

References

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Abstract

Effect of hoof characteristics on the propensity of cattle to slip

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Bovine hooves were assessed for their linear and volumetric characteristics and ranked in sets of four for hoof volume. An artificial cow was constructed with the hooves set into metal cylinders underneath a platform containing a known weight. The device was connected via a strain gauge to a pulling handle operated by two people, and the horizontal force required to move each set of hooves was determined three times. The coefficient of friction, calculated as the horizontal force divided by the fixed vertical force, was positively correlated with

hoof volume. The same exercise was repeated with the hooves ranked for toe angle, and the hooves with steep toe angles had a lower coefficient of friction than the hooves with shallow toe angles. However, since both hoof volume and toe angle were related to toe length, the relationship between friction and toe angle was believed to derive from the larger size of claws with shallow toe angles. The results indicate that young cattle that have small claws with smooth surfaces and steep toe angles are more likely to slip.