

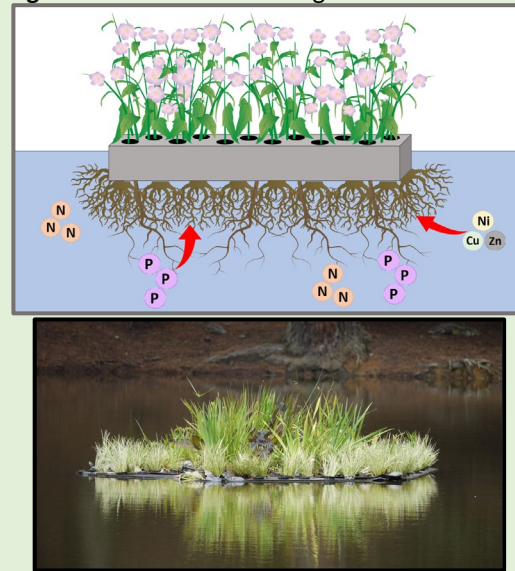
# Plant Production for Floating Treatment Wetland Plugs in Brackish Stormwater Ponds

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## Introduction:

- Floating Treatment Wetlands (FTWs) are structures that remove pollutants/contaminants from water
- Research is focused on using FTW in non-freshwater systems
- Salinity can be detrimental to plant health and consequentially nutrient removal
- Wetland halophytes are being evaluated as plug plants
- Nursery production utilizes only freshwater in plant production
- The research presented here aims to:
  - Evaluate the priming treatment methods most effective at improving germination of halophytes in brackish water
  - Propose nursery acclimatization protocols to encourage plug salt tolerance

Figure 1. Common FTW design



## Results:

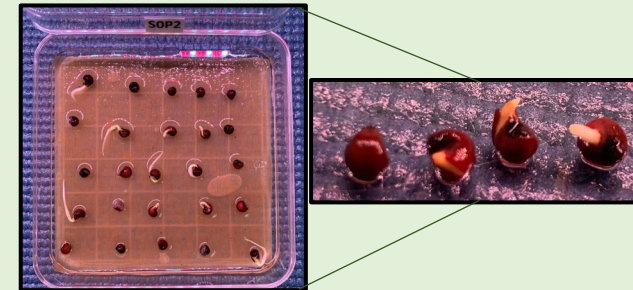


Figure 2. Priming methods Germination Percentage across salinities

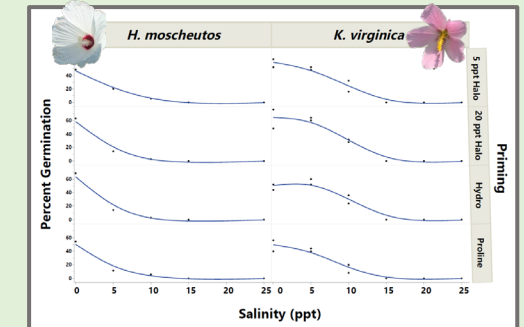
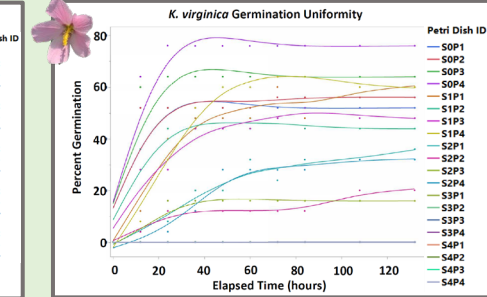
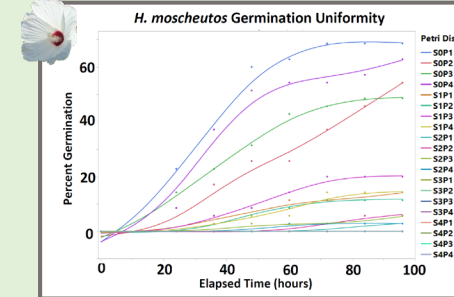


Figure 3. Germination Uniformity for all experimental units for *H. moscheutos* and *K. virginica*



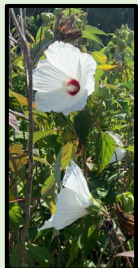
**Legend:**  
**S# (0-4)**  
 0: 0 ppt  
 1: 5 ppt  
 2: 10 ppt  
 3: 15 ppt  
 4: 25 ppt  
**P# (1-4)**  
 1: Hydro  
 2: Proline  
 3: 5ppt Halo  
 4: 20ppt Halo

## Plant Species Evaluated



### *Kosteletzkya virginica*:

- “Ditch Mallow”
- Herbaceous perennial
- High Salt Tolerance in maturity

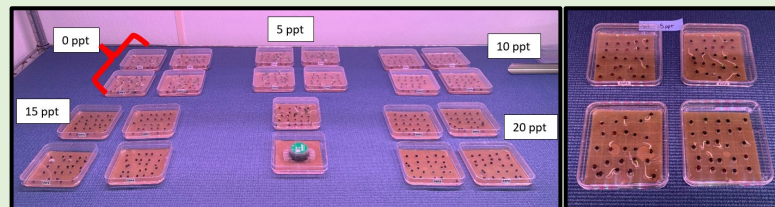


### *Hibiscus moscheutos*:

- “Swamp Rose Mallow”
- Herbaceous perennial
- Moderate Salt Tolerance in maturity

## Methods- Brackish Propagation

- Seeds scarified in sulfuric acid for 35 minutes.
- Seeds of both species primed in 1 of 4 unique priming solutions for 8 hours:
  - P1- Hydropriming (0 ppt salinity)
  - P2- Proline Priming (5mM L-proline)
  - P3- Low Halopriming (5 ppt salinity)
  - P4- High Halopriming (20 ppt salinity)
- Seeds sowed into petri dishes containing germination paper and brackish solution

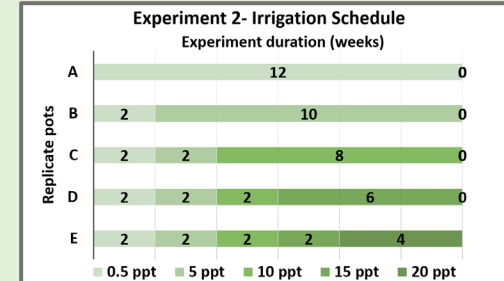


Species	0 ppt		5 ppt		10 ppt		15 ppt		25 ppt	
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
	P3	P4	P3	P4	P3	P4	P3	P4	P3	P4

## Proposed Methods- Acclimatization Protocols

- Preliminary methodologies are actively occurring
- Considerations include emulating current nursery plant production

Figure 4. Plant Brackish Exposure for Nursery Production



## Discussion:

- Plant selection is important
- Plant treatment at commercial nurseries should be considered
- Nurseries propagating plants with brackish conditions should tailor methods based on species of interest
- K. virginica*: 20 ppt Halopriming solution and exposed to 5 ppt salinity
- H. moscheutos*: Hydropriming and exposed to 0 ppt salinity
- If considering FTW in storm water retention ponds that are exposed to salinity, inquire about plant treatment

## Acknowledgments:

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