Selecting and Proving Dairy Sires

Prepared by H. P. EWALT and D. E. ANDERSON
Extension Dairy Specialists, Oregon State University, Corvallis

Great strides have been made in sire proving in the last ten years. A significant advance was made when the U. S. Department of Agriculture developed the Predicted Difference in sire evaluation. Further advance was made when dairy cattle breed associations adopted the new USDA Sire Summaries. We now have one uniform sire summary for the entire dairy industry and one uniform system of reporting sire-proving data. All sire records are now produced by the regular dairy herd improvement (DHI) testing and the dairy herd improvement registry (DHIR) programs.

The present careful selection of sires through the USDA dairy herd improvement program gives the dairy industry the most accurate production predictions ever available.

With the use of artificial insemination, one bull can sire several thousand daughters. This permits the use of only the very best sires. Every dairyman should be production testing to provide more data for earlier and still more accurate sire proving.

At the present time, the use of electronic data-processing machines permits record refinements which consider these factors: Number of daughters, number of herdmates, distribution of daughters among herds, the number of records per daughter, days in milk for incomplete records of all cows not completing the lactation, the herd genetic level, regional differences in age, and regional and seasonal differences in breed averages.

Sire summaries are updated and published by the USDA three times yearly. All records are for 305 days or less and have been standardized to a mature-equivalent twice-a-day milking basis.

Following is an explanation of some of the most important data in a sire summary:

Daughter average. The average production of the sire's daughters on a 305-day, mature-equivalent basis and milked twice daily.

Adjusted herdmate average. The average production of those cows in the herd sired by all other bulls and calving in the same year and season as each daughter of the sire being summarized. This average is adjusted for the number of herdmates.

Predicted difference. This is today's most accurate measure of the genetic potential of a sire for milk and fat production. It is the best calculated estimate of the sire's future performance in many herds with varied feed and management conditions. The basis of the predicted difference is the production of the sire's daughters compared to their herdmates. It is expressed in pounds of milk and fat above or below the breed average for each breed.

Repeatability of sire summary. This is a measure of the degree (0-100) of confidence that we have in the Predicted Difference. The accuracy of the prediction increases with the increase in number of daughters and number of herds represented. A high repeatability means that the Predicted Difference is a good indication of the bull's future performance in most herds. A predicted
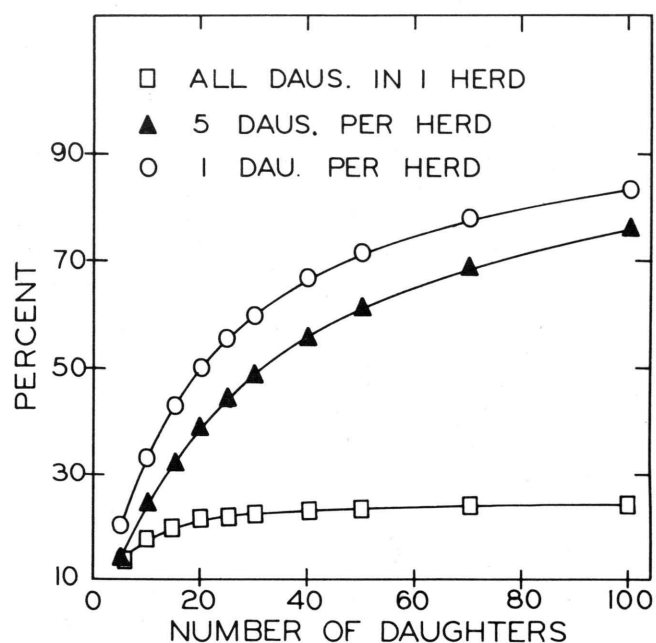
Effect of the number of herds and the number of daughters per herd. A repeatability of less than 50 percent seriously limits the repeatability value. As the repeatability value increases above 50 percent, the greater is the "probability" that the Predicted Difference reflects the true transmitting ability of the bull for milk and fat yield.

difference of plus 1,000 pounds of milk with a repeatability of 60 percent is three times as reliable as a plus 1,000 pounds with a repeatability of 20 percent.

Young sire program. A major move toward proving young sires at an early age. These young sires are carefully selected on the basis of pedigree value. In some instances they are the result of a special mating. This program is designed to speed up and improve genetic values by getting more sire proofs at an earlier age. The success of the program depends in a large part in the cooperation of dairymen in using these young sires on a part of their herds to get proving data. There is little gamble in this young sire, since many of them will be the top proved sires of tomorrow.

Commercial dairymen and breeders who make their income from the sale of milk will do well to breed their cows to the top production proved sires.

The following chart is a typical sire summary with all columns identified.

EXAMPLE SIRE SUMMARY DATA [1]

REGISTRATION DATA			DAUGHTERS					DAUGHTER AVERAGES			HERDMATE AVERAGES			REPEAT- ABILITY	PREDICTED DIFFERENCE	
A	**B**	**C**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**
1303198	VIGO ROBURKE ELVIS	*	11	57	1.47	42	3.1	15,516	3.63	563	48	15,311	558	70	+282	+9

D	**E**	**F**	**G**
07-02-56	1024453	3906910	8-66

H	**I**	**J**
STUD 35-75	STATES 12	23,32,35,87,93

A Registration number

B Registration name

C Indicates that 51 percent or more of progeny in the summary were registered

D Bull's birth date

E Registration No. of sire of bull

F Registration No. of dam of bull

G Date of summary

H AI stud in which bull is located

I Number of States in which progeny are located

J The States (up to five) having the highest number of daughters

K Percent of first lactation progeny with incomplete records (blank if first lactation not available on 50 percent or more of progeny)

L Number of daughters having herdmates

M Number of records / Number of daughters

N Number of herds in which daughters are located

O Effective distribution of daughters per herd

P Daughters milk, lb.

Q Daughters percent fat (M.E.)

R Daughters fat, lb.

S Average number of herdmates per daughter

T Herdmates milk, lb.

U Herdmates fat, lb.

V Repeatability of this summary to future summaries, in percent

W Milk

X Fat

[1] Pedigree information (sire, dam, and birth date) may not be available the first time a bull is summarized. If a bull is in an AI stud, the stud code is shown.