nothing when it comes to sifting through the non-genetic influences on weaning weight, and they ignore information on relatives.

Because the methodology used to calculate EPD (Best Linear Unbiased Prediction or BLUP) allows us to parse weaning weight by the factors that impact it, EPD permit us to zero in on an animal's genetics for milk, independent of all the other factors. This is accomplished by leveraging the sophisticated statistical techniques of BLUP on the 6 million + weaning weights in our database. These features make EPD vastly superior to other methods of gauging milk genetics. After extolling the virtues of EPD, how is it that we can have cows that wean heavy calves with poor Milk EPD (and vice versa)? One obvious reason is that these cows may be weaning heavy calves via exceptional growth genes they pass to their calves. Just look through ASA's database and you will find plenty of animals that have low Milk EPD but high Maternal Weaning Weight EPD due to their extreme growth. Remember, Maternal Weaning Weight EPD = Milk EPD + ½ Weaning Weight. A typical retort to this assertion is "how could the calf express exceptional growth if the cow did not give loads of milk?" Though high levels of milk certainly help a calf express its growth potential, a calf gets a significant amount of its nutrients from sources other than milk, particularly after the first few months.

Another plausible cause for a heavy weaning calf out of a low Milk EPD cow is simply that she produced lots of milk. In these circumstances, our genetic evaluation tells us that the reason for the souped-up milk production is likely non-genetic in nature. This is a big pill to swallow, as we tend to assume that a heavy milking cow must be genetically outstanding for milk production; however, since milk production is only low to moderately heritable we should not be surprised to have heavy milking cows that are below average genetically, and vice versa. [1]

From a genetic evaluation standpoint, milk's meager heritability means that it takes more data to move Milk EPD and improve accuracies than it does with more heritable traits (e.g., growth and carcass). Since a cow is limited in the number of calves she can have naturally, unless she has numerous daughters (typically only possible for donor cows) and they have many calves, or her sire or maternal grandsire change dramatically for milk, a colossal shift in her milk EPD from where she starts is not in the cards. A big jump in accuracy is just as unlikely.

These limitations do not in any way imply fault with EPD; the limitations are simply a function of biology. Low heritability and small numbers of offspring are not conducive to accurate estimation. Always keep in mind, however, even though a cow's Milk EPD may not be highly accurate, research has clearly shown that they are far and away the most accurate estimate of her genetic merit for milk. ■

[1] In our population we have estimated the heritability of milk to be 16%. This means 84% (100% – 16%) of the differences in milk production between cows during a lactation are due to non-genetic factors — and that is after we remove differences due to age and contemporary group (i.e., herd, pasture). Given these circumstances, it is easy to see that a cow's milk production ability may be very different from the genes she possesses for the trait.