

Colorado Dairy News

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Reproductive Ultrasound Revisited

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Over the last 5 years the use of ultrasound for routine reproductive management in the dairy industry has made major leaps forward. This progress is a result of (1) improvements in ultrasound technology, (2) the interest and expertise developed by reproduction specialists, and (3) the widespread adoption of intensive estrus synchronization programs which benefit from early pregnancy detection. This article will highlight some of these developments.

Improvements in Ultrasound Technology

Ultrasound has been widely adopted in the traditional dairy areas of the Northeast and Midwest United States, as well as in many European countries. Its adoption on dairies in the Western United States has lagged far behind, in part because of equipment limitations. In the West reproductive exams commonly take place in outdoor lockups, and ultrasound machines were initially not sufficiently portable or their screens clearly discernable in the sunshine. Several machines are now available that address these problems: The Easi-Scan, manufactured by BCF Technologies of Livingston, Scotland and the Bantam LM manufactured by E I Medical of Loveland, Colorado both use video monitor glasses for display. The Sonosite 180 Plus is considerably more expensive but has color doppler, a keyboard, broadband transducer and a 4 X 6 inch tiltable screen. All three of these units have been used very effectively on large Colorado dairies, solving the equipment problems that limited the routine use of ultrasound on large Western dairies. More information on these three machines are provided in the insert.

Diagnostic Confirmation

Traditionally, reproductive specialists develop a certain confidence that their rectal palpation skills can tell everything necessary about the reproductive tract of the cow. However, diagnostic use of ultrasound in the reproductive examination provides definitive information that previously was only an educated guess by those using rectal palpation. The following are illustrative of questions that can be answered using ultrasound.

1. *Is that a luteal or follicular cyst?* The thickness of the cyst wall can be measured using ultrasound.

2. *Is that a large CL or a cyst?* The appearance of a CL is easily distinguished from a cyst using ultrasound.

3. *Is that a pyometra or a pregnancy?* In the ultrasound image pus is often gray with floating flecks of hyperechoic (white-appearing) debris. In contrast, pregnancy fluid is totally anechoic (black), and membranes and/or embryonic tissues (Please continue on page 3, under Ultrasound)

Colorado State University and U.S. Department of Agriculture cooperating. Cooperative Extension programs are available to all without discrimination.

**Worker Safety Training
on Dairy Farms in
Northeastern Colorado**

**Noa Roman-Muniz, DVM,
MS; ILM, CSU**

Over the last decade, the population of workers of Hispanic descent in the U.S. dairy industry has increased dramatically. The background experience and work-related training of Hispanics in entry-level positions on Colorado dairies is variable. Hispanic dairy workers, a majority of who are foreign-born and Spanish speaking, may or may not receive training about the tasks they perform or safety measures necessary. Across the dairy industry, worker training is inconsistent in content, scope and extent, and may lack relevant cultural and linguistic considerations. All these factors, in the context of an industry known for its high rates of fatal and nonfatal work-related injuries may explain why more efficient worker training has been consistently identified as a priority by Colorado dairy producers.

In 2002, the ILM team conducted a study entitled *Worker Safety Training: Current Status and Future Needs of the Colorado Dairy Industry*. The goals of this study were to define the existent training practices on dairies in Colorado, to identify factors in the workplace to which producers and workers attribute work-related injuries, and to define the safety and task-related training (Continue on page 3, under Workers)

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Important Dates:
Mark Your Calendar

January 25, 2005: The Colorado Dairy Nutrition Conference – Greeley, CO Contact: w.wailes@colostate.edu

January 26 & 27, 2005: Colorado Dairy Days – Greeley, CO Contact: kmaxey@co.seld.co.us

March 8-11, 2005: Western Herd Management Conference Reno, NV. Contact: w.wailes@colostate.edu or <http://www.wdmc.org/>

October 10-24, 2005: European Dairy Tour Through Germany and The Netherlands. Contact: w.wailes@colostate.edu.

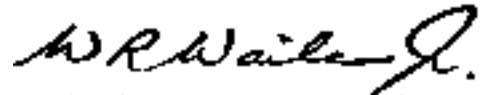
A Message From Your Extension Dairy Specialist.....

Cash Cheese Market: Can the Class III market hold the present prices for the next twelve months? The current string of \$12 or higher milk prices should hold for this time and the result would be a record. This price trend started in August 2003 and is expected to continue until at least March 2006. The recent CWT announcement that over 51,700 cows and 931 million pounds of milk are being taken out will set up optimum conditions for the dairy industry. To take advantage of these above average prices currently being offered, dairy producers can either sell futures or buy puts, but please do something!

Colorado Dairy Nutrition Conference January 2005: This year's conference will be held January 25th in Greeley. The Program will be mailed out soon. Please register early. There is a great line up of speakers.

Dairy Days & Colorado Hay and Forage January 2005: Our traditional Dairy Days program at The Colorado Farm Show in Greeley will combine with the Hay and Forage program this year. January 26th will focus on the hay and forage program while the traditional dairy program will be presented on January 27th. The dairy program will still benefit the forage producer. Contact Keith Maxey (970) 356-4000 ext.4475 for more information.

Happy Holidays,



William R. Wailes, Colorado Extension Dairy Specialist



***Integrated
Livestock
Management***

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Commodity Price Quotes

By-Product Feeds	Price/Ton Spot Loads	Price/Ton OND/Clock
Bakery Waste	\$100.00	NQ
Blood Meal (Porcine)	\$390.00	NQ
Corn Gluten Feed	\$100.00	\$100.00-Clock
Corn Hominy	\$92.00	\$92.00-Clock
Flaked Corn	\$105.00	\$108.00-Clock
Whole Corn	\$93.00	\$96.00-OND
Whole Cottonseed	\$160.00	\$165.00-Clock
Distillers Grains	\$120.00	\$120.00-Clock \$160.00-OND
Pork - Meat & Bone Meal	\$205.00	NQ
Tallow	\$0.205 /lb.	NQ
SBM - 48%	\$180.00	\$188.00-Clock
Wheat Middlings	\$90.00	\$95.00-Clock
Soybean Hulls	NQ	\$90.00-Clock
Canola	\$145.00	\$148.00 -Clock
Corn Gluten Meal	\$290.00	NQ

These price quotes are delivery at Greeley, Co

(Ultrasound, continued from page 1)

are clearly visible.

4. *Is that pregnancy a healthy one?* Ultrasound signs of a pregnancy in trouble include lack of heartbeat (visible as early as 30 days), disruption of membranes and the fetus itself, and appearance of gray flecks in the fluid. When these signs are recorded, the cow can be rechecked in a week, or prostaglandin can be given.

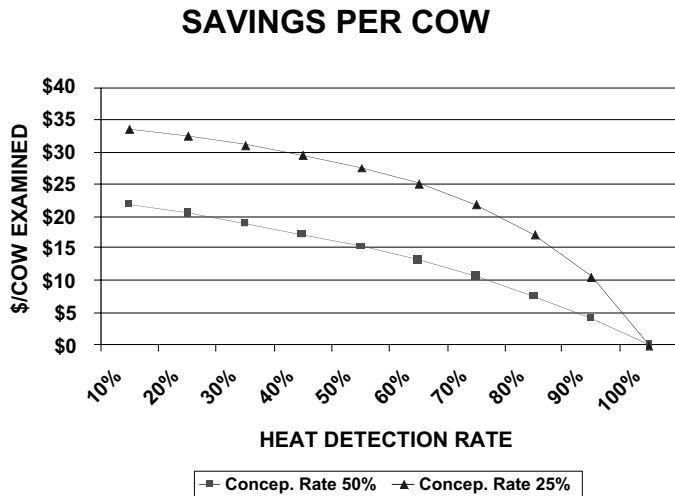
5. *Does this cow have twins?* Multiple fetuses are much easier to detect with ultrasound than palpation. Theoretically, twin reduction can be performed at 30 days of gestation if the embryos are in different horns.

6. *Is it a boy or a girl?* At 60 days of gestation, an experienced ultrasound operator can accurately determine the sex of the fetus.

7. *Is this cow open 27 days after insemination?* This is by far the most important question, since we have a significant ability to intervene via resynchronization. Uterine fluid is clearly visible in a 27-day pregnancy, and with a little practice the embryo is easily found.

Decreasing Days Open

Limiting the days the cow remains open is the goal of every progressive dairy, and ultrasound can help achieve that goal. Ultrasound must be used to identify the *open* cow as soon as possible after breeding (27-30 days) so that she may be re-inseminated immediately. The insert to this issue illustrates a timed insemination protocol using early ultrasound pregnancy detection. The following graph indicates the potential savings per cow theoretically achievable using ultrasound and rebreeding open cows soon after diagnosis. This analysis only includes the economic effects of days open saved by early rebreeding of open cows, and represents the savings achievable in herds using traditional visual heat detection.



Large dairies have always had difficulty in performing visual heat detection, and have thus relied on using secondary signs of estrous such as tail chalk. Many studies have shown the inaccuracy of this method of heat detection because cows that are not in heat or already pregnant may be inseminated. Sturman (2000) showed that using tail chalks as heat detectors, 19% of inseminations were performed on cows not in heat or in the early stages of pregnancy. Insemination of pregnant cows led to 17% embryonic loss.

It is possible to eliminate the need for estrous detection. A breeding program which

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(Workers, from page 1)

ing needs of entry-level dairy workers. The study involved a survey of management and workers from dairy operations located in northeastern Colorado. Participant dairies and dairy workers were enrolled on a voluntary basis and the survey was conducted in English or Spanish, according to the participants' preferences.

Background experience and training varied tremendously among the interviewed workers. A majority of the workers were Mexican-born, Spanish-speaking and male. When asked about the training received upon arrival at the dairy, the extent of the training reported by workers ranged from no training at all to a combination of verbal and formal instruction, demonstration and written materials. The training received by the workers also varied in duration and the person providing the instruction. Some workers reported having received safety training along with task-related training, while others reported having received only safety training or task-related training, but not both. The training reported by the workers frequently differed from that reported by the operator or manager from that same dairy. The person providing the training to the workers was in most cases a co-worker or a supervisor, but in rare instances, the workers reporting having an outside individual doing the training.

Both dairy workers and dairy operators were asked their opinions regarding the value of the safety and task-related training practices existent on the dairy. Interestingly enough, both groups perceived the task-related training offered at their dairies as more valuable than the safety training. Both groups also agreed that more formal work safety training is necessary to avoid work-related injuries and expressed an interest in participating in such programs in the future.

In an attempt to explore the rate of work-related injury and disease on Colorado dairy operations, dairy workers were

(Continue on page 4, under Workers)

(Workers, continued from page 3)

asked to list any work-related injury suffered in the 12-month period prior to the survey. The workers were also asked the likely cause of the injury, the type of medical attention received, and the number of workdays lost as a result of the injury. Dairy operators were asked the number of work-related injuries, workdays lost experienced by their workers in a previous year, and to rate causes of work-related injuries according to their frequency. The reported number of injuries and work days lost per worker per year were very similar between the two groups. Nearly half of the workers interviewed suffered at least one work-related injury in the twelve months prior to the survey, and the average number of work days lost after the injury approximated six days. Almost half of the injuries were seen by a health professional. The injuries reported by the workers ranged from being stepped on or kicked by cows to fractured bones as a result of machinery falling on a foot. One fifth of the surveyed workers reported experiencing respiratory problems and one in seven of all workers reported suffering skin problems related to work. However, workers and dairy operators had different opinions in regard to the underlying cause of work-related injury. According to the workers, most injuries happened as a result of direct contact with animals (cows or bulls) and less frequently due to human error. Dairy operators, however, believed that human error constitutes the most common cause for work-related injuries, more common than direct contact with animals or machinery.

Statistical analysis of the data was then performed to determine the relationship between the type of training received upon arrival at the dairy and the occurrence of injury. The results were both interesting and useful in the assessment of the existent task-related and safety training practices on Colorado dairies. Although safety training by itself did not have a protective effect against experiencing a work-related injury, workers who received task-related training were several times less likely to be injured than workers who did not receive task-related training. Of the workers who received any type of training (safety or task-related), those who received training as a combination of verbal instruction, demonstration and supervision were least likely to suffer a work-related injury. Also, workers who were taught by a co-worker were less likely to be injured at work than those workers not taught by a co-worker. Being taught by a supervisor had no apparent protective effect against being injured at work.

All these observations suggest that task-related training that includes safety practices might improve worker safety on dairy farms. By including safety issues into task-related training, hazard recognition and avoidance practices could be presented into a context familiar to the learner. By having new concepts presented into the context of everyday job tasks, the learner might be able to retain the new information more effectively. The fact that workers taught by co-workers are less likely to be injured may suggest that the language and cultural mannerisms used by the instructor could possibly enhance the communication of safety information vital in the prevention of work-related injuries.

It is evident that the dairy workers of northeastern Colorado would benefit from language- and culture- sensitive training interventions that incorporate safety issues into task-related training. It is also clear that the dairy industry of Colorado is very hazardous, that dairy operators are aware of this fact, and that producers understand the need for more effective safety training. The challenge therefore falls to educational institutions and veterinarians to develop worker training interventions that fit these criteria. Relevant measures of farm productivity should be measured before and after such training, so the economic value of worker training can be more objectively assessed.

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eliminates estrus detection has 3 essential components: a) first breeding using a systematic timed insemination program (OvSynch or PreSynch) in which ALL cows are bred within a month of the end of the voluntary waiting period; b) accurate pregnancy detection at 27-33 days after AI (using ultrasound); c) systematic re-synchronization program for ALL cows found open. By utilizing such a breeding and pregnancy diagnosis program, you can improve your overall pregnancy rate and spend less money doing so.

Dr. Ray Nebel of Virginia Tech implemented a reproductive plan in which cows were all bred to timed breeding protocols and employees ignored all heats. Pregnancy diagnosis was performed with ultrasound around day 28; non-pregnant cows were enrolled in a resynchronization program. Dr. Nebel reported a pregnancy rate of over 20% using this program (the national pregnancy rate is around 14%).

He also compared the economics of traditional heat detection programs with timed insemination programs in a theoretical herd model. This comparison is illustrated in this issue's insert and shows that a timed insemination program using ultrasound pregnancy detection can save the producer over \$100 per pregnancy. Application of this breeding program in your dairy herd may not have the exact same results, but it is worth knowing there are options out there to deal with poor heat detection and the results can be quite exceptional.

Nebel RL, McGilliard ML, French PD, Saltman RL. Economic impact of systemic breeding programs and factors to consider in program selection for the reproductive management of dairy cattle. Proc Ann Conf Society for Therio, Columbus, Ohio, pp 371-379, 2003.

Sturman H, Oltenucu EA, Foote RH. Importance of inseminating only cows in estrus. Theriogenology 53:1657-1667, 2000.