

Footbath as a part of lameness control programs in dairy herds

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Home Messages:

- Footbath maybe suitable for controlling or prevention of claw diseases.
- Footbaths are not suitable for treatment of digital infectious diseases.
- Misuse of footbath may result in more spread of the infectious lesions.
- Footbaths are just a part of general lameness control program.
- Environmental and carcinogenic effects of agents which use in footbaths should be considered.
- High Concentration (more than 5 % of copper sulfate or formaldehyde) is highly carcinogenic.

Introduction: Lameness referred to any change in gait and posture that is an outcome of discomfort or pain resulted in low mobility of the cow. Lameness is one of the most important casuses of economic losses in dairy farming. Pain, discomfort and reducing total animal welfare resulted in direct and indirect loss of animal production. Lameness is the second or third major cause of economic loss following mastitis and infertility. Estimated loss in north American herds recoded as 10-50 % and in England lameness estimated to have 32-36% of total economic losses, that is somehow the same in Iran.

Because of geographical variation and methods of scoring systems, different prevalence of lameness were reported in Iran. In 2014 prevalence reported between 11.1-54.5 % in Kermanshah and subclinical lameness (Scores 2-3) recorded as 59-67%. Climatic condition, management, housing, feeding and ratio, genetics may affect on lameness prevalence. Digital causes of lameness devided into infectious (digital dermatitis, interdigital necrobacillosis and interdigital dermatitis), and noninfectious causes (sole hemorrhage, white line disise and sole ulcers).

Some treatments for lameness control can be done as repetitive actions on a regular basis (eg. Hoof trimming, hoof bathing etc) and some others can be done as a salvage method (digital amputation) however, some actions needs a strategic look at dairy farming (eg. Bedding quality, heat stress control, stocking density, etc) all these actions are not only useful in lameness control but also is effective for controlling other health issues like mastitis.

Use of Footbath: Footbath usage implemented in dairy farms mainly for control of infectious causes of lameness. Although many investigators believe that usage of footbath can make more

risk for lameness, correct usage of bathes may help in controlling hoof lesions special infectioud causes. A traditional belief is that footbath with special agents make hooves harder. No evidence for such this claim were found in the literature. Usage of some medications in footbath like copper sulfate and formaldehyde are regulated due to its environmental and carcinogenic effects in some countries. Unfortunately there is no regulation for footbath solution usage in Iran as still high concentration of formaldehyde is used regularly that should be restricted due to its environmental and human hazards, however usage of footbath can make a huge cost for farm, for example in a farm with 1000 cows in USA, annual expenses of 42000 US dollar were estimated that may change due to its interval and percentage of the medicines in the bath. In Iran costs for such a bath would be about 1.5 bilion rials annualy that is a high cost for dairy farm. There is not any standard design for hoof bathes and there are lots of differences in its usage in farm animals. However it is important to design a bath that make disinfectant or any other solouction in effective touch with hooves for reasonable time that needs correct design of the bath.

Footbath design: A questioner base study in Canda reveals that most footbaths had 180-220 com length, 72-76 width and 15-16 depth. Base on Cook *et al.* findings in a walking through footbath a minimum of 3 meter length for two immersion of a limb and 3.7 length for 3 immersion of a limb is necessary and for reduction of the volume of the solution the width of the footbath should reduce to 60 cm.

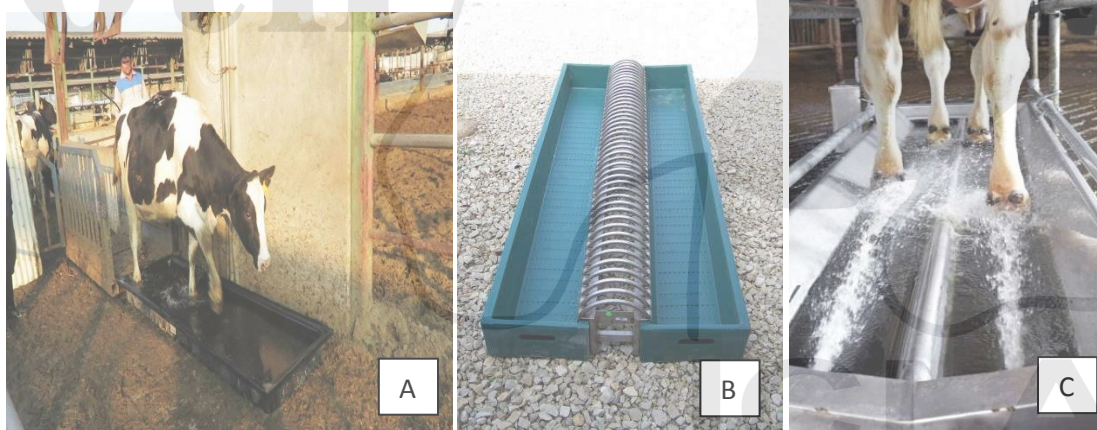


Fig 1: Prtable (A), Splitted footbath (B), Splitted footbath with jetwash (C)

In addition to all criteria that affect footbath, cleanliness of the hooves and existence of the slurry on the hooves is an important factor for maintenance of the footbath effect, this is why is some experiences use of a prewash bath before main footbath of the cows (Fig 2). The solution in such a prewash bath is just water with a depth of about 15 cm, but it should be considered that such a water prewash bath may reduce the concentration of the main footbath and lower its efficiency.



Fig 2: Use of footwash before main footbath (Not recommended)

Construction of the footbath should be on the ground as the animal have to raise her foot for entering the bath. The old fassion of digging the ground for making a bath may cause further lameness and problems. Apart from the proper dimensions of the footbath different style of the bath were used in dairy farms. Splitted footbath, portable footbath (Fig 1), double foot bath and some other local designs were used in dairy farms (Fig3). Ragrding construction costs of the bath and ease of its use in large dairy farms of Iran a double design of bath were employed that separated by a swing door, and by passing estimated number of cows from one bath cows forwarded to the other one and the first one can be washed and disinfected.

Footbath solutions: Antibiotic and antiseptic agents were used in the footbaths during past few years, different percentage of copper sulfate (2-5 %) and formaldehyde normaly used in the footbaths. Adding acidifiers and detergents to copper sulfate bath and alchohol in cold month to formaldehyde bath increase the disinfectant potency of the solution. Also some agents like CITREX[®], Pink-Step[™], Chelated Copper sulfate, Hypochlorite, Peracetic acid, Dragonhyde, Tea

tree oil, were used successfully in the footbath during past few years that its cost and efficiency usually limite its usage.



Fig 3: Use of double footbath in large dairy herds

Further reading:

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