

Public Abstract

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Title: A Survey of Relationships Among Rare Breeds of Swine

Swine production has evolved over the last century resulting in the loss of biodiversity among breeds utilized by commercial producers. Only a handful of breeds are used extensively by these producers, with many swine breeds facing extinction due to lack of popularity. These breeds, often called heritage breeds, are not without value, they simply lack many traits seen by popular commercial breeds, such as fast growth rate, leanness, and large litters. Valued by small farms for hardiness and self sufficiency, heritage breeds are still at risk of extinction due to small population numbers and lack of pedigree data. Maintaining accurate pedigrees reduces the chance of producers breeding closely related individuals. Such close breeding can result in a concentration of undesirable traits that ultimately reduce the overall health of a population or breed. This research estimates levels of relationship between individuals within a breed based solely on information from an individual's DNA. Comparing results among 7 heritage breeds and 3 commercial breeds of pigs revealed higher levels of relation between individuals from heritage breeds versus commercial breeds. Inbreeding values were also higher for individuals from heritage breeds, indicating a mating between related individuals occurred somewhere in their pedigree. When access to complete pedigrees is not possible, as is the case for many heritage breeds, DNA can provide information for producers to make educated breeding decisions. Maintaining low levels of inbreeding and reducing breeding between closely related individuals can help preserve genetic diversity within a breed. By preserving genetic diversity, a breed stands a better chance of maintaining healthy genetic traits and surviving for future generations.