

# Footbaths: The Minimums and Maximums for Success



Ask a group of dairy producers whether a footbath routine is a meaningful part of their hoof health program, then listen to the responses. Some will say footbaths are most important while others will say they are of little value. Both answers are true because a properly used footbath with a well-researched product is a great asset, but improper use will make a footbath appear to provide minimal benefit.

There are a few minimum and maximum recommendations that will add value and benefit to the use of footbaths which are too often ignored or glossed over in the rush to sell products, rather than provide meaningful footbath management to dairy producers.

|                       | Minimum                              | Maximum                              |
|-----------------------|--------------------------------------|--------------------------------------|
| <b>Dimensions:</b>    |                                      |                                      |
| <b>Length</b>         | <b>8 ft.</b>                         | <b>12 ft.</b>                        |
| <b>Width</b>          | <b>2.5 ft.</b>                       | <b>Alley width</b>                   |
| <b>Solution Depth</b> | <b>5 in.</b>                         | <b>7 in.</b>                         |
| <b>Volume*</b>        | <b>60 gal.</b>                       | <b>--</b>                            |
| <b>Concentration</b>  | <b>Manufacturer's recommendation</b> | <b>Manufacturer's recommendation</b> |
| <b>Acidity (pH)</b>   | <b>--</b>                            | <b>&gt; 4</b>                        |
| <b>Frequency</b>      | <b>As needed</b>                     | <b>14/week</b>                       |
| <b>Cow Passes</b>     | <b>150/2.5 ft. width</b>             | <b>250/2.5 ft. width</b>             |

\* Volume (gal.) = Length (ft.) X Width (ft.) X Soln. Depth (ft.) X 7.48 (gal/sq. ft.)

## Dimensions:

**Length** – The 8 ft. minimum is established to insure the likelihood that each hoof of the cow has a minimum of two and preferred three steps (hoof immersions) as they walk through the bath. There are many commercially sold footbath trays with lengths as low as 6 feet that result in a very high percentage of the cows' rear hoofs only getting 1 to 2 steps/immersions. The 12 ft. maximum is recommended to avoid extra footbath volume and cost, BUT to establish that where the short trays are used there should be two in sequence.

**Width** – The 2.5 ft. minimum is certainly less than the typical cow width, but easily within the hoof tracking width. Using this minimum width requires that alley widths or gating does not allow cows to pass the bath without all hoofs going in the bath (no side-stepping). The maximum recommendation of "alley width" for formed footbaths acknowledges that some large dairies with "high release" cow numbers can not bottleneck cow movement with narrow returns.

**Solution Depth** – A 5 in. minimum depth assures the hoofs are covered completely above the coronary band and dew claws. The 7 in. maximum reduces wasted volume and cost, but also reduces splashing onto the teats and udder floor of deep-uddered cows. (This is particularly important for the safety of milking personnel where carcinogenic/mutagenic footbath products are used.)

**Volume:** The 60 gal. minimum is purely the approximate volume calculated using the minimum footbath dimensions given in the above table (Volume (gal.) = 8 X 2.5 X 0.42 X 7.48 = 62.8).

If a producer states their footbath has a lower volume, determine whether:

- Volume properly calculated?
- Filling to proper depth for a footbath with adequate length and width?
- Footbath placed on an incline that alters volume and uniform solution depth?

**Concentration:** Follow manufacturer’s recommendations for both minimum and maximum solution concentrations. **ASK FOR RESEARCH THAT SUPPORTS THESE RECOMMENDATIONS.** Avoid using lower concentrations than recommended to reduce cost/bath because effectiveness is reduced. **LIKEWISE,** avoid excessively high concentrations as this may irritate and damage hoof tissue.

**Acidity (pH):** Some footbath products put so much focus on very low acidity (pH) that there seems to be little emphasis on the mineral (zinc, copper, etc.) content or other active ingredients (antibiotics, etc.). Remember, if acidity were the primary factor on footbath effectiveness there are far less expensive sources of acid.


**Frequency:** The frequency of footbath use is largely a function of hoof cleanliness. Remember that both footrot and hairy heel warts are caused by bacteria. Moist manure and mud provide an ideal environment for these bacteria to grow. Dr. Nigel Cook, U. of WI Madison Veterinary School, prepared an excellent “Hoof and Leg Hygiene Scoring Chart” (shown below) to determine frequency of footbath use based on the percentage of cows within the herd with “hygiene” scores greater than 3. Dairy producers serious about proper footbath use should be as knowledgeable of their hoof hygiene score as they are of their cows’ body condition scores.

Exceptionally clean herds with little hoof problems should use the footbath as required to minimize hoof health issues. **WHEREAS,** herds with high hoof health problems and high hygiene scores may require treatment daily for each milking.

**Hoof and Leg Hygiene Scoring Chart**


Score at least 20% of the cows in each pen in a free stall herd or all of the cows in a tie stall herd

Score 1




Clean, little or no manure contamination of the lower limb

Score 2




Slightly dirty, where the lower limb is lightly splashed with manure

Score 3



Moderately dirty, where there are distinct plaques of manure on the foot, progressing up the limb

Score 4



Very dirty, where there are confluent plaques of caked on manure on the foot and higher up the lower limb

**Interpretation**

| Proportion of cows scoring 3 and 4 | Comment   | Your Herd | Suggested Foot Bath Frequency |
|------------------------------------|-----------|-----------|-------------------------------|
| <25                                | Good      |           | As required                   |
| 25-50                              | Fair      |           | 2 days per week               |
| 51-75                              | Poor      |           | 5 days per week               |
| >75                                | Very Poor |           | 7 days per week               |

**Cow Passes:** The range of 150 to 250 cow passes/bath is often given, but this is a function of cow cleanliness as was footbath frequency (discussed above) and the width of the bath. Each 2.5 ft. width of the bath is a multiple of the minimum or maximum cow passes/bath (Example: an 8’X5’ bath doubles the cow passes of an 8’X2.5” bath.)

A “rule of thumb” for passes/bath can be related to Cook’s chart:

- Majority hygiene score of 4: 150 passes/2.5 ft. width/bath
- Majority hygiene score of 3: 200 passes/2.5 ft. width/bath
- Majority hygiene score of 2 or less: 250 passes/2.5 ft. width/bath