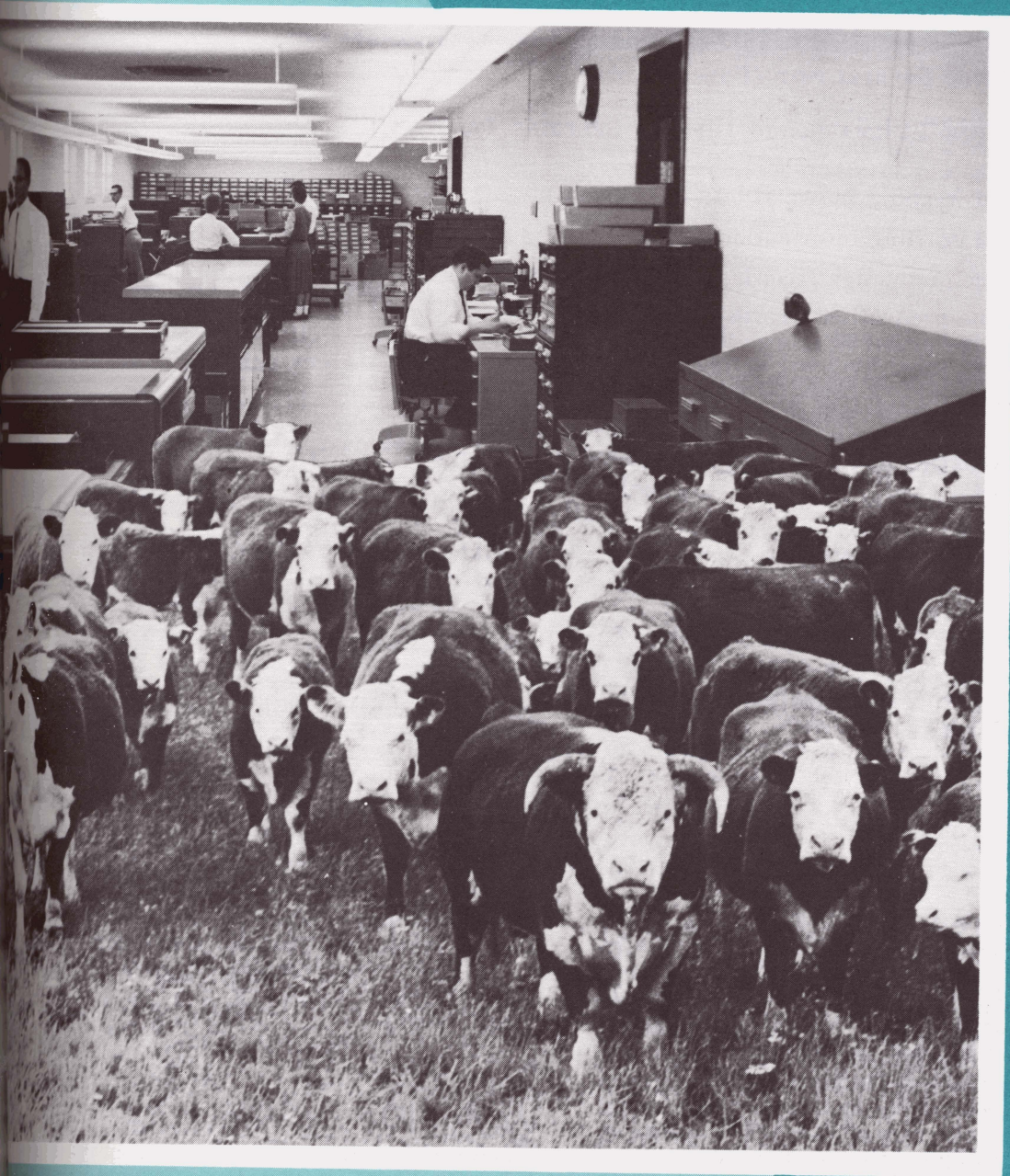


# USING DATA PROCESSING EQUIPMENT

to keep Beef Cattle Production Records



THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

College Station, Texas

TEXAS AGRICULTURAL EXTENSION SERVICE

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**T**HE RANCHMAN'S ENDLESS SEARCH for ways to keep his cattle operation profitable has led to the use of individual production records. These records enable a ranchman to select more productive replacement cattle and to cull those that fail to calve, or produce light-weight or off-type calves. Individual production records become time consuming for medium and large-size ranches. The owner may feel that he is using too much of his time or too much money in secretarial help. Even the expected expense has caused many ranchmen to avoid this type of records.

Many segments of the business world have begun using data processing equipment to reduce the cost of keeping similar records. This

same service is available to beef cattle producers in keeping individual production records. Private processing centers, equipped with high-speed sorters, tabulators and computers are available to serve the beef cattle industry. Instructions to processing centers are outlined in detail in Texas Agricultural Experiment Station MP-506, "Use of Data Processing Equipment for Keeping Individual Beef Cattle Performance Records." Associations of beef cattle producers, by pooling their records, can have enough volume to bargain for attractive prices in processing these records. Cost is estimated at \$150 to \$200 per 1,000 cows per year. The cost per cow would increase when the contract included a smaller number.

# Using Data Processing Equipment To Keep Beef Cattle Production Records

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THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

This system of production records is simple, yet it furnishes the necessary information for a sound breeding program. When multiple-bull pastures are used, the following information will be available:

1. Regularity of calving
2. Adjusted weaning weights
3. Weaning grade
4. Adjusted yearling weights
5. Yearling grades
6. Life-time production records on individual cows
7. Production records on different pastures

When single-sire herds are used and the sire of each calf and breeding cow is reported, the following additional summary will be available:

1. Annual production records on individual sires
2. Life-time production records on individual sires
3. Life-time production records of the breeding cows by sires

All forms designed for use in the procedure outlined in this publication will be designated as DP Form..... The DP stands for data processing and thus eliminates confusion with the existing forms in production testing work.

There are two reporting forms basically designed for the ranchman to furnish information on his cow herd. DP Form 1 is used the first year to report basic information on each breeding cow to the processing center. This form would not be used after the first year except when new females, without production records, are added to the breeding herd. DP Form 2 is used to report the calving, weaning and yearling information to the processing center.

For commercial cattlemen who have multiple-bull pastures, the processing center will furnish the following records.

DP Form 3 includes weaning information on all calves and yearling information on those calves retained for replacements. DP Form 4 gives the total production of each cow in the breeding herd.

If the ranchman has a single-sire herd and reports the sires of the calves and the breeding cows, additional summaries of the records can be furnished. An annual and life-time production record of the herd bulls, based on weaning weights and grades of his calves, is very useful. The processing center also will furnish a similar record based on the weaning weight and grade of calves produced by cows with the same sires.

## SECTION 1. GATHERING AND REPORTING PRODUCTION INFORMATION

### A. Getting Started

You will need to identify all breeding cows with an individual number that can be read in the pasture. Fire-branded numerals 4 inches or taller are suitable. Numbers on neck chains have been used successfully in smaller herds.

You first fill out DP Form 1 to initiate the program and furnish the processing center with the information to make up the calving record. In the first column, list your herd bull and in the second column, list all cows that are bred to that particular bull. Go back to the first column and draw a wavy line down through the last line that has a cow number. This indicates that all cows listed were bred to this bull. If the birth date of the breeding cows and sire are available list them in columns 3 and 4. List your second bull and repeat the process.

Commercial breeders who use multiple-bull pastures should list the pasture number rather than the bull number in column 1. List the individual number of each cow in that pasture during the breeding season. Breeders who have birth dates and/or sires of the cows should complete columns 3 and 4. If year of birth is all

Sire no. or breeding herd no.	Breeding cows			Sire no. or breeding herd no.	Breeding cows				
	Dam no.	Year of birth	Sire no.		Dam no.	Year of birth	Sire no.		
113	38	48	16	113	602	56	187		
}	49	48	16	}	604	56	187		
	71	49	16		606	56	187		
	75	49	16		618	56	187		
	85	50	16		619	56	187		
	87	50	16		187	81	50	16	
	89	50	16		}	169	53	41	
	100	51	16			170	53	41	
	105	51	16			245	54	41	
	109	51	16			288	55	41	
	111	51	41			297	55	41	
	116	51	41			}	302	56	41
	127	52	41				600	56	92

that is available, list it. List your second pasture and repeat the process.

Mail this form to the processing center at least one month before the calving season begins.

**B. At Calving Time**

You will have received from the processing center a copy of DP Form 2 (Weaning) with columns 1 and 2 filled out. During the calving season you must identify each calf with an individual number and record the dam, sex and date of birth.

You can identify calves by using numbered ear tags or ear tattoos. DP Form 2 will fit in a regular 8½ x 11-inch notebook. You can record the calf number, birth date and sex directly on the form. Most ranchmen carry small notebooks to record this information and later transfer the pocket records to DP Form 2.

You will need to use a code for the sex of calves when filling out Form 2, since the data

processing equipment works best with numbers.

The code is as follows:

- 1 - Bull
- 2 - Heifer
- 3 - Steer

**C. At Weaning Time**

Record weaning weights and grades when calves are 160 to 250 days old. Work the younger calves at a later date.

Put the calves through a chute and paint a brand on each calf which corresponds to that of its tattoo or tag number. An aerosol paint can is an effective way to number calves at this time. Next, weigh and grade the calves. Weights usually are recorded to the nearest 5 pounds. Grading usually is done by three visiting ranchmen, but in some cases the owner may wish to grade his own cattle. USDA grading standards are recommended.

If you are producing primarily stocker and feeder calves, use the following grades and code:

For stocker and feeder grades:

- 1 - Fancy
- 2 - Choice +
- 3 - Choice
- 4 - Choice
- 5 - Good

If you are producing primarily slaughter calves use the following grade and code:

For slaughter calves:

- 1 - Choice
- 2 - Good +
- 3 - Good
- 4 - Good
- 5 - Standard

If you prefer to use a private grading system, code the grades into 1's, 2's, 3's, etc.

To have a complete set of records on a group of breeding cows, account for the cows that do not wean calves. The column, "no calf weaned," should carry a coded reason. A suggested code follows:

- 1 - Abortion
- 2 - Dead after natural birth
- 3 - Died before weaning
- 4 - Calf removed from cow
- 5 - Unknown, apparently did not conceive

You can use the miscellaneous column to record additional useful information. Code this information numerically. For example, a Hereford breeder may wish to use:

- 1 - Line back
- 2 - Red neck
- 3 - Too much white
- 4 - Not enough white

A Santa Gertrudis breeder may wish to identify the color of the calves by using:

- 1 - Light red
- 2 - Medium red
- 3 - Dark red

After completing this form, mail the original to the processing center. The first carbon will be used to record the weaning information on the younger cattle when they are weighed and graded at a later date.

You will receive from the processing center DP Form 3 (Weaning). Indicate on this form the calves retained for possible replacements.

Complete explanation on how you use the form is given in Section 2A. From this list the processing center will prepare another DP Form 2 (Yearling), which will list only the calves you have indicated as possible replacements.

DP Form No. 2

REPORT OF WEIGHTS AND GRADES

for calves

..... for yearlings

Sire no. or breeding herd no.	Dam no.	Calf no.	Birth date	Sex	Weigh date	Weight	Grade	No calf weaned	Misc.	
113	38							5		
113	49	824	10-27-59	2	6-12-60	485	1			
113	71	825	10-27-59	2	}	473	1			
113	75	857	10-22-59	3		431	2			
113	85	826	10-31-59	2		405	2			
113	87	831	11-6-59	2		423	3			
113	89	828							1	
113	100	862	10-28-59	3		477	3			
113	105	867	11-8-59	3		500	1			
113	109	866	11-7-59	3		495	3			
113	111	870	12-13-59	3		325	5			
113	116	863	10-29-59	3					3	
113	127								2	
113	134	822	10-21-59	2		420	5			
113	213	853	10-10-58	3		490	2			

..... for calves

Sire no. or breeding herd no.	Dam no.	Calf no.	Birth date	Sex	Weigh date	Weight	Grade	No calf weaned	Misc.
113	49	824	10-27-59	2	3-6-61	820	1		
113	71	825	10-27-59	2	}	803	2		
187	288	827	11-1-59	2		818	1		
113	618	830	11-6-59	2		814	2		
113	244	832	12-11-59	2		769	1		
187	81	900	11-6-59	2		780	2		
191	305	901	10-10-59	2		740	3		
187	170	904	10-22-59	2		800	3		
191	390	905	12-13-59	2		780	2		
187	288	907	10-28-59	2		755	2		
191	345	909	11-7-59	2		810	1		
187	302	914	10-30-59	2		820	2		
191	388	918	10-13-59	2		785	3		
187	608	920	11-8-59	2		760	2		
113	602	929	10-18-59	2		790	3		

**D. At Yearling Age**

Eight to 12 months after these calves have been weaned, record another weight and grade. These yearlings should have been weaned at the same time and run on the same or similar pastures since weaning, so that they will have had equal opportunity to gain. Weights can be taken on the yearling cattle with or without shrink, as long as all of the cattle are handled in the same manner.

The ranchman should report the date yearling weights are taken, the weights and the grades. Leave the last two columns blank. Mail this form to the processing center.

You next will receive DP Form 3. From the information on this report, select the replacement heifers and mark them in the appropriate column. Use of this form is explained in Section 2. The carbon copy will be returned to the processing center and used to make up punch cards on these heifers to be added to the breeding herd.

**E. Preparing for Next Year**

The processing center will mail you a complete set of punch cards on the breeding cows in the herd. These cards will be arranged ac-

ording to the bull they were bred to last year or according to last year's breeding herds. The cards for replacement heifers will be in a separate group and should be added to the proper breeding group. You should rearrange the cards into current breeding groups and return them to the processing center. The processing center will use these cards to prepare DP Form 2 (Weaning) for next year.

Punch cards are processed at high speeds through precision machines and must be undamaged to fit the limited tolerances of the machines. The cards are remarkably durable; do not hesitate to inspect or sort them by hand.

The following points will aid in keeping the card flat and in keeping the edges straight and sharp:

1. Do not fold or spindle.
2. Keep dry and clean.
3. Store in a tray or drawer with push-up type follower (See equipment).
4. Do not use paper clips.
5. Do not use rubber bands. (Loose-fitting rubber bands sometimes are used for short periods.)

**SECTION 2. USING SUMMARIES TO IMPROVE BREEDING PROGRAM**

**A. Annual Weaning Information**

The processing center will prepare and send you DP Form 2 (Weaning). Two correction factors will be applied to the actual weaning weight to make a usable adjusted weaning weight. The first correction adjusts all calf weights to 205 days of age. This correction is made by subtracting average birth weight of 70 pounds, calculating gain per day of age, multiplying this gain by 205 and adding the 70-pound birth weight. The correction for age of dam is made by adding 10 percent of the adjusted weaning weight to all calves out of 2-year-old heifers and cows 11 years old or older. Three-year-old heifers and 10-year-old cows have 5 percent added to adjusted weaning weight of their calves. The calves are listed on different forms according to sex; no correction for sex is necessary.

To select replacement heifer calves decide on the number you wish to add to the breeding herd; then add about 20 percent for later culling. Next, decide on the lowest grade that you will accept as a replacement heifer. For example, if five grades are used, heifers in the last two grades might not be acceptable for re-

placements. Work down the list, beginning with the heaviest adjusted weaning weight, until you have marked the desired number of heifers within acceptable grades. Decision to keep or cull heifers with lighter weights from this group may depend on the life-time production record (DP Form 4) of the dam and sire.

Group together prospective replacement heifer calves; then, by visual means, cull out about 10 percent of these heifers. This culling is based on points such as undesirable markings, bad temperament, etc. Mark the heifers selected as replacements on DP Form 3 (Weaning) in the replacement column. Return the first carbon to the processing center where it will be used to make up the record for yearling weights and grades.

If the bulls are to be selected for further gain testing use the same procedure as on heifer replacements.

Weight ratio as shown on DP Forms 3 and 4 is calculated by using the average as 100 percent and calves 10 percent above the average will be shown as 110 percent or 20 percent below the average as 80 percent, etc. You should use this weight ratio instead of adjusted weaning weight when comparing calves dropped in different seasons or different years.

DP Form No. 3

**ANNUAL PRODUCTION RECORD**

  X   for weaning calves

       for yearlings

       for sires

  H   sex

Animal no.	Dam no.	Sire no.	Adjusted weight	Weight ratio	Grade	Misc.	Replacements
824	49	113	495	114	1		X
825	71	113	474	109	1		X
830	618	113	474	109	2		X
827	288	187	473	108	1		X
819	602	113	465	107	1		X
817	619	113	459	105	3		
832	244	113	449	103	2		X
820	302	187	445	102	1		
823	245	187	433	99	2		
821	297	187	432	99	2		
831	87	113	420	97	3		
826	85	113	394	90	2		
816	267	113	385	88	3		
822	134	113	375	86	5		
829	170	187	372	85	4		

DP Form No. 3

ANNUAL PRODUCTION RECORD

..... for weaning calves  
 ..... for yearlings

X for sires  
 ..... sex

Animal no.	Dam no.	Sire no.	Adjusted weight	Weight ratio	Grade	Misc.	Replacements
Av. 12 heifers		92	445	102	2.1		
Av. 12 heifers		113	444	102	2.1		
Av. 10 heifers		187	428	98	2.3		
Av. 12 steers		92	462	102	2.1		
Av. 14 steers		113	458	101	2.2		
Av. 12 steers		187	452	99	2.3		

DP Form 3 will be prepared for each sire giving the average adjusted weight, weight ratio and grade of his calves produced that

year. This can be used to evaluate the herd bulls if they have been bred to comparable groups of cows grazed on similar pastures.

DP Form No. 3

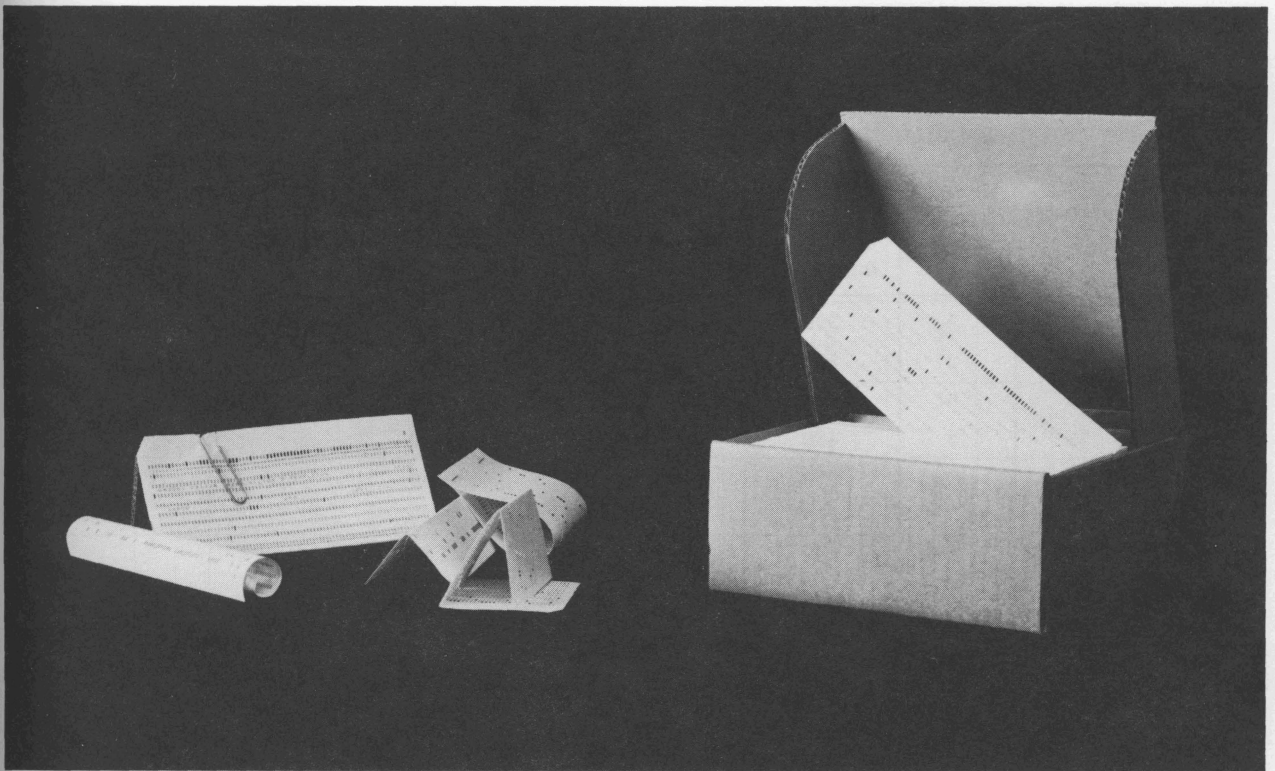
ANNUAL PRODUCTION RECORD

..... for weaning calves  
X for yearlings

..... for sires  
H sex

Animal no.	Dam no.	Sire no.	Adjusted weight	Weight ratio	Grade	Misc.	Replacements
824	49	113	830	107	1		X
830	618	113	811	104	2		X
832	244	113	808	104	1		X
825	71	113	804	104	2		X
905	390	191	794	102	2		X
904	170	187	790	102	3		X
920	608	187	785	101	2		X
909	345	191	782	101	1		X
827	288	187	781	101	1		X
914	302	187	780	100	2		X
900	81	187	756	97	2		X
907	288	187	745	96	2		X
819	602	113	735	95	3		X
918	388	191	735	95	3		X
901	305	191	720	93	3		X





**WRONG**

**RIGHT**

Keep punch cards in boxes to retain sharp, straight edges.

### B. Annual Yearling Information

The processing center will send you DP Form 3 (Yearling). This summary includes an adjusted yearling weight that is calculated by adding the gain after weaning to the adjusted weaning weight.

From this summary you probably will want to cull at least 10 percent of the heifers you originally kept as replacements. These heifers will be the ones that did not gain well during the yearling period or that graded low at this time. After you make your final selection of replacement cattle, record it on DP Form 2 (Yearling), and return the first carbon to the processing center so that cards can be made up and placed in the file with the other breeding females.

### C. Lifetime Production Record of Breeding Cows

DP Form 4 will be prepared by the processing center after all weaning information has been reported on the DP Form 2's.

Methods of determining adjusted weaning weight, weight ratio and grade are discussed in Section 2A. The production index gives a

rating on each breeding animal according to its own production records. This index includes both weight and grade of the calves produced. The calves are divided into weight groups at the time weaning weights are recorded. These weight groups are numbered from 1 to 6 and that number is added to the number code for the conformation grade to give the production index. Table 1 shows how the calf rating is calculated. The production index is an average of calf ratings.

**Table 1. Rating value for calves.**

Weight groups (Percent)	Code for grades				
	1	2	3	4	5
1—Heaviest 10	2	3	4	5	6
2—Next 15	3	4	5	6	7
3—Next 25	4	5	6	7	8
4—Next 25	5	6	7	8	9
5—Next 15	6	7	8	9	10
6—Lightest 10	7	8	9	10	11

In the column under "no calf weaned," show the actual number involved in each class.

for individual cows

for individual sires

..... for daughters of individual sires

or  
..... for breeding herd

Animal no. or breeding herd no.	Year of cow birth	Av. total production at weaning				Prod. index	No calves weaned					
		No. of calves	Adj. weaning weight	Weight ratio	Grade		No. in each class					
							1	2	3	4	5	
49	48	9	506	115	1.5	3.0			1			
618	56	2	506	112	1.75	3.25						
39	48	9	493	112	2.0	3.75						1
288	55	3	480	109	2.3	4.50						
71	49	9	470	108	2.25	4.60						
244	55	3	473	107	2.6	5.20						
602	56	1	462	105	3.0	5.90		1				
619	56	2	453	103	3.0	6.00						
297	56	2	449	102	3.0	6.15						
302	56	2	440	100	3.5	6.75						
85	50	6	431	98	3.3	6.80	1					1
245	54	4	427	97	3.5	6.88						
87	50	8	424	94	3.75	7.40						
134	52	6	396	90	4.5	7.80						

The life-time production record of the breeding cows will be used to rank cows according to their production index. Note that the *lowest production* index signifies the *highest producing cows*. This summary ranks breeding cows according to their ability to produce, and the high-producing cows can easily be separated from the low producers. Although the ranking is based only on weights and grades of the calves produced, the cows that do not calve regularly can be identified in the last five columns. You should use these records to reorganize the breeding herd in any manner for improving your breeding program.

One of the best ways to improve the production of the entire breeding herd is to establish graded herds. Use of graded herds of cows and bulls selected on production records makes the most efficient use of breeding stock. These herds usually are the "A" herd, which consists of one-fourth to one-third of the breeding cows selected for high production and are used to raise most of the replacement cattle, "B" herd, which is made up of the average producers from which most of the calves are marketed; and "C" herd, which are cattle that you should cull as soon as practical.

The summary of individual cows will identify the ones that do not calve regularly, or that

consistently produce calves low in weight or grade, or both. Cull these low-producing cows from the breeding herd.

This form gives you a summary of regularity of calving of each cow in the breeding herd. From the summary, you should be able to appraise the reproduction efficiency and adopt practices for increasing your percentage calf crop, if this is a problem. Usually you should cull cows that do not conceive each year.

**D. Life-time Production Record of Sires or Breeding Herds**

Commercial breeders who report sires of the breeding cows will receive a summary of their production record. The summary of sires may show differences in average weight and grade of the offspring of sires, which will be due to genetic differences if: (1) the sires in the breeding herds were mated to comparable groups of cows, and (2) there are no significant pasture or management differences between the breeding herds. Mate the high-producing sires to high-producing cows, and cull the low-producing sires.

Most large commercial breeders, who use multiple-sire herds, will receive a summary of breeding herds or "pastures." If the cows and

..... for individual cows

for individual sires

for daughters of individual sires

.....  
or  
for breeding herd

Animal no. or breeding herd no.	Year of cow birth	Av. total production at weaning				Prod. index	No calves weaned				
		No. of calves	Adj. weaning weight	Weight ratio	Grade		No. in each class				
							1	2	3	4	5
16		201	448	105	2.1	4.9	2	3	2	4	12
41		108	444	103	2.1	4.9	1		1	1	9
187		38	420	98	2.3	5.3			1		9
92		16	445	103	2.1	4.9			1		1

bulls in these pastures have not been selected on previous production, the ranchman may have an indication of the production value of the different pastures on the ranch.

**E. Life-time Production Records of Daughters of Individual Sires**

The only way to measure the ability of a bull to transmit milk production and mothering ability is through analyzing the weaning weights of calves produced by his daughters. There also have been reports of large differ-

ence in regularity of reproduction of cows by different sires. This summary can be used as additional confirmation of the actual production ability of the sires. You should keep in the breeding herd as long as possible sires whose daughters produce calves with heavy weaning weights, high grades and that calve regularly. Remove sires that demonstrate a weakness in any of these areas. In making this evaluation, study previous management practices to determine whether pastures or the selection of bulls has given an advantage to any of the individual sires.

..... for individual cows

..... for daughters of individual sires

for individual sires  
or  
for breeding herd

Animal no. or breeding herd no.	Year of cow birth	Av. total production at weaning				Prod. index	No calves weaned				
		No. of calves	Adj. weaning weight	Weight ratio	Grade		No. in each class				
							1	2	3	4	5
16		140	440	104	2.3	4.8	1	1	2		11
41		138	436	103	2.2	4.9	1	2		1	12
92		42	444	102	2.1	5.0	1		1		3
113		47	443	102	2.0	5.0	1		1		4
187		134	430	100	2.4	5.1	1		1		14

**SECTION 3. GETTING PAST RECORDS  
IN PROCESSING CENTER**

More than 500 breeders in Texas are getting production records. If you are one of them it will be to your advantage to have all of the production information in the processing center and available for making up life-time production records. The report of past production records, DP Form 1A, properly filled out, will furnish the processing center with all of the information necessary. Many commercial

breeders will not have year of dam birth, sire of the dam and sire of the animal available. If this information is not available report the other information.

If you have been keeping your records on forms furnished by your county agricultural agent, all of the basic information will be on the Form 1, Weaning Record. Or if you have a complete set of Form 3's, Individual Cow Record, it will be another source of information that you should report on DP Form 1A.

DP Form No. 1A

**REPORT OF PAST PRODUCTION RECORDS**

Calf number	Birth date Mo. day Yr.	Sex	Dam number	Year of dam birth	Sire of dam	Sire of animal	Weaning date Mo. day Yr.	Weaning weight	Weaning grade	Misc.
725	11-6-58		408	1954	41	113	6-12-59	430	3	
713	10-10-58		213	1952	41	113	}	490	2	
717	10-22-58		75	1949	16	187		431	2	
721	10-26-58		406	1954	41	113		485	1	
715	10-14-58		270	1950	16	187		380	5	
718	10-23-58		413	1958	16	187		491	2	
720	10-26-58		404	1954	41	187		470	2	
729	10-20-58		249	1952	16	113		476	2	
719	10-25-58		169	1953	41	113		522	1	
730	10-13-58		111	1951	41	187		325	5	
712	10-9-58		400	1954	41	113		469	2	
726	11-7-58		109	1951	16	113		495	3	
722	10-28-58		100	1951	16	187		477	3	
727	11-8-58		105	1951	16	187		500	1	