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**Phenotypic and biometric characterisation of
autochthonous Vietnamese Ban pigs**

Master Thesis

by

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7 SUMMARY

Ban/Meo pigs have been kept in ethnic villages in Son La province since a long time. There were some surveys on productive and reproductive performance of Ban pigs kept in Thai and H'mong groups but information on breed description as well as breeding history of Ban pigs in different ethnic groups is scarce. The aim of present study is to characterize the phenotypic and biometric traits of the Ban/Meo pigs that belong to Thai and H'mong people in Son La province. Since they may have different sizes, types, appearances and performances but are believed to originate from a common ancestor. Result of such a characterization is a prerequisite for their systematic integration into a breeding programme. The study also aims to assess local breeding management and breeding history leading to development of Ban/Meo pigs.

The fieldwork was conducted in 8 villages belonging to three districts (Mai Son, Son La and Song Ma) in Son La province, Northern Vietnam from the beginning of March to the end of May, 2005. Qualitative and quantitative information on Ban pigs were gathered through observation, measurements, taking photos, key person interview, and using RRA tools (timeline and historical map). This information includes breed, age and herd structure, reproductive performance and phenotypic description of Ban/Meo pigs. Descriptive statistics, cluster analysis and analysis of covariance were applied, using SAS version 8.2.

Most of Ban pigs observed in investigated villages were uniform two colours (black and white counting 88.8% or brown and white (3%)). The small number of observed Ban pigs was uniform black colour (8.2%). Ban pigs have thick, smooth skin and long, density hair covering, some have bristle, counting 32.7%. The head is quite big with long and straight snout (58.6%) or medium and straight snout (41.4%). Most the ears are small and erect (73.2%). The back is long and straight (42.7%) or swayback (57.3%). The belly is potbellied but not reaches the ground.

On basis of body form and colour characteristics, Ban pigs observed in this study were classified into 6 clusters: Cluster 1 (n=99): uniform two colours pigs (black coat, white legs and white spots on the body). Major pigs do not have bristle, big head with long, straight snout and small, erect ears, swayback and potbelly; Cluster 2 (n=60): Black pigs with a little white at legs, some pigs had white spots on forehead or tail or both. Pigs are mainly without bristle, medium and straight head, small and erect ears, swayback and potbelly; Cluster 3 (n=18): pigs are uniform black colour, nearly a haft has bristle, long and straight head and small, erect or medium, semi lop ears, swayback (or straight back) and potbelly; Cluster 4 (n=27): Black coat, white legs and white spots on the forehead, belly or tail but not on the shoulder. Body characteristics are not much different from pigs in other clusters except 100% pigs has medium, semi lop ear and potbelly; Cluster 5 (n=7): Pigs with irregular black and white spots on the head and back, white legs, belly and tail. Most pigs have no bristle, long, straight head, small, erect ears, straight back and potbelly; Cluster 6 (n=5): Pigs with brown coat and white spots on the forehead, shoulder, belly, legs and tail. Pigs have no bristle, medium, straight head, straight back and potbelly.

Pig clusters 1, 2, and 4 were more common in the three districts than pigs in clusters 3 and 5. The highest percentage of observed pigs in districts felt in cluster 1 then cluster 2 and 4. The lowest was in cluster 5. Pigs in clusters (from 1 to 5) were seen in both Thai and H'mong villages, pigs in cluster 6 were only seen in one H'mong village (Pa Dong) and counted

11.6% of total pigs observed in Mai Son. However, the proportion of observed pigs in ethnic groups falling to clusters was different. The higher percentage of pigs observed in Thai villages fell in cluster 1 and 2 but lower than H'mong villages in cluster 4 and 5. Pigs in cluster 3 were equivalently distributed in both ethnic groups.

There was no significant difference in biometric parameters of female and castrated male pigs. The difference between male and female, or male and castrated male was significant ($p < 0.05$) exception of leg height. LSmeans of body length of Ban pigs in three districts were not significantly different. Body height of pigs in Song Ma was significantly higher than those of pigs in Son La town and Mai Son ($p < 0.05$), but leg height of pigs in Song Ma was only statistically higher than in Son La town. The LSmean of backfat thickness of pigs in Song Ma was lower than that of pigs in Son La (26.3 mm compared to 28.6 mm) but not significantly different with that of pigs in Mai Son (27.0 mm). No significant difference in body height, leg height and backfat of pigs in Son La town and Mai Son occurred. Ban pigs observed in two ethnic groups were not different in biometric measurements (body length, body height, leg height, and backfat).

Litter numbers of pigs in Song Ma (0.85 litter/sow/year) were statistically lower than that of pigs in Mai Son and Son La (1.0 and 0.98 litter/sow/year), but the difference was not significant in case of sows in Son La and Mai Son. The number of piglets per litter of Ban pigs in districts were not significantly different (6.9, 6.6 and 6.2 in Mai Son, Song Ma and Son La, respectively). At 3 days, 30 days, 60 days, and 90 days of age, the body weight of Ban piglets was 0.6 kg, 2.6 kg, 4.2 kg and 7.4 kg, respectively. Due to big gap in piglet sample size between districts and wide range of piglet age, comparison of piglet weight in districts was not put in statistic.

Pig keeping conditions differed between districts and ethnic groups. In Mai Son district, pigs were scavenging from October to March. Pigs in Son La town were kept in pen in the whole year exception of Giang village. Sows in Song Ma district were tethered around house or in the garden. Uncontrolled mating and inbreeding was common in almost investigated villages. Animal selection for breeding was applied in all villages. Common selection criteria were in productive performance (fast growing, good eating) and appearance (long body, high leg), less attention in performance of pedigree.

Nobody knows exactly origin of Ban pigs. Before 1990, Ban pig was kept scavenging in village and forest. Pig off-take was only got by hunting. Ethnic groups called Ban pig by their own name. From 1993, some Kinh middle-men went to villages to buy this local pig and they called them "Ban pig", meaning pigs in ethnic villages. Now, this name became popular, even in ethnic groups. Due to customs of giving pig as dowry and exchanging pig keeping between villages or because of epidemic diseases, movement of Ban pig between villages and region is frequent and in a dense net.

While indigenous breeds are being replaced by exotic breeds and crossbreds (exotic breeds x local breeds) in many places of Vietnam, most of poor households in Son La province like to keep Ban sows because of easiness in raising, no additional input requirement. On the other hand, Ban fattening pigs are preferred because of good taste meat. However, Ban boars are not favoured and lack of breeding management. It can cause loss of breed value (due to inbreeding) or gradually lost pure Ban breed. Conservation of Ban pigs would be desirable.