BIOSECURITY ON DAIRIES .... ARE WE DOING ENOUGH?

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BIOSECURITY: EFFORTS TO CONTROL SPREAD OF INFECTIOUS DISEASES

There are three levels of biosecurity: 1) efforts to keep infectious diseases not present in the USA, like Foot-and-Mount disease, out of our country, 2) efforts to keep infectious diseases not present on some farms from entering those farms, and 3) efforts to control infectious diseases that have become established in dairy herds. This presentation will only deal with the last two levels of biosecurity, those that producers have under their direct control.

Dairy herds in the USA can be kept free of many infectious diseases that we consider endemic (present everywhere) in our country by following some simple common sense practices. Examples of these diseases include:

- Strep. ag. mastitis
- Mycoplasma mastitis
- Johne's disease
- Salmonella dublin
- Salmonella DT104 - multi-drug resistant
- Heel warts
- BVD (type 2 and PI animals)

Recent events in California demonstrate that even diseased we think we have eradicated from the USA like tuberculosis can be brought into herds.

Bankers are the #1 cause of the spread of infectious diseases of dairy cattle in the USA today (yes, you can quote me on this). Failure to look at the long-term investment forces many bad decisions when herds are expanding. Typically, bankers will advice their clients to fill the barn with cattle "as soon as the concrete is dry". This leaves little room for being selective about purchased cattle and inevitably results in buying cattle infected with a variety of pathogens that then spread disease to the rest of the herd. For the next 10 years or more farm profitability is compromised as owners pay for veterinary services to treat and control the problems brought about by this short-sighted approach to cattle purchasing. A small investment in pre-purchase testing can avoid these train wrecks.

Its an old but still very true adage: ***"An ounce of prevention is worth a pound of cure"*** - but the dairy industry can't seem to learn this lesson even though the swine and poultry industries learned long ago that total exclusion of pathogens from farms is by far the most cost-

Fact:
71% of dairy herds sold in New York and Pennsylvania from January 1998 to June 1999 had at least one cow infected with Strep ag. or Mycoplasma mastitis.
Dairy Herd Management, December 1999.

effective way to manage many infectious diseases. There are numerous examples in the literature documenting the significant risks of buying cattle and the cost-effectiveness of programs to limit this risk. Your veterinarian should be part of the team planning any expansion and specifically be responsible for a sound biosecurity plan.

MASTITIS EXAMPLE: STRATEGIES TO LIMIT THE CHANCES OF BUYING INFECTIOUS MASTITIS

Prepurchase exam on the herd of origin:
1 - Bulk tank culture for
Streptococcus agalactiae
Staphylococcus aureus
Corynebacterium bovis
Mycoplasma bovis
2 - Request last 6-12 months of bulk tank SCC data
3 - Request last 6-12 months of bulk tank bacteria counts (SPC): not for mastitis pathogens, instead for general quality of herd management; avoid herds with high counts or upward trend.
4 - Request last 6-12 months of records for clinical mastitis: ask yourself, is it the same or higher than in my own herd?
5 - For smaller numbers of cows, get SCC history and culture all four quarter for mastitis pathogens.

These procedures will reduce risk but not guarantee 100% that no infected cattle are purchased. So, a sound on-farm biosecurity program is also needed.

After purchase:
1 - house separately - separate milking group - or milk last.
2 - culture quarter milk samples
3 - assume that every purchased cow has been treated with antibiotics. Do not put her milk into the bulk tank until she has been tested and proven antibiotic-free.

To test or not to test?

...from Dairy Today, October 1999.

Following are two actual New York herds. Herd A did no mastitis screening of animals prior to purchase. Herd B screened all cows by culture. Data provided by Dave Wilson, 1999 NMC Regional Meeting Proceedings.

Herd A
375 lactating cows; bought 110 cows
Prior SCC; 350,000 to 400,000
SCC two months after purchase: 670,000
49 cows found positive for Strep. ag.

Costs:
Lab costs (2,300 cultures) $6,626
Lost milk (150 cows x 4.5 days x 60lb/cow) $5,265
Culls (24 cows @ $860 each)$20,640
Drug costs (150 @ $14/box) $2,100
Premium losses
($0.25/cwt x 225 cwt/day x 240 days)$13,500

Total $48,131

Herd B
150 lactating cows: bought 450 cows
Prior SCC; 120,000 to 180,000
Screened all cows by culture
600 cows total after 13 months
SCC unchanged

Costs:
Lab costs (514 cultures)$1,465
Culling (7 culls @ $860)$6,020
(no drugs, premium loss or culls due to contagious mastitis)

Total $7,485

Not only should you limit introduction of infectious disease for the sake of you herd, some of these "bad bugs" are also zoonotic - capable of infecting you, your family and your employees. *Salmonella* is the most notorious example.

Similar pre-purchase testing programs are recommended for Johne's disease, BVD, Salmonella and other infectious diseases. The concepts are the same only the specific testing strategies and techniques differ. There is not time in the program nor space in these meeting proceedings to detail them here, so consult your veterinarian.

JOHNE'S DISEASE
A SPECIFIC EXAMPLE OF HOW TO IMPLEMENT A BIOSECURITY PROGRAM

Prevalence - it's wide spread

Johne's disease has gone from a disease nonexistent in the USA (prior to 1908) to one that affects well over half of US dairy herds. It is an epidemic, even though it may not seem like it because of the slow insidious way it spreads. The 1996 USDA survey of dairy herds showed that over 40% of large herds (more than 300 cows) had Johne's disease. Consolidation of the dairy industry leads to larger herds, causing more cattle purchasing, and, since few producers make any attempt to limit the chances of buying Johne's disease, more herds with Johne's disease.

The rest of this article outlines specific, affordable strategies to limit spread fo Johne's disease among and within farms.

Latin legalese:
Caveat emptor
English translation:
Buyer beware
True meaning:
Don't be a sucker - there is a reason that cow is being sold

Every purchased animal is a threat to the health of the herd.

Strategies to avoid buying Johne's disease

The best way. Buy from herds in an official herd status program. Many states are adopting programs modeled after the U.S. Voluntary Bovine Johne's Disease herd Status Program. These herds are graded from 1 (lowest level of safety) to 4 (highest level of safety). Any cow or heifer raised in these herds, whether tested before purchase or not, has a low risk of being infected. Wisconsin uses this system and also grades the infected herds

A = no test-positive cows
B = less than 5% test-positive cows
C = 5-15% test-positive cows
D = over 15% test-positive cows

Untested herds as "maximum risk" for Johne's disease.....and they are.
Tested and classified herds are becoming easier to find.
As of January 1, 2002 Wisconsin had 176 herds at the "A" level.

Minnesota reports the following numbers of herds by VJDHSP (national program) status level. (as of September 12, 2002).

Status level	Beef herds	Dairy herds	Total herds
1	5	9	14
2	5	22	27
3	3	9	12
4	3	12	15
Total	16	52	68

Buying replacement cattle from herds that at "A" herds or levels 1-4 in the VJDHSP is good insurance against buying Johne's disease. As these programs gain momentum, stimulated by investment of states, such herds are becoming easier to find every day.

The second best way. Buy only from a limited number of herds and require that at least 30 adult cattle (2nd lactation or older) from the source herd test-negative for Johne's disease (by ELISA - blood test). By this criterion, the source herd qualifies as a level 1 in the VJDHSP. You do NOT need to test the heifers you may buy from such a herd. The test is more meaningful when used on adults. It is not a guarantee that the source herd is not infected but your risk of buying Johne's disease is much much lower than when buying from random sources of untested herds.

AFFORDABLE STRATEGIES FOR CONTROLLING JOHNE'S DISEASE ONCE IT IS IN YOUR HERD

First and most important. Follow best management practices for calf rearing. That means:

1. Have written procedures for maternity pens and calf rearing, called Standard Operating Procedures (SOPs) that everyone on the farm reads and follows.
2. Maternity pens must NOT be located near sick cow pens.
3. Cows that test-positive for Johne's disease should calve in a separate pen.
4. Remove the calf from the cow within an hour.
5. Feed the calf 4 quarts (3 qts. for smaller breeds like Jerseys) of colostrum collected from a single Johne's disease test-negative cow within 12 hours of birth.
6. Feed calves ONLY pasteurized milk up to weaning. This can be bought as milk replacer or pasteurized on-farm with commercially available systems.
7. Practice good sanitation for feeding and watering heifers.

A Johne's disease testing program helps accelerate Johne's disease control but can not replace good management.

1. Test all cows at the end of lactation using the ELISA blood test.
2. Label all cows with suspect or positive results. Attachments to ear tags or leg bands are working well in many herds. These cow are high-risk cows and everyone on the farm can readily identify them. These are the cows that must calve in a separate maternity pen and not be used as colostrum donors.
3. The testing and labeling program will cause a shortage of colostrum. This can be solved either by collecting and banking excess high quality colostrum, or buy use of colostrum replacement products such as Acquire®.
4. Cull all cows that are classified as "strong-positive" by ELISA before they calve. These cows are in the terminal stages of infection, will not survive another lactation, are highly infectious and shedding enormous numbers of M. paratuberculosis (the cause of Johne's disease) in their manure, colostrum and milk. Note: be sure you test cows as they approach the end of lactation so that test results are in hand BEFORE dry-cow mastitis treatments are used. In this way you save money and are not forced to hold the strong-positive cows waiting for drug withdrawal time to pass.

FINANCIAL SUPPORT

There is financial support for Johne's disease testing in Minnesota and Wisconsin. The specifics of these programs change from year to year so website references are provided where you can get the latest information about the programs and people to contact.

Minnesota
http://www.bah.state.mn.us/cattle/Johne's/johnes_program.htm

Wisconsin
http://datcp.state.wi.us/ah/agriculture/animals/disease/johnes/reimburse.html

SUMMARY

If you do not like paying "vet bills", avoid buying sick cattle - you DO have a choice. The methods for avoiding sick cattle are simple, logical, affordable and proven cost-effective.

REFERENCES

For additional information, pictures, website links, and even mini-lectures on Johne's disease visit the Johne's Information Center:

http://johnes.org