

# Kirkwood Community College Terminal Sire Demonstration Project

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### Summary and Implications

Nine different terminal sire lines were a Yorkshire/landrace sow herd at the Kirkwood Community College over a 30-month time span to determine production and economic merits of different sire lines.<sup>1</sup> The lowest backfat of the progeny came from the Danbred sire line. Premier T-Max sire line gave the progeny the largest loin muscle area and the highest per cent lean. The Waldo Duroc sire line produces the lowest selling age, lowest days to 250 lb., highest terminal sire index and highest overall economic value. The data indicate all the mated sire lines can provide positive contributions to commercial swine production. The use of a particular sire line within a herd will depend on the compliments of the sow herd, the desired progeny results, and the anticipated marketing outlet.

### Introduction

The use of a terminal sire line in a commercial pork production unit is a desired breeding method for producing pork. The question for the producer is, Which sire line representing purebreds and company hogs should I use? This demonstration was selected and designed to show the commercial pork producer what progeny results could be expected from the Kirkwood Community College Yorkshire/Landrace sow herd with various selected terminal sire lines. Production data such as loin muscle area, backfat, lean pounds, percent lean, selling age and days to 250 lb. were determined for each terminal sire line. Using this production data, a terminal sire index and economic values were determined for the sire lines as outlined by the National Swine Improvement Federation (NSIF) formulas and guidelines. The economic values are as follows: 17¢ for days to 250 lb., \$15.00 for each inch of backfat, and \$5.68 for each square inch of loin eye compared with the average of the group. All results were adjusted to 250-lb. pig weight. This information indicates

how different terminal sires affected the progeny from the Kirkwood Community College sow herd.

### Materials and Methods

Sire lines representing Berkshire, Danbred, DRU, Duroc, Hampshire, Newsham, Swedish Duroc, Premier T-Max, and Waldo Duroc were selected for this demonstration project. All boars were PRRS-negative as well as stress negative. At least five boars were used to make a composite sire line. All terminal sires were mated to a Yorkshire/Landrace sow herd via artificial insemination (A.I.). For the Danbred, DRU, Newsham, Swedish Duroc, Premier T-Max, and Waldo Duroc sire lines, the semen from at least five different boars was collected and mixed together to create a pooled semen source. The purebred breeds of Berkshire, Duroc, and Hampshire were A.I. mated with specific semen from a sire with at least five different sires being used for a composite progeny group. A 14-day breeding schedule was used with each sow group to achieve approximately 100 pigs per group. Each terminal sire line was represented with progeny of 125 head or more.

Pigs were weaned at an 18-day average and placed in a total confined hot nursery until approximately 50 to 60 lb. At this weight the pigs were transferred to a double-curtain confined finisher. At approximately 240 to 250 lb. the pigs were selected for marketing and each pig was real-time ultrasound (RTU) scanned by a certified scanner. From the scan data, the terminal sire line information was obtained for analysis and comparison. All pigs were then marketed to the Excel Corporation in Ottumwa, IA.

### Results and Discussion

All sire lines can provide positive results depending upon the sow genetic base and the desired marketing outlet (Table 1). For the Kirkwood Community College sow herd the lowest progeny backfat came from the Danbred sire line (Figure 1) and the largest loin muscle area came from the Premier T-Max line (Figure 2). The highest percent lean was from the Premier T-Max line (Figure 3). The lowest selling age and days to 250 lb. resulted from the Waldo Duroc (Figure 4). Using the NSIF terminal sire formula, the Waldo Duroc had the highest index (Figure 5). Some sire lines, however contributed a higher economic value to the progeny from his sow her (Table 2). In comparing the economic value achieved from the various terminal sire lines, the Waldo Duroc line gave the highest overall economic value to the Kirkwood Community College Yorkshire/Landrace sow herd. In this demonstration, muscle quality factors were not determined. Consequently, as the industry moves to muscle quality procurement, terminal sire lines will need

<sup>1</sup> Does not imply endorsement by the authors, Iowa State University, or Kirkwood Community College.

to be selected and evaluated to achieve the needed muscle quality standards.

A niche market through the Berkshire Gold Program could have been achieved with the Berkshire terminal sire line that would have added additional economic returns for that line. As various niche markets develop, selection of a terminal sire line to meet the desired niche standards will need to be considered.

### Acknowledgements

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**Table 1. Data from all breeds' averages.**

| Sire          | n   | Selling Weight | Loin Eye | Adj. LEA | Back Fat | Adj. BF | Lbs. Lean | % Lean | Selling Age | Days to 250 lb | Sire Index |
|---------------|-----|----------------|----------|----------|----------|---------|-----------|--------|-------------|----------------|------------|
| Berkshire     | 205 | 248            | 6.73     | 6.77     | 1.02     | 1.0     | 89.8      | 52.83  | 164         | 166            | 91         |
| Danbred       | 182 | 244            | 6.94     | 7.05     | 0.84     | 0.9     | 93.5      | 55.01  | 168         | 171            | 100        |
| DRU           | 254 | 251            | 7.26     | 7.24     | 0.91     | 0.9     | 93.4      | 54.95  | 167         | 167            | 102        |
| Duroc         | 194 | 249            | 6.29     | 6.31     | 1.04     | 1.0     | 87.8      | 51.64  | 162         | 163            | 93         |
| Hampshire     | 157 | 244            | 6.55     | 6.65     | 0.99     | 1.0     | 39.7      | 52.79  | 165         | 168            | 89         |
| Newsham       | 261 | 245            | 6.26     | 6.33     | 0.93     | 0.9     | 89.6      | 52.71  | 163         | 166            | 100        |
| Swedish Duroc | 159 | 248            | 7.29     | 7.33     | 0.88     | 0.9     | 94.1      | 55.34  | 162         | 164            | 109        |
| Premier T-Max | 286 | 247            | 7.65     | 7.69     | 0.85     | 0.9     | 95.8      | 56.34  | 168         | 169            | 103        |
| Waldo Duroc   | 124 | 255            | 7.22     | 7.13     | 1.00     | 1.0     | 91.7      | 53.92  | 155         | 153            | 113        |

**Table 2. Economic value of sire groups compared with the average of the group.**

| Sire          | Days to 250 | Value of < days 250 | Adj. BF | Value of < BF | Adj. LEA | Value of > LA | Econ. Value |
|---------------|-------------|---------------------|---------|---------------|----------|---------------|-------------|
| Berkshire     | 166         | \$ (0.11)           | 1.03    | \$ (0.12)     | 6.77     | \$ (0.10)     | \$ (0.33)   |
| Danbred       | 171         | \$ (1.00)           | 0.87    | \$ 0.12       | 7.05     | \$ 0.06       | \$ (0.81)   |
| DRU           | 167         | \$ (0.32)           | 0.90    | \$ 0.07       | 7.24     | \$ 0.17       | \$ (0.08)   |
| Duroc         | 163         | \$ 0.44             | 1.05    | \$ (0.15)     | 6.31     | \$ (0.36)     | \$ (0.07)   |
| Hampshire     | 168         | \$ (0.52)           | 1.02    | \$ (0.10)     | 6.65     | \$ (0.17)     | \$ (0.79)   |
| Newsham       | 166         | \$ (0.06)           | 0.95    | \$ 0.00       | 6.3      | \$ (0.35)     | \$ (0.40)   |
| Swedish Duroc | 164         | \$ 0.27             | 0.89    | \$ 0.09       | 7.3      | \$ 0.22       | \$ 0.58     |
| Premier T-Max | 169         | \$ (0.72)           | 0.86    | \$ 0.13       | 7.69     | \$ 0.43       | \$ (0.17)   |
| Waldo Duroc   | 153         | \$ 2.01             | 0.98    | \$ (0.05)     | 7.13     | \$ 0.11       | \$ 2.07     |
| Average       | 165         |                     | 0.95    |               | 6.94     |               |             |

Figure 1. Backfat averages.

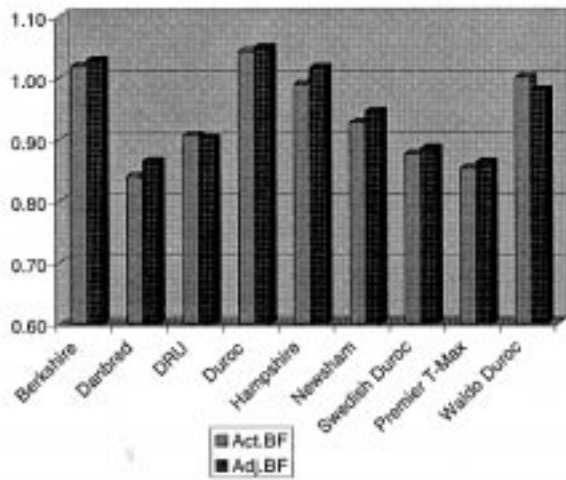


Figure 2. Loin muscle area averages.

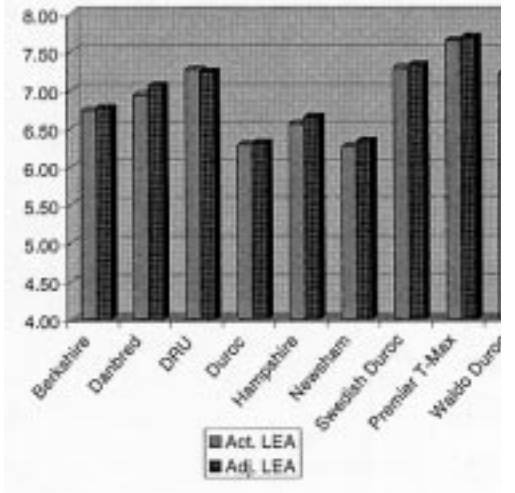


Figure 3. Percent lean averages

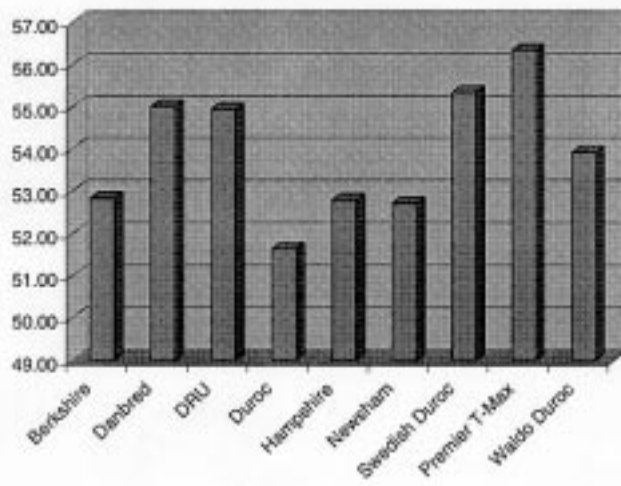


Figure 4. Selling age and days to 250#

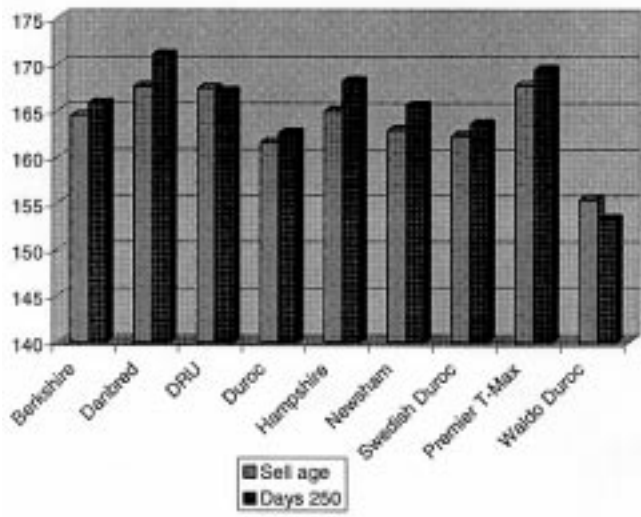


Figure 5. NSIF terminal sire index

