NATIONAL DHIA

National Dairy Herd Information Association

Alabama DHIA
Phone: 334-844-1562

Arizona DHIA
Phone: 480-894-0156

Colorado DHIA
Phone: 970-353-9818

Dairy Lab Services
Phone: 563-557-7421

Dairy One Cooperative Inc.
Phone: 607-257-1272

DHI Cooperative Inc.
Phone: 800-DHI-OHIO

Idaho DHIA
Phone: 208-733-6372,
ext. 104

Indiana State Dairy Assn.
Phone: 765-494-8025

Lancaster DHIA
Phone: 717-665-5960

Louisiana DHIA
Phone: 225-578-4411

Minnesota DHIA
Phone: 763-682-1091

NorthStar Cooperative
DHI Services
Phone: 800-471-3716

Puerto Rico DHIA
Phone: 787-796-4500

Rocky Mountain DHIA
Phone: 435-797-1330

San Joaquin DHIA
Phone: 209-824-7790

Southeast DHIA
Phone: 352-392-5592

Tennessee DHIA
Phone: 865-974-7289

United DHIA
Phone: 540-552-2541

Vermont DHIA
Phone: 800-639-8067

Washington DHIA
Phone: 360-755-0375

# ICAR session:

## genomics to agri-terrorism to visual image analysis

The 36th International Committee for Animal Recording (ICAR) Session, held June 16-20, in Niagara Falls, N.Y., drew 450 participants from 43 countries. Those attending represented governmental regulatory agencies, milk testing and data collection organizations, animal identification (ID) device and milk testing equipment manufacturers, and livestock species associations.

USDA Under Secretary for Marketing and Regulatory Programs Bruce Knight addressed the international crowd and discussed the importance of animal ID and tracking. He noted that livestock producers need to be consistent in radio frequency ID (RFID) tagging and tracking group lots within their operations.

To increase the efficiencies of animal tracking and traceability, Knight explained the need for system standardization that works within the marketplace. “Through better animal tracking databases and animal trace processing systems, we can significantly increase the communication streams between government officials and agricultural producers,” Knight stated.

*ICAR Secretariat Andrea Rosati, Under Secretary of Agriculture Bruce Knight, ICAR President Neil Petreny and National DHIA CEO and Administrator Jay Mattison convene to address global animal identification and traceability challenges and opportunities.*

Topics addressed during the 36th ICAR Session ranged from intellectual property needs in the animal breeding and agribusiness industries to animal genomics to robotic milk sampling analysis to alpaca genetic improvement to dairy herd management improvement tools. Following is a brief synopsis of three presentations.

### U.S., Canadian genomic evaluations

In 2007, U.S. and Canadian geneticists collaborated to develop and implement genomic evaluations, reported George Wiggans of the USDA Agricultural Research Service. Additionally, they integrated those evaluations into national genetic evaluations for dairy cattle.

The Cooperative Dairy DNA Repository contains semen from more than 17,400 bulls and is the primary DNA source for investigating genomic evaluations of dairy cattle. Researchers discovered and selected high-quality single nucleotide polymorphisms (SNP) (a DNA sequence variation occurring when a single nucleotide in the genome differs between members of a species) for testing and analysis.

A field test looked at selecting which full brother to purchase from an embryo flush. Also, cows were assessed to evaluate their suitability as bull dams. Estimates of SNP effects were combined with parent average or genetic evaluation to produce a genomic evaluation. For genomic evaluations, mean expected reliability for the young bulls ranged from 63% to 75% across traits.

Based on field trial results, USDA has implemented routine genomic evaluations. Estimates of SNP effects will be updated with each national evaluation. Newly genotyped animals will be evaluated once or more between those updates based on the volume of genotype.

The U.S. and Canadian computing centers plan to exchange evaluations so each country has evaluations for all genotyped animals with evaluations and their ancestors. In 2009, USDA expects to make genomic evaluations the official evaluation for all genotyped animals and allow those evaluations to affect evaluations of relatives that have not been genotyped. As the official evaluation, genomic evaluations will appear in breed association pedigrees, but AI organizations may request a delay in releasing genomic evaluations for bull calves until they are enrolled with the National Association of Animal Breeders or a Canadian AI organization.

*With bulk food contamination a big concern for the U.S. Department of Homeland Security, University of Kentucky's Chris Thompson explains and describes a milk transport security system.*

### Preventing agri-terrorism in U.S. milk supply

While many U.S. attendees found Chris Thompson's "Development of a milk transport security system" presentation very informative and helpful, those from other countries were surprised the topic even needed to be addressed. A member of the University of Kentucky's biosystems and agricultural engineering department, Thompson explained that the U.S. Department of Homeland Security (DHS) has targeted bulk food contamination as a priority because it poses a high consequence health threat to our society. Currently, the manual methods used for monitoring milk during transport are cumbersome, paper intensive and prone to errors. The bulk milk transportation sector needs security enhancements that will reduce recording errors and enable normal transport activities to occur while providing security against unauthorized access.

Thompson developed a milk transport security system that includes a security monitoring system (SMS) located on the milk transport tank, a handheld device (computer), and a remote data server. (SMS electronics included electronic locks for the hatch and back door, temperature sensor on the milk transport tank wall and in the milk sample cooler, GPS receiver, Wi-Fi antenna, digital user interface keypad, LCD screen and data storage unit.) The SMS controlled access to milk during transport, automatically collected security data and transmitted it to the handheld device. With this system, the milk hauler/sampler used a handheld device to record milk data. The handheld device transmitted milk and security data, using cell phone communication, to a data server where access was provided to data users.

Results indicated that SMS effectively secured the milk transport tank and recorded security data. Furthermore, the handheld device was effective for collecting milk data and transmitting the milk and security data to a server.

### A more objective look at BCS

Recording and evaluating body condition score (BCS) sheds light on animal health, welfare and productivity. While widely accepted, some feel BCS is too subjective because individuals do not score cattle consistently. Ahmet Onal, from the Namik Kemal University in Tekirdag, Turkey, suggested a more objective alternative – visual image analysis, which estimates live weight, body measurements and product quality. Researchers described visual image analysis as more suitable (than subjective BCS scoring or using a tape measure), exceptional, fast and economical.

When evaluating visual image analysis, a video camera captured images and transferred them to a computer. Body measurements were obtained from images by using reference points on cattle's body surface.

Researchers evaluated four different methods – constant scale as a reference point, constant object as a reference point, laser telemeter as a reference point, and laser pointers as reference points. To use the constant scale as a reference point method, a scale that has 20 centimeters diameter and divided per centimeter by colors is put on the animal's body with a view to reference points to help determine real measures via computer. Using a constant object as a reference point requires that the animal be in a freestall or cage, or the animal should pass through a gate when recording is done. The other two methods are used primarily for non-domesticated animals.

The National Dairy Herd Information Association staff coordinated planning and meeting arrangements for the 36th ICAR Session. This is the first time ICAR has held its biennial session in the United States. To view the 2008 ICAR presentations, log on to: www.dhia.org/presentations.asp.