

A NATIONAL ANTI-STRESSUSCEPTIBILITY PROGRAM

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The situation of genetic stressusceptibility at the top of the breeding pyramid of the Finnish Landrace pig has been investigated (Schulman 1980). This investigation included halothane testing, H blood group and Phi (Glucosephosphate isomerase) type determination, meat colour, meat water holding capacity and serum CK (Creatinekinase) enzyme activity measurements.

Of the 2003 halothane tested Landrace pigs 12.4 per cent were found to be halothane sensitive, from which it could be calculated, that about 49 per cent of the Finnish Landrace pigs were heterozygotic carriers of the halⁿ gene. The H blood group factor a was found to be present in 60.7 per cent of the pigs, factor c in 38 per cent and in 16.7 per cent neither of these factors could be demonstrated.

Of the halothane sensitive pigs 91.6 per cent had the Phi enzyme type BB, 3.4 per cent type AB and non in this group had the AA type. The Phi type AA was on the whole very rare, and accounted for only 1.5 per cent in all the pigs tested.

The halothane sensitive pigs had more lean meat in the carcass but at the same time a lighter meat colour than the pigs not sensitive to halothane. However, also some halothane sensitive pigs with very dark meat colour were noticed.

The data accumulated from this investigation resulted in a nation wide antistressusceptibility program for the Finnish Landrace breed and includes the following determinations: Meat colour measurement, pH determination on meat after 24 hrs, halothane test and H blood group analyses according to be following schedule.

1. In the progeny and performance tests the meat colour is measured with a reflectometer and the readings obtained used to determine a threshold value in the breeding programme.
2. The pH value 24 hrs after slaughter will be used together with the reflectometer readings so that DFD (dry firm meat) cases can be detected and excluded.
3. On the farms the selection for better stress resistance will depend on using pigs having the H blood group factor c. The best H a/a and H a/- pigs may be kept for breeding purposes, provided that they are mated to H c/ pigs only.

4. The halothane test is used in two ways:
a) it is used for testing young broars at the performance testing stations. b) it is used as a sire test on all boars showing a high K index. The K index is used as a measurement for the total breeding value of a particular animal. At least all AI boars with a high K index will be progeny tested for halothane sensitivity. If a halothane sensitive sow is mated then it will be enough to halothane test only one litter consisting of seven piglets. If on the other hand a known halⁿ heterozygotic dam is used, one litter of at least 12 piglets is required for the test.

If a boar is mated with pigs borne to unknown dams, or daughters to heterozygotic boars, then the halothane test should be done on at least five litters in order to get reliable results. This program was started in November 1981 by the Finnish Animal Breeding Association (FABA).

In the Finnish Yorkshire breed the frequency of halothane sensitivity was found to be only 0.25 per cent. (two out of 780 tested boars).

The national anti stress program comprimens the Yorkshire breed therefore requires only meat colour determinations at the progeny and performance testing stations and halothane testing of young boars at performance testing stations.

References: Schulman, A. J. *Scient. Agric. Soc. Finl.* 1980, 52, 505-570; Schulman, A. *Proc. Porcine Stress and Meat quality symp. Norway* 1981, 160. Anon. *Handlings of the Pig Breeding Committee of Finland*, October 1981.