

breaking the transmission cycle of the organism through sanitation is presently the most effective and safe method of control. Limited success in getting producers to use disinfectant solutions especially in the winter months resulted in recommending the following methods of sterilizing calf pens:

1. *Propane flame.* Wooden, concrete or metal calf pens or hutches can be flamed with a propane burner. One can flame the pens by applying the flame much like a paint brush. The ground the pens are on can be literally cooked. Occasionally the wooden pens will be scorched and one must use caution when working around flammable materials.

2. *Fumigation and formaldehyde gas.* Fiber glass hutches that cannot be flamed and small airtight buildings can be sterilized with formaldehyde gas. The gas is produced by placing one pound of potassium permanganate in a stainless steel container to which is added one liter of commercial formaldehyde solution. The volume of gas produced is enough to fumigate 500 feet³. The hutch or building should remain closed for three to four hours for maximum effect. One should avoid breathing the fumes. This gas is relatively effective in the presence of organic material. Dead flies inside the building during the fly season are a good indication of an adequate volume of gas being produced.

Embryo Transfer Tips

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While I tried to make this presentation a light-hearted one, borrowing an idea or two from the television shot *Dragnet*, I did present two ideas that have been helpful to me in my embryo transfer work.

The *first*, and the one on which the presentation dealt entirely, was a simple idea designed to hold a cow's tail out of the way during embryo transfer or any other procedures in the perineal area of a cow. A black rubber tie-down strap that is usually used to hold a tarpaulin on a truck bed plus a handle from the end of a set of battery jumper cables are fastened together and attached to the chute in which you are working. It can be positioned so that when attached to the tail there is some tension on the rubber strap. This will keep the tail cleanly out of the way even when the cow moves forward or backward. In the event the tail is left attached when the cow leaves the chute, the handle will automatically be pulled off when the rubber strap stretches to the limit without amputating the tail as happens many times when rope is used to tie the tail. Battery handles and rubber tie-down straps can be found at all automotive supply stores or at your local flea market.

The *second* tip involves a homemade disposable embryo filter that can be made for under about 20 cents. Materials needed include flexible plastic drinking cups (2) with their bottoms cut out, and a piece of 80 micron nylon screening material. A 4"x4" piece of the 80 micron filter is laid on top

of one of the cups and the second cup is then placed on top of the screen and pushed downward into the first cup—sandwiching the screen between the two cups. The second cup (or inside one) should be cut so that it is only one-half as tall as the outer cup to facilitate removal of the screen for rinsing.

The flush media containing the embryos is poured through the cups. Then the filter screen is removed and held over an embryo transfer dish. The debris and embryos are washed off the filter surface and into the embryo transfer dish for searching. The filter is rinsed with PBS by a syringe and a 20 gauge needle. The filter is then thrown away and the cups are saved and resterilized.

I sterilize the filters by placing ten of the 4"x4" sheets into a zip lock sandwich bag, adding a 4"x4" piece of cardboard to keep the filters flat, and then sterilize with Ethylene Oxide. The cups are sterilized the same way with ETOH. I have found that the cups can be protected very well by putting about twenty sets of them (one set equals one long and one short cup) into a piece of clear PVC 3" tubing with caps on each end and sterilizing them in that tube. Plastic or paper wrapping does just as well. The address to obtain the 80 micron material by the yard is: Tetko, Inc., 420 Saw Mill River Road, Elmsford, New York 10523, telephone (914) 592-5010. Product #HC3-80.

Using Peak Milk as a Monitor of Dairy Herd Production

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An emerging area of the veterinarian's involvement on a dairy farm is production management consultation. As a production consultant you are expected to monitor herd production and make recommendations that keep produc-

tion at a profitable level. I have found that monitoring peak milk yield on individual cows and on the herd average gives me a quick and accurate assessment of the dry cow program and the fresh cow production level.

Peak milk yield occurs between 30 and 60 days in milk for both cows and heifers if the feeding and management program on a dairy are adequate.

On dairies that I am monitoring production, I calculate peak milk yield each month. From a test day report showing individual cow milk weights and days in milk, I average the production of cows between 30 and 60 days in milk. I make separate calculations for first calf heifers and cows in second or greater lactations. On larger dairies, I look at cows at 40 to 49 days in milk to cut down on the numbers but still stay statistically significant.

An excellent article on peak milk yield and lactation curves was written by Larry E. Chase in the 1986 Winter Dairy Management School proceedings published by The Cornell Cooperative Extension Service. It includes a table which compares peak milk yield and 305 day milk production. The table uses data collected by Jeff Keown of Cornell on 470,000 DHI records.

In the future it will be even more important to monitor peak milk yield as we use products like bovine somatotrophin and added fat to change lactation curves in cows.

Use of a Bovine Nose Twitch, Bilge Pump, and Milk Test for Ketosis

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Bovine Nose Twitch. A bovine nose twitch, which has much the same effect as an equine nose twitch used in a horse, is available for use in cattle. Bovine nose twitches are commonly used in Europe, where they are sometimes referred to as Reetz nose holders.¹ I first saw one of these twitches when a student brought one back from Ireland. It looked strange but worked impressively.

I now use my own version of a Reetz nose holder extensively in practice. The twitch is fabricated from an equine humane nose twitch using an industrial rod bender. Because the twitch places steady pressure around the top and bottom of the external nares it gives more control of the head and is more distracting than a nose lead (nose tongs) or a rope halter alone. If no assistant is available to hold the twitch, the handles can be tied together and the twitch left in the cow's nose. It is particularly useful for procedures that require the head to be kept very still, such as administration of sub-conjunctival injections or treatment of ocular cancer. It also works very well for distracting cows while doing teat surgery, tracheal washes, peritoneal taps, or similar standing procedures. Bovine nose twitches are available from the Colorado State University student veterinary bookstore (Vet Supply, P.O. Box 1651, Fort Collins, CO 80522) at a cost of \$25.00 each.

Bilge Pump. A large capacity, plastic pump comes in very handy when delivering large volumes of oral solutions to cattle. I have found that a standard plastic bilge pump designed to bail water from sailboats works both inexpensively and effectively. The pump I use (Thirsty-Mate, Model 124PF6, Beckson Marine, Inc., Bridgeport, Conn. 06605) costs about \$18.00 and is available at most sailboat or marine supply stores. I use a large stomach tube (3/4 to 1 inch inside diameter) modified to attach to the bilge pump by

a 20 cc disposable syringe case taped to the end of the tube. This "homemade" bilge pump system delivers large volumes of fluid very quickly, is easy to pump, and doesn't stiffen up as stainless steel pumps tend to do. Care should be taken when using any high-capacity pump not to overload an already full rumen, which could result in regurgitation and/or rupture of the rumen wall.

Milk Test for Ketosis. Diagnosis of ketosis in postpartum dairy cows is difficult if you cannot get the cow to urinate or if you cannot detect the odor of ketones on the cow's breath. In such cases, I use a ketone test powder (Ketonate™, Labanco Inc., Box 483, Addison, IL 60101) to test for milk ketones. The powder is quite inexpensive (about \$3.00 for a 15 gram bottle) and is easy to use. It contains the same nitroprusside reagent found in urine dipsticks, but is in a different formulation to that it is sensitive enough to detect ketone bodies in milk (ketone bodies are not concentrated in milk as they are in urine). This powder contains the same chemicals as Rothera's reagent (1 part sodium nitroprusside, 25 parts sodium carbonate, and 20 parts ammonium sulfate) but does not state the proportions of the chemicals on the label. The test procedure is quite simple. Place a small quantity (about 1/4 gram) of Ketonate™ powder on a plain white surface (I use a CMT paddle), then deposit 1 or 2 drops of milk on the powder. Results can be read after two minutes, with a purple color denoting a positive test for ketone bodies. Colostrum milk may not provide a suitable test sample.

Reference

1. Stober, M: Handling cattle. in Rosenberger G (ed): Clinical Examination of Cattle. Philadelphia, WB Saunders, 1979, pp 3-5.