ZM-X: A New Biochemical Dreissenid Control Technology

Safe. Scalable. Scientifically Sound.

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Presentation Outline

1. What is ZM-X?
2. ZM-X Efficacy Data
3. Potential Benefits of ZM-X in Irrigation

What is ZM-X?

ZM-X: A Management Option for Closed Systems

- Patent Pending (ZM Controllers)
- Compatible w/ most materials & safe for workers
- Exempt from US EPA registration
  (Citric acid formulation, FIFRA 25b)
- Environmentally sound
- Scalable & readily available

ZM-X Depresses pH with Organic Acids

Invasive mussels have a narrow range of pH tolerance and minimum required level of calcium

By manipulating pH with specific **organic acids** we can control their **survival and settlement**

ZM-X: CITRIC ACID

We are highlighting our citric acid formulation first due to:

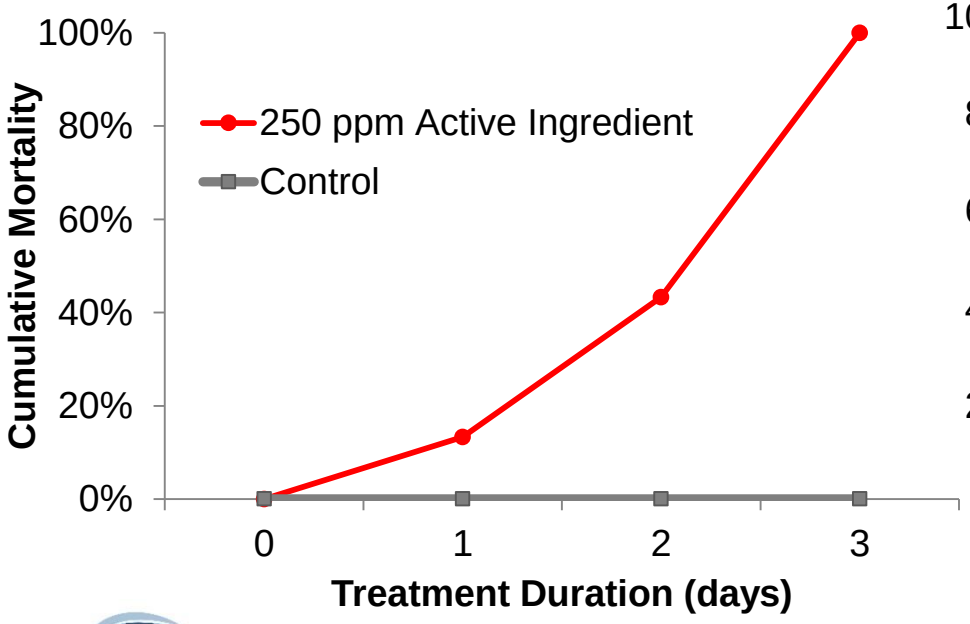
Efficacy, availability, and exemption from EPA registration (FIFRA 25b)

Is ZM-X Efficacious?

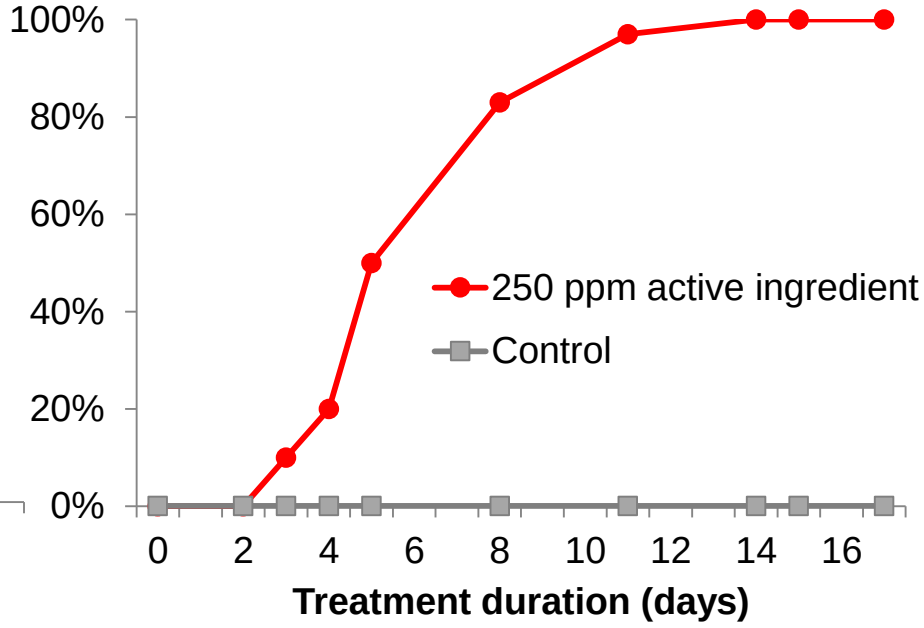
ZM-X Yields 100% Adult Mortality in 3 days

Independent lab tests (RNT Consulting) indicate faster mortality than current chemical technologies

100% mortality in 3 days
in warm water (>18ºC)



100% mortality in 14 days
in cold water (~10ºC)



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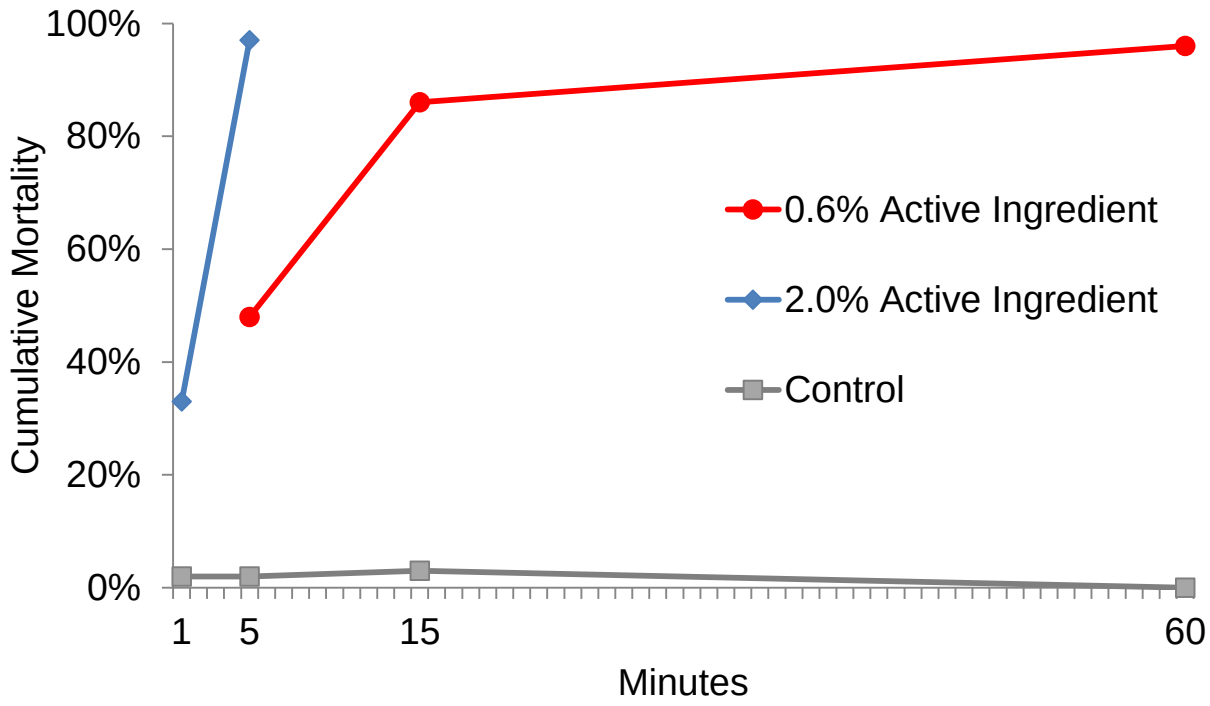
ZM-X Kills Veligers in ~5 minutes

Independent lab tests (KASF Consulting) indicate 97% veliger (mussel larvae) mortality within 5 min of exposure



Benefits of ZM-X in Irrigation

ZM-X Has Added Benefits for Agriculture

When used in irrigation systems, ZM-X may:

- **Reduce parasitic energy loss** by inhibiting and removing scale
- **Stimulate crop growth** by converting insoluble minerals into fertilizers
- **Reduce biofilm** by inhibiting algae and bacteria
- **Positively impacts soil characteristics and promotes a healthy soil microbiome** by solubilizing essential minerals and increasing organic matter, and by modifying soil structure and increasing water holding capacity
  - A healthy and diverse microbiome may decrease in soil pathogens

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We Are Seeking Research Partnerships!

Contact Bridget Gruber at bhohner@gmail.com
Visit our webpage at zmcontrollers.com

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