Performance Ratios

~Cindy Bene
Moonlight Farms

The purpose of using Performance Ratios is to identify animals that are "above average" in each kidding season. They are also helpful in ascertaining which females are the better producers.

When calculating Performance Ratios, animals must be compared to their own contemporary group versus animals from another breeder or farm. This ensures that the animals being compared were all born and raised under the same conditions and management. Additionally, bucks, does and wethers are calculated as separate groups.

The simplified formula for the calculation of the Performance Ratio is:

Individual animal's weaning weight divided by the contemporary group average weaning weight, and then multiplied by 100. Since this is a ratio, a score above 100 is considered "above average."

Before this calculation is done, however, the weaning weights are first adjusted to 90 day weight equivalents. Most kids are weaned between 60-120 days. Regardless of when the kid is weaned, in order to draw meaningful comparisons, all kids' weights in the group are adjusted to the 90 day weight equivalent as follows:

- Subtract birth weight from weaning day weight
- Divide by age (in days) at weaning
- Multiply by 90
- Add to birth weight to get the 90 day weaning weight

Example: A kid weighed 5 pounds at birth and 55 pounds when weaned at day 100.

Step 1: Calculate the average daily weight gain

- 55 pounds minus 5 pounds = 50 pounds
- 50 pounds divided by 100 days = 0.5 pounds average daily weight gain

Step 2: Convert above to 90 day weaning weight:

- 0.5 multiplied by 90 = 45 pounds
- 45 plus the birth weight of 5 pounds = 50 pounds, and this is the "90 day weight equivalent"

Next, the 90 day weight equivalent is adjusted for non-genetic factors. Based on research done at Virginia Tech, there are adjustments that need to be made to eliminate these effects. These adjustments include:

- Sex of kid
- Litter size/Rearing
- Age of dam

The multiplier for adjusting for sex is shown below:

Factor	Sex
0.90	Buck
1.0	Doe
0.97	Wether

Adjusting for the dam's age:

Factor	Dam's Age
1.1	1 year
1.09	2 years
1.0	3-7 years
1.0	8+ years

Adjusting for the type of birth and rearing:

Factor	Birth Type	Raised as:
1.00	Single	Single
1.14	Single	Twin
1.04	Twin	Single
1.18	Twin	Twin
1.08	Triplet	Single
1.23	Triplet	Twin
1.27	Triplet	Triplet

Example: Buck with weight adjusted to 50 pounds, born to a 1 year old doe, and born a twin, reared as a single.

Adjustment for sex:

- 50 multiplied by 0.9 = 45 pounds

Adjustment for dam's age:

- 45 multiplied by 1.1 = 49.5 pounds

Adjustment for type of rearing:

- 49.5 multiplied by 1.04 = 51.48 pounds

The next step is to calculate the adjusted weights for all other kids of the same sex and born at the same time (contemporary group) to arrive at an average for the group. All the weights are calculated in the same fashion as above. Then the average for the group is derived by adding all the weights and dividing by the number of kids. Let's say the contemporary group had 3 kids with weights of 51.48, 50.2 and 49.82 pounds.

51.48 + 50.2 + 49.82 = 151.50 pounds.
151.50 divided by 3 = 50.5 pounds average weight for this contemporary group.

To figure the Performance Ratio for the above example kid that was 51.48 pounds, divide his weight by the average weight and multiply by 100.

51.48 divided by 50.5 = 1.02
1.02 multiplied by 100 = 102

The Performance Ratio is expressed as deviation from 100, so this kid is 2 above the average for his group.

Calculating Performance Ratios is relatively simple and comes in handy when striving to improve your herd. If you choose a doe that was above average and a buck that was also above average for breeding, this will enable you to improve the performance of your herd over time.