SISKIYOU STOCKMAN

What's New in the "Top of the State". A report for Siskiyou Livestock Producers put out by the Farm Advisors Office, Cooperative Extension of the University of California, located at 1655 South Main Street, Yreka, California 96097

March 2008

EPD Accuracy

There are two issues about accuracy of Expected Progeny Differences (EPDs). The first is whether EPDs are accurate in accessing or estimating genetic value and the second is the accuracy of a specific numerical EPD. These are completely different concepts, but one may influence the other in actual practice.

There has been a great deal of experimental research and practical use of EPDs to show that they can be successful in selection and improving genetic merit. EPDs from individuals with numerous progeny and extensive pedigrees have been very useful. It gets confusing because the mathematical models that calculate a specific EPD value have some error associated with that predicted value. Usually we call that error a variation or deviation or it may be expressed as a standard deviation which implies certain statistical properties about the error.

With EPDs the variation or error associated with the calculation of an EPD is called its accuracy. These are often reported (but usually ignored) with the EPD, and they range from 0 to 1. A stud bull with lots of progeny and an extensive pedigree may have an accuracy of 0.90. A value of 1.0 would be no error. Young bulls as typically purchased will often have an accuracy of 0.05. Accuracy values are a handy tool to help guide us in accessing the "true" value of an EPD. Accuracies of 0.70 or greater are usually considered highly accurate. That means the reported EPD is likely very close to the "true" EPD. It will not change much as more records are reported.

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EPDs that are clearly of low accuracy are those of about 0.05. This means that the reported EPD has a good chance of changing as more records are reported. Accuracies between 0.05 and 0.70 are more problematic in classifying as to their "accuracy" or error but are still useful as a guide.

The question not often asked is how much error (variation) is there in the EPD based on the accuracy? It is helpful to know that an EPD is of "low accuracy" but can we learn more and is it helpful in our decision-making? A good number to keep in mind is 2.5 pounds. For an Angus bull with a birthweight EPD accuracy of 0.05, their "true" EPD will be above or below the reported birthweight EPD value by about 2.5 pounds. For example, for a

reported birthweight EPD of 0.7 with an accuracy of 0.05, the "true" birthweight EPD will be between –1.8 and +3.2 about 2/3 of the time. These values are calculated by: 0.7-2.5= -1.8 and 0.7 + 2.5= 3.2. This is illustrated in the figure (below) showing a birthweight EPD of 0.7 and a dotted line indicating the variation expected in that EPD ranging from –1.8 to +3.2. If we compare this bull to one with a birthweight EPD of 3.7 with an accuracy of 0.05, we find that the second bull's EPD will most of the time (2/3 of the time) finalize between 1.2 and 6.2. This is illustrated with the triangle symbol in the figure and its dotted line. The problem is there is a substantial chance that the true EPD of these bulls are about the same. There is an "overlap" between 1.2 and 3.2, suggesting that there is not a difference between the two low accuracy EPDs.
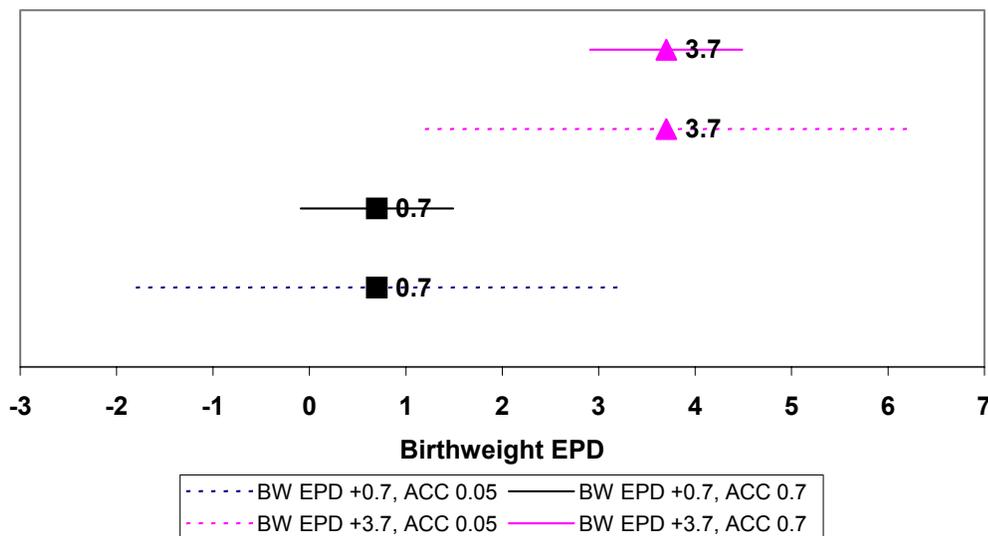
When the accuracy is higher the amount of the error is smaller. For an accuracy of 0.70 the birthweight accuracy is about 0.8 pounds, which is much smaller than the 2.5 pounds associated with the low accuracy EPDs. The figure demonstrates the EPDs with higher accuracy.

When comparing birthweight EPDs of young low accuracy bulls the EPD values need to be about 5 pounds different to be confident of a true

difference. This doesn't happen too often. As the difference gets less we are less confident that the reported EPDs for birthweight are really different. Remembering to add or subtract 2.5 pounds to a birthweight EPD for Angus is helpful in deciding if the EPDs are really different. Different breeds have different values associated with the accuracy. But for all breeds 0.05 represents low accuracy and 0.70 is much higher accuracy.

Low accuracy EPDs can be very meaningful and useful, but they must be very much larger or smaller than comparative values. For example, a young bull has a marbling EPD of 0.55 with an accuracy of 0.05. A marbling *accuracy* of 0.05 is associated with a marbling *error* of 0.25. The young bull with a reported marbling EPD of 0.55 will likely have a "true" EPD of between 0.3 (0.55-.25=0.3) and 0.8 (0.55+0.25=0.8). With time, even if all the additional records are not favorable, the "true" EPD of this young bull is most likely at least 0.3 which is higher than most Angus sires. In this example, even though the accuracy is low, the early EPD value is so high that the odds are very good that at worst case it will be recalculated and still be relatively high.

The table below shows the error associated with important common EPDs for low accuracy Angus bulls (accuracy of 0.05). The errors can be applied like the examples above to the reported EPD for a young bull to help determine what the "true" EPD might be when more records become available. As a general rule when any two EPDs are different by twice the value in the table for that trait they are likely going to be different when their accuracy improves. If the EPDs for a specific trait are only different by the value in the table then the odds go down that the EPDs are really different.

Expected Progeny Difference	Error or change associated with an Accuracy of 0.05
Birthweight	2.5
Weaning weight	11
Yearling weight	16
Milk	9
Calving ease direct	8
Calving ease maternal	9
Marbling	0.25
Ribeye area	0.27
Fat Thickness	0.034
Ultrasound IMF	0.17
Ultrasound ribeye area	0.31
Ultrasound fat thickness	0.022

New tools to help predict genetic value at an early age are being developed. But until then you should be the producer that uses the reported accuracy of an EPD. Use the error value associated with the accuracy for a specific trait to determine whether an EPD is really different. If not different then let someone else pay more for that bull.

Cattle Health Meeting

The annual Cattle Health meeting will be held on **TUESDAY, March 11** at 7:30 pm in the Montague Elementary school. Dr. Bob Sainz from the Animal Science department, UC Davis, will discuss pre-weaning and pre-conditioning nutrition on subsequent growth and development of calves. This has important implications on grid value. With improving tracking, buyers for producers that are not in alliances or retaining ownership, may consider previous calf performance when bidding. It behooves producers to seriously consider nutrition at the cow/calf level as a factor for feedlot and carcass performance. With increasing costs for grain and hay, understanding the implications of feeds on performance is cost effective.

Dr. John Maas, Extension Veterinarian, will share his knowledge on important animal diseases. An update on Foothill abortion and progress in its control will be provided. Dr. Maas will also talk about leptospiorsis variants that may be of concern and results of BVD vaccine challenges.

The meeting will conclude with Siskiyou County CattleWomen pies.

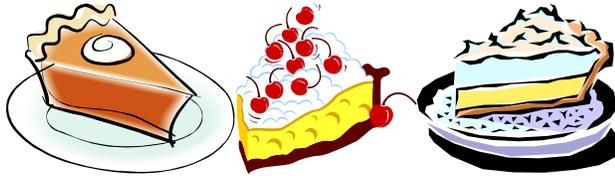This is your copy of the Siskiyou Stockman, which you requested, or which we thought would be of interest to you.

Sincerely,

Daniel J. Drake

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CE Associate, Animal Science Dept., UC Davis
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ANNUAL CATTLE HEALTH MEETING
INFORMATION ENCLOSED

<u>Date: March 11, 2008</u>
<u>Where: Montague Elementary School</u>
<u>Time: 7:30 pm</u>

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A report for Siskiyou Livestock Producers put out by the Farm Advisors Office, ¶
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