvae
- Start in early spring
- Combine sweeping with visual observations
- Use pheromone trapping data
- Remember there are 2 generations



Even full grown, larva is only 1/3"



DIFFERS FROM SOME OTHER PEST PROBLEMS

- Short window of opportunity--larval stage is quick (few wks)
- Discovery of few larvae may indicate there is a problem

EARLY SIGNS OF FIREWORM DAMAGE

MAY, just as vines exit dormancy eggs hatch

Some larvae may mine last year's leaves



Prefer new growth

THE WEBBED TIP



Classic
evidence
of early
infestation

EARLY MAY

HATCH TIME CAN BE EXTREMELY VARIABLE!!
SCOUT FOR HATCH

- Use visual inspections of vines; keep an eye on 'hot spots'
- where chemigation coverage was poor last year
- warm edges
- rank vines, heavy trash areas

SCOUTING FOLLOWING HATCH

TO TARGET SMALL LARVAE
COMBINE SWEEPS
WITH VISUAL INSPECTIONS

Small larvae are not picked up in net



SWEEP RECOMMENDATIONS

- 1 sweep set/acre (reduce for larger beds)
- Do not avoid hot spots
- Very small fireworm cling to top of net
- Average of 1-2 larvae per sweep set triggers treatment

NET INSPECTION

- BELIEVE you will find a larva -- keep looking
- Dingy, small creature mixed with trash



VISUAL INSPECTIONS



- Visually scan a 2x2 ft area for webbed leaves, damage (30 -60 secs)
- Wisconsin IPM: Four scans/bed
- BC IPM: 10 scans/acre
- Average of 1 larva/scan = consider treatment



LARGE LARVAE ARE
readily picked up in net
numbers reflect infestation
harder to control

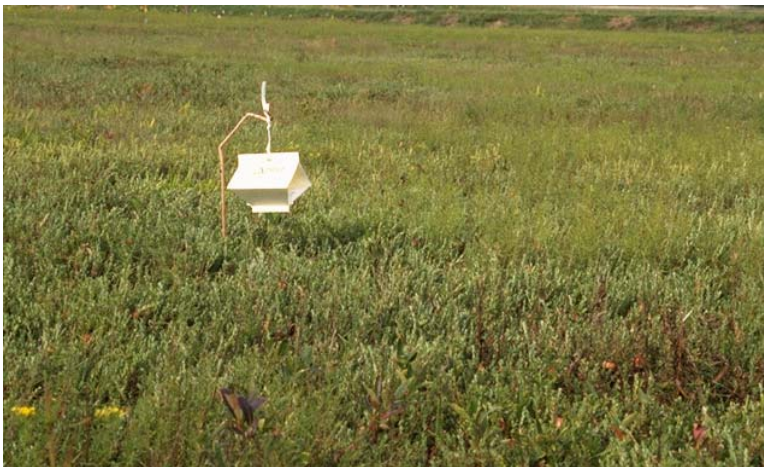


JUNE ---
MONITOR
ADULTS WITH
TRAPS

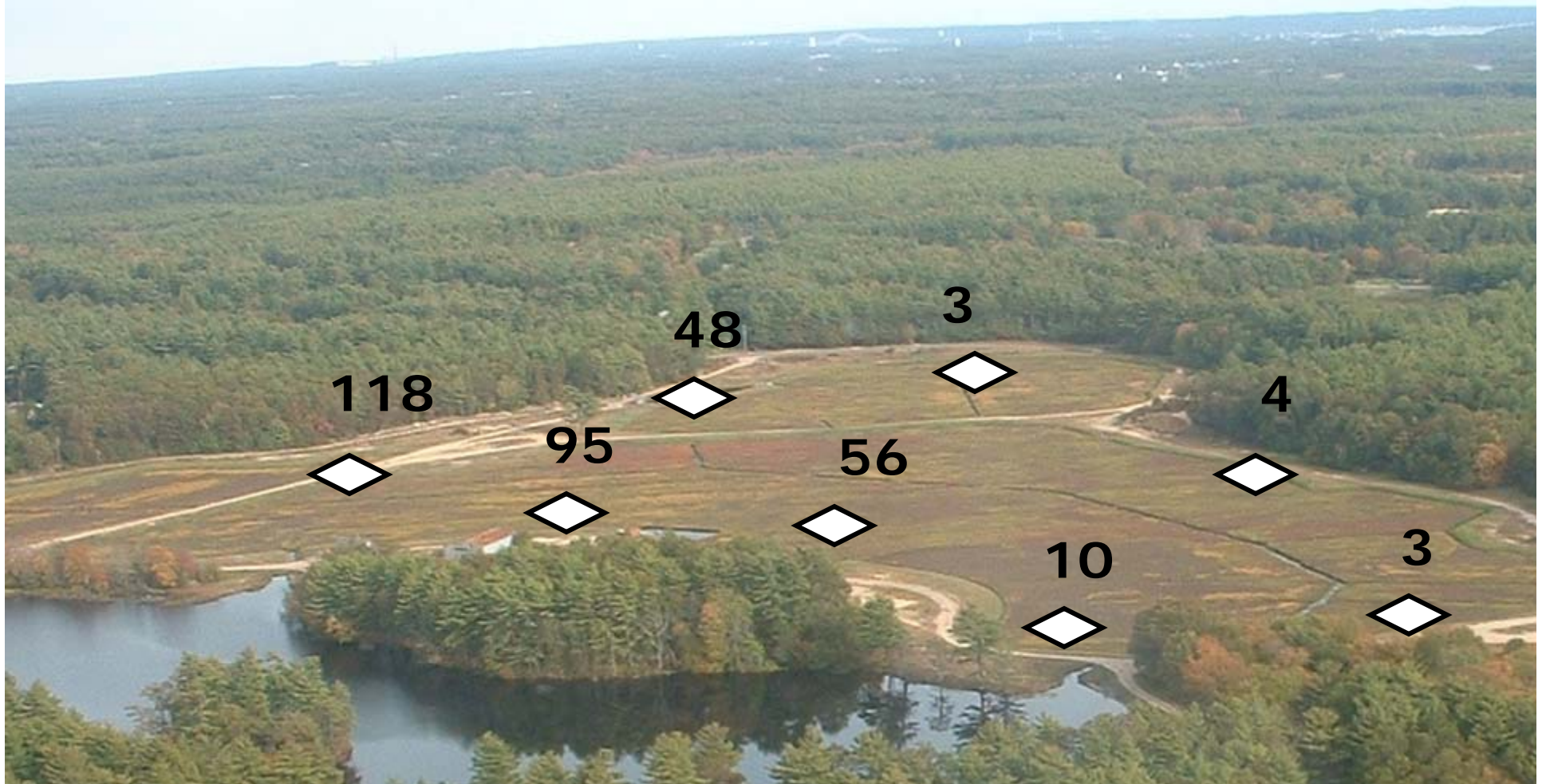


TRAPPING RECOMMENDATIONS

- Up by end of MAY
- Inspect each week
- At least 1 trap/10 acres



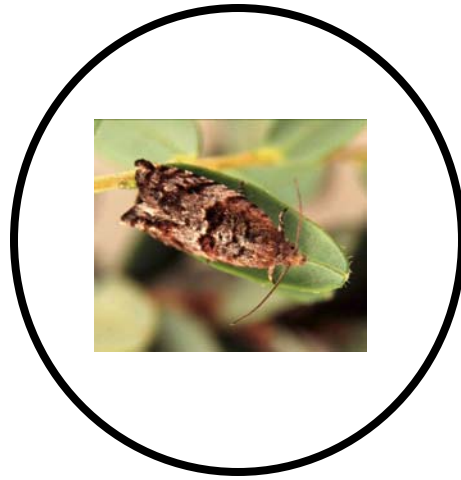
Traps captures may not be evenly distributed



RULES OF THUMB

- Control: peak = 0-30 males
 - In WI IPM program, 60% of farms <5
- Fair control, probably poor coverage in some areas: peak around 100
- Out of control, missed spray timing = peak 100's of males

SPRING



Moths monitored
with
pheromone traps
June > July

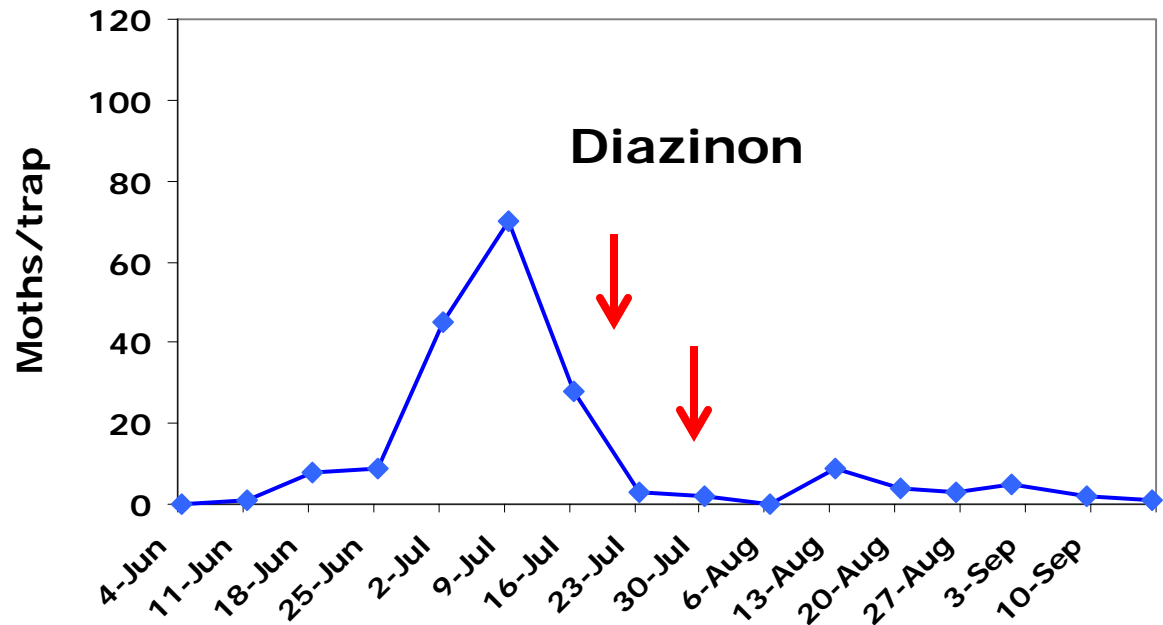
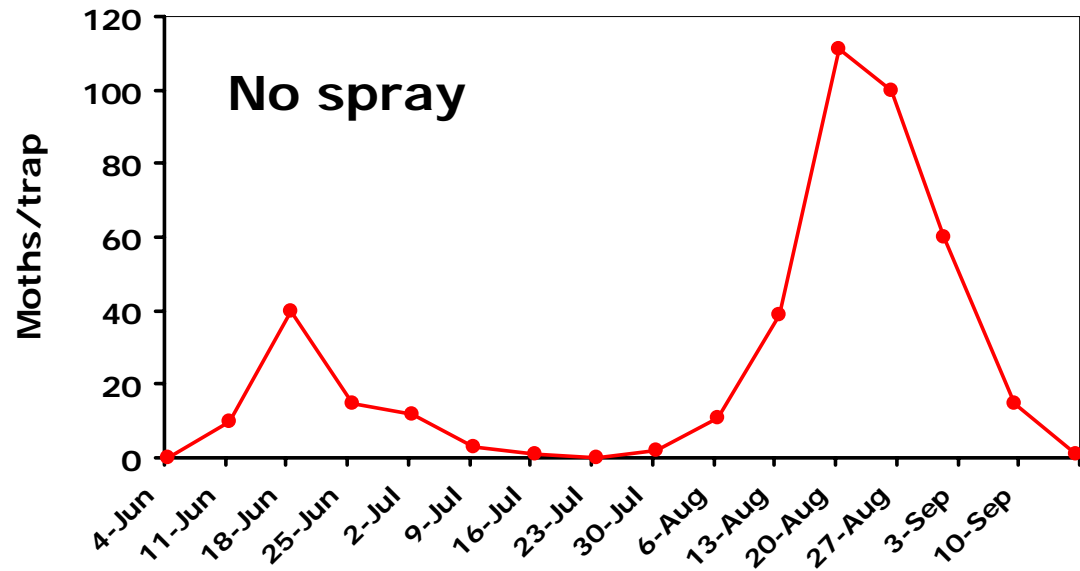
SUMMER



FALL



Moth
population
trends
in a
sprayed
and
unsprayed
bed



SPRING



???



Does probability of collecting 1st gen larvae predict 2nd gen moth flight?

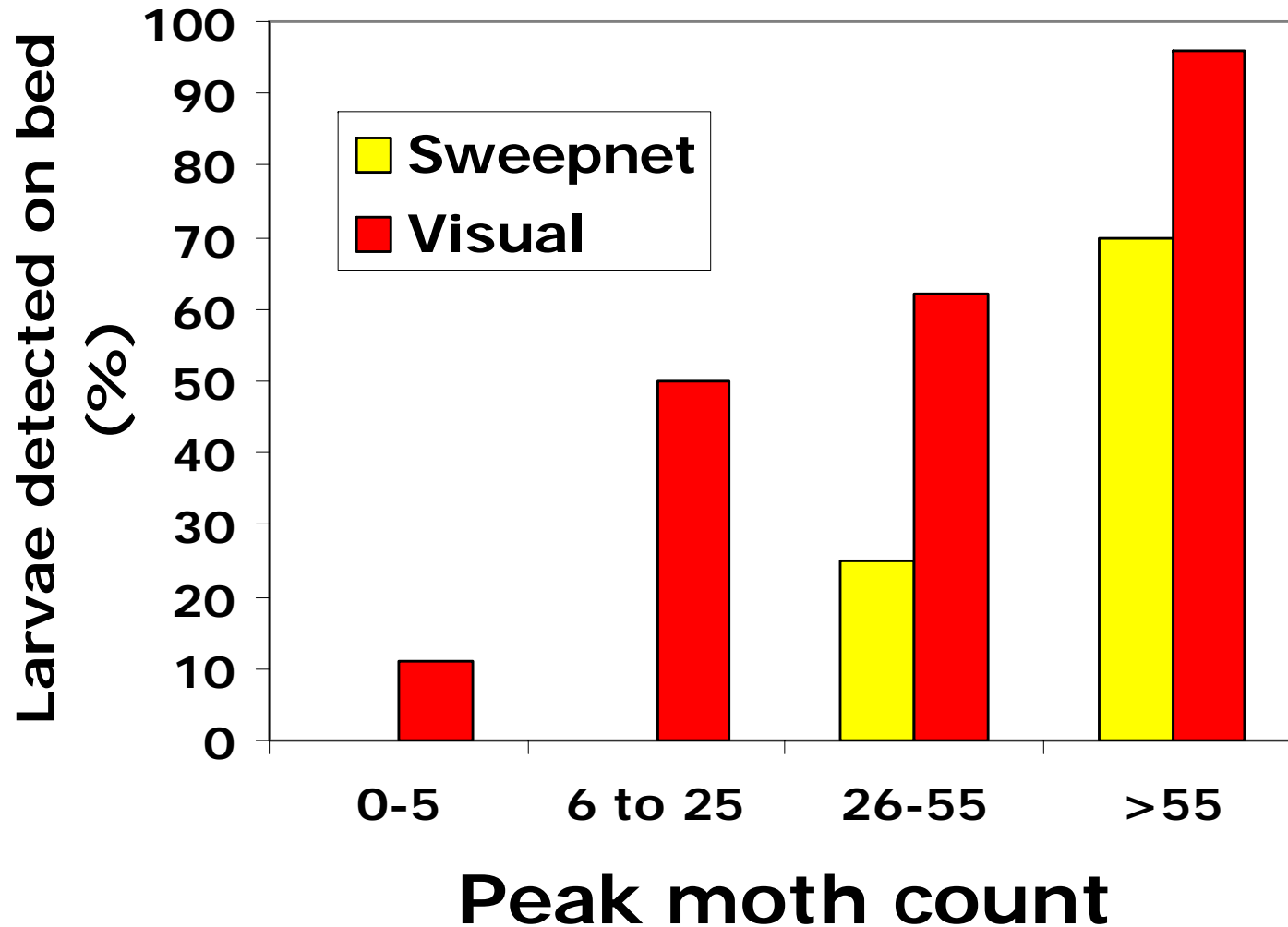
SUMMER



FALL



Detection of spring larvae and subsequent moth flight



From Katchadoorian and Mahr 1991

SPRING



Can 1st gen flight predict probability of detecting 2nd gen infestation?

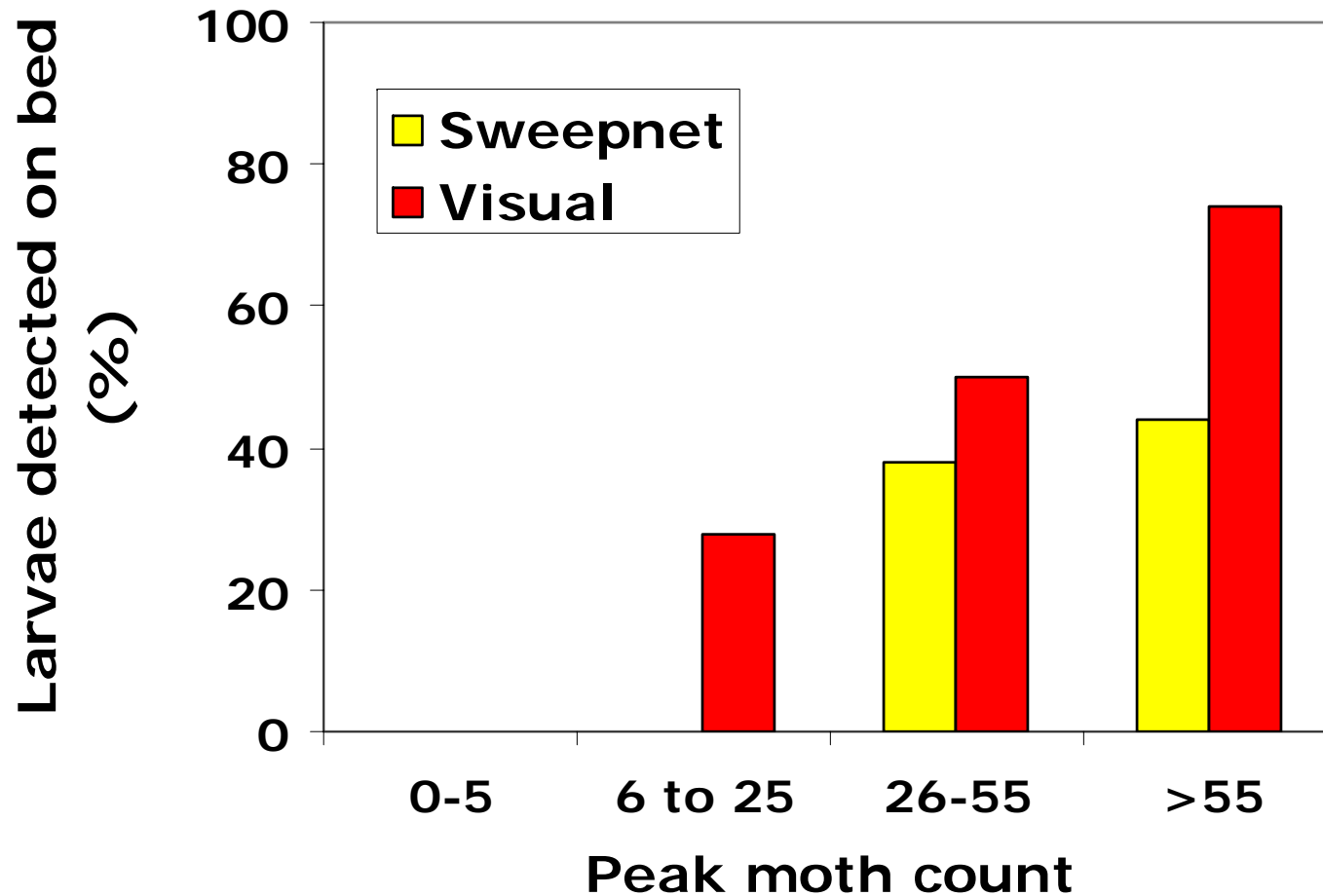
SUMMER



FALL



Trap counts predict probability of detecting summer larvae



from Katchadoorian and Mahr 1991

SPRING



NOT
monitored
with
pheromone traps
in August

SUMMER



FALL



WINTER

SPRING



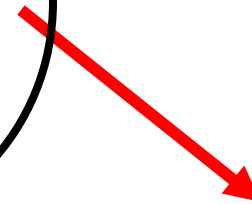
SPRING



SUMMER



2nd gen flight
predicts
probability of
detecting
next year's
infestation



FALL

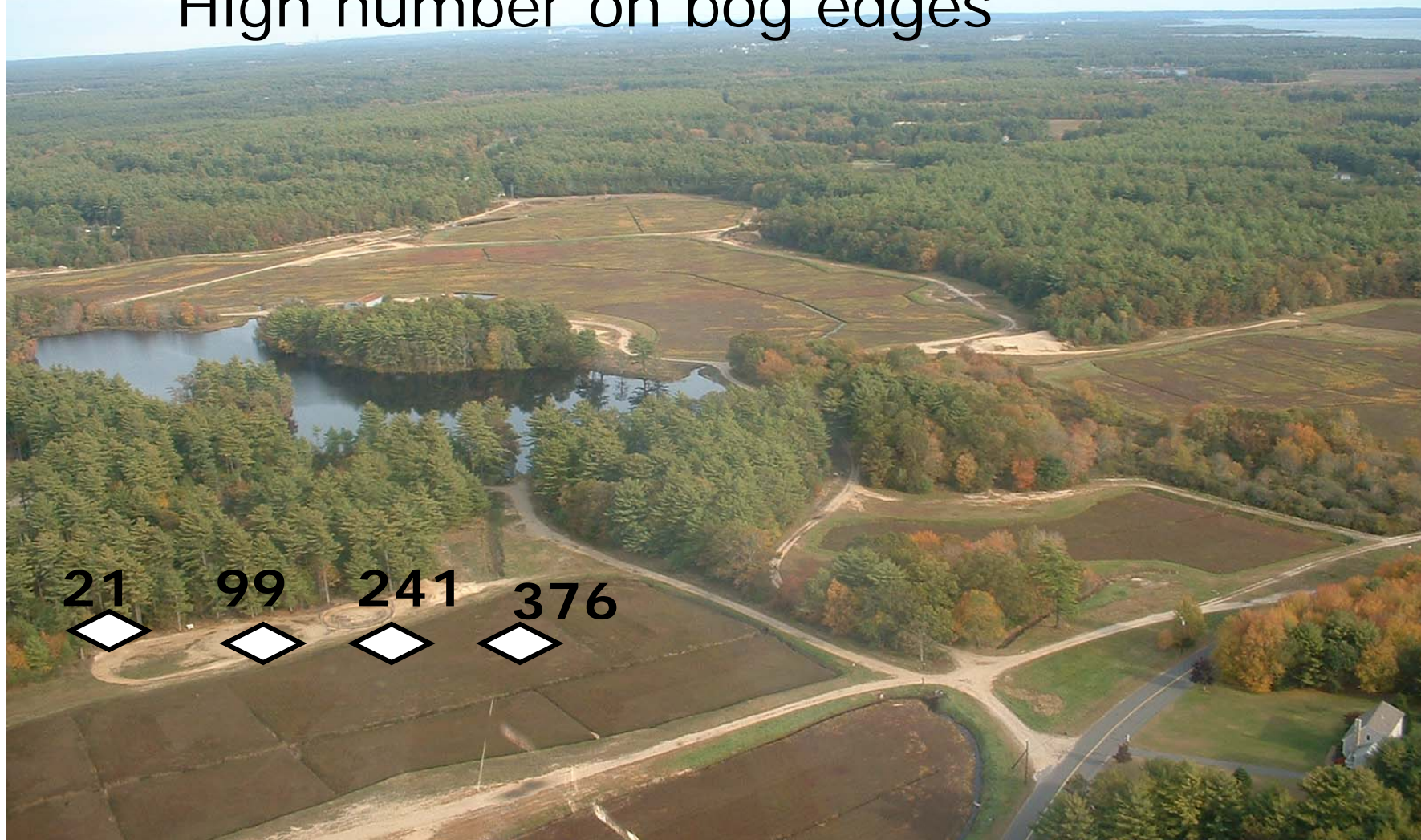


WINTER

SPRING



Moth catches inside and outside bog show:
Lower off-bog populations
High number on bog edges



from Shanks et al. 1990

RECOMMENDATION

- Use pheromone traps at bog edge to monitor summer moth flight in August
- High numbers
 - indicate poor control of spring gen
 - indicate potential problem next year

SPRAY OPTIONS

Reported to be effective

- Diazinon
- Intrepid
- Orthene (first generation)
-
- Confirm (good systems)
- SpinTor
- Imidan

CONFIRM and INTREPID

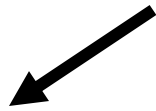
- Intrepid more active
- Intrepid has Zone II restrictions

SPRAY TIMINGS

- In spring, when larvae detected by sweep/scan
- In summer, when larvae detected --OR
- In summer, based on trap captures
 - Confirm and Intrepid
 - 3 weeks after onset of flight, 10 days later
 - Diazinon, Imidan, SpinTor
 - 10-14 days after peak moth flight

Detect an average
of 1-2 larvae; ASAP

MAY



JULY



SEPTEMBER

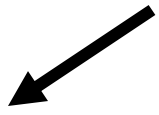


MAY



10-14 days after peak flight -- OPs
3 wks after onset of flight -- IGRs

JULY



FALL



???



**KEEP AN EYE OUT FOR THIRD
GENERATION OF LARVAE**

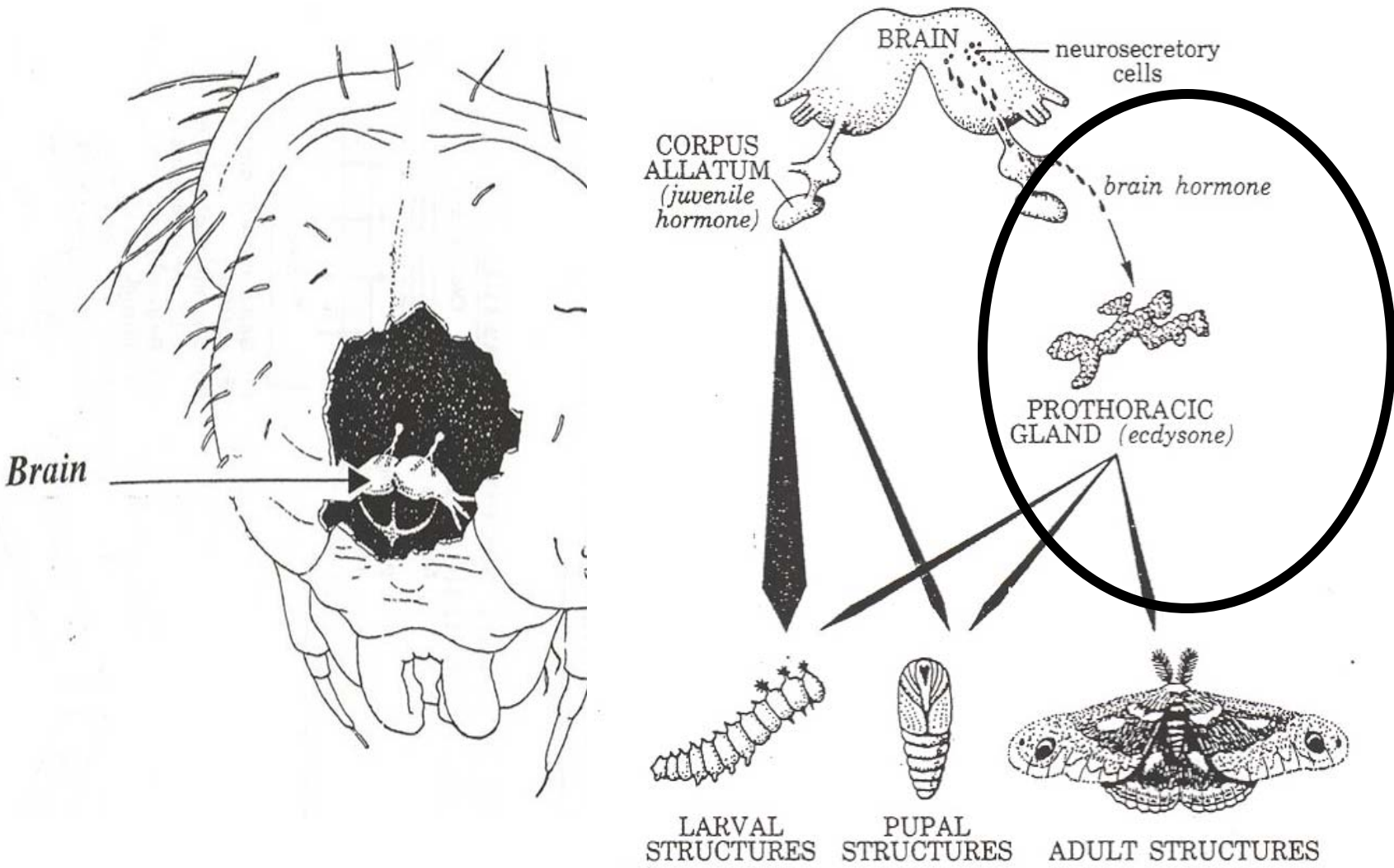
2nd GEN SPRAY
OCCURS AT BLOOM

Explosion and burnout can
appear with week(s)

Choose Intrepid or
Confirm to avoid
messing with pollinators
bee kill



CONFIRM and INTREPID



CONFIRM and INTREPID

- Must be eaten by larva
- Coverage! Aerial or short rinse
- Spreader/binder recommended
- Drying time (6 h)

- Multiple apps required for high pressure BHF

Keep up to date
Winter moth is around—
larvae may balloon in??



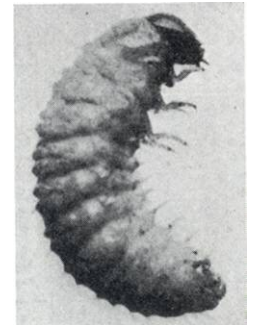
Admire 2F

- SOIL INSECTS
 - Striped colaspis
 - Oriental beetle
 - *Hoplia*??
 - Flea beetle?? if app late enough



Could be one of many

- Scarab beetles
 - Cranberry white grub
 - Cranberry root grub
 - Oriental beetle
 - *Hoplia equina*
- Black vine weevil
- Cranberry girdler
- Striped colaspis



Management differs
---based on ID

ADMIRE FOR GRUBS

- Must target small larvae, just before hatch is best
- But bee toxicity high

