



AUSTRALIAN
BIOSECURITY
CRC

FOR EMERGING
INFECTIOUS DISEASE

Post-farm gate disease surveillance of pigs in Eastern Australia

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Introduction – Background information

AB – CRC Project 3.016RE: Peri-urban regional surveillance for biosecurity for the pig industry in Eastern Australia

Off-farm disease surveillance:

1. Identify strengths and weaknesses in the current system of monitoring pigs post-farm-gate (saleyard and abattoir) for the early detection of exotic diseases:

- Review of legislation, policies and procedures
- Review of resources available for disease surveillance (questionnaire & focus groups)

2. Develop standard operating procedures (SOPs) for health surveillance among peri-urban pig herds post-farm-gate

- Focus groups with government agencies and stakeholders (Nov '07)

Introduction – Background information

Preliminary project findings on disease surveillance:

1. Limitations of resources for disease surveillance post-farm-gate
2. Non-commercial operations (>150 sows) may pose a higher risk for exotic disease introduction and spread than commercial operations:
 - Poor disease knowledge
 - Poor utilization of veterinary services
 - Poor biosecurity measures
 - Mixed farming practices (ruminants or birds)
 - Poor reporting and communication with authorities

Opportunities for capture of surveillance data post-farm gate of non-commercial pig producers in Eastern Australia

Objectives:

1. Assess the **likelihood of exotic disease detection** with the current disease surveillance activities:
 - Sources of data (AB-CRC project):
 - Interviews & focus groups with producers selling through saleyards
 - Questionnaire & Focus groups with government agencies and stakeholders: resources available & current activities
2. Develop a set of **SOPs for health surveillance** among peri-urban pig herds post-farm-gate following the previous assessment
3. Assess the likelihood of exotic disease detection under the proposed SOPs

Methodology

“Non-commercial” pig producers:

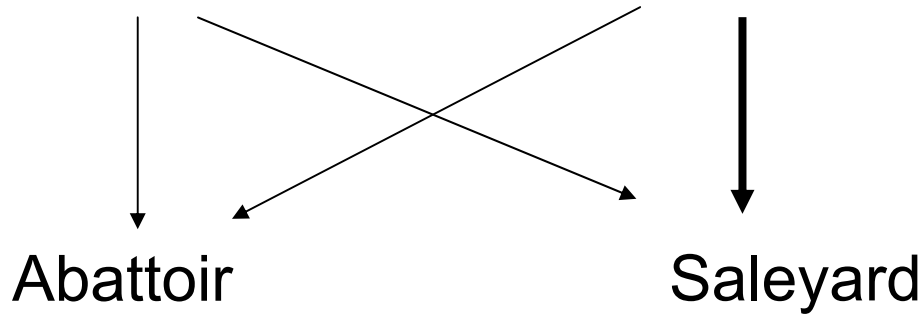
- Farms definition
- Pathways of transition and movements of pigs post-farm-gate
- Scenario tree for disease detection and notification: Application of the *Martin et al. (2007)* methodology
- Identification of variables required
- Identification of available data from the AB-CRC project



Methodology

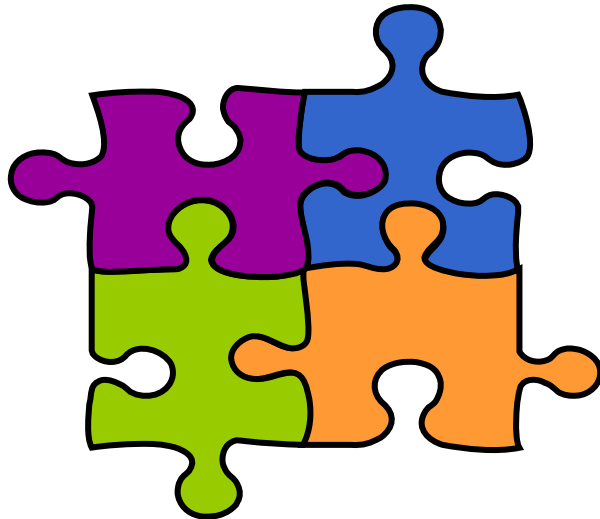
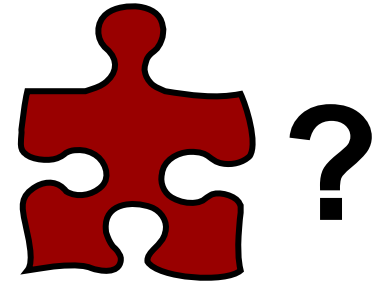
Commercial operations

Non-commercial operations



Other producers:

- Backyard producers
- Pet pigs



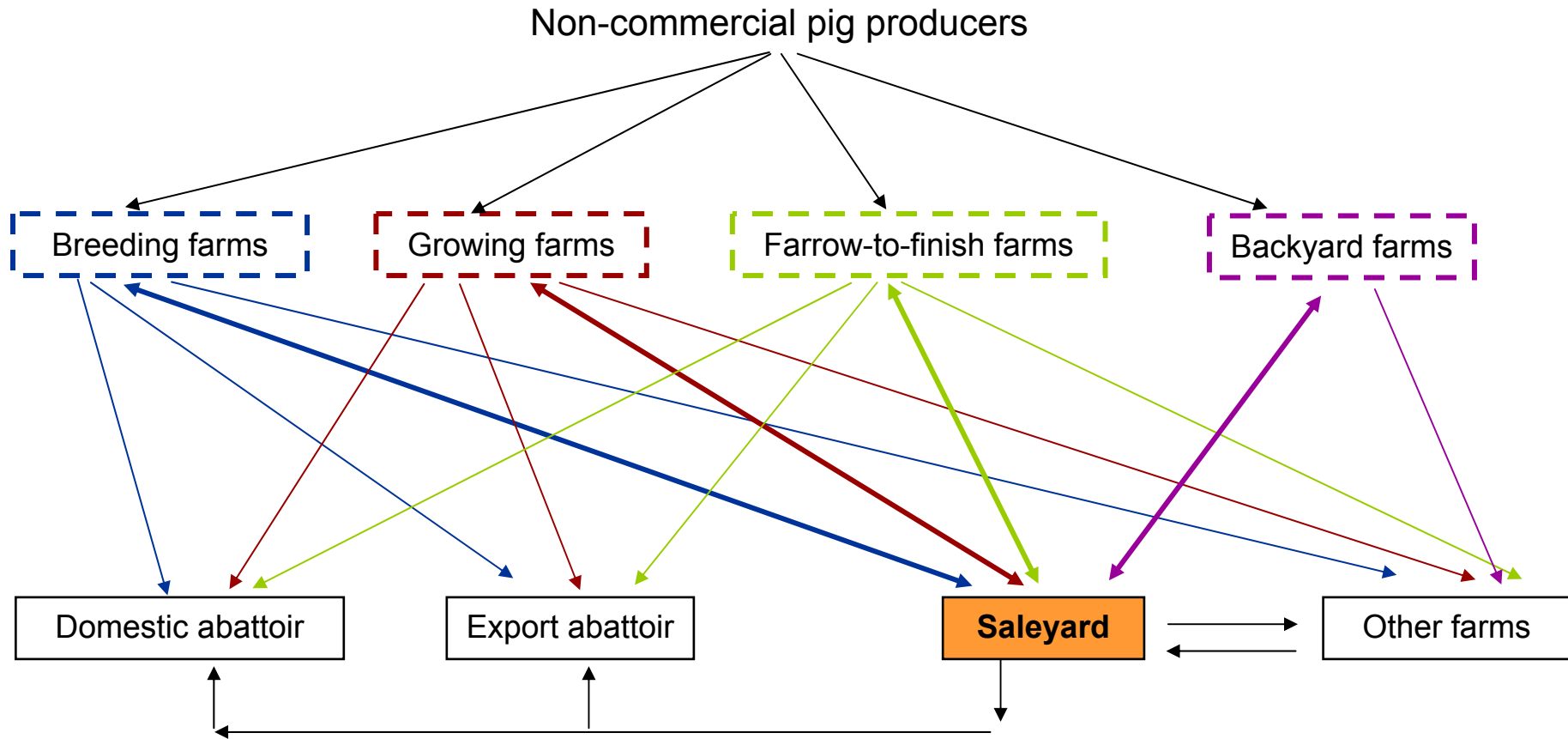
Transaction and movement patterns for pigs of non-commercial operations in Australia

Non-commercial pig farms:

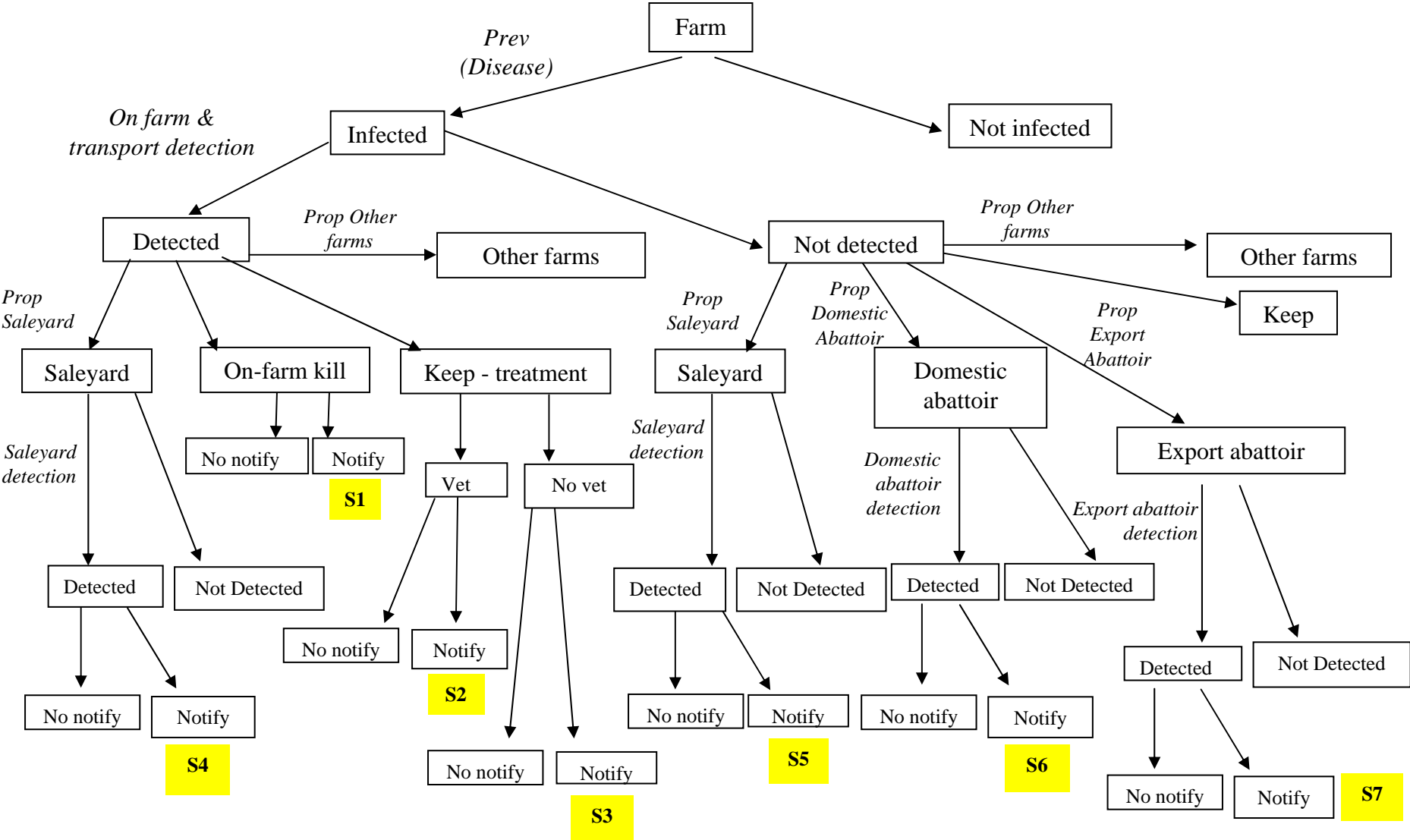
	Farm type			
Item	Breeding	Growing	Farrow-to-finish	Backyard
Pigs sold	Weaner	Porker Baconer Backfatter	Porker Baconer Backfatter	Weaner
Selling method	Saleyard Abattoir Other farms	Saleyard Abattoir Other farms	Saleyard Abattoir Other farms	Saleyard Abattoir Other farms

Saleyard → **Abattoir (Domestic & Export)**
 → **Other farms**

Transaction and movement patterns for pigs of non-commercial operations in Australia

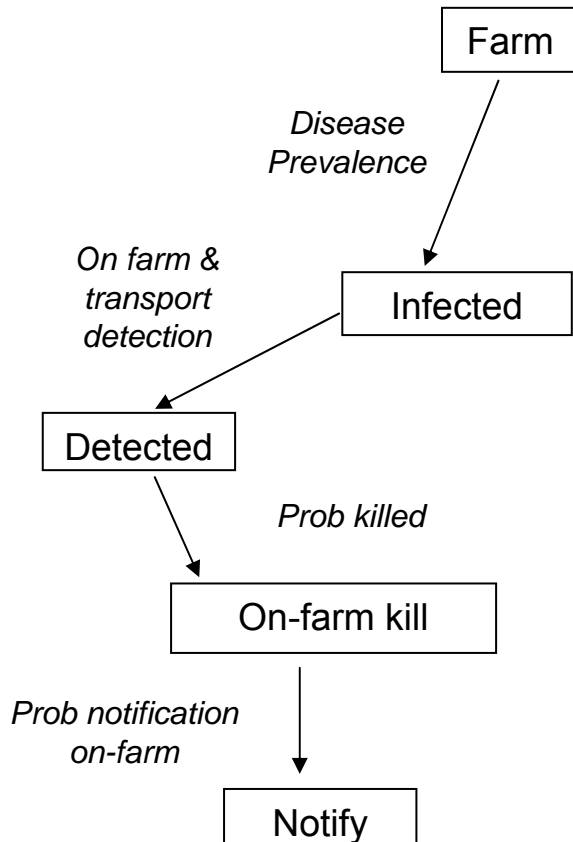


Scenario tree representing the likelihoods of disease detection according to the different pathways animals can follow when leaving the farm



Scenarios or pathways for disease detection in non-commercial operations

Scenario 1

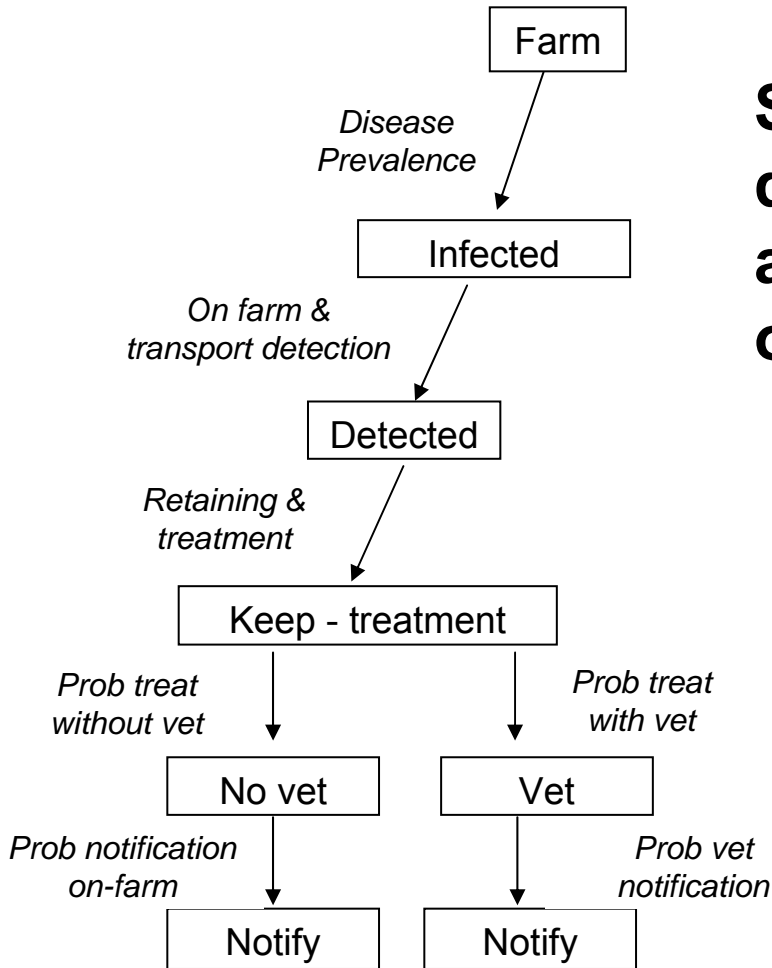


S1: On-farm notification of disease if disease is detected and animal is killed on farm

1. Probability of infection
2. Probability of detection on farm
3. Probability the animal is killed if detected
4. Probability of notification

Scenarios or pathways for disease detection in non-commercial operations

Scenario 2 / Scenario 3

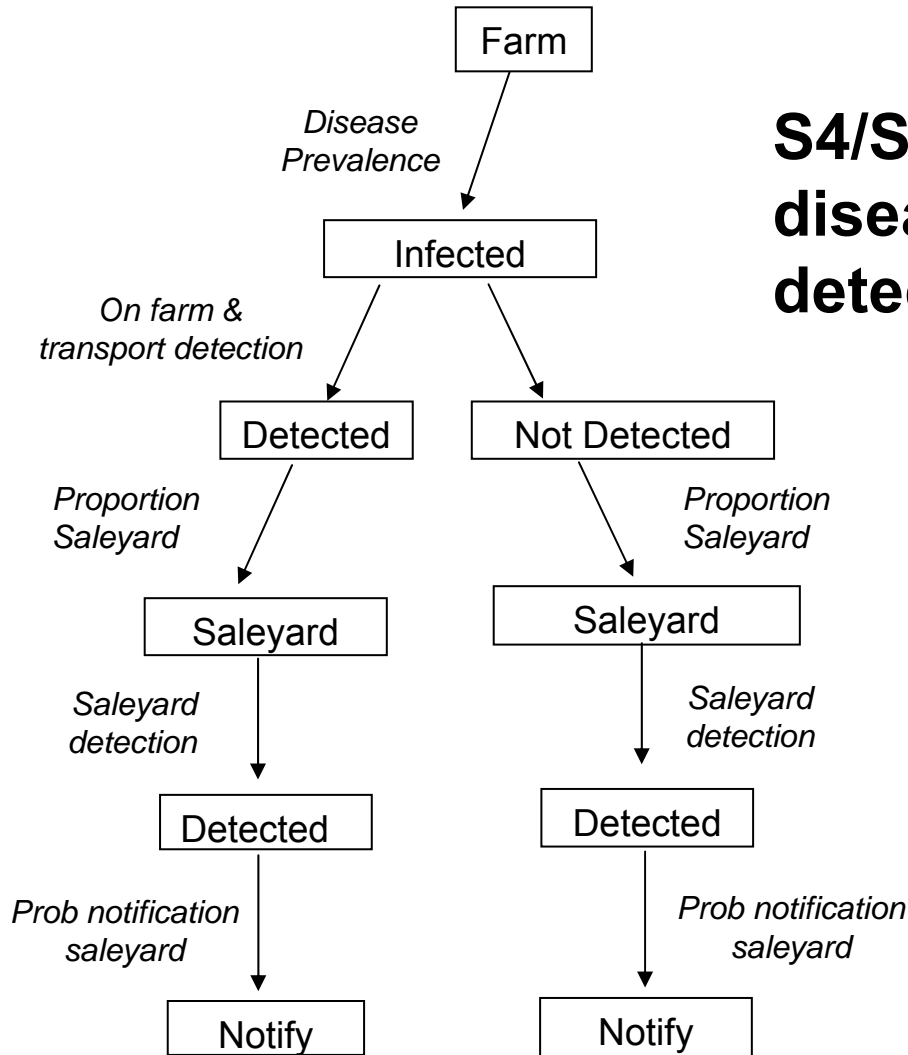


S2/S3: Notification of disease if disease is detected on-farm and animal is kept for treatment without or with a vet

1. Probability of infection
2. Probability of detection on farm
3. Probability of retaining and treatment
4. Probability treat without vet / with vet
5. Probability notification if detected on farm
6. Probability of vet notification

Scenarios or pathways for disease detection in non-commercial operations

Scenario 4 / Scenario 5

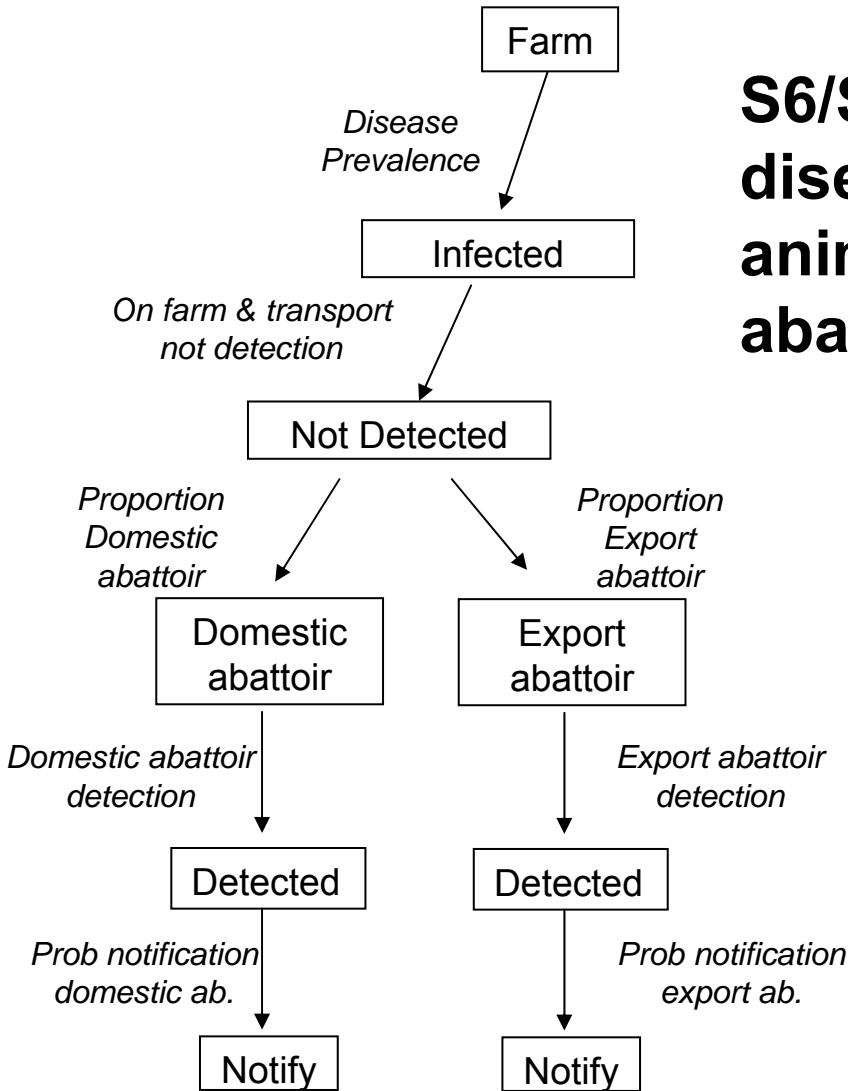


S4/S5: Saleyard notification of disease if disease is detected/not detected on-farm and at saleyard

1. Probability of infection
2. Probability of detection/non-detection on farm
3. Probability the animal is sent to the saleyard
4. Probability of detection at saleyard
5. Probability of notification if detected at saleyard

Scenarios or pathways for disease detection in non-commercial operations

Scenario 6 / Scenario 7



S6/S7: Notification of disease if disease is not detected on-farm and animal is sent to the domestic abattoir

1. Probability of infection
2. Probability of not detection on farm
3. Probability of going to domestic / export abattoir
4. Probability of detection at domestic / export abattoir
5. Probability of notification at domestic / export abattoir

Evaluation of variables

1. Variables depending on farm type:

- Proportions of:
 - animals going to saleyard
 - animals going to domestic abattoir
 - animals going to export abattoir
 - Probability of:
 - detection on farm
 - animal being killed if detected
 - animal being treated if detected
 - calling a vet if animal detected
 - the farm vet notifying (may vary between farm types)
- Disease dependent
(exotic or endemic)**

Evaluation of variables

2. Variables not depending on farm type:

- Probability of:

**Disease dependent
(exotic or endemic)**

- detection at saleyard
- notification if detected at saleyard
- detection at domestic abattoir
- notification if detected at domestic abattoir
- detection at export abattoir
- notification if detected at export abattoir

3. Predetermined variable: Prevalence of disease

Sources of data: AB-CRC project

- **Interviews and focus groups** with producers selling through saleyards:
 - *Disease knowledge*
 - *Disease recording and reporting*
 - *On-farm treatment of sick animals*
 - *Veterinarian use*
 - *Destination of animals*
 - *Transportation systems used*
- **Disease surveillance questionnaire:**
 - *Resources available for disease surveillance at saleyards*
 - *Policy and procedure requirements*
 - *Inspectors' disease knowledge*
- **Focus groups** with (Nov '07):
 1. Saleyard inspectors, government agencies and stakeholders
 2. Abattoir meat inspectors and food authorities
 - *Resources available for disease surveillance*
 - *Current disease surveillance activities*
 - *Development of SOPs for improving disease surveillance*

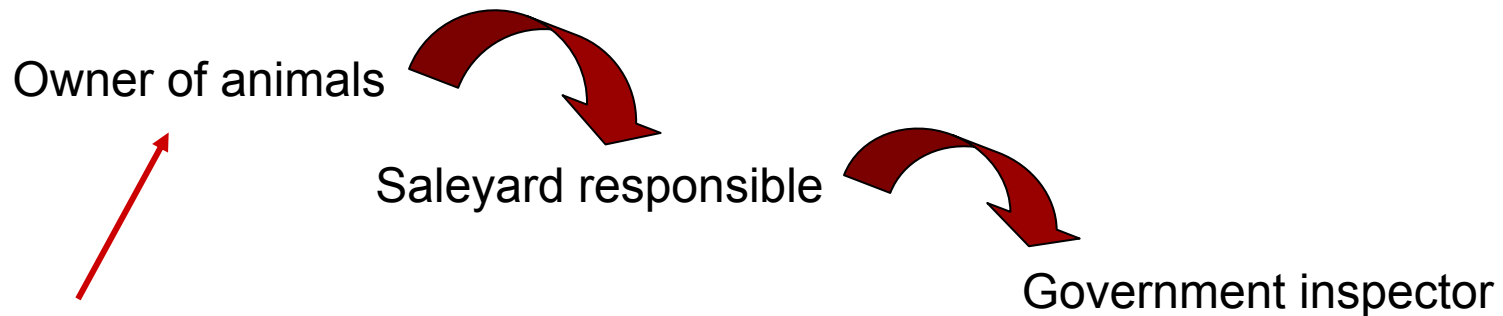
Other possible sources of data

- Veterinarian **questionnaire**:
 - *Pig Disease knowledge*
 - *Pig producers using a vet*
 - *Visits & treatment policy*
 - *Disease notification*
- Visits to saleyards and abattoirs: “**On-field**” evaluation of current disease surveillance activities
- **Expert opinion**:
 - Identify the experts



More questions...

- Need of a **national approach** for disease surveillance activities (on-farm and post-farm-gate)
- How to overcome the **resources limitations** at government agencies for disease surveillance
- Who should be **responsible** for disease surveillance at saleyards?



- Use of the **NVD** and the **Quality Assurance Programs** as an on-farm health declaration
- Should we focus our efforts on **extension to producers** for improving their disease knowledge and reporting?
- How important is the current **ante-mortem inspection** at the abattoirs (specially at domestic abattoirs)?

Conclusions

1. Increasing the likelihood of disease detection on-farm and post-farm-gate → Decrease the likelihood of disease introduction and spread
2. Disease detection at saleyards and abattoirs is crucial → centers for disease transmission between and across species
3. Assessing the likelihood of disease detection with the current disease surveillance activities → Help developing alternative systems for improving surveillance and decide where the effort should be focused on (on-farm/ saleyard or abattoir / inspector)
4. The development of SOPs for disease surveillance based on a risk analysis approach will provide scientific justification for influence the policies on disease surveillance activities.



Thanks for your attention