

- IETS
- National Western Stock Show
- Fort Worth Stock Show
- Houston Stock Show
- San Antonio Stock Show
- Sioux Empire Farm Show
- Black Hills Stock Show
- Iowa Beef Expo
- Various State Fairs
- Various Junior National Shows
- AkSarBen
- AETA
- American Royal
- Louisville



Diane Broek- Bovance, General Manager  
 1-800-999-3586 Ext 3104/712-441-3193  
 diane@transova.com  
 22938 380th St.  
 Sioux Center, IA 51250



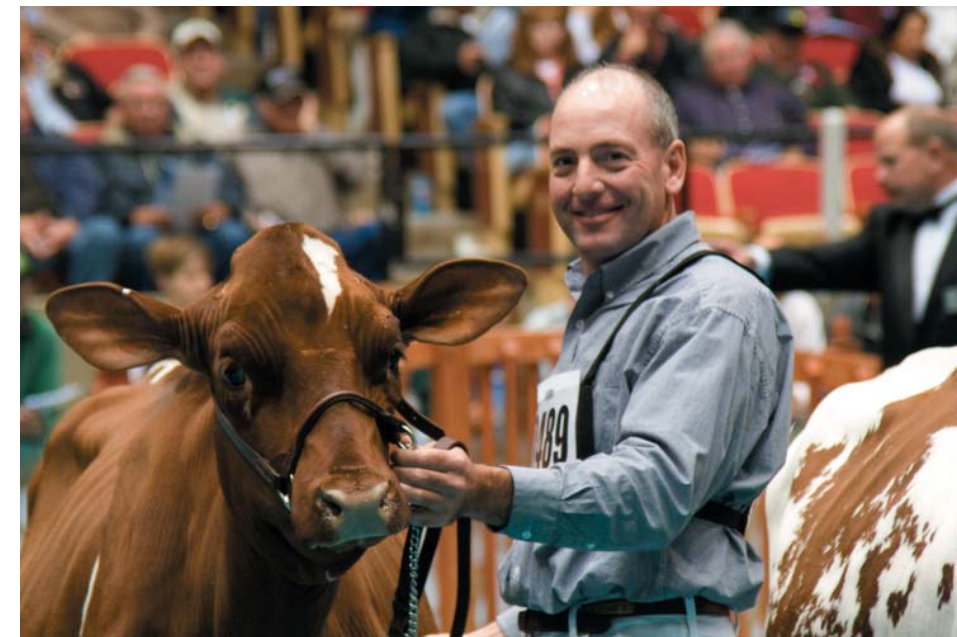
BOVANCE BULLETIN: January 2009

## Apple II Wins at World Dairy Expo

Sioux Center, Iowa—KHW Regiment Apple-Red-ET EX-92 attracted a great deal of attention during the Holstein Show at the 2006 World Dairy Expo when she won the Junior Two-Year-Old class. Two years later, a genetic copy of Apple turned heads as she stood first in the Winter Heifer Calf Class- the largest class in the show at the 2008 Grand International Red & White Show.

KHW Regiment Apple II-Red-ETN was created through cloning technology by Bovance and is a genetic copy of the million dollar Apple, who was the All-American Holstein Junior Two-Year-Old in 2006. A daughter of the original Apple, Ms Apple Pie-Red-ET, stood second in the Winter Calf Class, completing the double feat for owners of Apple Red, LLC.

“Apple was a popular winner at the World Dairy Expo and everyone was



John Erbsen and Apple II pose for a shot during the Winter Heifer Class at the 2008 World Dairy Expo.

pleasantly surprised and excited to see Apple II win,” commented Mike Deaver, Edgerton, Wis., one of the partners in Apple Red, LLC. “During the week we had so many people remark about how much they loved Apple II and how the whole story with her and Apple is really a fairy tale.”

Deaver added that the partners are anxiously awaiting the birth of additional genetic copies of Apple produced by Bovance.

“Cloning technology has proven to be an effective way for us to extend the Apple brand,” said Deaver. “When popular ones like Apple come along, it’s important to utilize everything you can to capitalize on the marketability of her.”

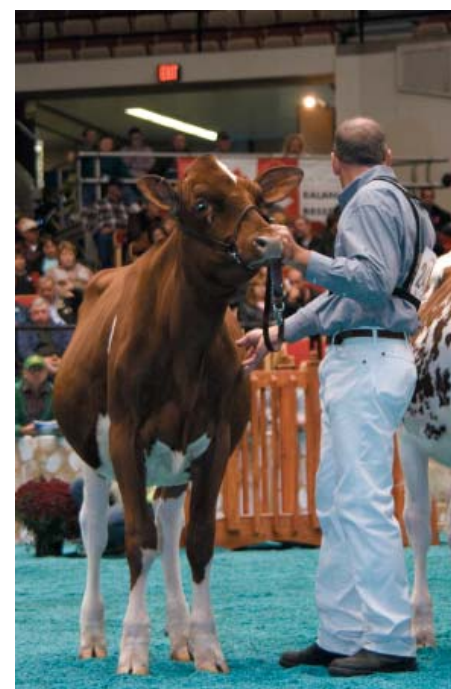
“It’s been exciting to see Apple II develop so well as a heifer- even better than the original Apple,” said John Erbsen.

Erbsen is also one of the partners in Apple Red, LLC, and has raised Apple II

on his Illinois farm.

“We plan to flush Apple II once or twice this winter and breed her this spring for calving in December when she’s two years old,” he said.

“We’re pleased to have the opportunity to work with Apple and her owners,” said Diane Broek, Bovance general manager. “Apple II winning her class at World Dairy Expo helped exemplify the fact that Apple’s elite genetic influence has been extended through cloning.” ■



### Inside this issue:

Bovance Q&A	2
Cloning Helps Manage Curly Calf Syndrome	3
Japan: Panel Believes Cloned Cattle Safe to Eat	3
Sales and Shows	4

# CLONING

## Q & A

### What is a clone?

A clone is a genetic twin to an existing animal. This original

animal provides a tissue sample from which a cell line is made. Clones are not genetically modified. The clone has the exact same chromosomal DNA – genetic material – as the original animal.

### Are clones genetically modified animals?

Clones are not genetically modified. They carry an exact copy of nuclear DNA as the original animals.

### How long has Bovance been cloning dairy and beef cattle?

For over twenty-five years, Trans Ova Genetics, one of the parent companies of Bovance, has been working closely with cattle breeders on advanced reproductive technologies. They joined forces with ViaGen, a cloning company from Austin, Texas who brings tremendous laboratory presence and intellectual property to form Bovance – a joint venture between these two cloning leaders in 2007. The combined years of experience from these parent companies involves 10 years of experience in cloning dairy and beef cattle.

### How many clones has Bovance made?

Trans Ova Genetics and ViaGen, the parent companies of Bovance, have produced more than 500 cloned calves. Many clients have chosen to use cloning technology to accelerate advancement of their genetic breeding programs.

### How much does it cost for a cattle breeder to clone an animal?

The cost of cloning an animal can range from \$19,500 down to \$5,000 depending on the goals of the breeder and the program selected. Cell lines perform differently, so each cloning package needs to be evaluated as an individual.

### Under what circumstances might cattle breeders want to clone their animals?

Through cloning, producers can duplicate the animals that contribute the most value in their herds and toward their goals to produce more efficient, healthier animals, and better quality food products. The influence of these animals, through breeding, can help create a more consistent supply of tender, flavorful beef, for example. Therefore, cloned animals will be used for intensive breeding and genetic purposes, not specifically for meat or milk production. Another example of cloning application is in the case of an animal lost early in its breeding career, perhaps even before the value of its genetics is fully discovered. Cloning technology can help extend this animal's genetic influence to contribute to the improvement of food animal production.

### How does cloning affect the genetic diversity of cattle breeding populations?

Cloning and the use of cloned animals in an elite breeding program must be managed just like AI. Cloning will likely be used for a few hundred animals, while 30 million doses (straws) of semen will be used in AI. Furthermore, cloning technology can allow for the preservation of all genetics, and in particular those of unique, diverse bloodlines that may otherwise be lost or missed in traditional

genetic selection programs. Using cloning technology, outcross genetics can be preserved to help diversify the population. Cloning contributes to genetic gain by increasing selection intensity. Elite animals are allowed to extend their genetic impact. Additionally, animals can be selected that are otherwise not available due to death, injury, castration, etc.

### Are there animal welfare concerns with cloning?

Bovance maintains the highest standards of care and comfort for all animals housed at their facilities. This same care and superior animal husbandry is critical to the success of all reproductive technologies. Dairy and beef cattle breeder clients trust Bovance to give their valuable animals the best care possible, which in turn helps ensure the best results for their breeding program goals.

### Should food from cloned animals and their offspring be labeled as such?

Bovance supports the FDA's position that mandatory labeling is appropriate only when there is a material difference in the product. The FDA has indicated that there is no difference in food produced from cloned animals and their offspring, thus there is no reason to require labeling on all products.

Bovance does support voluntary labeling. Such labeling allows for consumer choice and provides marketing opportunities. To facilitate voluntary labeling, the parent companies of Bovance, ViaGen and Trans Ova Genetics, have developed a Supply Chain Management system which provides for the identification of cloned animals through the use of RFID ear tags, affidavits and incentives in a unique registry. This information can be queried by food marketers if they desire. The offspring of clones are conventionally bred and are not clones themselves. They require no labeling and have been approved to enter the food chain by the FDA. ■

## Cloning Helps Manage Curly Calf Syndrome

Recent developments in Curly Calf Syndrome in the American Angus breed have left many breeders perplexed as to how to proceed with animals of elite genetic merit and or cell lines that are currently in storage on deceased animals.

The services of Genetic Preservation and Cloning offer some unique tools to assist breeders in the management of this syndrome. In order to understand the status of your animal:

**1. Determine if your animal carries the recessive gene for CCS.** If the animal is alive, follow the recommendations of the American Angus Association for testing of live animals. If the animal is deceased and you have a cell line in

storage with Bovance, we can still test the animal by submitting a small portion of the cells. If he or she carries the recessive

**“You can submit cells from a cell line for testing purposes in the case of Curly Calf Syndrome. The animal does not need to be living if a cell line or genetic preservation is in place.”**

gene for Curly Calf you can then decide how to proceed. Some owners will choose to keep the cell line in storage and others

may decide to discard the cell line at that point.

**2. If you have tested your animal and or cell line and found that he/she does not carry the gene for CCS, you can freely move forward with the development of cloned calves.** Rest assured that the cloned animals produced will also NOT be CCS recessive nor will their offspring if mated to a recessive free animal.

The same testing and cloning alternatives hold true for any breed that deals with recessive gene issues.

For more information on Curly Calf access the American Angus Association website. ■

## JAPAN: Panel Believes Cloned Beef Safe to Eat

*The Yomiuri Shimbun, Jan. 7, 2009*– A Food Safety Commission working group likely will acknowledge the safety of

meat from cloned cattle and swine in a report to the commission's higher panel, potentially paving the way for cloned meat to enter the market, government sources said Tuesday.

The decision was made after its subgroup of experts had concluded meat from cloned animals was as safe as that from ordinary livestock.

Once the commission acknowledges the safety of the meat, it is expected to open the door to the distribution of beef from cloned cows in the market, the sources said.

The commission is under the jurisdiction

of the Cabinet Office.

Concerns have been expressed over the safety of cows and pigs cloned from

difference between offspring from cloned pigs and cows and those bred conventionally.

The working group plans to notify the commission's Expert Committee of its conclusion by the end of this month. The Food Safety Commission is then expected to submit a report on the safety of cloned animals to the Health, Labor and Welfare Ministry by as early as the end of the year, according to the sources. The final decision will be made by the central government.

Several research institutes in the nation have cloned cattle from somatic cells. At the request of the Agriculture, Forestry and Fisheries Ministry, however, they have refrained from shipping such cows into the market to avoid public confusion. ■



*This Beefmaster bull was produced by cloning one of the breed's top performers, Black Magic.*

somatic cells because of their higher rates of stillbirths and deaths soon after birth.

After examining reports and studies from around the world, however, the subgroup concluded cloned animals would grow healthy after they reached 6 months of age, according to the sources.

The experts could find no discernible

### MORE INFO AT:

- ▶ [www.bovance.com](http://www.bovance.com)
- ▶ [www.transova.com](http://www.transova.com)
- ▶ [www.viagen.com](http://www.viagen.com)
- ▶ [www.clonesafety.org](http://www.clonesafety.org)