

Livestock Efficiency

A comparison of birth weight and yearling weight along with cow efficiency

Authors: L. Neil Burcham and Milton G. Thomas

The purpose of this paper is to explain the relationship between birth weight and yearling weight. The second part is to explain cow efficiency.

The first part will be the birth weight-yearling weight situation. The second part will be cow efficiency.

The term used to describe this situation is correlation. Correlation is defined as: A measure of how two traits vary together. A correlation of + 1.00 (100%) means that as one trait increases the other also increases – a perfect positive relationship. A correlation of – 1.00 (100%) means that as one trait increases the other decreases – a perfect negative or inverse relationship. A correlation of 0.00 means that no relationship exists between traits. Correlation coefficients may vary between +1.00 and –1.00.

Birth weight and yearling weight are correlated positives. This means that as one will increase so will the other. The level of the correlation is +. 4 to +. 7. The average is about +. 55. Note that the relationship is not perfect (+ 1.00) meaning all animals do not fit the correlation.

As a producer you can find both sires and dams that will produce calves with low birth weight and high yearling weights.

Table 1 will show the average birth weight and yearling weight by year. I have selected alternate years and bull calves only. Also, the weights are in pounds. The data was copied from the American Angus Association Sire Evaluation report page 4.

Table 1. Changes by year in birth and yearling weights.

<u>Year</u>	<u>Birth Weight</u>	<u>Yearling Weights</u>
1973	68	857
1975	69	866
1977	72	881
1979	73	901
1981	75	926
1983	78	938
1985	80	978
1987	81	1,010
1989	83	1,059
1991	83	1,067
1993	82	1,077
1995	82	1,081
1997	82	1,087
1999	82	1,114
2001	82	1,120
2003	81	1,140

The data is made from 3,773,381 birth weight records and 2,137,293 yearling weight records. Angus was selected for this paper because they have the most records of any breed association.

Note that from 1985 to 2003 birth weight increased one pound while yearling weight increased 162 pounds.

Table 2 will show the changes in EPD's for birth and yearling weights over the same years.

Table 2: Changes by year in birth weight and yearling weight EPD's.

<u>Year</u>	<u>Birth Weight</u>	<u>Yearling Weights</u>
1973	-1.9	-12
1975	-1.7	- 8
1977	-1.3	- 4
1979	- .9	0
1981	- .4	+ 5
1983	+.4	+12
1985	+1.2	+19
<u>Year</u>	<u>Birth Weight</u>	<u>Yearling Weights</u>
1987	+1.9	+25
1989	+2.3	+31
1991	+2.6	+37
1993	+2.6	+42
1995	+2.5	+47
1997	+2.4	+52
1999	+2.5	+58
2001	+2.4	+63
2003	+2.4	+68

To get information in New Mexico, Table 3 will show changes in EPD's over the years in the New Mexico State Angus herd.

Table 3. Changes in EPD's by year on birth weight and yearling weights.

<u>Year</u>	<u>Birth Weight</u>	<u>Yearling Weights</u>
1987	+1.8	+10
1989	+ .6	+11
1991	+1.0	+22
1993	+1.3	+31
1995	+1.3	+30
1997	+ .3	+35
1999	+ .3	+43
2001	- .4	+42
2003	- .3	+41
2005	-1 .4	+47

Part Two: Cow Efficiency

Cow energy value (\$En), expressed in dollar savings per cow per year, assesses differences in cow energy requirements as an expected dollar savings difference in daughters of sires. A larger value is more favorable when comparing two animals (more dollars saved on feed energy expenses). Components for computing the cow \$En savings differences include lactation energy requirements and energy costs associated with differences in mature cow size.

The \$En was published for the first time in 2005. I included this information for the reason that it is new. The average of all Angus is a \$9.06 savings.

All of the \$En records for all cows in the New Mexico State Angus herd have been obtained. That average is \$19.17. The range is \$+10.79 to +28.53. In looking at the NMSU records the small body weight cows with low milk EPD's are the most efficient. Also, one of our Angus bulls is in the top 1% on \$En. I hope to have him on display at the field day.

Since \$En is new, I know very little about it. I am sure most of your questions will be answered with, "I don't know; you may be right and sounds good to me". But I do know one thing for sure; single trait selection does not work.