

HEIFER DEVELOPMENT
Lesson 1
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<http://beef.osu.edu>

Most beef producers replace 10-20% of their mature cows each year with heifers. The unique challenge that each cow/calf producer is faced with is that they are anticipating the future biological and economic performance of their herd for perhaps the next decade when replacement heifers are selected.

Heifers that will become profitable should:

1. Become pregnant within the first 25 days of the breeding season
2. Give birth to a live calf with little difficulty
3. Raise the calf to an average weaning weight
4. Breed back in the first 45 days of the breeding season
5. Continue to produce calves every year for 6 to 9 years.

REFERENCE POINTS

Top cattle producers are calving 50-60% of their total cow herd by 21 days, 80-90% by 42 days and 90-100% by 60 days. If the percentage calving early declines in the calving season, it may be an indication of inadequate nutrition for the genetically changed (higher milking) herd. The producer may need to change the nutrition program or the breeding program. On the average, 86% of females exposed actually wean a calf. A producer with a calf crop lower than this should examine the reasons for reduced reproduction. Table 1. are some average values for when calving occurs in a calving season.

Table 1. Calving Distribution and Weaning Weights for 66,606 calves.

Cycle	Weaning Wt., lbs	WDA ^a	Weight Lost ^b , lbs	Number of Calves	Potenital Percent of Total
Early ^c	531	2.35	---	2901	4.3
Cycle 1	520	2.48	11	28627	43
Cycle 2	496	2.53	24	23356	35.1
Cycle 3	458	2.53	38	7761	11.7
Cycle 4	424	2.53	34	2856	4.3
Late Season	395	2.56	29	1105	1.6

^aWeight per day of age (lbs.)

^bCalculated by subtracting previous cycle weight

^cDefined as any cow that calved before the 2nd three year old or older cow calved within the herd.

One should calculate the percentage of yearling heifers, 1st-calf-heifers and mature cow

weaning a calf since a low percentage in a specified age group may indicate problem areas. The highest incidence of open females occurs in 2-year-old heifers. If over 4% of mature cows fail to get pregnant during the breeding season, it may indicate inadequate nutrition, disease problems or bull fertility problems. Correspondingly, if over 20% of yearling heifers are open after a 45-day breeding season or over 10% after a 60-day breeding season, the heifer development program should be evaluated.

Values have been calculated for critical success factors utilizing 45,832 North Dakota beef cow records (Table 2). Bench mark values for each critical success factor are as follows (1) Calf production time 199 days, (2) Weight per day of age 2.7 lbs., Birth weight 86 lbs, average daily gain 2.37 (3) Percentage of females calving within 42 days : Heifers - 86%, mature cows - 83% (4) replacement rate 17.2%. The average cow age was 5.3 years. Lower rebreeding rates for heifers compared to mature cows are the normal through the second calf.

If greater than 2% of the cowherd aborted during the second and third trimester, a reproductive disease may be present. Calf death losses greater than 3% of the calves born are generally management related.

Table 2. Cow-Calf herd performance evaluation.

	Goal	Monitor	Action
Reproduction			
Calf Crop, %	>90	85-90	<85
60 day Preg. Rate, %	>95	90-95	<90
1 st 20 day Preg. Rate, %	>65	55-60	<50
Median Calving Date	17	18-25	>25
Herd			
Average Cow Age	5-6	4-5, 6-7	<4, >7
Body Condition Score			
Mid-Gestation	4.5-6	4-4.5	<4
Calving	5-6	4.5-5	<4.5
Dystocia			
Adults, %	<5	6-7	>8
Heifers, %	<15	20-25	>25
Gestational Losses, %	<2	2-3	>3
Perinatal Mortality, %	<5	5-9	>10
Cow Death Loss, %	<2	3-4	>5
Culling Rate, %	15-20	10-14, 21-25	<10, >25
Calf			
ADG, lbs			
Steer	>2.25	2-2.35	<2
Heifer	>2	<1.75	<1.75
Weaning, %	100	90-95	<90

This section has been titled REFERENCE POINTS. Information has been presented on

actual production information on large cattle populations. Educators/consultants need to have some understanding on the current level of herd performance of each herd she or he is working with. The following are some baseline values that may be helpful in reviewing a herd with a producer to evaluate where management changes to improve herd performance might be needed.

GENETIC ORIGIN

The genetic origin (i.e. breed and color), management techniques from diet to reproduction, alliances, marketability of heifers, and economics are all factors that a producer needs to take into account when purchasing or developing heifers.

In a two-year economic evaluation by the University of Minnesota they observed differences in profitability between heifers of Hereford × Angus (BWF) origin or heifers primarily of Angus (black) origin for a single producer (Table 3). Among first AI service, pregnant heifers, BWF heifers were nearly twice as profitable as black heifers during both years. In contrast, profitability of second-service heifers did not seem to differ with genetic origin. These figures indicate the importance of knowing the market in which you sell your heifers, because that can aid a producer in purchasing replacement heifers from a genetic origin that will maximize profitability.

Table 3 The Economic Effect of Genetics on Artificially Inseminated Heifers Over a Two Year Period in a Heifer Development Operation

	First Service AI heifers		Second service AI heifers	
Year	No. of heifers	Profit, \$/head	No. of heifers	Profit, \$/head
Year 1				
Black ^a	28	120	13	133
BWF ^b	136	235	29	175
Year 2				
Black ^a	108	112	44	198
BWF ^b	147	201	83	177

^aHeifers of predominately Angus origin.

^bHeifers of predominately Hereford x Angus origin.

Source: G. C. Lamb. 1999. Purchasing, producing and managing replacements beef heifers to optimize profits. 1999 Beef Cow/Days. Univ. MN.

THE PRODUCTION PHASES OF HEIFER MANAGEMENT

The management of first calf heifers effect their performance for the rest of their lives. The selection and development of replacement heifers can be divided into four phases or production periods:

1. Prior to Weaning
2. Weaning/Selection
3. Growing
4. Breeding

5. Rebreeding