

Virginia Cow Herd Performance Check-Up

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Profitability of the cow/calf enterprise within any particular year is impacted by several factors. A cursory analysis of the most basic farm records can quantify important issues affecting herd success such as reproductive performance, calf growth and weaning weight, calf health performance, market price, and herd turnover. If the cow/calf operation is to be managed as a serious business enterprise, performance and economic measurements must be compiled. An annual analysis of various herd performance measures can serve as a yardstick against which to compare past and future years' performance.

The Virginia Cow Herd Performance Check-Up can serve as an effective tool to calculate annual herd baseline data. Using commonly available herd records, managers can complete a Performance Check-Up by doing the calculations by hand or with an Excel spreadsheet available at the local Extension offices. Basic sources of information to complete the analysis include:

- Cow inventory records
- Calf sale receipts
- Calving records
- Cow sale receipts

Herd Goals for Key Performance Measures

The Virginia Cow Herd Performance Check-Up will generate many pieces of valuable information on cow herd performance. Seven key measures provide the essential information for evaluation of the cow herd and decision support for changes in management. A discussion of these measures is given below.

Herd calving percent - Herd calving percent is perhaps the single most important measure of the cow herd's reproductive efficiency. A realistic goal for herd calving percent should be in the 90-94% range. Low herd calving percentage may be symptomatic of several problems including failure of cows to cycle, failure of cows

to conceive at breeding, bull fertility, early embryonic death due to high temperatures or other environmental factors, abortions due to disease, and others.

Percent calf death loss - Once calves have been born and are at least a day old, herd managers should expect less than 1% death loss until weaning. Cow herd operators should make certain that newborn calves nurse sufficiently to get adequate supply of colostrum. The maternal antibodies in colostrum are important in providing disease resistance to the calf. Likely causes of excessive calf death loss might include scours, severe weather conditions, or clostridial diseases.

Percent calf crop weaned per cow exposed - This calculation is the best measure of a herd's overall reproductive and health status. A goal of 89-93% calf crop weaned per cow exposed should be attainable for many herds. Obtaining such herd performance will require attention to those factors which impact reproductive performance and calf health.

Length of calving season for mature cows in days - A restricted calving season of 60-70 days offers many benefits to the operator. With a short calving season, the manager can focus attention to the cow herd during the most critical time of the year for the cow/calf enterprise. A shortened calving season allows the manager to more efficiently match the herd feeding program to meet the changing nutritional needs of the cow herd. A short calving season also enhances the marketing of a more uniform calf crop.

A practice of many well managed cow/calf operations is to begin calving the first-calf heifers three to four weeks ahead of the mature cows. First-calf heifers typically require longer after calving to exhibit estrus. Calving heifers early improves the chances they will calve on schedule with the mature cows the following year.

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Virginia Cow Herd Performance Check-Up

Production Year _____ Name: _____

Herd Reproductive Performance

A.	Number of cows and bred heifers on hand Jan. 1		___	A.
B.	Number of cows and bred heifers on hand Jan.1 of previous year		___	B.
C.	Number of breeding age females exposed to bulls or A.I. during breeding season		___	C.
D.	Number of bred females purchased after breeding season		___	D.
E.	Number of breeding females sold for non-reproductive reasons plus the number that died after the breeding season		___	E.
F.	Adjusted number of females "exposed"	(C + D) - E	___	F.
G.	Number of cows and heifers calving		___	G.
H.	Herd calving percent	(G / F) x 100	___	H.
I.	Number of calves born alive		___	I.
J.	Number of calves stillborn, found dead, or died within 24 hours		___	J.
K.	Number of calves weaned		___	K.
L.	Percent calf death loss	(I - K) / I x 100	___	L.
M.	Percent calf crop weaned per cow exposed	(K / F) x 100	___	M.
N.	Number of mature cows calving		___	N.
O.	Length of calving season for mature cows in days		___	O.
P.	Number of mature cows calving within first 21 days of calving season	Day 1 - 21	___	P.
Q.	(Day 1 begins on day second calf is born)	Day 22 - 42	___	Q.
R.		Day 43 - 63	___	R.
S.	Percent mature cows calving	Day 1 - 21	___	S.
T.		Day 22 - 42	___	T.
U.		Day 43 - 63	___	U.
V.		Day 1 - 63	___	V.

Calf Performance and Value

W.	Approximate average calving date			___	W.
X.	Approximate average calf age (months) at weaning		___	X.	
Y.	Number of calves sold		___	Y.	
Z.	Total weight of calves sold		___	Z.	
AA.	Average sale weight	(Z / Y)	___	AA.	
BB.	Total calf sale net income (minus sale charges)		___	BB.	
CC.	Average price per head	(BB / Y)	___	CC.	
DD.	Average price per cwt.	(BB / Z) x 100	___	DD.	
EE.	Estimated total pounds of calves weaned but not sold		___	EE.	
FF.	Total pounds of calves weaned	(Z + EE)	___	FF.	
GG.	Average calf weaning weight	(FF / K)	___	GG.	
HH.	Pounds of calf weaned per cow exposed	(FF / F)	___	HH.	
II.	Estimated total value of unsold calves at weaning		___	II.	
JJ.	Average value per calf	(BB + II) / K	___	JJ.	
KK.	Average value per cwt. of calf weaned	(JJ / GG) x 100	___	KK.	
LL.	Average calf value per cow exposed	(BB + II) / F	___	LL.	

Cows leaving herd

MM.	Number of cows sold (production year)			___	MM.
NN.	Percent of cow herd sold	(MM / A) x 100	___	NN.	
OO.	Number of cows and bred heifers that died		___	OO.	
PP.	Cow herd percent death loss	(OO / A) x 100	___	PP.	

Winter Feed

QQ.	Date winter hay or silage feeding to cows began			___	QQ.
RR.	Number of days cows fed hay or silage		___	RR.	

If you have questions, contact Bill McKinnon (540/231-9160), Dr. John Hall (540/231-9153), or Tom Covey (540/382-5790)

If you would like to have your operation's analysis included in a Virginia aggregate, please send a copy to:

Bill McKinnon, 368 Litton Reaves, VA Tech, Blacksburg, VA 24061

Percent mature cows calving Day 1-21 - The percent of mature cows that calve within the first 21 days is indicative of both the length of the calving season and the nutritional status of the cowherd before last year's breeding season. The relevance of the focusing on the first 21-day period of calving is related to the length of the cow's estrous cycle. Experience has demonstrated that mature cows in body condition score 15 or better at calving return to a normal estrous cycle more rapidly after calving than thinner cows. An achievable goal for most herds with a restricted season would be for 65-70% of the mature cow herd to calve within the first 21 days of the calving season.

Average calf weaning weight - The average weight of calves at weaning can be impacted by several factors including age of the calf at weaning, calving season, forage conditions, milking ability of the cow herd, genetic merit, implants, deworming management, etc. A reasonable goal for most spring calving herds would be for the calves to have an average weight per day of age of at least 2.75 pounds. This growth level would equate to an average weaning weight of 575 pounds for a seven month old calf. For most fall calving herds, a weight per day of age of 2.5 pounds or a weaning weight of 525 pounds at seven months would be an acceptable goal.

Pounds of calf weaned per cow exposed - This is the single most important measure of the relative reproductive and growth performance of a cow herd. The measure is impacted by both reproductive efficiency and calf growth. A realistic goal for a well managed herd should be determined by multiplying percent calf crop weaned per cow exposed by the goal for the average calf weaning weight. Example: 90% X 575 pounds = 518 pounds of calf weaned per cow exposed.

If you would like assistance in completing the Virginia Cow Herd Performance Check-Up or interpreting your results, contact your Extension Animal Science or Farm Business Management Agent. Below is a brief description of each line of the form and the input required or the directions for completing any calculations.

- A. **Number of cows and bred heifers on hand Jan.1.** This number represents the breeding females, both mature cows and breeding age heifers, in the herd at the start of the year being analyzed. If the breeding season is underway on January 1, include all the heifers in the breeding group in the total in A.
- B. **Number of cows and bred heifers on hand Jan. 1.** of previous year. This number represents the same classes of breeding females as represented in A above, except one year earlier.
- C. **Number of breeding age females exposed to bulls or A.I. during the breeding season.** This is all breeding age females exposed to bulls or artificially inseminated during the previous breeding season. For purposes of this analysis, breeding season refers to the breeding period that produced the calf crop weaned during this production year. If bred females were purchased before or during the breeding season, they should be included in C.
- D. **Number of bred females purchased after breeding season.** Any bred females purchased after the end of the normal breeding period should be entered in D.
- E. **Number of breeding females sold for non-reproductive reasons plus the number that died after the breeding season.** Any breeding age females included in either C or D above that were culled for non-reproductive reasons or died after the breeding season should be included. Non-reproductive reasons would include poor calf performance, unsoundness, old age, temperament, etc.
- F. **Adjusted number of females exposed.** This calculation represents the females exposed to bulls or artificial insemination plus purchased bred females minus females that were culled for reasons other than being open or aborting in early gestation. The number in F represents the number of adjusted exposed females against which measures of herd efficiency will later be calculated.
- G. **Number of cows and heifers calving.** This includes all females that either calved or attempted to have a calf.
- H. **Herd calving percent.** The number of females that calved, G, divided by the adjusted number of females exposed during the breeding season, F. The result is then multiplied by 100 to express the result as a percentage. This measure is an indication of the reproductive performance during the breeding season and gestation period.

- I. **Number of calves born alive.** This is the total number of calves that were born excluding stillbirths.
- J. **Number of calves stillborn, found dead or died within 24 hours.** Enter the total number of stillbirths, calves found dead, and calves dying within a day of birth. This number provides some indication of the extent of calf vigor, calving difficulty, cow mothering ability, etc.
- K. **Number of calves weaned.** This is the total of all the calves that were weaned from the calves that were born in I above.
- L. **Percent calf death loss.** Calf death loss is determined by subtracting the number of calves weaned, K, from the number of calves born, I. Percent calf death loss is then calculated by dividing calf death loss by the number of calves born, I, and then multiplying that result by 100.
- M. **Percent calf crop weaned per cow exposed.** This calculation is a measure of a herd's overall reproductive and health status. It is calculated by dividing the number of calves weaned, K, by the adjusted number of exposed females, F, and then multiplying that result by 100.
- N. **Number of mature cows calving.** This is the number of females in G above that have gone through at least one previous calving season.
- O. **Length of calving season for mature cows in days.** This is the number of days that elapsed from the date the second mature cow calved until the date on which the last mature cow calved.
- P. **Number of mature cows calving within the first 21 days of calving season.** This is the number of cows from N above that calved from Day 1 through Day 21 of the calving season with Day 1 being the day on which the second calf is born from a mature cow. Do include the first cow that calved in this number. The purpose of this designation is to approximately identify the cows that conceived within the first 21 days of estrus cycle of the breeding season.
- Q. **Day 22 - 42.** This is similar to P above except for mature cows calving Day 22 through Day 42 of the calving season.
- R. **Day 43 -63.** This is similar to P above except for mature cows calving Day 43 through Day 63 of the calving season.
- S. **Percent mature cows calving Day 1 - 21.** This calculation takes the number of mature cows calving Day 1-21, P, and divides it by all the mature cows that calved, N. The result is then multiplied by 100 to convert it to a percentage.
- T. **Day 22 - 42** This calculation takes the number of mature cows calving Day 22-42, Q, and divides it by all the mature cows that calved, N. The result is then multiplied by 100 to convert it to a percentage.
- U. **Day 43 - 63.** This calculation takes the number of mature cows calving Day 43-63, R, and divides it by all the mature cows that calved, N. The result is then multiplied by 100 to convert it to a percentage.
- V. **Day 1 - 63.** This calculation takes the number of mature cows calving Day 1-63 (Sum of P + Q + R) and divides it by all the mature cows that calved, N. The result is then multiplied by 100 to convert it to a percentage.
- W. **Approximate average calving date.** Make an estimate of the average calving date of all the cows and heifers.
- X. **Approximate average calf age in months at weaning.** Make an estimate of the average age of all calves weaned.
- Y. **Number of calves sold.** This is a total of all the calves marketed from the calf crop in I that were sold near the time of weaning and before being backgrounded, retained as replacements, etc.
- Z. **Total weight of calves sold.** This should be the weight of calves marketed at or very near weaning time. The sale weight of calves after they have been backgrounded should not be used here. The number in Z will be used along with EE to estimate an average weaning weight of the herd.
- AA. **Average sale weight.** Divide the total weight of calves sold in Z by the number of calves sold in Y.

- BB. **Total calf sale net income.** This number may be determined by adding the net amounts from sales checks for the calves marketed in Y.
- CC. **Average price per head.** Divide the total net calf sale income, BB, by the number of calves sold in Y.
- DD. **Average price per cwt.** Divide total calf sale net income, BB, by the total weight of the calves sold, Z, and then multiply that result by 100. The resulting price allows comparison with prices available during the marketing season or with past years prices.
- EE. **Estimated total pounds of calves weaned but not sold.** Make an estimate of the total weight of calves at weaning that were retained for replacement heifers, backgrounding, custom feeding, etc.
- FF. **Total pounds of calves weaned.** Add the total weight of calves sold, Z, to the total pound of calves weaned, but not sold, EE.
- GG. **Average calf weaning weight.** Divide the total pounds of calves weaned, FF, by the number of calves weaned, K. Average weaning weight is an important measure of the herd's overall production level and is certainly impacted by the average age of the calves at weaning.
- HH. **Pounds of calf weaned per cow exposed.** Divide the total pounds of calves weaned, FF, by the adjusted number of females exposed, F. This result is probably the most important single measure of a cow herd's combined reproductive and growth performance.
- II. **Estimated total value of unsold calves at weaning.** Determine the total market value at the time of weaning of all the calves retained after weaning.
- JJ. **Average value per calf.** Add the total net income from calf sales, BB, to the estimated total value of the unsold calves, II, and then divide the sum by the number of calves weaned, K.
- KK. **Average value per cwt. of calf weaned.** Divide the average value per calf, JJ, by the total pounds of calf weaned, FF, and then multiply the result by 100.
- LL. **Average calf value per cow exposed.** Add the value of the calves sold, BB, to the value of the unsold calves, II, and divide the sum by the number of exposed females, F.
- MM. **Number of cows sold** This is simply a total of all the cows two years old and older that were sold for any reason during the calendar year.
- NN. **Percent of cow herd sold.** Divide the number of cows sold, MM, by the number of cows and bred heifers in the herd on Jan. 1, A, of the year being analyzed and then multiply the result by 100.
- OO. **Number of cows and bred heifers that died.** This is a total of all cows and bred heifers in A that died for any reason during the year being analyzed.
- PP. **Cow herd percent death loss.** Divide the number of cows and heifers that died, OO, by the total number of cows and heifers, A, and multiply the result by 100.
- QQ. **Date winter hay or silage feeding to cows began.** Write down the date that winter feeding of the cow herd began. This date should serve as a baseline measure against which future years can be compared.
- RR. **Number of days cows fed hay or silage.** This is the number of days during the year in which cows were fed a significant amount of supplemental feed. A goal for most operators should be to limit the days additional feed is required.