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Annual Crossbreeding Report for South Dakota  
Livestock Production Records Association

W. K. Smith, F. W. Crandall and C. A. Dinkel

Each year since 1970 weaning weight records from member herds of the Production Records Association have been used to prepare a crossbreeding summary for use by members and other cattlemen in the formulation of individual breeding programs. This report presents the five year summary which includes the 1974 calf crop.

Source of Data

Data from the 1970 through 1974 calf crops representing a total of 27,605 straightbred and crossbred calves were used in the study. This number represents the calves remaining after the following restrictions were applied: (1) only breedgroups of at least 15 calves per breeding group per herd per year were included and (2) only breed groups containing at least a total of 40 calves for each breeding group were included. Restrictions were subjectively chosen prior to the collection of data.

Method of Analysis

Since environmental differences could be present between herds, comparisons of breeding group differences within herd were used in the evaluation. In order to have a basis of comparison, one breeding group was needed for a standard. Since straightbred Herefords were most numerous, this group was chosen as the standard and results are presented as a ratio of each breeding group to the straightbred Hereford. In each herd the average adjusted weaning weight for each breeding group was calculated and expressed as a percent of the Hereford average adjusted weaning weight. In herds where there were no straightbred Herefords, the ratio to either the Angus, Red Angus or Charolais group was calculated. Ratios of other breeding groups which were calculated relative to the Angus, Red Angus or Charolais base were converted to a Hereford base by adding the advantage of the conversion group to the ratio. For example, in calculating the 1974 summary the straightbred Angus weaning weight advantage of 4% over the straightbred Herefords in the period 1970 through 1973 was used to adjust breeding groups in herds where straightbred Angus were present but straightbred Herefords were not. In herds in which the breed groups were compared to Angus, 4% was added to the ratio to convert it to a Hereford base. All ratios shown in the table are in comparison to straightbred Herefords.

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South Dakota Livestock Production Records Association  
Five Year Summary

Breed group		Weaning	Number	Total	Total
Sire	Dam	weight	calves	years	ranches
		ratio			
Hereford (H)	Hereford	100	11,097	5	148
	Angus	110	701	5	22
	H x A	109	248	3	8
	H x Beef Master	99	166	1	1
	H x Holstein	97	130	1	1
Angus (A)	Angus	104	3,213	5	39
	Hereford	105	3,518	5	81
	H x A	108	809	5	19
Red Angus (R)	Red Angus	102	372	1	2
	Angus	104	41	1	1
	Hereford	102	1,275	5	18
	R x H	107	246	3	4
	C x R x H	111	40	1	1
Charolais (C)	Charolais	122	337	3	8
	Angus	111	935	3	18
	Hereford	110	751	3	16
	A x H	113	561	4	16
	R x H	112	159	2	2
	C x H	125	67	1	2
Shorthorn	Angus	108	148	3	5
	Hereford	108	128	2	4
Simmental	Angus	118	329	4	7
	Hereford	112	621	4	21
	H x A	113	121	2	3
Limousin (L)	Angus	109	274	2	7
	Hereford	107	506	3	10
	H x A	114	123	2	3
	L x H	112	48	1	1
Gelbvieh	Red Angus	116	61	1	1
	Hereford	106	81	1	2
Galloway	Hereford	104	161	2	6
Maine-Anjou	Angus	118	63	1	3
Murray Gray	Angus	108	41	1	1
Angus-Hereford	Hereford	107	85	1	1
Simmental-Hereford	Hereford	108	89	1	2
Limousin-Red Angus	R x H	102	60	1	1

## Results and Discussion

Although the information in the table gives an indication of the relative performance of various crossbreds for weaning weight, cattlemen should consider several other factors in addition to weaning ratio. The relative advantage of various breeding groups could change when factors such as reproductive performance, calving difficulty and calf livability are considered. In addition, breeding groups with larger numbers of calves from several herds will probably be more reliably evaluated in terms of expected performance.

Results involving straightbred Hereford and Angus and their crosses over the 5-year period indicate a 5.5% level of individual heterosis and a 3.8% level of maternal heterosis. The estimate for individual heterosis is comparable to results from experiment station data, but the estimate for maternal heterosis is slightly less than that usually obtained.

The results obtained with single crosses involving Shorthorn sires with Hereford or Angus dams were similar to those obtained with Hereford and Angus sires. The average weaning weight ratio involving single crosses of the British breeds ranged from 105 to 110. Crosses involving the straightbred British sire and the British crossbred female averaged about 8% higher than the straightbred Hereford.

Straightbred Charolais averaged 22% higher than straightbred Herefords when only weaning weight ratio was considered. Two breed crosses with Charolais and either Hereford or Angus were slightly lower than the average of the parent breeds. Crosses involving a Charolais sire and crossbred dams were approximately 6% superior to single crosses involving Charolais sires and straightbred Angus or Hereford dams.

Somewhat higher weaning weight ratios were obtained when Simmental and Limousin were crossed on Angus than when crossed on Hereford dams. Crosses using Limousin sires and crossbred dams resulted in a higher weaning weight ratio than when Limousin sires were crossed on straightbred dams. However, in the sample of cows mated to Simmental bulls the crossbred dams did not outperform the straightbred dams.

Crosses involving Red Angus sires and crossbred dams were 6% superior to crosses involving Red Angus sires and straightbred British dams. The average weaning weight ratio from the Gelbvieh sire on straightbred Hereford dams was 6% higher than the straightbred Hereford.

Although the use of crossbred sires on straightbred Hereford dams gave a weaning weight ratio about 7% superior to straightbred Herefords, the ratio was lower than crosses involving straightbred sires and crossbred dams.

Probably one of the most useful functions of this summary is to indicate areas in which cattlemen can cooperate to increase the usefulness of the records they are collecting. The inclusion of the number of dams of each breed exposed to each breed of bull as well as the number of calves born and weaned and also yearling and carcass data will increase the usefulness of this study. Association and university personnel will be happy to cooperate in summarizing data and making summaries available to cattlemen.