Assessing chemical management options for the control of stinknet \((\textit{Oncosiphon piluliferum})\)

Clarissa Rodriguez\(^1\), Travis Bean\(^1\), Christopher J. McDonald\(^2\), Loralee Larios\(^1\).

\(^1\)Botany and Plant Sciences, University of California Riverside;
\(^2\)UC Cooperative Extension.
Crodr087@ucr.edu
What and where is stinknet?

Native to South Africa

First record in CA:
Riverside - 1981

Plant characteristics:

Flowering height variable
Small seed size (0.6-0.8mm)
Seed heads remain on skeleton
Creates dense stands
Multiple germination cohorts
What and where is stinknet?

Native to South Africa
First record in CA: Riverside - 1981
Plant characteristics:
Flowering height variable
Small seed size (0.6-0.8mm)
Seed heads remain on skeleton
Creates dense stands
Multiple germination cohorts

Distribution expanding with a need for management options

Lake Perris State Recreation Area
Chemical Control Approaches

1) Reduce initial establishment of the invader

*Pre-emergent herbicides*
→ Sprayed in the Fall, aimed at stopping the seedlings from germinating successfully

2) Reduce seed production of the invader

*Post-emergent herbicides*
→ Sprayed in the Spring, aimed at killing actively growing plants prior to flowering
Chemical Control Approaches

1) Reduce initial establishment of the invader

*Pre-emergent herbicides*
→ Sprayed in the Fall, aimed at stopping the seedlings from germinating successfully

2) Reduce seed production of the invader

*Post-emergent herbicides*
→ Sprayed in the Spring, aimed at killing actively growing plants prior to flowering

Research Question’s

Question 1. Which herbicide strategy is most effective in reducing stinknet cover?

Question 2. Within a given herbicide strategy, which herbicide treatment is the most effective in reducing stinknet cover?

Question 3. How do herbicide treatments impact community composition?
Conducted herbicide trials in 2018 & 2019

Trials replicated at three sites within Riverside county:

Lake Mathews Preserve
Lake Perris State Recreation Area
Motte Rimrock Reserve

Sampling:
recorded stinknet cover & overall species composition within a 1 x 1 m quadrat **one year after treatment**
Stinknet Cover

Stinknet cover impacted by herbicide strategy and year treated

Herbicide strategy
2018: pre- and post-emergent strategy reduced stinknet cover
2019: pre-emergent strategy only

Herbicide treatment
2018 & 2019: All pre-emergent + Transline

* Indicates statistical difference from control p<0.001
Stinknet Cover

Stinknet cover impacted by herbicide strategy and year treated

Herbicide strategy
2018: pre- and post-emergent strategy reduced stinknet cover
2019: pre-emergent strategy only

Herbicide treatment
2018 & 2019: All pre-emergent + Transline

* Indicates statistical difference from control p<0.001
Stinknet Cover

Stinknet cover impacted by herbicide strategy and year treated

Herbicide strategy
2018: pre- and post-emergent strategy reduced stinknet cover
2019: pre-emergent strategy only

Herbicide treatment
2018 & 2019: All pre-emergent + Transline
Stinknet Cover

Stinknet cover impacted by herbicide strategy and year treated

Herbicide strategy
2018: pre- and post-emergent strategy reduced stinknet cover
2019: pre-emergent strategy only

Herbicide treatment
2018 & 2019: All pre-emergent + Transline

* Indicates statistical difference from control \( p < 0.001 \)

Error bars 1 SE
Community Composition

Herbicide & Year significantly impacted plant community composition

Post-emergent herbicides did not differ from control

Pre-emergent herbicides resulted in more bare & litter cover type
Conclusion

Q1) Reducing initial establishment was the most effective at reducing stinknet cover

Q2) Pre-emergent treatment: Esplanade
    Post-emergent herbicides: Transline

Q3) Pre-emergent herbicides resulted in more bare and litter compared to post-emergent and control plots
Thank You

Larios Lab
Dr. Loralee Larios
Noah Teller
Stuart Schwab
Meg Kargul
Lachlan Charles
Junyong Li

Collaborators
Travis Bean
Chris McDonald

Funding:
RCHCA
Eugene-Cota Robles Fellowship

Acknowledgements

Land Practitioners
Kenneth Halama
Ken Keitzer
Brian Shomo