A presentation from

BIOPROPERTIES

The Vaccine Innovators

Avian mycoplasma control in Asia

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MG free Broilers

- If you have vertical transmission of MG then you need to give antibiotics around day 20-21-22 to prevent CRD and associated mortality (Day 26+)
- Once you get control of MG you can safely stop this antibiotic programme
  - Cheaper
  - Avoids residues
  - More sustainable – Resistance development is not a problem
    - Tylosin resistance in Australia,
    - Enrofloxacin resistance in Thailand

MG free broilers

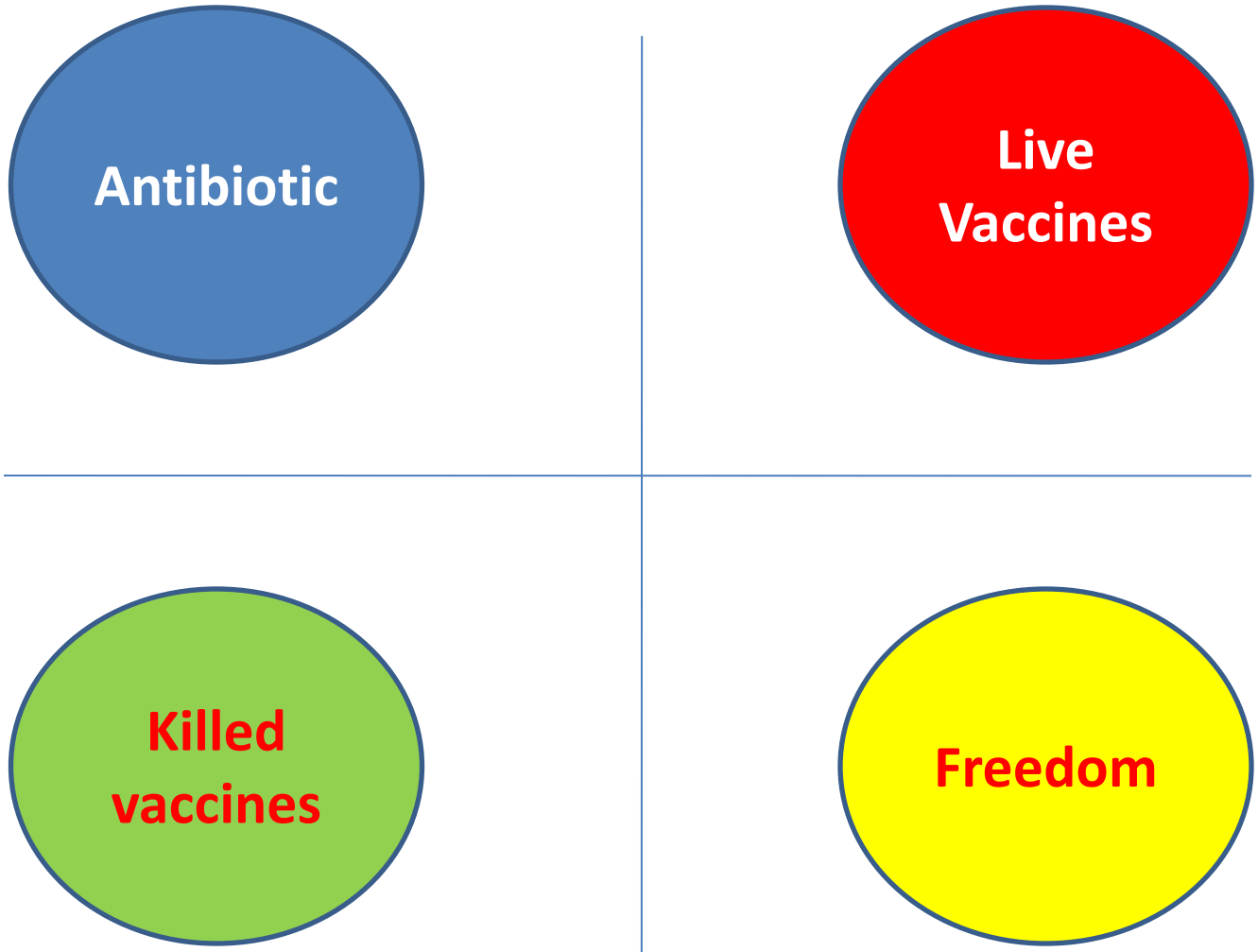
- World wide two programmes have proved successful
  - Freedom in breeders
    - UK, NZ, USA, Some parts of Europe
    - MS may then be a problem
  - ts-11 vaccination of breeders
    - Australia, China, Philippines, Lebanon?
    - Vertical transmission is a rare event. The usual experience is prevention of vertical transmission by ts-11 vaccination.
    - F strain has regular vertical transmission and residual pathogenicity has not been successfully used
  - Freedom not guaranteed by antibiotic based programmes (proven since 1950)

Broiler performance is the best measure of mycoplasma control

- Ability to farm chickens without a mycoplasma specific antibiotic intervention
  - Is possible in areas with positive broiler flocks if your broilers are uninfected at hatch. Horizontal transmission is not as big a problem
- Also lack of clinical effects of MG challenge in breeders.
- Measurement of hatchability, embryo mortality profile and airsacculitis in pips.
  - Non specific/apparent failures as effects may be due to MS.


SMIC

Control strategies



Avian mycoplasma vaccination

Controlled exposure	1960s	First generation live vaccine	Loss of 5 to 20 eggs
Killed Bacterins	Late 1960s	Injection(s)	Limited DOI and protection and birds still infected
Mild strains	1970s	Second generation live vaccine	F strain (layers) 6/85 (layers)
Attenuated strains	1980s	Third generation live vaccine	ts-11 MSH
Pox vectored	1990s	Fourth generation	Limited success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Only live vaccines induce mucosal immunity

- *ts* vaccines uncouple the relationship between protective immunogenicity and residual pathogenicity seen in naturally occurring strains.
- Resistance to infection with field strains happens at the mucosal surface. The immunological mechanism is unknown but it can be demonstrated.

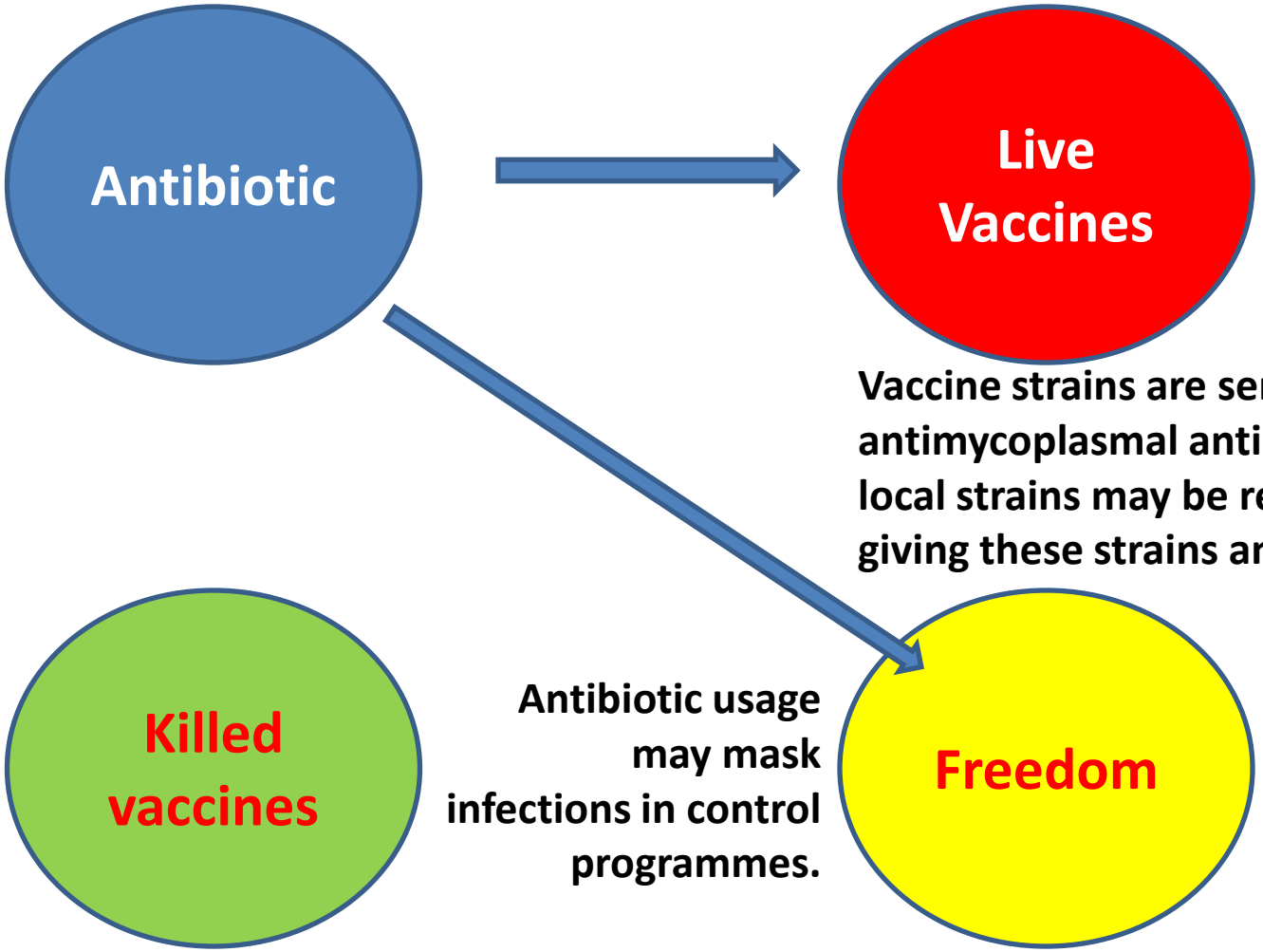
Email from ME/Asia

- MG and MS are endemic in many countries of the Middle East, they have tried many programs during the past years. One of the programs they have used is the combination of a live TS11 (7 weeks of age) vaccine plus an in activated MG vaccine during the rearing period of the breeders, and during the laying period and for certain reasons as management and low biosecurity and heavy MG challenge they use in feed premixes or water medications for mycoplasma as Tylosin premix or tylosin tartrate or Spiramycin every 30 days during the laying period which is from the age of 24 weeks to 55 weeks.
- *With this program they claim that they have very satisfactory rsults and they don't face production losses or losses in hatchability or fertility and using this type of combination they are controlling MG and MS*

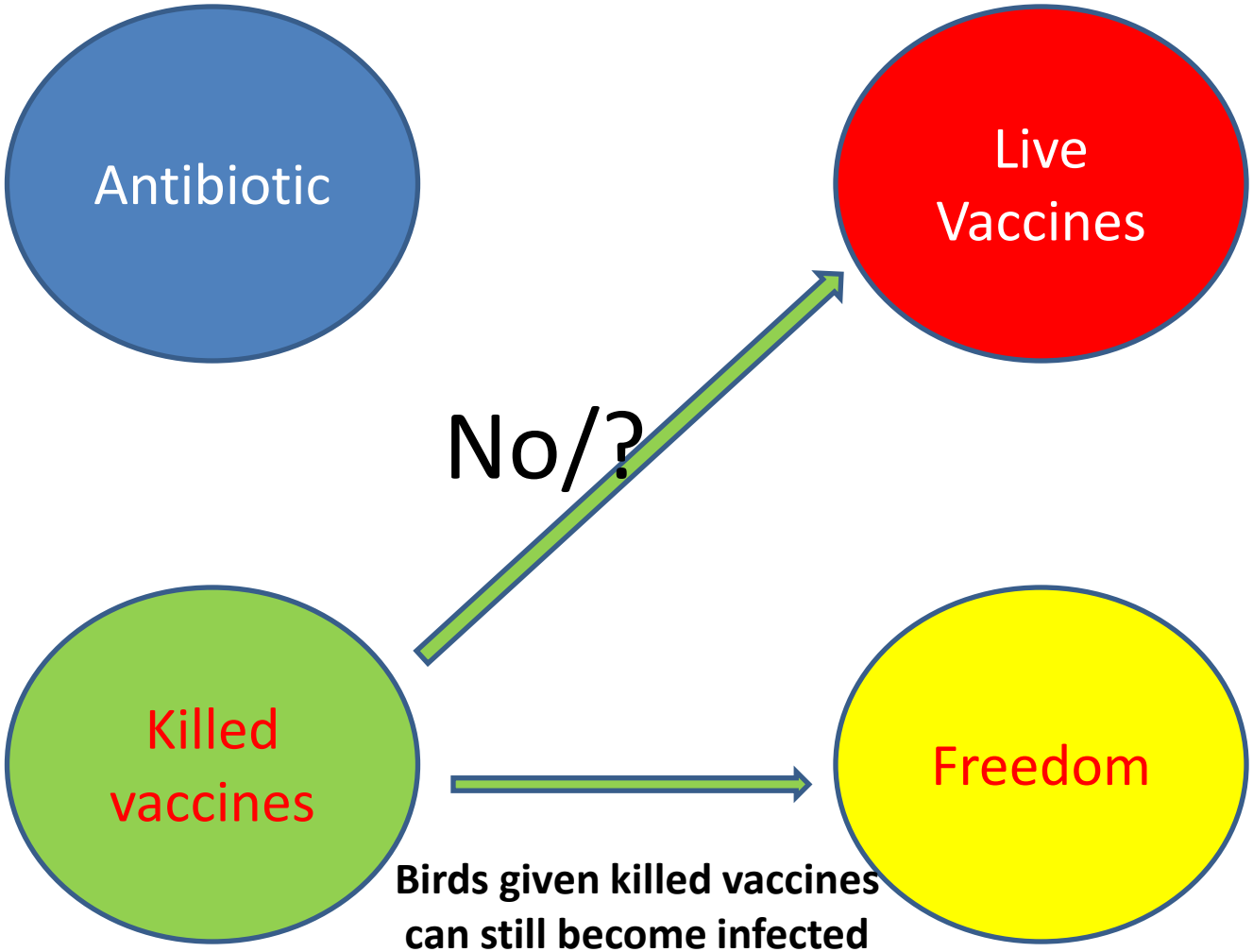
What is happening here?

- Ts-11 vaccine protects till the laying period if it has antibiotic free windows
  - First is to get the birds initially infected with the vaccine and an initial response by the bird
    - Recommend no antibiotics one week before or for 4 weeks after vaccination.
  - Maintenance of the vaccinal induced mucosal immunity is probably impeded
  - Could killed vaccine be depressing the effectiveness of ts-11? Or is it doing nothing or just making antibody? Is the total immunity more than ts-11 alone?

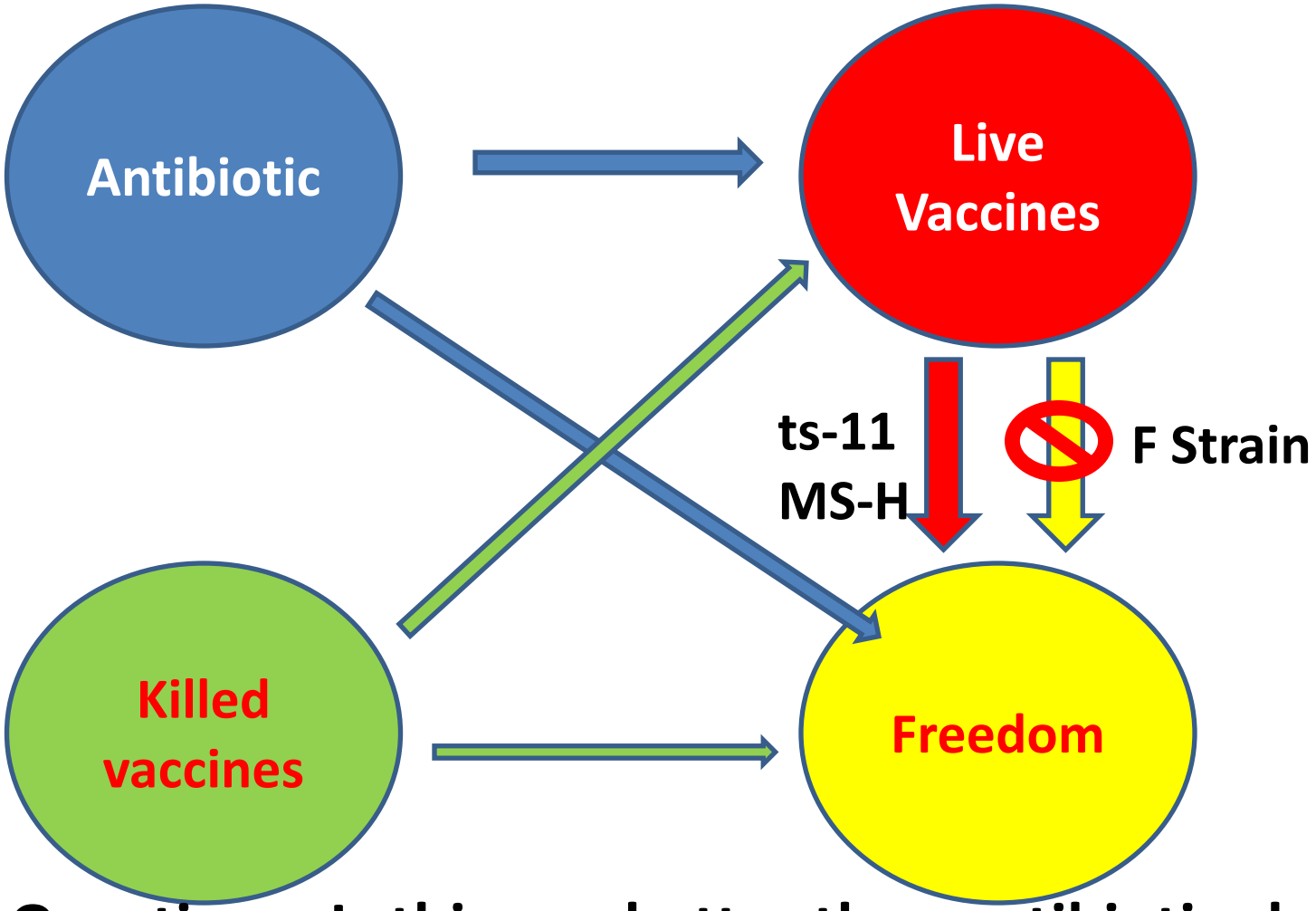
Interactions - Antibiotics



Interactions – Killed vaccines



Interactions - Combined



Question – Is this any better than antibiotics by themselves?

Serology problem

- Humoral antibody is not associated with protection
  - May be useful to prevent a systemic problem
- No good for assessing vaccine administration in the field.

Maternal antibody

- Does not protect DOC
- May increase survival of vertically infected embryos making vertical transmission more efficient.

- Humoral antibody is irrelevant in mucosal immunity.

MS control

MS problem

- Not just infectious synovitis
- Often poorly recognized with mycoplasmosis being assumed to be due to MG and/or hidden by current antibiotic practices.
- Large variation between strains in effects seen.

Some people reluctant to start live MG vaccination programmes if they must continue to control MS with antibiotics

Solution

MSH vaccine –the only live MS vaccine

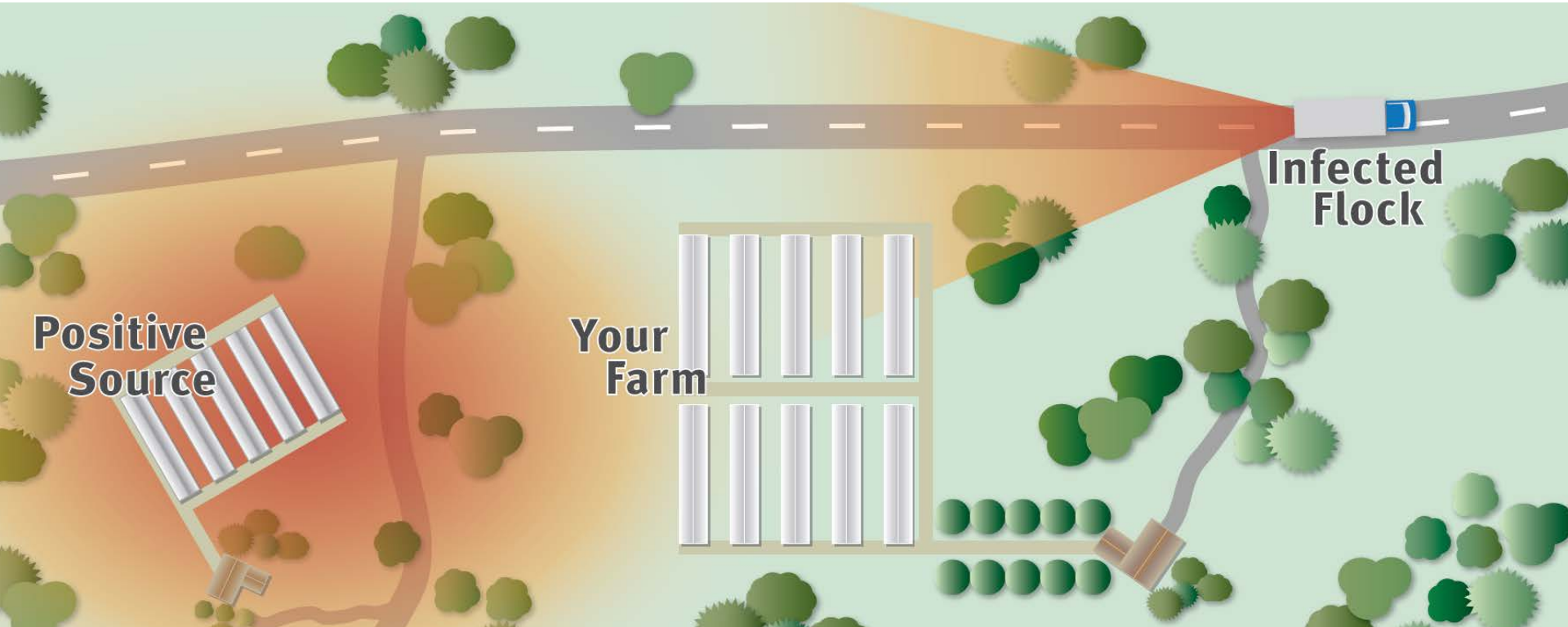
Layers in Asia

- Residual pathogenicity costs Eggs and FCR
- May need MS protection especially with glass top eggs emerging. Although second quality eggs are not a big economic loss in Asian markets you are also losing production and FCR.

Parameter to 57 weeks	Trial 1 Sonia grey	Trial 2 Lohmann
Total eggs	+11.4 eggs/HD	+13.4 eggs/HD
Normal eggs	+1.4%	+2.9%
Egg mass	+795 g	+787g
FCR	-0.12	-0.07

How much protection is needed?

- Bird to bird in contact – not needed
  - Pen trials.
- Row to row/Shed to shed - yes



Thank you

How do we justify what we do for avian mycoplasma control on economic grounds?