

A Preliminary Comparison of the Productivity of Females of Duroc, Yorkshire, Landrace and Spot Breeding

R. K. Johnson, S. D. Welty, R. Vencl and J. Schooley

Story in Brief

Purebred Duroc, Yorkshire, Landrace and Spot females were compared for average litter size and pig weight at birth and at weaning (42 days). The number of dams per breed ranged from 56 to 62. Sows and gilts of each breed were bred to boars of each breed to produce both purebred (64) and crossbred (169) litters.

Litter size at birth was greater for litters from Duroc and Yorkshire dams than for litters from Landrace and Spot dams. However, survival rate to 42 days was 80 percent for pigs by Landrace dams compared to 62 percent, 72 percent and 76 percent for pigs from Duroc, Yorkshire and Spot dams, respectively. Thus by 42 days, Yorkshire and Landrace dams had litters with about one more pig than Duroc and Spot dams. Pigs from Yorkshire dams were lighter at birth and weaning than pigs by dams of the other breeds. Overall, purebred litters were somewhat larger at birth than crossbred litters, but survival rate to weaning was 8.7 percent higher for crossbred pigs than purebred pigs.

Introduction

Crossbreeding capitalizes on genetic differences between breeds and on heterosis; and crossbred systems have been shown to be more efficient in the conversion of feed to pork than purebred systems. Previous Oklahoma Agricultural Experiment Station research with the Duroc, Hampshire and Yorkshire breeds has demonstrated that specific crosses of crossbred females mated to a boar of a third breed result in about 30 percent more litter weight weaned per female exposed than the average of the purebreds. In addition, crossbred pigs grew faster and more efficiently than purebreds.

Several breeds of swine have not been adequately evaluated under controlled experimental conditions so that producers can make decisions as to

how they fit in a breeding program. In addition, mating systems involving purebred and crossbred boars have not been compared. In 1976, a project was initiated to evaluate the performance of the Duroc, Yorkshire, Landrace and Spot breeds as purebreds and in two-, three- and four-breed crosses. The present report includes three-seasons of reproductive performance of purebred sows of the four breeds when producing either purebred or two-breed cross litters. Three additional seasons with this mating structure will be completed to more thoroughly evaluate the breeds.

Experimental Procedure

In spring 1976, 25 gilts and four boars of each of the Landrace and Spot breeds were purchased from breeders to establish herds at the Stillwater Experimental Swine Farm. Landrace gilts were purchased from two breeders and were predominantly American Landrace breeding. The Landrace boars (two unrelated Canadian Landrace and two unrelated Swedish Landrace) came from two different sources. Spot boars and gilts were obtained from nine different breeders, two of which provided both gilts and a boar. Duroc and Yorkshire herds, with semi-annual introduction of at least one boar, have been maintained at the farm for several years. Purebreds of each breed will be maintained with semi-annual introduction of boars and within herd selection of gilts.

Purebred boars and females were randomly mated in all combinations to produce purebred and two-breed cross litters that were born during fall 1976, spring 1977 and fall 1977 according to the mating scheme shown in Table 1. Duroc and Yorkshire dams were approximately 30 percent gilts and 70 percent second, third and fourth litter sows and Landrace and Spot females were approximately 40 percent gilts and 60 percent second and third litter sows. No adjustments were made for parity of dam.

Table 1. Number of litters of each mating type for evaluating purebreds and two-breed crosses during each season at the Stillwater Experimental Swine Farm

Breed of sire	Number of sires	Breed of dam			
		D	Y	L	S
Duroc (D)	4	6	4	4	4
Yorkshire (Y)	4	4	6	4	4
Landrace (L)	4	4	4	6	4
Spot (S)	4	4	4	4	6

^aLitters have been produced during fall 1976, spring 1977 and fall 1977 seasons.

Each season, handmating was used during the eight-week breeding period. Gestating females were maintained in pasture lots and hand-fed a daily ration of four to five pounds of a 15 percent protein corn or milo base diet. Litters were farrowed in confinement, and when the pigs were from one to two

weeks old, were moved to pasture lots with three to four litters per lot or to individual pens in an open-front, solid concrete floor building. Litters were provided access to creep feed between two and three weeks and were weaned at six weeks. Individual pig weights were recorded within 12 hours of birth and at weaning.

Results and Discussion

Litter size and average pig weight for purebred and crossbred litters produced by purebred females of each breed is presented in Table 2.

Table 2. Litter size and average pig weight per litter for litters by purebred females when producing purebred and crossbred litters

Mating type	No. of litters	Litter size		Average pig weight per litter, lbs.	
		birth ^a	42 days	birth ^a	42 days
Duroc females ^b	59	11.4	7.1	3.14	25.2
w/purebred	18	11.5	6.0	3.13	25.4
w/crossbred	41	11.3	7.6	3.15	25.1
Yorkshire females ^b	56	11.3	8.1	2.69	23.3
w/purebred	14	12.6	8.2	2.49	22.5
w/crossbred	42	10.9	8.0	2.75	23.5
Landrace females ^c	62	10.0	8.0	3.19	25.8
w/purebred	18	10.6	8.2	2.98	24.8
w/crossbred	44	9.8	7.9	3.28	26.2
Spot females ^c	56	9.4	7.1	3.08	24.3
w/purebred	14	9.4	6.6	3.09	23.8
w/crossbred	42	9.4	7.3	3.07	24.4
Standard deviation		3.0	2.60	.62	5.0

^aIncludes number of fully formed pigs.

^bApproximately 30% gilts and 70% 2nd, 3rd and 4th litter sows.

^cApproximately 40% gilts and 60% 2nd and 3rd litter sows.

Although not significant, purebred litters were somewhat larger at birth (.6 pigs/litter) than crossbred litters. However, by 42 days of age, crossbred litters averaged 7.7 pigs per litter compared to 7.3 for purebred litters. The survival rate of crossbred pigs was 8.7 percent higher than for purebred pigs.

Duroc and Yorkshire females had significantly larger litters at birth than Landrace and Spot females, however, Landrace and Yorkshire females weaned litters with about one more pig than Duroc and Spot females. Eighty percent of the pigs raised by Landrace dams survived to weaning compared to 62 percent for Duroc, 72 percent for Yorkshire and 76 percent for Spot. In addition, pigs from Landrace dams were heaviest at birth and weaning while Yorkshire dams had pigs that were the lightest at both ages.

Three additional seasons of this same mating structure will provide additional data to more accurately evaluate these breeds. In addition,

crossbred females from these litters are being mated to purebred and crossbred boars to compare the productivity of various crossbred females. These results, in conjunction with growth and carcass merit of the breeds will provide information to make better decisions on how to utilize these breeds in crossbreeding systems.

Growth and Carcass Traits for Pigs Of Four Swine Breeds and Their Crosses

E. R. Wilson, R. K. Johnson, L. E. Walters, S. D. Welty and J. Schooley

Story in Brief

Growth and carcass characteristics of 162 purebred and crossbred boars, 464 purebred and crossbred gilts and 150 purebred and crossbred barrows of Duroc, Yorkshire, Landrace and Spot breeding were compared. Crossbred boars, gilts and barrows grew 11 percent, 7 percent and 9 percent faster, respectively, than purebreds. There were very small differences between purebred and crossbred pigs for backfat probe.

The differences between pigs by Duroc, Yorkshire, Landrace and Spot sires were small for average daily gain and days to 220 lb for boars and barrows and for days to 200 lb for gilts. Duroc sired pigs consistently had less probe backfat than pigs by the other sire breeds. However, pigs from Yorkshire and Spot dams were less fat than those out of Duroc and Landrace dams. Duroc and Spot dams tended to have pigs that gained faster than pigs from Yorkshire and Landrace dams. Gilts were fed either in confinement pens or pasture lots. Gilts raised in confinement were 3.49 days younger at 200 lb and had .03 inch less backfat probe than those raised on pasture. Duroc sires produced barrows which had less carcass backfat, larger loin-eye areas, greater percent lean of carcass weight and higher marbling and firmness scores than sires of the other breeds. Yorkshire, Landrace and Spot sires produced barrows that were very similar for percent lean of carcass weight. Barrows by Yorkshire and Spot dams had less backfat than barrows by Duroc and Landrace dams and Yorkshire dams produced pigs which had the greatest percent lean of carcass weight.

Introduction

This report gives a preliminary analysis of the feedlot performance and carcass merit of Duroc, Yorkshire and Spot breeds of swine and their two-
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