Using Salt as a Preventative and Therapeutic Treatment

By
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Fisheries Technician

Mission: To protect, conserve, and enhance the Commonwealth’s aquatic resources and provide fishing and boating opportunities
Brian McHail

- Penn State University
- Edinboro University
- PFBC
  - Fisheries Biologist Aid
  - Fish Culturist
  - Fisheries Technician
Overview

- Salt treatments are important
- Calculate water flow
- Calculate salt treatment
Why Salt?

- Low regulatory drug
- No withdrawal period
- No temperature restrictions
- Easily accessible
- Cost effective
Why Salt?

• **Stress Relief**
  • Transport
  • Grade/inventory/move
  • High water temperatures/low dissolved oxygen
  • Post poor water event
  • Post disease treatment
Why Salt?

- Pathogen Control
- External pathogens
Salt

• **Hi-grade granular untreated salt**
  • No additives
  • Available at feed stores

• **Salts to avoid**
  • Rock salt
  • Water softener salt
  • Salt blocks
When to Start a Salt Treatment?

- **Fish Delivery**
  - Preventative treatment (0.5%)
  - Salt fish for 3 consecutive days
  - Do not feed

- **Scheduled Treatment**
  - Water temperature 50°F-65°F: once per month
  - Water temperature >65°F: once per week
When to Start a Salt Treatment?

• **Disease Episode**
  - Therapeutic treatment (1%)  
  - Can treat as high as 3%  
  - Salt fish for 3 consecutive days  
  - Do not feed  
  - Can reduce losses when the first sign of a problem occurs
Salt Treatment

• % Solution
  • 0.5% or 1.0%

• Water Flow
  • Gallons per minute (gpm)
Water Flow

- **Weir Method**
  - Width of the weir (feet)
  - Depth of the water flowing over the weir (inches)
    - Use the average of 3 measurements
Water Flow

42”

1 1/8”
Water Flow

- No leaks under/between boards
- No obstructions
- Add boards if needed
**FLOW OVER RECTANGULAR WEIR WITHOUT END CONTRACTIONS**

*Width Weir = 1 foot*

\[ Q = \text{gals. per min. (gpm)} \]

\[ H = \text{head in inches} \]

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**1 1/8** is circled in red.
Water Flow

- Flow = Weir Width (ft) x gpm

- Weir Width = 42”/12” = 3.5’

- Flow = 3.5’ x 42.9 gpm

- Flow = 150 gpm
Water Flow

- **Bucket Method**
  - Use a bucket with a known volume (gallons)
  - Time with a stopwatch (seconds)
    - Use the average of 3 measurements
    - Do not “eyeball” the measurement
Water Flow

• Flow = (gallons/second) x 60 (seconds/minute)

• Flow = 3 gallons/6 seconds = 0.5 gps

• Flow = 0.5 gps x 60 seconds/minute = 30 gpm
## Salt Treatment Table

### 30 Minute Treatment Concentration

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<tr>
<th>Flow (gpm)</th>
<th>0.5%</th>
<th>1%</th>
<th>2%</th>
<th>3%</th>
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<td>125</td>
<td>250</td>
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<td>750</td>
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Salt Treatment

- **0.5% Salt Treatment**
  - Lbs. of salt = 1.25 lbs. of salt x water flow (gpm)
  - Lbs. of salt = 1.25 lbs. of salt x 30 gpm = 37.5 lbs.

- **1.0% Salt Treatment**
  - Lbs. of salt = 2.5 lbs. of salt x water flow (gpm)
  - Lbs. of salt = 2.5 lbs. of salt x 30 gpm = 75 lbs.
Salt Treatment

- **Flow Reduction**
  - Reduce the water flow for the treatment period
  - Flow reduction saves time, money, and your back!
  - Lbs. of salt = 2.5 lbs. of salt x 100 gpm = **250 lbs.**
  - Lbs. of salt = 2.5 lbs. of salt x 50 gpm = **125 lbs.**
Salt Bags Too Heavy?

- **Slice-O-Matic**
- East Fork Sportsmen’s Club
Salt Bags Too Heavy?
Salt Bags Too Heavy?
Summary

- Hi-grade granular untreated salt
- Preventative (0.5%) vs. Therapeutic (1%)
- Calculate flow and treatment concentration
- Mechanically dissolve the salt treatment
- Salt treatments can save fish, time, and money
Questions?