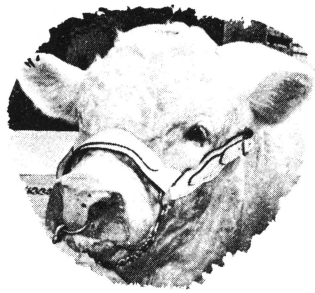
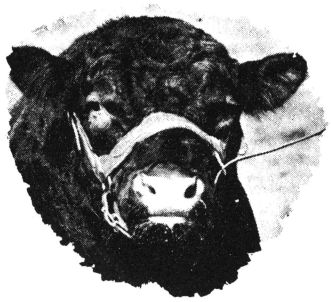
Missouri Beef Cattle Improvement Programs

On-The-Farm Performance Testing

Preweaning Phase

Plan A


John W. Massey
Livestock Improvement Specialist
Animal Husbandry Department

Extension Division
University of Missouri-Columbia
MP270 12/72/4M

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APPENDIX

ON-THE-FARM BEEF PERFORMANCE TESTING

The Missouri Beef Cattle Performance Testing Program is designed to help improve Missouri beef cattle in both quality and growth through breeding and selection.

The phases of this program are available to beef cattle breeders who may use them to check each animal's performance from birth until it is added to a herd or slaughtered. The program has flexibility and will be helpful to both purebred and commercial cattlemen in their selection and breeding programs. It is most useful in evaluating individual animals within a herd. It is not designed for the purpose of comparing one herd with another herd or one breed with another breed, because the environmental conditions will vary from herd to herd.

There are six major phases of the program that should receive emphasis.

1) Plan A which ends at 205 days when the calf is weaned and scored.

2) Plan B, the postweaning phase, including the superior male calves, full-fed for a minimum of 140 to 160 days postweaning, or grown for 365 days after the preweaning phase.

3) Central beef cattle testing stations.

4) Use of ultrasonics and potassium-40 evaluation in livestock improvement.

5) State and area performance-tested bull sales.

6) Progeny testing via carcass information.

The foregoing records of performance programs are useful primarily to provide a basis for comparing cattle within a herd, managed the same, and within sex; and only secondarily for estimating differences between herds or between groups treated differently within a herd. This is because large environmental differences caused by location, management, and nutrition are likely to exist between herds or different management groups within a herd. It is not possible to adjust accurately for these differences. This is important because differences that are due to environment are not transmitted from parents to their offspring.

Plan A--Measurement of Weaning Weight (205 Days)

The purpose of this phase of the program is to evaluate calving interval (fertility) and mothering ability of dam (milk production), preweaning growth rate, and quality by USDA feeder standards and potential mature frame. (A.H.E. Form No. 2 P.R. 72, Appendix, page 10)

The procedure for obtaining performance data:

1) Contact the local University Extension Center and set up an appointment with the Area Livestock Specialist for discussing the program.

2) Enrollment: Enroll all of the cows in your herd. (A.H.E. Form No. 1 P.R. 66, Appendix, page 11)

3) Identification of cows: Identify each cow in the herd--tattoo, horn brand, neck chain, plastic neck tag, brand numbers, plastic ear tags, etc. If a tattoo is used in the ear, an ear tag or neck chain will make identification much easier.

Identification of Cows and Calves

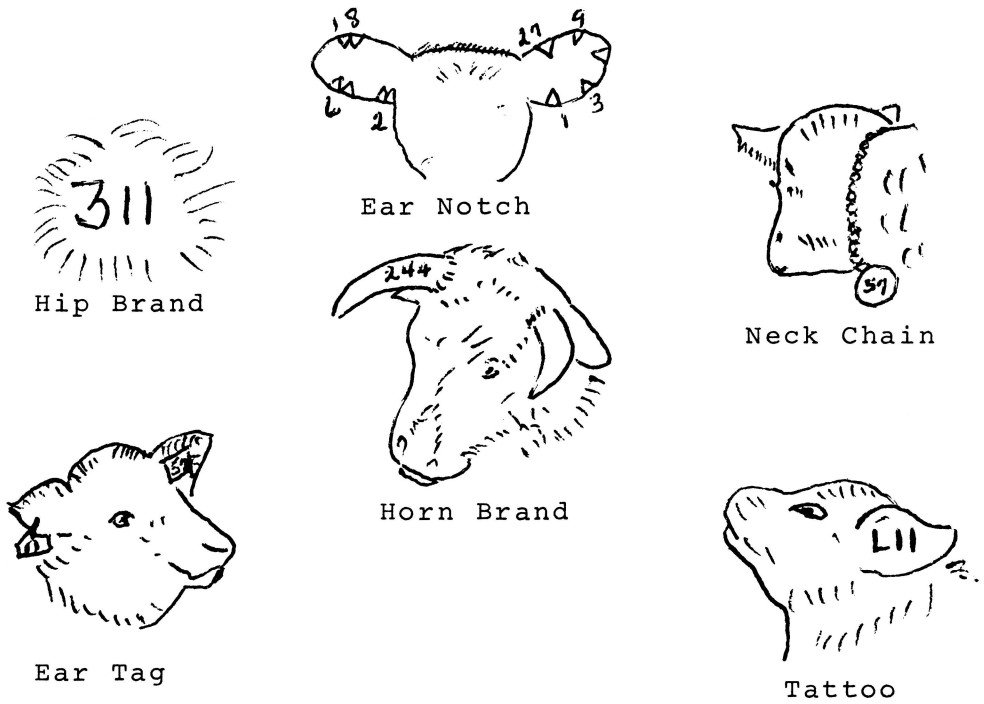

Figure 1

4) Birth date of calves: The birth date of each calf must be accurately recorded. It may be handier to record the birth dates in a herd notebook during the calving season and then transfer them to the permanent record.

5) Identification of calves: Each calf must be identified at calving time with a tattoo, ear tag, or other positive identification and recorded by dam.

6) Birth weight: There are two possibilities. Each calf may be weighed at birth, or 70 pounds may be used for all birth weights. The latter is used most commonly.

7) Adjusted weaning weights: Weaning weights will be adjusted to 205 days within sex and management group. The 205-day weaning weights will be adjusted for age of dam.

Procedure for Calculating 205-Day Adjusted Weaning Weight

1) Calves are to be weighed between 160 and 250 days of age. The nomograph on page 12 of the Appendix may be used to determine the 205-day weaning weight when calves are weighed in this age range.

2) To determine the age of the calf use "Chart for Calculating Days of Age" on page 13 of the Appendix.

3) The following formula may be used to adjust the weaning weights of calves that are not weighed within the range of the age limits.

Formula: W.W.--Weaning Weight; B.W.--Birth Weight

$$\left(\frac{\text{Actual W.W. - B.W.}}{\text{Actual Age at Weaning}}\right) \times 205 \text{ days} + \text{B.W.} = \text{205-day Wt.}$$

Example: A calf 180 days of age weighs 430 lbs.

$$\left(\frac{430 \text{ lbs} - 70 \text{ lbs}}{180}\right) \times 205 \text{ days} + 70 \text{ lbs} = 480 \text{ lbs 205-day Wt.}$$

4) A dam's age and sex of the calf influence its weaning weight. Weaning weights will be adjusted for age of dam within sex by using the chart found on page 14 of the Appendix, "Weights at 205 Days, Adjusted for Age of Dam."

For the purpose of adjusting the 205-day weight of calves for age of dam the following schedule applies:

Age Range of Dam at Calving	Age of Dam
1 yr 9 mos to 2 yrs 9 mos	2-year-old
2 yrs 9 mos to 3 yrs 9 mos	3-year-old
3 yrs 9 mos to 4 yrs 9 mos	4-year-old
4 yrs 9 mos to 10 yrs 9 mos	5- to 10-year old
10 yrs 9 mos and older	11-year-old & over

Further information on "Age of Dam Adjustment Factor for 205 Days" is to be found on page 15 of the Appendix. The 205-day weight is multiplied by the appropriate factor.

Example: The 205-day weight of a calf from a 2-year-old dam is 480 lbs. Obtain the adjusted 205-day weight for age of dam by multiplying 480 lbs x 15% = 72 lbs. Then 480 lbs. + 72 lbs. = 552 lbs, the adjusted 205-day weight for age of dam within sex.

5) Adjusted Average Daily Gain: On page 16 of the Appendix is a chart for obtaining the adjusted average daily gain on 205-day adjusted weights, ranging from 300 lbs to 795 lbs. Weights above or below this range may be figured by applying the following example.

Example:

$$\frac{\text{Adjusted 205-day wt. of 552 lbs. - 70 lbs. B.W.}}{\text{205 days}} = 2.35 \text{ Adj ADG}$$

6) Other adjustments: Calves that are creep-fed or calves that are on nurse cows must be listed and compared separately. In most areas of the state the average adjustment for creep-fed calves would be 0.3 pound expected additional gain for each day on creep for bull calves, whereas with steers and heifers it is 0.2 and 0.1, respectively.

7) Some associations compare produce of dam and actual weaning weight by adjusting to steer equivalent. If this is the case, the bull calves are adjusted down 5 percent and the heifers up 5 percent.

8) Inbreeding will have minor effect on weaning weight, but if one wishes to adjust for within herd comparison add 0.7 pound to adjusted weaning weight for each one percent of inbreeding.

9) Weight ratio: The weight ratio is calculated by obtaining the average adjusted 205-day weaning weight within sire, sex, and management group for the herd, using Column 10 of the Plan A Calf Crop Record, and dividing the individual calf's weight by the herd average for its sex.

If ten or more calves within sex are sired by a given sire the average weaning weight of his progeny may be used for "herd average." The steers will be adjusted upward 5 percent to a bull equivalent to determine average weaning weight of male calves. (A steer is any calf castrated and healed when weaning weights are taken.)

Example: The adjusted 205-day average weaning weight for the bull calves is 450 pounds (total and average of Column 10, Plan A) and bull calf No. 1's adjusted 205-day weaning weight is 600 pounds.

600 lbs ÷ 450 lbs. = 133.3 Wt. ratio for Calf No. 1

Feeder Grade

All calves in the purebred herds should be graded at weaning according to the USDA feeder grade standards by the extension specialist or a three-man committee. "Feeder Steers, U. S. Grades" are illustrated on page 17 of the Appendix. "Standards for Feeder Cattle Grades, April, 1966" are included in the Appendix of this manual on pages 18, 19, 20 and 21.

In commercial herds major attention for heifer selection should be given to adjusted weaning weight and evaluation of sire or herd group for conformation.

Feeder Grade Ratio: The feeder grade ratio is figured the same as weight ratio within each sex; that is, by obtaining the average feeder grade score within sex (Column 13, Plan A, Calf Crop Record) and dividing the individual calf's feeder grade score by the herd average for its sex.

Example: The average feeder grade score of all bull calves is 12 and bull calf No. 1's score is 14.

$$\frac{14}{12} = 116.7$$ Feeder grade ratio for Calf No. 1

Frame Scores

Frame scores are similar to those used by V. H. Brungardt, University of Wisconsin, in the Hereford, Charolais, and Angus studies.

1) The Hereford and Angus ranged from 1 to 5, with 1 the smallest and 5 the largest, and 3 was intermediate or average for the breed. The Charolais ranged 3 through 7, with 5 being the average for the breed.

2) The newer large breeds in this country, at least the high percentage, will probably fit the Charolais range. At the present time with half bloods and three-quarter bloods, we will see all frames represented.

3) The Brahma, Santa Gertrudis, and Brangus will likely fall in the Charolais classification also.

4) Shorthorn, Red Angus, Murray Grey will be close to the Hereford and Angus frames.

Frame score types are illustrated on page 22 of the Appendix. The "Frame Score Table" is located on page 22 of the Appendix.

Cow Production Records

In order to compare cows within the herd for the weaning weight of their progeny when they have produced unequal numbers of bulls, steers, and heifers in different seasons it is necessary to add and average the progeny's weaning weight ratios for each cow.

A.H.E. Form No. 4 P.R., "Cow Production Record" has been designed on heavy card stock for use as a permanent record on each cow. This form is illustrated on pages 23 and 24 of the Appendix.

Example: To compare Cow A with Cow B

Cow A			Cow B		
Age	Sex of Calf	Weaning Wt. Ratio within sex	Age	Sex of Calf	Weaning Wt. Ratio within sex
2 yrs	B	110	4 yrs	H	105
3 yrs	S	114	5 yrs	H	115
4 yrs	H	111	6 yrs	B	110
5 yrs	B	109			
Total		444	Total		330
Av Wt. Ratio		111	Av Wt. Ratio		110

Formula: Breeding Value or Most Probable Producing Ability

$$MPPA = \bar{H}\text{erd av.} + \frac{nr}{1 + (n-1)\,r} \times (\bar{C}\text{ow av. ratio} - \bar{H}\text{erd av. ratio})$$

n = number of records
r = repeatability of trait--W.W., 0.4; Conformation, 0.3
$\bar{H}$ = Herd average which is 100
$\bar{C}$ = Mean ratio of weight or conformation of individual

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MPPA for Cow A	MPPA for Cow B
$100 + \frac{(4)\ (.4)}{1 + (4-1)\ .4} \times 111-100$	$100 + \frac{(3)\ (.4)}{1 + (3-1)\ .4} \times 110-100$
$100 + \frac{1.6}{2.2} \times 11 = 108.00$	$100 + \frac{1.2}{1.8} \times 10 = 106.66$

Keeping the Records

Sample copies of forms to use in keeping the records on your herd are in the appendix. These are available from the Extension Livestock Specialist in your Area. They are:

A.H.E. Form No. 1 P.R. 66--Missouri Beef Cattle Performance Testing Herd Enrollment.
A.H.E. Form No. 2 P.R. 72--Plan A Calf Crop Record (Preweaning Phase).
A.H.E. Form No. 4 P.R.--Beef Cow Production Record.
A.H.E. Form No. 2A P.R. 72--Beef Performance Testing Plan A Herd Summaries.

(Designed for use by the Area Livestock Specialist for reporting to the State Animal Husbandry Extension office the herds enrolled in the area. Note: Only herd records that have bulls for tested bull sales need to comply with dates on the form. Commercial and other purebred herds can be submitted together when total calf crop is analyzed; however, the annual deadline is May 30.)

Other illustrations, charts, and tables in the Appendix, pages 10 through 25, are to aid you in your record keeping.

Science and Technology Guides, University of Missouri-Columbia, which relate to the Missouri Beef Cattle Performance Testing Program are:

2909 Predicting Inheritance of Breeding Herds
2005 Value of Beef Performance Records
* How to Evaluate Breeding Herd

These are available by writing to PUBLICATIONS, B-9 Whitten Hall, University of Missouri-Columbia, Columbia, Missouri, 65201, or by contacting your local area livestock specialist.

*Number yet to be assigned

A.H.E. Form No. 2 P.R. 72

PLAN A CALF CROP RECORD

County_____

Name of Breeder_____ Specialist_____

Complete Address_____ Year_____

Date Weighed at Weaning_____ Sex[1] _____ Breed_____

Calf (1)	Dam (2)	Sire (3)	Age of Dam (4)	Birth Date (5)	Birth Wt. (6)	Weaning Age in Days (7)	Weaning Wt. 160-250 Days of Age (8)	205-day Wt. (9)	205-day Wt.Adj. for Age of Dam[2] (10)	Adj. Daily Gain (11)	Adj. W.W. Ratio (12)	Feeder Grade 1-17 (13)	Feeder Ratio Frame Ratio (14)	Frame Score 1-7 (15)	Remarks[3] (16)
													- - -		
													- - -		
													- - -		
													- - -		
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[1] Use separate form for each sex.

[2] Use Column 9 to figure Column 10 from the table on page 14.

[3] Management information: (1) Creep; (2) Noncreep; (3) Other

A.H.E. Form No. 1 P.R. 66

MISSOURI BEEF CATTLE PERFORMANCE TESTING HERD ENROLLMENT FORM

County_____

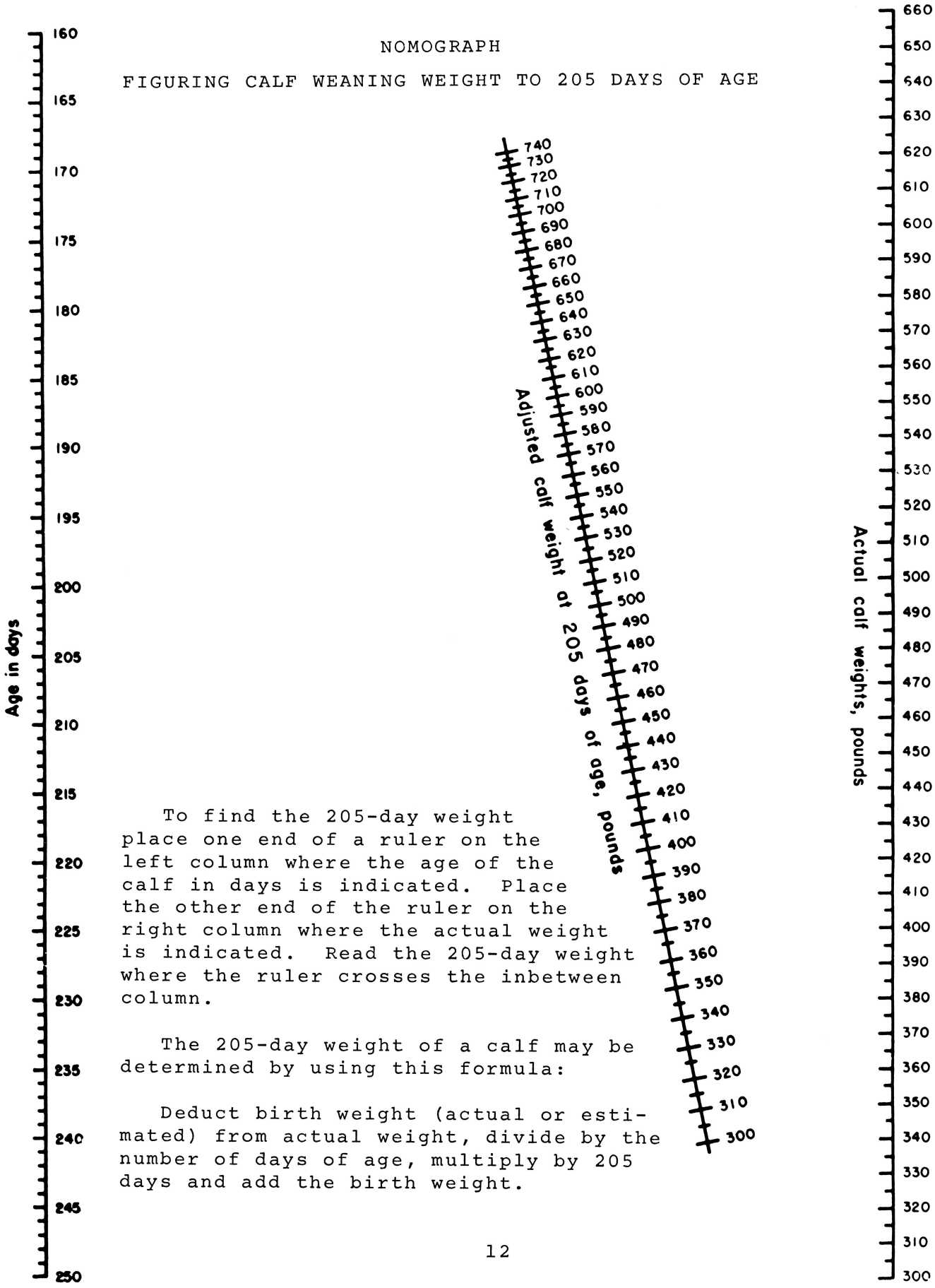
Name of Breeder_____ Specialist_____

Complete Address_____ Year_____ Breed_____

Calf No. or ID	Sex	Dam No. or ID	Sire No. or ID	Birth Date of Dam or Year Born	Birth Date of Calf	Birth Weight of Calf	Remarks

NOMOGRAPH

FIGURING CALF WEANING WEIGHT TO 205 DAYS OF AGE



To find the 205-day weight place one end of a ruler on the left column where the age of the calf in days is indicated. Place the other end of the ruler on the right column where the actual weight is indicated. Read the 205-day weight where the ruler crosses the inbetween column.

The 205-day weight of a calf may be determined by using this formula:

Deduct birth weight (actual or estimated) from actual weight, divide by the number of days of age, multiply by 205 days and add the birth weight.

CHART FOR CALCULATING DAYS OF AGE

	1 Jan.	2 Feb.	3 March	4 April	5 May	6 June	7 July	8 Aug.	9 Sept.	10 Oct.	11 Nov.	12 Dec.	
1	1 **365**	32 **334**	60 **306**	91 **275**	121 **245**	152 **214**	182 **184**	213 **153**	244 **122**	274 **92**	305 **61**	335 **31**	1
2	2 **364**	33 **333**	61 **305**	92 **274**	122 **244**	153 **213**	183 **183**	214 **152**	245 **121**	275 **91**	306 **60**	336 **30**	2
3	3 **363**	34 **332**	62 **304**	93 **273**	123 **243**	154 **212**	184 **182**	215 **151**	246 **120**	276 **90**	307 **59**	337 **29**	3
4	4 **362**	35 **331**	63 **303**	94 **272**	124 **242**	155 **211**	185 **181**	216 **150**	247 **119**	277 **89**	308 **58**	338 **28**	4
5	5 **361**	36 **330**	64 **302**	95 **271**	125 **241**	156 **210**	186 **180**	217 **149**	248 **118**	278 **88**	309 **57**	339 **27**	5
6	6 **360**	37 **329**	65 **301**	96 **270**	126 **240**	157 **209**	187 **179**	218 **148**	249 **117**	279 **87**	310 **56**	340 **26**	6
7	7 **359**	38 **328**	66 **300**	97 **269**	127 **239**	158 **208**	188 **178**	219 **147**	250 **116**	280 **86**	311 **55**	341 **25**	7
8	8 **358**	39 **327**	67 **299**	98 **268**	128 **238**	159 **207**	189 **177**	220 **146**	251 **115**	281 **85**	312 **54**	342 **24**	8
9	9 **357**	40 **326**	68 **298**	99 **267**	129 **237**	160 **206**	190 **176**	221 **145**	252 **114**	282 **84**	313 **53**	343 **23**	9
10	10 **356**	41 **325**	69 **297**	100 **266**	130 **236**	161 **205**	191 **175**	222 **144**	253 **113**	283 **83**	314 **52**	344 **22**	10
11	11 **355**	42 **324**	70 **296**	101 **265**	131 **235**	162 **204**	192 **174**	223 **143**	254 **112**	284 **82**	315 **51**	345 **21**	11
12	12 **354**	43 **323**	71 **295**	102 **264**	132 **234**	163 **203**	193 **173**	224 **142**	255 **111**	285 **81**	316 **50**	346 **20**	12
13	13 **353**	44 **322**	72 **294**	103 **263**	133 **233**	164 **202**	194 **172**	225 **141**	256 **110**	286 **80**	317 **49**	347 **19**	13
14	14 **352**	45 **321**	73 **293**	104 **262**	134 **232**	165 **201**	195 **171**	226 **140**	257 **109**	287 **79**	318 **48**	348 **18**	14
15	15 **351**	46 **320**	74 **292**	105 **261**	135 **231**	166 **200**	196 **170**	227 **139**	258 **108**	288 **78**	319 **47**	349 **17**	15
16	16 **350**	47 **319**	75 **291**	106 **260**	136 **230**	167 **199**	197 **169**	228 **138**	259 **107**	289 **77**	320 **46**	350 **16**	16
17	17 **349**	48 **318**	76 **290**	107 **259**	137 **229**	168 **198**	198 **168**	229 **137**	260 **106**	290 **76**	321 **45**	351 **15**	17
18	18 **348**	49 **317**	77 **289**	108 **258**	138 **228**	169 **197**	199 **167**	230 **136**	261 **105**	291 **75**	322 **44**	352 **14**	18
19	19 **347**	50 **316**	78 **288**	109 **257**	139 **227**	170 **196**	200 **166**	231 **135**	262 **104**	292 **74**	323 **43**	353 **13**	19
20	20 **346**	51 **315**	79 **287**	110 **256**	140 **226**	171 **195**	201 **165**	232 **134**	263 **103**	293 **73**	324 **42**	354 **12**	20
21	21 **345**	52 **314**	80 **286**	111 **255**	141 **225**	172 **194**	202 **164**	233 **133**	264 **102**	294 **72**	325 **41**	355 **11**	21
22	22 **344**	53 **313**	81 **285**	112 **254**	142 **224**	173 **193**	203 **163**	234 **132**	265 **101**	295 **71**	326 **40**	356 **10**	22
23	23 **343**	54 **312**	82 **284**	113 **253**	143 **223**	174 **192**	204 **162**	235 **131**	266 **100**	296 **70**	327 **39**	357 **9**	23
24	24 **342**	55 **311**	83 **283**	114 **252**	144 **222**	175 **191**	205 **161**	236 **130**	267 **99**	297 **69**	328 **38**	358 **8**	24
25	25 **341**	56 **310**	84 **282**	115 **251**	145 **221**	176 **190**	206 **160**	237 **129**	268 **98**	298 **68**	329 **37**	359 **7**	25
26	26 **340**	57 **309**	85 **281**	116 **250**	146 **220**	177 **189**	207 **159**	238 **128**	269 **97**	299 **67**	330 **36**	360 **6**	26
27	27 **339**	58 **308**	86 **280**	117 **249**	147 **219**	178 **188**	208 **158**	239 **127**	270 **96**	300 **66**	331 **35**	361 **5**	27
28	28 **338**	59 **307**	87 **279**	118 **248**	148 **218**	179 **187**	209 **157**	240 **126**	271 **95**	301 **65**	332 **34**	362 **4**	28
29	29 **337**	— —	88 **278**	119 **247**	149 **217**	180 **186**	210 **156**	241 **125**	272 **94**	302 **64**	333 **33**	363 **3**	29
30	30 **336**	— —	89 **277**	120 **246**	150 **216**	181 **185**	211 **155**	242 **124**	273 **93**	303 **63**	334 **32**	364 **2**	30
31	31 **335**	— —	90 **276**	— —	151 **215**	— —	212 **154**	243 **123**	— —	304 **62**	— —	365 **1**	31
	Jan. **1**	**Feb.** **2**	**March** **3**	**April** **4**	**May** **5**	**June** **6**	**July** **7**	**Aug.** **8**	**Sept.** **9**	**Oct.** **10**	**Nov.** **11**	**Dec.** **12**	

Dark number--Days to January 1 Light number--Days from January 1

When using two Light numbers, subtract one from the other. When adding Dark and Light numbers subtract one day to adjust for starting and stopping day. During Leap Year add one day to dates after February 28.

WEIGHTS AT 205 DAYS ADJUSTED FOR AGE OF DAM

Age of Dam (Years)	205-Day Weight in Pounds														
	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440
2	345	357	368	380	391	403	414	426	437	449	460	472	483	495	506
3	330	341	352	363	374	385	396	407	418	429	440	451	462	473	484
4	315	326	336	347	357	368	378	389	399	410	420	431	441	452	462
5 to 10	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440
11 up	315	326	336	347	357	368	378	389	399	410	420	431	441	452	462
	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
2	513	529	541	552	564	575	587	598	610	621	633	644	656	667	679
3	495	506	517	528	539	550	561	572	583	594	605	616	627	638	649
4	473	483	494	504	515	525	536	546	557	567	578	588	599	609	620
5 to 10	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590
11 up	473	483	494	504	515	525	536	546	557	567	578	588	599	609	620
	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740
2	690	702	713	725	736	748	759	771	782	794	805	817	828	840	851
3	660	671	682	693	704	715	726	737	748	759	770	781	792	803	814
4	630	641	651	662	672	683	693	704	714	725	735	746	756	767	777
5 to 10	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740
11 up	630	641	651	662	672	683	693	704	714	725	735	746	756	767	777
	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890
2	863	874	886	897	909	920	932	943	955	966	977	989	1001	1012	1024
3	825	836	847	858	869	880	891	902	913	924	935	946	957	968	979
4	788	798	809	819	830	840	851	861	872	882	893	903	914	924	935
5 to 10	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890
11 up	788	798	809	819	830	840	851	861	872	882	893	903	914	924	935

Use this table for calves whose 205-day weight ranges from 300 lbs. to 890 lbs. For animals whose weight is not in this range, multiply the 205-day weight by the adjustment factor (see page 15). All sexes are adjusted the same. Make only within-sex comparisons.

AGE OF DAM ADJUSTMENT FACTOR FOR 205 DAYS

The age of dam at calving is determined according to the following schedule:

Age Range of Dam at Calving	Use Adjustment Factor for:
1 yr 9 mos to 2 yrs 9 mos	2-year-old
2 yrs 9 mos to 3 yrs 9 mos	3-year-old
3 yrs 9 mos to 4 yrs 9 mos	4-year-old
4 yrs 9 mos to 10 yrs 9 mos	Mature cow--no adjustment
10 yrs 9 mos and older	11-year-old & over

Age of Dam at Calving	Factors for Sex of Calf		
	Bull	Steer	Heifer
2-year-old	1.15	1.15	1.15
3-year-old	1.10	1.10	1.10
4-year-old	1.05	1.05	1.05
Mature cow--no adjustment	1.00	1.00	1.00
11-year-old & over	1.05	1.05	1.05

Other Conditions Which Alter the Age of Dam Adjustment

1. A cow nursing twin calves is figured as a 2-year-old dam for that lactation period regardless of her age.

2. If a cow has twin calves and only one nurses, the nursing calf will receive the regular adjustment for the age of its dam.

3. Calves which nurse dairy animals will receive no age of dam adjustment.

4. Calves weaned early, before 120 days of age, and placed on self-feeder will receive no age of dam adjustment.

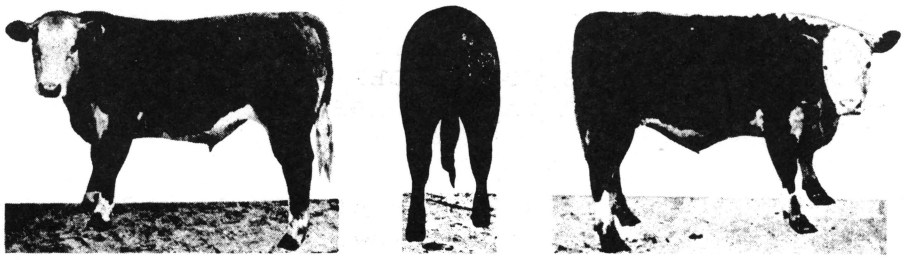
AVERAGE DAILY GAIN FOR 205-DAY ADJUSTED WEIGHTS*
(70-Pound Birth Weight)

Adjusted 205-Day Weight	Adjusted Daily Gain	Adjusted 205-Day Weight	Adjusted Daily Gain	Adjusted 205-Day Weight	Adjusted Daily Gain	Adjusted 205-Day Weight	Adjusted Daily Gain
300	1.12	425	1.73	550	2.34	675	2.95
305	1.15	430	1.76	555	2.37	680	2.97
310	1.17	435	1.78	560	2.39	685	3.00
315	1.19	440	1.80	565	2.41	690	3.02
320	1.22	445	1.83	570	2.44	695	3.05
325	1.24	450	1.85	575	2.46	700	3.07
330	1.27	455	1.88	580	2.49	705	3.10
335	1.29	460	1.90	585	2.51	710	3.12
340	1.32	465	1.93	590	2.54	715	3.15
345	1.34	470	1.95	595	2.56	720	3.17
350	1.37	475	1.97	600	2.59	725	3.19
355	1.39	480	2.00	605	2.61	730	3.22
360	1.41	485	2.02	610	2.63	735	3.24
365	1.44	490	2.05	615	2.66	740	3.27
370	1.46	495	2.07	620	2.68	745	3.29
375	1.49	500	2.10	625	2.71	750	3.32
380	1.51	505	2.12	630	2.73	755	3.34
385	1.54	510	2.15	635	2.76	760	3.37
390	1.56	515	2.17	640	2.78	765	3.39
395	1.59	520	2.19	645	2.80	770	3.41
400	1.61	525	2.22	650	2.83	775	3.44
405	1.63	530	2.24	655	2.85	780	3.46
410	1.66	535	2.27	660	2.88	785	3.49
415	1.68	540	2.29	665	2.90	790	3.51
420	1.71	545	2.32	670	2.93	795	3.54

*This table was constructed by using the following formula:

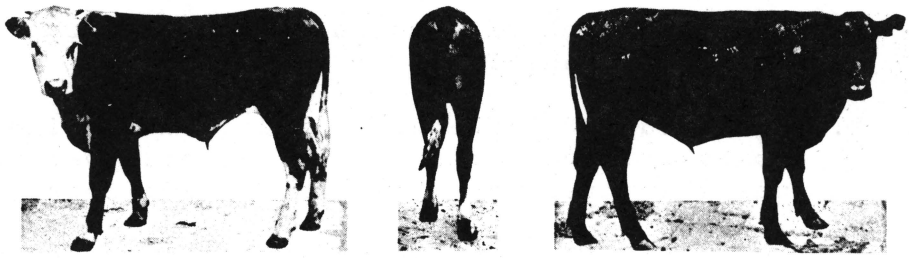
$$\frac{\text{Adjusted 205-day weight - 70 pounds}}{\text{205 days}} = \text{Adjusted daily gain}$$

FEEDER STEERS
U.S. GRADES

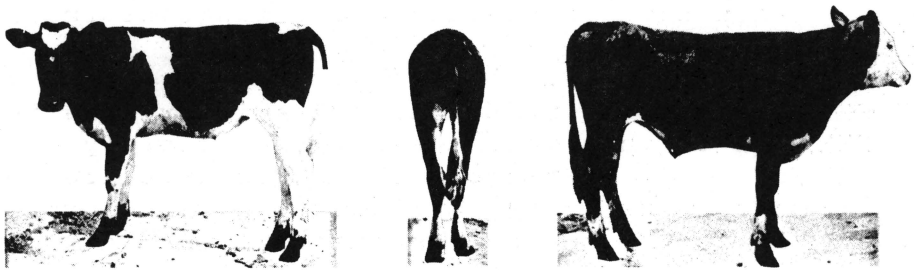


PRIME

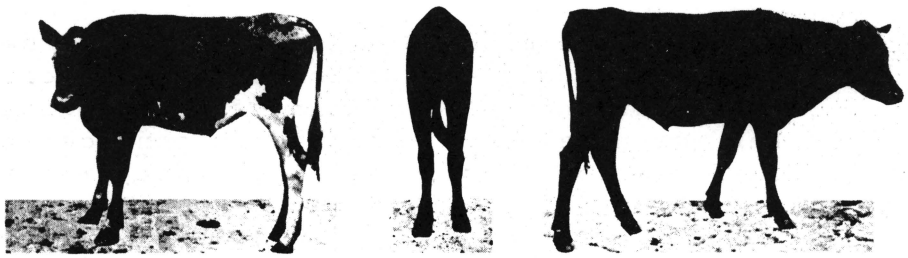
CHOICE



GOOD



STANDARD



UTILITY

COMMERCIAL AND INFERIOR GRADES ARE OMITTED

COPIES OF THE OFFICIAL UNITED STATES STANDARDS FOR GRADE ARE AVAILABLE ON REQUEST

MARCH 1966

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMER AND MARKETING SERVICE
LIVESTOCK DIVISION
WASHINGTON, D. C.

STANDARDS FOR FEEDER CATTLE GRADES
April, 1966

Official United States standard grades of feeder cattle were established by the Agricultural Marketing Service, USDA, in the Administrative Procedure Act, 7 CFR 53.207 and 53.208, effective September 25, 1964.

The official standards for live cattle developed by the United States Department of Agriculture provide for segregation, (1) according to use--slaughter and feeder, (2) class, which is determined by sex and condition, (3) grade, which is determined by the apparent relative excellence and desirability of the animal for its particular use. Feeder cattle are those which are intended for slaughter after a period of feeding.

I. The term "cattle" as used in these standards includes bovines of all ages.

1. The grade of a feeder animal is determined from a composite evaluation of two general values: logical slaughter potential and thriftiness.

2. The logical slaughter potential of an animal is its slaughter grade at that stage of its development when carcass quality grade and conformation grade are equal.

3. Thriftiness refers to the ability of a feeder animal to gain weight and fatten rapidly and efficiently. Extremely thrifty cattle are healthy, have wide, roomy middles with well-sprung ribs, are large for their age, and have an alert manner.

II. General principles in grading feeder cattle.

1. Although the grade of feeder cattle is determined from a composit evaluation of its logical slaughter potential and its thriftiness, the logical slaughter potential is given primary consideration. Thus conformation is the most important single factor affecting the grade of feeder cattle.

2. In establishing the feeder grade, conformation is determined by appraising the development of the muscular system in relation to the development of the skeletal system. Degree of fatness is not a

factor. These standards are based on animals that have a slightly thin covering of fat. When grading animals which have either a greater or lesser degree of fatness than slight to moderate, a proper allowance must be made for the effect of these differences on appearance of the animal.

3. Cattle will deposit fat at a relatively fast rate over the loin, back, flank, cod, twist, and brisket, as compared to other parts of the body. As the condition increases with cattle, they will appear to be better over the back, loin, and spring of rib development. Therefore, it will be necessary for the grader to make critical evaluation of the development and thickness of muscle through the rear quarter as an indicator of overall muscling and plump natural fleshing in the forearm, since slight to moderate amounts of fat are deposited in these areas and it comes nearer the end of the feeding phase.

4. Thriftiness is a factor affecting the grade of feeder cattle when the animal is relatively less thrifty than normally associated with that particular development as prescribed in the various grades. In such a case, the final grade of the feeder animal may be lowered from that indicated by other grade factors from 1/3 to 1 full grade, depending upon the degree of thriftiness.

5. Maturity is not normally a factor in determining the grade of feeder animals, since animals will reach their logical slaughter potential before the following limits: Prime, 36 months maximum; Choice, 42 months maximum; Good and Standard, 48 months maximum; Commercial, 48 months minimum. There are no maturity limits for Utility, Cutter, and Canner grades.

III. Standards for Grades

This is a listing of the 53.208 Specifications for official United States standards for grades of feeder cattle--steers, heifers, and cows. Since stags and bulls are used as feeders only infrequently, standards for grades of these classes are not included herein.

1. High-prime, 17; Prime, 16; Low-prime, 15.

   Fancy feeder cattle are now classified as Prime under the new grading system and these cattle which possess minimum qualifications for the Fancy grade

are extremely thrifty and very large for their age, breed considered. They are very thick-muscled throughout. They are wide through the chest floor with well-sprung ribs, wide and thick through the back, crop, and loin. The rounds are thick, plump, and deep in the twist. They have a straight top and bottom line and are deep in the fore and rear flanks. As to skeletal structure, the animal will stand on strong, straight, moderately short legs, on the corners. The head is usually short and wide and the neck is usually short and thick. They have large rugged frames with moderately large but refined bones. They have a high degree of symmetry and smoothness throughout, and usually show no evidence of nonbeef breeding. Only steers and heifers are eligible for the Fancy feeder grade or Prime logical slaughter potential.

2. High-choice, 14; Choice, 13; Low-choice, 12.

The Choice feeder cattle are very thrifty and are large for their age, breed considered. They are moderately thick-muscled throughout, showing moderate width through the chest, crop, back, and loin with a moderate spring of rib. The rounds are moderately thick and plump and the twist is moderately deep. They will show a straight top and bottom line with moderate depth in the fore and rear flank. Choice cattle should stand on slightly short, moderately straight strong bone with moderate width between their legs. They have a moderate degree of symmetry and smoothness throughout, usually showing a very high proportion of beef breeding and will have a slaughter potential of Choice.

3. High-good, 11; Good, 10; Low-good, 9.

Good grade feeder cattle which possess typical minimum qualifications for the Good grade are thrifty but may be slightly small for their age, breed considered. They are slightly thick-muscled throughout, slightly narrow through the chest and spring of rib. They are slightly narrow through the crop, back, and loin, with slightly sunken muscling in the rump between the pins and hips, but showing slightly prominent muscling in the shoulder and round. They usually have moderately straight top lines but may lack depth in the rear flank. The legs tend to be slightly long or set slightly wide apart, and frequently are crooked, showing some coarseness in skeletal structure. However, they may have slightly large frames showing fineness in the skeletal bone

structure of the legs. They are slightly irregular and rough in appearance and usually are predominantly beef breeding. They have a logical slaughter grade potential of Good.

4. High-medium, 8; Medium, 7; Low-medium, 6.

   Medium feeder cattle which possess typical minimum qualifications for the Medium grade are only moderately thrifty and are moderately small for their age, breed considered. They are slightly thin-muscled and are angular, rough, and irregular in appearance throughout. They tend to be narrow through the chest over the crops, back, loin, and rump. The hip and shoulder joints are prominent, showing narrowness through the rump and shallowness in the twist. They usually predominantly show some nonbeef breeding and have a logical slaughter potential of Standard or Commercial, depending upon their maturity.

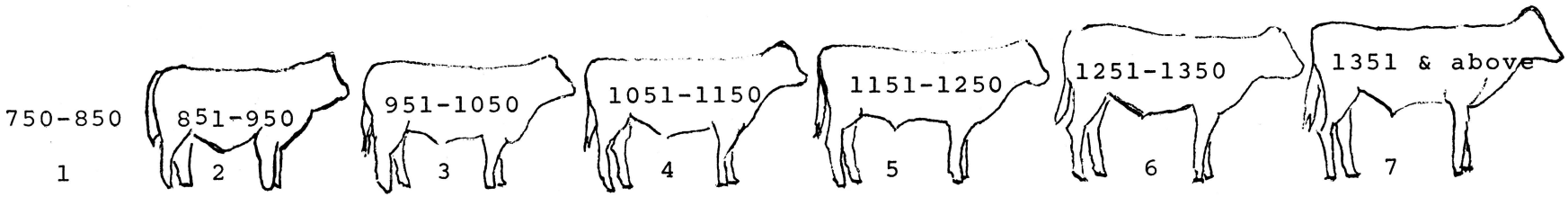
5. High-common, 5; Common, 4; Low-common, 3.

   The Common feeder cattle which possess typical minimum qualifications for the Common grade are slightly unthrifty and are small for their age, breed considered. They are thinly muscled throughout and are very angular, rough, and irregular in appearance. They have a very small frame and the bone usually is very fine, although it also may be large and coarse. They usually have very little or no evidence of beef breeding and have a logical slaughter potential of Utility.

6. Inferior, 2 to 0.

   Inferior feeder cattle are those described for Common, but unthrifty, or are inferior to those described for Common grade.

FRAME TYPES



Number 1 steers are the smallest feeders available in the U.S. cattle population, and Number 7 steers are the largest. They are expected to weigh within the limits indicated in the drawings at 14 1/2 to 15 months of age. Eighty percent or more are expected to grade Choice under the feeding system used by the commercial feedlots (140 to 200 days on feed).

FRAME SCORE TABLE

Measure height at shoulder. Point of measurement is at elbow or fifth rib.

Age in Months	Shoulder Height in Inches							
	Frame Score 1	Frame Score 2	Frame Score 3	Frame Score 4	Frame Score 5	Frame Score 6	Frame Score 7	Frame Score 8
5	32	34	36	38	40	42	44	
6	33	35	37	39	41	43	45	
7	34	36	38	40	42	44	46	
8	35	37	39	41	43	45	47	
9	36	38	40	42	44	46	48	
10	37	39	41	43	45	47	49	
11	38	40	42	44	46	48	50	
12	39	41	/43/	45	47	49	51	
13	39.50	41.50	43.50	45.50	47.50	49.50	51.50	
14	40.00	42.00	44.00	46.00	48.00	50.00	52.00	
15	40.50	42.50	44.50	46.50	48.50	50.50	52.50	
16	41.00	43.00	45.00	47.00	49.00	51.00	53.00	
17	41.50	43.50	45.50	47.50	49.50	51.50	53.50	
18	42.00	44.00	46.00	48.00	50.00	52.00	54.00	

The base point is 43 inches shoulder height at 12 months of age for a Frame Score of 3. Allow two inches for each Frame Score at the same age. Allow one inch per month from 5 to 12 months of age, 0.50 inch per month from 12 to 18 months, and 0.25 inch up to 2 years.

A.H.E. FORM NO. 4 P.R.

BEEF COW PRODUCTION RECORD

Name of Cow_____ Birth Date _____ (Mo/Day/Yr.) Registration No. _____ Ident. _____

PRODUCTION RECORD OF HER CALVES

Birth				Weaning					Postweaning						
Calf Ident.	SEX	Sire	Birth Mo/Day/Yr / Wt.	Age in Days	Actual Wt.	Adj. 205-day Wt. / Ratio	Adj. Daily Gain	Feeder Grade / Frame Score	Off Feed Date / Wt.	Total Gain / ADG	Adj. 365-Day Wt. / Ratio	Life Daily Gain	Conf. Score / Frame Score	Av. Acc. Wt. Ratio	Cow MPPA
23															

FORM NO. 4 P.R. (Back)

BEEF COW PRODUCTION RECORD

Name of Cow _____ Birth Date _____ Mo./Day/Yr. Registration No. _____ Ident. _____

ANCESTRY		Reg. No.	Adj. 205-day W.W.	W.W. Ratio	No. Bull Calves	Feeder Grade / Frame Score	% Calves Fed	Adj. 365-Day Wt.	Life Daily Gain	365-Day Wt. Ratio	Conf. Score / Frame Score
PATERNAL	Grand Sire										
	Grand Dam										
MATERNAL	Grand Sire										
	Grand Dam										
PARENT	Sire of Dam										
	Dam of Dam										
24	Dam Record										
RECORD of SIRES	Name:										
	Name:										
	Name:										
	Name:										
SIRE'S PROGENY RECORD	Name:										
	Name:										
	Name:										
	Name:										
	Name:										

A.H.E. Form 2A P.R. 72

SUMMARY OF CALF CROP RECORDS (PLAN A)

Check — Purebred Herds Involved in Performance-Tested Sale

*1__ Calves born 12/1 through 5/31

*2__ Calves born 6/1 through 11/30

*3__ Calves from commercial herds and other purebred herds

Area_____

Specialist_____

Breed_____
(Separate form for each breed)

Name of Breeder, Address County	Sex	No. of Animals	Total Ages of Dams — Average	Total of ADJUSTED 205-Day W.W.'s — Average	Top Range — Bottom Range	Total Feeder Grades — Average	Top Range — Bottom Range	Total Frame Scores — Average	Top Range — Bottom Range	Remarks
	B									
	S									
	H									
	B									
	H									
	S									
	B									
	S									
	H									
	B									
	S									
	H									

*Due Dates: 1. Dec. 31; 2. June 30; 3. As completed

Issued in furtherance of cooperative extension work, acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Carl N. Scheneman, Vice-President for Extension, Cooperative Extension Service, University of Missouri, Columbia, Mo. 65201. The University of Missouri-Columbia is an equal educational opportunity institution.