Theme 9: Animal Health

BIOSECURITY OF DAIRY FARMS

(Level 3)

Topic	Training & information Content
9.1	Introduction to Animal health (Prevention vs curative health care)
9.2	Health signals
9.3	Biosecurity of dairy farms
9.4	Tick born diseases (Prevention and treatment)
9.5	Worm infections (Prevention and treatment)
9.6	Vaccination schedule and planning
9.7	Mastitis prevention and treatment
9.8	California Mastitis Test
9.9	Usage and storage of veterinary medicines on dairy farms
9.10	Administering of medicines to dairy cows
9.11	Instruction use of injectors into teat canal
9.12	Key performance indicators (KPIs) for monitoring health status of dairy herd

1. You will learn about (learning objectives):

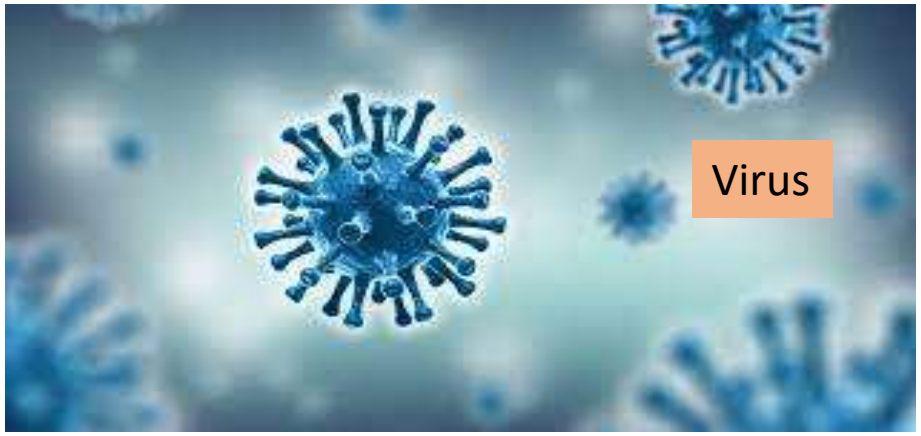
- ❑ Biosecurity and its importance.
- ❑ How to implement biosecurity measures?
- ❑ The effect of biosecurity measures.

2. Introduction

What is biosecurity?

- Measures to minimise the diseases caused by entrance of pathogenic microorganisms on your farm, and the spread of pathogenic microorganisms over your farm are called ‘biosecurity’.

Dutch traffic sign to stop animal traffic during an animal epidemic, like foot and mouth disease or bird flu.



Virus

3. Pathogenic microorganisms

Which micro*organisms can be pathogenic**?

- Bacteria and rickettsia
- Viruses
- Protozoa
- Fungi
- Worms and nematodes

*Small
**Causing disease

Theileria a protozoa that causes East Coast Fever

Tongue

Foot and mouth disease is caused by a virus

Mastitis is caused by bacteria

4. Classification of biosecurity

Biosecurity is about;

- Preventing diseases (microorganisms) that enter your farm. This we call external biosecurity.
- Preventing diseases (microorganisms) present on your farm that can spread. This we call internal biosecurity.

- Definition: Biosecurity are management practices laid to minimize the risk of disease introduction and spread on a farm.

Udder washing (internal biosecurity)

Disinfecting an entering car (external biosecurity)

5. Biosecurity and Infection pressure

- Infection pressure indicates the number of pathogenic microorganisms and their ability to infect the animals in a farm. The lower the number of pathogenic microorganisms on your farm, the better it is for the health of your animals.

- So by good biosecurity measures you lower the infection pressure.

6. External Biosecurity

- If you are aware of the ways that pathogenic microorganisms enter your farm, you can take measures to prevent them.
- Pathogens can enter your farm through cattle you bring to your farm, people visiting your farm, other animals entering your farm like goats, dogs, birds, mice, rats, etc.

Good fencing can protect you from goats bringing in tick borne diseases

At cattle markets foot and mouth disease can easily spread

Dirty gumboots can carry bacteria

7. Closed farm

- One way of improving biosecurity is by establishing a closed farm.
- In a closed farm no cattle from outside the farm are brought into the farm.
- Dairy cattle will only be replaced by calves born on the farm.
- In developed dairy farming countries, this is often a common practice.

Sires are known to spread veneral diseases like Brucellosis, Trichomonas and Herpes viruses

A gift can be a risk

8. Buying animals

When buying animals try to find out;

- Do you know what farm the animal comes from?
- Is there Brucellosis on the farm?
- Are there many problems with tick borne diseases?
- Did the cow get vaccinations? If yes, which ones?
- What diseases does the origin farm have?
- What hoof-, udder- and other diseases occurred on the previous farm?

Vaccination against FMD

A bull serving many cattle can be a serious health risk

9. Quarantine

- Incoming cattle at any dairy farm are considered a risk. They can carry diseases with them without being sick. Examples are tick borne diseases, Brucellosis and Foot and Mouth Disease.
- One way to reduce the risk is by putting the cattle separate from other cattle for a certain period of time for monitoring.
- Cattle with possible tick borne disease infection should not be left to graze, to prevent infection of ticks on the farm.

FMD gives the government reason to set quarantine measures

Cattle brought to market in Uganda despite quarantine rules in 2018

Source: Ugandaradionetwork

Not only adult cattle are a risk

9.1 Quarantine Cont'd: Other animals

- Other animals can also transfer diseases to cattle.
- Measures to keep other animals away from cattle in general improves biosecurity.
- Not only direct contact should be avoided. Other animals can also infect pastures (eggs from worms, ticks and nymphs).

Goats can be a reservoir for tick borne diseases

Goats can also transfer worm infections

Goats can spread Brucellosis

9.2 Other animals Cont'd…

9.3 Other animals Cont'd: Birds

- Chicken will pick and eat ticks.
- Swallows will reduce the number of flies on a farm.
- Egret bird will eat snails (fluke) and ticks (tick borne diseases)
- Diseases transferred from birds to cattle are rare.

10. Human (visitors) handling

- A disinfection gate is maybe not the most effective way to improve biosecurity but it makes immediately clear to each visitor to take farm hygiene seriously.
- In many modern dairy farms, gumboots and coats are offered to visitors.
- For traceability reasons, a visitors book should contain valuable records.

10.1 Implementing Human (visitors) handling

- A disinfection gate is maybe not the most effective way to improve biosecurity but it makes immediately clear to each visitor to take farm hygiene seriously.
- Disinfect cars at entrance.
- Visitors should change clothes/done appropriate protective clothing (gumboots, overalls).
- Give possibility to disinfect gumboots
- Animals (especially cattle) are often a far bigger risk to transfer diseases than people, restrict their entry.

Changing room in a modern dairy farm

11. Farm external biosecurity plan

- Plans should be step by step.
- Set you priorities, consider;
  - The chance that new/incoming cattle transfer diseases to cattle in the farm is big.
  - The transfer of diseases by other animals is also considerable.
  - Transfer of diseases by people is possible but not a big risk.

People do not transfer tick borne diseases, but they can transfer viruses like FMD

All cattle infectious diseases can be transferred from cow to cow

Goats can transfer tick borne diseases (TBD), worms and bacterial infections

12. Internal biosecurity

- Internal biosecurity focuses on the steps you take to minimize the risk of infectious diseases spreading on your farm.
- A lot of these things you already do without being aware of them or linking them to biosecurity.

Clean milk equipment helps to prevent mastitis

Washing your hands helps to reduce spreading viruses and bacteria

Manure contains a lot of bacteria. Cleaning gumboots will prevent spreading them.

12.1 Internal biosecurity Cont'd…

- Hygiene measures will reduce (spread of) bacteria and viruses.
- Vaccinations will reduce spread of the infection over the farm.
- Quick treatment of diseases will decrease spread of infectious diseases.
- Decreasing the number of ticks decreases the risk on tick-borne diseases.
- Keeping cattle away from goats and sheep decreases the risk on certain infections

Separating sick animals helps to prevent spreading of the disease

Disinfect navel directly after birth

13. Biosecurity and Tick-borne diseases (TBD)

External measures:

- Closed farm
- Quarantine incoming animals
- Good border fences.

Internal measures:

- Regular spraying
- Acaracide rotation
- Pasture management
- Paddocking
- Treat sick animals in time
- Vaccination

Regular spraying reduces the number of ticks

Removing shrubs decreases the number of ticks

13.1 Biosecurity and Tick-borne diseases Cont'd…

When you spray correct and tick-borne diseases starts to occur, change to another acaracide.

When a paddock is left empty and grass is cut, ticks will eventually die

Vaccination helps to reduce infection pressure

The sooner a cow is treated, the sooner disease spreading stops

14. Biosecurity and Mastitis

Internal measures:

- Personal hygiene (clothes, hand washing)
- Clean milk place
- Cleaning and massage of the udder
- Good milk technique
- Dipping
- Dry off treatment

One towel per cow helps to prevent spreading bacteria from cow to cow

Fore stripping helps to detect bacterial infections

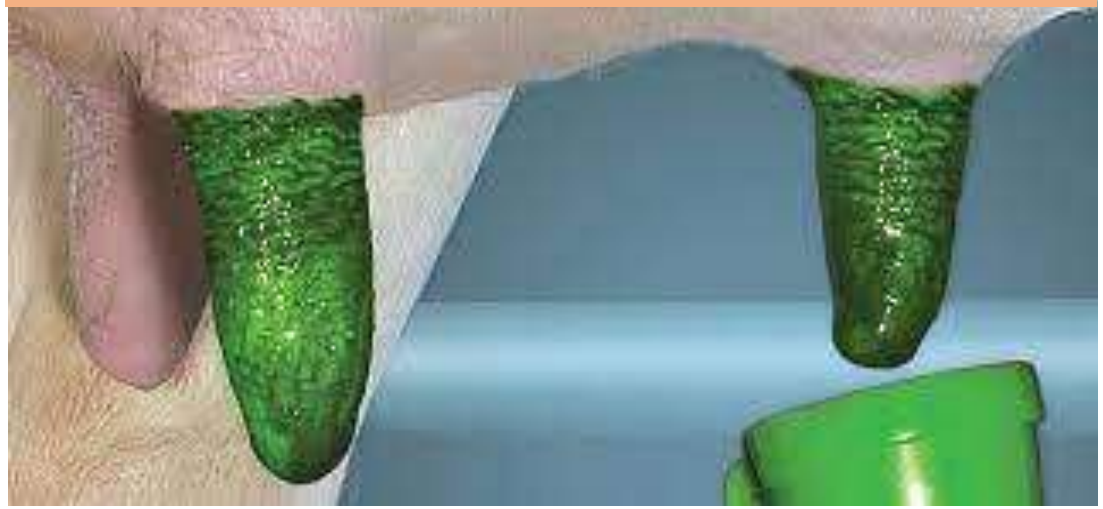
Pasture is an excellent place to milk cattle

14.1 Biosecurity and Mastitis Cont'd…

Treatment and dry off treatment

All biosecurity around mastitis focuses about keeping bacteria away from the teat ends.

Dipping helps to reduce the spread of bacteria



Muddy soil contains a lot of bacteria

15. Biosecurity and Foot & Mouth Disease (FMD)

External measures:

- Closed farm
- Quarantine incoming animals
- Good border fences
- Hygiene measures at farm gate

Internal measures:

- Yearly vaccination

Disinfection of cattle truck

Vaccination helps to prevent spreading of the diseases over the farm

16. Biosecurity and Calving

- Maintaining hygiene around calving is important for mother and calf, in order to reduce diseases like endometritis and scours.
- Drinking colostrum is very important for the calf to increase disease resistance.

Let a cow calf down in a clean environment

Giving colostrum directly after birth is key

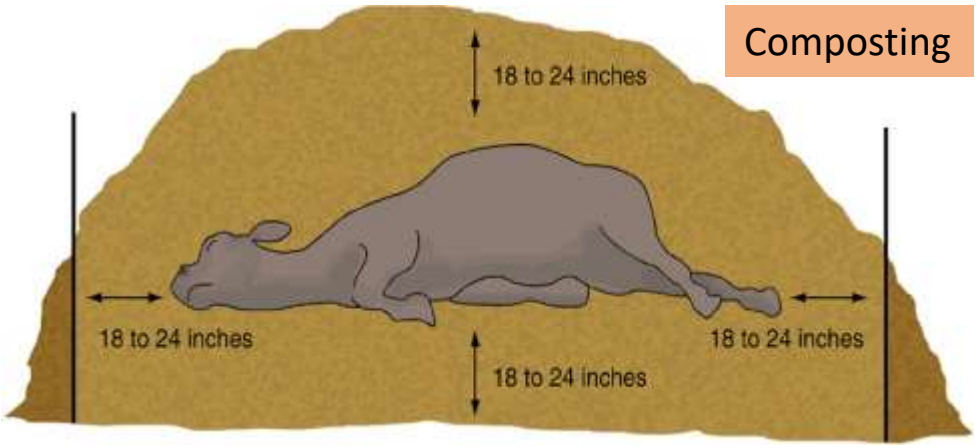
Disinfection of the navel helps to protect the calf against infections

17. Biosecurity and Dead animals

- Dead animals are a potential health hazard. Huge numbers of bacteria can remain and develop in the carcass.
- Incineration is the safest way to dispose a carcass.
- Burial or even composting is a good alternative.
- Diseases like Anthrax and Bovine spongiform encephalopathy (BSE) remain a risk after burial.

A dead cow is a hazard

Cattle incinerator



Composting

18. Biosecurity measures and reducing risks

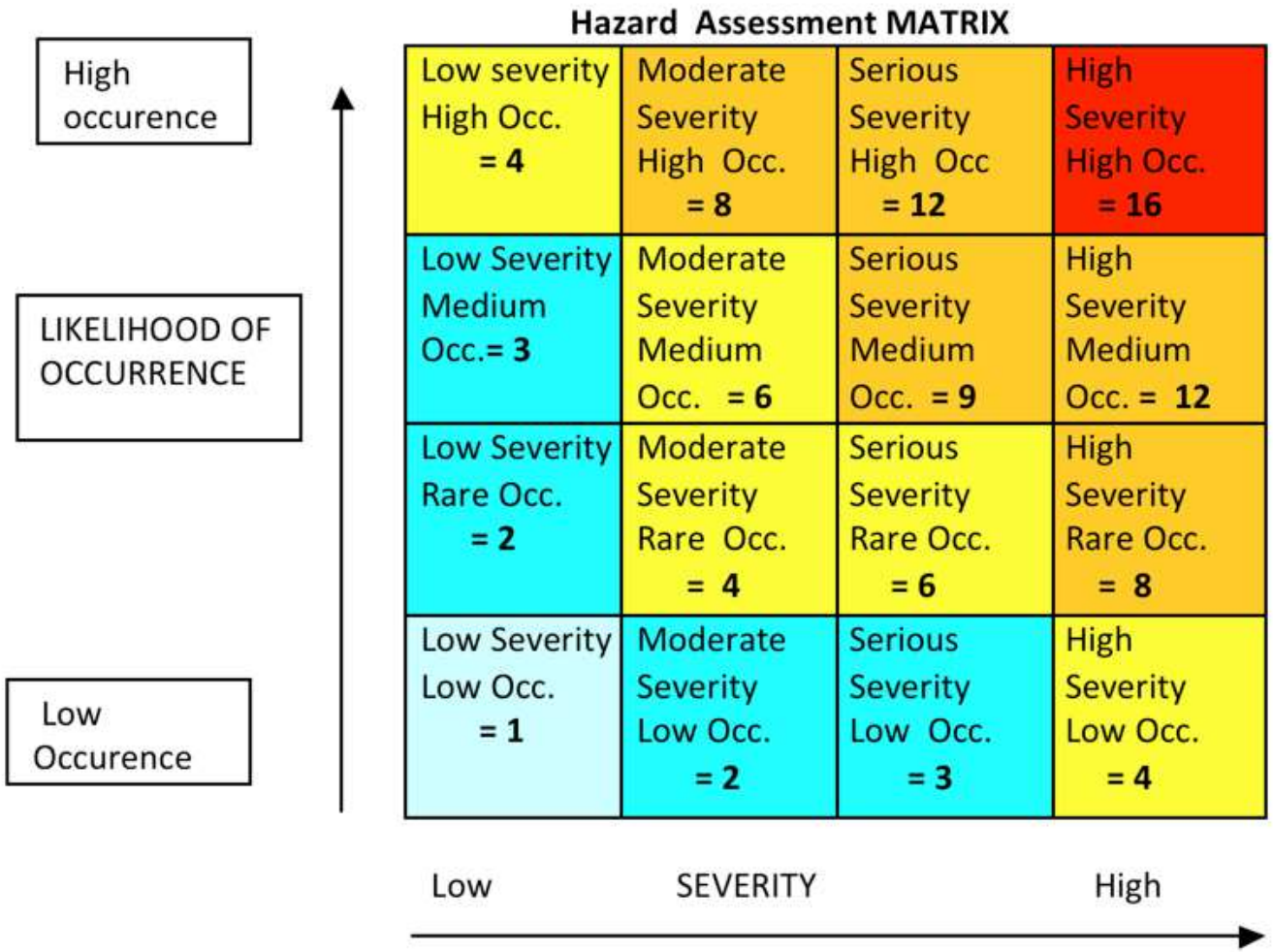
- Biosecurity measures are taken to reduce risks on infectious diseases.

Risk you can calculate by;

- Risk = severity of the diseases x likelihood of the disease to occur.

- For instance:
  - Anthrax is very severe, but mostly not very likely to occur.
  - Mastitis is often not very severe, but very likely to occur.
  - Tick borne diseases are very severe and very likely to occur.
- When making biosecurity measures you of course focus on the biggest risk.

18.1 Hazard (risk) assessment matrix



- The table to the left shows a way to calculate risk.
- The disease is called a hazard in this table.
  - Severity is scored from 1 to 4.
  - Occurrence is also scored from 1 to 4.

For example:

Tick borne diseases

- Are severe, so scores 4
- Are likely to occur, so scores 4

4 x 4 = 16

This is a high score, so action is required!

18.2 Examples of how to calculate risk Cont'd…

Example: Farm X

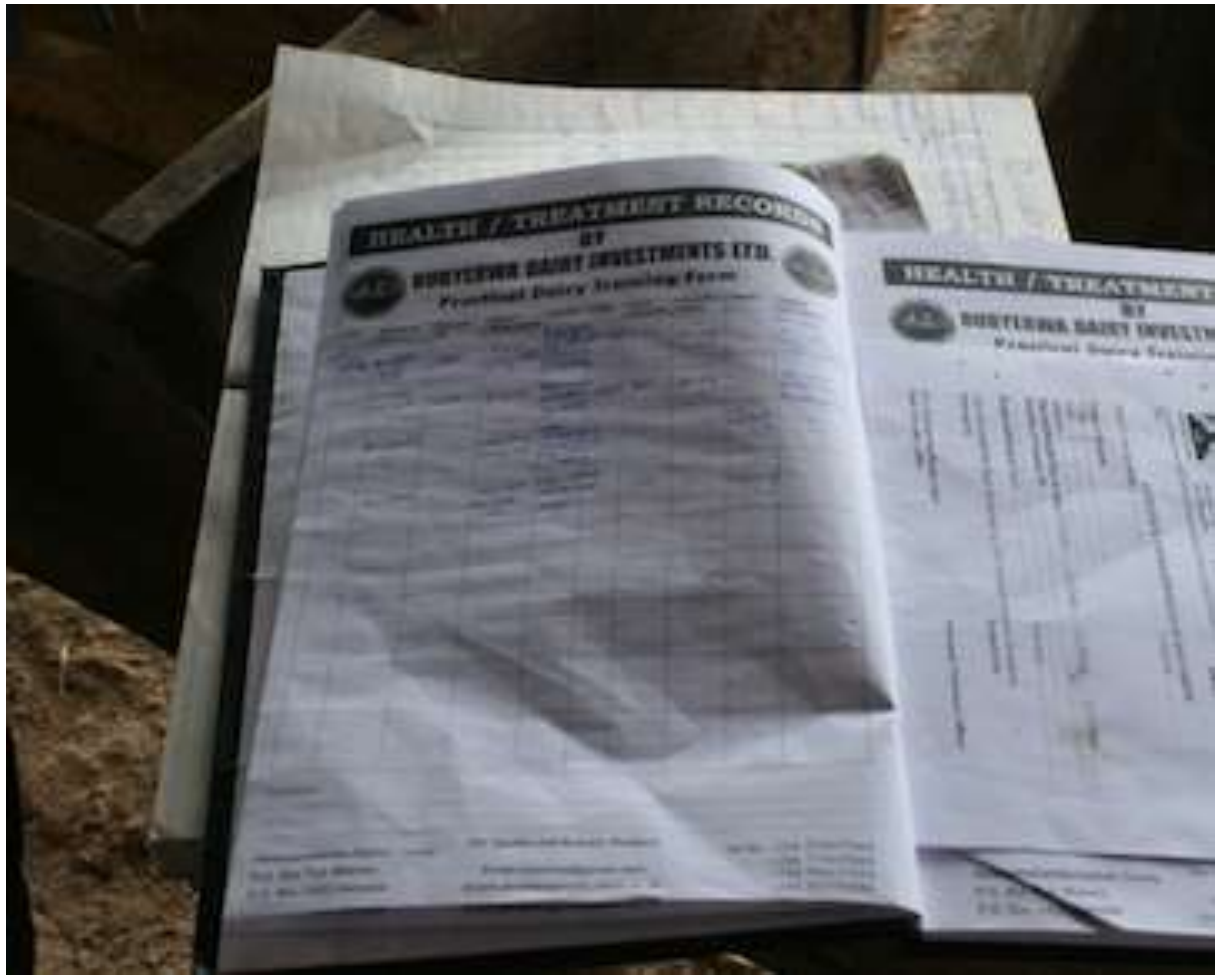
Disease	Severity	Likelihood	Score
Tick-borne diseases	Deadly 4	Likely 4	16
Mastitis	Mild 2	Likely 4	8
Anthrax	Deadly 4	Rare <1	<4
Foot and Mouth Disease	Very sick to deadly 3	Rare 1	3
Endometritis	Mild 2	Likely 4	8
Calf scour	Severe 3	Likely 3	9

- By taking biosecurity actions to prevent tick borne diseases you eventually reduce the likelihood of the occurrence of tick borne diseases.
- By every step you take, the likelihood goes down. So eventually, if everything is done correctly, the score can go down to 4.

Note: When making plans you of course focus on diseases with the highest risk.

18.3 Measuring and recording risks is helpful

- The aim of biosecurity measures is to bring down the risk of infectious diseases, with the ultimate goal of reducing cattle diseases.
- Biosecurity measures costs labour and money, and therefore should be worthwhile to make/lay.
- By recording animal health parameters, you can see if your actions had effect (less sick or dead animals, reduced medicine cost, etc.)



19. Summary/Take home messages

- Biosecurity measures are taken to reduce the risk of infectious diseases.
- When making a biosecurity plan, you look especially to the diseases with high risks. For these diseases you make a plan.
- You look which action will have the most effect and if it is possible to execute the action.
- If plan A is not possible you make plan B. Then the most difficult part comes, which is proper execution of the plan.

To establish a closed farm will be for most farmers close to impossible, but by creating a good boundary fence you already make a big step forward.

- END -