SOUTH FLORIDA WATER MANAGEMENT DISTRICT



Water Hyacinth Management Experiences of SFWMD Lessons For Lake Tana Yirgalem Assegid (PhD)



Context Of Experience Sharing

- Lake Tana is Suffering from encroachment of invasive weed Water hyacinth
- The weed is known for

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- its fast propagation physically as well as by seed
- Disrupting lake ecology
 - competes oxygen supply,
 - evaporates water at faster rate,
 - destroy fish breeding areas,
 - obstruct navigation etc.
- Stakeholders of Tana Visited lake Okeechobee Epicenter of Water hyacinth with 130+ years experience
 - Head of environmental protection
 - Global Coalition for Lake Tana (NGO)



This presentation is experience sharing to wider audience since would be a major treat of water resources any where not to mention GERD that is hydrologically connected to Tana



Water hyacinth in South Florida

- Imported from Amazon to South Florida / Louisiana as backyard flower.
- In 1899, the United States Rivers and Harbors Act authorized the construction and operation of "crusher boats" to remove water hyacinth from navigable waterways.
- Three years later the Rivers and Harbors Act Amendment allowed for the extermination of water hyacinth by mechanical, chemical, or any other means.
- Since then all management techniques were attempted

Lesson 1. Strategy shifted from eradication to managing it

Current Water Hyacinth Management Methods at SFWMD

Mechanical

- Barriers
- Harvesters/Shredders

Biological

- Planthopper
- Weevil
- Moth

≻Chemical

- Selective / non-selective
- Systemic /Contact
- Additional Approaches
 - Nutrient Reduction
 - Best Management Practices

Mechanical

- Barriers (vegetative for small canals)
- Berms (for water ways as wide as 150 ft) :

Lesson 2: Berms would avoid transport of water hyacinth from Tana to GERD





Aquatic Harvesters and shredders

- Used for creating an alley / access for air boats SFWMD is in charege of activities
- Costly and spread water hyacinth via fragmentation and relocation (immediate disposal is also an issue)
- Lake Tana has more than 5 harvesters: Concern- expectation is to harvest all using these machineries

Lesson 3: Reset the purpose of harvestors /Shredders - only to open up alleys

Lesson 4: Having 5+ harvests / Shredders is enough for alley/access creation





Biological control (Weevil and moths)

- Bio controls are applied upstream of the water currents for ease of propagation to downstream – USDA is in control of research and application
- They are applied where water hyacinth is dispersed with other vegetation and neither physical nor chemical approach is applicable
- Because of its slow process to eat out the water hyacinth and reduce its photosynthesis it is applied in places where strategic importance is less. However it is a must for a long term
 Weevils and Moth larvae

Research on adaptability weevils that do not not harm crops





Neochetina eichhorniae Mottled water hyacinth weevil Copyright 1997 USDA-ARS

Advantages of biological control

- low cost (long term)
- Self sustaining
- High efficacy once adapted

Disadvantages

- Slow process
- Could be washed to the wrong direction
- Start up costs

Lesson 4: Long term investment,

It can't cope with he propagation rate of water hyacinth

Chemical control

The chemicals are EPA approved and proven to have no effect on fishery and other fauna if used at suggested rate

Active Ingridient	Product Name	Selectivity
Contact Herbicides		
Diquat	Reward	Non selective
Systemic		
Flumioxazin	Clipper	Some selectivity
Glyphosate	Rodeo	Non Selective
Imazapyr	Habitat	Non Selective
Triclopyr	Renovate	Some selectivity
Penoxsulam	Galleon	Some selectivity
Bispyribac sodium	Tradewind	Some selectivity

2,4 D Weedar64 Some selectivity

Private sector is given contract -- SFWMD regulates



Mode of Application

- All concentrations are as per EPA's ruling and labeled on the product
- Florida Department of Environmental Protection (FDEP) certifies contractors involved in responsibility

Technologies

- 1. Air boats are used to apply herbicides (Dayqat) following the alleys
 - They can maneuver on shallow waters (below 40cm)
 - Each boat costs up to 15 K (USD)

2. Diqat is widely used and trained contractors are permitted to apply on the area they are given

Lesson: Proven chemical control methods shall be tested at pilot level and adopted for lake Tana

Before treatment

After Dyqat treatment



Additional Approaches

- >Nutrient Management
- Watershed treatment
 - Soil and water conservation
- Reduce inputs into the Lake
 - Water treatment areas to arrest nutrient inflow- demands space and does not seem applicable to Lake Tana
 - Isolate inputs Water treatment facilities Not applicable given the cost

Institutional arrangements

Research on biological and chemical control:6+ Universities, Amhara Agricultural Research Institute

Lake Tana Management Office

Policy and guidelines : The Regional Environmental Protection Agency

Physical and Chemical Control implementation: **Private sector/NGOs**



Existing situation of lake Tana

https://www.facebook.com/solomon.kibret/videos/10223571085809256/?t=0

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