

EVALUATION OF FEMALE REPRODUCTIVE PERFORMANCE OF 28 ONE-WAY CROSSES PRODUCED FROM EIGHT BREEDS OF SWINE

W. B. HOLTSMANN†, M. H. FAHMY‡, T. M. MACINTYRE§ AND J. E. MOXLEY||
Laval University, Agriculture Canada and Macdonald College, Canada

SUMMARY

The study included 1013 gilts representing 28 one-way crosses among Yorkshire (Y), Landrace (Ld), Lacombe (Lc), Hampshire (H), Duroc (D), Berkshire (B), Large Black (LB) and Tamworth (T) breeds of swine. The crosses were distributed among five cooperating stations and were mated to Poland China boars to evaluate sow reproductivity based on the performance of the first two litters. The traits studied were weight at 112 days of age, age at puberty, percentage farrowing, litter size and weight at farrowing and at 3 weeks. Significant differences between crosses were found for all traits except farrowing percentage. The most prolific crosses were Ld × Y, H × Ld and D × Y which gave birth to 11.0, 11.0 and 10.8 pigs per litter respectively, compared to the overall mean of 9.7. Ld × Y, LB × Lc and H × Ld crosses weaned litters 7.4, 5.3 and 4.9 kg heavier than the 40.5 kg mean for all crosses. Using percentage farrowing multiplied by litter 3-week-weight for the two litters as a measure of sow productivity, Ld × Y and LB × Lc crosses ranked highest. The breeds that had the best combining abilities for 3-week litter weight were Ld, Y, LB and Lc, however their specific combining abilities are important and hence not all crosses between these breeds produced superior performing crossbred sows. Overall, the Ld × Y was the most precocious, farrowed and weaned the greatest number of pigs per litter and had the heaviest litters at 3 weeks post-farrowing.

INTRODUCTION

THE economic returns from a swine enterprise depend largely on the reproductive performance of the adult female (sow) herd, usually evaluated by the number of pigs marketed per sow per year. Reproductive performance of a sow is a function of many traits such as age, percentage farrowing, litter size, pig livability, pig growth rate and number of farrowings per year. All these traits are known to have low heritabilities and are greatly affected by environmental factors, hence increased performance can be obtained by using breeding systems which capitalize on the phenomenon of hybrid vigour. The superiority of the crosses over the parental breeds depends upon the genetic diversity among the parental stocks and the pattern in which the stocks are combined.

† Department of Animal Science, Laval University, Sainte-Foy, Quebec G1K 7P4.

‡ Canada Agriculture, Research Station, Lennoxville, Quebec J1M 1Z3.

§ Canada Agriculture, Research Station, Nappan, Nova Scotia B0L 1C0.

|| Department of Animal Science, Macdonald College, Quebec H9X 3M1.