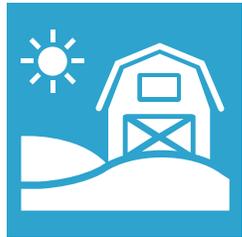


WG2 Description of farm interventions

Diana Meemken
Freie Universität Berlin | DE

meaningful feedback & effective incentives

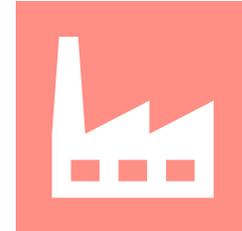
effective pre-harvest interventions



sustainable animal production



effective post-harvest interventions



effective meat inspection

meaningful Food Chain Information

meaningful HEIs

WG2

Pre-harvest meat safety interventions

virus

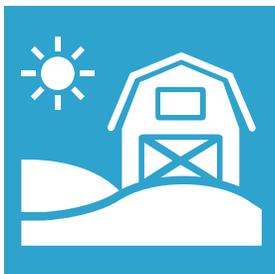
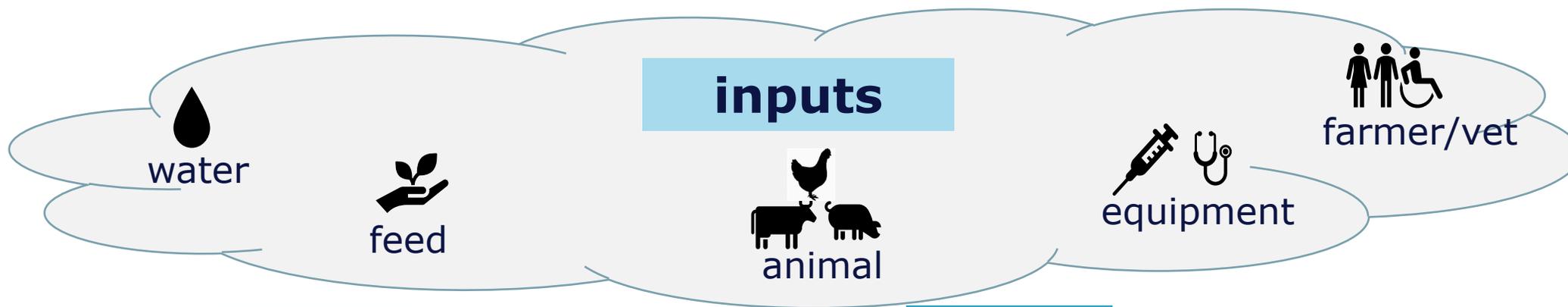
prion

bacterium

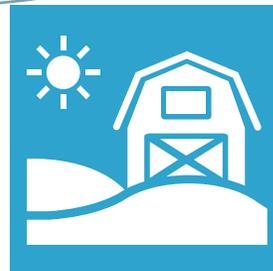
parasite



Biosecurity & Host Resistance



breeding farm



fattening farm



harvest

Biosecurity:

= measures aimed to reduce the probability of **introduction & spread** of pathogens (FAO, 2008)

History of Biosecurity:

- 1960s: family-owned farms -> large scale animal production industry (Alexander, 1986)
 - **protection of individual animals**
- 1980s: new concept of "specific pathogen free farms" & "minimal disease" (Moore, 1992)
 - **protection of farms**
- 2000s: bigger farms in lesser hands, increasing need of animal movement
 - **protection of regions**



- **Biosecurity:**

= measures aimed to reduce the probability of **introduction** and **spread** of pathogens (FAO, 2008)

- **External Biosecurity:** measures aimed to reduce the probability of an **introduction of pathogens**

- **banning the introduction of pathogens via animals, people, vehicles & equipment by**

- physical barriers
- quarantine
- rules



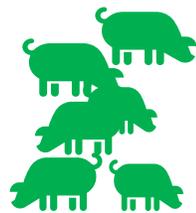
external
biosecurity

pathogen

- **Internal Biosecurity:** measures aimed to reduce the probability of a **spread of pathogens**

- **limiting the spread of pathogen once the herd is infected by**

- management of herd
- general hygiene of facilities
- cleaning & disinfection
- personnel
- equipment

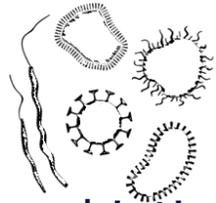


internal
biosecurity

infected animal

WG2

Focus: farm interventions



probiotics



vaccine



cleaning & disinfection



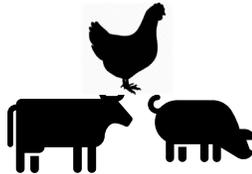
access restriction/quarantine



sustainable
animal production



bacteriophage



animal



genetics



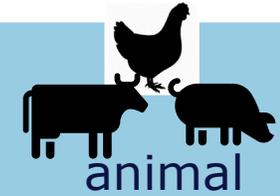
diet manipulation



feed

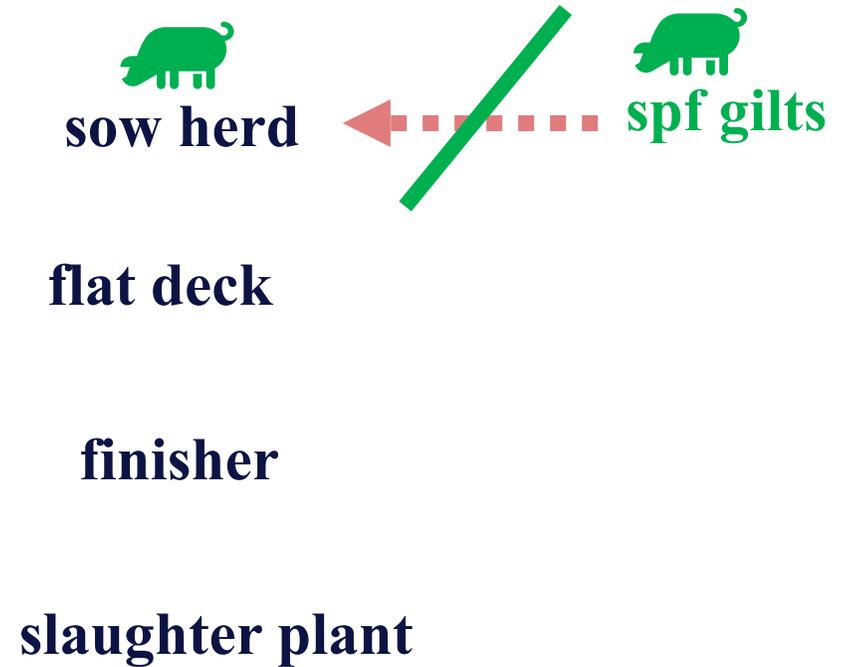
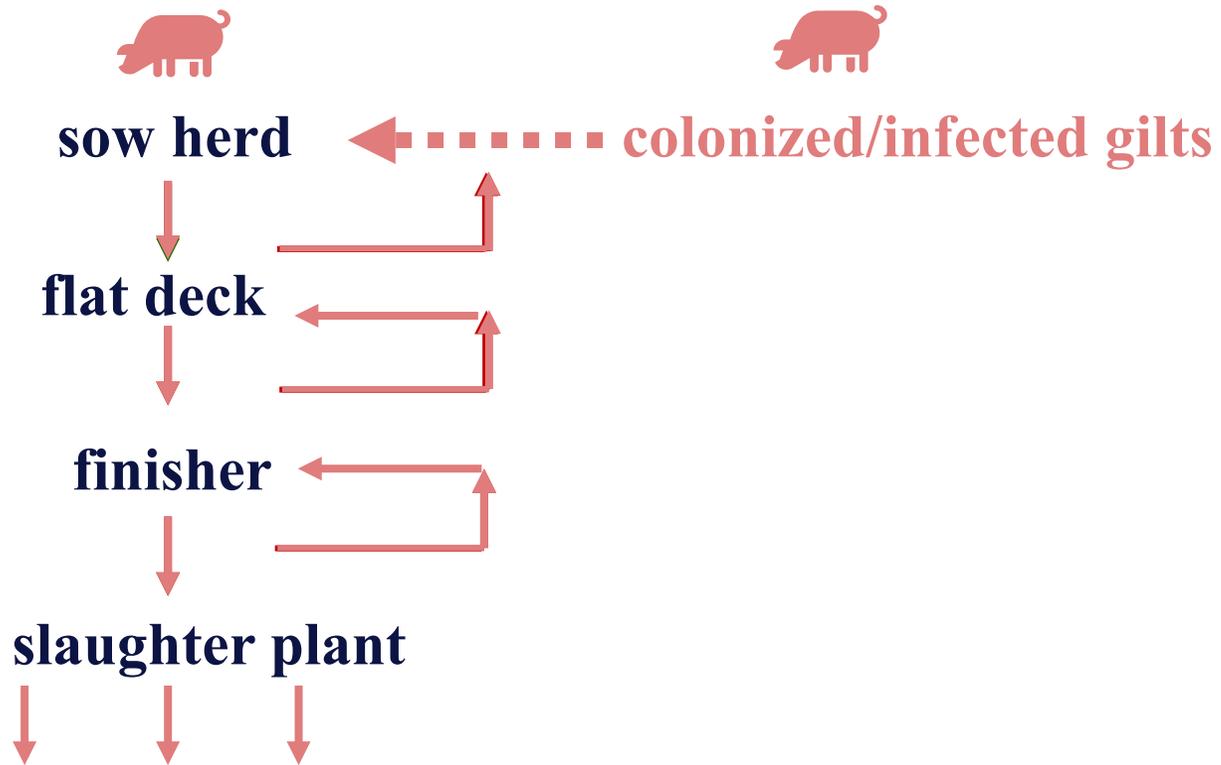


rules/management



- **Why:** If external biosecurity is secured, **specific pathogen free (spf) animals** in clean and disinfected environment may stay negative
- **How:** purchasing controlled pathogen-free animals (e.g. cesarean section, isolated rearing, ..)

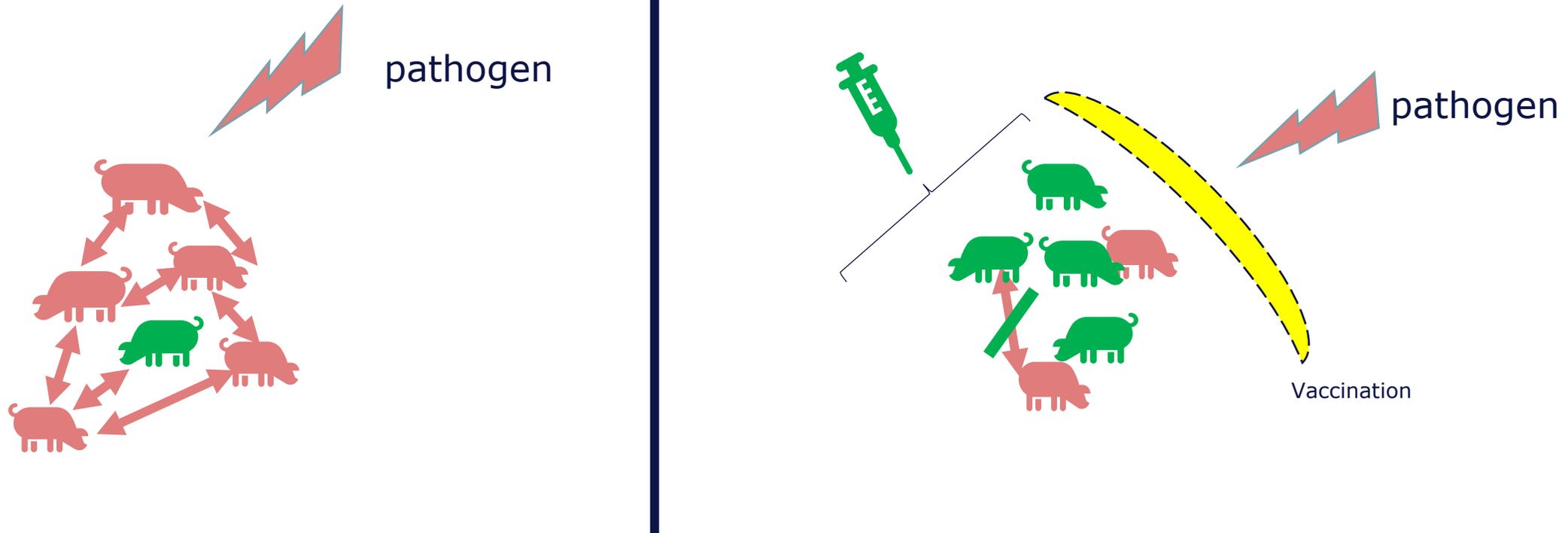
- **Pro:** high health & welfare status, less antibiotic treatments, high productivity
- **Contra:** high costs, success only if good hygiene practice is implemented without gaps





- **Why:** reducing disease symptoms and the spread of the pathogen in the herd/flock by reducing the pathogen excretion from vaccinated animals
- **How:** repetitive vaccination of breeding animals & vaccination once or twice in fattening animals

- **Pro:** prevention and reduction of diseases is better than cure
- **Contra:** only few vaccines available against zoonoses, limited effect in case of non-compliance with general hygiene principles



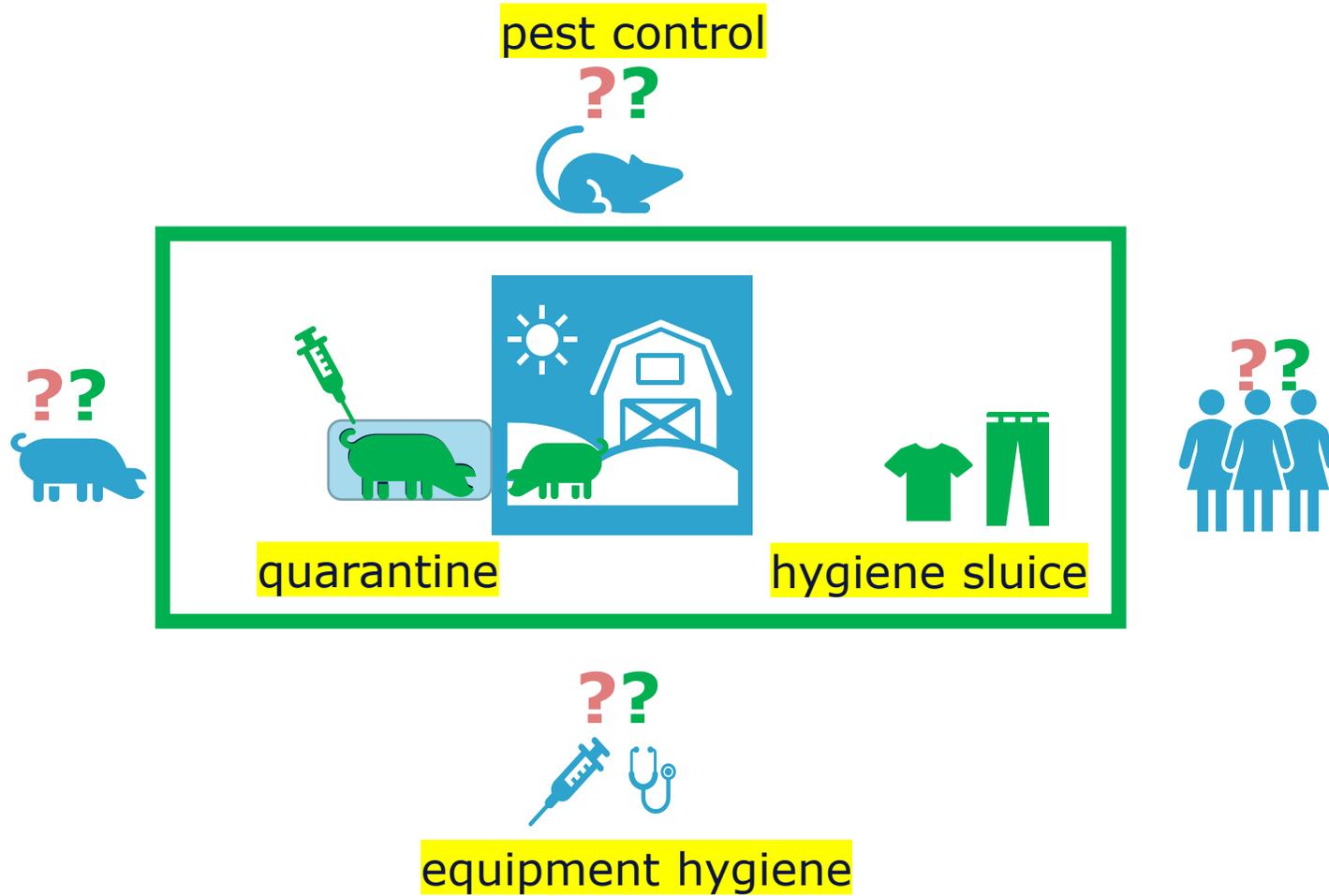
-  infected/colonized animal
-  not infected/ not colonized animal



- **Why:** reducing introduction of pathogens from humans & from animals to be integrated
- **How:** humans: hygiene sluice, shower in, provision of protective clothing and boots, gloves, hair net, temporal abstinence from other herds/flocks (3 days)
animals: two-phase quarantine of breeding animals:
 - 1st phase: isolation, vaccination, antiparasitic treatments
 - 2nd phase: dosed contact to herd animals, graduated integration
- **Pro:** prevention of introduction of pathogens is better than cure of diseases
- **Contra:** high costs, success only if good hygiene practice is implemented without gaps

EXTERNAL BIOSECURITY MEASURE

Access restriction/quarantine





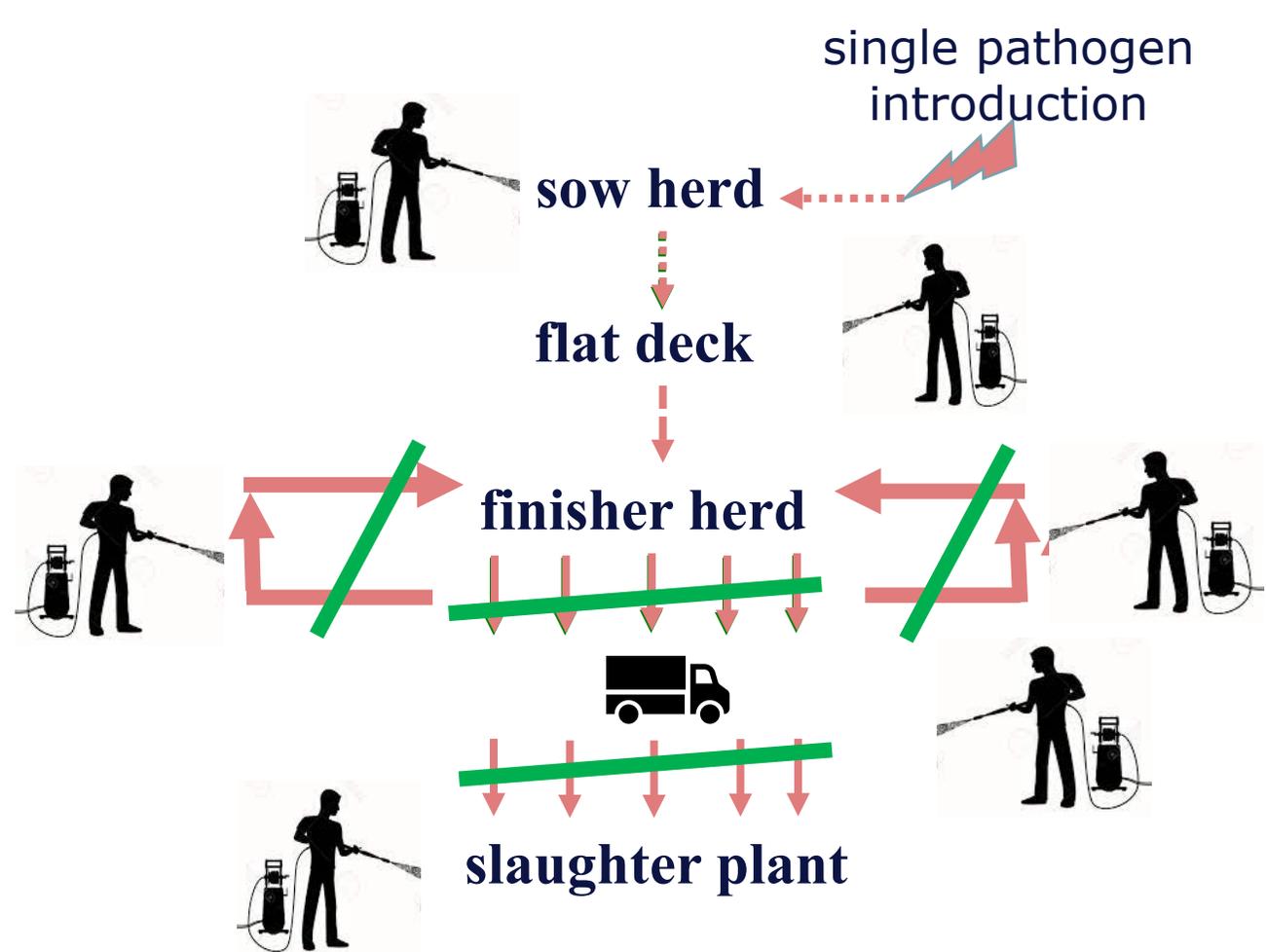
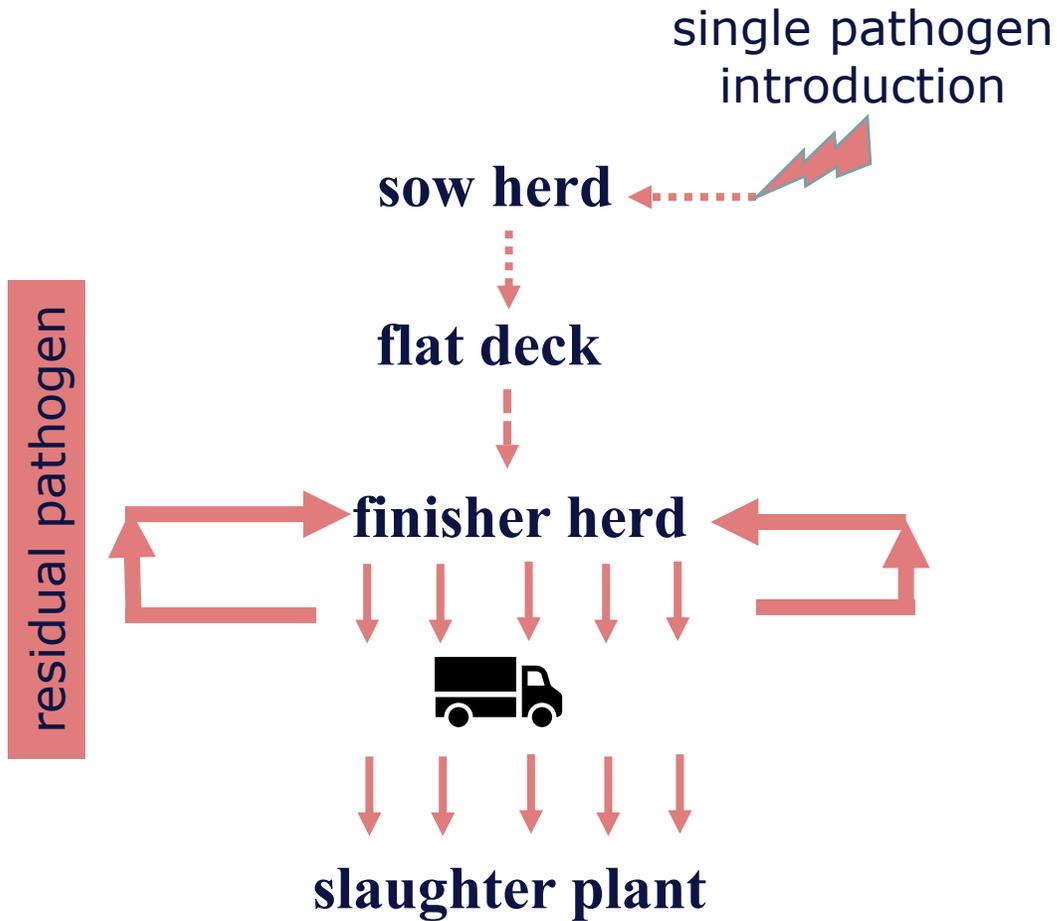
- **Why:** reducing circulation of pathogens from one to the next production cycle
- **How:** removal of organic matter, cleaning with hot soapy water, drying, disinfecting with appropriate substances
- **Where:** direct and indirect environment of the animals (incl. transporters)

- **Pro:** low costs, in the area of responsibility of the farmer
- **Contra:** time consuming, success only with careful and gapless work

WG2

INTERNAL BIOSECURITY MEASURE

Cleaning & Disinfection



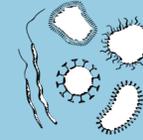


- **Why:** reducing an introduction of pathogens via feed and water
- **How:** obtaining city water and controlled feed/heat treated feed

- **Pro:** introduction of pathogens via the water or feed can be ruled out
- **Contra:** higher costs than spring water resp. homegrown feed or uncontrolled feed

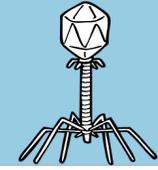


- **Why:** reducing penetration and multiplication of pathogens in the host organism
- **How:** specific preparation of feed (grinding, peletting, acidification, composition) leads to
 - a) reduced concentration of the pathogen in the feed or
 - b) increased killing of the pathogen in the digestive tract of the animal
- **Pro:** preventing measure
- **Contra:** slightly worse feed conversion & reduced palatability in some cases



- **Why:** reducing the concentration of the pathogen in the animal's gut
- **How:** administration of a mixture of facultative and obligate bacteria to youngborns/hatchlings-> colonisation-> displacement of pathogens

- **Pro:** preventing measure, tolerated in Scandinavia, France, Spain, GB, Austria, Ireland
- **Contra:** undefinable mixture of bacteria that might include pathogens, no pharmaceutical approval in e.g. Germany, elimination of the pathogen is unlikely



- **Why:** reducing the concentration of the pathogen in the animal's gut
- **How:** administration of effective bacteriophages or bacteriocines

- **Pro:** preventing measures
- **Contra:** undefinable mixture,
no pharmaceutical approval,
elimination of the pathogen is unlikely

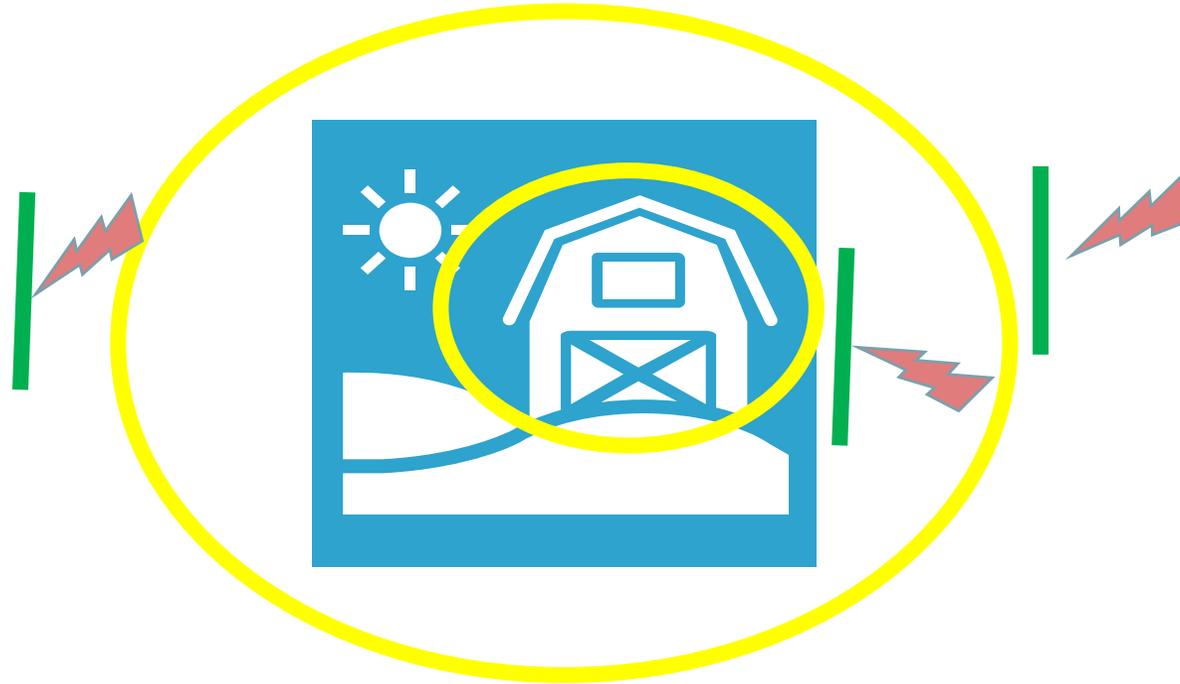
Aspects that limits the success of interventions

- **„human“ failure**
 - cleaning & disinfection
- **insufficient endurance/ laziness**
 - cleaning & disinfection
 - access restriction/quarantine
 - rules/management
- **extra costs for interventions against „subclinical zoonoses“ without paying off by abattoir**
 - controlled/guarenteed animal health status (spf)
 - vaccination

Reasons: Lack of information on:

- mode of action of interventions
- usefulness of the interventions
- consequences of non-compliance

WG2 Internal Biosecurity & External Biosecurity



a guarantee for healthy animals, reduced antimicrobial resistance, a high level of animal welfare, safe meat and environmental protection.