Making super weeds? continuous mowing improves fitness and defense traits in Silverleaf nightshade *Solanum elaeagnifolium*.

Jesus Chavana

MS Biology student

Department of Biology

Kariyat Lab

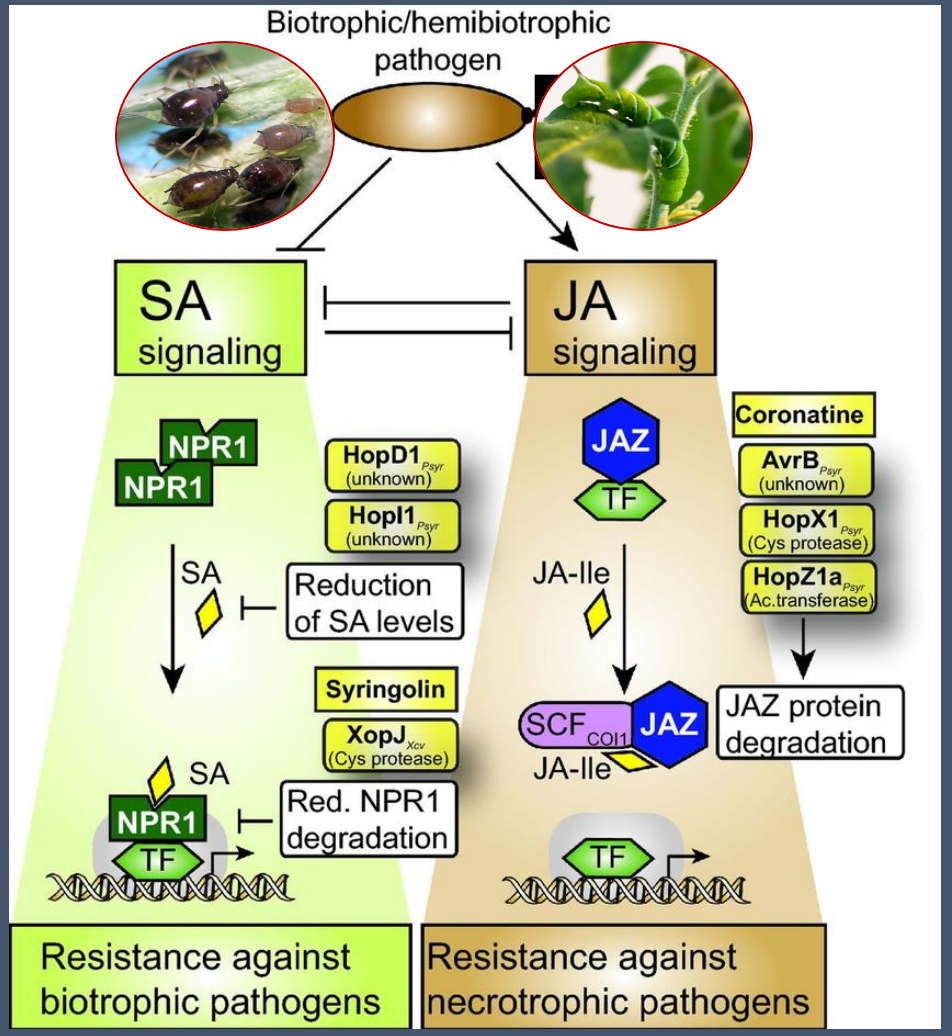
Insect-Plant Ecology

THE UNIVERSITY OF TEXAS RIO GRANDE VALLEY

PRAESIDIUM DISCIPLINA CIVITATIS

Weeds and Disturbance

- Disturbance tend to enhance weed growth
- Mowing is a disturbance that can be considered as mechanical wounding
- Mechanical wounding can enhance plant defense against herbivores
- Can differentially affect JA- SA pathway



Buttner, 2016

Questions

- Does mowing affect growth and fitness traits?
- Does mowing affect weed-herbivore interactions?
- Does mowing lead to transgenerational effects on seed germination, seedling growth and fitness?

Silver leaf nightshade: A model to understand weed-herbivore interactions

Feeding on glandular and non-glandular leaf trichomes negatively affect growth and development in tobacco hornworm (*Manduca sexta*) caterpillars

Rupesh R. Kariyat[1] · Cristina E. Raya[1] · Jesus Chavana[1] · Jason Cantu[2] · Gildardo Guzman[2] · Lekshmi Sasidharan[3]

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Field data on plant growth and insect damage on the noxious weed *Solanum eleaegnifolium* in an unexplored native range

Rupesh R. Kariyat *, Jesus Chavana

Department of Biology, University of Texas Rio Grande Valley, Edinburg, TX 78539, United States

Leaf trichomes affect caterpillar feeding in an instar-specific manner

Rupesh R Kariyat [a], Sean B Hardison [b], Aisling B Ryan[c], Andrew G Stephenson[c], Consuelo M De Moraes [d], and Mark C Mescher [d]

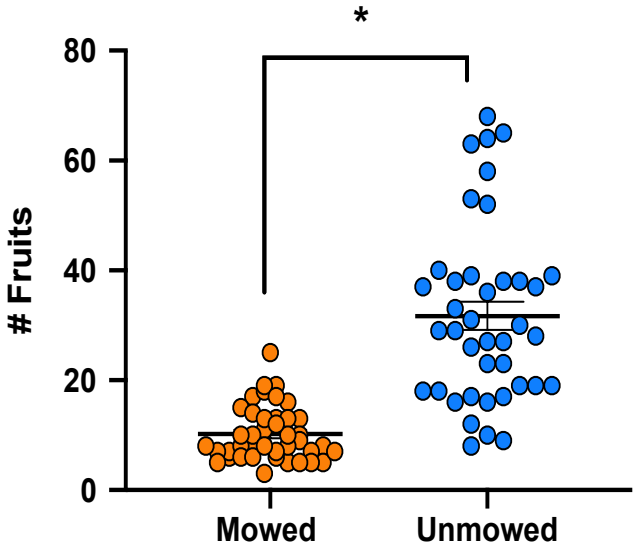
[a]Department of Biology, University of Texas Rio Grande Valley, Edinburg, TX, USA; [b]Integrated Statistics, Woods Hole, MA, USA; [c]Department of Biology, The Pennsylvania State University, University Park, PA, USA; [d]Department of Environmental Systems Science, ETH Zürich, Zürich, Switzerland

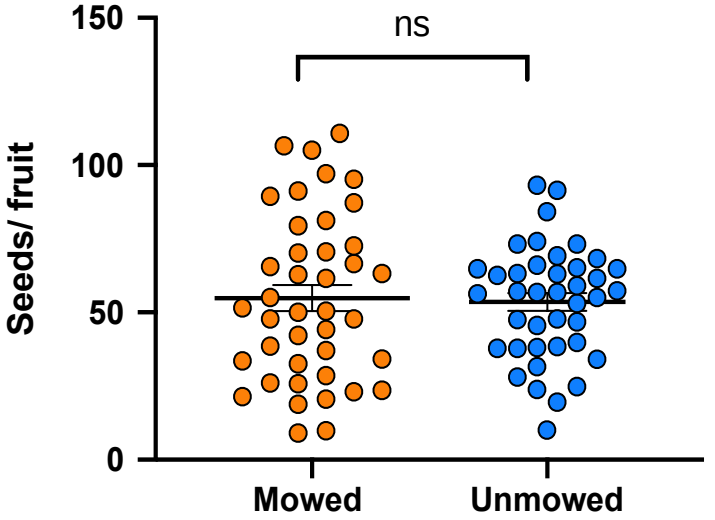
Experiments

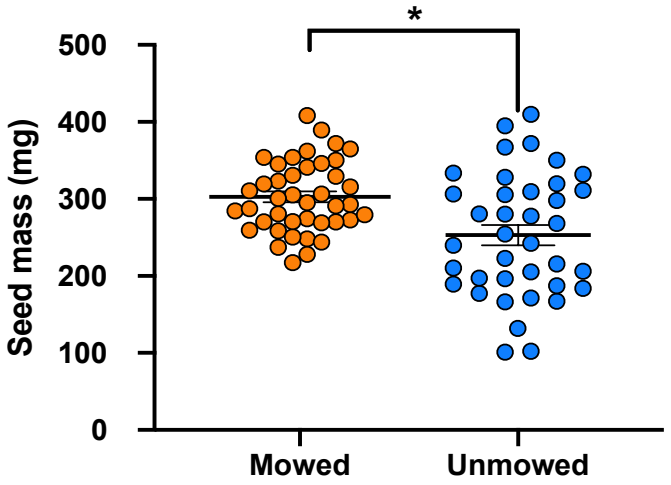
- Field fitness
- Seed germination and establishment
- Field herbivory
- Herbivory in lab
- Root traits

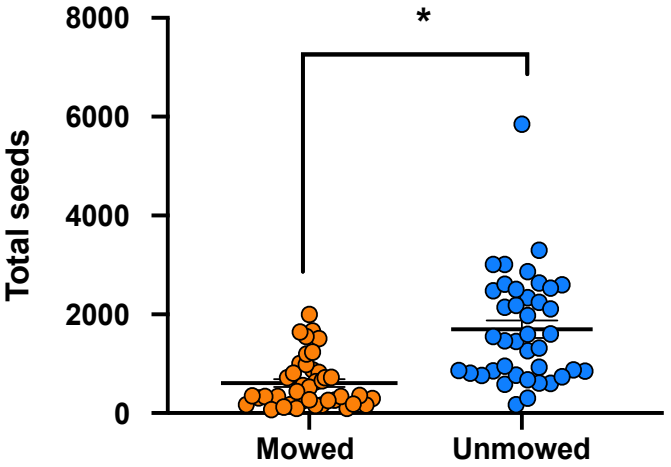
Results: Fitness traits in field

Does mowing affect growth and fitness traits?



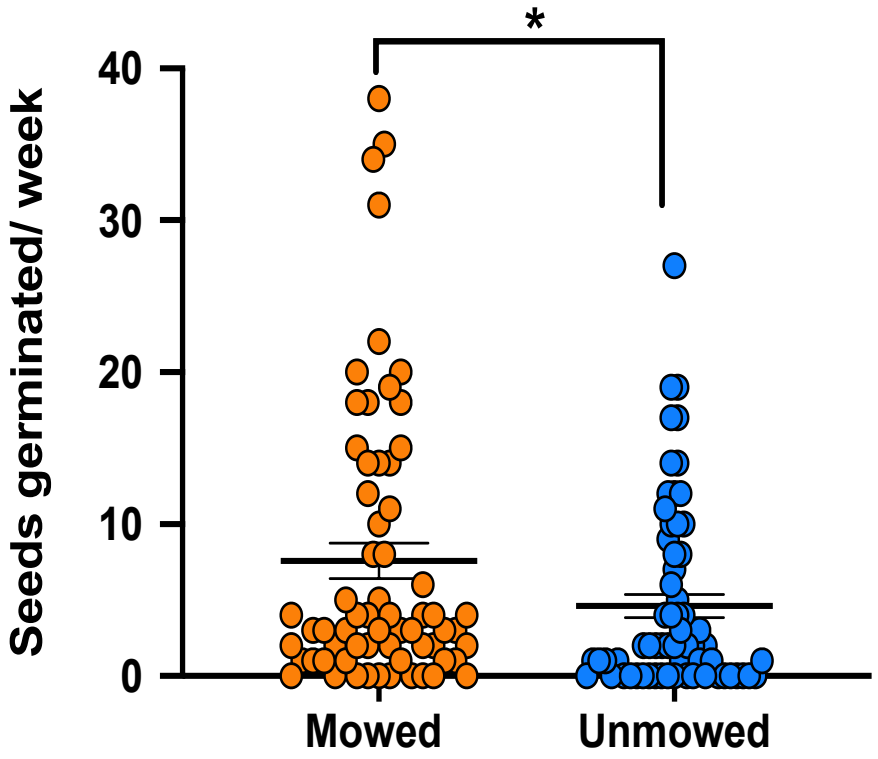


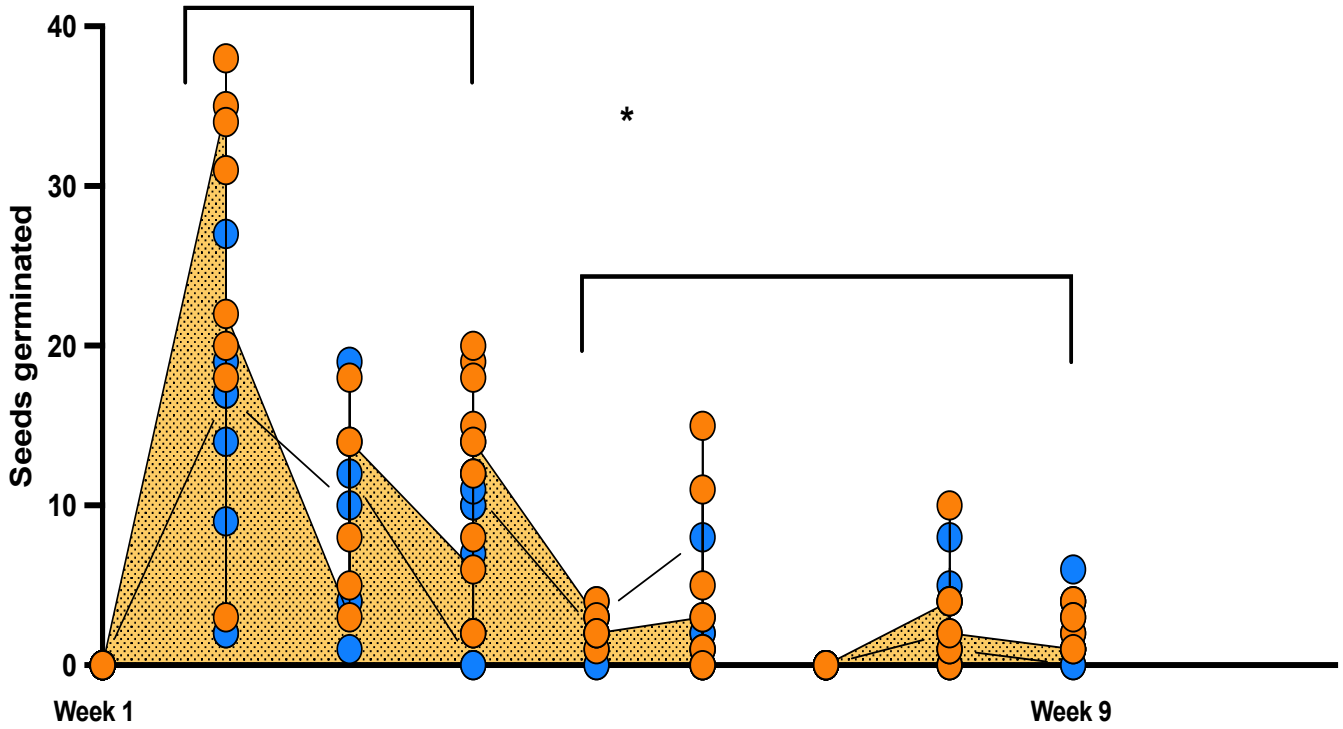




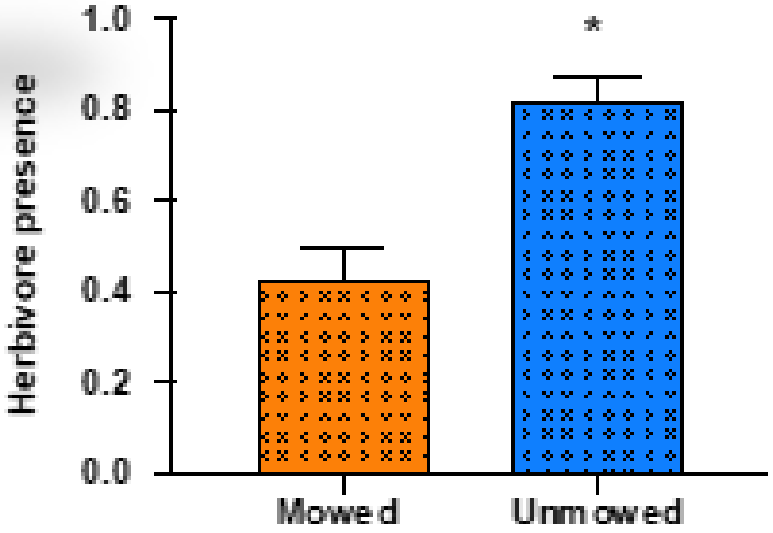
Results: Seed Germination

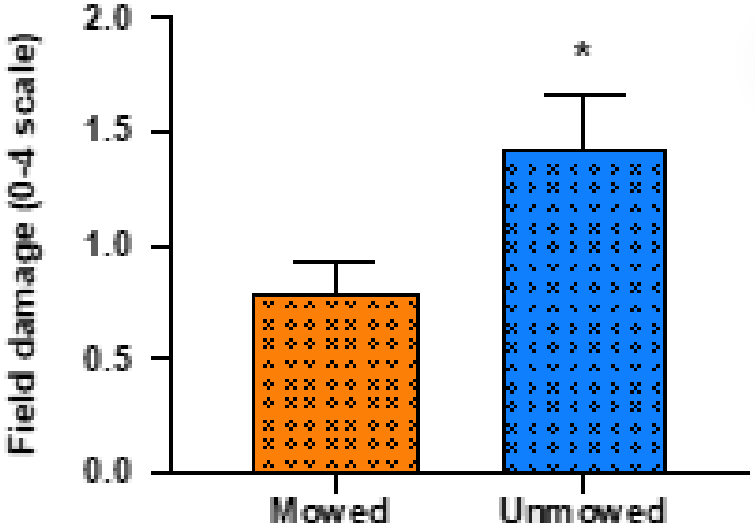
Does mowing lead to transgenerational effects on seed germination, seedling growth and fitness?





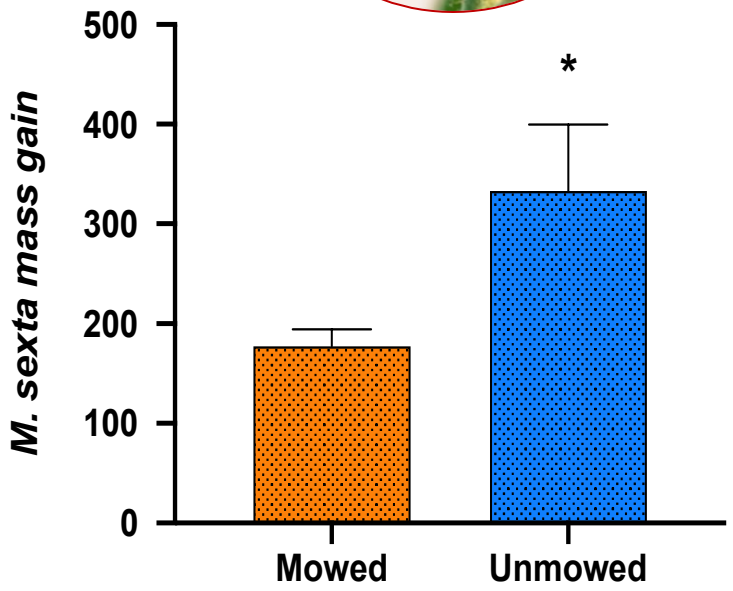
Results: Field damage

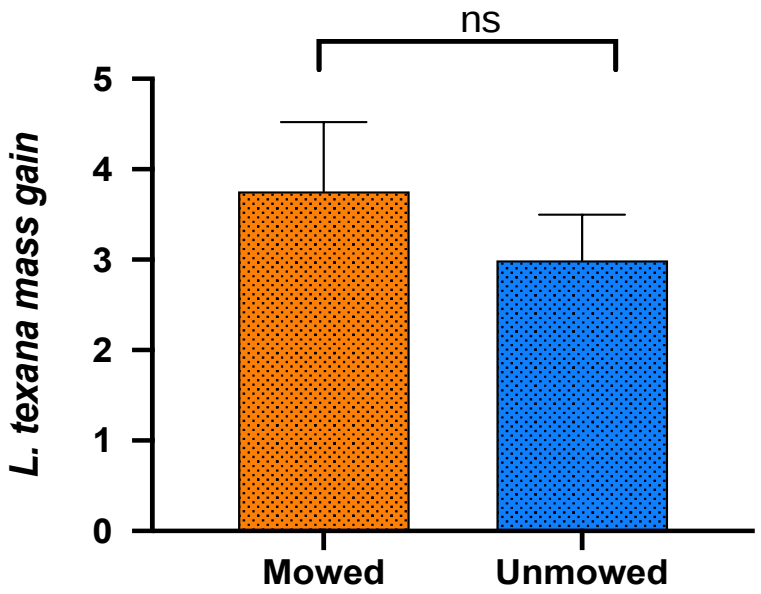




Results: Herbivory in lab

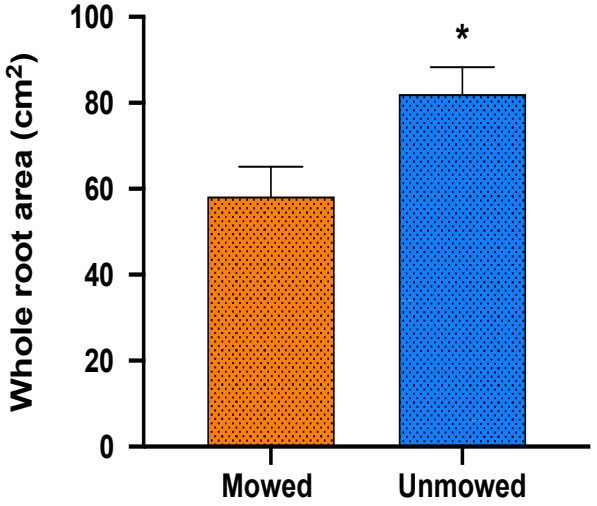
Are there any transgenerational effects on plant defenses against generalist and specialist herbivores that vary in feeding habit?

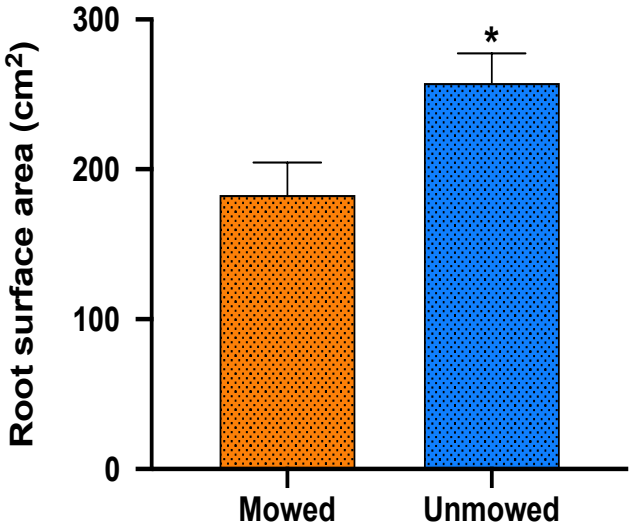


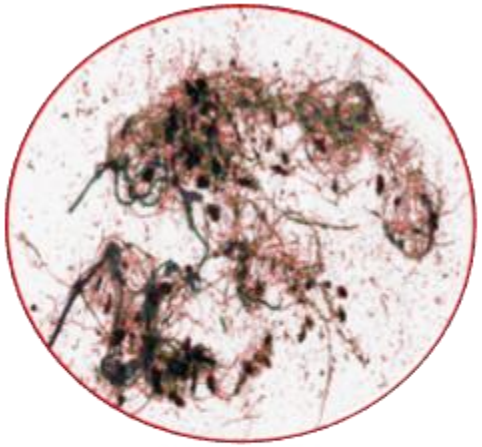


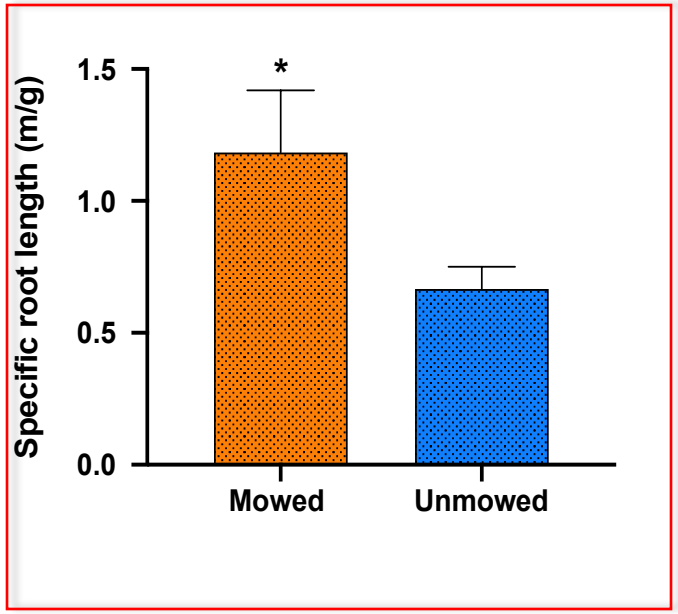
Results: Root traits

Are these transgenerational effects if any, also prevalent in root traits?









Conclusions:

- Both parental and offspring generations affected by mowing significantly affect growth and fitness traits
- Herbivore interactions are species specific
- Possible JA-SA crosstalk
- Molecular mechanisms needs to be understood
- Continuous mowing can lead into ***super weeds***

Acknowledgements

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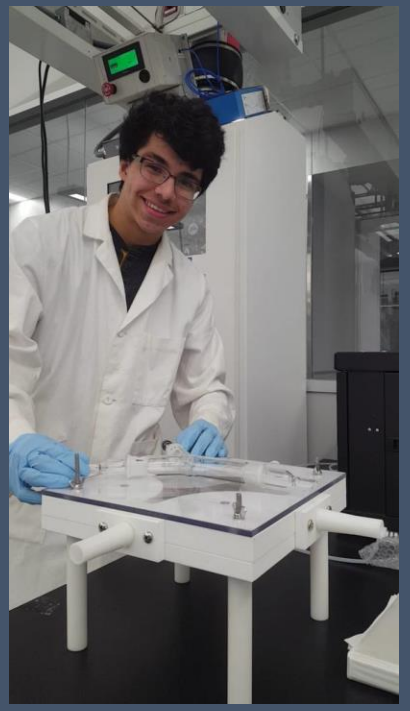

Alejandro Vasquez

Questions?