

geela
Governor's Environmental and
Economic Leadership Award
2008



 **A S T I A**
2008 Cleantech Innovator Award



Natural Products

For Pest Management

 **MarroneTM**
Bio Innovations



**Improved Formulations
of Extract of *Reynoutria sachalinensis*
for Control of Foliar Diseases**

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Marketing Manager
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Biofungicide

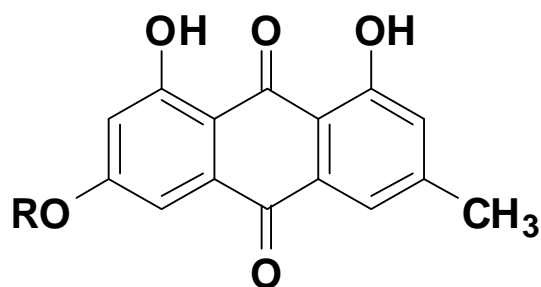
❖ Source:

Extract from giant knotweed *Reynoutria sachalinensis*.

❖ Efficacy:

Control of powdery mildew, leaf spots, blights.

❖ Active Ingredients:



R=H Emodin
R=CH₃O Physcion



❖ Market:

Currently sold in US and Ecuador.



Mode of Action - ISR Inducer

- ❖ **Immune Response:** Non-pathogenic triggers that induce the plant's immune system to produce phytoalexins, PR proteins, phenolics, antioxidants.
- ❖ **Strengthening:** Induces papillae formation.
- ❖ **Systemic Effect:** Translaminar movement to untreated portion of leaf.



Formulation Improvements

Regalia[®] SC (5% a.i.)

- Modification of Milsana formulation with improved physical characteristics.
- For conventional production.
- Registered nationwide but sold primarily in California.



Aggregation
of Milsana



Regalia at 1% dilution
(commercial rate)

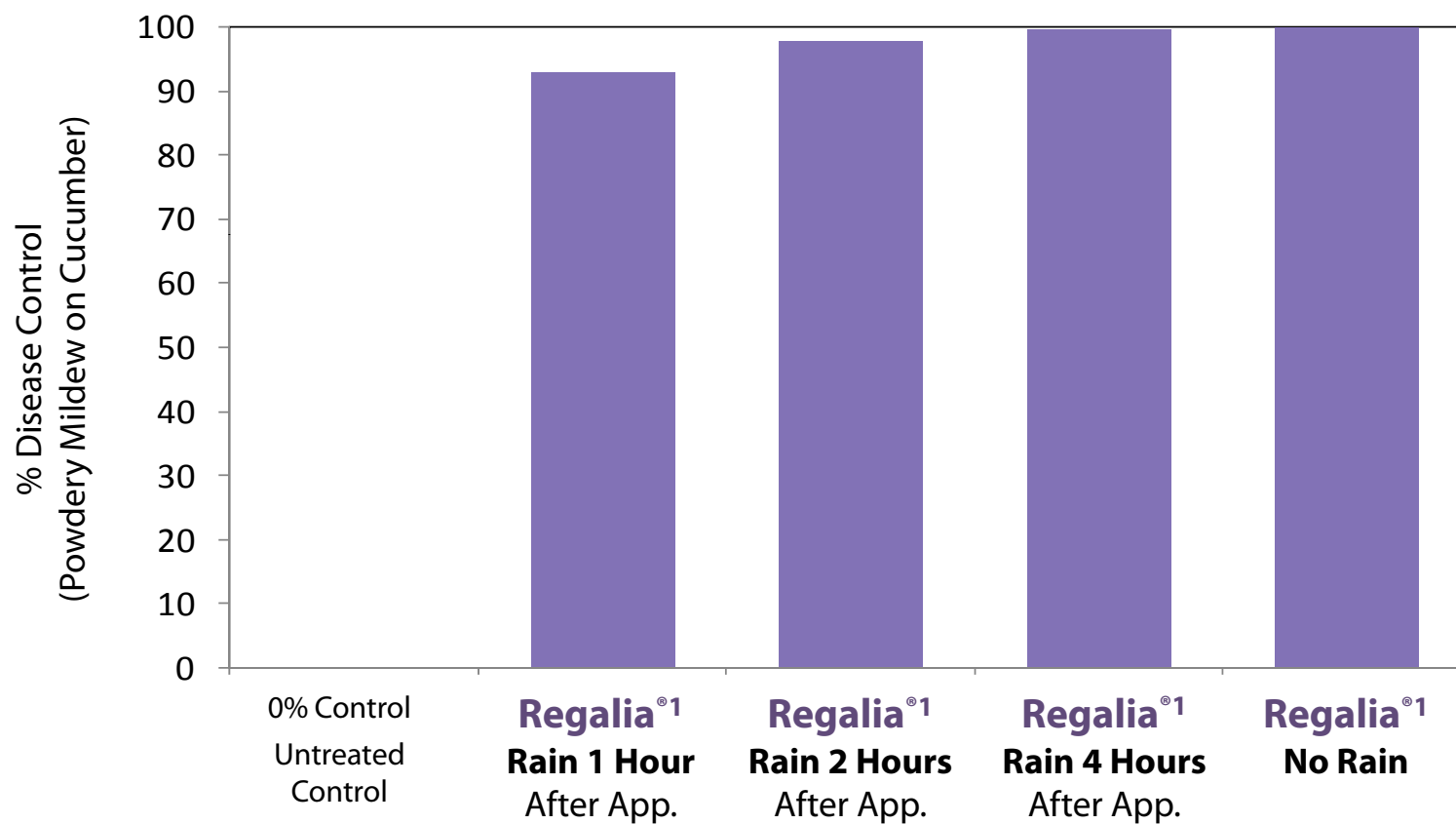


New Formulation

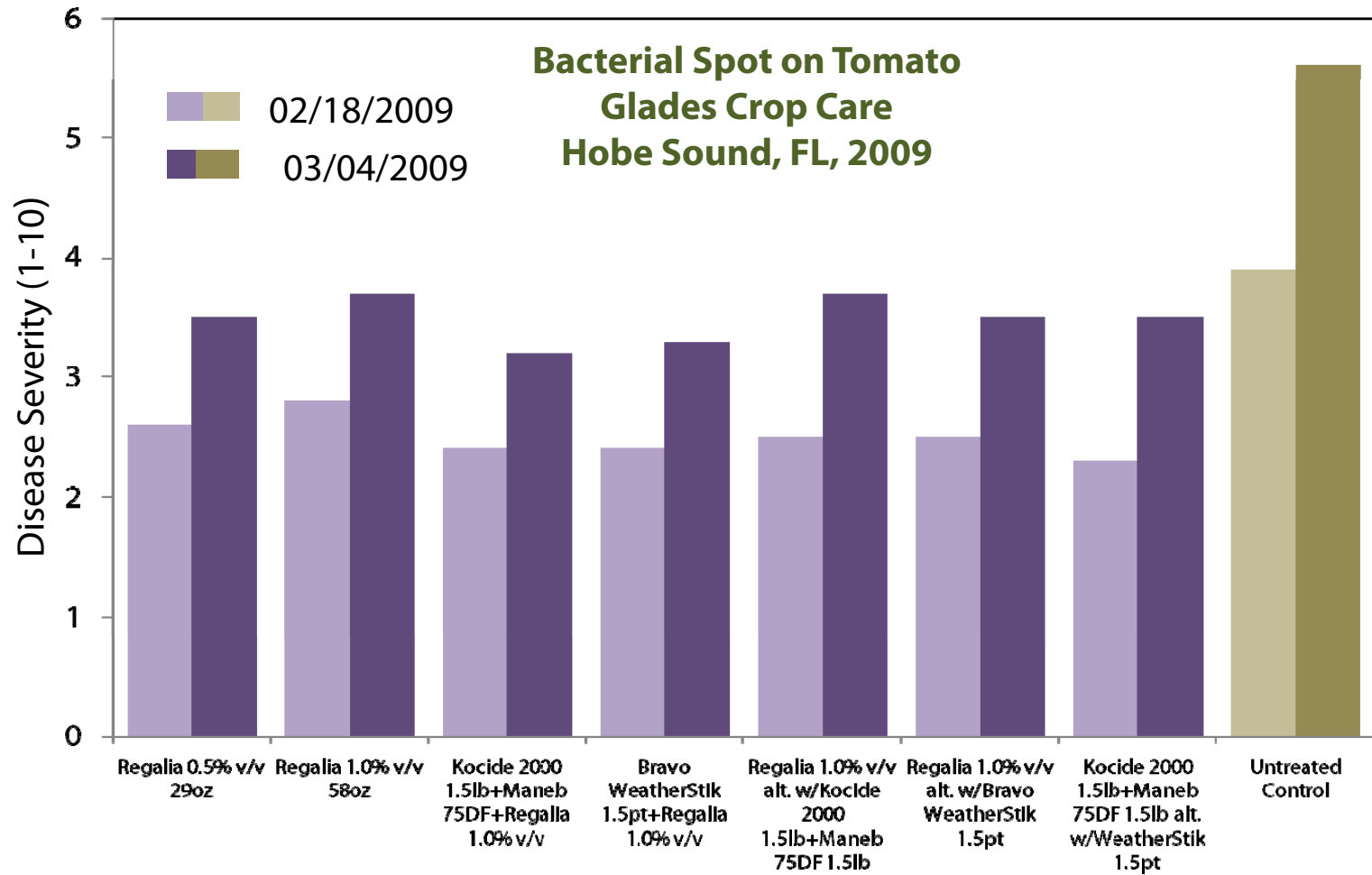
Regalia[®] (MOI or MBI-10605)

- 5% active ingredient
- Additional crops and expanded diseases.
- For conventional and organic production – NOP compliant.
- REI = 4 hours, PHI = 0 days.
- Rainfast in 1 hour. Additional surfactant is not critical to efficacy.
- Greenhouse Use – Labeled for greenhouse use on edible crops.
- Registered and sold in most states. Registration pending in CA, NY, TX, WV.

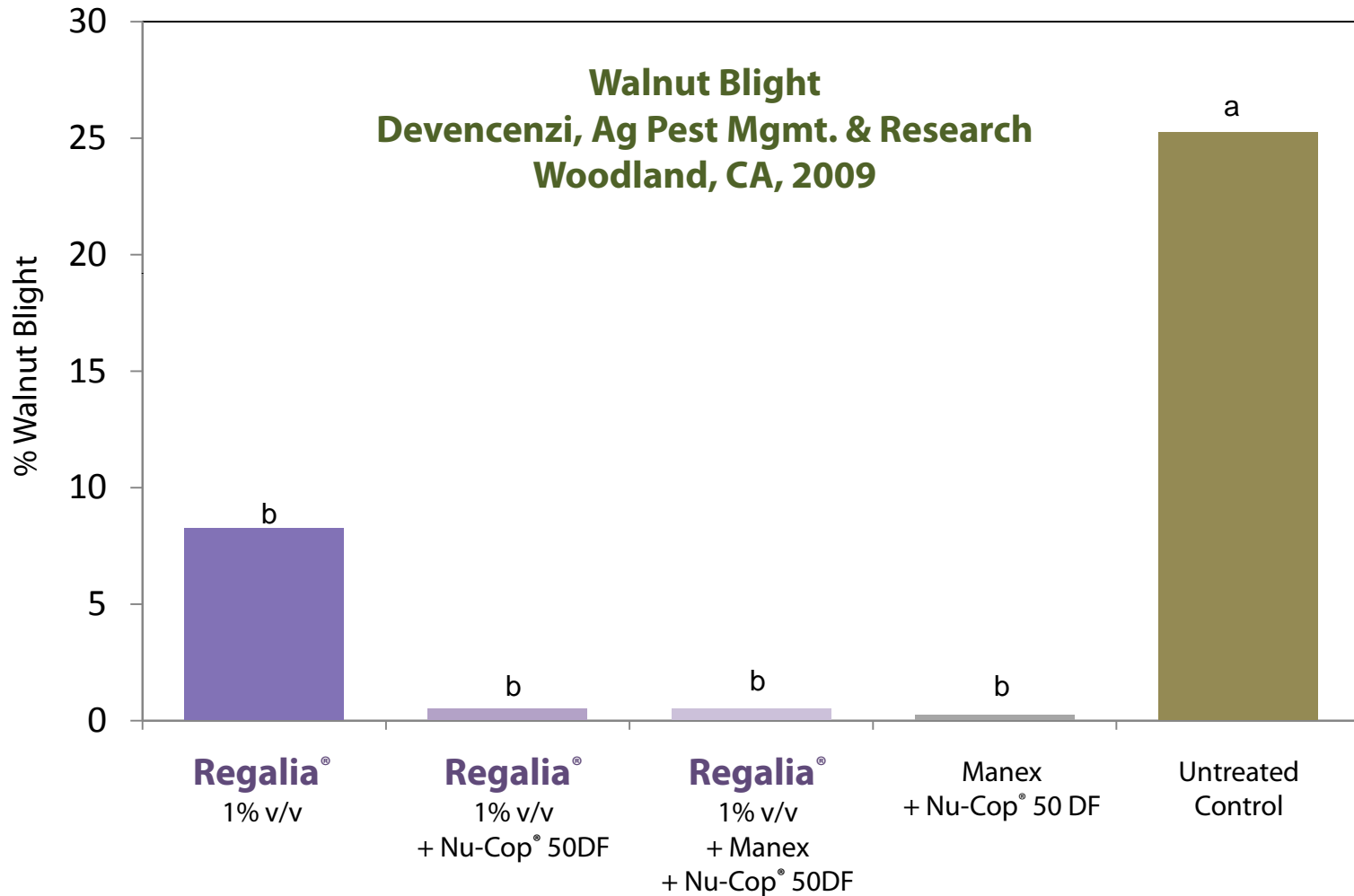
Regalia[®] is Rainfast in only 1 hour.



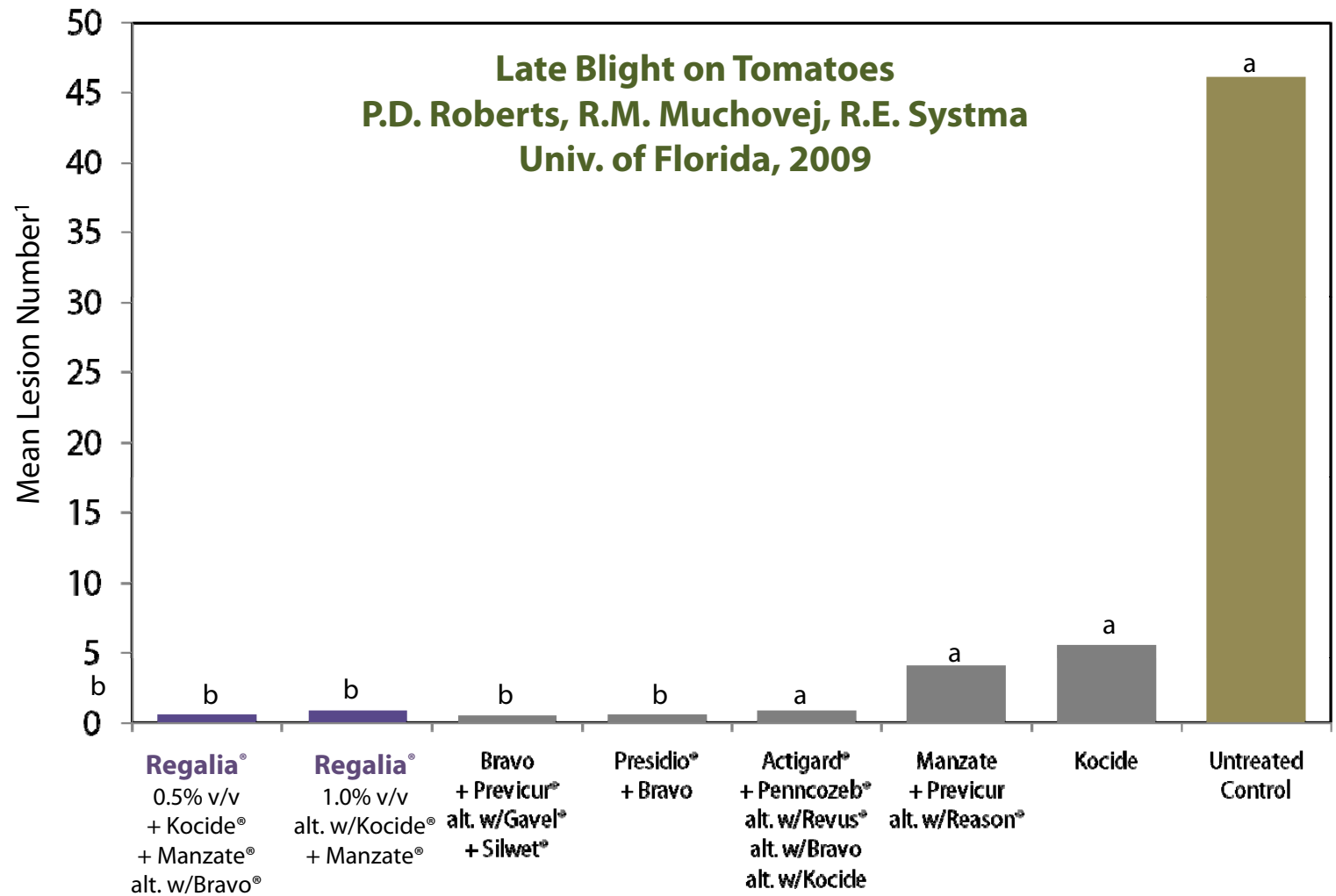
¹All Regalia applications at 1.0% v/v.



Regalia[®] plus copper is as effective as maneb plus copper for controlling Walnut Blight.

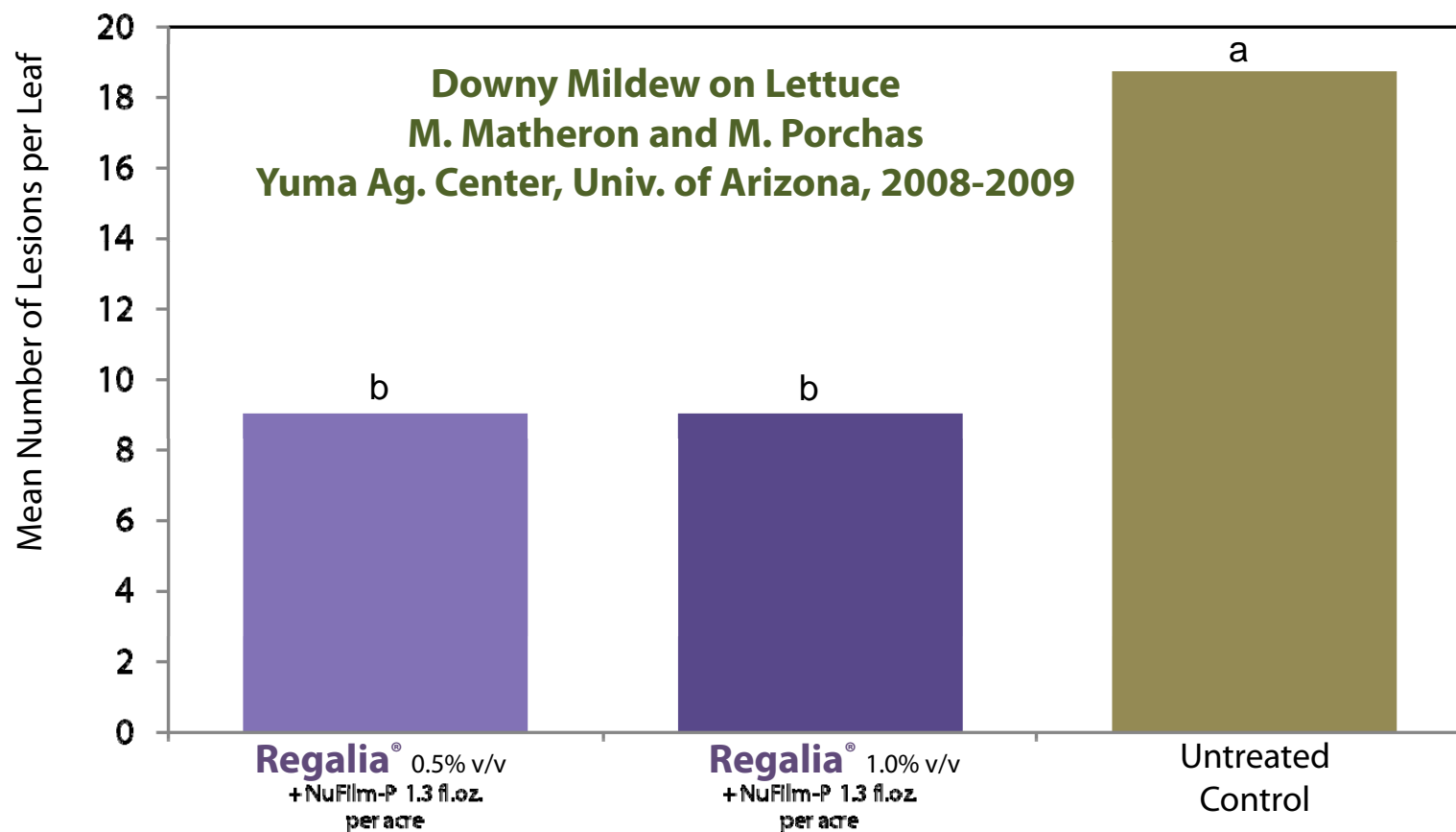


Regalia® is a proven component in Late Blight control programs in tomato

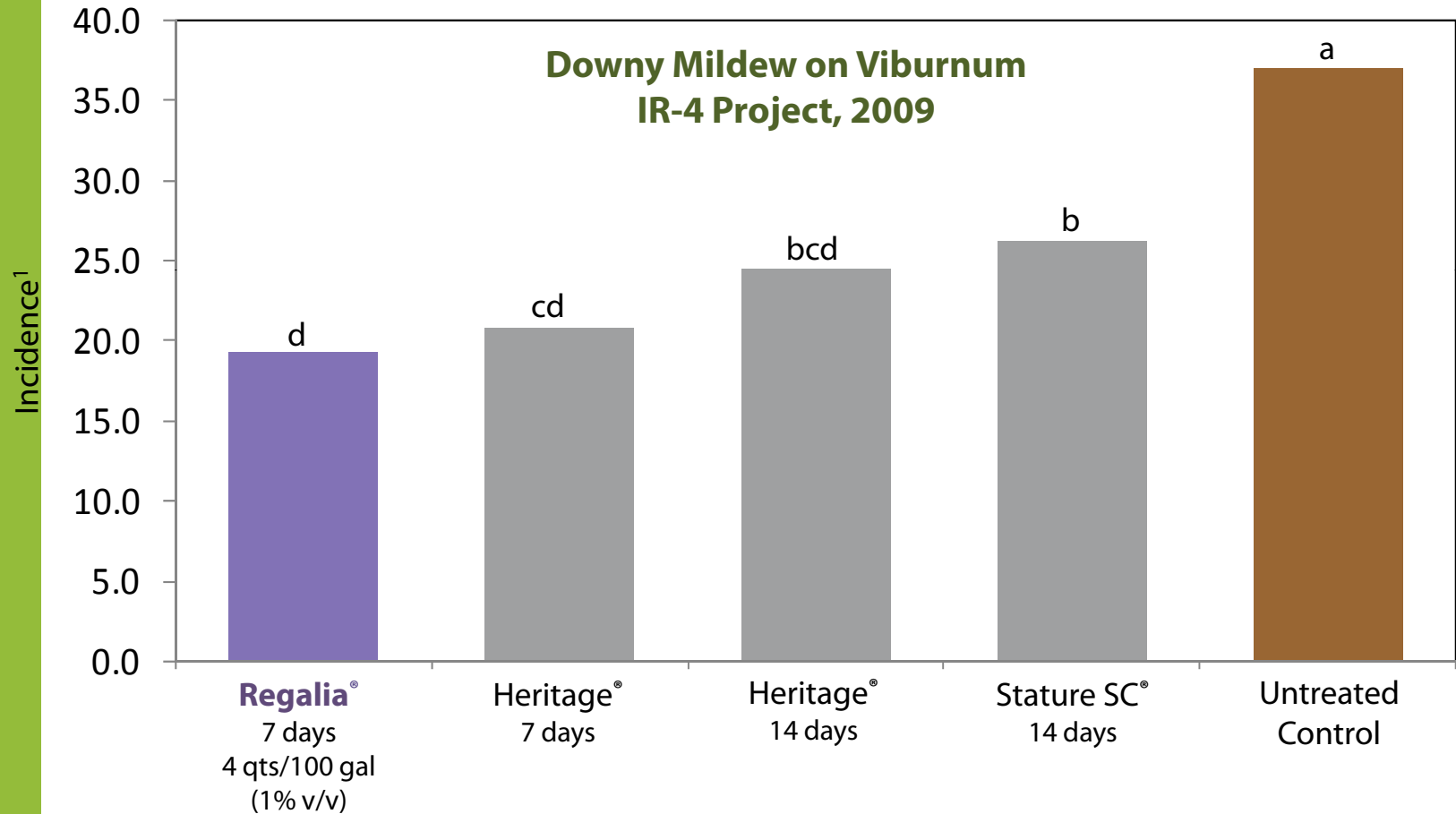


¹Mean Lesion Number – Lesions per plot on May 4, 2009.

Regalia[®] shows significant suppression of Downy Mildew, even at low rates.

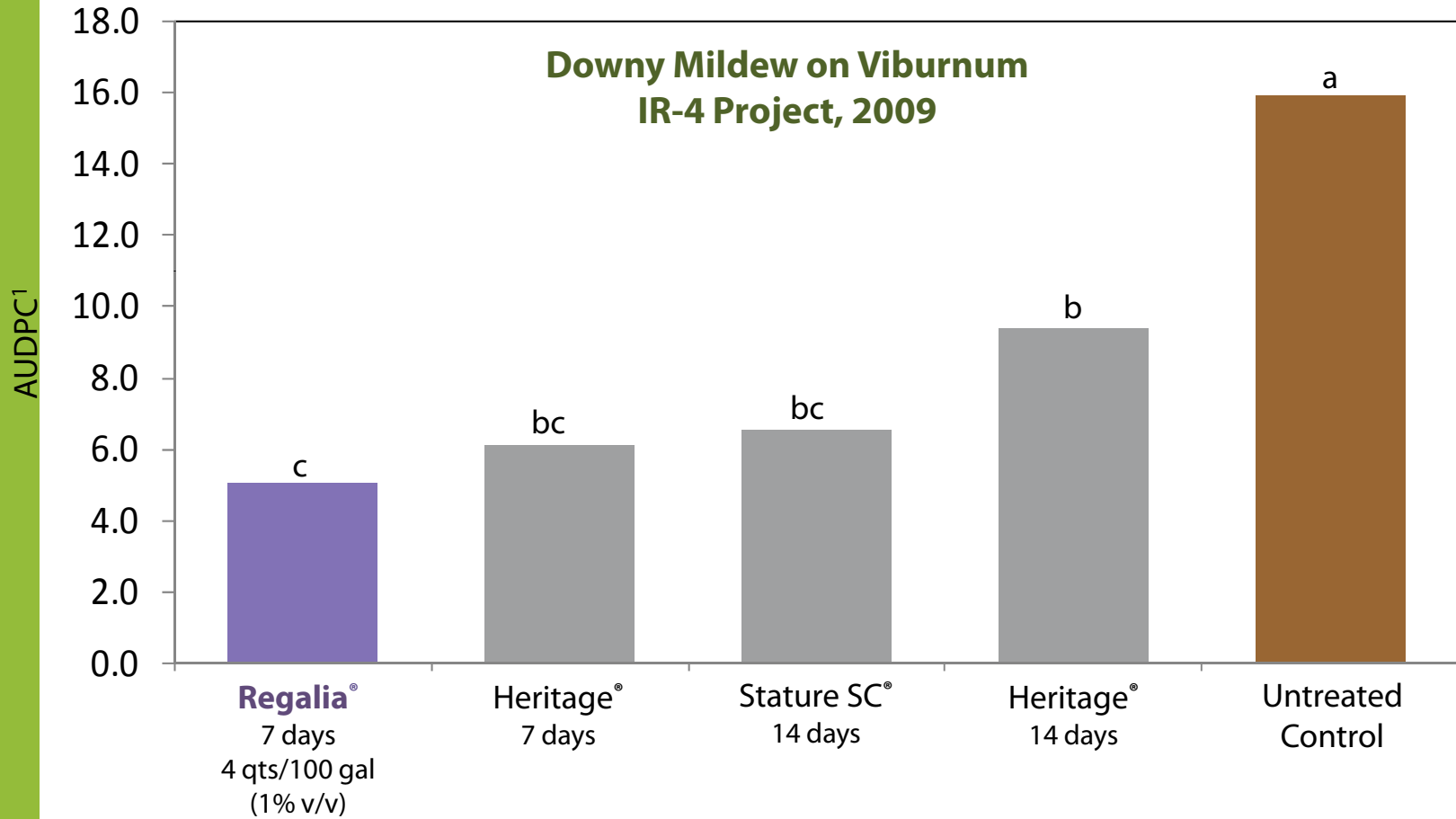


Regalia® is effective at suppressing Downy Mildew in ornamentals.



¹Incidence = # of diseased leaves / total # of leaves.

Regalia® is effective at suppressing Downy Mildew in ornamentals.



¹Area Under Disease Pressure Curve.

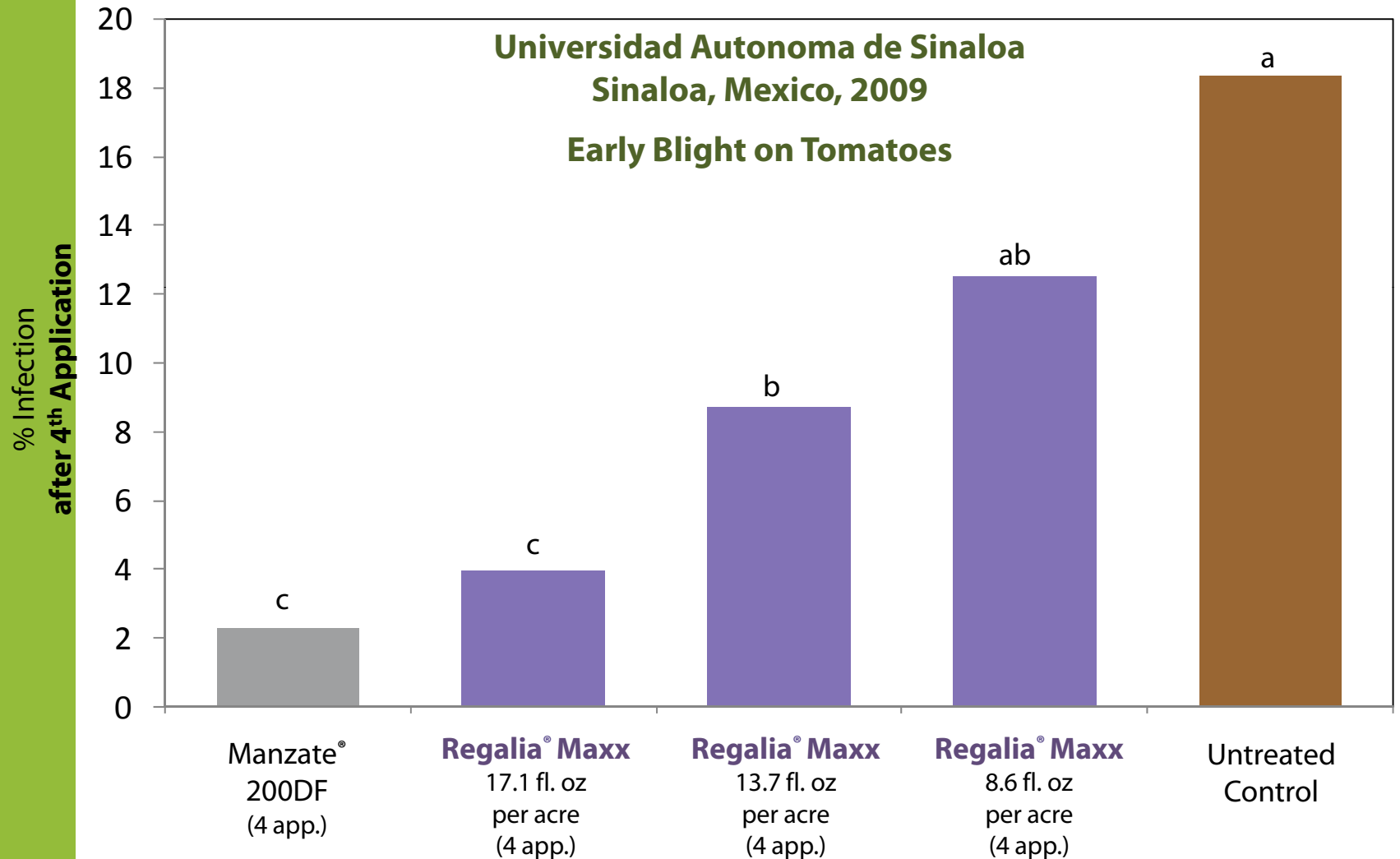


Future Formulations

Regalia[®] Maxx (MOI or MBI-106020)

- 20% active ingredient. Formulation similar to MBI-10605 with higher level of active ingredient.
- Growers use lower rates. Less cost in packaging and shipping.
- For conventional and organic production – NOP compliant.
- Registration package at EPA.
- Market introduction in 2010.

Regalia® Maxx is proven to be as effective as **Manzate®** at controlling Early Blight on tomatoes.





Conclusions

New Formulations of **Regalia**®

- Improved solubility of *Reynoutria* extract.
- Improved formulation quality – better mixing.
- Expanding knowledge base for disease control.
- NOP compliance.



Future Research with **Regalia**®

- **Additional Crops** - Focus on fruits, nuts, berries.
- **Field Crops** – Such as wheat, soybeans and peanuts.
- **Lower Use Rates** - Investigate lower use rates on fruiting vegetables in tank-mix scenarios.



Thank you !

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