PRODUCTION POTENTIALS OF YORKSHIRE AND LANDRACE PIGS IMPORTED FROM UNITED STATE, DENMARK AND AUSTRALIA

INTRODUCTION

Pig breeding programs are always set up regarding the different objectives in different countries. These have brought about the specific characteristics of phenotype and genotype for pig genetics through selected generations. In Vietnam, the importation of pigs from overseas has contributed remarkably to the improvement of domestic pig populations in quality and productivity during the last years. Especially, this has created the genetic diversity of current pig population and also allowed pig producers to combine the dominant features of each genetic source by applying the outbreeding systems. Since the year of 2000 – 2002, the total of 204 pure Yorkshire and Landrace pigs imported from United States (US), Australia and Denmark, and kept at Binh Thang Animal Husbandry Training and Research Center (BTRC) – Institute of Agricultural Science for Southern Vietnam (IAS). The data set of reproduction and production of these pigs was recorded through three generations and adjusted to number born alive (NBA), litter weight at 21 old day (LW21), days to 90kg body weight (D90) and backfat thickness at 90kg (BF90). The analysis results of these traits using the genetic statistic methods are presented in this paper.

PHENOTYPIC AND GENETIC VALUES OF IMPORTED PIGS

Phenotypes

Although phenotypes are influenced not only by genotypes but also by environmental factors, the phenotypic values of production and reproduction traits are usually the first concern in assessing and comparing between genetic groups. As indicated in Table1, the results of statistical analysis from 1,372 litters and 1,095 growing pigs between 2002 and 2006 at BTRC showed that the genetic

groups from Denmark for both Landrace and Yorkshire were the best in the reproduction traits (NBA, LW21), while there was no significant difference in production (D90, BF90) among genetic groups. Pigs imported from Australia had a trend for the lean meat production; therefore their backfat thickness was lower in both Yorkshire and Landrace as compared to the genetic groups from Denmark and United State.

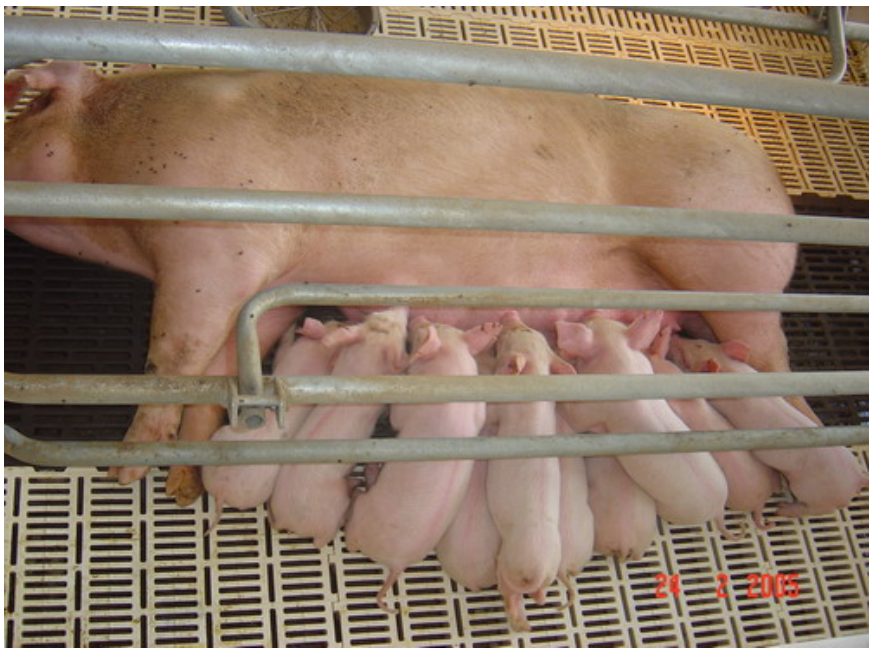
Table 1. Production and reproduction performances of imported pigs

	Reproduction traits		Production traits	
Genetic groups	NBA	LW21	D90	BF90
US Landrace	$9.3^{a} \pm 0.2$	$62.8^{a} \pm 0.7$	$185.7^{bc} \pm 1.2$	$8.7^{a} \pm 0.1$
Australian Landrace	$9.1^{a} \pm 0.3$	$61.9^{a} \pm 1.1$	$183.1^{ab} \pm 3.6$	$\mathbf{8.5^{a} \pm 0.3}$
Danish Landrace	$\mathbf{9.9^{b} \pm 0.2}$	$\mathbf{64.9^{b} \pm 0.6}$	$\mathbf{180.8^{a} \pm 1.1}$	$8.8^{a} \pm 0.1$
US Yorkshire	$9.6^{b} \pm 0.4$	$58.5^{a} \pm 1.8$	$182.1^{a} \pm 3.5$	$\mathbf{8.3^{a} \pm 0.3}$
Australian Yorkshire	$8.9^{a} \pm 0.2$	$57.4^{a} \pm 0.6$	$182.0^{a} \pm 1.4$	$\mathbf{8.3^{a} \pm 0.1}$
Danish Yorkshire	$\mathbf{9.7^{b} \pm 0.3}$	$\mathbf{64.0^{b} \pm 1.1}$	$\mathbf{181.5^{a} \pm 1.7}$	$8.9^{b} \pm 0.1$

Superscript letters in the same columns and the same breeds are statistically different at $P<0.05$

Genetic values

The estimated breeding values (EBV) of animals are the most important criteria used for the genetic evaluation and selection. The EBVs are also used to compare among genetic groups imported from US, Denmark and Australia (Table 2). For NBA and LW21, the Danish and US pigs had higher EBVs than Australian one in both Yorkshire and Landrace. While, for D90 and BF90, the highest EBVs were found in Australian Landrace and Danish Yorkshire. The Landrace and Yorkshire from US had low EBVs for growth and backfat. Thus, the different genetic groups have different production orientations and depend on breeding objectives setup for the genetic evaluation programs in each country. Genetically, the US pigs have high potentials for reproduction traits, while the Australian pigs have high potentials for growth and backfat traits. The



Danish pigs have genetically high potentials for both reproduction and production. This was also reported by Wolf et al (2001) that the Yorkshire and Landrace pigs from Denmark and Scandinavian Area usually show the best in both reproduction and growth.

Table 2. Average breeding values of performance traits in imported pigs

Genetic groups	Reproduction traits		Production traits	
	NBA	LW21	D90	BF90
US Landrace	**0.013**	**0.132**	1.336	0.032
Australian Landrace	-0.223	-0.192	**-1.268**	**-0.135**
Danish Landrace	**0.066**	**0.152**	**-0.885**	**-0.088**
US Yorkshire	**0.055**	**0.124**	1.662	0.138
Australian Yorkshire	-0.168	-0.623	**-0.237**	**0.002**
Danish Yorkshire	**0.059**	**0.281**	**-1.725**	**-0.097**

APPLICABILITY

The combination of dominant characteristics from imported genetic groups should be done by setting up the outbreeding systems for commercial production and for new line selection as well. This job could produce excellent parent pigs in both reproduction and production traits. In addition, the best physical appearances from US, Danish genetic groups could be also found in the outbreeding pigs such as long back, legs, underlines and good conformation. This can satisfy the desires of pig producers.