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Muzzle Printing and its applications

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Abstract

Cattle, buffalo and cow identification plays an influential role in cattle traceability from birth to slaughter, understanding disease trajectories and large-scale cattle ownership management. Muzzle print images are considered discriminating cattle biometric identifiers for biometric-based cattle identification and traceability.

Introduction

Muzzle prints are analogous to finger prints of human beings, that have been in use to identify them, individually, obtained by applying a thin film of lamp-soot-paste to the clean dry muzzle surface and bringing a piece of plain paper in contact with it, with moderate uniform palm-pressure. The muzzle photographs are called muzzle printing. Muzzle print, or nose print, was investigated as distinguished pattern for animals since 1921 photographs and is considered as a unique animal identifier that is similar to human fingerprinting. Cattle muzzle print images display distinct grooves, valleys, and beaded structures, and muzzle print images are considered a unique and time-immutable biometric trait that can identify cattle with similar accuracy as that from human fingerprints.

Anatomy of muzzle

The middle part of the upper lip and surface between the nostrils is bare and known as muzzle (Planum nasolabiale). It is smooth and in health, kept cool and moist by a clear fluid, secreted by nasolabial glands. It shows irregular lines, mapping out small polygonal areas on which the orifices of the gland ducts are visible. The planum nasale of dog and cat is composed of thick keratinized



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epidermis with distinct elevations and grooves that provide the basis for identification by nose printing. The skin around the nostrils of horse is thin and contains fine hairs and numerous sebaceous glands. The planum rostrale of pig has fine hairs, sparsely distributed over the surface, and numerous sebaceous glands. The surface markings are characteristics of each individual and imprints of them can be used for identification purpose. In carnivores the skin around and between the nostrils is hairless and usually pigmented and known as nasal plane. In dog the surface of the skin is mapped out by grooves into areas called “areae”. The markings are characteristics of each individual and imprints can be used as identification purpose.

Techniques of muzzle printing

The animal should be taken in perfect control and better to animal is put in a crate. Then hold the animal by both the jaws joined together and draw them forward to face the print-taker. The jaws should be firmly held together. The muzzle surface should be swilled thoroughly, followed by mopping by a piece of clean cloth. A thin film soot paste is then applied uniformly to the entire muzzle-surface. A suitable size rectangular plain paper is held in the right hand by the print-taker who applies it to the paste coated surface with uniform palm pressure for 10 seconds and obtained print on paper. This print is then dried in air and preserved.

Components of muzzle printing

Muzzle print having different components: the base line, Median groove, Hair lines, Top line, Ridges, Nasal curves, Beads, Hair pits, Dent-mark, Riffle-mark, Elongated fissures and Compound figures.

Application of muzzle printing

- Cattle Insurance: It helps in cattle insurance; the insured has to be asked to furnish a copy of natural size muzzle photograph along with doctor’s health certificate and proposal form.
- Development programs: to prevent substitution and clandestine sale of animals, given by the government to farmers, introduction of muzzle prints for identification will prove to be the surest measure. Random muzzle photography of animals supplied should be adopted, as a check measure.
- Bank working: Banks sanction loan to farmers for the purchase of cattle, sometimes farmers do not purchase animals and mis-utilize the money. To prevent non-purchase or clandestine sale, the bank may introduce a system of keeping muzzle photographs, beneficiary-wise in



records, of all the animals purchased. This system will promote to safeguard the objectives of the banks in sanctioning loans to the farmers.

- Farms and Dairy organizations: In large farms where chances of animal substitution are fair, to prevent this farm should maintain class-wise ledgers of muzzle prints along with the name, tattoo/ brand mark colors and production. Muzzle photography of these animals and comparing the original photographs with those obtained subsequently may stop substitution.
- Recovery of stolen animals: Introduction of muzzle prints help in recovery of stolen animals. Farmers should keep muzzle photographs of all valuable cattle/buffaloes belonging to them.
- Personal deals: In each sale and purchase, identification slip must include the muzzle photograph of animal sold, which should be handed over to the purchaser.
- Registration of Animals: Muzzle printings are specific to the individual cattle, so, they may be used in combination with the methods of identification.

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