



PRACTICAL MYCOPLASMA CONTROL FOR ASIA

Chris Morrow, PhD BVSc
Global Technical Manager, Bioproperties
Associate Professor, University of Melbourne
Poultry Focus, Bangkok,
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PROBLEMS



- Biological
 - Diseases
 - Respiratory, Reproductive (EAA), Systemic (IS)
 - Production inefficiencies (Chronic infection)
 - Broilers
 - Antibiotic dependence
 - FCR feed into live weight
 - Layers and breeders
 - Output
 - Antibiotic dependence
 - FCR feed into eggs
- Commercial
 - Export
 - Local (especially in non integrated production systems)
 - Maternal antibody

EFFECTS IN COMMERCIAL CHICKENS

Parameter	MG infected (strain dependent)	MS infected (very strain dependent)
Overt respiratory disease	Yes	Not by itself in lab setting
Layers - chronic effects on egg production	10 to 20 eggs/hen less than free flocks	5 to 10 eggs/hen less than free flocks (3 eggs BB)
Infection in lay	Egg drop	Egg drop
Hatchability	Increased pips with airsacculitis	Variable increased pips with airsacculitis
FCR of egg production	Unknown but probable	4% more seen in vaccine responses assessments
Progeny CRD and meat FCR	Yes	Yes in synergistic situations
Infectious synovitis	Rarely	Some strains
Peritonitis	Yes	Yes
EAA	No	Yes

adapted from Sippkovits and Kempf 1996

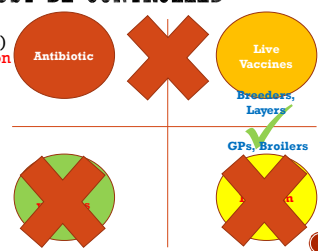
EFFECTS IN COMMERCIAL CHICKENS

Parameter	MG infected (strain dependent)	F strain vaccinated (Never used in Breeders in USA)	MS infected (very strain dependent)
Overt respiratory disease	Yes	Yes	Not by itself in lab setting
Layers - chronic effects on egg production	10 to 20 eggs/hen less than free flocks	7 eggs less than free flocks (Carpenter <i>et al</i> 1981)	5 to 10 eggs/hen less than free flocks (3 eggs BB)
Infection in lay	Egg drop	Protected	Egg drop
Hatchability	Increased pips with airsacculitis	Vertical transmission	Variable increased pips with airsacculitis
FCR of egg production	Unknown but probable	Unknown but probable	4% more seen in vaccine responses assessments
Progeny CRD and meat FCR	Yes	Yes especially with LaSota	Yes in synergistic situations
Infectious synovitis	Rarely	No	Some strains
Peritonitis	Yes	Unlikely	Yes
EAA	No	No	Yes

adapted from Sippkovits and Kempf 1996

MYCOPLASMA MUST BE CONTROLLED

- Freedom (Kill Positives)
 - Susceptible population
- Antibiotics
 - Acquired resistance
 - Cost
- Killed vaccines
 - Humoral antibody
- Live vaccines
 - Mucosal immunity
- Combinations
 - Incompatibilities




Antibiotic

Live Vaccines

Breeders, Layers

GPs, Broilers

ANTIBIOTIC USAGE CREATES RESISTANCE

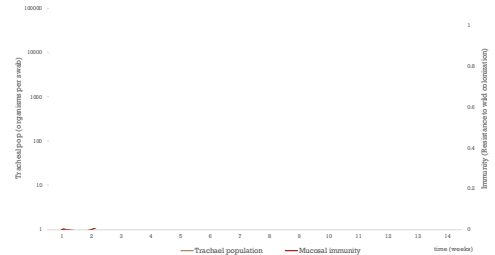


- Not sustainable
 - The more you use the more you lose
 - May be in non target organisms
- Customer don't want
 - Frenzy over Colistin resistance emergence
 - Technical issues are not important anymore. The battle is lost.

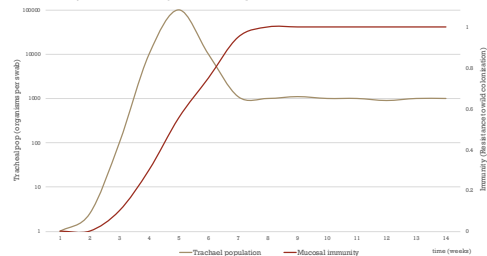
ANTIBIOTIC FREE DEFINITION (BROILERS)

Region	Therapeutics	Growth promoters	Ionophores	Comment
USA	OK but no longer antibiotic free	No	No - considered antibiotic	Coccidiosis vaccination or chemicals in broilers & Mycoplasma Freedom
EU	Large variation in use between countries	No	No problem	MS control is important
ROW	No definition	Variable	No problem	Mycoplasma control by antibiotics in some areas
Australia	OK but no antibiotic free (except organic)	Legal but certain customers restrict use	No problem	Mycoplasma control by live vaccination

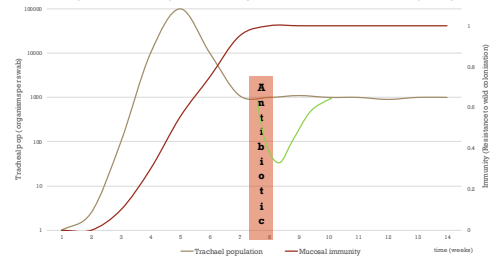
KINETICS OF VACCINE STRAIN INFECTION AND DEVELOPMENT OF IMMUNITY



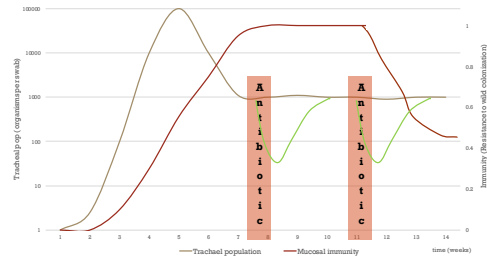
KINETICS OF VACCINE STRAIN INFECTION AND DEVELOPMENT OF IMMUNITY



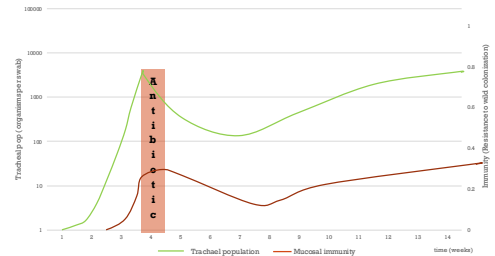
KINETICS OF VACCINE STRAIN INFECTION AND DEVELOPMENT OF IMMUNITY + ANTIBIOTIC



KINETICS OF VACCINE STRAIN INFECTION AND DEVELOPMENT OF IMMUNITY + ANTIBIOTICS



KINETICS OF VACCINE STRAIN INFECTION AND DEVELOPMENT OF IMMUNITY + ANTIBIOTICS II

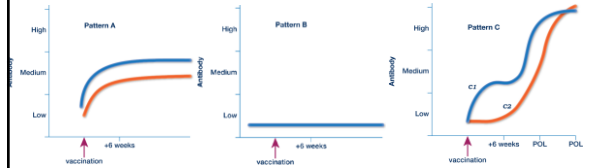


MUCOSAL IMMUNITY

- Short duration
 - Coccidial vaccines
- Maintenance requires regular stimulation
- Not always parallel to humoral antibody
- Live vaccine colonizing a mucosal site for life is the perfect solution
 - Affects field strain pops.
 - Must vaccinate before infected.



NORMAL ANTIBODY PATTERNS IN TS11/MSH VACCINATED FLOCKS



ARE ALL LIVE MG & MS VACCINES THE SAME?

- No - variation in
 - Price
 - Price of Vaccine
 - Cost of Administration
 - Mode of administration
 - Presentation, Storage, and cold chain dependence
 - Strain dependent properties
 - Horizontal transmission
 - Vertical transmission
 - Residual virulence and Reversion to virulence
 - Immunogenicity/Protection
 - Antibiotic sensitivity?
 - Reason for attenuation
- Variation in
 - Humoral antibody response
 - Technical tools to support product
 - Ability to assess protection and vaccine administration in non-specialist laboratories



INDONESIA: 2 YEAR RESULT IN INTEGRATION

Parameter	Before intervention (F + Antibiotic)	After (MSH and ts-11)	Comment
Disease	Clinical respiratory disease	No respiratory signs Less peritonitis	Better livability after vaccination
Saleable DOC	140 Chicks	162 Chicks	15 chicks more than SE Asia Cobb average
Feed per chick	325g/Chick	285g/Chick Now getting 280g	From beginning of production.
Hatchability	89% peak 84.2% average	92% peak with 89% average	
Airsacculitis in pips	>35%	<20%	Good hatchability now
Antibiotics	Tylosin @ six weeks in lay	None	Some at placement
DOC quality		Improved	Less customer complaints - Options

INDONESIA: COST BENEFIT (USD)

Treatment	Before (F + Antibiotic)	Vaccination (MSH and ts-11)
Cost of antibiotics	\$100K/year (800K Cobb hens)	\$0
Cost of vaccine + Admin	7c for F strain + 3c by eye drop	25-30c per hen MSH and ts-11 by eye drop
Extra production		+22 extra chicks per hen
Feed (FCR eggs)		40g less feed per chick (-18%)
	Respiratory disease	No respiratory disease Less peritonitis in lay
Calculation		per Hen Profit (No broiler effects)
Extra Revenue	Chicks	25-50c sale price × 22 chicks + \$5.5 to \$11.00 per hen
Extra Cost	Feed	(70c per kg × 0.87 kg/hen) [162 × 285-140 × 325 g] +\$0.47 per hen
Cost Saving	Antibiotics	\$100K/800K hens + \$0.16 per hen
Extra Cost	Vaccine	(28c - 10c) per hen - \$0.18 per hen
	Total Extra profit	+ \$5.95 to \$11.45 per Hen

ANOTHER WAY



- Live vaccines
 - Breeders
 - Layers
- Forget MG and MS

