

# Biosecurity On Dairy Operations

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**D**airy producers will continue to grow in the size of their operations through the year 2000. Much of this growth will be through purchased animals brought into a herd. Forty-four percent of dairy operations brought some dairy or beef cattle onto their operations in 1995 (Figure 1). Larger herds brought higher percentages of cat-

tle into their herds and this trend is likely to continue. Disease risk exists when new animals are commingled with those on an existing operation; the following are true stories:

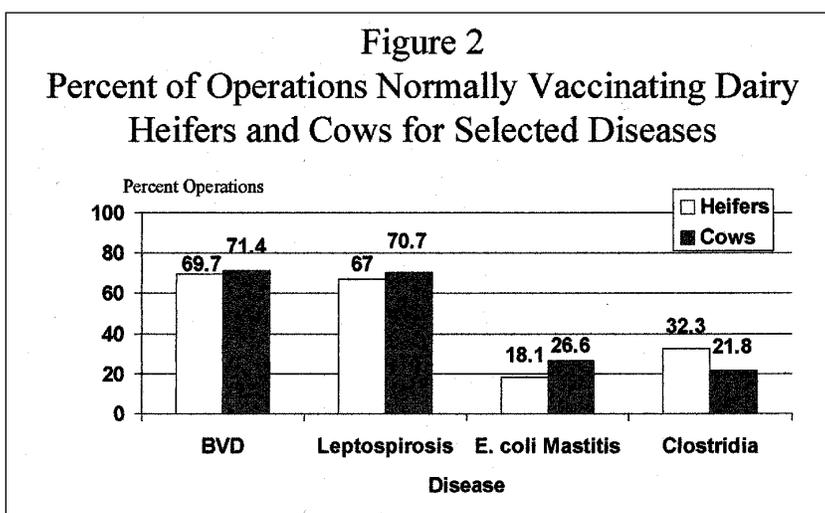
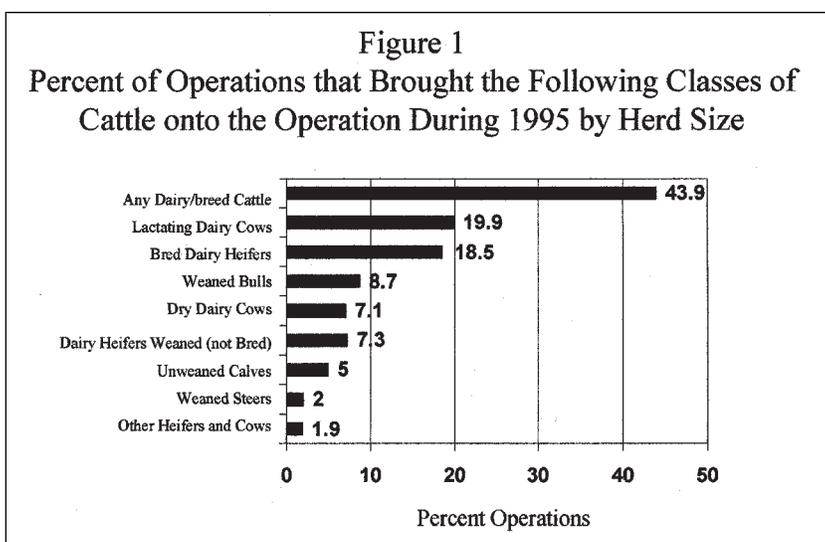
**Example 1:**

- 250 Holsteins expanding to 500 head through purchase of springing heifers.

- May, 1995 60 springers were purchased; by October of that year 52/60 heifers and 2 cows had died of BVD.

**Example 2:**

- High level of acute death loss began in calves with severe diarrhea on a large Southwestern dairy.
- Within 1 year, over 1,000 calves, heifers and some cows died of salmonellosis.



Biosecurity is preventing the introduction and spread of infectious diseases within a herd. Dairy operators need to know the risks that diseases can have on their herds and apply three basic principles to minimize these risks:

1. Vaccination to increase protective immunity.
2. Eradication or control of existing infectious diseases within the herd.
3. Prevention of infectious diseases from coming into the herd by appropriate testing and pre-arrival management and vaccination strategies.

The diseases which pose the highest risk to expanding dairy operations at present are: BVD,



Johne's disease, Salmonellosis, contagious mastitis and Clostridial diseases. Some of these diseases will be described in the context of examples of how to minimize disease risk in an expanding herd.

**Vaccination of the herd to increase a protective immunity.**

Many diseases can be controlled through vaccination; protective antibody levels established in the core herd can protect these cattle from potentially severe pathogenic disease brought in by "asymptomatic carrier" animals. BVD is one example. Persistently infected (PI) animals (perhaps 1-5% of animals in any herd) are those with BVD virus circulating in their bodies, but free of disease symptoms. When PI animals are commingled with unvaccinated, susceptible herd animals, the result is diarrhea, abortions, extremely sick animals and mortality rates that can exceed 50%. Vaccination against BVD is with the use of either chemically altered (modified live) or killed vaccines. Neither are 100% protective, but both significantly reduce risk of BVD compared to the unvaccinated, susceptible herd when applied properly.

IBR, similar to BVD, can cause viral abortion in susceptible animals. Unlike BVD, it is not known to exist in a latent persistently infected state. Without this constant exposure because animals are not carriers, IBR vaccination is extremely reliable in protecting against abortion. Clostridial diseases cause acute death in normal cattle when this organism is present in the environment. Vaccination against this disease is highly effective when applied properly. Despite the availability of highly efficacious vaccines, many herds remain unaffected and susceptible to disease when purchased animals are added to the herd (Figure 2).

Vaccination of herd additions prior to their arriving in the herd can sometimes be accomplished. Logistics of cattle movement and timing from point of sale to arrival on the dairy make this protective effort difficult. Figure 3 indicates the percent operations by number of cows requiring vaccinations before bringing animals

**Figure 3: Vaccinations normally required by operations by herd size before bringing animals on farm.**

vaccination type	percent operations number of cows			
	under 100	100-199	200+	all operations
Brucellosis	48.9%	61.8%	73.8%	52.9%
BVD	43.1%	59.3%	59.3%	46.8%
IBR	39.2%	57.1%	8.9%	43.4%
Leptospirosis	41.9%	58.2%	55.8%	45.4%
Other	8.2%	12.0%	15.2%	9.4%
None	42.0%	28.3%	15.4%	37.7%

**Figure 4: For Operations bringing on dairy cows during 1995, percent that normally required tests or proof of health by herd size.**

proof type	percent operations number of cows			
	under 100	100-199	200+	all operations
individual cow somatic cell count	24.7%	32.1%	25.8%	25.7%
herd bulk tank somatic cell count	13.4%	21.1%	27.4%	15.3%
individual cow milk culture	9.1%	7.8%	9.8%	9.0%
herd bulk tank milk culture	3.9%	8.7%	23.4%	5.8%

**Figure 5: Tests normally required by operations by herd size before bringing animals on farm.**

proof type	percent operations number of cows			
	under 100	100-199	200+	all operations
brucellosis	28.5%	39.7%	40.1%	31.0%
Johne's Disease	8.5%	14.6%	4.7%	9.1%
BVD	15.1%	21.5%	13.7%	15.9%
bovine T.B.	22.3%	29.0%	24.8%	23.4%
other	2.3%	4.1%	2.9%	2.6%
none	%68.7	%58.4	57.5%	66.3%

on farms during 1995.

**Eradication of control of existing infectious diseases within the herd.**

Contagious mastitis remains a costly disease for dairy producers. In those herds where *Staphylococcus aureus* and *Streptococcus agalactiae* persist, exposure of newly acquired, uninfected cattle to those harboring these infections almost guarantees contamination of the new animals. Conversely, purchasing infected additions to a herd where these mastitis pathogens have been eliminated puts the entire herd at risk. Figure 4 identifies the percent of dairies requiring tests of proof of mastitis health by size.

**Prevention of infectious diseases from coming into the herd by appropriate testing.**

Some infectious diseases are virtually impossible to control or eradicate once established in a herd. Prohibiting their entrance into a herd can only be done by strategic testing of animals prior to purchase and/or acceptance of cattle at the dairy. Johne's disease is an

example. *Mycobacterium paratuberculosis* bacteria (Johne's disease) is spread among calves, and infected animals remain asymptomatic until after first calving. Once the infection is evident, treatment is unrewarding and slaughter for salvage is the only alternative. Testing technology to identify asymptomatic carriers is available. Figure 5 identifies the percent of operations in 1995 that required tests for Johne's disease and other disease conditions that are best managed by identification of positive animals prior to arrival in dairies.

**Summary**

Biosecurity management procedures are the expanding dairy owner's opportunity to reduce the risks of disease in his/her herd. The first step is for owner's to realize their risk. The second step is to utilize the expertise of veterinary professionals to devise strategies that minimize risks through application of sound scientific principles of disease control.

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**Reference:**

1. 1996 Dairy Management Practices: National Animal Health Monitoring System. United States Department of Agriculture: Animal Plants and Health Inspection Services, 555 South Howes, Fort Collins, CO 80521.

**Notes**