

BIOSECURITY COST EXPLAINED

Depending on the animal disease in question, cattle producers may have several ways to reduce the risk of the disease impacting their herd. The decision as to which strategy to use will depend on several factors and no one recommendation is best for all farms. Likewise, the cost of implementing a strategy will differ by farm and the disease being considered. Producers should work with their veterinarian to evaluate which biosecurity practices are most appropriate for their farm. Some practices may have very little cost such as changing the people flow during chores by going from young to old stock. Other costs are operating expenses incurred on an ongoing basis. Still others require an initial investment that is spread over time with relatively little operating cost.

Coveralls and boots:

Worksheet: Prevent Fomites

One disease risk management practice that may be considered is to require the visitors and all the people that work on the farm to wear coveralls and boots. One possibility is that the owner provides washable coveralls and boots to his employees, including himself, and disposable coveralls and boots to the visitors. Table 1 is a simple cost estimate procedure to use to estimate the cost of providing coveralls and boots in a farm that employs 4 people and receives 50 visitors per year.

Table 1: Provide clean coveralls and disposable or disinfected rubber boots.			
		Example	Your farm
(A)	Washable Coverall cost	70	0
(B)	Washable Boots cost	40	0
(C)	Number of employees including yourself	4	0
(D)	Washable Coverall & Boots cost per year	440	0
			[(A)+(B)] *(C)
(E)	Disposable Coverall cost	4.95	0
(F)	Disposable Boots cost	0.5	0
(G)	Number of visitors per year	50	0
(H)	Disposable Coverall & Boots cost per year	272.5	0
			[(E)+(F)] *(G)
	Total Coverall & Boots cost per year	712.5	0
			(D)+(H)

Facility investment decisions:

Worksheet: Prevent Fomites

There are several disease risk management recommendations that require an investment in one year but whose benefits are captured in several years such as:

- Fencing the entrance to prevent off-farm vehicles from driving in areas where animals travel.
- Building a new loading facility at the edge of the farm to load out and deliver animals.
- Restrict animal access by fencing off water or waste from neighboring operations that accumulates from run-off following rainfall.
- Buy equipment or vehicles so that it is not necessary to share equipment or vehicles between farms.

These recommendations bring a high cost during the first year to build the facility but the benefit is extended for several years. Table 2 is a simple cost estimate procedure to use to estimate the cost of building a new loading facility. The example given is for a hypothetical cost of \$8000. The producer also needs to estimate if he/she can afford to pay this amount of money in one year because all the cash flow occurs in the first year.

Table 2: Animal load out should occur at the perimeter of the farm.			
		Example	Your farm
(A)	Cost of building a new loading facility	8000	<u>0</u>
(B)	Depreciation, interest, taxes, insurance rate *	14%	<u>0</u>
	New loading facility cost per year	1120	0 (A)*(B)
* Depreciation (5%) + Interest (6%) + Taxes (1.5%) + Insurance (0.5%) + Repairs (1%)			

Carcass disposal:

Worksheet: Prevent Fomites

One disease risk management practice that may be considered is to promptly remove dead animals from your operation by rendering, composting, burying or burning them in a timely manner so predators, wild birds and other animals do not spread disease. Table 3 is a simple procedure to estimate the cost of properly disposing the carcasses in a farm where 4 animals die on average per year and the disposal cost is about \$60 per animal.

Table 3: Promptly remove dead animals from your operation.			
		Example	Your farm
(A)	Disposal cost per animal	60	0
(B)	Number of animals dead per year	4	0
(C)	Total disposal cost	240	0 (A)*(B)

Feed delivery first of the day:

Worksheet: Prevent Fomites

One disease risk management practice that may be considered is to require that feed deliveries to your farm occur first thing in the morning to minimize the introduction of a disease on the tires of the delivery truck from another operation. Obviously not everyone can be first and restricting the delivery schedule to make you the first one may bring a higher cost for the trucking company. Suppose that the trucking company starts charging a fee for delivering to you first. Table 4 is a simple cost estimate procedure to use to estimate the cost of this fee. The example given is for a hypothetical fee of \$20 on a farm that buys feed every 2 weeks.

Table 4: Require feed deliveries to your farm be the first delivery of the day			
		Example	Your farm
(A)	Additional price charged by trucker to deliver to your farm first	20	0
(B)	Number of loads per year	26	0
	Total cost per year	520	0 (A)*(B)

Quarantine animals entering the herd:

Worksheets: Dairy, Cow/Calf

One disease risk management practice that may be considered is to quarantine incoming animals for a period of time to observe their health before exposing them to the entire herd. Table 5 is a simple cost estimate procedure to help producers identify what costs to include in the analysis and what the total cost of a quarantine strategy might be.

Quarantining incoming animals may not be appropriate for all types of cattle operations or diseases. For example, feedlots that bring in new animals weekly or more often may not see the benefits as much as a dairy operation that brings in replacement heifers three to four times a year or a beef herd that brings in a bull once a year. The frequency, cost of facilities, equipment, and labor, and consequences of the disease differ across the types of operations.

Table 5 is an example of a dairy operation that brings in 35 heifers every 3 months and holds them in a quarantine facility before putting them in the main facility. There is an annual cost of the facility and equipment and a cost of cleaning the facility between groups. There is also additional labor required to care for the animals that is either separate from the main herd or, at a minimum, takes added precautions to not spread disease from the new animals to the main herd. Either way there is a labor cost to maintain the separate facility.

This example also includes the cost of the feed and interest of holding the animals in quarantine. This assumes that the animals are brought to the farm 2 months before they need to be bred or calve to allow them to acclimate and be observed before putting them with the rest of the herd. It also assumes that the cost of the animals is the same whether they are put directly in the herd or quarantined for two months. If the animals' feed costs and interest are factored into the purchase price, then they may not need to be considered in this example.

Table 5: The cost of keeping the animals separate from the rest of the herd.			
	Example	Your Farm	
(A) Number of animals per group	35	0	
(B) Number of groups per year	4	0	
(C) Annual overhead costs			
(D) Facility costs	18200	0	
(E) Equipment costs	5600	0	
(F) Utilities and fuel	5250	0	
(G) Cost per head	208	0	$[(D)+(E)+(F)] / [(A)*(B)]$
(H) Cleaning facility (\$/cleaning)	120	0	
(I) Cleaning facility per head	3.43	0	$(H) / (A)$
(J) Veterinary and health per head	16	0	
(K) Number of days/turn	60	0	
(L) Labor Hrs/day	7	0	
(M) Wage rate	9	0	
(N) Labor costs	3780	0	$(K)*(L)*(M)$
(O) Labor cost per head	108.00	0	$(N) / (A)$
(P) Feed costs per head	200	0	
(Q) Interest and insurance on herd	42	0	
(R) Total cost per head	576.93	0.00	$(G)+(I)+(J)+(O)+(P)+(Q)$

Note: Consider that during this period of time the cattle could improve their value or produce some commodity (such as milk) that would compensate for some of the costs

Cleaning facilities and not sharing equipment between incoming and existing cattle:

Worksheet: Feedlot

For feedlots that constantly bring in new animals, it may be impractical to quarantine the incoming cattle. But producers can clean facilities between groups of cattle and keep a separate set of equipment for use with incoming cattle. The frequency of animal introduction, cost of facilities, equipment, labor, and the consequences of a disease differ across the types of operations. Table 6 is a simple cost estimate procedure to help producers identify what costs to include in the analysis and what the total cost of this strategy might be.

Table 6 is an example of a feedlot operation that brings in 150 steers every month, uses separate equipment in the facility that holds the incoming cattle, and cleans the pens between groups of cattle. There is an annual cost of the equipment and a cost of cleaning the facility between groups. There is also additional labor associated with switching equipment between groups.

Table 6: Cost of cleaning facilities and use a different set of equipment for incoming cattle				
		Example	Your Farm	
(A)	Number of animals per group	150	0	
(B)	Number of groups per year	12	0	
(C)	Annual overhead costs			
(D)	Equipment costs	2400	0	
(E)	Cost per head	1.33	0.00	(D) /[(A)*(B)]
(F)	Number of days/turn	60	0	
(G)	Additional Labor Hrs/day	0.25	0	
(H)	Wage rate	9	0	
(I)	Labor costs	821	0	(G)*(H)*min{365,(F)*(B)}
(J)	Labor cost per head	0.46	0.00	(I) /[(A)*(B)]
(K)	Cleaning facility (\$/cleaning)	120	0	
(L)	Cleaning facility per head	0.80	0.00	(K) / (A)
(M)	Total cost per head	2.59	0.00	(E)+(J)+(K)

Cost of buying only from herds with trusted animal health programs:

Worksheets: Feedlot, Dairy, Cow/Calf

One disease risk management practice that may be considered is to limit cattle purchases to a few sources with known and trusted herd health programs. Table 7 is a simple cost estimate procedure to help producers identify what costs to include in the analysis and what the total cost of this strategy might be.

Table 7 is an example of a cow-calf operation that brings in 20 heifers every year and limits purchases to a few sources with known and trusted herd health programs. There is a time cost of searching for trusted health herds and reviewing health documentation, and it is likely that a higher price should be paid for animals with these characteristics. It is possible that the final genetics acquired would be inferior because the searching is restricted to a certain number of operations and ends with fewer pounds (lbs.) of calves weaned per cow for example.

Table 7: Cost of buying replacements only from trusted high health herds			
		Example	Your Farm
(A)	Number of animals	20	<u>0</u>
(B)	Value of manager time (\$/hour)	20	<u>0</u>
(C)	Increase in searching time (hours)	2	<u>0</u>
(D)	Time cost per head	2.00	0 (B)*(C)/(A)
(E)	Lower genetic effect on lbs weaned/cow (%)	5	<u>0</u>
(F)	Value of a 1% decrease in lbs weaned/cow (\$)	5.17	<u>0</u>
(G)	Cost of genetics per head	25.86	0.00 (E)*(F)
(H)	Increase price paid for replacement (%)	1.0%	<u>0.0%</u>
(I)	Replacements value (\$/head)	750	<u>0</u>
(J)	Cost of higher price per head	7.50	0.00 (H)*(I)
(K)	Total cost per head	35.36	0.00 (D)+(G)+(J)

Vaccinating for key diseases:

Worksheets: Feedlot, Dairy, Cow/Calf

One disease risk management practice that may be considered is a vaccination schedule to maintain a level of protective immunity in the herd. Table 8 is a simple cost estimate procedure to use to estimate the cost of vaccinating the herd for a particular disease. The example given is for a hypothetical herd of 150 animals and the vaccination costs \$2.00 per dose and requires two shots. There is also a labor cost of working the cattle.

Vaccination is perhaps the simplest cost to estimate and includes only the cost of the product and labor to vaccinate the animals. This example does not consider any opportunity cost of stress on the animals following the vaccination, but it could be added if it were expected to be an issue. The example also makes no attempt to estimate the benefit from vaccination such as a reduced probability of getting the disease, lower the morbidity rate, or a less severe impact if the disease does occur. There are a number of factors that would affect the probability of an animal getting a disease and producers are encouraged to work with their veterinarian to discuss the benefits of vaccination.

Table 8: Cost of vaccinating for key diseases			
(A)	Vaccination	Example	Your Farm
(B)	Number of animals	150	<u>0</u>
(C)	Cost per dose	\$2.00	<u>0</u>
(D)	Number of shots	2	<u>0</u>
(E)	Product cost	\$600	0 (B)*(C)*(D)
(F)	Labor	\$50	<u>0</u>
(G)	Total cost	\$650	0 (E)+(F)
(H)	Total cost per head	\$4.33	0.00 (G)/(B)

Testing for key diseases:

Worksheets: *Feedlot, Dairy, Cow/Calf*

One disease risk management practice that may be considered is testing incoming cattle to prevent some key diseases from entering the herd. Table 9 is a simple cost estimate procedure to use to estimate the cost of testing the incoming cattle for a particular disease. The example given is for the hypothetical case of buying 2 bulls to be used in a cow-calf operation. Diagnostic tests cost \$5.00 per sample. There is also a labor cost of working the cattle.

Table 9: Cost of testing for key diseases			
(A) Test	Example	Your Farm	
(B) Number of animals	2	0	
(C) Cost per test	5	0	
(D) Test cost	10	0.00	(B)*(C)
(E) Labor	5	0	
(F) Total cost	15	0.00	(D)+(E)
(G) Total cost per head	7.50	0.00	(F)/(B)

NOTE:

Production system specific tables can be found in the Excel file *Biosecurity Cost*