Blueberry Gall Midge Control

L. K. Tanigoshi, B. S. Gerdeman & G. Hollis Spitler
WSU Mount Vernon Northwestern Washington Research & Extension Center
Dept. of Entomology

Budbreak through Bloom Management: Blueberry gall midge, *Dasineura oxycoccana*

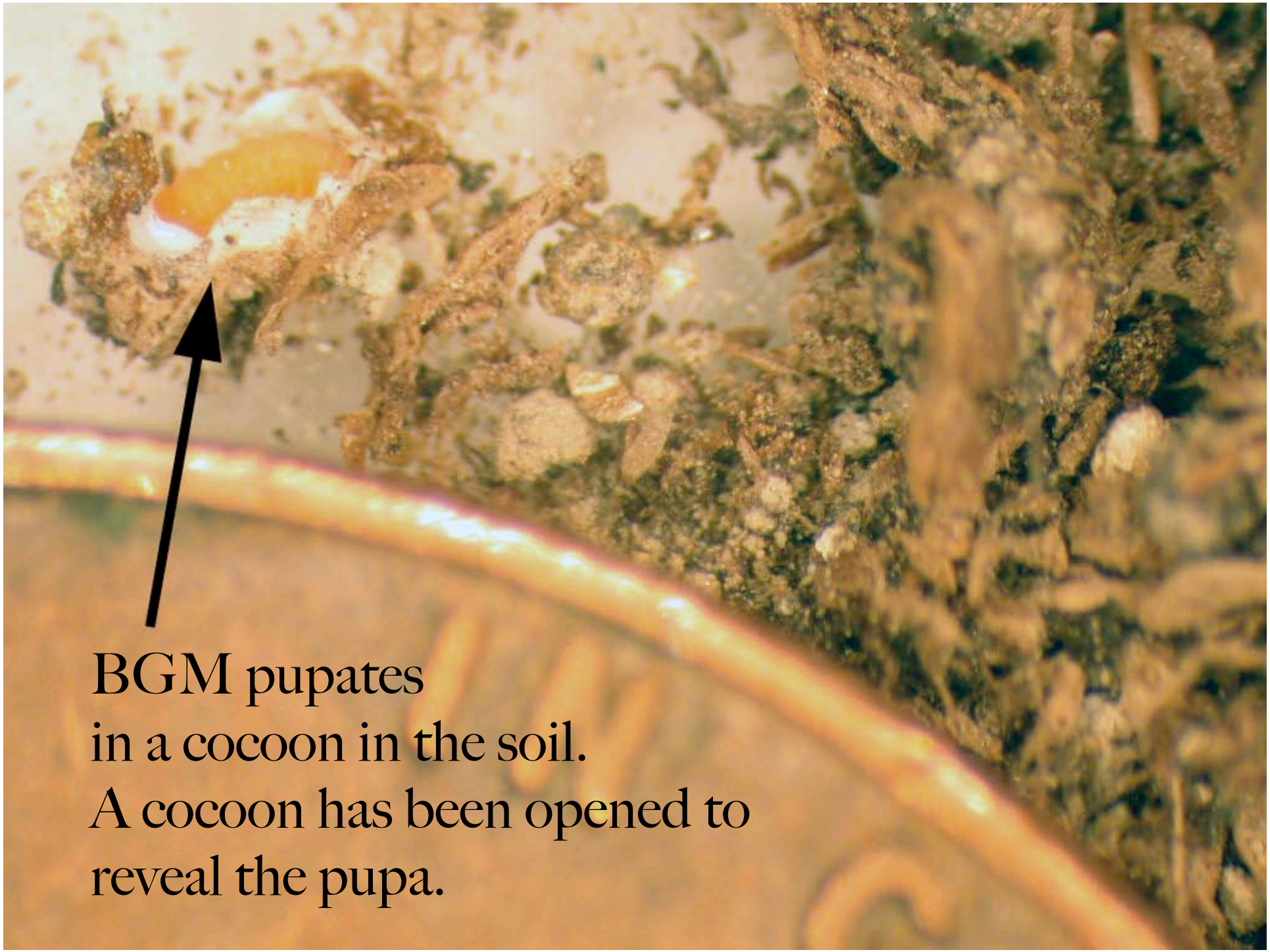
- Larvae legless, 1 mm long, white-orange in color.
- Eggs laid in floral or vegetative buds after bud swell.
- Buds abort and blackened young shoot tips, distorted leaves.
- Late season ‘witches broom symptoms.
- 4-5 generations/year.

Blueberry gall midge lays eggs inside terminals, 0.35 mm long, hatch in 2-3 days.

Blueberry gall midge 1st & 2nd instar larvae are white and begin to turn orange as they approach 3rd instar. 1-2 mm. long

7-8 day larval period

Blueberry gall midge prepupae (left) and pupae (right), 3-4 days.



BGM pupates
in a cocoon in the soil.
A cocoon has been opened to
reveal the pupa.

Witches broom

Male
Yang

Female
Yang

Puparium
Yang

Newly emerged female blueberry gall midge adult, 2-3 mm long.
Live 4-6 days

Characteristic of BGM infestation is aborted and/or blackened young shoot tips and distorted leaves. Witches' broom increases labor costs, poor bud set and may reduce berry size.

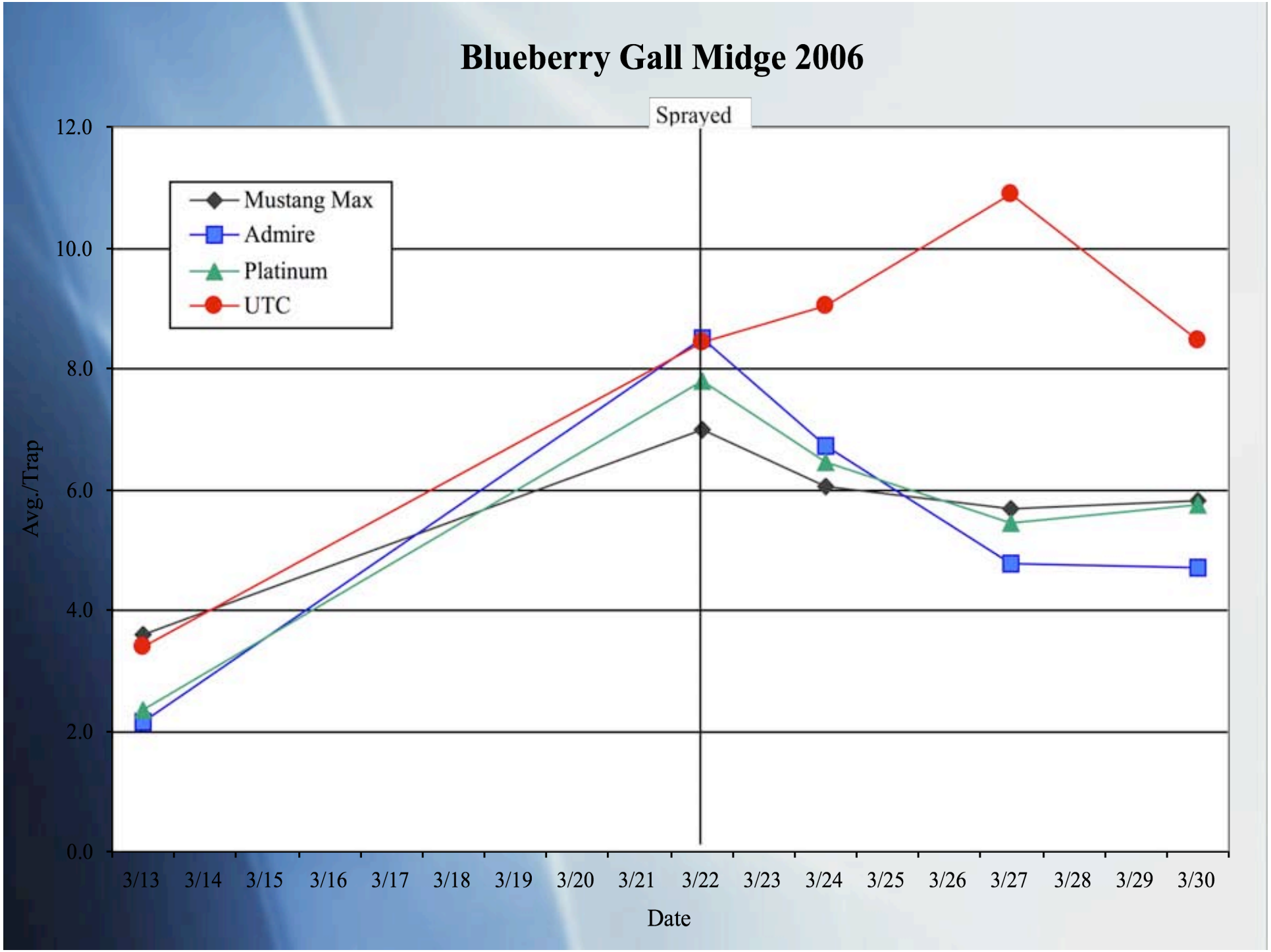
Monitoring Methods

Chemical, Cultural, Biological Control:

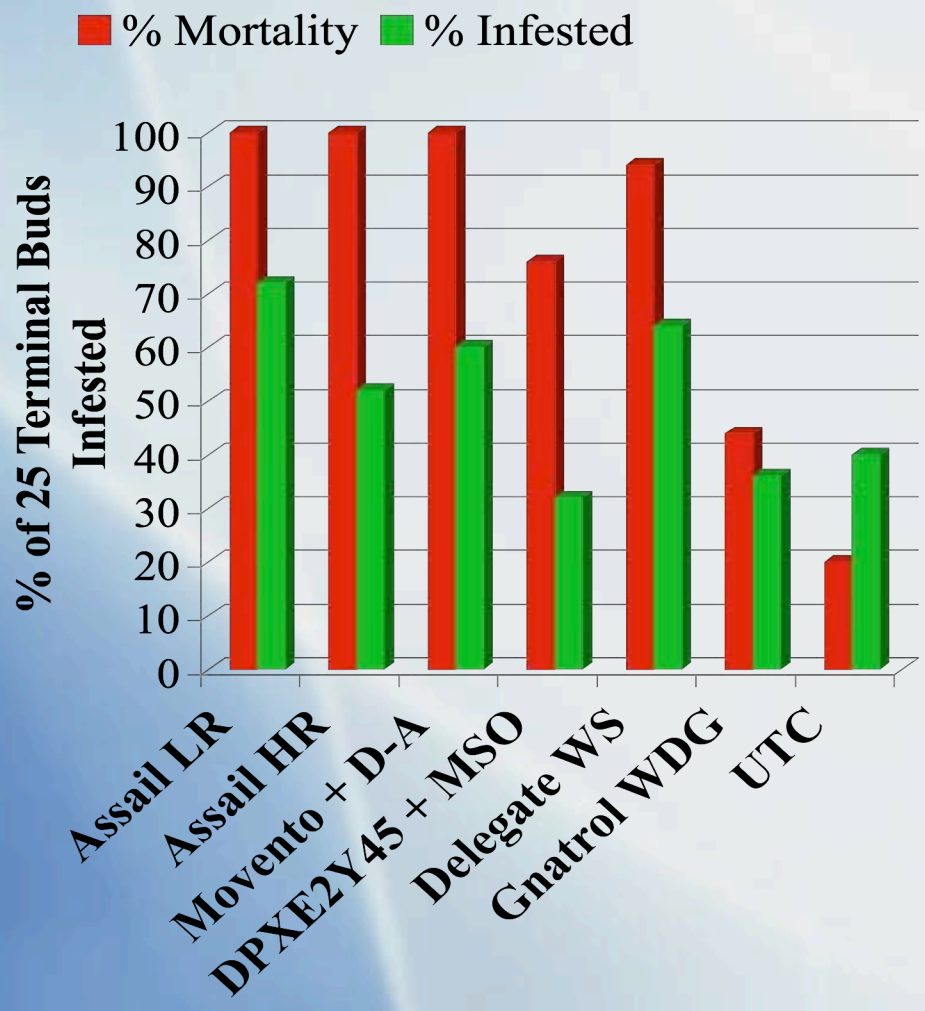
- BGM listed on Delegate label.
- Legal uses of: Actara, Admire, Assail, Platinum, Provado, Diazinon, Malathion, Mustang, Lannate.
- Prebloom malathion resulted in 94% mortality in 24 hrs, SE US, Sampson/USDA.
- Cultural control, none known.
- Biological control, new species of parasitic wasps.

Dormant and PreBloom Periods

Blueberry Gall Midge 2006



Blueberry gall midge field trial, Lynden, WA, 2008



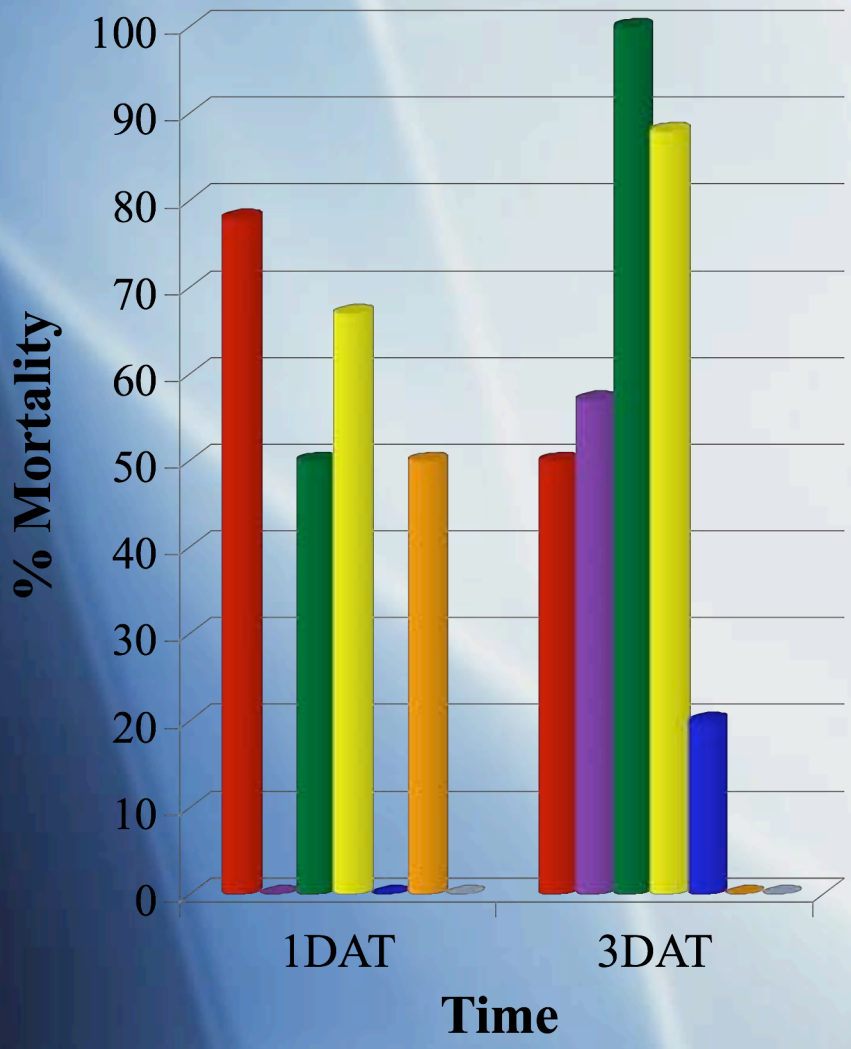
Movento (spirotetramat), Group 23

- MOA, lipid biosynthesis inhibitor (LBI).
- 2 way systemicity in host plant.
- Active by ingestion, primarily sucking insects (aphids, whiteflies, scales, mealybugs).
- IGR activity, reduced fecundity (egg laying) and survivorship of offspring.
- Not registered on small fruits, Bayer CS.

DPX-E2Y45, (chlorantraniliprole), Class 28

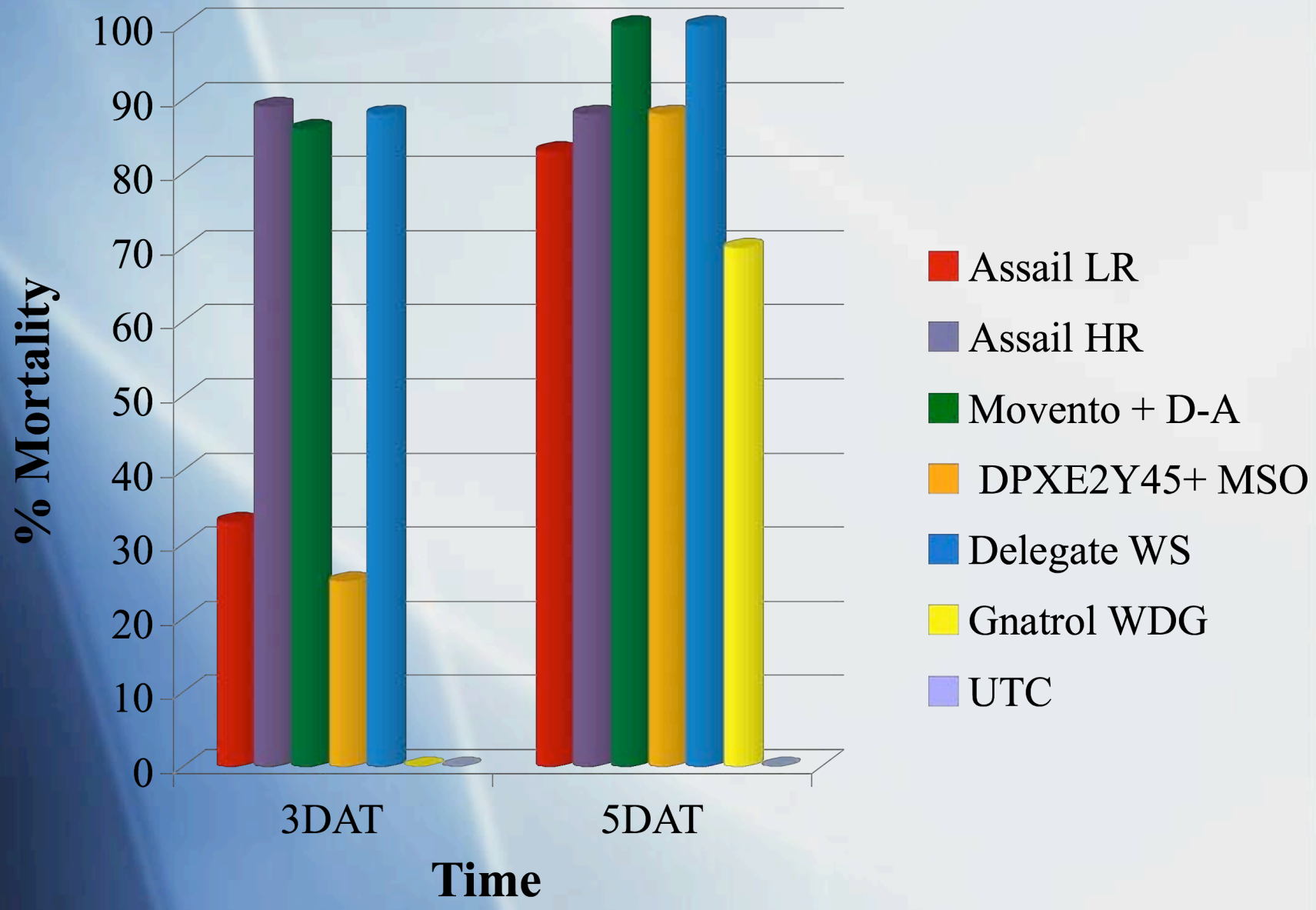
- MOA, binds to insect ryanodine receptors, causing uncontrolled release and depletion of Ca^{++}.
- Prevents muscle contraction, paralysis, stops feeding, lethargy and ultimately death.
- Ingestion stops feeding within minutes.
- Active on eggs (ovicidal) and larvae (ovi-larvicidal).
- Translaminar activity and rainfast.
- Highly effective on caterpillars, some beetles, and flies.
- No cross resistant to insect populations resistant to other classes of insecticides.
- Selective to predators, parasitoids and pollinators.

Blueberry gall midge bioassay, 2008



Assail LR
Assail HR
Movento + D-A
DPXE2Y45 + MSO
Delegate WS
Gnatrol WDG
UTC

Blueberry gall midge bioassy, 2008



Summary

- 4-5/6 generations a year in the PNW, seemingly associated with flushing periods.
- Overwinters as a pupa, emerging in early March. Prebloom drench tactic.
- Foliar windows for multiple insecticides are prebloom and postharvest periods.
- New mode of action chemistries are very effective, including experimentals being evaluated.

Current BGM Studies for 2009

- Continue terminal sampling of vegetative and floral buds to determine infestation rates.
- Understand economic impact of BGM on branching patterns, bud set and berry size of current year's wood.
- Couple terminal sampling with foliar and drench treatments.

Please carefully note that Movento, DPW-E2Y45 and Gnatrol are not EPA registered for their use on blueberry. As with any crop-protection product, always read and follow label instruction.

Acknowledgements

Washington State Blueberry Commission

Northwest Agriculture Research Foundation

B. S. Gerdeman

G. H. Spitler

Wei Yang

C. Meckstroth

L. Hirdler

J. Flores

All rights are reserved. Copyright © 2009 Board of Regents, Washington State University | Accessibility | Policies | Copyright
www.wsu.edu | http://access.wsu.edu | http://policies.wsu.edu | http://publishing.wsu.edu/copyright/WSU.html