



Freeze Branding Cattle Using Liquid Nitrogen



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Identifying cattle and maintaining records should be a high priority among cattle producers. Individual identification allows producers to maintain accurate records and, in the long term, use them to improve overall production efficiency. One type of permanent identification is branding.

Although a fire brand can be applied, many producers prefer freeze branding. Freeze branding is performed using a coolant along with copper or copper-alloy branding irons. Two common methods of freeze branding include the use of liquid nitrogen or a combination of dry ice and alcohol as a coolant. Producers who freeze brand may have better results with dry ice and alcohol, but locating a source of dry ice can sometimes be difficult. Liquid nitrogen can be bought from welding supply stores and artificial insemination companies. Producers who use artificial insemination may have an industry representative service their liquid nitrogen tanks every few months and can take advantage of this access to prepare for freeze branding.

Freeze branding is relatively stress-free and does little or no damage to the hide. Unlike fire branding, freeze brands result in reduced incidences of blotching. Some disadvantages need to be considered, however, when implementing a new management practice. Compared to fire branding, freeze branding takes more time, it can be more costly, and the brands may not be clear on all cattle.

As the brand is applied, melanocytes, pigment-producing cells in the skin, are destroyed, and subsequent hair growth is white. After branding, the re-growth should appear in two to three months. Over time, these brands may fade, so consider an added form of identification, such as tattooing, as a backup. The effectiveness of freeze

branding is variable, and results are usually better for black and red cattle than for white cattle.

Table 1
Several Advantages and Disadvantages of Freeze Branding

Advantages	Disadvantages
Relatively painless	Time required to brand
Reduced hide damage	More expensive than hot-iron branding
Blotching does not occur	Does not work as well on cattle with light color hair; <i>results may vary.</i>

Table 2
Tools Needed to Freeze Brand with Liquid Nitrogen

Copper or copper-alloy branding irons <i>(Steel and brass irons have been used with poor success)</i> 3 inches for calves 4 inches for mature cattle
Liquid nitrogen
Container to hold liquid nitrogen and branding irons while cooling
Rice brush or curry comb
Clippers with surgical blade
95% – 99% isopropyl alcohol

Procedures

(Results may vary)

1. Don't freeze brand when it is rainy, windy or humid. If weather conditions aren't optimal, the irons change temperature rapidly, hindering effects.
2. Place copper branding irons in liquid nitrogen.
3. Wait 20 – 25 minutes for irons to cool to the proper temperature. A coat of ice will begin to migrate up the handle as the irons cool.
4. Secure animal in squeeze chute.
5. Brush intended brand location and remove all debris and loose hair.
6. Clip brand location using surgical clippers to ensure good contact between the iron and the hide.
7. Brush brand location a second time to remove loose hair.
8. Saturate brand location with 95 percent to 99 percent isopropyl alcohol with a spray bottle or sponge.
9. Immediately after soaking the brand location with alcohol, apply the brand. Research reports that calves should be branded for 20 to 24 seconds, while cows should be branded for 25 to 30 seconds. Variations in hair length can change the amount of time needed to apply a quality brand. If brands are applied too long, the results will mimic that of fire branding; this can be done with red or white cattle.
10. Two numbers can be applied at once but this requires two people. Brand location must be thoroughly saturated with alcohol.
11. Make sure iron is free of debris and place back in liquid nitrogen.
12. Allow 3 – 4 minutes for irons to cool before using again.



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Replaces Bulletin 718

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