
Prevention and Control of poultry diseases

For better farm profitability

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Module Objectives

By the end of this session all participants will be able to:

- Identify the threats to our poultry and how disease agents might enter a poultry farm

- Identify the costs of diseases and their prevention

- Define the three principles of biosecurity:
 - Segregation & Traffic control
 - Cleaning
 - Disinfection

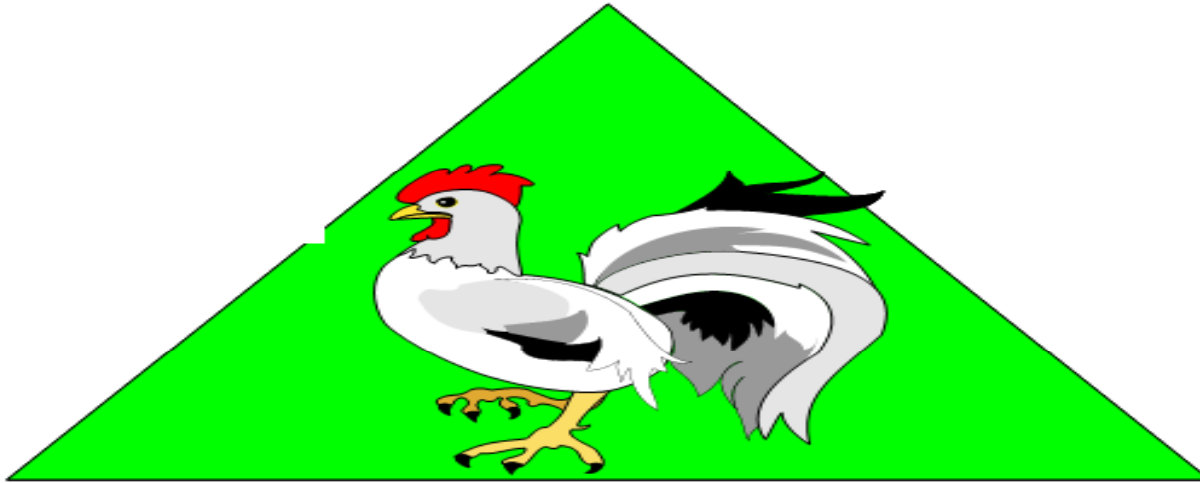
- Identify biosecurity risks present in a poultry farm

Exercise:

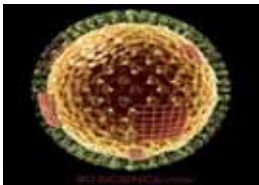
- The questions!
 1. How a disease can enter a poultry farm ?
 2. What are the costs involved in a disease outbreak ?
 3. How can we prevent and control a disease outbreak ?
 4. What are the costs involved in disease prevention ?

- In your group discuss what do you know about the question
- Record your key points on the flipchart
- Be prepared to present your answer to the group
- Take about 10 minutes to complete this task

What are the threats to poultry farms?



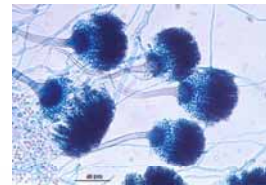
Viruses



Bacteria



Mould & fungi

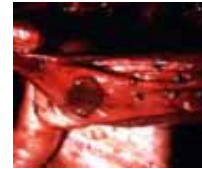


Protozoa & parasites

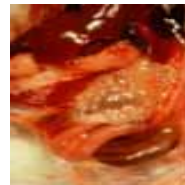


The diseases caused by:

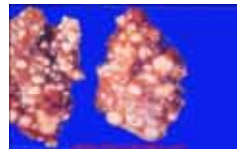
- **Viruses** (Newcastle Disease, Gumboro, Avian Influenza, Duck plague)



- **Bacteria** (Fowl Cholera, Salmonella, Mycoplasma, E. Coli, Rimerella anatipestifer)



- **Fungi** (Aspargilosis, Mould, Mycotoxins)

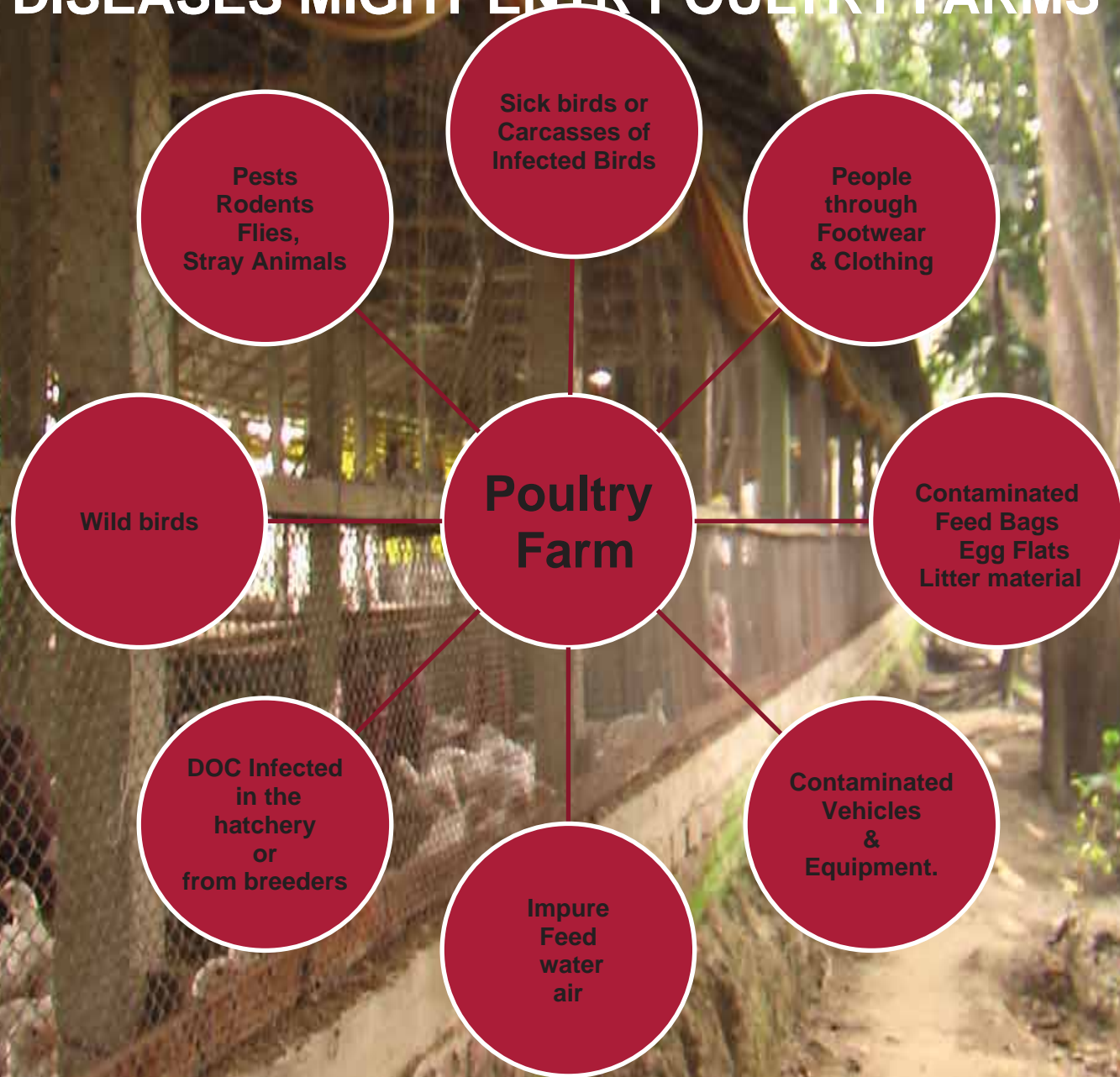


- **Protozoa and Parasites** (Coccidiosis, Intestinal Worms, lice & mites)

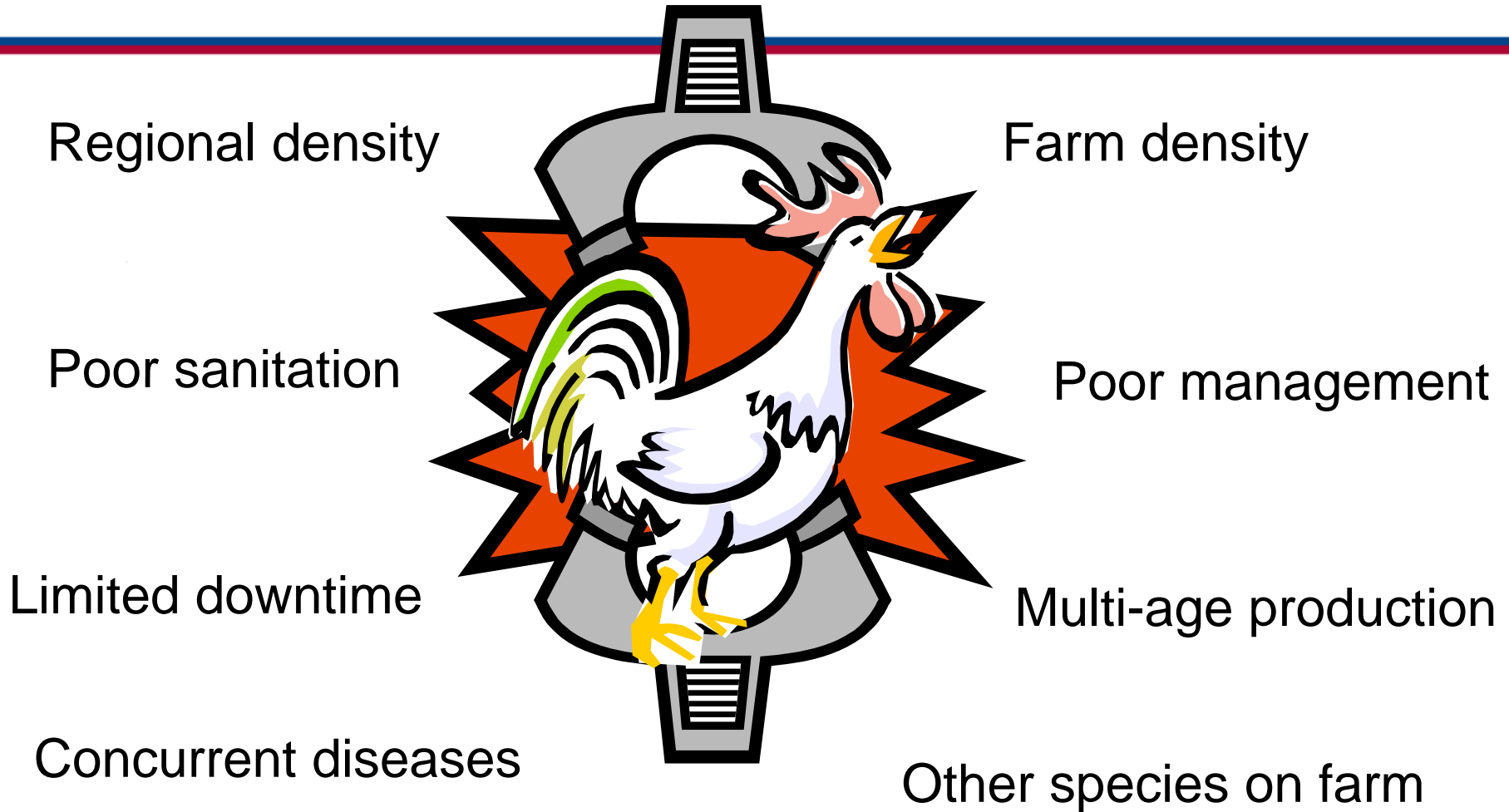


Which diseases do you see at your farm?

HOW DISEASES MIGHT ENTER POULTRY FARMS



The infection pressure in relation to:



The costs of diseases :

- Poultry mortalities
- Low production performances
 - less eggs (less hatchability)
 - less meat
 - slow growth rate
 - poor FCR
 - poor product quality
- Financial losses to farmers
 - Due to:
 - mortalities
 - medication
 - low performance
 - decontamination
- Human infection and death = zoonosis (in case of Salmonella, HPAI)

How you can prevent and control diseases

In decreased order of efficacy

1. Implementing Biosecurity
2. Vaccination program
3. Medication

Often we use these three in varies combination

Remember! - Prevention is always cheaper than cure

What are the costs of disease prevention & control

You should invest in:

Better Housing + Equipment

But the most important investment should be in:

Training + Education

Of yourself and your employees about risk reduction behaviours and changing procedures at the farm

Cost:	layers \$/doz eggs	broilers \$/Kg
Cost of disease		
Treatment	0.003	0.002
Lost production	0.020	0.030
vaccination	0.002	0.020
Tot:	0.025	0.054
Cost of prevention		
Procedures & education		
Better Housing & equipment		
Tot:	0.019	0.016

Small commercial producers what are the issues ?

- Limited resources (money/people/time)
- High risk because many movements
- Housing - may not be purpose built
 - not owned by the producer (rented)
- Limited technical knowledge and access to information

What is Biosecurity Plan

Biosecurity plan is a set of practices designed to prevent the entry and spread of infectious diseases into and from a poultry farm.

Biosecurity requires the adoption of a set of attitudes and behaviours by people, to reduce risk in all activities involving poultry production and marketing.

Biosecurity plan should focus on

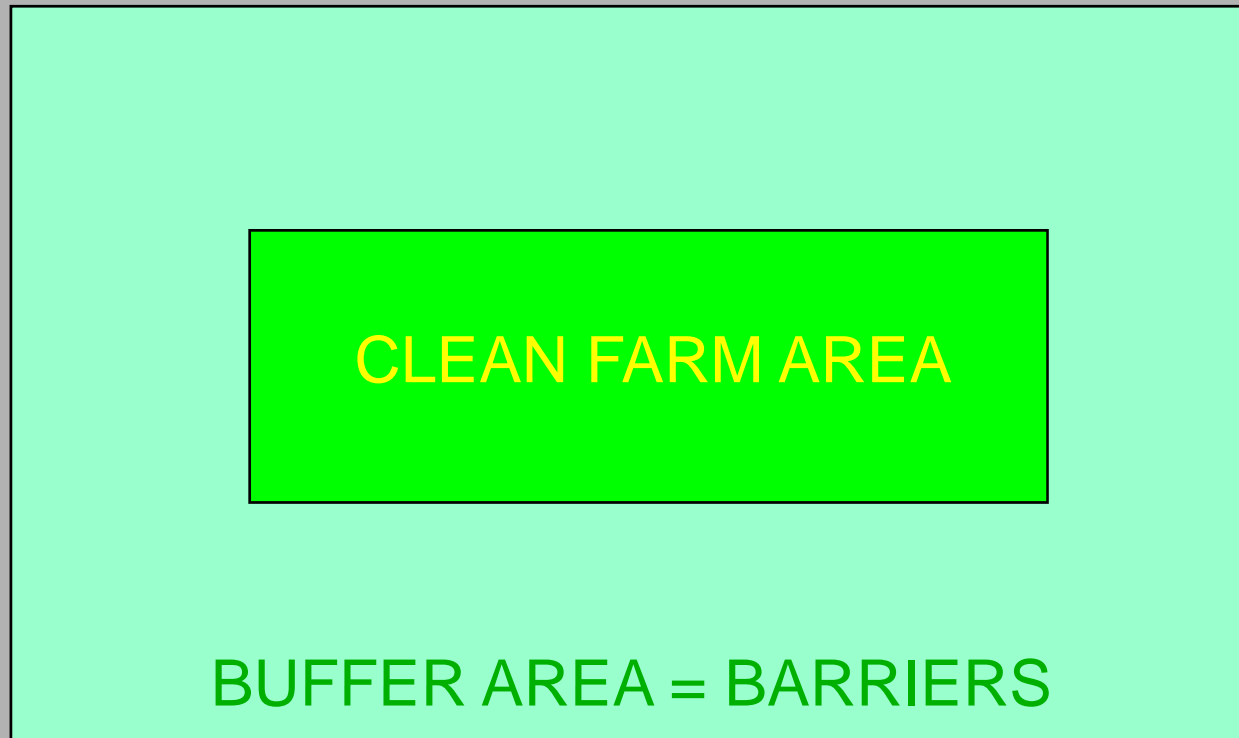
Preventing disease agents from entering the farm

By keeping potentially infected animals and contaminated objects away from healthy poultry.

This requires formation of barriers

- Physical
- and/or
- Conceptual

DIRTY AREA



Quiz Time

1. Biosecurity is the most effective and the cheapest way to protect your chickens.
 - a. true
 - or
 - b. false
2. Which elements are the most important for disease's prevention?
 - a. housing and equipment
 - b. training and education
3. What is it the buffer area?
 - a. clean area
 - b. dirty area
 - c. protective area around the farm created by a wide range of procedures

Exercise:

The question!

1. What are the prerequisites to ensure the good health and maintenance of poultry on farm?
2. What is segregation and traffic control and how to achieve it on a farm?
3. What is cleaning and how to achieve it on a farm?
4. What is disinfection and how to achieve it on a farm?

- In your group discuss what do you know about the question
- Record your key points on the flipchart
- Be prepared to present your answer to the group
- Take about 10 minutes to complete this task

The 3 elements of biosecurity

A. Segregation & Traffic Control

The most effective form of biosecurity
prevent contamination

B. Cleaning

The next most effective step - when all dirt is removed
remove most (80%) contamination

C. Disinfection

The least reliable step - depends on the quality of cleaning
might kill any remaining contamination

Prerequisite:

Good bird management ensuring the good health and maintenance of poultry on farm



- Provide adequate feed, water, temperature, airflow
- Keep records of the flock :
 - source and number of birds being placed in the farm
 - how many birds died or culled each day (in number and %)
 - daily feed consumption (in tot and in grs/bird)
 - daily water consumption (in Liters)
 - vaccinations, medications, vitamins



Do you keep any records at your farm?

A. Segregation & Traffic Control

The strongest form of biosecurity and where all effort should be placed !!!

Preventing disease agents from entering the farm by keeping potentially infected animals and contaminated objects such as clothing, footwear, vehicles, equipment, etc, away from healthy poultry.

This requires formation of barriers,

Nothing crosses these barriers unless it has to.

The barriers can be:

- physical - lock on doors, fence & gate, distance
- temporal - time break in between farms' visits
- procedural - washing hands and feet, changing footwear and outer clothes, vehicles kept off the farm

Barriers in descending order of efficacy



1. Locks + Chains



Prevent unauthorized people from entering into the chicken house, risking the transmission of diseases

2. Screened walls and windows



fishnet – in use in Thailand



Prevent contact of poultry inside the chicken house with wild and domestic animals and birds from the outside

3. Strict procedures – for farm entry

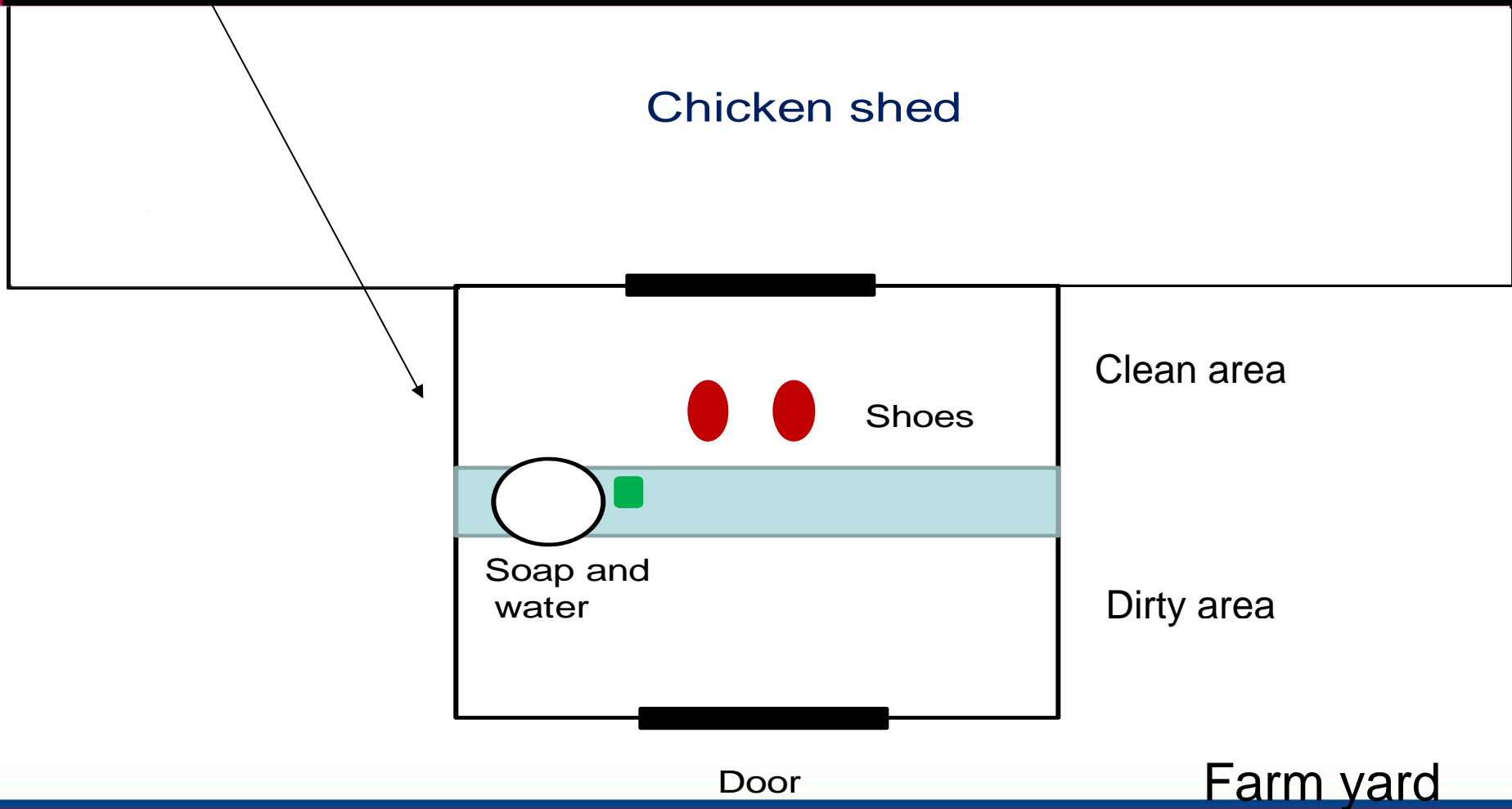
- All workers or visitors must wash hands and feet with soap before entering the chicken house
- All workers or visitors must change or cover clothes and footwear before entering the chicken house (wear farm's clothes)
- All workers or visitors must clean and disinfect footwear between sheds by using a footbath or change footwear



Prevent contact of poultry inside the chicken house with diseases agents that might be carried from the outside on people hands, cloth or footwear



Annex at the chicken house entrance with dirty and clean side



Only essential visitors allowed on farm



such as: veterinarian and service man.
never allowed in:
chicken/duck & eggs dealers



Help us maintain flock health

Please keep out

Phone: - _____

Visitors allowed in under strict conditions

(wash, change of cloths, restricted movement, etc)

Prevent contact of poultry inside the chicken house with people from the outside that might carry disease on their hands, cloth or footwear

Conducting farm business

Selling live birds

- Transport poultry offsite to poultry dealers
- Transfer to poultry dealers at your farm gate (do not let the dealer on your farm)
- Transport to a live bird market
- Sell directly from the farm gate (do not let people in)



Selling eggs

- Sorting the eggs into flats to be taken off the farm (using plastic vs. paper flats)
- Never bring paper egg flats back from the market to the farm
- If selling eggs directly from the farm, sell them at the farm gate (do not let people in)

Only essential vehicles and equipment allowed on farm

- Vehicles should be left outside the farm area
 - might allowed into the farm in special condition following strict washing and disinfection
 - parked at least 30 mt from the house



- Only essential pieces of equipment allowed into the farm following strict washing and disinfection



Fumigation box

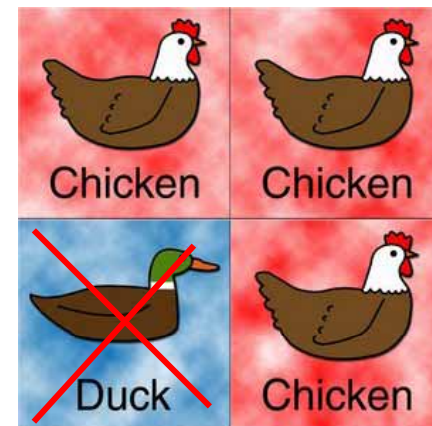


4. Separating birds by species

Never keep together in the same house or same farm birds of different species
for example: chickens and ducks or gees

Remember!

Waterfowls are often a silent carrier
of Avian Influenza or Newcastle virus



5. All-in all-out management system = single age

- Don't add new birds to a flock
- Prevent spread of diseases from age group to another on the same farm (due to different health and immunological status)
- Allow simultaneous depopulation of facilities between flocks and periodical clean-up and disinfection of all houses and equipment to reduce infectious pressure or to break the cycle of disease



6. Fence + gate + warning signs

Fence around the farm + gate + warning signs to control the movement into the farm of people, vehicles, equipment and other animals that might carry diseases into the farm from the outside



Help us maintain flock health
Please keep out

Phone: - _____



7. Keeping minimum distance between poultry farms

- Keeping minimum distance between poultry farms
 - When there are number of farms in a short distance, there is a possibility to form a cluster of farms with good coordination, all birds are placed and marketed at the same time = single age
- Keeping minimum distance between poultry farm and LBM

Prevent or reduce the spread of diseases
from infected to healthy birds

B. Cleaning

Cleaning of housing, vehicles and equipment is the next most effective step, cleaning remove 80% of contaminants



When all dirt is removed, there is little organic material left in which disease agent may be protected and carried

Cleaning means that the surfaces of the object must be visibly clean with no dirt left that is visible to the eye

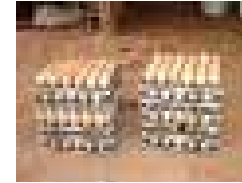
Cleaning needs effort – scrubbing, brushing and high pressure washing with detergent and water



What should be cleaned and when

You should ensure regular cleaning before entering into the farm:

- vehicles and equipment (syringes, de-beakers, egg trays)
- cloths and footwear
- workers and visitors hands and feet



You should ensure regular cleaning at the farm:

- equipment used on farm (drinkers, feed pans, egg trays)
- workers cloths and footwear
- workers hands in between jobs

You should ensure cleaning between flocks

- poultry house (inside & outside) and equipment



C. Disinfection

Disinfection is the least reliable step of biosecurity, depends on the quality of cleaning, water hardness, etc. might kill any remaining contamination

To achieve effective disinfection you must ensure:

- removal of all dirt during the cleaning process
- usage of only approved disinfectant
- preparation of disinfectant solution in correct concentration
- application of disinfectant in the correct volume to ensure effective contact time and to cover the entire surface
- preparation and application of disinfectant in a safe manner

What should be disinfected and when

You should ensure disinfection before entering into the farm

- vehicles and equipment (syringes, de-beakers, egg trays, etc)

You should ensure disinfection between flocks

- poultry house (inside & outside) and equipment

Quiz Time

1. segregation & traffic control, cleaning and disinfection are the 3 elements of biosecurity.
a. true or b. false
2. when washing poultry house and equipment you should first, remove organic matter with detergent and then apply disinfectant
a. true or b. false
3. when working on farm you should never wash your hands
a. true or b. false

Identifying biosecurity risks

In a moment, we will show you pictures of a farm

- Note each biosecurity risk that you see
- How many risks have you identified?



What to observe

where are the high risk points

- Introducing New birds
- People
- Equipment
- Vehicles
- Wild birds
- Rodents
- Pets and other animals
- Insects
- Water
- Feed
- Dead birds disposal

1. Introduction of new birds

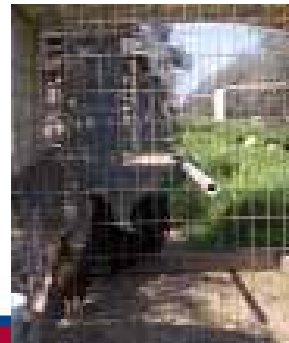
Don't add new birds to a flock, but if you do so, keep in mind the risks

- Introduction of diseased birds.
- Introduction of “healthy” birds which incubate or have recovered from a disease but might be carriers/shedders of virus or bacteria



Precautions:

- Isolate and quarantine all new in-coming stock for minimum period of 2 weeks in isolation shed/cage that should be far away as possible from the resident birds
- Observe these birds for any sign of sickness



2. People

- Highly mobile
- Carriers of disease agents presented in:
 - feathers
 - droppings
 - exudates

On contaminated {
- clothing
- footwear



Precautions:

- Minimize your visits to other farms.
 - * Never visit other farms during disease outbreak!
- Limit the entry of visitors to your farm.
Permit only essential visits
- Keep set of coverall and boots for visitors (servicemen, veterinarian, electrician, etc).



- Disinfect footwear between sheds in a footbath.

Remember to:

- re-fresh the solution daily!
- use a brush to remove dirt



Alternatively

- Keep separate boots or sandals (color coded) for each chicken house



3. Equipment

- Mobile
- Carriers of disease agents

Precautions

- Wash & disinfect equipment before and after use
- Be especially careful with:
 - borrowed and contractors equipment
 - vaccinators
 - debeakers
 - egg trays that return from market



4. Vehicles



Such as:

- Chick delivery vans
- Feed trucks
- Pick up & egg trucks
- Visitors



Are Highly Mobile

Carriers of disease agents on:

- Wheels
- Under the bottom of the vehicle

Precautions

- Limit the entry of vehicles to your farm (only in essential cases)
- Wash and disinfect vehicle's wheels and bottom

By:

- vehicles deep
- high pressure sprayers

- Parked at least 30 mt from house



5. Wild birds



Carriers of:

- Viruses:
 - Avian Influenza
 - Newcastle Disease
- Bacteria:
 - Salmonella
 - Mycoplasma

Might infect your chicken by

- direct contact
- contamination of feed or water with droppings and exudates

Precautions

Bird proof netting



- Wild birds proof house – screen or net
- Clean feed spills immediately around feed storage room and chicken house
- Keep feed storage room clean and door close at all time



6. Rodents



- Are carriers of disease agents contaminating feed and litter with
 - Salmonella
 - Fowl Cholera
- Cause damage to equipment
 - Electrical wire
 - Plastic water pipes



Enlarged wattles in Fowl Cholera

Precautions

- Remove piles of trash around the farm (which serve as a breeding area for rodents)
- Remove vegetation near by the house
- Clean all feed spills
- Place and rotate baits and traps around the poultry house regularly



7. Pets and other animals

- Dogs, cats and pet birds are carriers of infectious agents such as:
 - Salmonella (in faces)
 - Fowl Cholera (in saliva)
 - Psittacosis
 - Newcastle



Precautions

- Make the poultry houses pet-proof – screen or net

- Other farm animals like cattle, buffalos, goats, etc, raised on poultry farm



- Increase in pests like: rats and flies on farm
- Increase in disease agents concentration on farm like: Salmonella, Campylobacter, Cholera, endangering the poultry population

Precautions

- Make the poultry houses animal-proof – screen, net
- Fence the poultry area



8. Insects

- carriers of disease agents for example:

- Mosquitoes

Fowl pox



- Darkling beetle



Newcastle disease

Bursal disease

Marek Disease

HPAI

Salmonella

and many more

- Flies

Salmonella



Precautions

- Mow grass around houses regularly
- Prevent water build up around sheds
- Remove all potential larval food materials such as:
 - animal manure
 - rotting mulch
 - bird carcasses
- Spray insecticide between batches



flies glue trap
in Indonesia



Note! Ducks are highly sensitive to parathion and diazinon

9. Water

- Contaminated water can be a breeding ground for:

- Avian Influenza
- Newcastle disease
- Coliforms
- Salmonella
- Other disease agents



- Water leakage causes wet litter

- Increases the possible challenge of Coccidiosis
- Damages to leg's skin allowing penetration of bacteria causing foot pad and joint inflammation



Precautions

- Use only good quality clean water (tap or deep wells)
- Surface water of dams, ponds and rivers must be treated by:
Filtration or sedimentation + Chlorination
- Add iodine solution weekly to the water tank and drinking system (0.05% active) to prevent algae and other contaminants buildup in the pipes
- Keep drinking system free from leakage

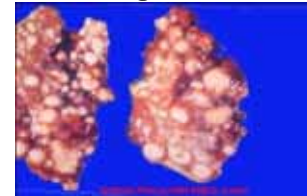


10. Feed



- Bacterial contamination of raw materials
 - Salmonella
- Wet feed permits development of fungi and molds for example:

- Aspergillus → pneumonia
- Mycotoxins like: Afla, Ochra, T2
 - Internal hemorrhages
 - Stunted growth
 - *Immunosuppression



Precautions

- Buy only good quality feed that went through heat treatment
- Feed storage
 - must be kept closed at all times to prevent contamination by rodents and wild bird
 - roof must be kept leakage free
- Feed pans must be cleaned often
- Foggers and drinkers must not drip into feed pans



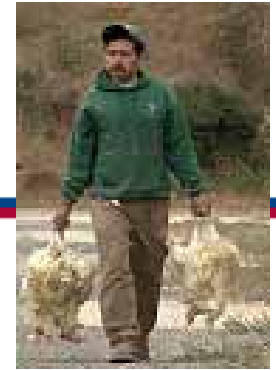
11. Dead bird disposal

- Dead birds present a risk to the rest of the flock, due to increase of disease agents load at the farm



Precautions

- Remove dead birds as soon as possible
- Dispose dead birds in a safe way by :
 - Composting
 - Incinerating
 - Deep burial + Lime
 - Digestion



Never!

- Eat or sell dead chickens
- Dispose dead chickens into rivers, canals or lakes
- Feed to dogs

Quiz Time

1. For how long should you isolate new incoming birds ?
a. 2 days b. 1 week c. 2 weeks
2. Never visit other farms during disease outbreak
a. true or b. false
3. You should provide all visitors with coverall and boots
a. True or b. false
4. Wild birds might be carriers of viruses like Avian Influenza or Newcastle Disease
a. True or b. false

Quiz Time

5. The best way to fight rodents is by

- a. removing piles of trash
- b. cleaning all feed spills
- c. placing and rotating baits around the poultry house
- d. All of the above

6. The best way to dispose dead birds in a safe way is by

- a. composting
- b. incinerating
- c. deep burial + lime
- d. all of the above

Discussion

- What are the biggest challenges to adopting biosecurity practices for smallholders?
- What do you think are the most important practices?
- Which ones will be the easiest to adopt?
- What are your ideas about how to work with smallholders to get them to adopt some of these practices?
- Who should train small producers?

What do you think ?

1. What are the 3 most important points you want to remember from this presentation that are important for you to achieve better health and performance at your farm?
2. What additional information do you need on this topic?