The Impact of Specific Management Programs on BMSB Injury in Commercial Orchards

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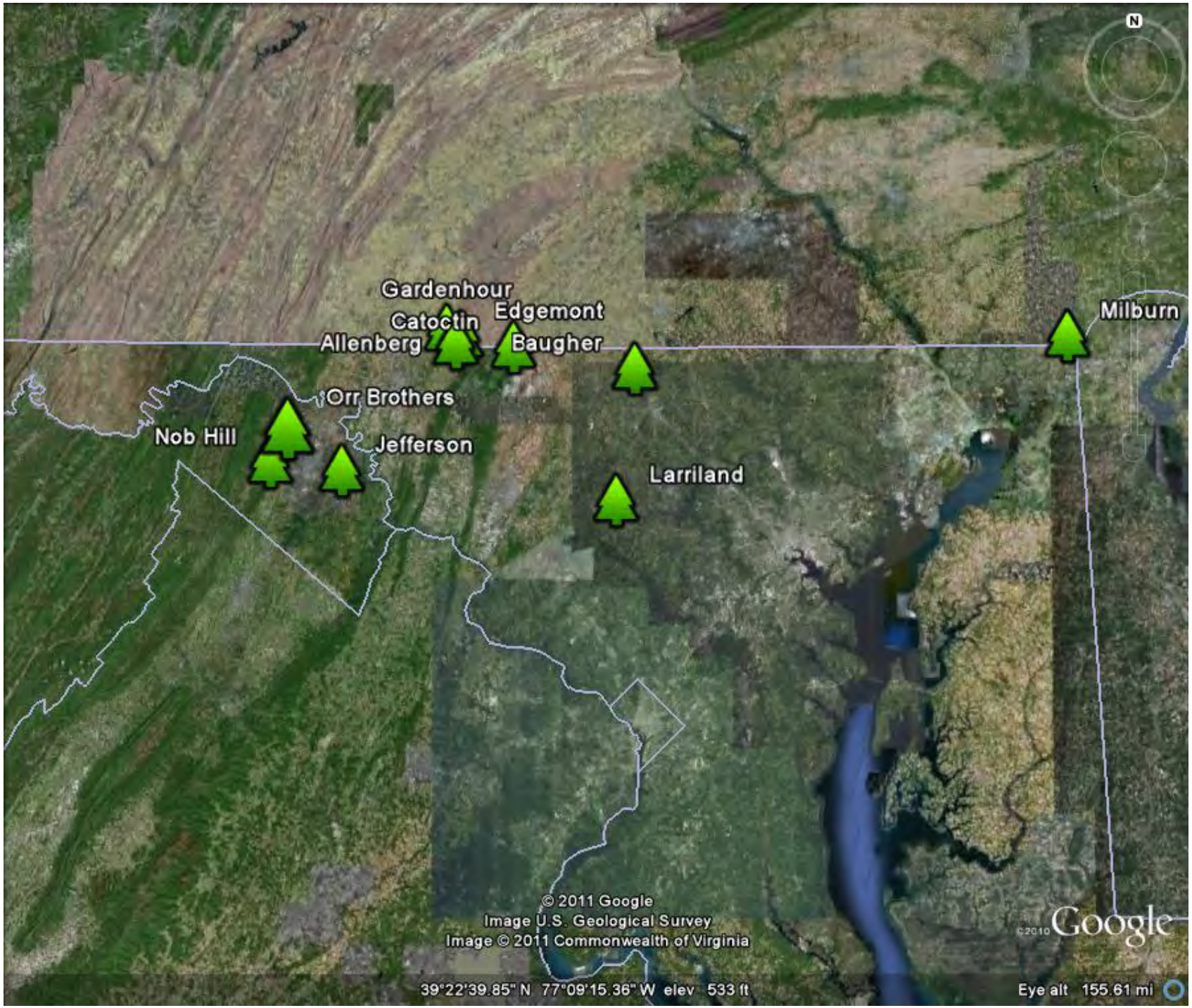
Bryan Butler
University of Maryland Extension


N
Gardenhour
Catoctin
Edgemont
Allenberg
Baugher
Milburn
Orr Brothers
Nob Hill
Jefferson
Larriland
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39°22'39.85" N 77°09'15.36" W elev 533 ft
Eye alt 155.61 mi

Acknowledgments

USDA-ARS-AFRS Technical Staff

John Cullum
Torri Hancock
Rebecca Posa
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Sean Wiles

Participating Commercial Growers

George Behling
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Brian Jacques
Bob Black
Guy Moore
Mark Orr
Bill Gardenhour
Henry Allenberg
Dwight Baugher
Nathan Milburn


N
G P1
G P2
G P3
G P4
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Imagery Date: 1/31/2008
1988
39°40'52.11" N 77°34'52.11" W elev 787 ft
Eye alt 1062 ft


N
G P4
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G PS3
G P1
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G PS2
G PS1
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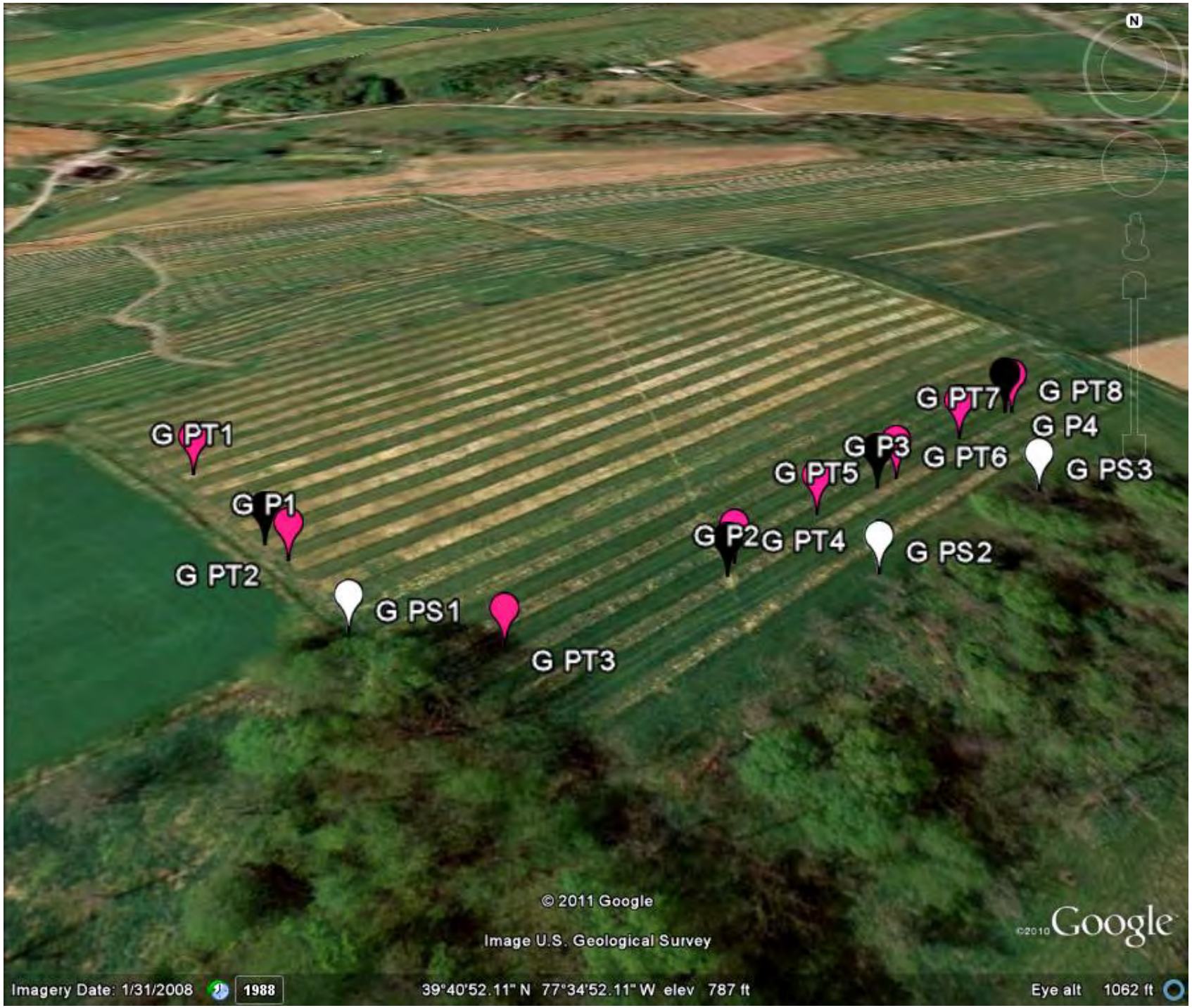
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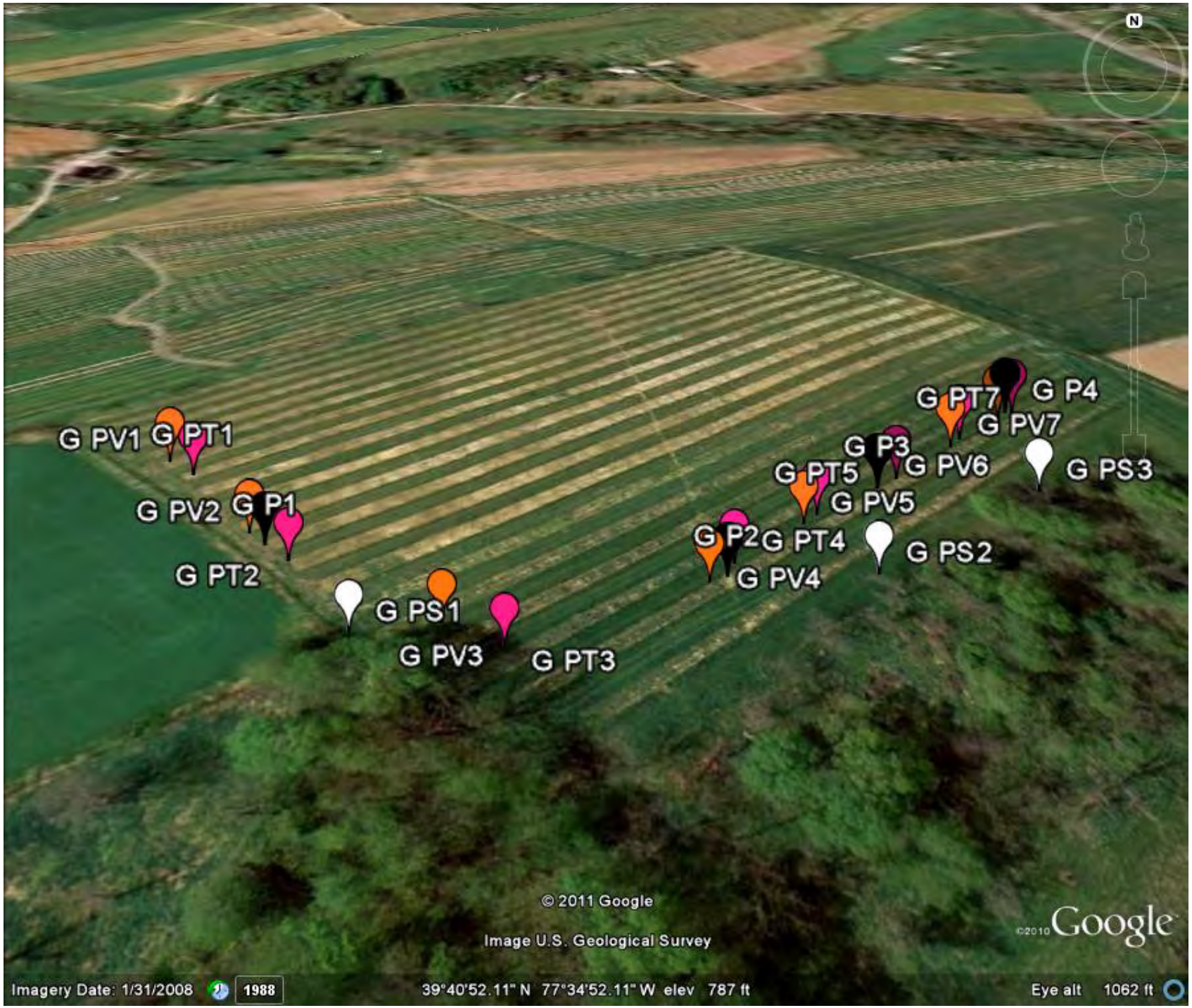
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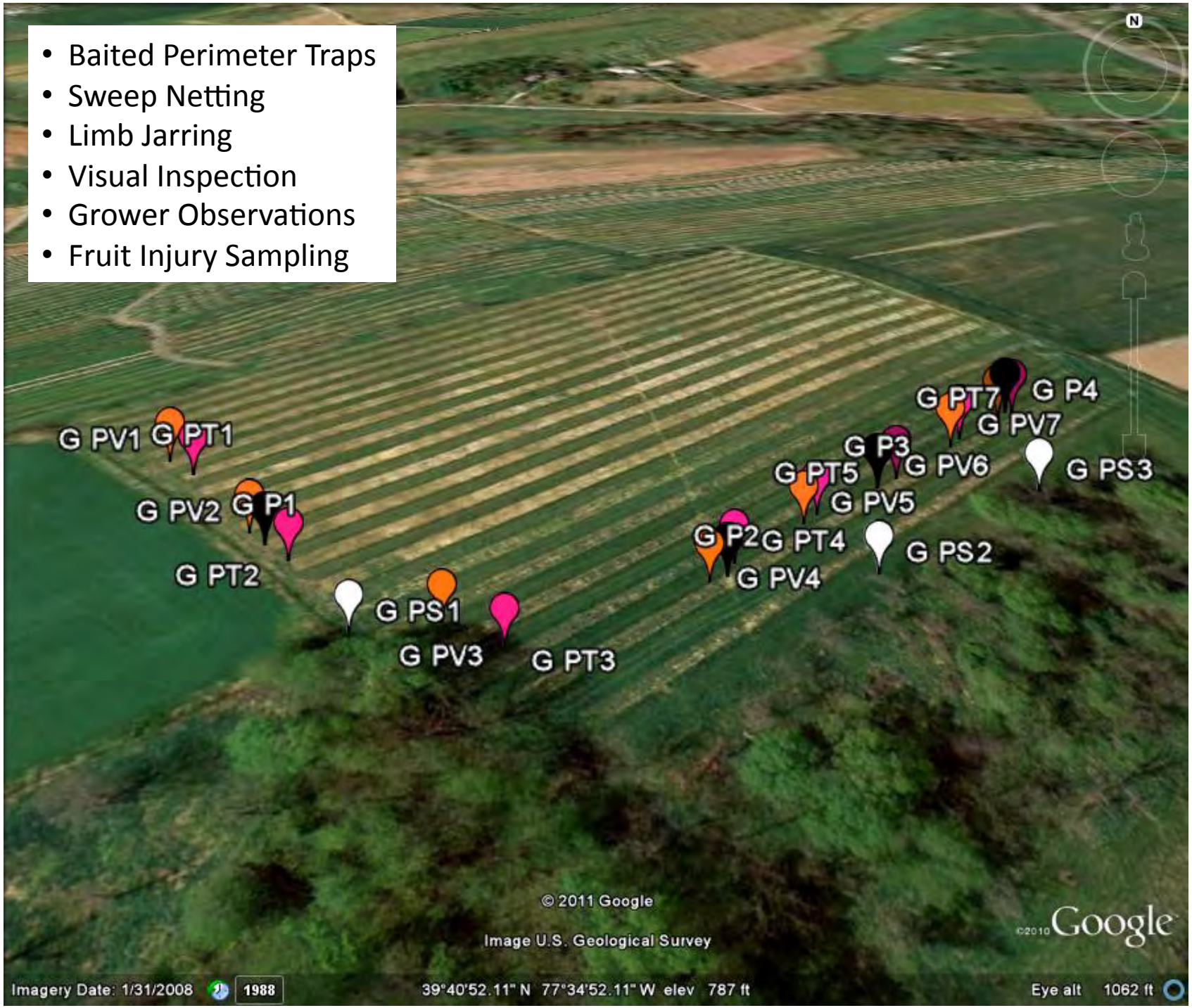
Baited Perimeter Traps
Sweep Netting
Limb Jarring
Visual Inspection
Grower Observations
Fruit Injury Sampling
G PV1
G PT1
G PV2
G P1
G PT2
G PS1
G PV3
G PT3
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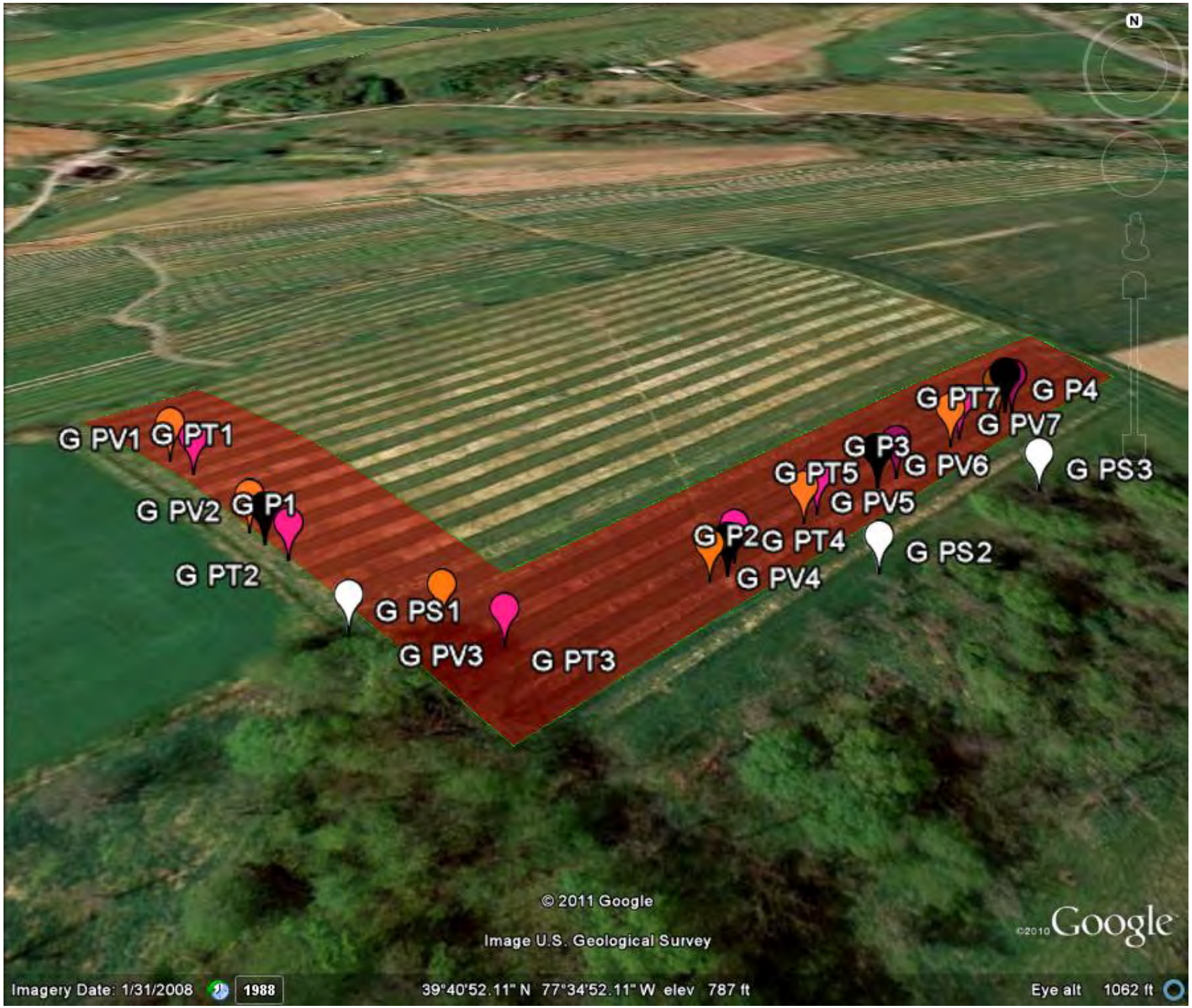
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Imagery Date: 1/31/2008
1988
39°40'52.11" N 77°34'52.11" W elev 787 ft
Eye alt 1062 ft


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Imagery Date: 1/31/2008
1988
39°40'52.11" N 77°34'52.11" W elev 787 ft
Eye alt 1062 ft

Fruit Injury Inspection

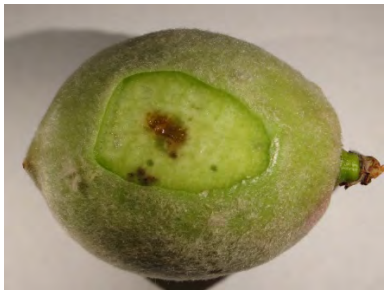
- Non-Destructive (On-Tree) Sampling
  - Peripheral Zone and Interior Zone
    - Shuck Split Through 20mm Fruit

- Destructive (Lab Dissection) Sampling
  - Peripheral Zone
    - 20mm Fruit Through 40mm Fruit
  - Peripheral Zone and Interior Zone
    - 40mm Fruit Through Harvest

Fruit Injury Inspection

- Destructive (Lab Dissection) Sampling
  - Whole-Fruit Sampling
  - Presence of Feeding Injury Only
  - Qualitative Assessment of Severity, Quantitative Assessment of Severity Conducted Closer to Harvest

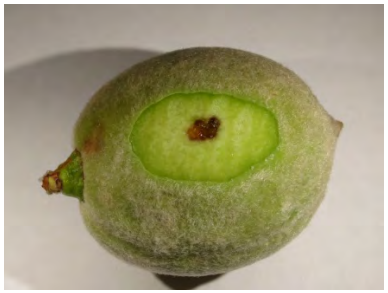
Surface Injury



Section 1 (2mm)

Section 2 (4mm)

Section 3 (6mm)



Key Question

- How do grower management decisions influence presence and severity of BMSB feeding injury?
  - Material Selection
  - Rate Selection
  - Coverage and Concentration (GPA)
  - Application Method (ARM)
  - Treatment Interval
  - Strategic Deployment (Peripheral Zone vs. Whole Plot)
  - Tank Mixes, Commercial Blends, and Synergists

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  - Treatment Interval

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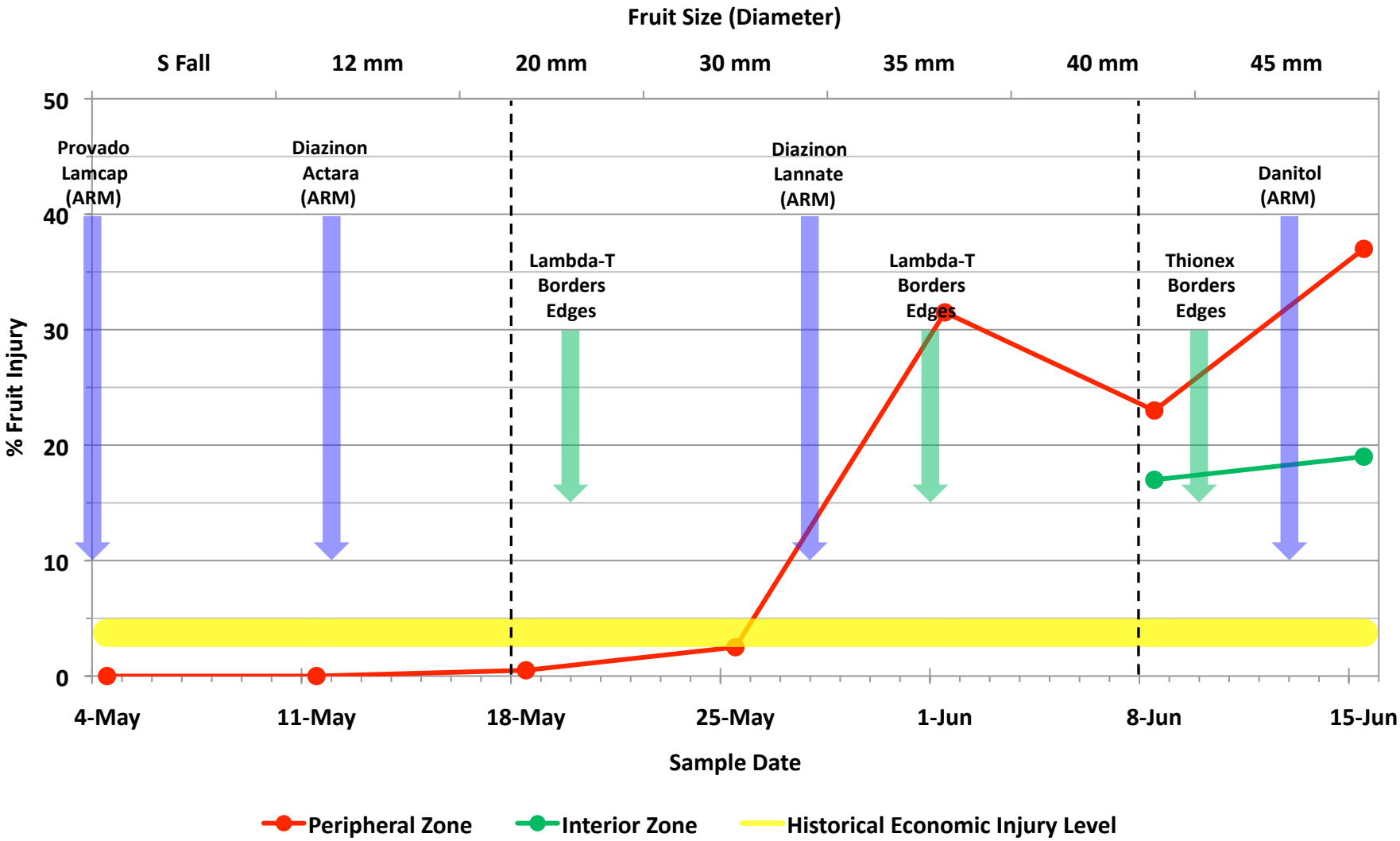
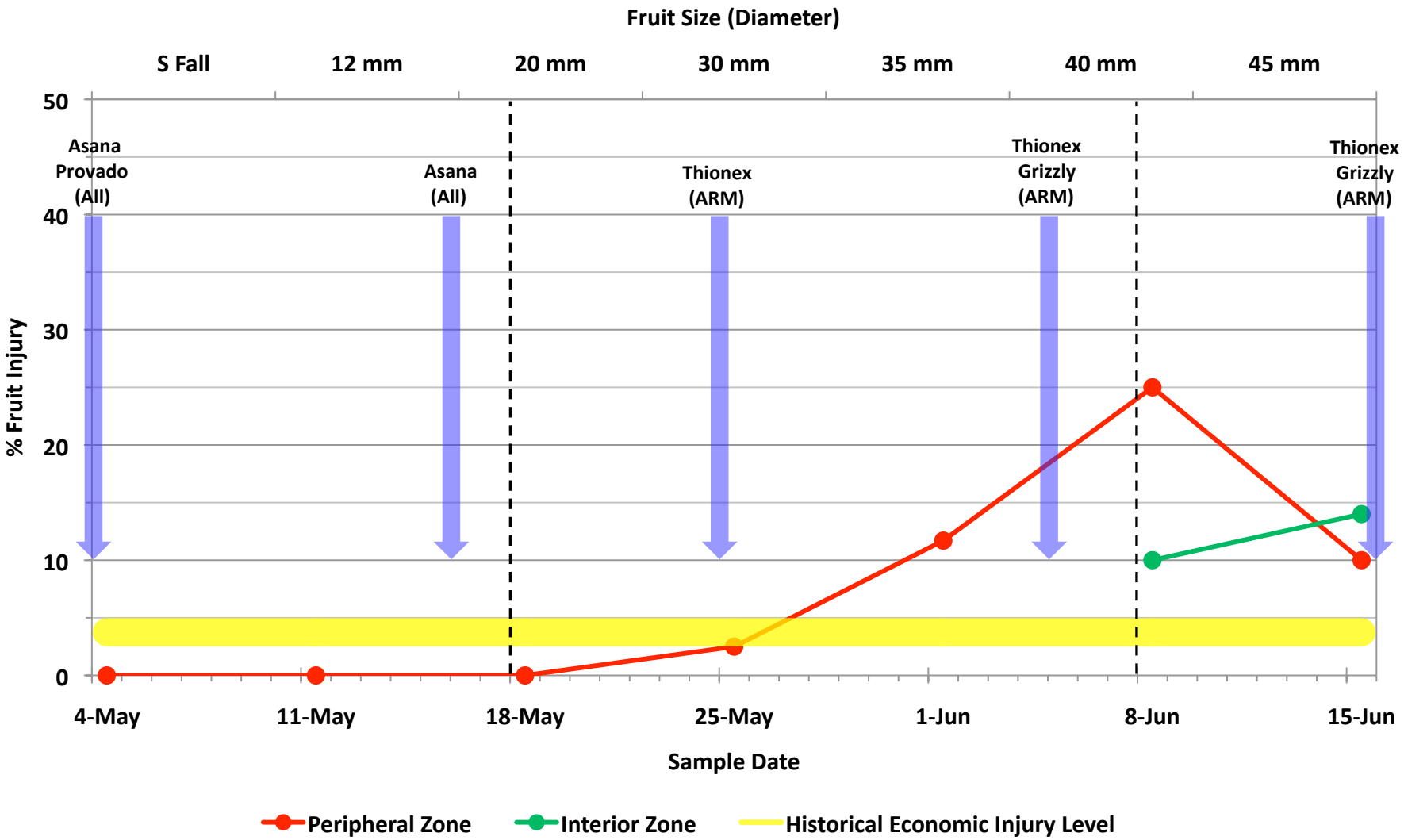
  - Material Selection
  - Treatment Interval

- If the input equals the spray schedule, and the outcome equals the injury rate, can a commercial grower win by spraying?

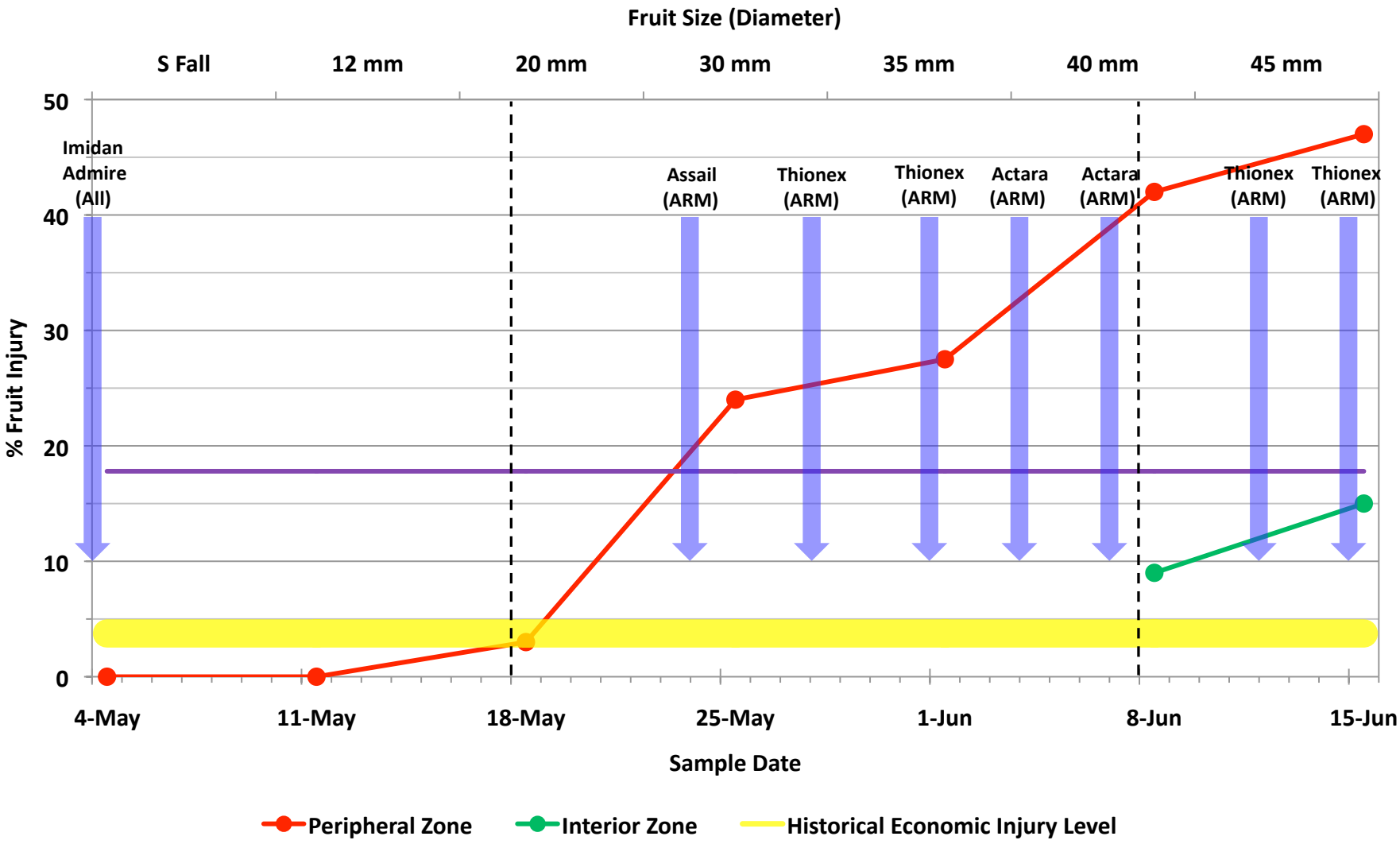
Monitored Orchard WV2-O
Non-Destructive/Destructive Fruit Sampling (Peach)
Presence of Feeding Injury



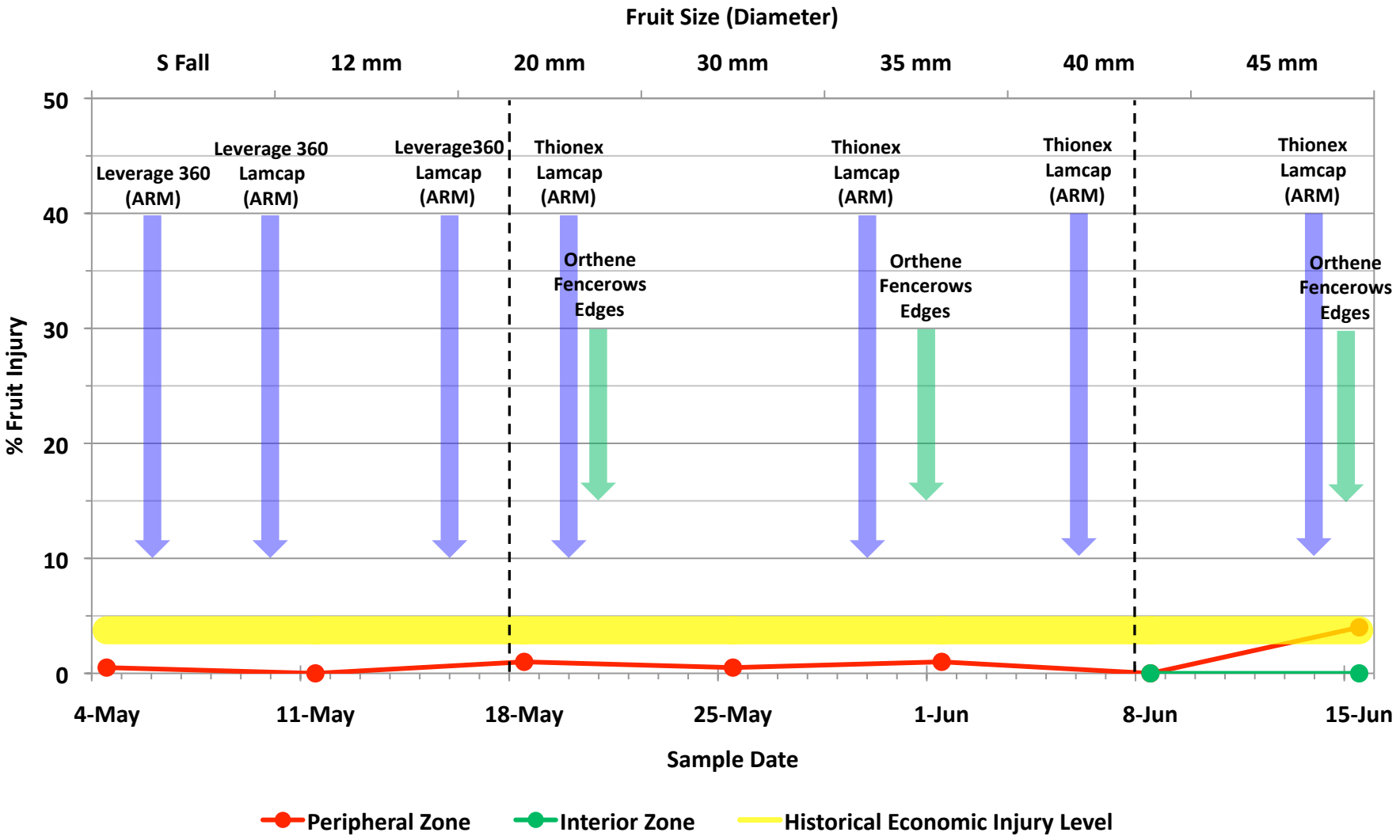
Monitored Orchard MD1-G
Non-Destructive/Destructive Fruit Sampling (Peach)
Presence of Feeding Injury



Monitored Orchard MD6-L
Non-Destructive/Destructive Fruit Sampling (Peach)
Presence of Feeding Injury



Monitored Orchard MD3-A
Non-Destructive/Destructive Fruit Sampling (Peach)
Presence of Feeding Injury



Challenges Emerging

- Large Farms
  - If it already takes 7 days to cover the farm, then options are severely limited.
- Diversified Farms
  - Essentially all PYO and farm-market crops are at risk.
- Residual Effectiveness
  - Few materials demonstrating greater than 5 days of kill of immigrating bugs.
- Label Restrictions
  - Seasonal maximum applications/seasonal maximum amounts will come into play very quickly for materials that prove effective.

Mid-Season Conclusions

- As of June 18th across all sampled farms, the injury rate in peaches is 16.7% in the peripheral zone and 10.3% in the plot interior. However, peripheral-zone injury is generally more severe.

- After peaches reach ~3/4", there appears to be very little room for error in material selection, rate, or timing of treatments. However, growers are still functioning without triggers or reasonable assurance of success.

- A combination of tight-interval residual material (endosulfan) tank-mixed with a knockdown material (pyrethroid) augmented by edge treatment with a systemic (acephate) has held firm through June 15th in an orchard with a history of very high BMSB damage rates.

- Central Maryland appears to be facing a substantial increase in the overall BMSB population from the 2010 growing season to the 2011 growing season.

- Early-season BMSB management in peaches is going to take practice.

In-Season Research Projects

- Analysis of Residual Insecticide Effects
- Trap and Stimulus Improvements
- Olfactory Deterrents
- Insecticide Synergists
- Tactile Deterrents


N
Image USDA Farm Service Agency
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Imagery Date: 6/7/2009
1990
39°26'33.30" N 78°02'40.88" W elev 766 ft
Eye alt 1206 ft

Surround Coverage (First Application)
15 LBS/100 Gallons, 125 GPA