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Identification of Management and Production Practices in Indigenous Pig Farms in North-West Vietnam via Multivariate Analyses

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Abstract

Pig production systems using indigenous breeds have a substantial impact on diversity in Vietnamese pig populations and also contribute to the income of small-scale farms in the northwest of Vietnam. In order to characterise indigenous pig (Ban pig) production systems, single person interviews basing on semi-structured questionnaires were conducted between October 2016 and January 2017 in 171 indigenous pig farms. The Ban pig production systems were classified using i) a two-step clustering approach, and ii) K-means clustering combined with categorical principal components analyses (CatPCA). Two-step clustering allocated the farms into three clusters. The first cluster was called "Nursery farms with low disease incidences" because 96 % of these farms sold piglets to the slaughterhouse after the nursery with a live weight between 10 to 25 kg. A large percentage of farms in cluster 1 had absolutely healthy piglets and/ or sows (41 % and 51 % of farms, respectively). Cluster 2 was named "Fattening and mixed farms with high investment and high disease incidences" because these farms had large pigpen sizes (20.03m^2), modern pigsty constructions, but a high rate of disease incidences. Similar to cluster 1, farms in cluster 3 also focused on the nursery phase, but the pigpen and herd size was smaller (12.13m^2 and 7.61 piglets respectively). Hence, cluster 3 was defined as "Nursery farms with low investment". The K-means cluster after CatPCA classified farms into a cluster A "Farms incorporating male and female farmers in farm management", cluster B "Nursery farms with low efficiency", or cluster C "Farms with long weaning interval". Correspondingly, husband and wife were herd managers in 64 % of farms in cluster A. Average weaning age for farms in cluster C was 70,25 days. We compared the farm allocations from both clustering approaches, and we identified substantial differences. In the last step, univariate analyses were applied, in order to identify factors contributing to the net household income from pig production. The vaccination for the sow, type of operation, number of piglets born alive, nursery weight, and nursery interval were the factors significantly affecting the net revenue in Ban pig production systems.

Keywords: Ban pig, cluster analysis, North-West Vietnam, production systems

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