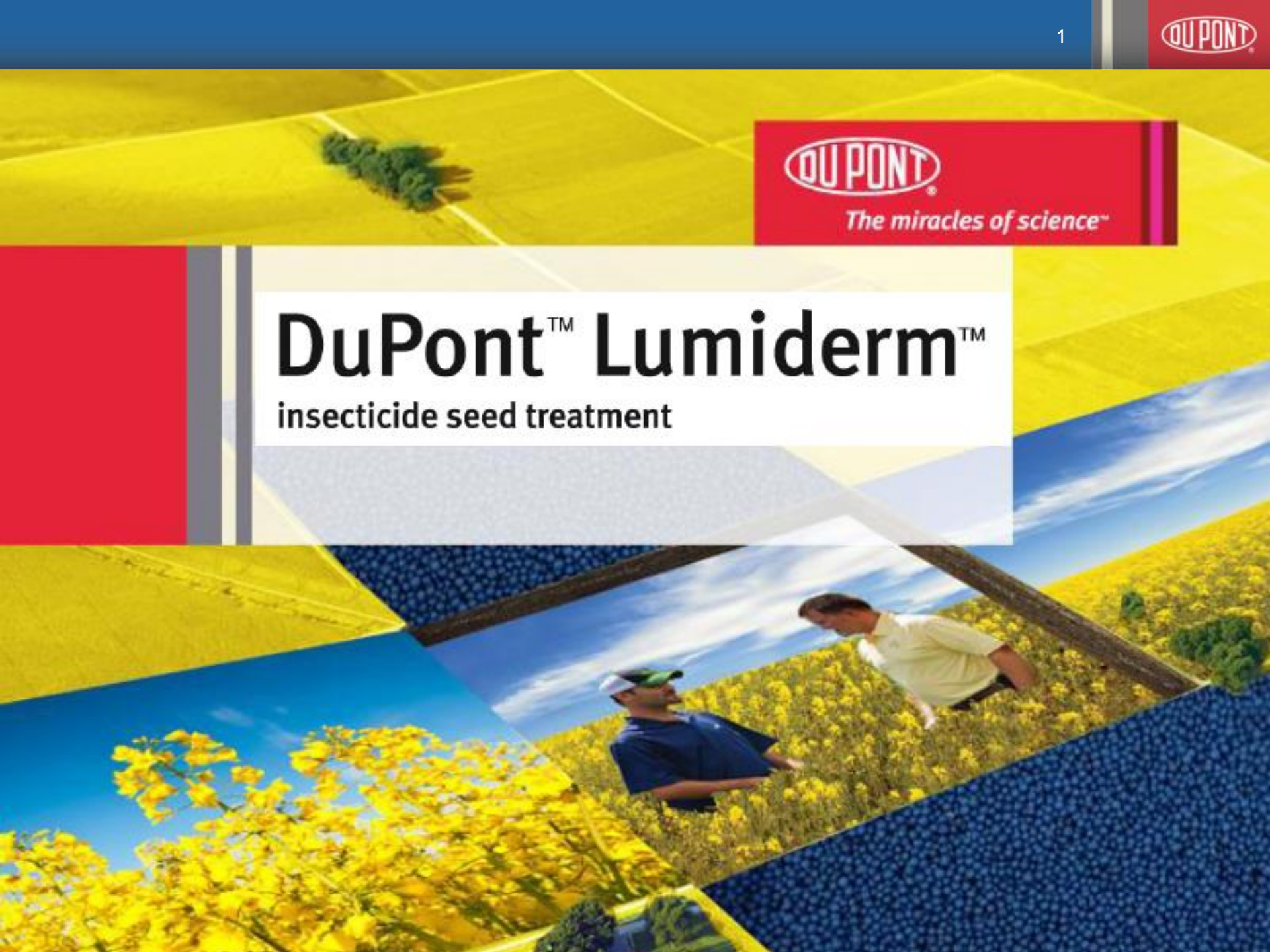




The miracles of science™

DuPont™ Lumiderm™

insecticide seed treatment



DuPont™ Lumiderm™

Insecticide seed treatment

*What is Lumiderm™
Seed Treatment?*

- A new mode of action insecticide
- Active ingredient – Cyantraniliprole
- Group 28 insecticide



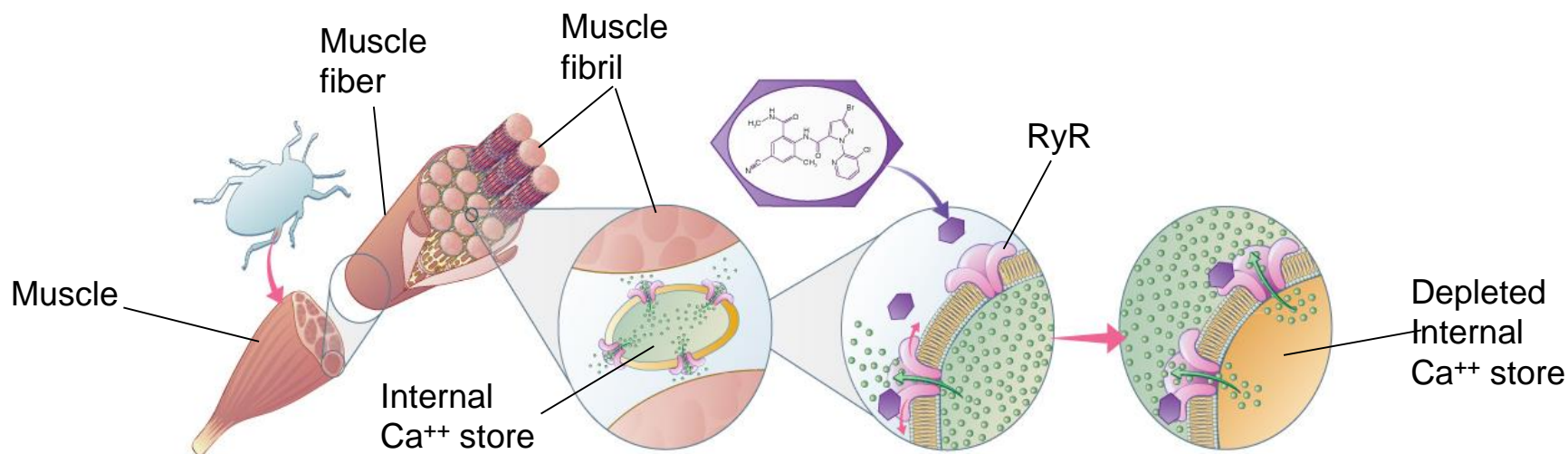
Standard



Lumiderm™

Mode of Action

The basis for rapid feeding cessation and plant protection



Rynaxypyr[®] impacts insect behavior by impairing muscle function (release of Ca⁺⁺), which causes muscle paralysis & death

Mammalian Toxicology

REPRESENTATIVE TEST

RESULT

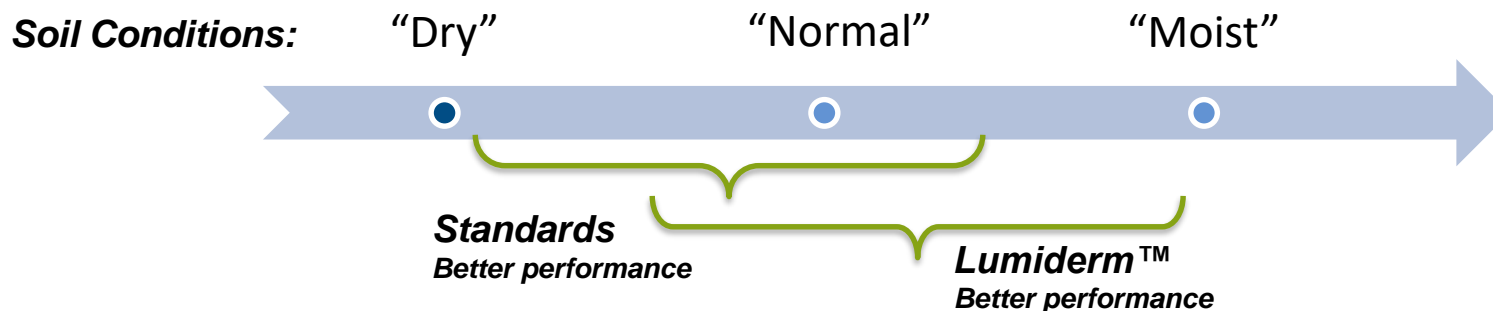
Acute oral toxicity, rat LC ₅₀ :	> 5,000 mg/ kg
Acute dermal toxicity, rat LD ₅₀ :	> 5,000 mg/ kg
Sub-acute and subchronic toxicity (mouse, rat, dog):	No adverse effects
Inhalation, rat LC ₅₀ :	> 5.1 mg/ L
Dermal irritation:	Not irritant
Eye irritation:	Slight, clearing in 72 hours
Dermal sensitization:	Not a sensitizer
Mutagenicity:	Not mutagenic
Carcinogenicity:	Not carcinogenic
Neurotoxicity:	Not neurotoxic
Immunotoxicity:	Not immunotoxic
Developmental toxicity:	No adverse effects
Reproductive toxicity:	No adverse effects

All regulatory toxicology studies have shown low toxicity to mammals, as low or lower than any other synthetic insecticides.

Product Concept



- **Lumiderm™ + Standard Seed Treatments are highly complementary**
 - Enhanced protection against both crucifer and striped flea beetles
 - New product functionality for protection against early season cutworms (lepidoptera)
 - Improved early season stand establishment & vigor of canola
 - Residual Control – up to 35 days protection from flea beetles & cutworms
 - Consistent Performance in Wide Range of Environmental Conditions



FLEA BEETLE CONTROL

- Enhanced protection against both crucifer and striped flea beetles



Crucifer



Striped

Untreated VS Lumiderm™ + Standard

Flee Beetle: Extremely HIGH Pressure - Crucifer
22 Days after seeding. Carman, MB



Untreated



Lumiderm™ + Standard

Standard VS Lumiderm™+Standard

**Flee Beetle: Extremely HIGH Pressure - Crucifer
22 Days after seeding. Carman, MB**

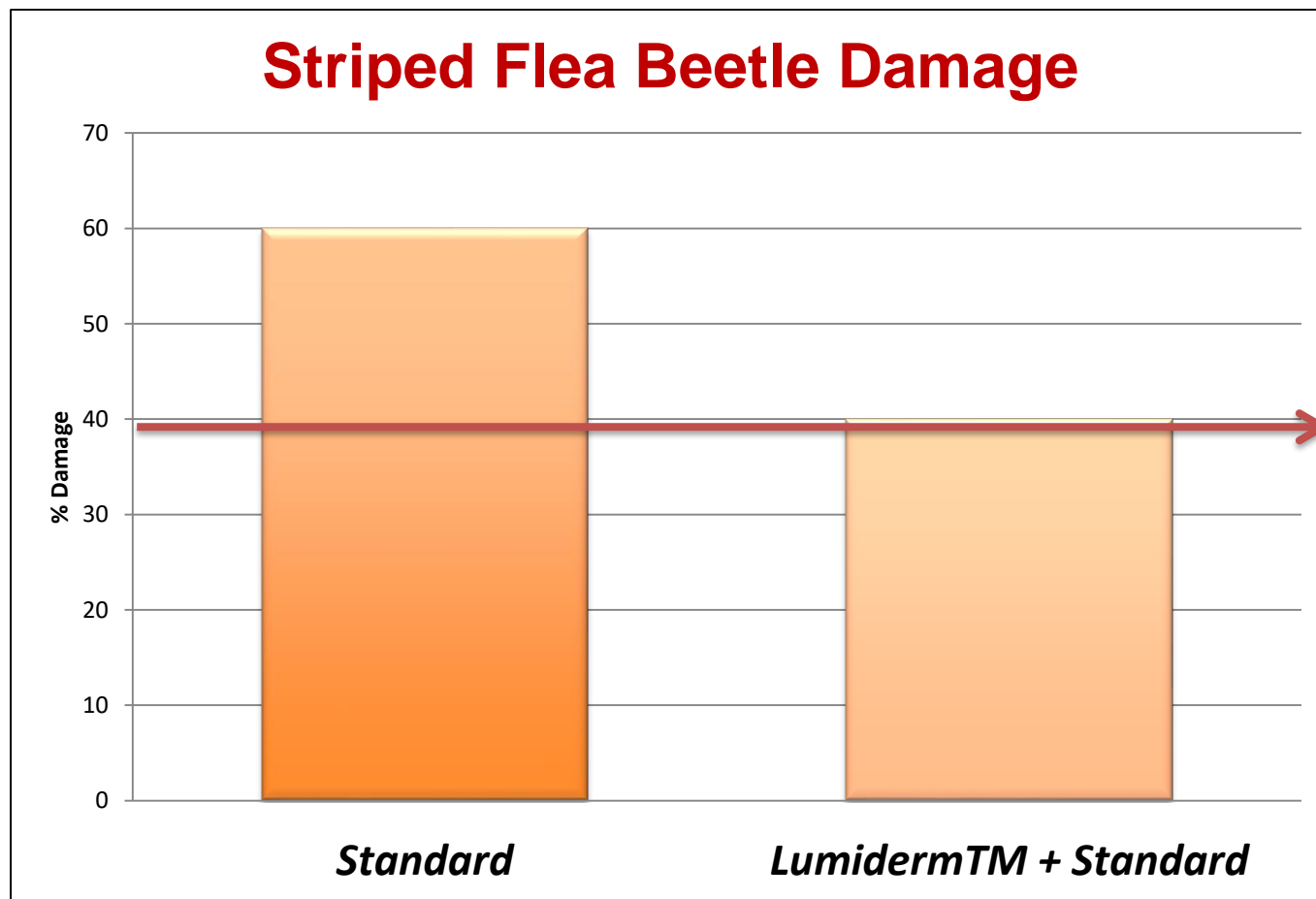


Standard



Lumiderm™ + Standard

WHAT DOES “Enhanced protection against striped flea beetles” LOOK LIKE?



33% less striped flea beetle damage

Source: University of Alberta, Dr. A. Keddie, 2-year Lab/Greenhouse Testing

CUTWORM CONTROL

New product functionality for protection against cutworms



Lumiderm™ + Standard VS Standard

40 Days after seeding
New Norway Site, AB



Lumiderm™ + Standard

Standard

Cutworm – Time Lapse Photography

DuPont – Stine-Haskell Research Centre – Wilmington, DE



Standard

Standard + Lumiderm™

- 24 canola cotyledons per tray
- Cutworm larvae were introduced at 2 per plant.
- The equivalent of 100 cutworms per square meter.
- This is 25 to 30 TIMES the economic threshold of 3 to 4 cutworms per square meter as identified by the Canola Council of Canada.

Cutworm – Time Lapse Photography

DuPont – Stine-Haskell Research Centre – Wilmington, DE

6 Days after infestation

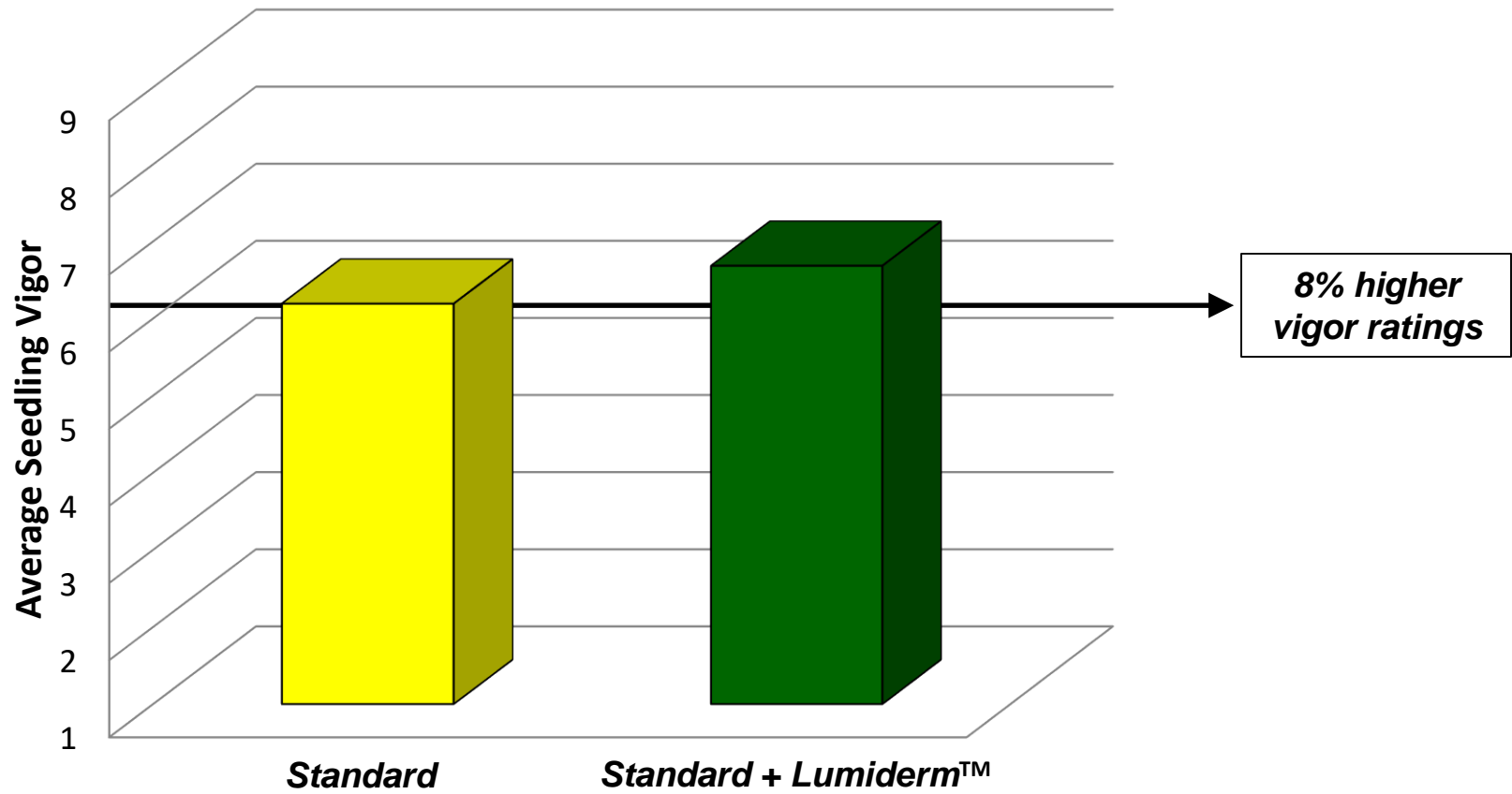


Standard

Standard + Lumiderm™

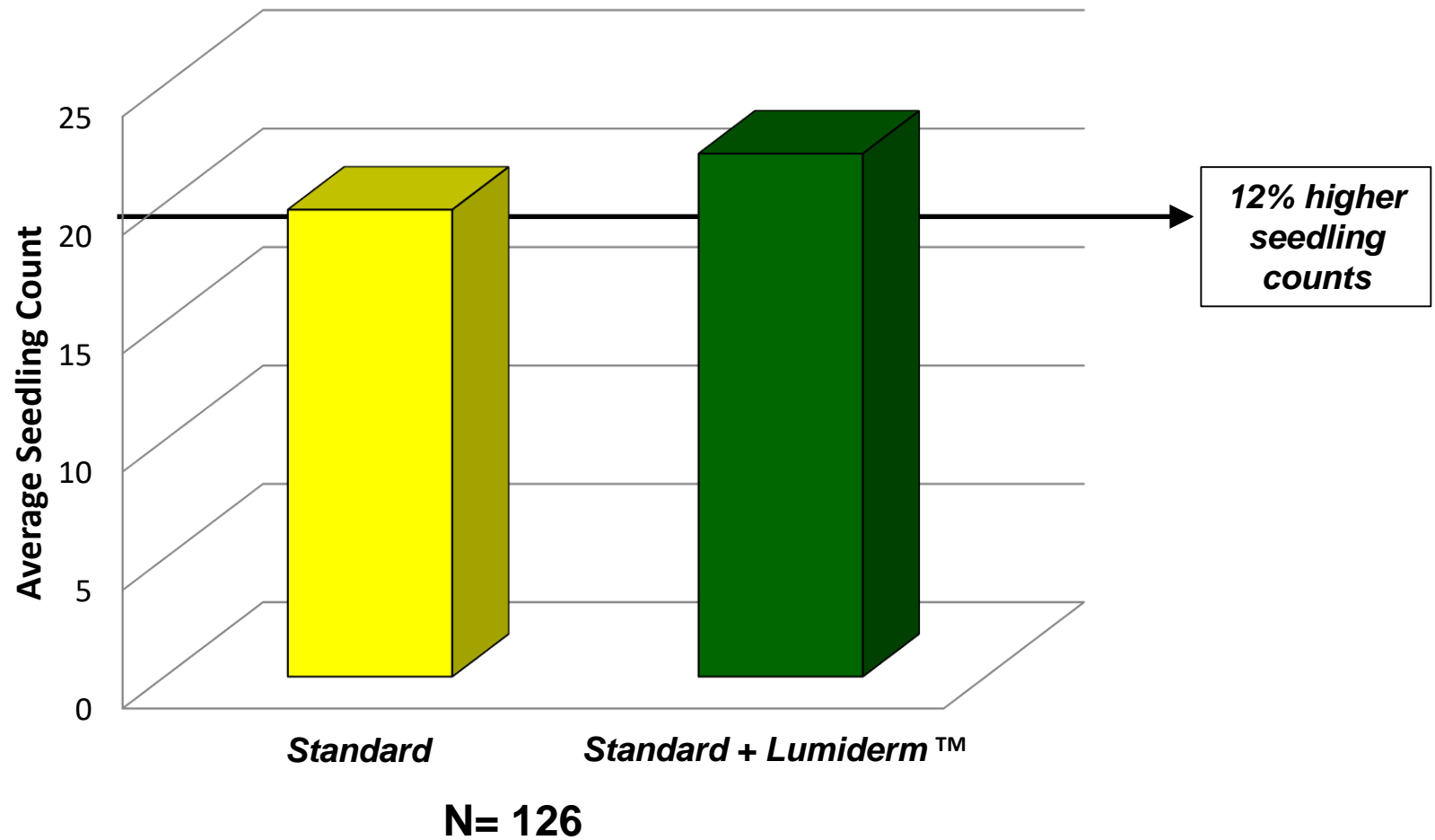
At 6 days post-infestation, none of the plants with the standard treatment have survived, while the majority of Lumiderm™-treated plants are still present and growing strong.

Seedling Vigor

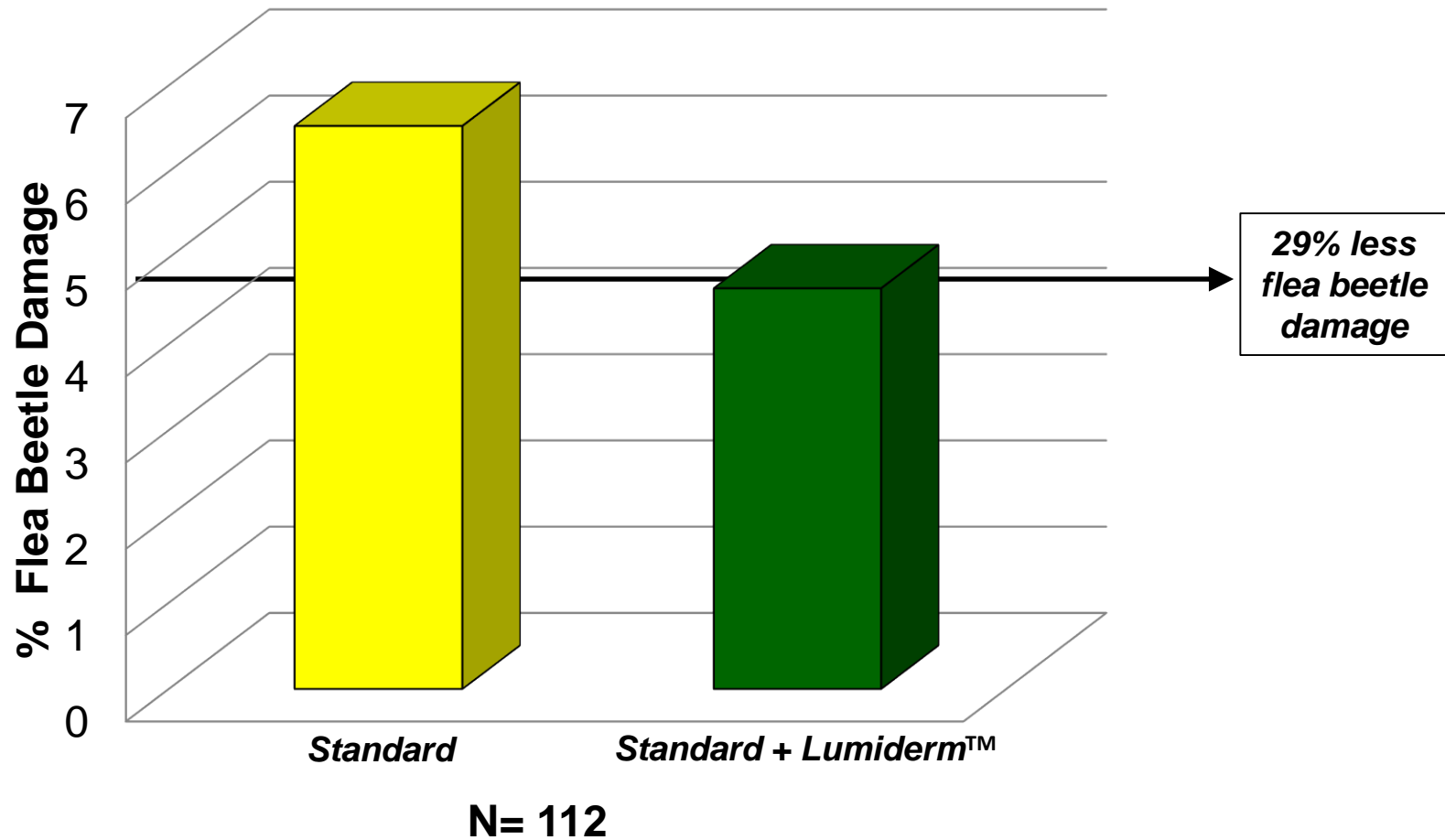


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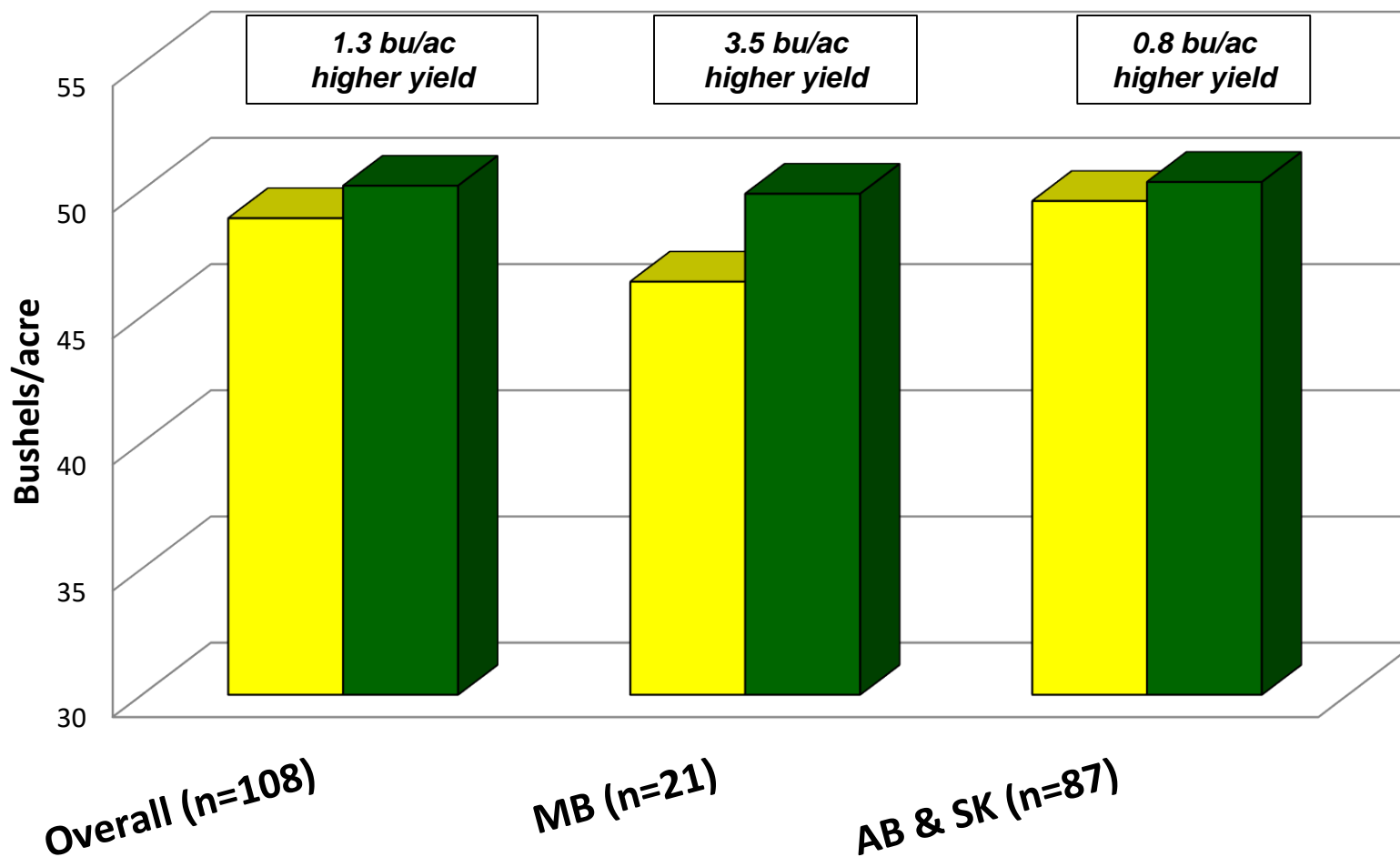
Plant Count



Flea Beetle Damage



Net Yield



MB had extremely high & prolonged pressure of Flea Beetles in 2013.

■ Standard
■ Standard + Lumiderm™

Thank You!
Questions / Comments?



The miracles of science™

**BETTER START.
BETTER HARVEST.**

**DuPont™
Lumiderm™**
insecticide seed treatment