

"The Beginnings of Life and Learning"

Jersey Comes to Berry

On Wednesday, November 10, the Berry Farms Genetics Enterprise was given the opportunity to meet with one of the top research executives of the Jersey Cattle Club, Cari Wolfe. She graciously agreed to come to Berry to meet with the Berry Farms Genetics Enterprise and discuss the intricacies of the genomic testing procedures. During her visit, she met the Berry College students who work within the Genetics Enterprise and gave a presentation to the team about the results of Berry's genomic testing performed on the 3K SNP chip that USJersey is offering to Jersey breeders. She also gave a lecture to Berry College students outside of the enterprise in the livestock genetics classes here at Berry College. To say the least, her visit was greatly enjoyed and her insight appreciated by the Berry Farms Genetics Enterprise as well as the Berry College Animal Science department.



Cari Wolfe is pictured above with the three Berry Farms enterprises along with the students that operate them.

A Royal "Flush"

This past month has been filled with careful planning and meticulous procedures in preparation for the first two flushes of the 2010 season. Jessica Smallwood and Lydia Swinks, students of Berry College, organized a focused team of students to conduct this vital procedure for increased embryo inventory and transfer work by the Genetics Enterprise. Over the years the Genetic Enterprise has set goals for the results of the flushes: twenty head flushed and two hundred embryos collected annually. In order to make this goal a reality, Berry College student leaders and their dedicated team of students follow a strict protocol and are required to pay special attention to detail in order to insure the productivity of the flush. The flush process itself takes sixteen days from the time the hormonal process starts with the donors and recipients until the embryologist harvests the embryos. During the first flush, performed on November 19th, six donor cows were flushed. Of the six, only one had been flushed before, Berry's Parade Medley-ET, who is eleven years old, one of Berry's top cows, and a donor of over one hundred embryos during her lifetime. Overall the flush was a great success! There were fourteen embryos collected from the cows, four of which were frozen and the other nine were implanted into recipients. On December 1st, the second flush was performed. Four cows were chosen and out of those four, 3 were yearlings. 37 embryos were collected making the second flush a triumph as well. So, following the success of these first two flushes, the students of the Berry Farms Genetic Enterprise are in high spirits and are in the process of organizing the next two flushes to take place next semester on January 6 and February 9 of 2011.



The 3k Chip: Technology of Tomorrow



Jersey breeders now have the ability to utilize genomic evaluations in their selection decisions. The American Jersey Cattle Association (AJCA) has made genotyping large numbers of animals affordable by releasing the 3k chip which encompasses ~90% of meaningful data as compared to the 50k chip at a fraction of the cost. The initial investment is approximated to be \$35 per sample of a heifer, cow, or bull. Genomic testing using the 3k chip expedites the process of accurately predicting the genetic value of an animal for performance traits whereas estimation of PTA traits using traditional means requires much time and money. Information collected from individual, pedigree and progeny performance data may take years to obtain only to find that particular animal is undesirable as a parent. Genomic evaluations help identify superior performers based on DNA sequences long before offspring are produced. Just as important, the evaluations also identify inferior animals not desired for entry into the breeding program. "Genomic testing gives cattle producers a genetic 'risk management' solution for the dairy industry," says Dr. Kyle Caires, the newest animal science professor at Berry College.

It is known that inbreeding depression affects milk production and reproductive traits in dairy cattle. In fact, Dr. Caires estimates that every 1% of inbreeding correlates with a \$25 reduction in lifetime productivity per cow, when considering production and yield traits alone in Jerseys. "Recent advances in molecular genetics allow Jersey breeders to accurately determine inbreeding depression at the level of DNA, whereas, traditional inbreeding coefficients are predicted based solely on analysis of an individual's pedigree," he continues. Dr. Caires is a native of Hawaii where he grew up managing a cattle ranch. He has since then received his Bachelor degree at Oregon State University and has completed his Masters and PhD at Washington State University in the area of Reproductive Genomics.

The availability and low cost of the 3k technology provides Jersey breeders the opportunity to take a sneak peek at various aspects of an animal's lifetime genetic potential. "It is an exciting time for producers to use cutting-edge technology to facilitate sustainable genetic improvement", Dr. Caires states. Genomic technology is an effective tool and should be used in conjunction with traditional evaluations for dairy cattle improvement. Recent use of the 3k technology has resulted in the consignment of two Berry College bulls to Sexing Technologies. Moreover, we recently consigned the short-bred heifer, 'Berrys Gannon Linda Sue', to the November 2010 Jersey Cattle Association Pot O' Gold Show and Sale. This animal was sold to Collin Russell of Hilmar Jerseys in Hilmar, California.

This very technology is a crucial driving force behind the new mantra of the Berry Farms Genetics Enterprise: "The Beginnings of Life and Learning". Not only does the 3K technology allow the Genetics Enterprise at Berry College to better identify and propagate genetic value within the herd, but, it also combines agricultural classroom teaching with industry wide practices allowing students the opportunity of hands-on experience, both in business and education. "The use of genomics testing has helped provide students with a better understanding of basic and applied mechanisms important for genetic improvement", says Dr. Caires. Students involved in the Berry Farms Genetics Enterprise assisted in the sample collection and interpretation of the AJCA genomics evaluation report for each animal tested. The 3k technology has proven to be a success for not only the herd, but also in a learning experience for students at Berry College. It truly does represent the Genetics Enterprise's next step toward "The Beginnings of Life and Learning."

The Berry Farms Genetics Enterprise would like to thank the manager, Greg Major, and his staff at the Chick-Fil-A Dwarf House of Rome, Georgia for their kind donation of chicken biscuits to the enterprise. We truly appreciate your generosity!

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