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Mounting Excitement Among Angus Producers for High-Density 50K Genomic Data

First and only commercially available genomic predictions for Angus cattle from a High-Density panel of more than 50,000 DNA markers

A significant milestone in the history of beef genetics occurred in January 2010 when Pfizer Animal Genetics announced the completion of HD 50K, the beef industry's first and only commercially available Molecular Value Predictions (MVP™s) from a High-Density panel where more than 50,000 DNA markers are genotyped for each animal. This breakthrough provides new insight into the fundamental basis for differences between individual animals, and represents significantly greater selection opportunities for owners of black Angus cattle.

"We are very excited about the results that are becoming available to Angus breeders," says Dr. Nigel Evans, vice president of Animal Genetics for Pfizer Animal Health. "The early HD 50K data confirm the value of this technology to the industry; cattlemen can now access reliable genomic information to supplement existing EPDs, predict performance on unique production traits, and accelerate genetic progress toward a broader range of goals. More and more seedstock sales will feature animals with HD 50K MVP results as the year

progresses, and we are pleased to feature just a few industry leaders in this newsletter."

You have probably heard about the release of HD 50K; if not, here's more information on this latest technology. HD 50K offers genomic predictions (MVPs) for 13 traits and the industry's first fully genomic-based economic index, \$MVP^{FL}. HD 50K MVPs have high levels of reliability and are strongly correlated with an animal's actual breeding value. A portion of the traits described by the MVPs—average daily gain, dry matter intake, net feed intake and tenderness—are not currently available as Expected Progeny Differences (EPDs) and therefore provide producers with an excellent opportunity to select cattle according to traits of economic importance that can be difficult or costly to measure. Other traits associated with calving ease, growth, maternal and carcass merit can be used in concert with existing EPDs. Also included is an economic index, \$MVP^{FL}, which is expressed in units of net dollars returned due to combined genetic merit for weaning weight,

[continued on back page](#)

In this issue ...

- Pfizer Animal Genetics announces availability of High-Density 50K for Angus Cattle
- HD 50K allows seedstock producer to enhance the accuracy, scope of decision-making
- New breeds to be added to North American GeneStar® MVP™ Reports

From the Expert

DR. KENT ANDERSEN
PFIZER ANIMAL GENETICS



Take a look at new HD 50K MVP™ for influential Angus sires

Pfizer Animal Genetics released High-Density 50K results for 10 influential Angus sires as identified by the American Angus Association¹. The results reinforce the power of this technology, as the MVPs closely reflect each sire's high-accuracy EPDs. HD 50K MVPs can also help to more accurately predict genetic merit in young, unproven animals, as compared to moderate or high-accuracy EPDs that require years of data.

To view HD 50K results on 10 influential Angus sires, visit our HD 50K Product page at www.pfizeranimalgenetics.com.

¹Angus Remains Industry Leader. *Angus Journal* 2009; 31(3):46-47.

HD 50K allows seedstock producer to enhance the accuracy, scope of decision-making

Lee Leachman of Leachman Cattle Company of Colorado (LCoC) continuously looks to new technology to take his business to the next level. Leachman has turned to HD 50K to enhance the accuracy and scope of selection information.

HD 50K delivers greater insights

HD 50K provides the industry's first and only commercially available Molecular Value

Predictions (MVPSM), where more than 50,000 markers are genotyped for each animal.

One unique feature of HD 50K is the ability to complement existing Expected Progeny Differences (EPDs) information as well as provide data on traits currently not available with EPDs, including average daily gain, dry matter intake, net feed intake and tenderness.



Lee Leachman
Leachman Cattle Company
of Colorado

Outstanding Angus HD 50K Results

Three leading sires—one used by Leachman in the past and two currently in use—were recently tested with HD 50K and their results are shown below. The results include their individual EPDs and MVPs for each trait, as well as their % ranks within the Angus breed and within the Pfizer database, respectively. HD 50K results reinforce the power of the technology, as the MVPs closely reflect the sires' high-accuracy EPDs. This also allows the information to be used in concert with EPDs.



N BAR EMULATION EXT

| | CED | BW | WW | YW | ADG | DMI | NFI | CEM | MA | CW | FAT | REA | MS | TND | \$B/\$MVP ^{FL} |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|----------|-------------------------|
| EPD | 6 | 1.9 | 43 | 79 | - | - | - | 11 | 18 | 18 | 0.047 | 0.06 | 0.12 | - | 30.68 |
| ACC | 0.96 | 0.99 | 0.98 | 0.98 | - | - | - | 0.95 | 0.97 | 0.92 | 0.92 | 0.92 | 0.93 | - | - |
| EPD % Rank | 45 | 45 | 50 | 55 | - | - | - | 3 | 70 | 20 | 90 | 65 | 80 | - | 75 |
| MVP | 8.5 | -3.2 | 29 | - | 0.27 | 0.96 | 0.27 | 13.5 | 16 | 36 | 0.06 | 0.01 | 0.09 | -0.75 | 61 |
| MVP % Rank | 15 | 4 | 30 | - | 70 | 90 | 90 | 1 | 50 | 4 | 90 | 80 | 90 | 9 | 90 |

N BAR EMULATION EXT is a proven reference sire and is a household name within and outside the Angus breed. While no longer readily available, EXT is a breed leader and has helped LCoC benchmark and advance their breeding program. The HD 50K MVP % ranks provide a quick-glance comparison of your Angus cattle to the overall population of Angus animals with HD 50K MVPs in the Pfizer Animal Genetics database.



LCC New Standard

| | CED | BW | WW | YW | ADG | DMI | NFI | CEM | MA | CW | FAT | REA | MS | TND | \$B/\$MVP ^{FL} |
|------------|----------|----------|-----------|----------|----------|-----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-------------------------|
| EPD | 11 | -0.8 | 58 | 117 | - | - | - | 11 | 35 | 11 | 0.024 | 0.24 | 0.4 | - | 52.26 |
| ACC | 0.82 | 0.92 | 0.9 | 0.85 | - | - | - | 0.57 | 0.67 | 0.45 | 0.47 | 0.56 | 0.53 | - | - |
| EPD % Rank | 5 | 5 | 10 | 2 | - | - | - | 3 | 1 | 50 | 70 | 30 | 30 | - | 15 |
| MVP | 15.3 | -5.5 | 46 | - | 0.56 | -0.37 | -0.82 | 12.1 | 42 | 23 | 0.02 | 0.27 | 0.57 | -0.56 | 189 |
| MVP % Rank | 1 | 1 | 3 | - | 4 | 20 | 1 | 1 | 1 | 40 | 80 | 20 | 20 | 50 | 2 |

LCC New Standard is a leading sire for feed efficiency based on multiple sources of information, including HD 50K MVP results, Leachman and the University of Illinois feed efficiency testing, and the Circle A Angus Sire Alliance (ABS) progeny evaluation (top 20%). While this information is valuable, it's not easy to compile. In addition, feed efficiency information is not readily available in the form of EPDs from breed associations. HD 50K, however, allows producers to accurately select animals at a very young age for this economically relevant trait.



GAR-EGL Protégé

| | CED | BW | WW | YW | ADG | DMI | NFI | CEM | MA | CW | FAT | REA | MS | TND | \$B/\$MVP ^{FL} |
|------------|-----------|-----------|----------|----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-------------------------|
| EPD | 6 | 1.1 | 66 | 106 | - | - | - | 5 | 22 | 21 | 0.01 | 0.34 | 0.67 | - | 65.23 |
| ACC | 0.6 | 0.87 | 0.81 | 0.61 | - | - | - | 0.25 | 0.27 | 0.23 | 0.31 | 0.41 | 0.35 | - | - |
| EPD % Rank | 45 | 25 | 2 | 5 | - | - | - | 70 | 40 | 50 | 23 | 15 | 5 | - | 1 |
| MVP | 6.5 | -1.4 | 54 | - | 0.43 | -0.23 | -0.47 | 1.3 | 16 | 33 | -0.03 | 0.33 | 0.86 | -0.66 | 211 |
| MVP % Rank | 30 | 15 | 1 | - | 15 | 30 | 6 | 70 | 50 | 7 | 8 | 15 | 3 | 20 | 1 |

GAR-EGL Protégé has a high ranking \$MVP^{FL}, the industry's first DNA-based economic index that helps producers select seedstock based on their profit potential for genetic merit in feedlot and carcass traits. While he has an exemplary EPD profile, the MVPs provide accurate predictions earlier in life. With \$MVP^{FL}, producers can identify at an early age bulls with the greatest potential to add profitability to their operation.

HD 50K can be used to screen animals before investing in expensive data collection.

“We are extremely interested in knowing an animal’s feed intake, which is why we measure it,” says Leachman. “But when we purchase a bull without the same information, we are in the dark. HD 50K provides that information for breeding and management decisions.”

HD 50K for Angus also includes \$MVP^{FL}, the industry’s first fully genomic-based economic index. The index takes the MVPs of economically relevant traits associated with feedlot and carcass performance, identifies the differences in profitability based



on genetic merit, and allows producers to easily select animals based on expected economic return.

“Between our best bulls and our average bulls, it’s common to see a difference of \$50 to \$70 per calf,” explains Leachman. “We look to HD 50K to be a validation of the differences in prices; as cattle move from sector to sector, these differences are paid for.”

Turning HD 50K results into action

Leachman recently received his first set of HD 50K results and believes the information can be used to more precisely select herd sires.

“We breed all of our seedstock cattle to about 20 bulls so it is extremely costly to us if a bull turns out to not be what we expected,” Leachman explains. “Having DNA results earlier in an animal’s life adds one more



level of reliability in our decision-making process.”

The accuracy of HD 50K MVPs has also been important for Leachman as he implements the results. Reports also include % ranks for easy comparison of animals in the Angus breed.

“As DNA-marker technology has improved, we’ve been able to explain more genetic variation. In a highly proven sire line-up, HD 50K results are very similar to EPD information,” Leachman says. “This is the first time we’ve been able to say that. So today, if we have no information other than a bull’s HD 50K results, we still have a good prediction of what that animal really is.”

Making decisions with HD 50K in your herd

HD 50K MVPs open up a world of opportunities to advance the reliability and range of selection decisions, including:

- **Heifer bulls.** Easy-calving bulls for your replacement heifers can be selected with more confidence using HD 50K results along with EPDs for calving ease and birth weight. MVPs can help identify bulls that calve easily when bred to first-calf replacements and possess desired levels of genetic merit in other important traits.

- **All-purpose bulls.** \$MVP^{FL} quantifies the net economic impact from genetic differences in weaning weight, average daily gain, dry matter intake, carcass weight, yield grade and quality grade. When \$MVP^{FL} is used alongside MVPs for calving ease (direct and maternal), birth weight, milk and net feed intake, those sires that serve a broad range of breeding objectives can more readily be identified.
- **Cows and replacements.** HD 50K delivers predictions of genetic merit for females with reliabilities equivalent to nearly a lifetime of natural calf production. As such,

HD 50K MVPs for females can contribute to a lifetime of better mating decisions and added value to their progeny, as well as help identify elite females.

More accurate and comprehensive selection and mating decisions empowered by HD 50K accelerate genetic improvement. Moderate accuracy with EPDs takes five or more generations to develop, while HD 50K results can be obtained soon after birth. Superior genetic merit translates into more valuable seedstock and greater returns for commercial producers throughout the production chain.

Pfizer Animal Genetics Announces Availability of High-Density 50K for Angus Cattle

continued from front page

average daily gain, dry matter intake, carcass weight, ribeye area, fat thickness (yield grade) and marbling score (quality grade) when sold on CAB-like grid.

“The MVPs from HD 50K have a strong relationship with an animal’s performance,” says Ronnie Green, Ph.D., senior director, global technical services for Pfizer Animal Genetics. “This enables Angus producers to achieve a significant return on investment through better informed management of their breeding herd. One powerful use of the HD 50K is to establish a genetic profile for animals early in life. DNA samples can be analyzed from young calves, long before progeny data are available, and with greater accuracy than parent average information. The resulting data provide a reliable prediction of genetic merit and allow producers to make earlier, better and more profitable genetic decisions.”

New Breeds to be Added to North American GeneSTAR MVP Reports in April

GeneSTAR® MVP™ percentile rank results for the 56-marker panel for feed efficiency, marbling and tenderness will be available for eight breeds in April. Initially offered for Angus, Charolais and Wagyu, now Brangus, Gelbvieh/Balancer, Santa Gertrudis, Simmental and Red Angus breeds will have surpassed our internal benchmarks to provide breed-specific MVP percentile summaries.

Ranking within a breed provides more precise information for breeders as they compare animals within their herd to all other animals of like-breed. For other breeds, results will be grouped by *Bos Taurus* and *Bos Indicus*. Percent rank for *Bos Taurus* animals will be compared against all *Bos Taurus* animals in the database, and *Bos Indicus/Indicus*-hybrid animals will be compared against all *Bos Indicus* animals in the database.

Percent rank tables for these breeds will be available on the Pfizer Animal Genetics Web site at www.pfizeranimalgenetics.com.