

Effects of Hoof Branding: Temperature changes to the insensitive laminae of the equine foot

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Objective- To examine the effects of hoof branding for identification purposes.

Sampling- Specimens from 14 postmortem equine distal limbs, displaying typical hoof wall growth. Those with evidence of white line disease or other hoof wall infections were not used. Hoof wall thickness (epidermal) averaged 9 to 12mm. This measurement was taken 1.5" below the coronary band. *Photograph 1a*

Results- The results were that the temperature of the insensitive laminae showed only an average of 3.9°F rise in surface temperature following the application of a commercial hoof branding iron applied for 18 seconds, with 18 seconds being the least amount of time required to get a satisfactory impression. *Photograph 2a, Items 1b, and 2b*

Method: All hoof capsules were numbered for identification prior to removal. Upon removal of the hoof capsule, a digital infrared thermometer held 2" from each surface was used to take several temperature readings^{1a}. The temperature of the surface of the outer hoof wall was taken to establish ambient temperature, as was the ambient surface temperature of the insensitive laminae. Ambient temperatures were recorded. Temperatures were taken again, immediately after the application of a commercial hoof brand, with the branding iron holding an average temperature of 500°F +/- 20°F, applied for an average of 18 seconds^{1a}. The location of the branding was 1.5" below the coronary band^{2a}, centered along the central axis of outer hoof wall. The temperature of the insensitive laminae directly palmar to the brand location was recorded throughout the branding process, and for 10 seconds after the completion of the branding. A distance of 2" was maintained at all times, using a depth gage attached to the digital thermometer.



1a



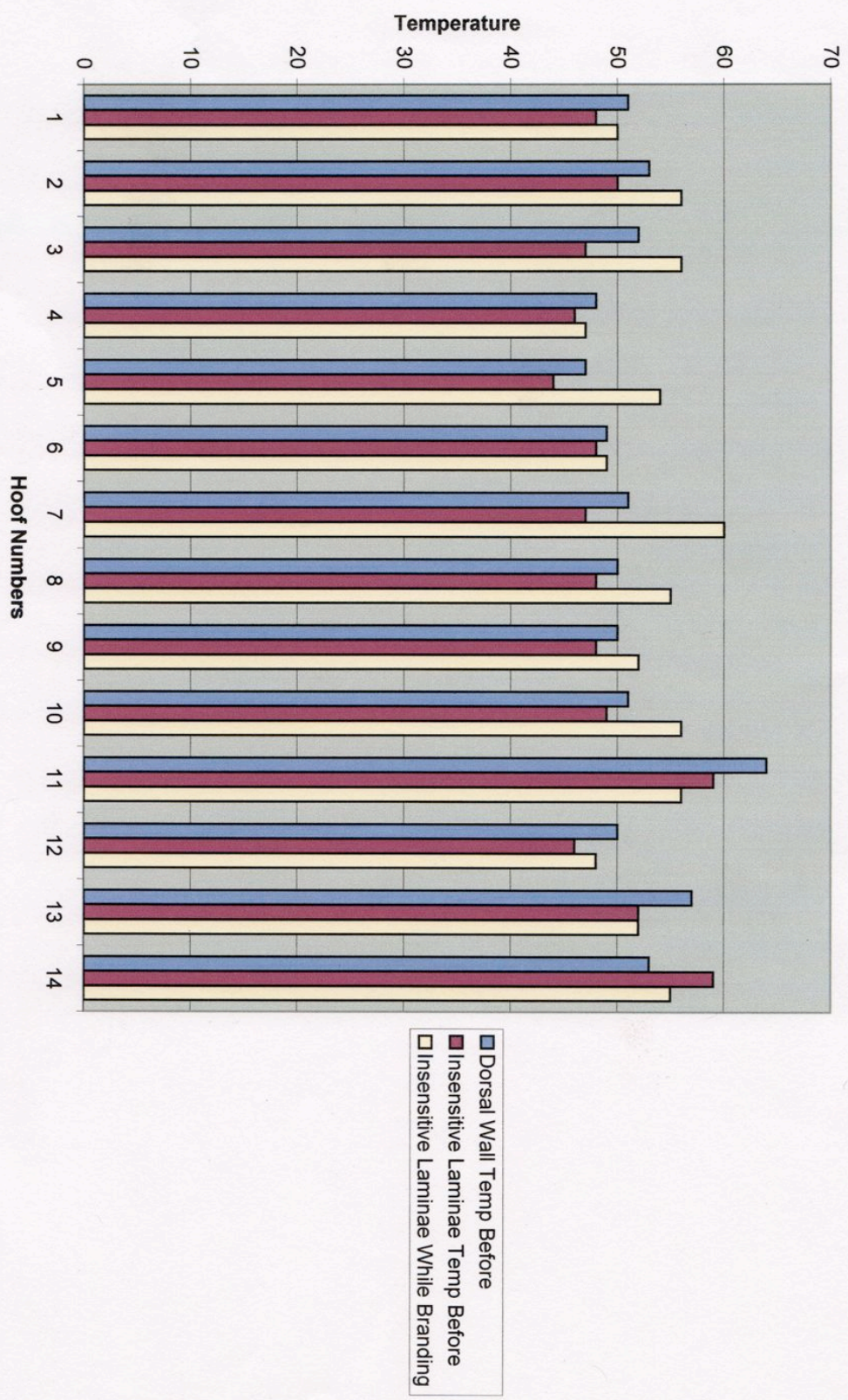
2a

Conclusions and Clinical Relevance- The application of hoof brands has been accepted as a relatively simple way to identify hooved stock, this helping to prevent theft. Concerns over internal trauma occurring as a result of excessive temperatures generated by this process must be considered legitimate. We believe that this study indicates that the danger of soft tissue damage due to a rise in internal temperatures is negligible.

Potential relevance: Further testing of the thermal qualities of the hoof capsule will help us to better understanding the changes that occur in outer hoof wall temperatures due to metabolic changes and/or pathologies, such as acute laminitis, abscess, and hoof infections. This could lead to the development of strategies for early intervention in the treatment of these conditions.

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Hoof Branding



Hoof Number	Dorsal Wall Temp Before Ambient	Temp Before Branding Insensitive Laminae	Temp While Branding Insensitive Laminae	Temp Change
6	51	48	50	2
10	53	50	56	6
12	52	47	56	9
13	48	46	47	1
14	47	44	54	10
16	49	48	49	1
17	51	47	60	13
18	50	48	55	7
20	50	48	52	4
25	51	49	56	7
30	64	59	56	-3
31	50	46	48	2
33	57	52	52	0
34	53	59	55	-4
			Average	3.9

2b