

## **Biosecurity: Perception Is Not Reality - The Need For A New Paradigm**

Satellite Conference  
Thursday, September 8, 2005  
12:00 - 1:30 p.m. (Central Time)

Produced by the Alabama Department of Public Health  
Video Communications Division

## **Faculty**

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University of Montreal

## **Program Objectives**

- Present the current situation of farm biosecurity in the US.
- Demonstrate and understand factors contributing to non-compliance with respect to farm biosecurity.
- Understand how poor biosecurity could exacerbate an animal disease outbreak.
- Understand the need for regional and industry approaches to biosecurity.

## **1978 - 2005**

- Bordetellosis
- Avian Nephritis
- Avian Influenza
- H.V. Infec. Bursal Dis.
- Variant Infec. Bursal Dis.
- Variant Infec. Bronchitis
- Ornithobacterium rhinotracheale infection
- Angara Disease
- Runting Stunting Syndrome
- Chicken Infectious Anemia
- Trans. Viral Proventriculitis
- Variant Mycoplasma G & S
- Dermal Squamous Cell Carcinoma

## **1978 - 2005**

- Myeloid Leukosis
- Turkey Rhinotracheitis
- Cryptosporidiosis
- Spiking Mortality Syn.
- V.V. Marek's Disease
- Pulmonary Hypertention
- Sal. Enteritidis type 4
- Big liver & Spleen Disease
- Equine Encephalitis
- Stunting Syn. (turkeys)
- Poult Enteritis Mort. Syn
- Multicentric Histiocytosis
- Osteomyelitis complex
- Pneumovirus

## **Avian Influenza**

Documented outbreaks of HP AI since 1955:

1959-1969 (n=4)    1970-1979 (n=3)    1980-1989 (n=3)    1990-1999 (n=11)    2000-2004 (n=21)





“Nation will rise against nation...and there will be great earthquakes, and in various places plagues and famines...”

Luke 21, 10-11

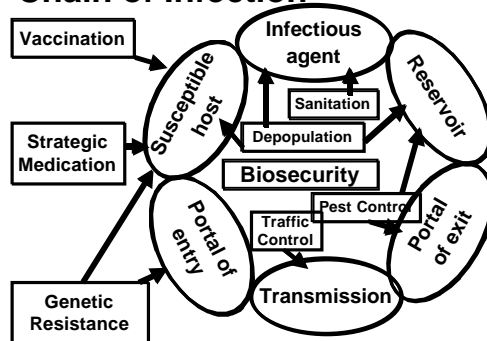


Bible: Hebrew soldiers returning from war were required to flame all their equipment and to plunge garments in boiling water.

Bible (Deuteronomy): Hebrew soldiers were provided with spades to bury their excreta.



### Chain of Infection

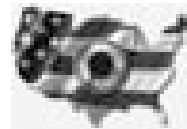


Period	Emphasis	Stimulus
1900-1940s	Care & sanitation	Control of parasites
1940s	Chemotherapy	Sulfa drugs; coccidiosis and salmonella
1950s	Antibiotics	Penicillin; tetracyclines; streptomycin - mixed bacterial infections
1970	Immunization	Marek's disease
Late 1980s	Testing & profiling	Complex viral diseases; ELISA
Ahead	Biosecurity	Economic Pressure; Public Health concerns

Marsh, 1987

### Top Ten Risks

1. Employees attend cock fights
2. Wild birds in poultry houses
3. Employees own poultry
4. Family of employees own birds
5. High farm density in the region
6. Birds of 2 different ages in same house
7. Rodent infestation
8. More than one species of birds on farm
9. Shared dead bird disposal
10. Grower visits other poultry farms



Poultry International  
January 2002

Looking back at 1987 predictions...

“ They were correct that, in health control, the emphasis would be on high levels of biosecurity including regular health status monitoring and flock profiling”

## Farm Characteristics - Biosecurity

(% of 52 NC farms)

Characteristic	% of farm
Gate at farm entrance	30.8
Sign advising to stay off farm	44.2
Requirements before a vehicle can enter	21.2
Access restricted if visitors have been in contact with poultry	53.8
Dead bird container animal proof	76.9



## An Industry On Wheels

- Grower/Employees
- Cleaning crew
- Livehaul (chickens)
- Livehaul (equipment)
- Poult trailer
- Shavings
- Rendering truck
- Servicemen
- Tractors
- Loading crew
- Feed truck
- Fuel truck
- Truck shop
- Snow plow
- Trash truck
- etc.

Dr Lloyd Weber, 1990

## Infectious Laryngotracheitis in Niagara Peninsula Logistic regression on "flock disease status"

Factor	Coefficient	p-value	(95%CI)
Vaccination crew	2.54	0.031	12.7 (1.3-126)
Manure handling	2.09	0.016	8.1 (1.5-45)

## Requirements For Visitors

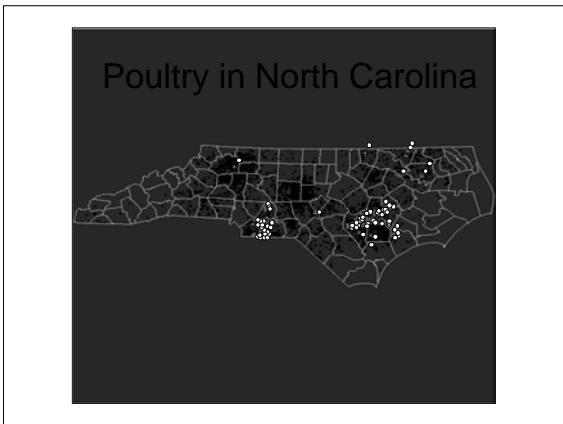
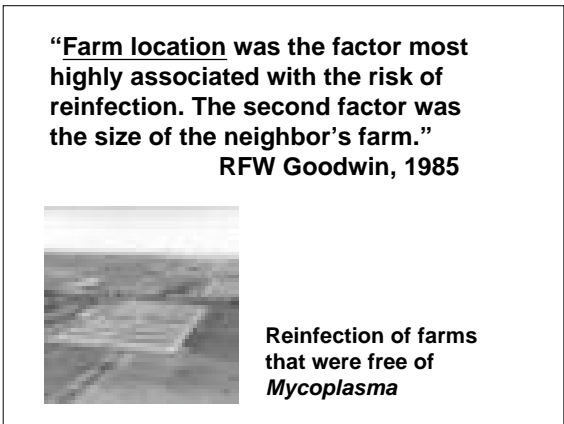
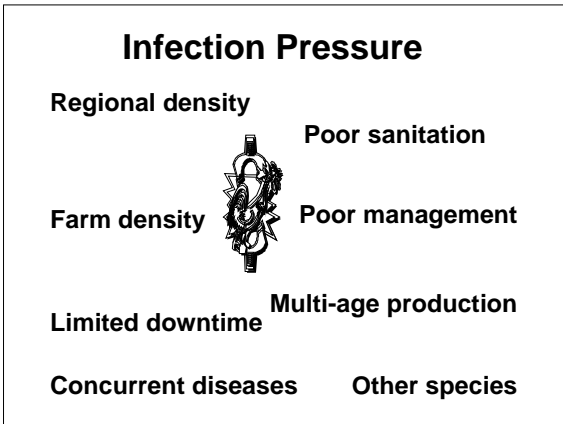
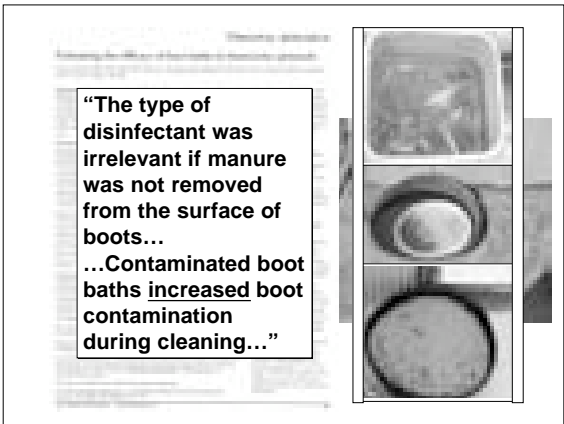
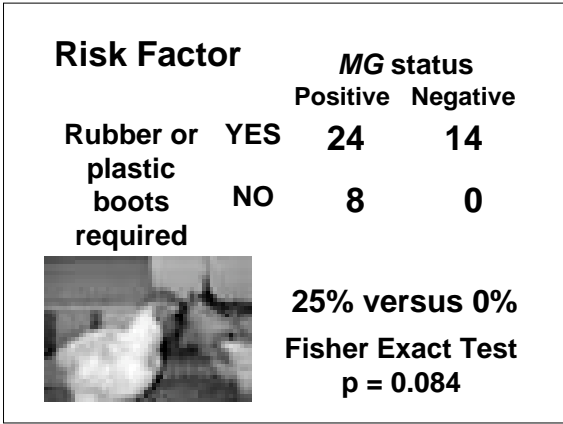
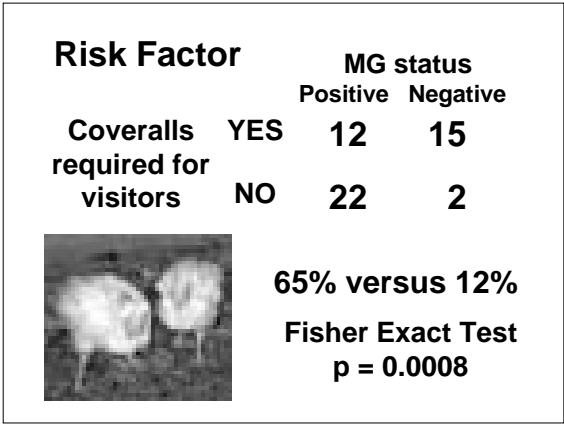
Requirement	NC Turkey	Layers 99	Ontario Layers
Shower	12	3	3
Coveralls	67	18-32	36
Rubber boots	58	76	58
Plastic boots	64	-	-
Footbath	64	34	21
Cap	42	-	26
Hand sanitizer or gloves	23	-	13

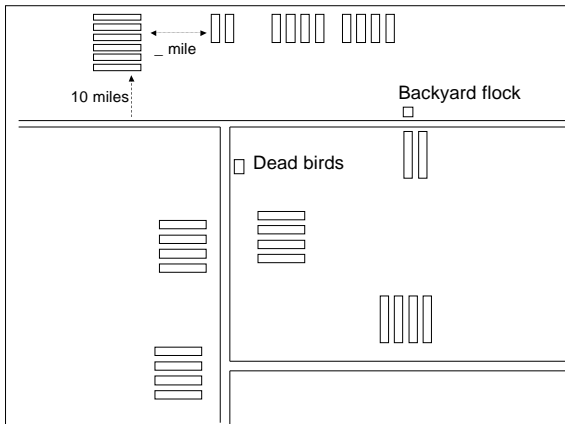
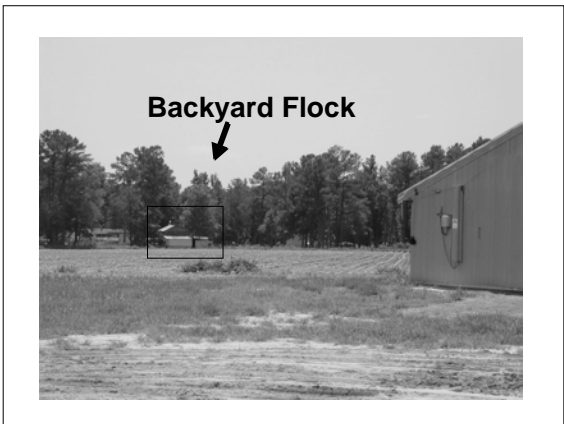
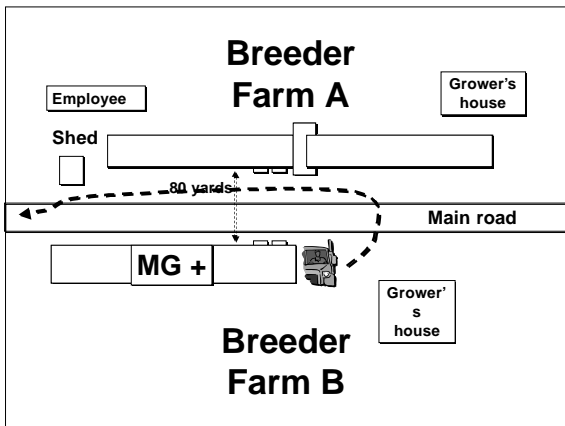
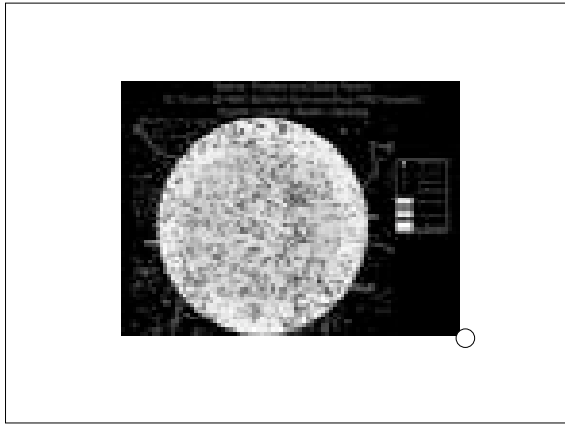
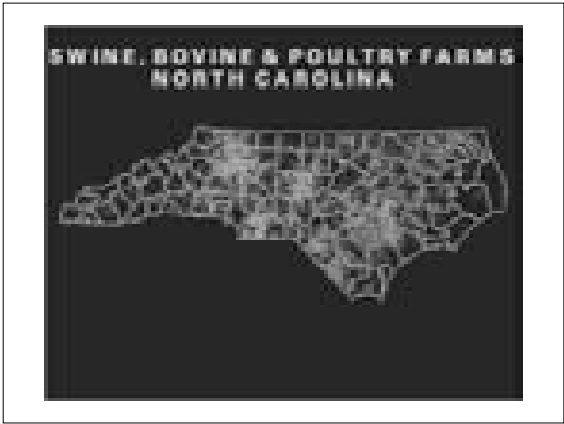
(% of 52 NC farms; Layers 1999 NAHMS; Ontario Layers 1995)

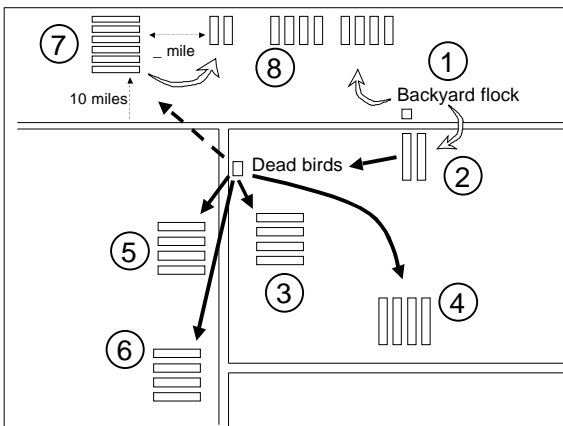
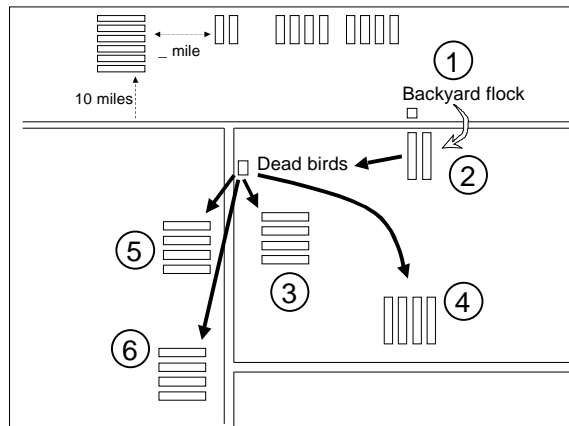
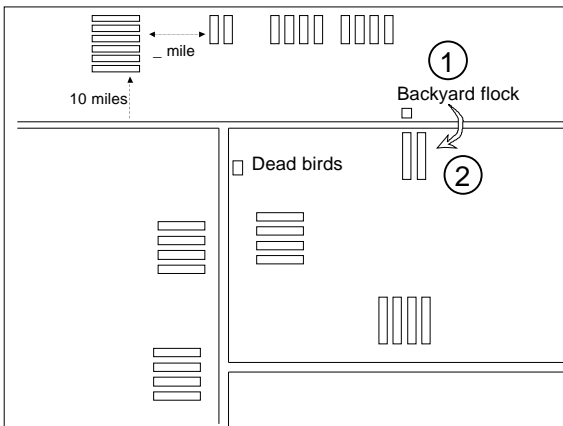
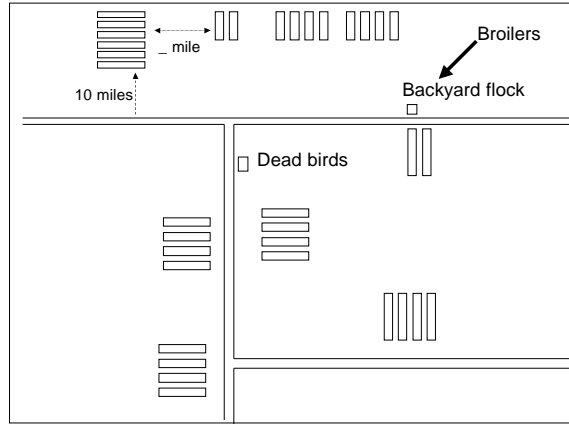
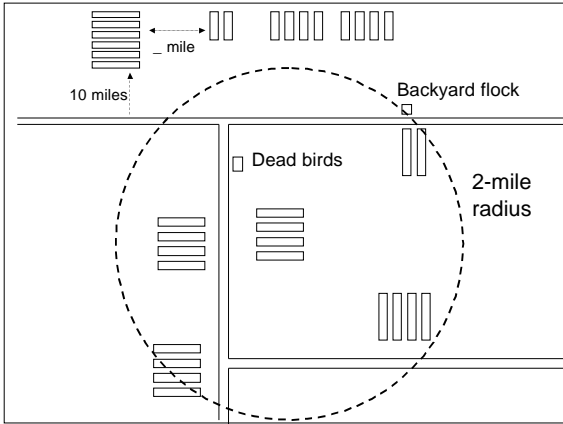
## Survey Data Versus Validation Data

Issue	Kappa	Agreement
Boots	0.07	Low
Using footbaths	0.19	Low
Prior poultry visitors	0.23	Low
Storage of dead birds	0.51	Fair / Good
Disposal of dead birds	0.00	Low

Nespeca & Vaillancourt, 1996







**Biosecurity on Breeder Farms**  
**179 respondents - census**  
**Based on your experience, before entering the barn, what is required of visitors?**

a) Putting on coveralls	82%
b) Taking a shower	74%
c) Using boots/footbaths	68%
d) Putting on cap	65%
e) Using hand sanitizer	51%
f) Putting on gloves	32%

## Compliance

The extent to which a person's behavior coincides with medical or health advice



Haynes, Taylor, and Sackett (1979)  
"compliance in Health Care"  
1422 references

## Biosecurity Levels



- Individual
- Farm
- Company
- Regional
- State
- National/International



"If the growers are not brought into the effort to upgrade the biosecurity situation in the U.S. poultry industry, very little will be accomplished. The grower level is where the biosecurity effort needs to be concentrated because that is where the birds are."

Dr Charles Beard, 2003



## Compliance Issues

- Buy in
- Communication
- Education
- Incentives
- Realistic game plan
- Verification (markers)
- Regional perspective



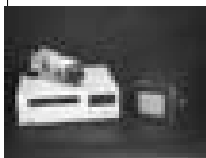
## Registration

Registration: Each time you enter YOU MUST REGISTER!  
Read and fill out completely before setting foot on this farm

Name of all people arriving: \_\_\_\_\_ Provide date & time of arrival:  
DATE: \_\_\_\_/\_\_\_\_/97\_\_\_\_  
Day Month Year  
TIME: \_\_\_\_\_

Circle or write all appropriate information (use back if needed)

Where are you arriving from?	REASON FOR VISIT
1. Office	1. Deliver feed
2. Feedmill	2. Deliver/pick up equipment
3. Slaughter plant	3. Deliver birds
4. Home	4. Pick up birds
5. Restaurant	5. Pick up litter
6. Other farm (specify): _____	6. Work on farm; service
7. Other: _____	7. Other: _____

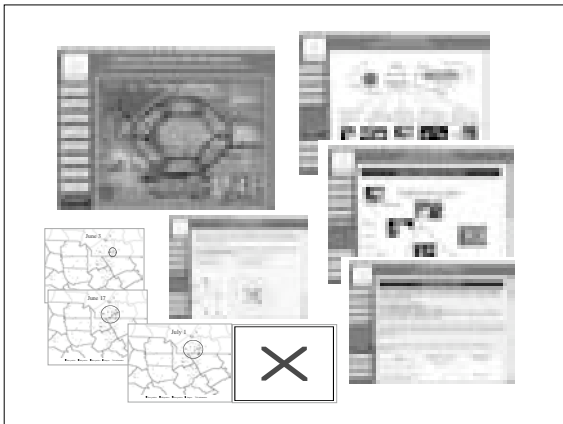
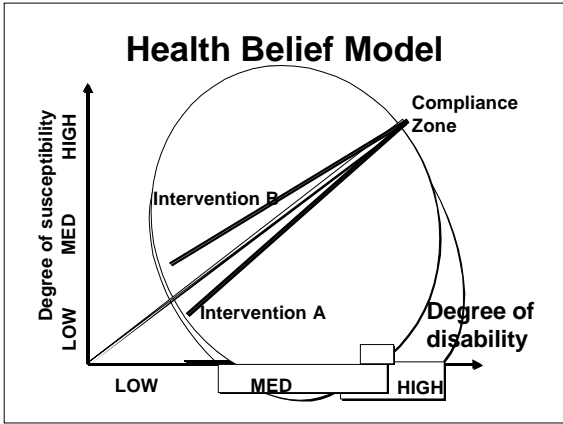


24/24 for  
7 consecutive days

Will you enter in any poultry house during your visit? YES NO

## Comparison Between Video And Log-In System

Farm	Video (#/day)	Log-in System (#/day)	% of Video
A	5.5	0.4	7.0
B	2.6	0.85	33.0
C	1.0	0.49	49.0
D	15.0	0.54	3.6



### Audits

Biosecurity Programs  
Program Models and Support Materials

Situation Report - Basic Biose

Date: \_\_\_\_\_ Name of reviewer: \_\_\_\_\_

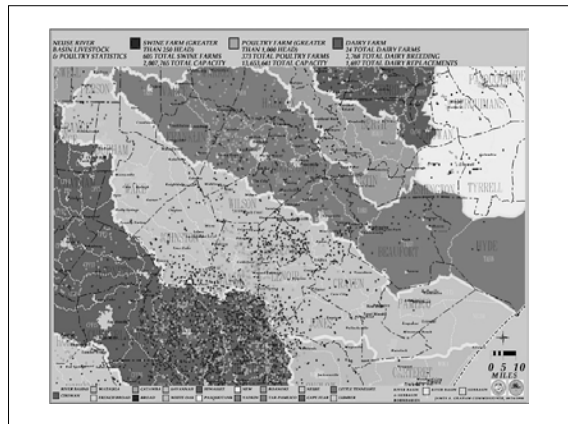
Farm ID: \_\_\_\_\_ Other farm name (if available): \_\_\_\_\_

Flock information if present: \_\_\_\_\_

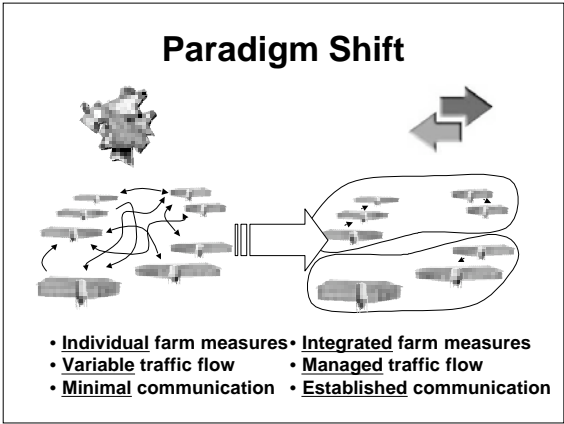
Reason for review: a) Routine b) other: \_\_\_\_\_

**TRAFFIC CONTROL ISSUES**

Biosecurity breach	Observed or reported	Not applicable (use code)
Protocol for farm entry or re-entry not followed		
Protocol for farm or barn re-entry not followed after disposing of mortality		
Some doors and/or gates not locked at designated times (e.g., at		







### Serving Maps on the Internet

### Search & Query

**Identify Farms**

- ### Communication
- |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Regular Conditions</b></p> <ul style="list-style-type: none"> <li>• Educational programs for growers &amp; employees</li> <li>• Regular reporting of health status between Co.</li> <li>• Audit of biosecurity rules</li> <li>• Known health status of breeders for meat flocks</li> </ul> | <p><b>Epidemic</b></p> <ul style="list-style-type: none"> <li>• Reporting health status of all farms in disease area</li> <li>• Utilities companies</li> <li>• Testing and reporting of all flocks at risk in area</li> <li>• Quarantine signs</li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

