

ACROSS-HERD GENETIC EVALUATION FOR YORKSHIRE AND LANDRACE PIGS IN BREEDING FARMS BINH THANG AND DONG A Nguyen Huu Tinh

1. INTRODUCTION

The program of across-herd genetic evaluation using BLUP (Best Linear Unbiased Prediction) procedure for pig breeding programs has become popular in developed countries since more than one decade. In Vietnam, since 2000, several pig breeders have started applying the BLUP for the genetic evaluation and selection of pure breeds and have got remarkable improvement for back fat and litter traits. However, the BLUP procedure for genetic evaluation was just applied within herds or farms and therefore the comparison of animals between farms could not be done. The aim of this study is to apply the across-herd genetic valuation program for breeding program in Yorkshire and Landrace pigs at the breeding farms of Binh Thang and Dong A.

2. RESULTS

Recognition of the best animals by BLUP method

Breeding values of selected traits were estimated using BLUP procedure based on the performance data obtained from 1,976 growing pigs and 2,174 litters in Yorkshire, and from 1,716 growing pigs and 2,396 litters in Landrace between 2000 and 2007 at Binh Thang and Dong A farms. The genetic connectedness between farms has been done by the exchange of Yorkshire and Landrace boars during the period of 2005 and 2007.

At the time of December, 2007, the best animals with genetically dominance were recognized from each farm and therefore, usually, the best boars would be mated with the best sows at the same farm if the genetic evaluation was applied for selection within farms. Theoretically, the mating between the best Yorkshire boar (with ID: 12061968) from Binh Thang farm and the best Yorkshire sow (with ID: 2205 8204) from Dong A farm will result in higher genetic improvement for the next generations. Similarly, for Landrace herd, the best boar (with ID: 11064433) from Binh Thang should be used to mate with the best sows from Binh Thang (with ID: 11050138) and also from Dong A farm (with ID: 21012019 and 21012445).

Genetic trends for selected traits

For litter traits (figure 1 and figure 2), there was nearly no genetic improvement between 2000-2004 for both of Yorkshire and Landrace. Since 2005, boars and sows have been evaluated genetically for selection and exchange between farms (Binh Thang and Dong A). This has resulted in the remarkably genetic improvement for litter traits, especially in Landrace pigs. Moreover, from the slope of genetic trends, the improvement of these traits could be increased with higher rate in coming years if the across-herd genetic evaluation and the genetic exchange will be continued to apply for these herds.

For the traits of individual performance test (figure 3 and figure 4), the genetic improvement of these traits was very little for both of D90 and BF90 between 2000 and 2002. Since 2003, the genetic progress of these traits has started with more positive trends. Between 2005-2007, when applied across-herd genetic evaluation program for these farms, the rate of genetic improvement for both of traits increased rapidly in Yorkshire and Landrace pigs as well.

As indicated in figure 5 and figure 6, the genetic trend of SPI and MLI is different from time periods. The years before 2002, the SPI and MLI trend was much fluctuated. Since

2002, when applied the BLUP procedure for genetic evaluation within farms, the genetic trend of SPI and MLI has been more positive than that in before. However, it has been really increased since 2005 due to the application of across-herd genetic evaluation program for these farms. Perhaps, the genetic exchange between farms was main reason for increasing the efficiency of breeding program.

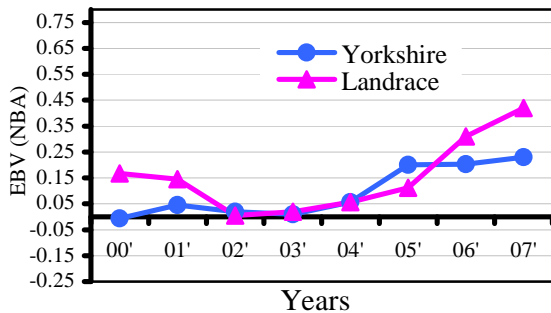


Figure 1: Genetic trend of NBA

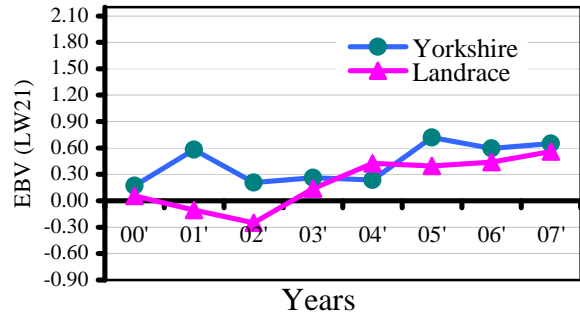


Figure 2: Genetic trend of LW21

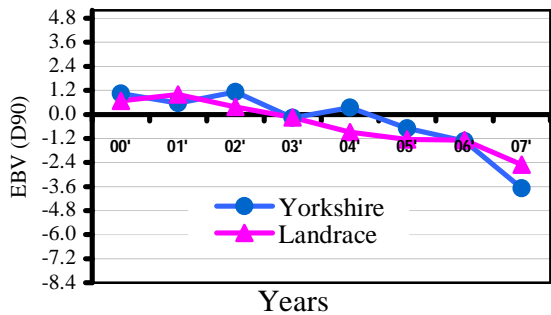


Figure 3: Genetic trend of D90

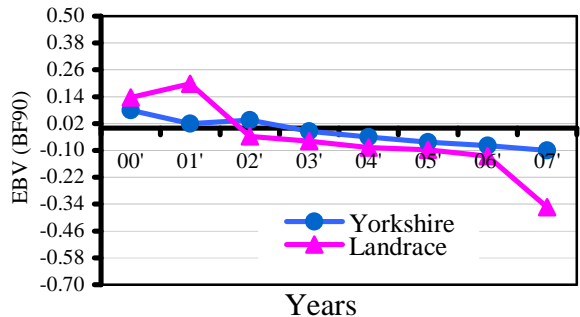


figure 4: Genetic trend of BF90

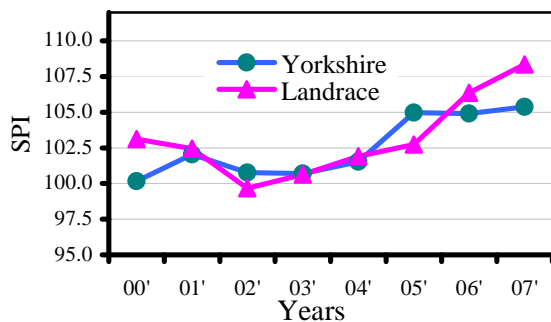


Figure 5: Genetic trend of SPI

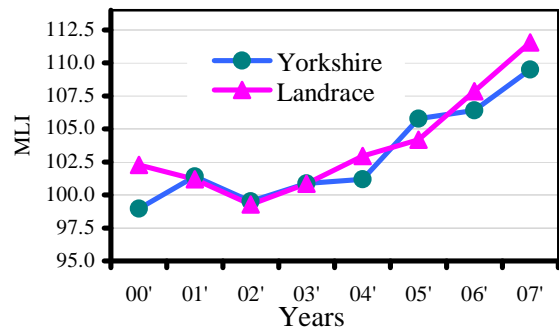


Figure 6: Genetic trend of MLI

Genetic progress for selected traits

After three years (2005-2007) applied the program of across-herds genetic evaluation for breeding farms Binh Thang and Dong A, the selected traits were genetically improved between 0.17 – 0.31 piglets per litter for SCS, 0.17 – 0.41 kg per litter for P21, 1.63 – 3.0 days for T90 and 0.06 – 0.36 mm for ML90 trait in Yorkshire and Landrace pigs. The genetic progress for selected traits in current study was little lower as compared to the same study in developed countries but still higher significantly as compared to similar studies in pigs of Vietnam. Therefore, it is suggested that the program of across-herd

genetic evaluation in pigs should be kept on doing with larger scale in order to improve rapidly the genetic quality in Vietnam.

3. CONCLUSIONS

By applying the program of across-herds genetic evaluation, the selected traits for Yorkshire and Landrace pigs at the breeding farms of Binh Thang and Dong A were remarkably improved. The genetic progress after three years obtained between 0.17 – 0.31 piglets per litter for SCS, 0.17 – 0.41 kg per litter for P21, 1.63 – 3.0 days for T90 and 0.06 – 0.36 mm for ML90 trait.