

The 2020 results are in: Are there red sunflower seed weevils with reduced susceptibility to pyrethroids?

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Red sunflower seed weevils

- Annual pest of SD sunflower
- Severe infestations can result in 50-80% of achenes being infested
 - Larvae feed on developing seed
- Primarily managed using foliar insecticides



The problem?

- Field outbreaks 10-100x over threshold
- Reported field failures



The problem?



The problem?

- 47 insecticides labeled for management
 - 29 with pyrethroid a.i.
 - 5 with at least one pyrethroid a.i.
 - 13 with organophosphate a.i.
- 2017, 2018, 2019, 2020: Failures reported
- Is it reduced susceptibility? Fields often retreated before sampling could occur.

2020 Field Efficacy Trial



The defoliating culprits



Experimental Design

- 4 treatments:
 - acetone, lambda-cyhalothrin, esfenvalerate, zeta-cypermethrin
- RSSW adults collected at the onset of flowering
 - 12 locations in SD
 - 9 locations in ND
- 10 adults placed in vials 24 hr after collection
- Evaluated 24 hr after placed into vials

Rates of insecticides used for vials

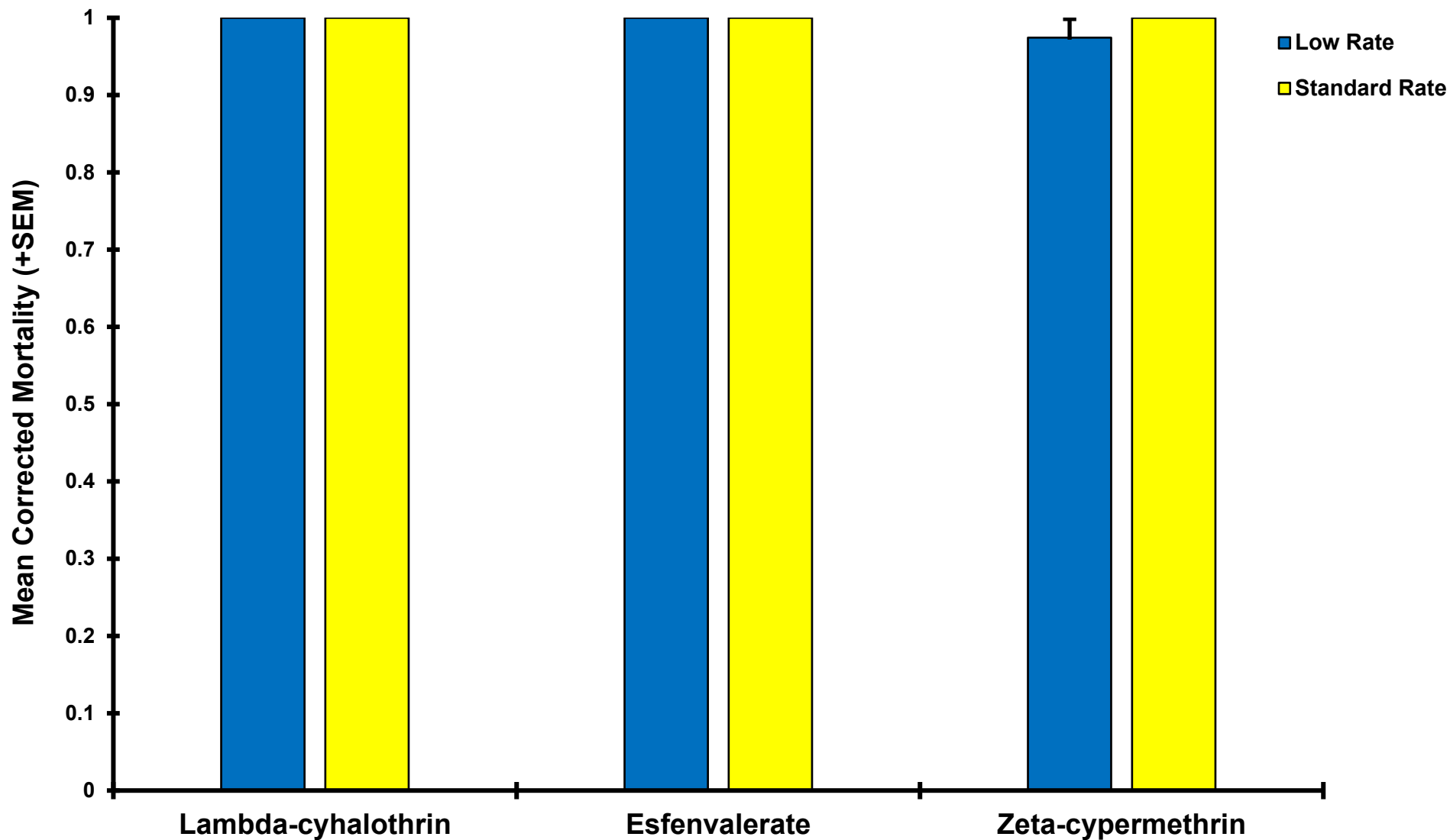
- **Normal:**

- Lambda-cyhalothrin (Warrior II): 1.92 fl oz/acre
- Esfenvalerate (Asana): 9.6 fl oz/acre
- Zeta-cypermethrin (Mustang Maxx): 4 fl oz/acre

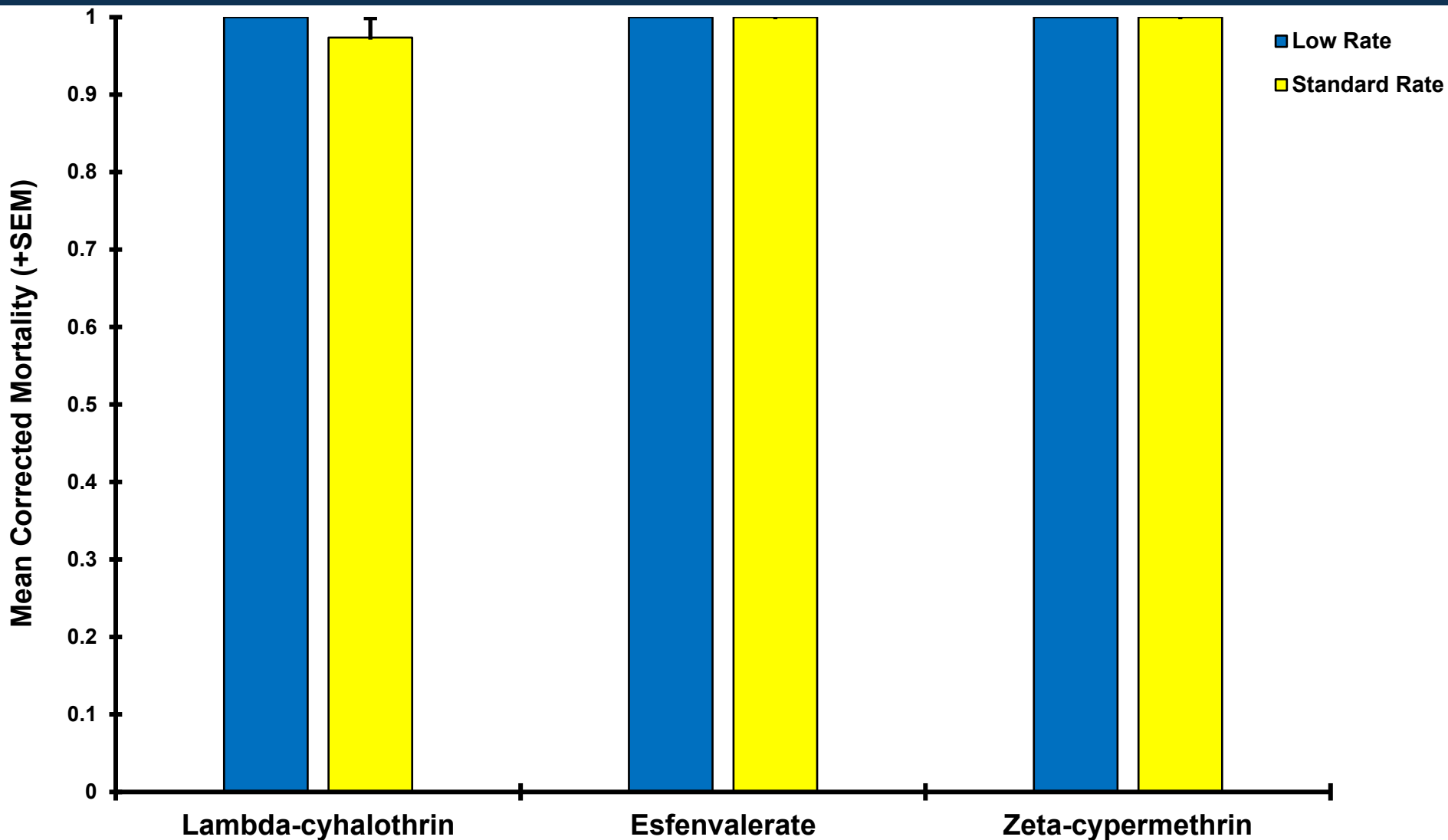
- **Low:**

- Lambda-cyhalothrin (Warrior II): 0.96 fl oz/acre
- Esfenvalerate (Asana): 5.8 fl oz/acre
- Zeta-cypermethrin (Mustang Maxx): 1.28 fl oz/acre*

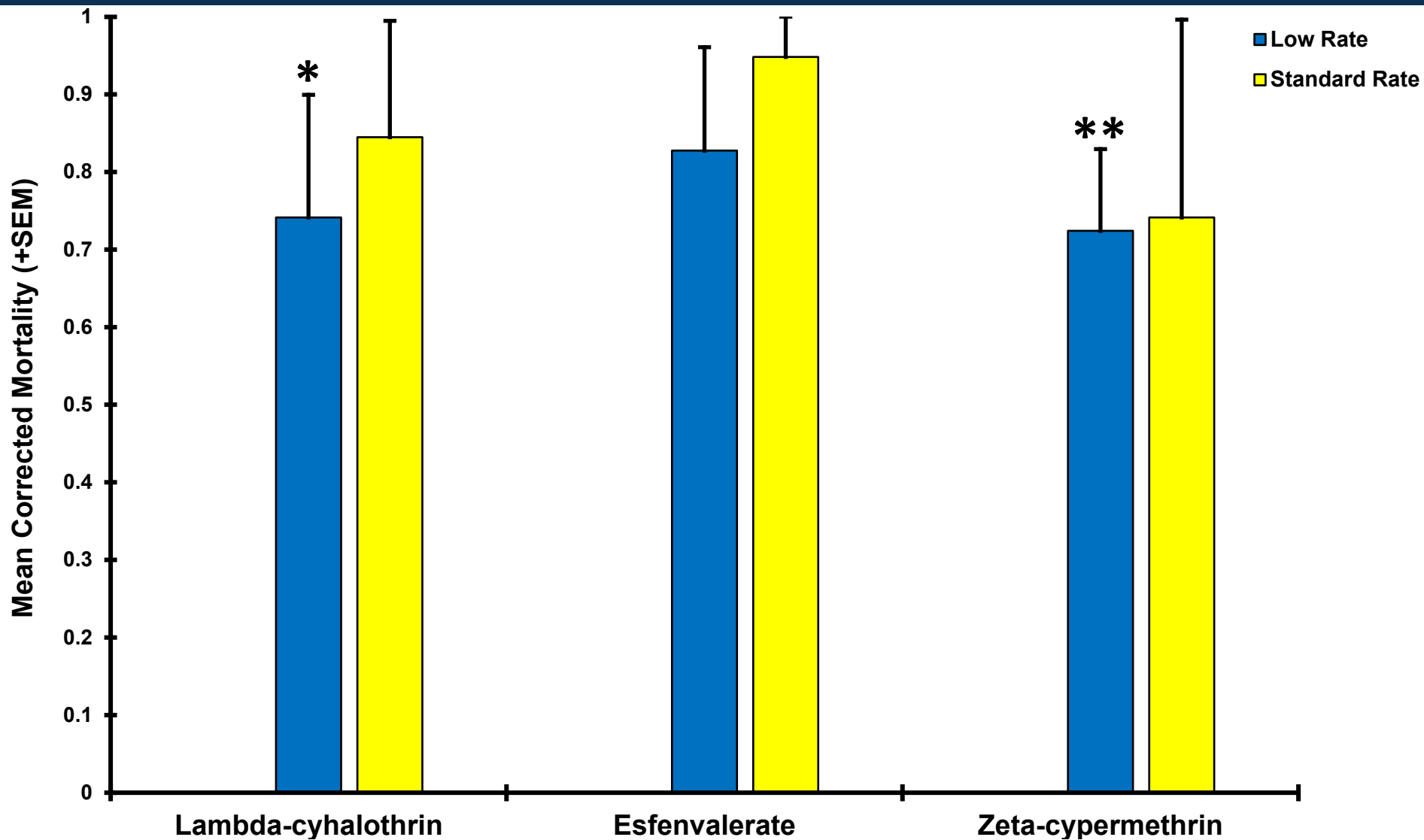
New Underwood 1, Pennington Co. SD



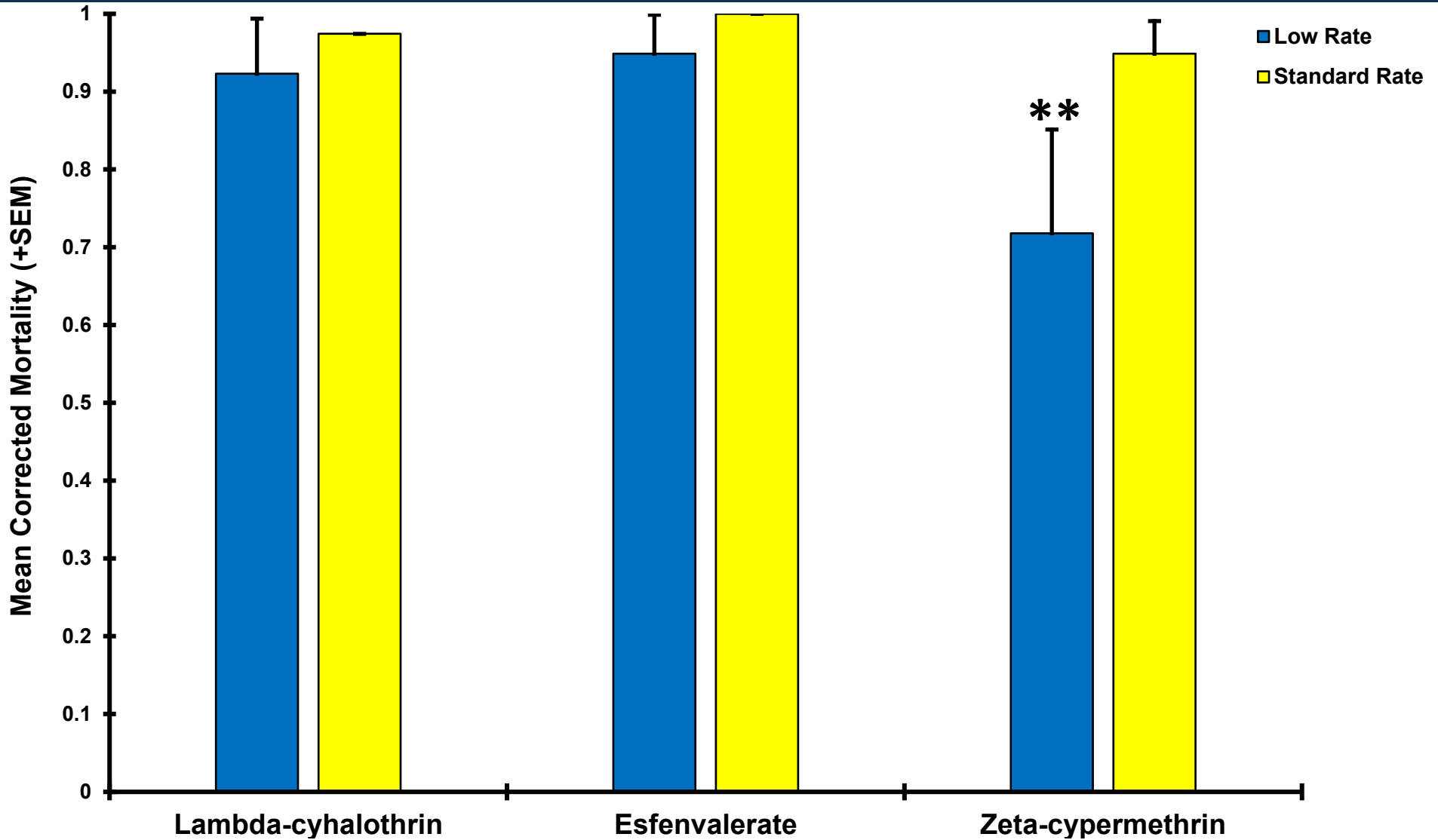
New Underwood 2, Pennington Co. SD



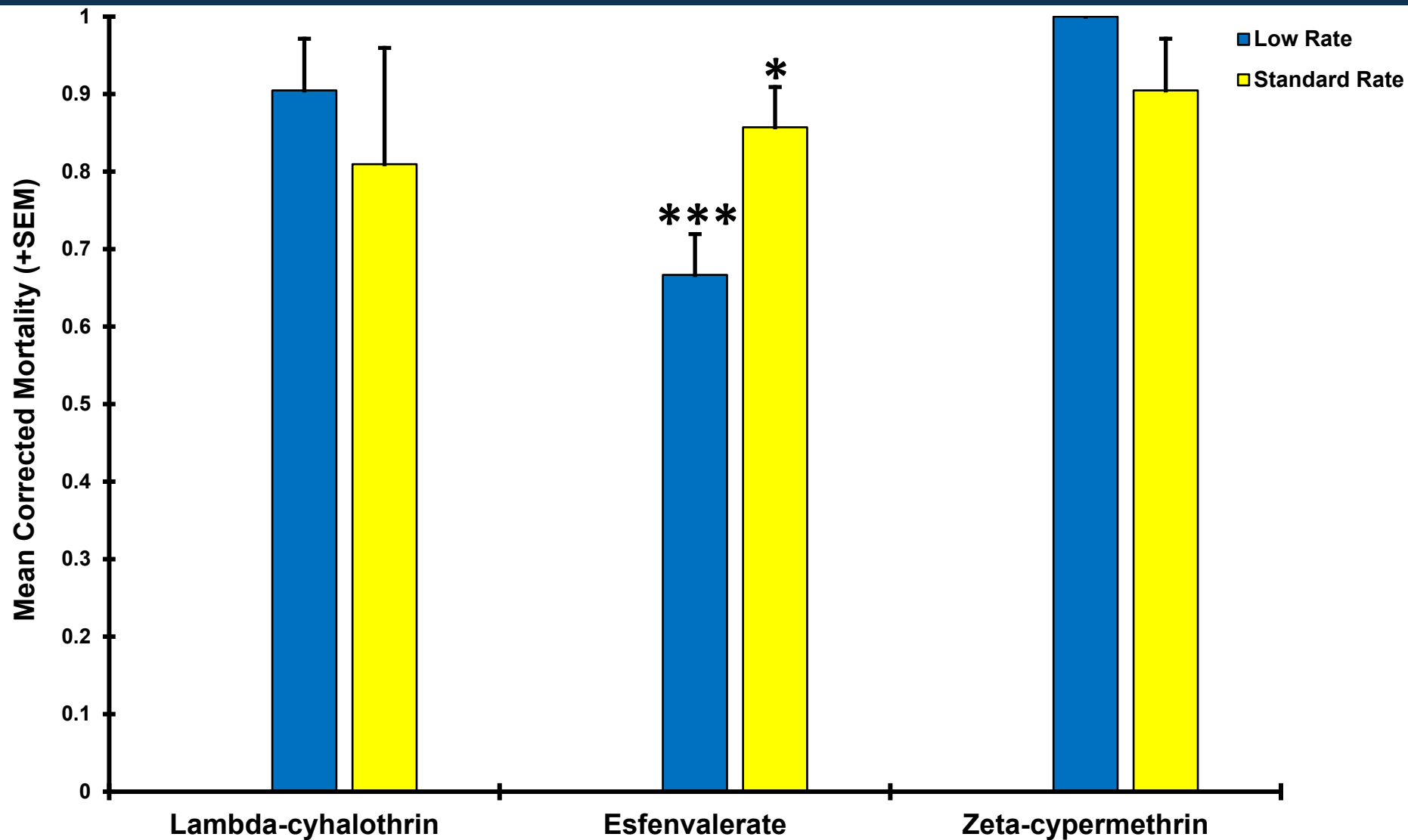
Milesville, Haakon Co. SD*



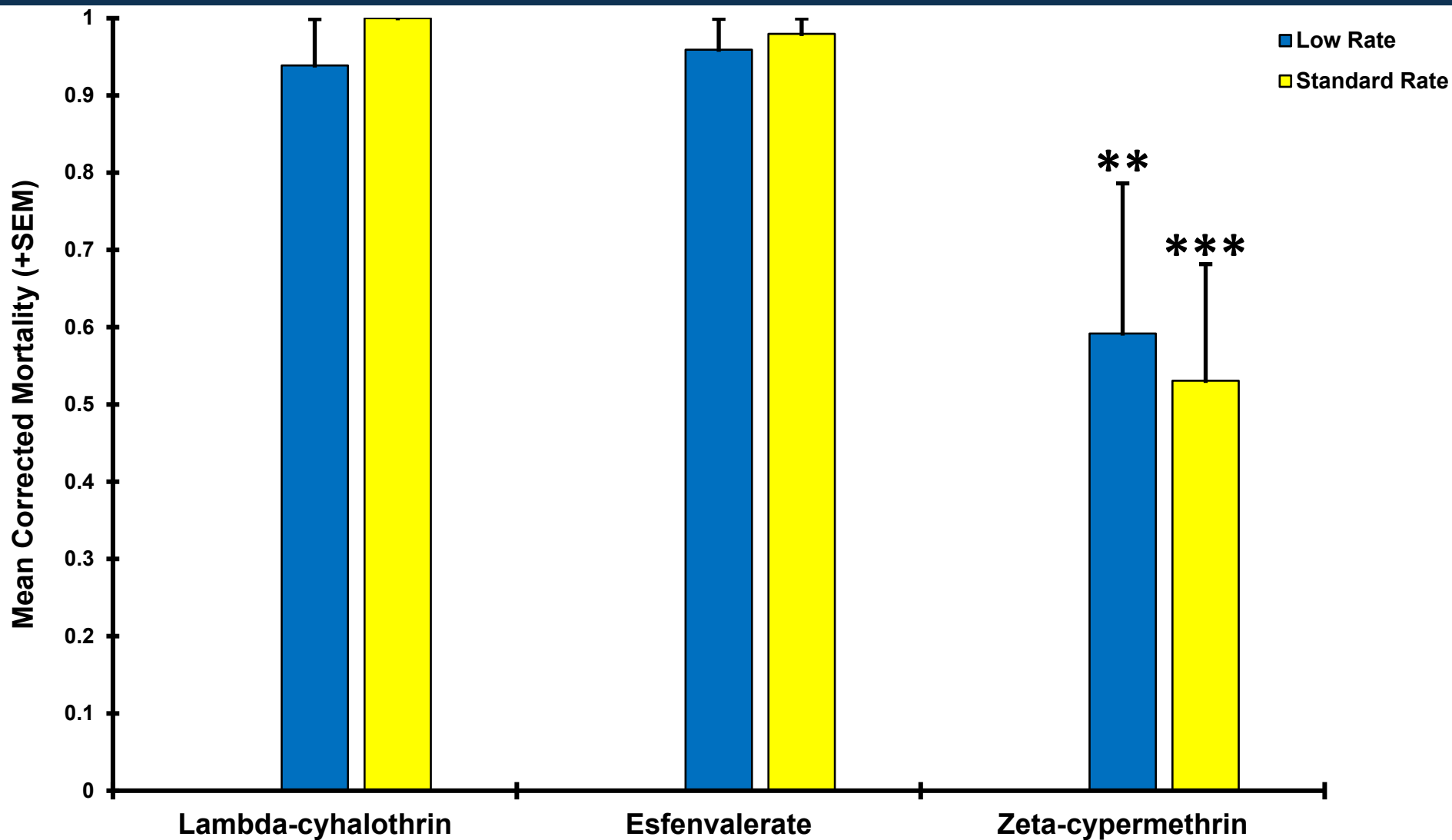
Canning Road 1, Hughes Co. SD



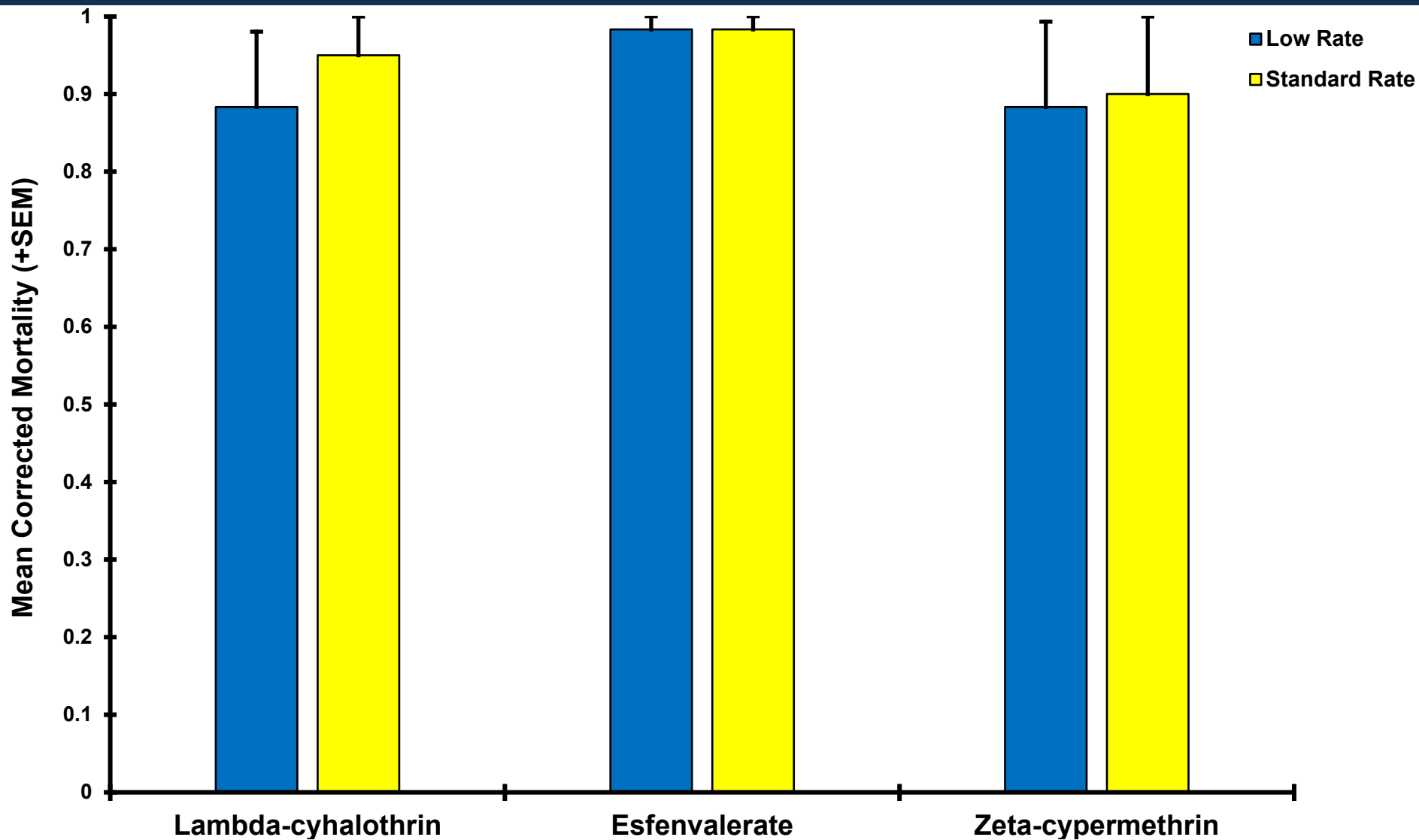
Canning Road 2, Hughes Co. SD



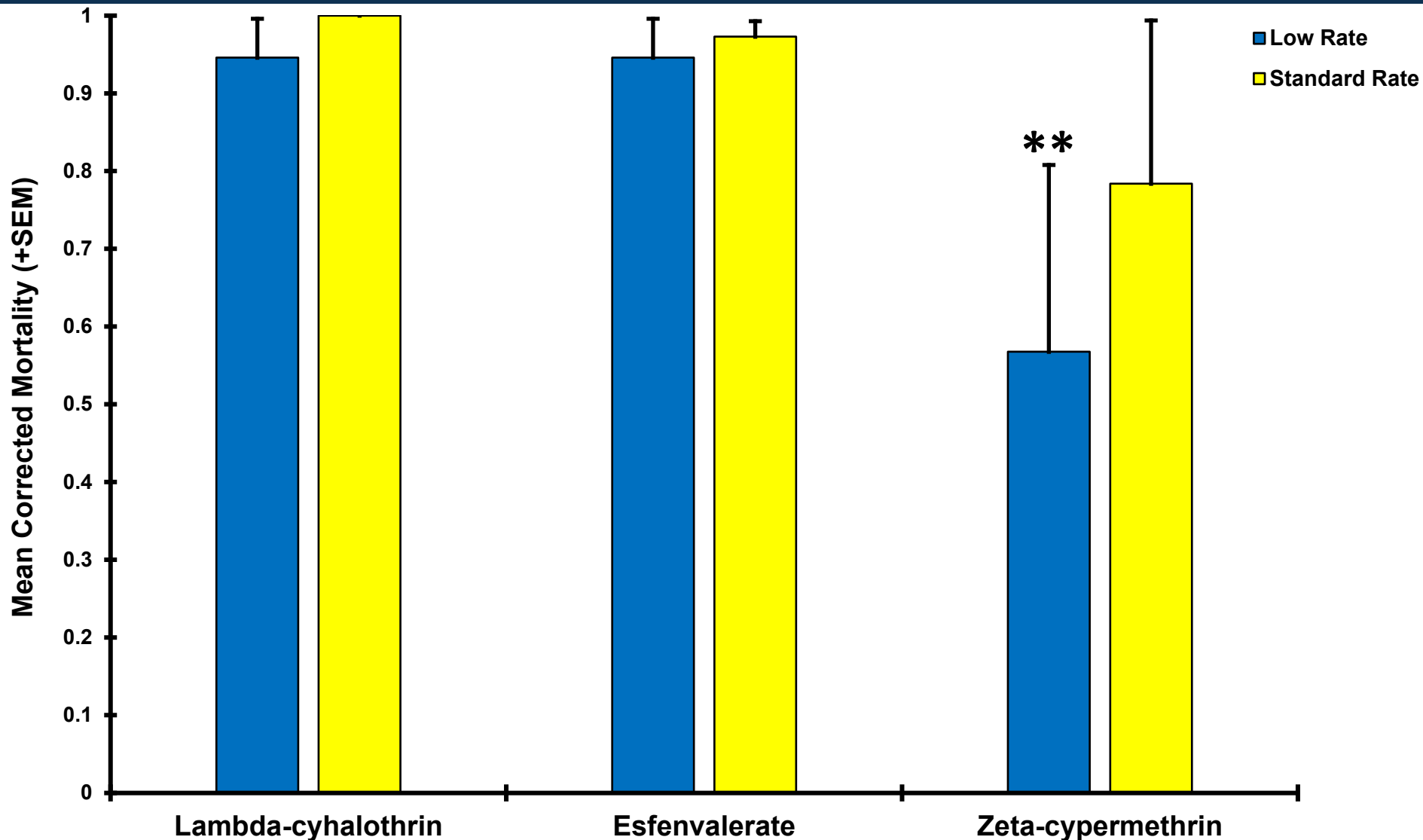
Blunt 1, Hughes Co. SD



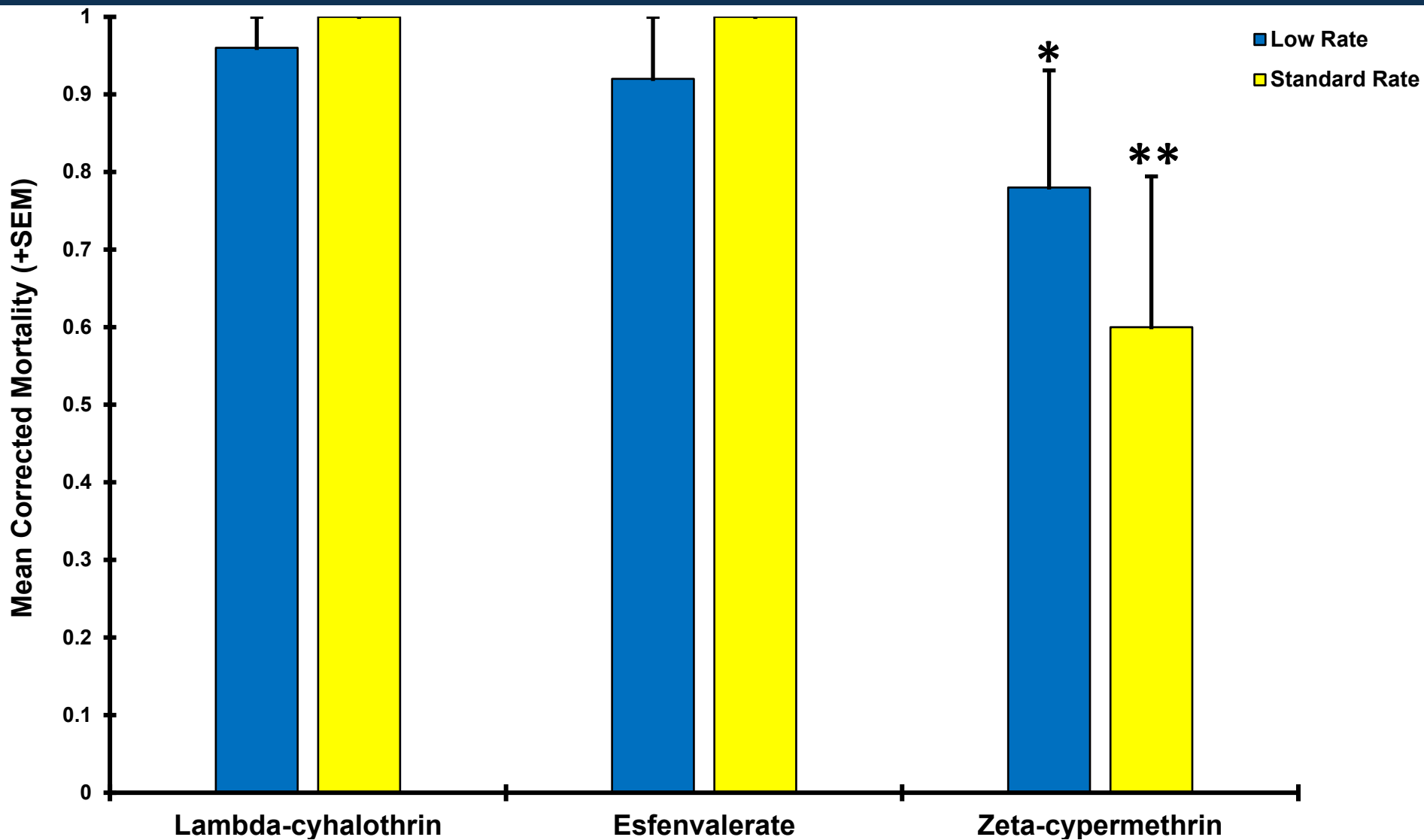
Blunt 2, Hughes, Co. SD



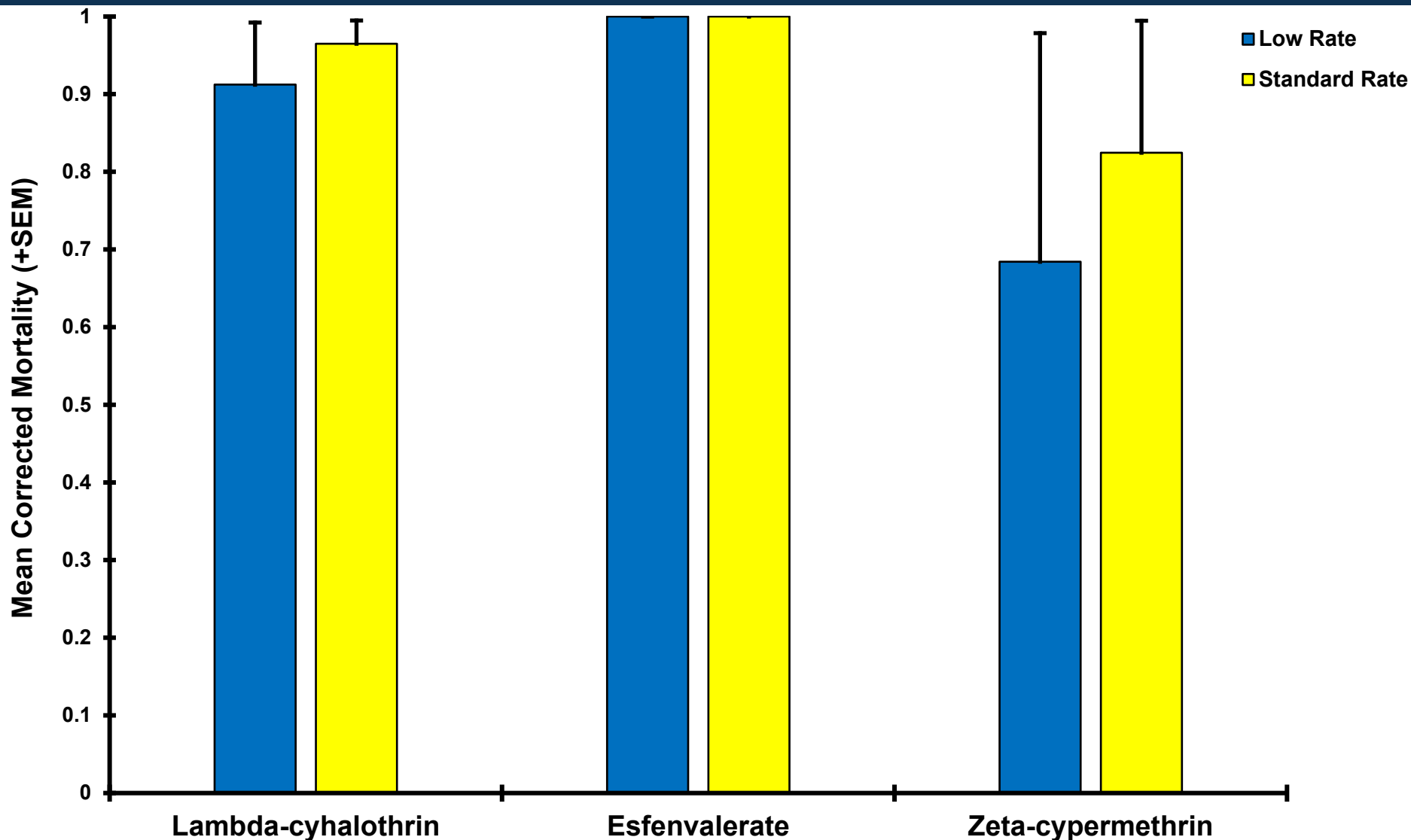
Harrold, Hughes, Co. SD



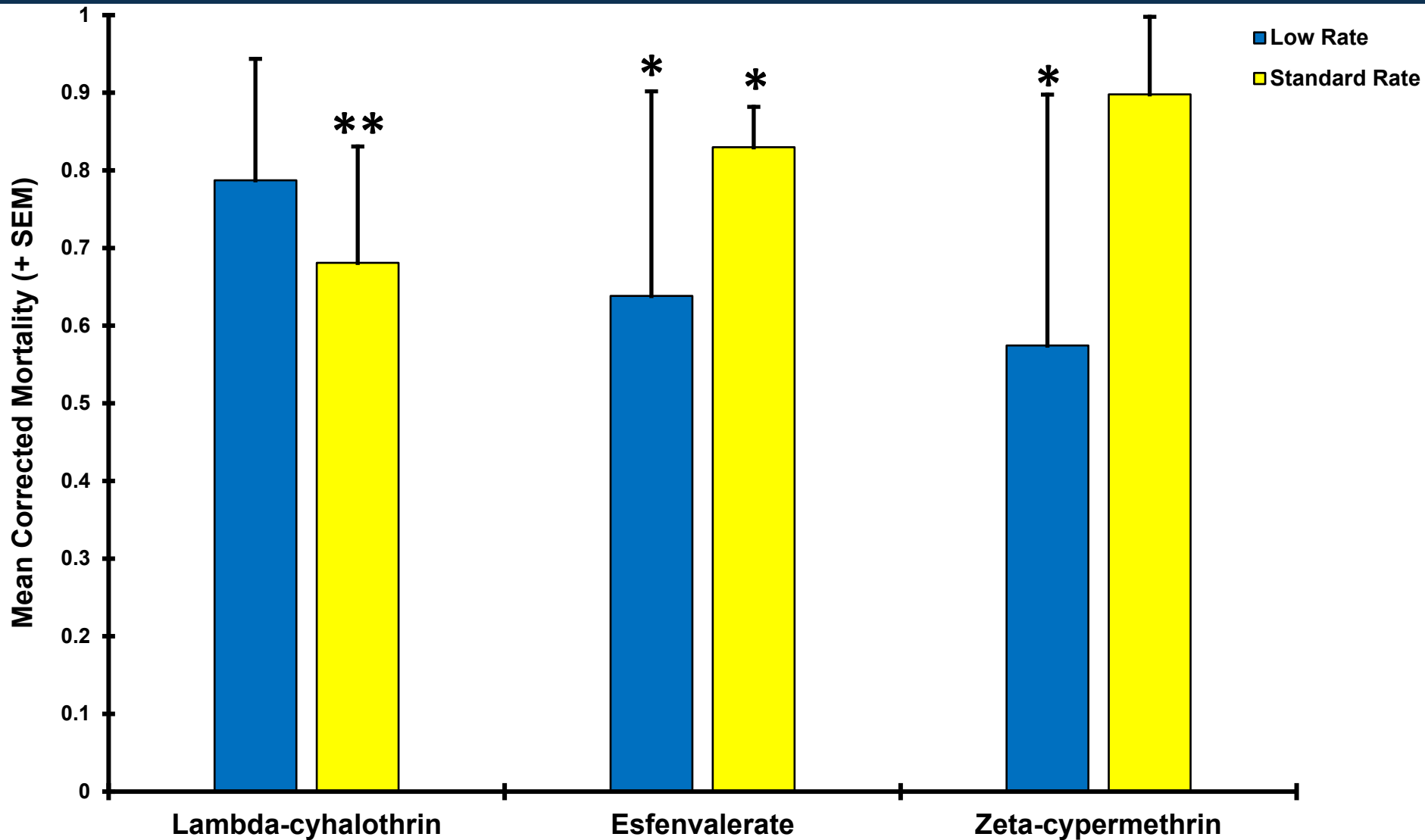
The Junction 1, Hughes, Co. SD



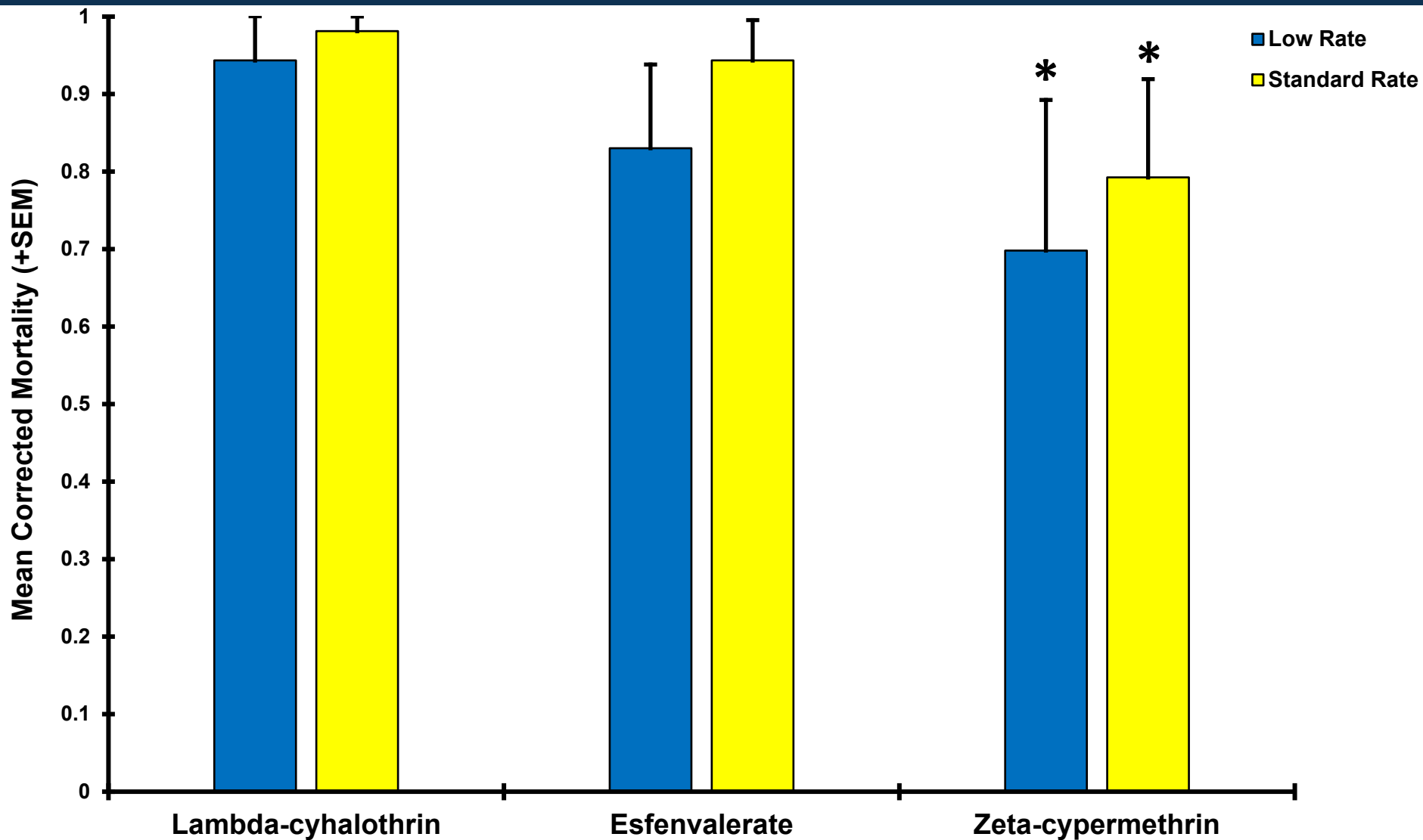
The Junction 2, Hughes, Co. SD



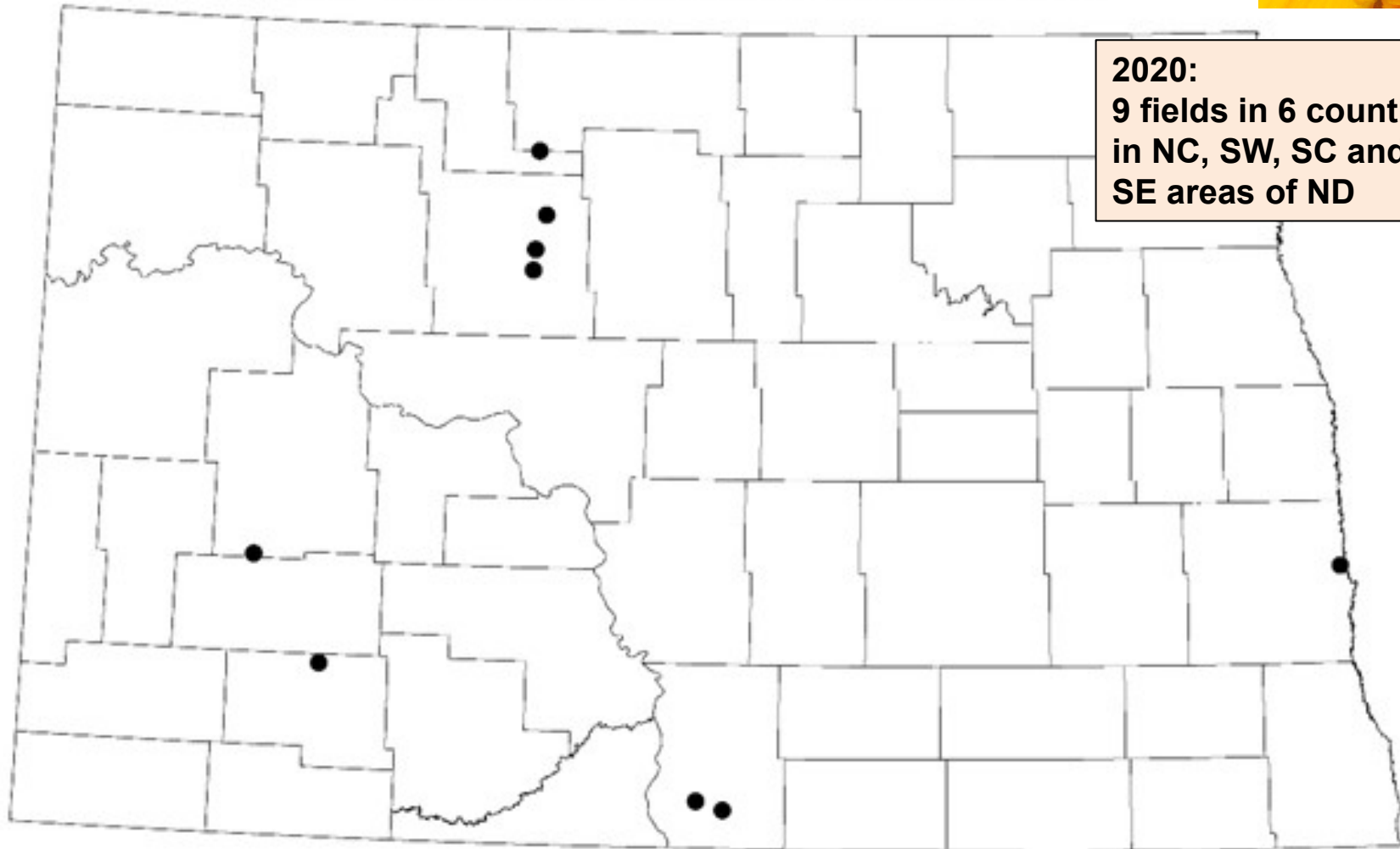
Onida 1, Sully, Co. SD



Onida 2, Sully, Co. SD

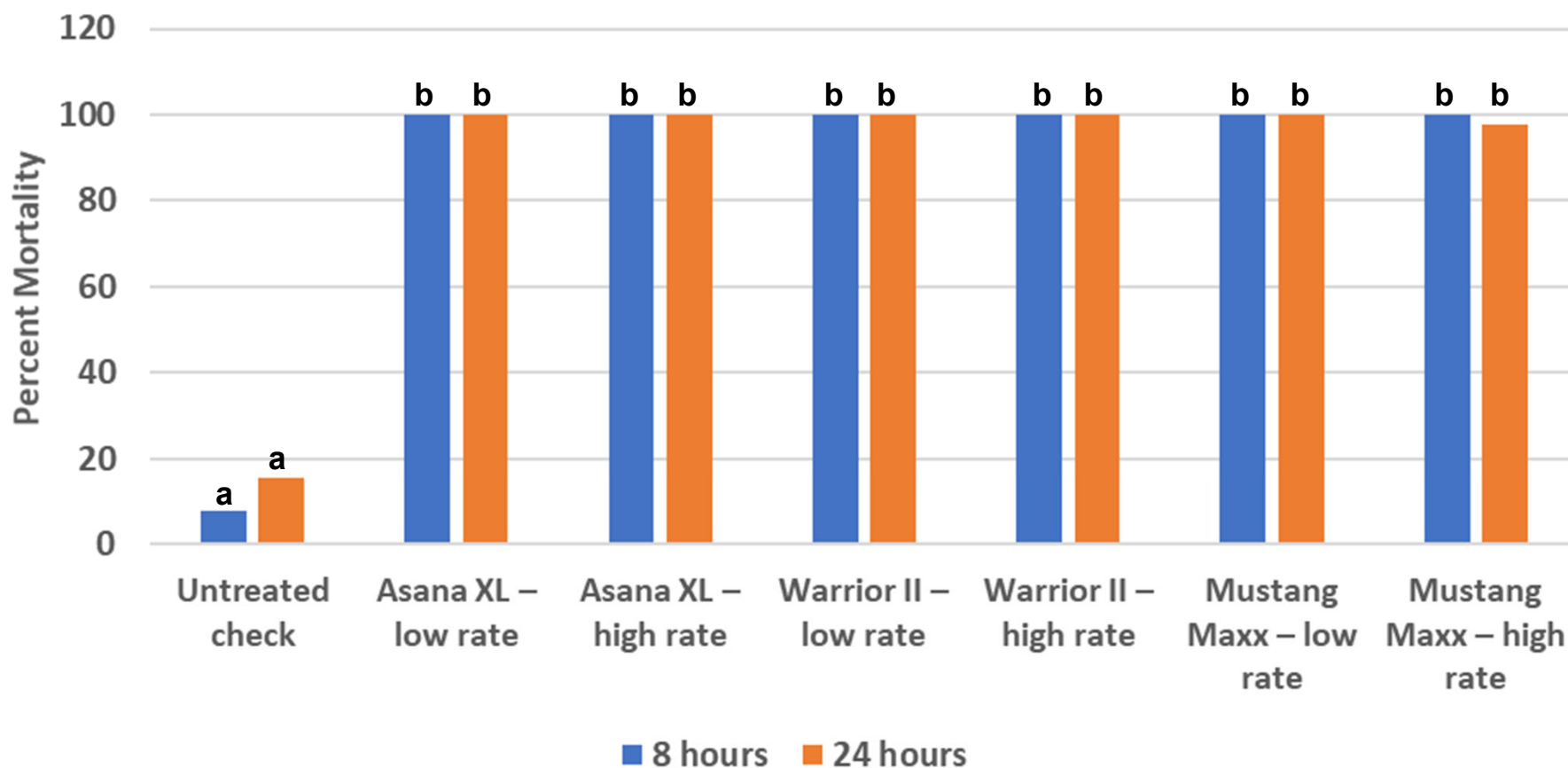


2020 Field Sites of Red Sunflower Seed Weevils Collected for Pyrethroid Susceptibility Testing in North Dakota



2020:
9 fields in 6 counties
in NC, SW, SC and
SE areas of ND

2020 Treatment Means for Adult RSSW Mortality at 8 and 24 Hours Across All Locations in ND



2020 Conclusions

- Reduced susceptibility:
 - Lambda-cyhalothrin: 2 locations
 - Esfenvalerate: 2 locations
 - Zeta-cypermethrin: 7 locations
- Zeta-cypermethrin low rate not labeled for RSSW
 - Will correct for 2021
 - Still saw issues with labeled high rate though
- Evaluate additional locations in 2021
- ND sites showed no signs of reduced susceptibility

Why might susceptibility be reduced?

- Coverage difficulties
- Very large RSSW populations
- Routine treatment of RSSW
- Timing of glass vial assay

Acknowledgements

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