EXPECTED PROGENY DIFFERENCES OF COLUMBIA-SUFFOLK-HAMPSHIRE CROSSBRED RAMS

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History of the flock. The Columbia-Suffolk-Hampshire flock was created to study genetic factors that influence lean growth efficiency in a terminal-sire composite flock. The Columbia, Suffolk, and Hampshire breeds were used because of their rapid growth and large mature size, characteristics appropriate for terminal sire breeds. The flock was created in 1980 with the birth of composite lambs out of Columbia rams and Suffolk-Hampshire crossbred ewes. Since that time, the flock has been closed. Experimental evaluation of composite and Suffolk sheep indicated that growth of composite sheep was similar to growth of purebred Suffolk sheep. Preweaning and postweaning survival of composite lambs tended to be greater than survival of purebred Suffolk lambs.

Explanation of Expected Progeny Difference. The **E**xpected **P**rogeny **D**ifference (**EPD**) of an animal is the predicted genetic value of that animal as a parent. An EPD predicts the average genetic value of a ram's sperm or a ewe's ova (eggs) for a trait such as daily gain. EPD's can be calculated for any trait recorded on a flock. The EPD procedure uses the most powerful technology available to predict genetic value with the greatest accuracy. The statistical procedure to estimate EPDs combines the information available on the individual and all its relatives into one value that can be used for ranking animals for a trait. This procedure works because related animals have a percentage of their genes in common. For example, a son receives one-half of its genes from its sire; therefore, a sire and son have 50% of their genes in common. A grandparent and a grandprogeny are expected to have 25% of their genes in common. Information on a close relative is obviously more useful than information on a distant relative. The procedure considers all these complex genetic relationships and appropriately emphasizes each source of information to predict EPD's for each trait recorded on an animal. EPDs are easy to understand and to use.

Ram information. EPDs for daily gain, 19-month weight, and 31-month weight are presented on the backside for each crossbred ram offered for sale. The information is presented by lot number (sale order). Sale order is determined by EPDs for daily gain because the value of a terminal sire is strongly influenced by its genetic merit for daily gain relative to other rams. Data collected over a 15-year period on 7,582 sheep of the terminal-sire composite flock were analyzed to calculate EPDs. Daily gain (pounds per day) was measured either from 9 to 18 weeks of age or from 9 to 19 weeks of age. EPDs of rams for 19- and 31-month weights (pounds) are based on the weights of related ewes. The EPDs are expressed relative to the base generation of animals whose EPDs average zero.

Use of EPDs. The intended use of this procedure is to compare the EPDs of two individuals. The difference between EPDs of two rams predicts the difference in the performance of future progeny from the rams. For example, ram 9703099 (lot 1) has an EPD of .053 pounds per day for daily gain whereas the EPD for 9703444 (lot 13) is .010 pounds per day. The difference between the two EPDs is .043 pounds per day. Therefore, we expect lambs of 9703099, on average, to grow .043 pounds per day more rapidly than lambs sired by 9703444. Over a 100-day postweaning period, lambs by 9703099 are expected to gain 4.3 more pounds (.043 pounds per day times 100 days) than progeny of 9703444. Assuming rams mate 50 ewes per year over a three-year period and use of a practical terminal sire crossbreeding system allows annual marketing of 1.8 lambs per ewe, ram 9703099 would produce 1,161 more pounds of lamb than 9703444. At 85¢ per pound live weight, the difference in genetic values between these two rams for daily gain is worth about $986.

RAM INFORMATION

		Expected **P**rogeny **D**ifferences (EPDs)		
Lot	Ram	Daily gain, lb/day	19-month weight, lb	31-month weight, lb
1	9703099	.053	7.34	8.51
2	9703358	.045	6.32	6.98
3	9703045	.045	6.62	7.68
4	9703283	.033	2.78	2.80
5	9703035	.028	2.72	2.90
6	9703012	.027	4.36	5.03
7	9703357	.027	2.35	2.48
8	9703295	.026	4.34	5.12
9	9703078	.023	.72	.49
10	9703008	.023	1.63	1.57
11	9703189	.020	2.26	2.29
12	9703448	.016	1.25	.91
13	9703444	.010	.58	.51