Footbaths – Key Points

**Design Considerations:**

- Footbath units should be 8 to 10 feet long and have a minimum depth of 6 inches. The footbath structure should be wide enough that all four of the cow's feet get exposure to the footbath solution.
- Footbath solutions should be 4 to 6 inches deep to ensure adequate coverage of the foot area.
- Research supporting the value of pre-bath solutions is limited.
  - Consider filling both pre-bath and treatment bath with the treatment chemical to increase exposure to the treatment solution.
  - If different solutions are used in the pre-bath and treatment bath, there should be a gap of 6 to 8 feet between the two baths to prevent the pre-bath solution from diluting, and hence decreasing the efficacy of the treatment bath solution.
  - On days when footbaths are not filled with a treatment solution, consider filling the pre-bath (if used) and treatment bath with a 1% mild soap solution.
- Ensure that footbaths are located on a level surface. Floors should provide adequate traction, but not be rough and abrasive, which may cause trauma to a cow's feet.

**Management Considerations:**

- Footbaths are most effective for treating infectious diseases of the interdigital skin such as digital dermatitis, interdigital dermatitis and foot rot.
- It is recommended that footbaths be used at least 3 to 4 days per week. Foot and leg hygiene help determine the number of days required. Dirtier cows require more footbathing.
- Locate the footbath in an area regularly traveled by cattle. Ensure that cows have the ability to bypass permanent footbath areas on days when footbaths are not being used.
- Cows should enter a clean dry area after passing through the footbath.
- Change footbath solution after every 150 to 200 cows. This frequency will vary depending upon cow cleanliness, use of a pre-bath, type of disinfectant or chemical concentration used and weather conditions.
- Alternate times for replenishing footbaths with fresh solution so each group of cows has access to fresh solution.
- Thoroughly drain footbath and rinse with water before mixing a new batch of solution.
- Use claw lesion records to monitor effectiveness of footbath management and efficacy of footbath solutions.

* Manure deactivates the chemicals used in a footbath; therefore, footbaths must be managed properly to achieve maximum effectiveness. A poorly managed footbath can become a vector for certain infectious diseases of the foot.

**Solutions:**

- Calculate footbath capacity to ensure proper amount of products are added to the footbath.
- In arid regions, evaporation will concentrate active ingredients.
Footbaths Options

Maintenance Footbath Solutions

<table>
<thead>
<tr>
<th>Product</th>
<th>Mix with water to achieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper sulfate(\text{abc})</td>
<td>5% - 10% solution</td>
</tr>
<tr>
<td>Zinc sulfate(b)</td>
<td>5% - 10% solution</td>
</tr>
<tr>
<td>Formalin(d)</td>
<td>2% - 5% solution</td>
</tr>
<tr>
<td>Mild soap</td>
<td>1 quart to 25 gallons water</td>
</tr>
</tbody>
</table>

\(a\) Hot water will help dissolve copper sulfate. If using hard water, adding some vinegar will help dissolve product.

\(b\) Due to amount of trace minerals added, dairy producers should consult with their agronomist to determine potential implications of applying manure containing high levels of trace minerals. Some success has been reported using 15% to 20% zinc sulfate footbaths. However, producers may have trouble dissolving this amount of zinc sulfate and impact on zinc content of manure will be substantial.

\(c\) Reducing footbath pH to 4 through the addition of acidifiers may result in good control of infectious lesions with 2% to 5% copper sulfate solutions. 2 to 5 gallons of a 36% formaldehyde solution added per 100 gallons of footbath solution. In some areas, formaldehyde use is prohibited. Caution must be exercised when using formaldehyde as fumes are harmful to both cattle and humans. Use in a well-ventilated area and always wear protective eye wear. Furthermore, formaldehyde is a suspected carcinogen. Formalin is not effective at temperatures below 45°F.

\(d\) Some success has been reported using 15% to 20% zinc sulfate footbaths. However, producers may have trouble dissolving this amount of zinc sulfate and impact on zinc content of manure will be substantial.

Common Footbath Calculations

<table>
<thead>
<tr>
<th>Type of Calculation:</th>
<th>How to Calculate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine capacity of a footbath</td>
<td>Multiply: Length (ft) X width (ft) X depth (ft) X 7.46 = number of gallons</td>
</tr>
<tr>
<td>2. Convert gallons to pounds</td>
<td>Multiply: Number of gallons X 8.33 = pounds of water</td>
</tr>
<tr>
<td>3. Determine pounds of dry product needed to achieve the desired solution</td>
<td>Multiply: Pounds of water X percent solution desired = pounds of dry product to add</td>
</tr>
</tbody>
</table>

Example:

How many pounds of dry product are needed to achieve a 5% copper sulfate solution in a footbath that measures 10 ft long, 3 ft wide and 6 inches deep? **Answer: 46.6 lb of copper sulfate.**

**How to Calculate This:**

**Step 1.** \(10 \times 3 \times 0.5 \times 7.46 = 111.9\) gallons

**Step 2.** \(111.9\) gallons \(\times 8.33 = 932.1\) lb of water

**Step 3.** \(932.1 \times 0.05 [5\% \text{ solution}] = 46.6\) lb of copper sulfate

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