Interactions Between Potato Leafhoppers, Glandular-Haired Alfalfa, and Insecticide Timing

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Potato Leafhopper, *Empoasca fabae* (Harris)

Potato Leafhopper Impacts on Alfalfa

- **Yield & Quality: immediate vs. carryover effects**
- **Stand persistence**
- **New seedings vs. established stands**

Mechanisms of Plant Resistance to Insects

- **ANTIBIOSIS: plants are “poisonous”**
- **NON-PREFERENCE: insect will go elsewhere when given choice**
- **TOLERANCE: plants can withstand more injury without yield loss**

Plant Resistance and Threshold Levels in GH Varieties

- **Increase (10X?, 2X?) in thresholds, based on tolerance ??**
- **Less likely to get high PLH numbers, due to antibiosis and/or non-preference ??**

Arlington Trial 2002

- Compare treatment thresholds
  - Conventional (1X) vs. 2X
- Compare levels of PLH resistance
  - Pioneer 5454 (none), DK 131 HG (53% resistant plants), Evergreen (79% resistant plants)

Potato Leafhopper Thresholds

Stem Height (in.)	PLH per sweep	
	1x	2x
>3	0.2	0.4
6	0.5	1
8 - 10	1	2
12 - 14	2	4

PIONEER 5454
(no resistance)

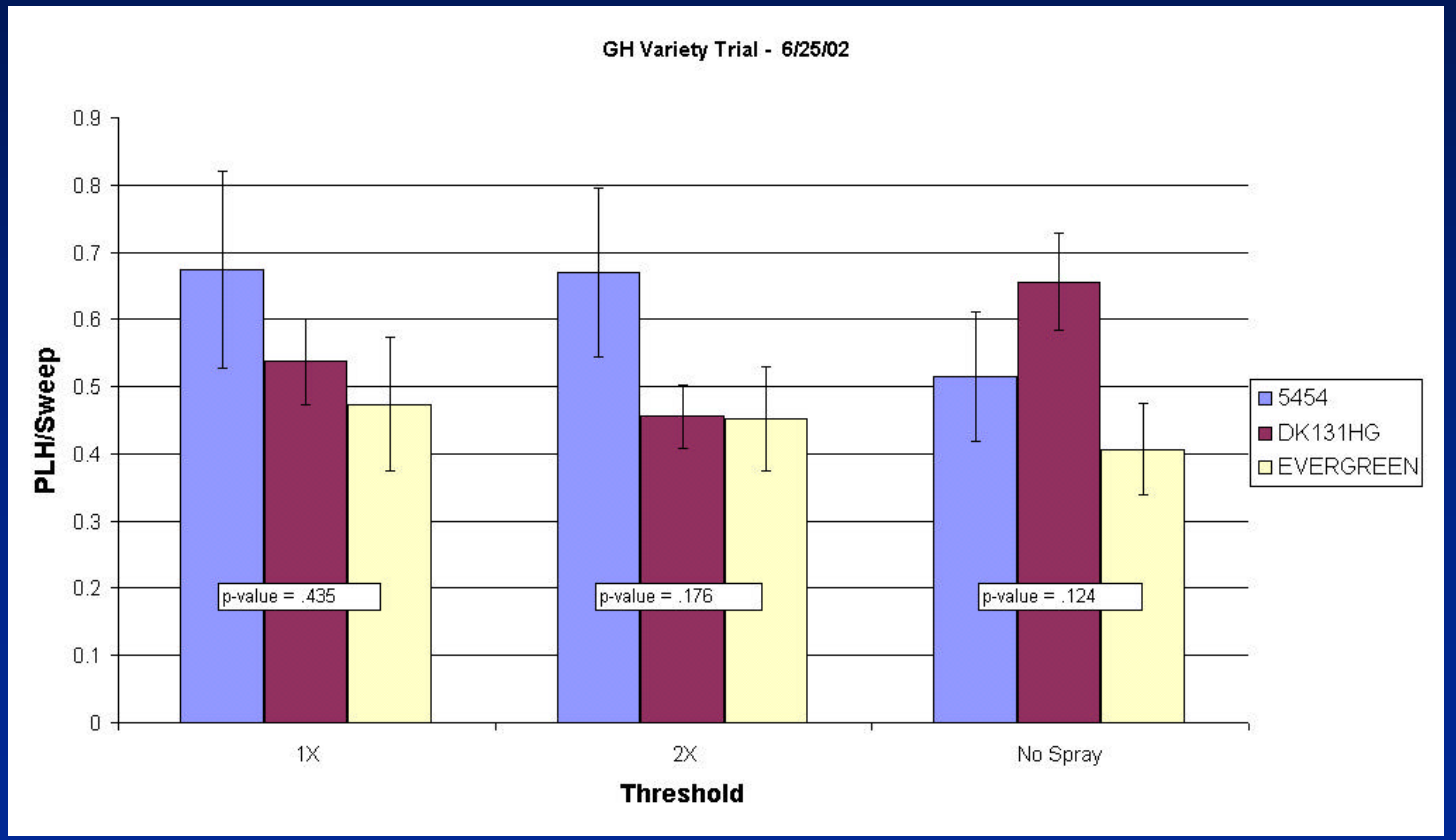
DK 131 HG
(53% resistant plants)

EVERGREEN
(79% resistant plants)

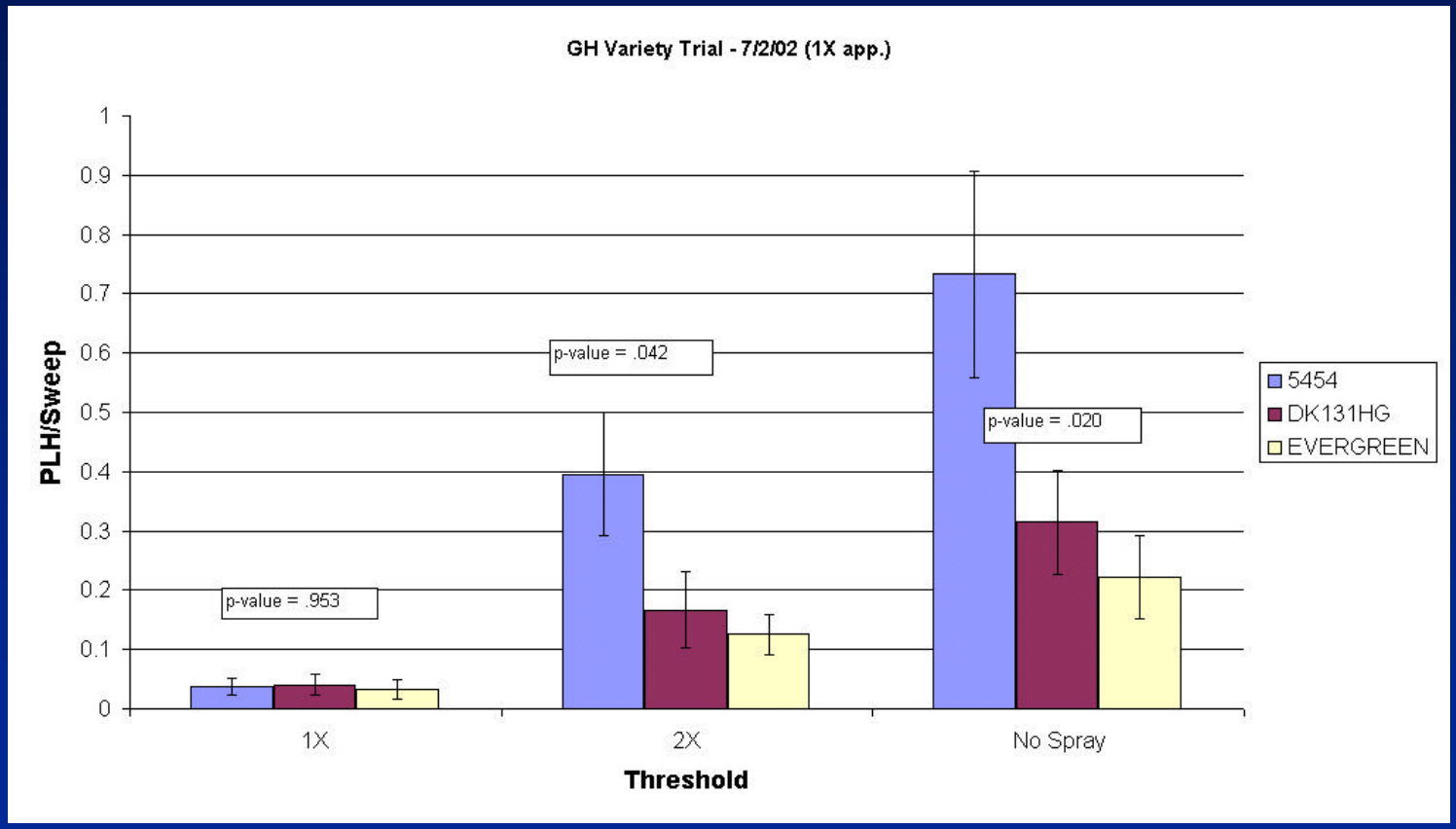
Arlington Trial 2002

- Plots (18'x18') seeded on May 16, 2002
- Conventional (1X) Threshold treated with Warrior on July 1
- 2X Threshold treated with Warrior on July 5
- Plots cut on July 30
- Data recorded included PLH counts, stand heights, hopperburn ratings (as warranted) and dry matter yields

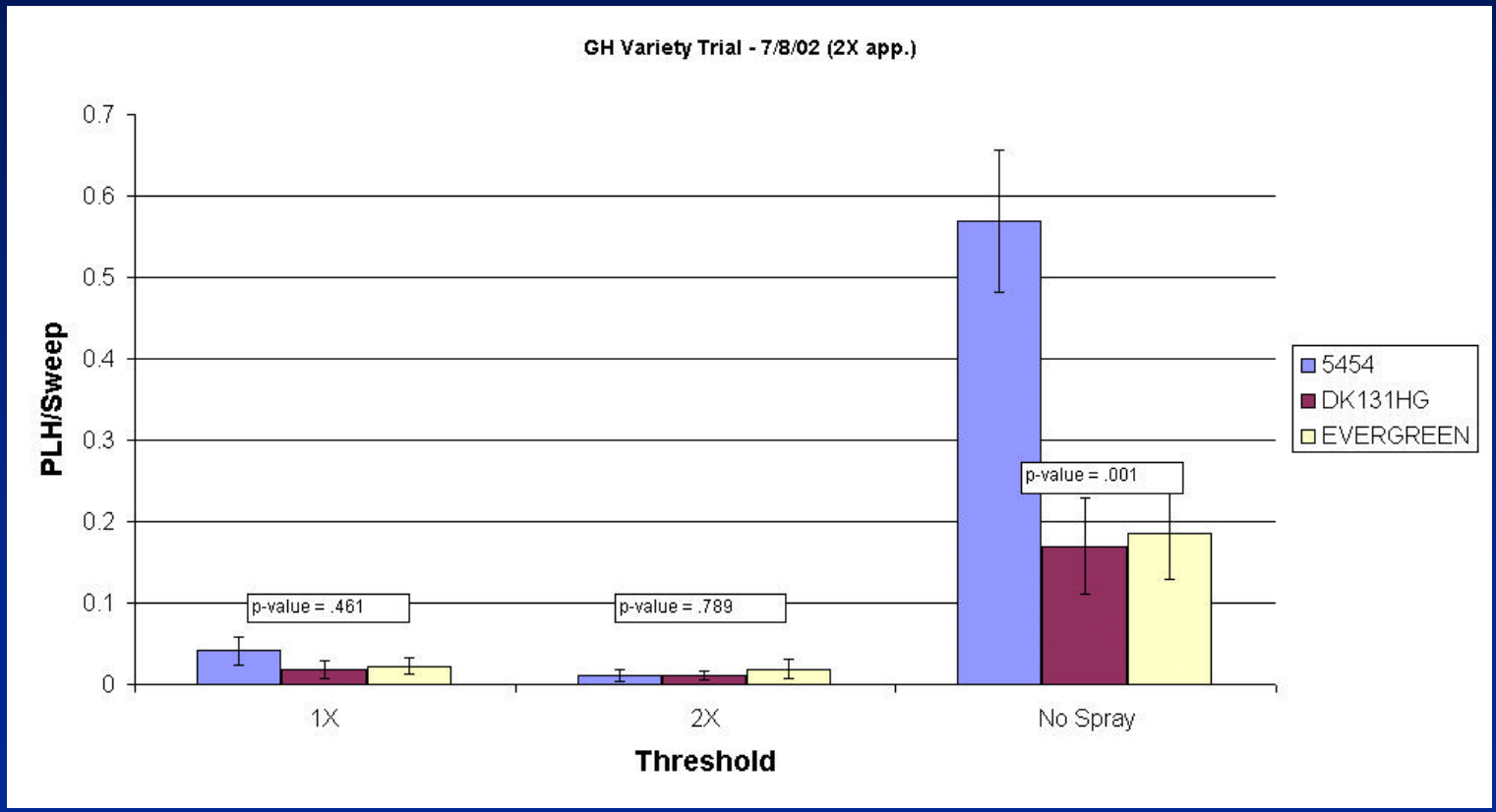
Leafhoppers Per Sweep
June 25



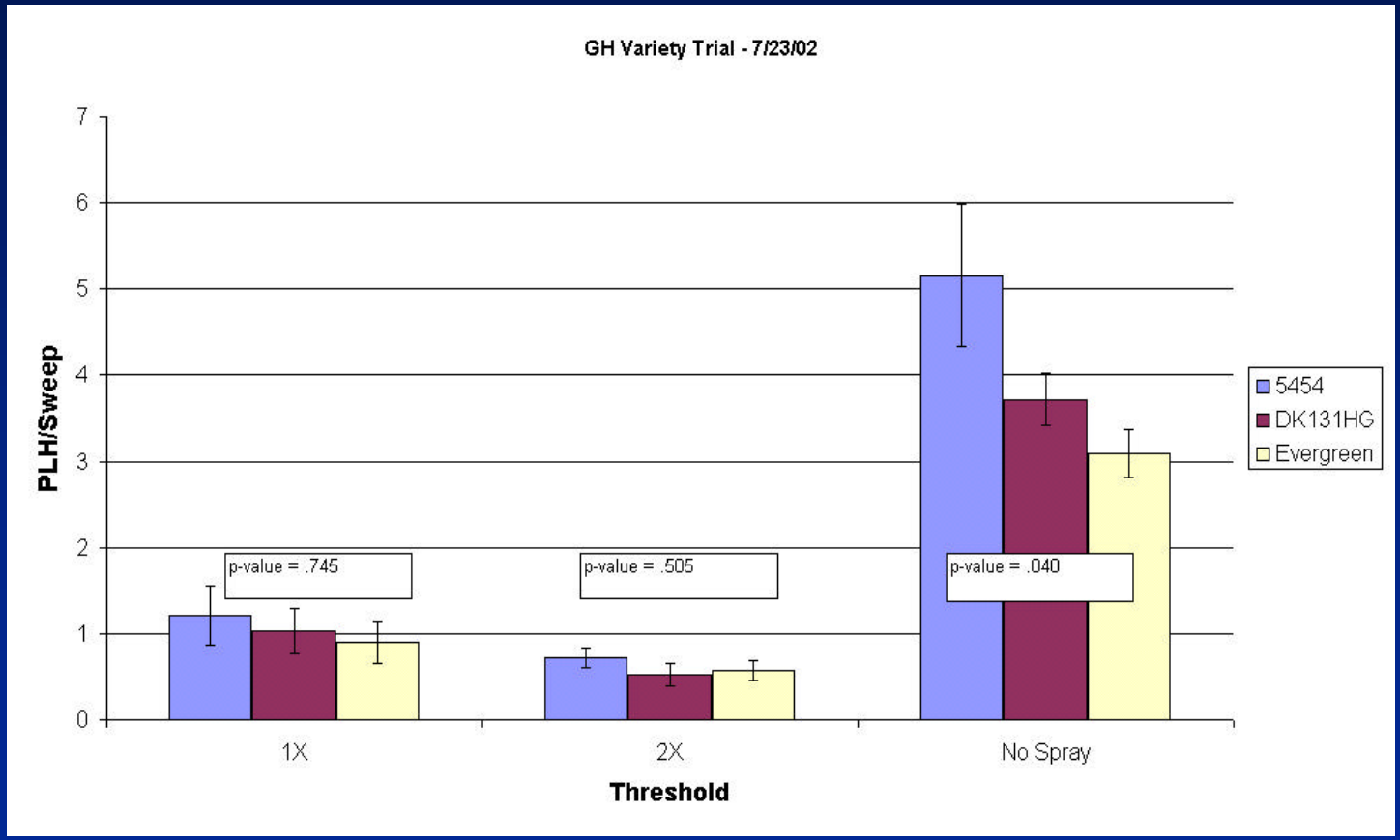
Leafhoppers Per Sweep
July 2



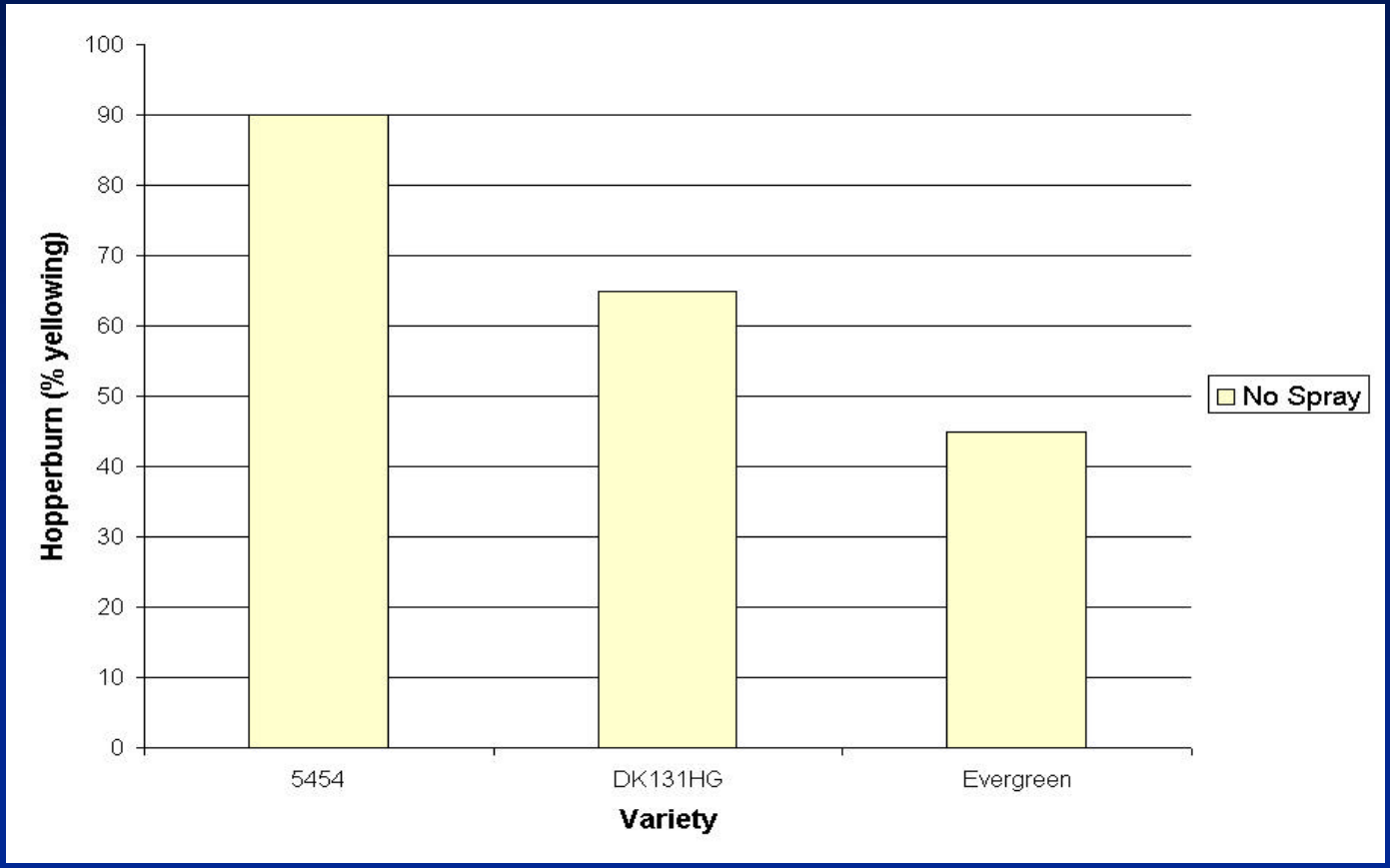
Leafhoppers Per Sweep
July 8



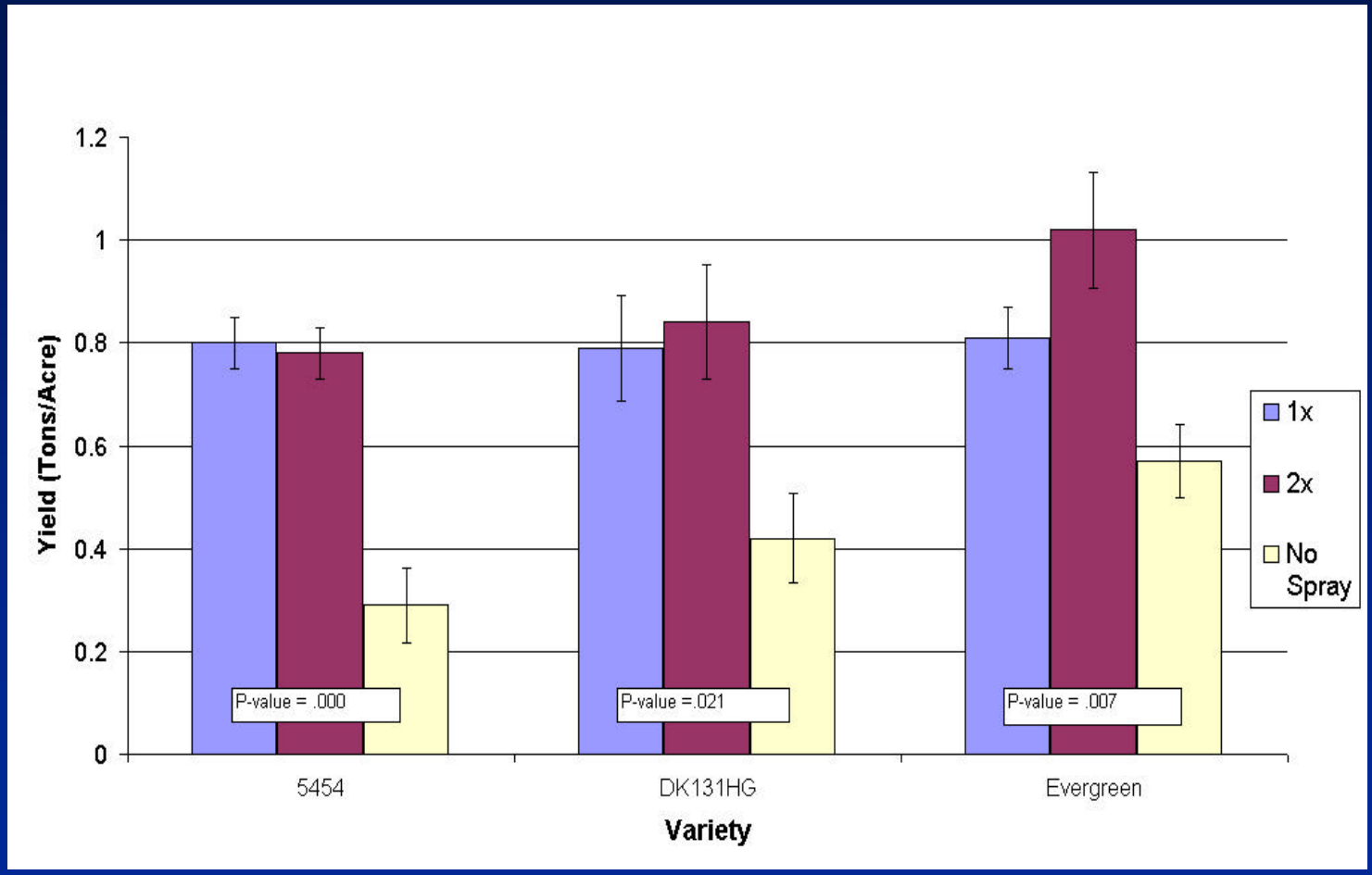
Leafhoppers Per Sweep
July 23



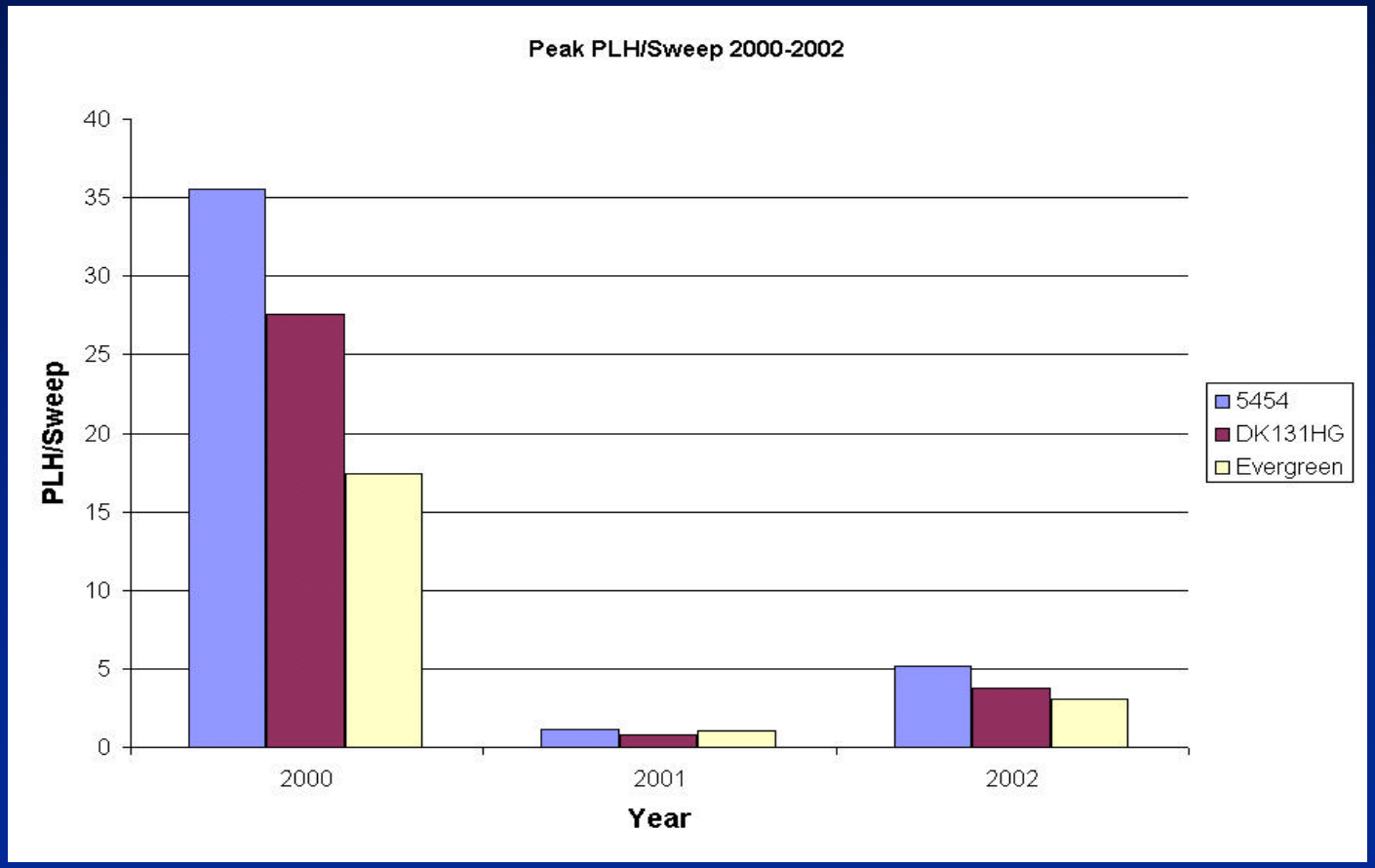
Hopperburn (% Yellowing)
July 23



Variety Yields
July 30, 2002



Peak PLH/Sweep for 2000-2002



Conclusions – Arlington 2002

- **PLH populations consistently higher in Pioneer 5454**
- **GH Varieties yielded just as well at the 2x threshold (vs. 1x)**
- **A possible increased tolerance and/or non-preference between the PLH and the GH varieties**

Conclusions – Arlington 2002

- GH varieties had less hopperburn and yielded higher in untreated plots
- All varieties lost yield when not protected
- Thresholds for PLH on GH alfalfa still an open question
- Resistance levels in GH varieties not yet sufficient for stand-alone PLH control
  - Management for PLH still a MUST

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