



VET PRODUCTS GROUP

ฉลองครบรอบ 25 ปี เครือข่ายโปรดัคส์

Key Success to Antibiotic-Free Setting for Saving Cost and Raising Production in Asia Poultry Industry 2019

กุญแจสู่ความสำเร็จสำหรับการเลี้ยงสัตว์ปลอดยาปฏิชีวนะ
เพื่อลดต้นทุนและเพิ่มผลผลิตในอุตสาหกรรมสัตว์ปีกเอเชีย 2019





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15 มีนาคม 2562

เวลา 09.00-16.00น. (ลงทะเบียน 08.30 น.)

ห้อง Wind Room โรงแรม AVANI+Riverside Bangkok Hotel
(เครือ Minor Hotels Group) ถนนเจริญนคร ถนนสุขุมวิท กรุงเทพฯ

วิทยากร



Disease and Production Challenge

ศ.น.สพ.ดร.จิโรจ ศศิปรียจันทร์
(ภาควิชาอายุรศาสตร์ คณะสัตวแพทยศาสตร์
คณะสัตวแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย)



Gut Health and Nutrition in Antibiotic-Free Challenge

พศ.ดร.ยุวเรศ เรืองพานิช
(ภาควิชาสัตวบาล คณะเกษตร กำแพงแสน
มหาวิทยาลัยเกษตรศาสตร์ วิทยาเขต กำแพงแสน)

วิทยากร



Environmental Management

พศ.น.สพ.ดร.สุวิทย์ โชติบัณฑิต
(ภาควิชาคลินิกสัตว์บก คณะสัตวแพทยศาสตร์
มหาวิทยาลัยเชียงใหม่)



การบริหารจัดการฟาร์มสัตว์ปีก และมาตรฐานสินค้านานาชาติ เพื่อการส่งออกสัตว์ปีก

สพ.ญ.สมพิศ จุลลาบุตรดี
(ผู้เชี่ยวชาญ ด้านการตรวจติดตามมาตรฐาน
สินค้าปศุสัตว์)

Key Success to Antibiotic-Free Setting for Saving Cost and Raising Production in Asia Poultry Industry 2019



Professor Jiroj Sasipreeyajan
D.V.M., Ph.D.

Education

- B.Sc. degree in 1977 and DVM degree in 1979 from Chulalongkorn University.
- In 1988, Dr. Jiroj received his PhD from University of Minnesota, USA.

Academic positions

- Professor in the Department of Veterinary Medicine, Faculty of Veterinary Science, Chulalongkorn University, Bangkok, Thailand.

Expertise

- Poultry diseases



Key Success to Antibiotic-Free Setting for Saving Cost and Raising Production in Asia Poultry Industry 2019



Assist.Prof.Yuwares Ruangpanit

Education

- Ph.D.(Nutrition), North Carolina State University, USA

Academic positions

- Assistant Professor, Department of Animal Sciences, Faculty of Agriculture Kamphangsae, Kasetsart University, Thailand.
- Vice head department for research and technical service

Expertise

- Poultry Nutrition
- Waste Management



Key Success to Antibiotic-Free Setting for Saving Cost and Raising Production in Asia Poultry Industry 2019



Assistent.Prof.Suwit Chotinun
D.V.M.,Ph.D.

Education

- Ph.D., Veterinary Medicine at Chiang Mai University, Chiang Mai, Thailand.

Academic positions

- Assistant professor of Veterinary Medicine at Chiang Mai University, Chiang Mai, Thailand.

Expertise

- Poultry medicine



Key Success to Antibiotic-Free Setting for Saving Cost and Raising Production in Asia Poultry Industry 2019

Sompiss Jullabutradee
DVM, MScVPH, MBA



Education

- Doctor of Veterinary Medicine - Khon Kaen University 1993
- Executive MBA - Sripatum University; Graduated Executive MBA. Major in marketing and financing 2001
- Master of Science in Veterinary Public Health - Joint program between the faculty of veterinary medicine of Chiang Mai University & Freie University Berlin 2005

Work

- G&S Agriconsultants Co., Ltd
- FAO national consultant

Expertise

- The Food Safety and Quality Management System auditing
- Certified auditor for SQF, HACCP, GMP and ISO9001 auditor for auditing food chain since 2001



"Swept 23 prizes"

From International Innovation Exhibitions



45th International Exhibition of Inventions of Geneva 2017
46th International Exhibition of Inventions of Geneva 2018



11th International Warsaw
Invention Show" (IWIS 2017)



Seoul International
Invention Fair (SIIF) 2016



28th International Invention Innovation & Technology Exhibition 2017 (ITEX'17)
29th International Invention Innovation & Technology Exhibition 2018 (ITEX'18)

Seoul International Invention Fair (SIIF) 2016

- BESOW PLUS

45th International Exhibition of Inventions of Geneva 2017

- LIFEPAK
- SYNERFLEX
- BOOSTER MILZ
- BESTARTER PLUS
- MAXSURE
- CONCENZYME NSPII
- AA CONCENTRATE GOLD
- CONATIC

28th International Invention Innovation & Technology Exhibition 2017 (ITEX'17)

- CONCENZYME NSPII

11th International Warsaw Invention Show" (IWIS 2017)

- Tilmicosin NanoParticle
- Bezyme NSP
- Comac Mill
- Synerlac

46th International Exhibition of Inventions of Geneva 2018

- Tilmicosin NanoParticle
- Pericol
- Begesta
- Mineral NanoParticle

29th International Invention Innovation & Technology Exhibition 2018 (ITEX'18)

- Pericol

Key success to **antibiotic-free** setting for saving cost and raising production in Asia poultry industry 2019

กุญแจสู่ความสำเร็จสำหรับการเลี้ยงสัตว์ปลอดยาปฏิชีวนะ
เพื่อลดต้นทุนและเพิ่มผลผลิต
ในอุตสาหกรรมสัตว์ปีกเอเชีย 2019

March 15, 2019

AVANI Riverside Bangkok Hotel, Bangkok, Thailand

Disease and Production Challenge

Jiroj Sasipreeyajan, D.V.M, Ph.D.

Faculty of Veterinary Science, Chulalongkorn University,
Bangkok, Thailand.

March 15, 2019 : AVANI Riverside Bangkok Hotel, Bangkok, Thailand

Poultry Production, Issues and Challenges in Asia

1. Production performance/Cost of production
2. Diseases
3. Food safety: **Salmonella, Drug residue, Antimicrobial resistant bacteria**
4. Animal welfare
5. Labour welfare
6. Environmental regulations
Flies, odor, dust

Important Poultry Diseases Etiology

- ☹ **Virus** : AI, ND, IB, ILT, IBD, MD, CIA, etc.
- ☹ **Bacteria** : Mycoplasmosis (MG, MS),
Colibacillosis, Infectious Coryza, Fowl Cholera,
Necrotic Enteritis, Salmonellosis, etc
- ☹ **Protozoa** : Coccidiosis
- ☹ **Others** : Mycosis, Mycotoxicosis, Nutritional,
External & Internal Parasites, etc

Important Poultry Diseases Clinical Signs

☹ **Respiratory** : AI, ND, IB, ILT, MG, MS,
Colibacillosis, IC, etc

☹ **Nervous** : ND, AE, MD, etc

☹ **Enteric (GI)** : NE, Coccidiosis, etc

☹ **Immune** : IBD, CIA, MD, Mycotoxins, etc

☹ **Reproductive** : Diseases, Management, Feed, etc

Infectious diseases PREDISPOSING FACTORS

1. Environment / management

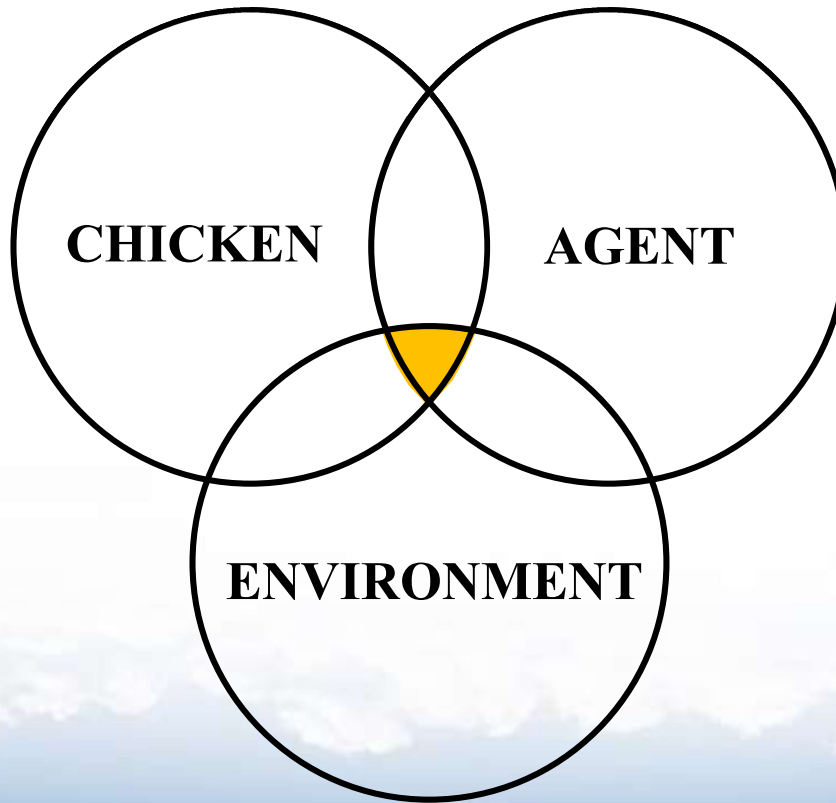
2. Immunologic status

3. Immunosuppressive agents:

IBDV, CIAV, REOV, MDV, ALV,
Mycotoxins, Stress

HEALTHY/DISEASE

VACCINE
FEED
WATER



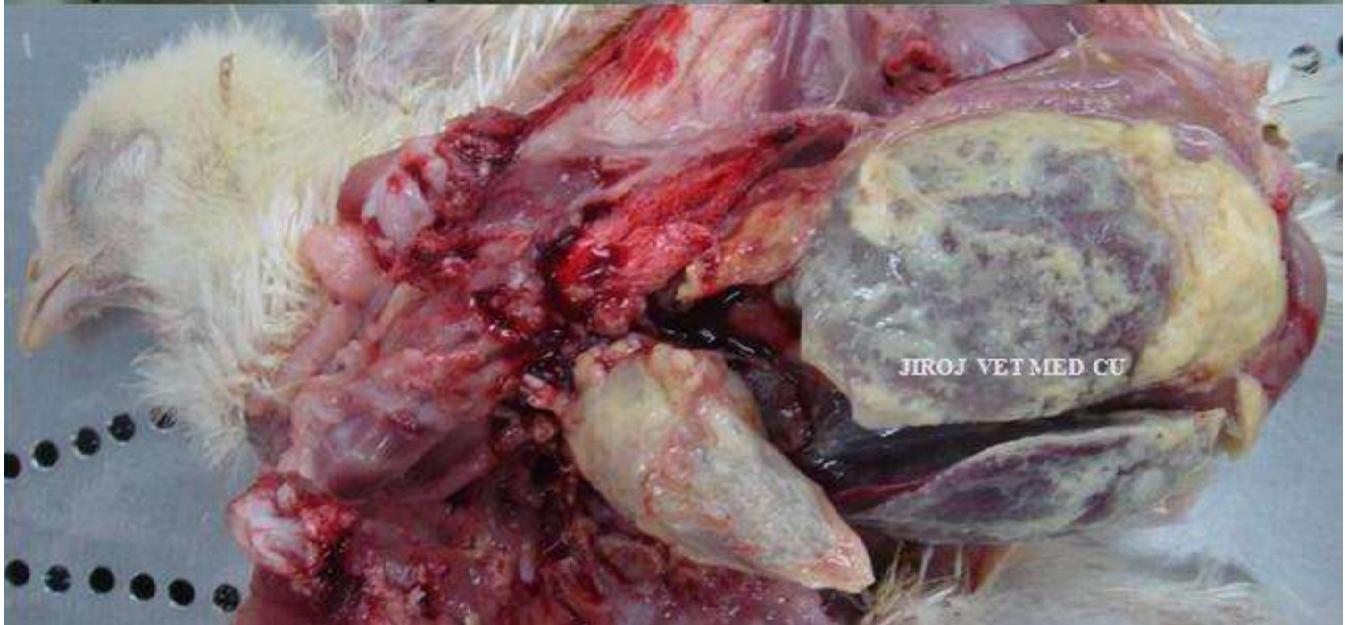
BIOSEC

TREATMENT



Antibiotics can not help our chickens in all cases

- 1. Viral infections**
- 2. Severe/chronic/complicated infections**
- 3. Localized infections**
- 4. Drug resistance, finally we are
no longer have effective antibiotics.**
- 5. Mode of action of each antibiotic**
- 6. Drug residue**

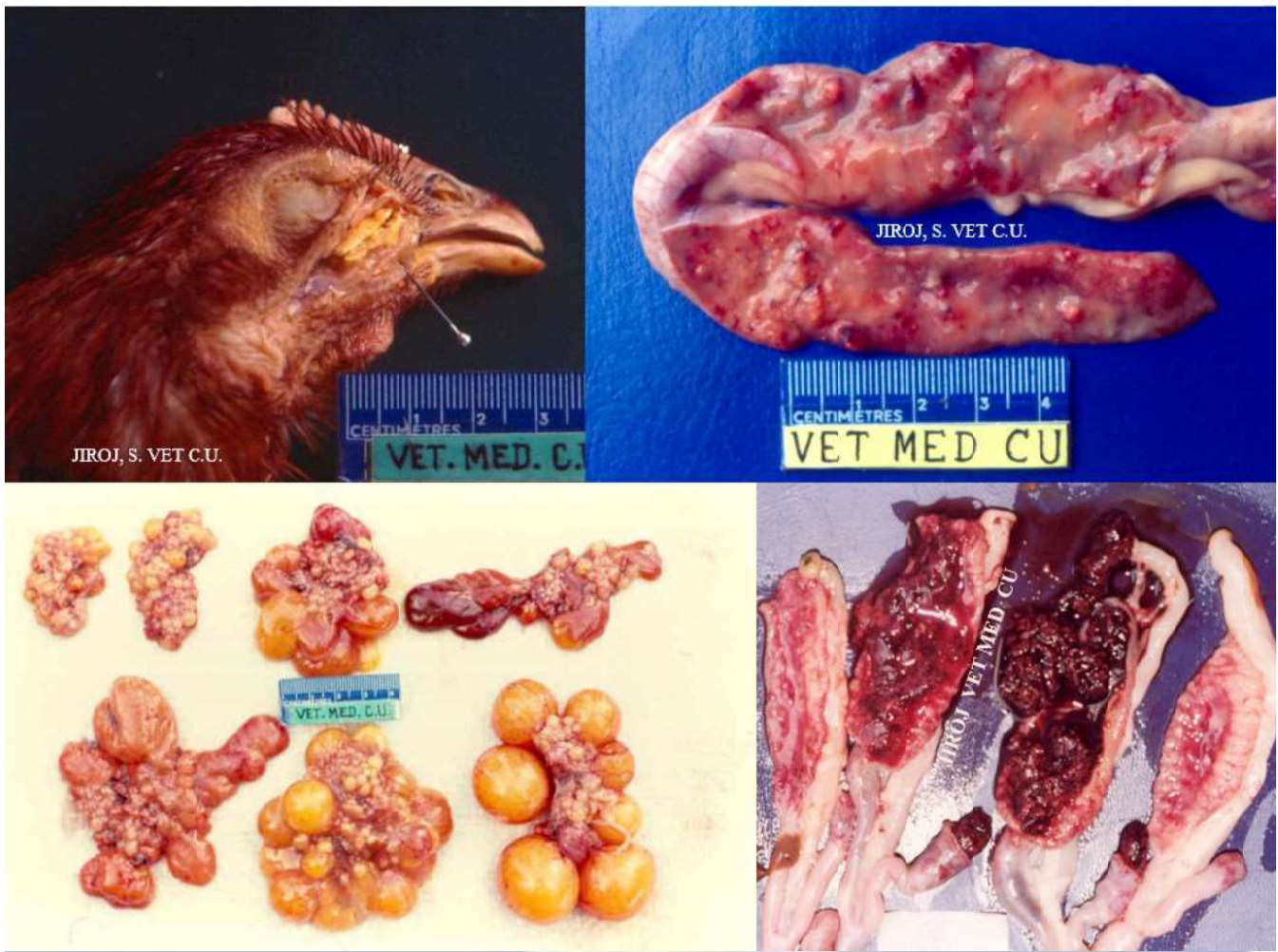


SENSITIVITY TEST



ANTIMICROBIALS SENSITIVITY TEST OF APEC

ANTIMICROBIALS	S	I	R
GENTAMICIN	S		
COLISTIN		I	
AMOXYCILLIN			R
ENROFLOXACIN			R
DOXYCYCLINE			R
SULFA+TRIMETHOPRIM			R
NEOMYCIN			R
ERYTHROMYCIN			R
NITROFURATOIN			R



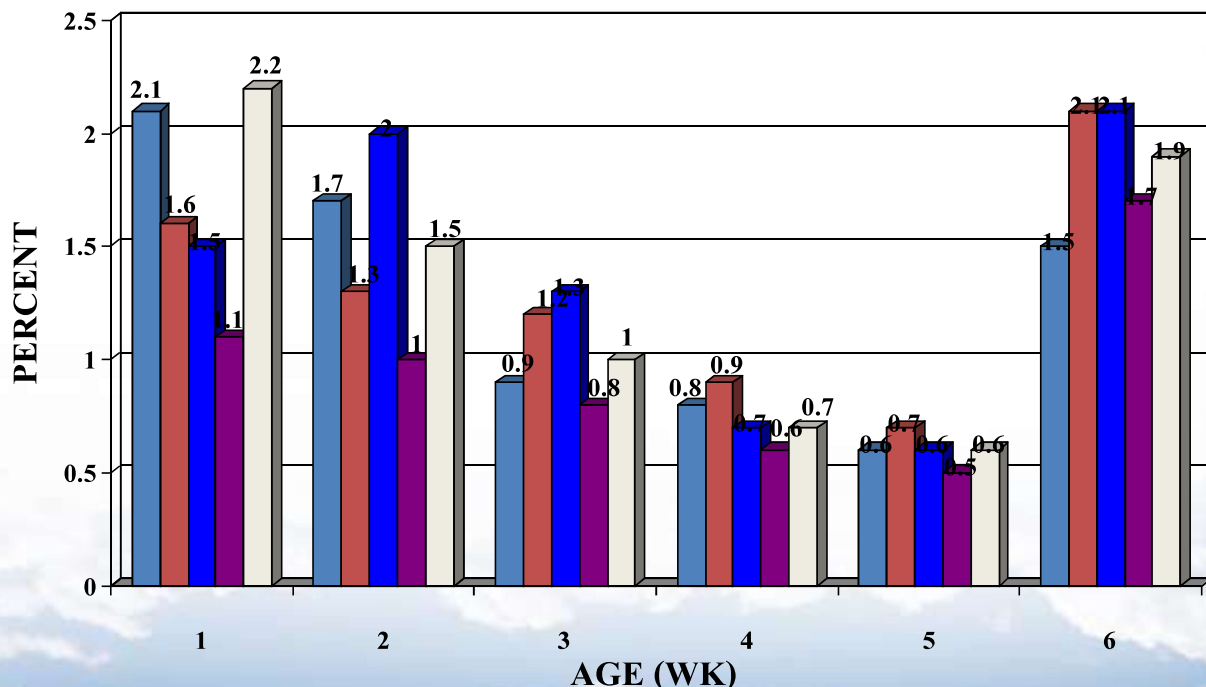
The purposes of using antibiotics

1. Treatment, unhealthy conditions
2. Prevent secondary infection
3. Growth promoter
4. Vertically transmissible and/or contaminated agents in day-old chicks
5. Poor chick quality

The purposes of using antibiotics

6. Vaccine reactions
7. Salmonellosis control
8. Infection challenge due to open house
9. Reduce stress
10. Poor or improper management
11. Contaminated feed and water

DEAD+CULLED CHICKS/WK IN BROILER CHICKENS



What do we need to improve?
in order to raise
Antibiotic Free Chickens

I mean

“No Antibiotic Ever (NAE) or Never Ever”

What do we need to improve?
in order to raise
Antibiotic Free Chickens

1. Biosecurity
2. Chick quality
3. Basic management: Water, feed, litter,
ventilation, density
4. Vaccines, vaccination, monitoring program
5. Maintaining healthy gut
6. Feed quality/feed efficiency, raw materials,
mycotoxins
7. Alternatives

Examples of alternative

Vaccines

Enzymes

Prebiotics

Probiotics

Acids

Immune enhancers, stimulants, moderators

Herb mixtures, herb extracts, phytochemicals

**No more antibiotics
for the first 3 to 5-day-old**

**Day-old chicks need to be healthy
and free from
vertically transmissible
and/or contaminated agents**

Day-old chicks need to be free from vertically transmissible and/or contaminated agents

1. **Bacteria:** *E.coli*, *Salmonella* spp.,
Mycoplasma spp., *Pseudomonas* spp.
2. **Virus:** CIAV, REOV, AEV, ALV,
REV, Adenovirus: IBH, EDS
3. **Fungus:** *Aspergillus fumigatus*

MG INFECTIONS



Colibacillosis



Yolk Sac Infection - Omphalitis



Bacterial contamination from vaccination



GOOD QUALITY CHICKS



**COME FROM HEALTHY PARENTS
AND CLEAN HATCHERIES**



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HEALTHY PARENTS



CLEAN HATCHING EGGS

Quality of hatching eggs



Quality of hatching eggs

- 1. Keep breeders healthy**
- 2. Close nests at night**
- 3. Nest box sanitation and changing dirty pads**
- 4. Shifting to easier-to-sanitize egg belts**
- 5. Keeping litter in a proper conditions at all times**

Quality of hatching eggs

6. If it is necessary, proper cleaning for minor dirty eggs may require and hatch them separately as well as floor eggs.
7. Nutritional formulating to improve egg shell quality > 45 weeks





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FROM CLEAN HATCHERIES





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Good quality chicks

1. Physical conditions

Normal physical conditions

Standard body weight, even size

Healthy, dry vent

No dehydration

2. Uniformity of MDA

3. No vertically transmissible and/or contaminated agents



Quality of day-old chick?

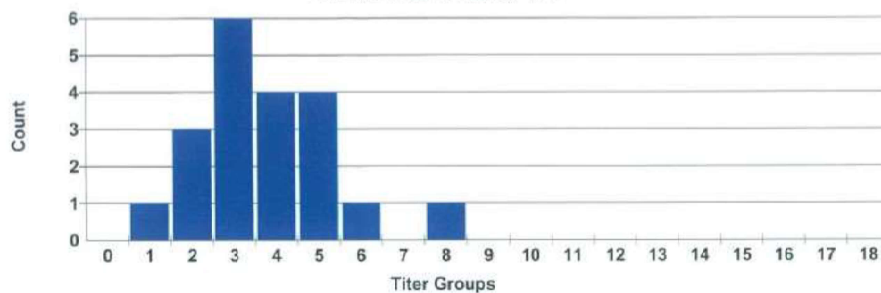


IDEXX Laboratories, Inc.
Westbrook, ME 04092
USA
11/28/2018

IDEXX
LABORATORIES

Analyze Case Report

61.07/64 0 DAY (17/5/18) - IBD



Count: 20
GMean: 3282
Mean: 2830
SD: 1813
%CV: 55.2
Min: 764
Max: 8925
Tech: S
Date: 11/28/18
Dil: 1:500

Case: 61.07/64 0 DAY (17/5/18) - 11/28/2018-003
IBD - 11/28/18 - S - 1:500

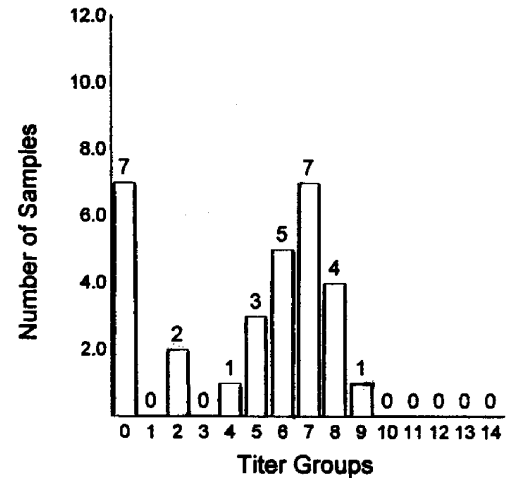
	Well	O.D.	S/P	Titer	Group	Result
Neg	A01	0.043				
Neg	A02	0.040				
Pos	A03	0.220				
Pos	A04	0.204				
1	A05	0.210	0.988	2261	3	Pos!
2	A06	0.288	1.447	3427	4	Pos!
3	A07	0.349	1.812	4379	5	Pos!
4	A08	0.281	1.406	3321	4	Pos!
5	A09	0.181	0.818	1840	2	Pos!
6	A10	0.333	1.718	4132	5	Pos!
7	A11	0.252	1.241	2899	3	Pos!
8	A12	0.633	3.482	8925	8	Pos!
9	B01	0.268	1.335	3139	4	Pos!
10	B02	0.353	1.829	4424	5	Pos!
11	B03	0.127	0.506	1090	2	Pos!
12	B04	0.229	1.106	2557	3	Pos!
13	B05	0.218	1.035	2378	3	Pos!
14	B06	0.146	0.612	1341	2	Pos!
15	B07	0.104	0.385	764	1	Pos!
16	B08	0.221	1.053	2424	3	Pos!
17	B09	0.375	1.959	4768	5	Pos!
18	B10	0.203	0.947	2159	3	Pos!
19	B11	0.293	1.482	3517	4	Pos!
20	B12	0.446	2.382	5900	6	Pos!

Flock: 8j2à'x6f
Dilution Plate: 20020926-01
Producer:
Flock Comments:

Agent: IBD
Bleed Date: 16/9/45
Bleed Age: 0-1

Sample	Location	OD	S/P Ratio	Titer	Group
1	C10	0.670	0.921	3732	5
2	C11	0.735	1.036	4286	5
3	C12	0.936	1.393	6063	7
4	D1	0.144	0.000	0	0
5	D2	0.071	0.000	0	0
6	D3	0.155	0.007	0	0
7	D4	0.921	1.366	5927	7
8	D5	0.227	0.134	0	0
9	D6	0.081	0.000	0	0
10	D7	0.048	0.000	0	0
11	D8	0.265	0.202	630	2
12	D9	0.845	1.231	5247	6
13	D10	0.967	1.448	6344	7
14	D11	0.039	0.000	0	0
15	D12	0.256	0.186	572	2
16	E1	0.861	1.260	5389	6
17	E2	0.805	1.160	4894	6
18	E3	1.164	1.798	8175	9
19	E4	0.605	0.805	3190	4
20	E5	1.061	1.615	7210	8
21	E6	0.972	1.457	6390	7
22	E7	1.009	1.522	6729	8
23	E8	1.015	1.533	6784	8
24	E9	0.730	1.027	4243	5
25	E10	0.963	1.441	6308	7
26	E11	1.040	1.578	7015	8
27	E12	0.871	1.278	5478	6
28	F1	0.810	1.169	4938	6
29	F2	0.980	1.471	6463	7
30	F3	0.886	1.304	5613	7

Samples: 30
Mean: 4054
GMT: 644
StDev: 2807
%CV: 66.236

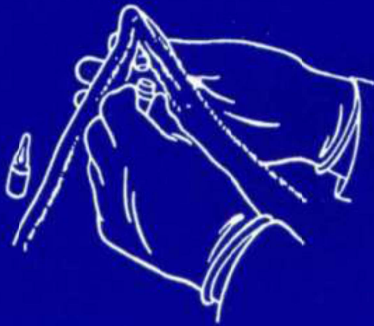


Appropriate vaccines and route of administration





Proper handling of vaccine during thawing and reconstitution



LAYER-TYPE CHICKS

PROPER BEAK TRIMMING



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1 9:56AM

Wait for transportation



AT FARM

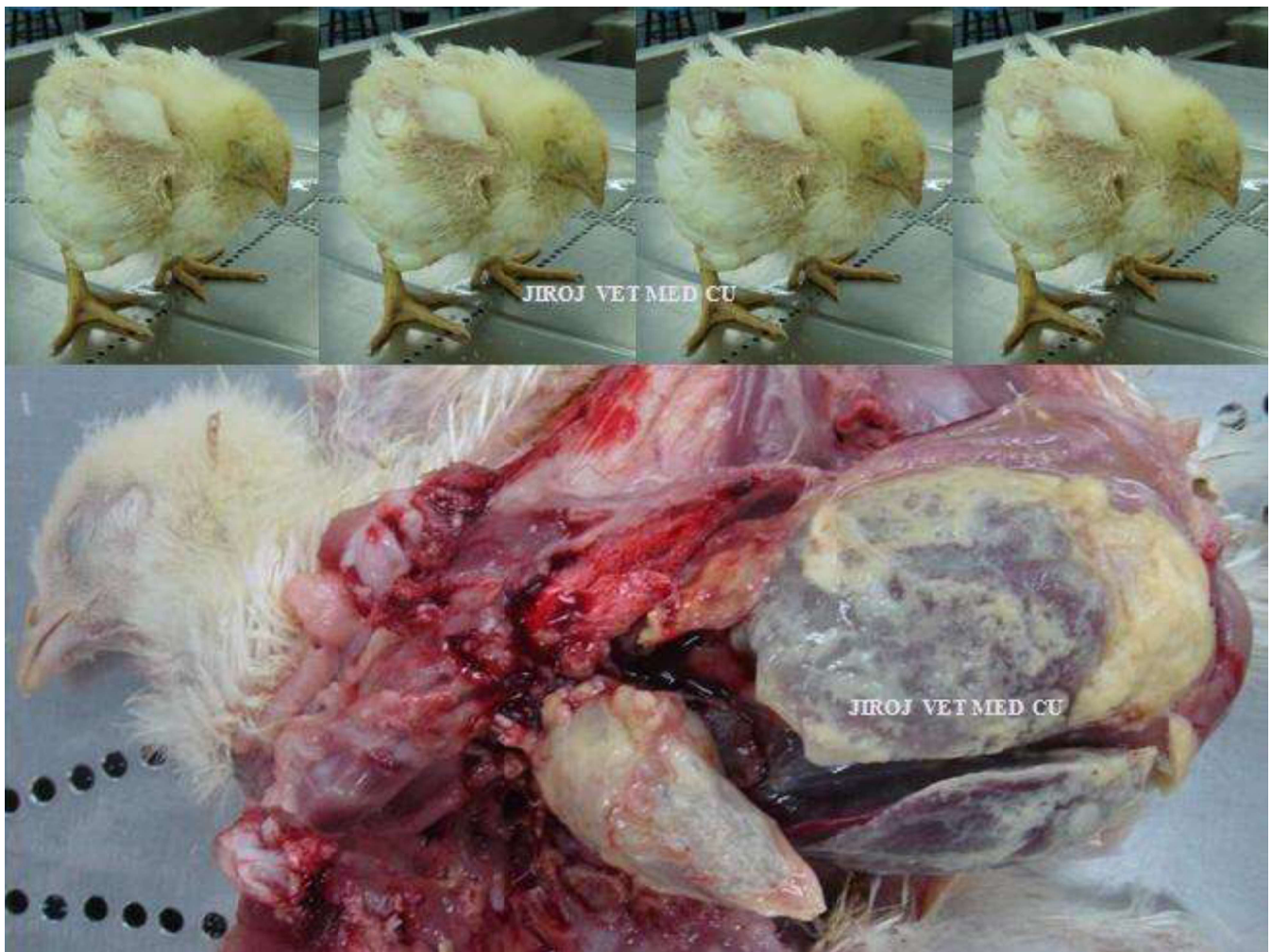
- ➔ ENOUGH DOWNTIME
- ➔ PREPARATION OF THE HOUSE
- 😊 START DAY-OLD CHICKS IN A CLEAN ENVIRONMENT
- 😊 THE FIRST 2 WEEKS OF MANAGEMENT

Good management starts from day-old chicks

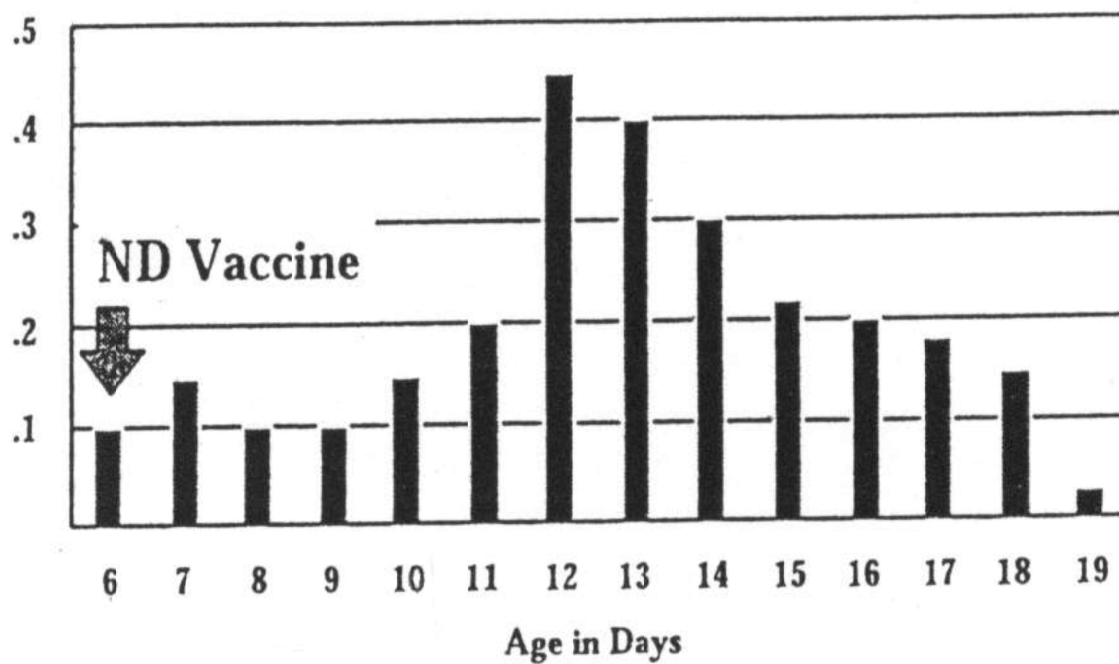


NO MORE ANTIBIOTICS AFTER VACCINE REACTIONS





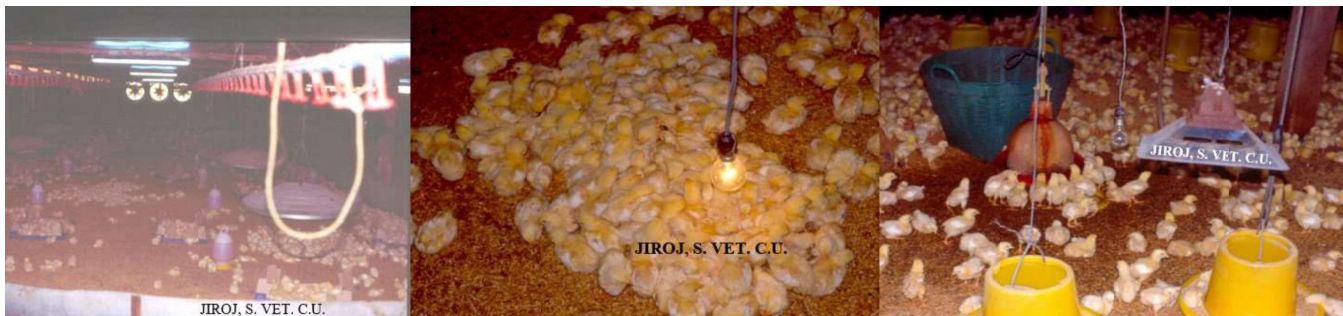
Vaccine Reactions



TO REDUCE THE EFFECTS OF VACCINE REACTIONS

- CHOOSE THE APPROPRIATE VACCINES AND VACCINATION PROGRAMS
- VACCINATE ONLY HEALTHY CHICKENS
- PROVIDE PROPER ENVIRONMENT
- SUPPORTIVE OR ALTERNATIVE PRODUCTS, IF IT IS NECESSARY

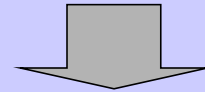
PREDISPOSING FACTORS OF VACCINE REACTIONS



THE EXAMPLE OF VACCINATION PROGRAM IN BROILER CHICKENS

AGE	VACCINE	ROUTE
EMBRYO OR DAY-OLD	rHVT-NDV 0.2 ML IBD	<i>IN OVO</i> , SQ
0 DAY	ND(B1)+IB	I/O, SPRAY
7-10 DAY	ND(B1)+IB	I/O, D.W.

**No more antibiotics
For Salmonellosis control**



**START WITH
SALMONELLA-FREE
BREEDERS**

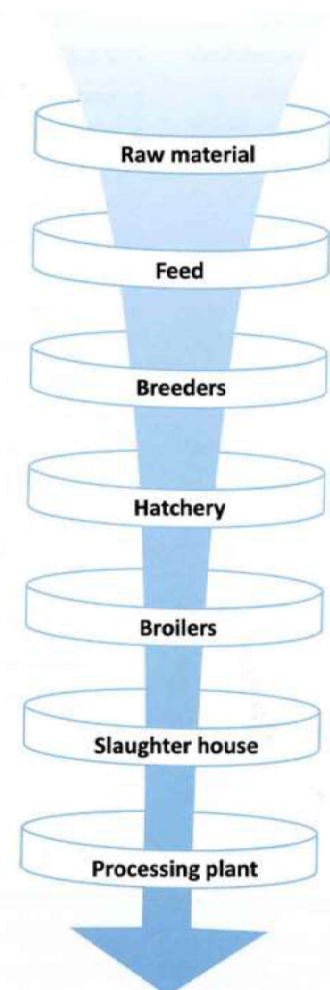


Disease prevention

Preventive measures

**have to be implemented
at all levels of production**

- continuously
- evaluation



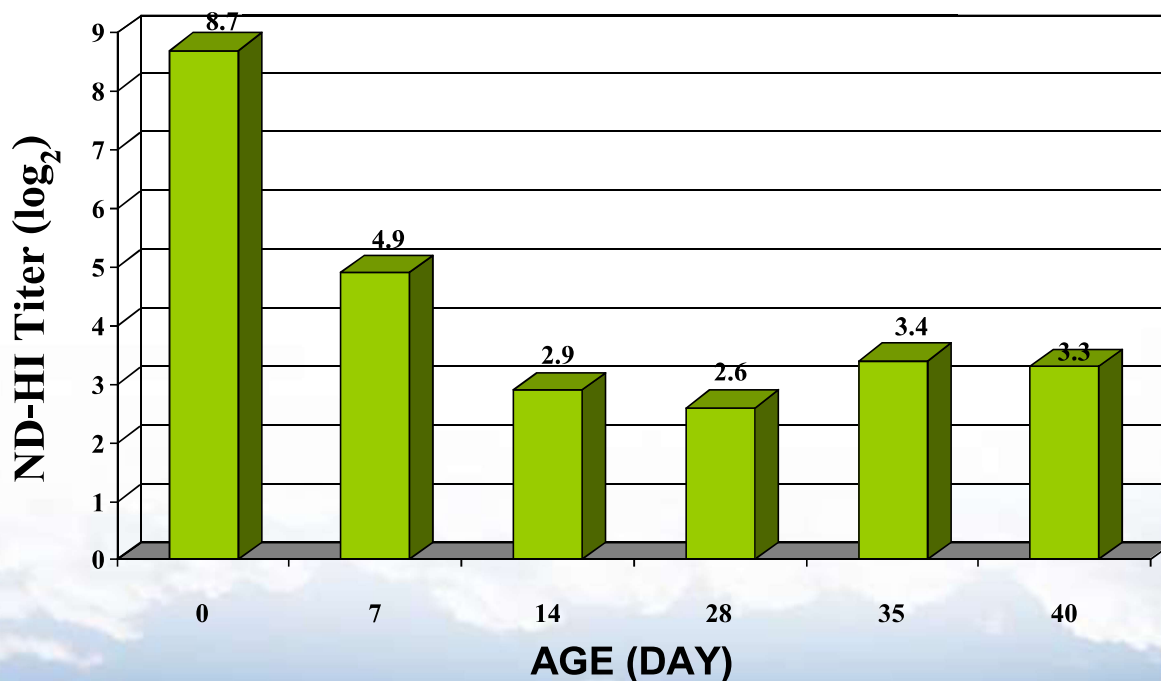
Disease prevention

- 1. Biosecurity, basic sanitation,
control all possible biological
and/or mechanical vectors / carriers**
- 2. Start with Salmonella-free chicks**
- 3. Vaccine**
- 4. Feed and water**
- 5. Alternatives**

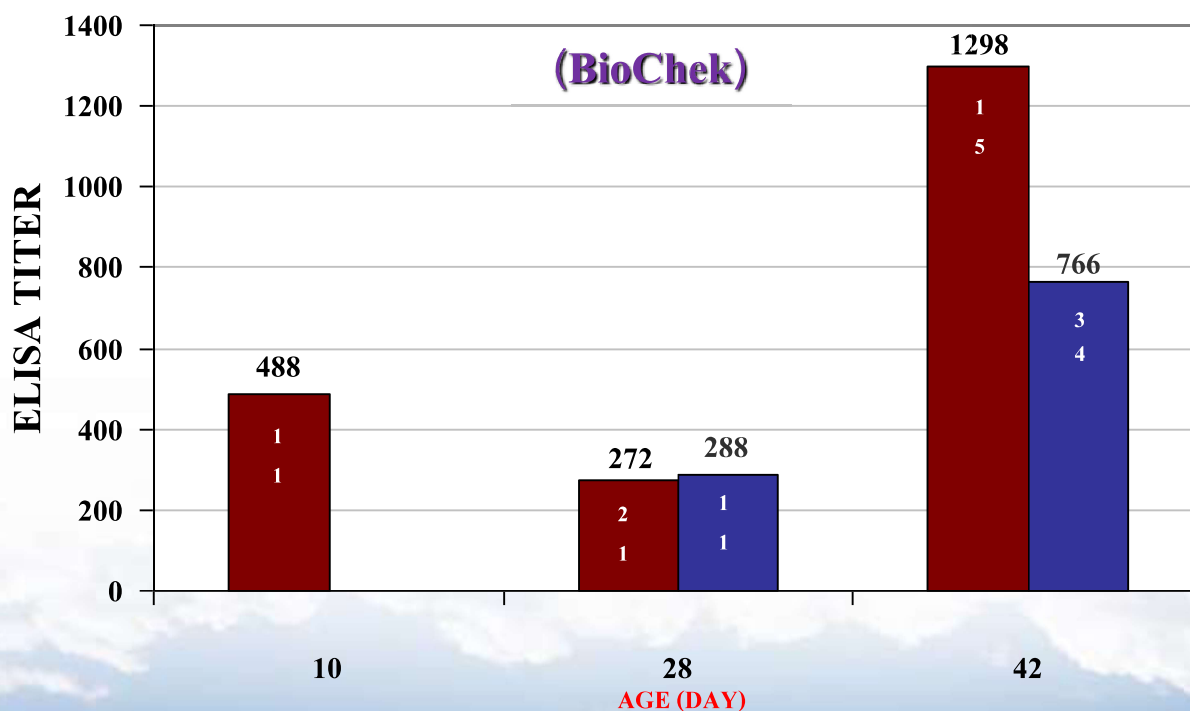
FLOCK HEALTH MONITORING PROGRAM

- 1. POST-MORTEM EXAMINATION
SHOULD TAKE PLACE ONCE A WEEK
FROM DEAD, CULLING AND NORMAL BIRDS**
- 2. ANTIMICROBIAL SENSITIVITY TESTING**
- 3. SEROLOGICAL MONITORING PROGRAM**
- 4. FAST DISEASE DIAGNOSIS**

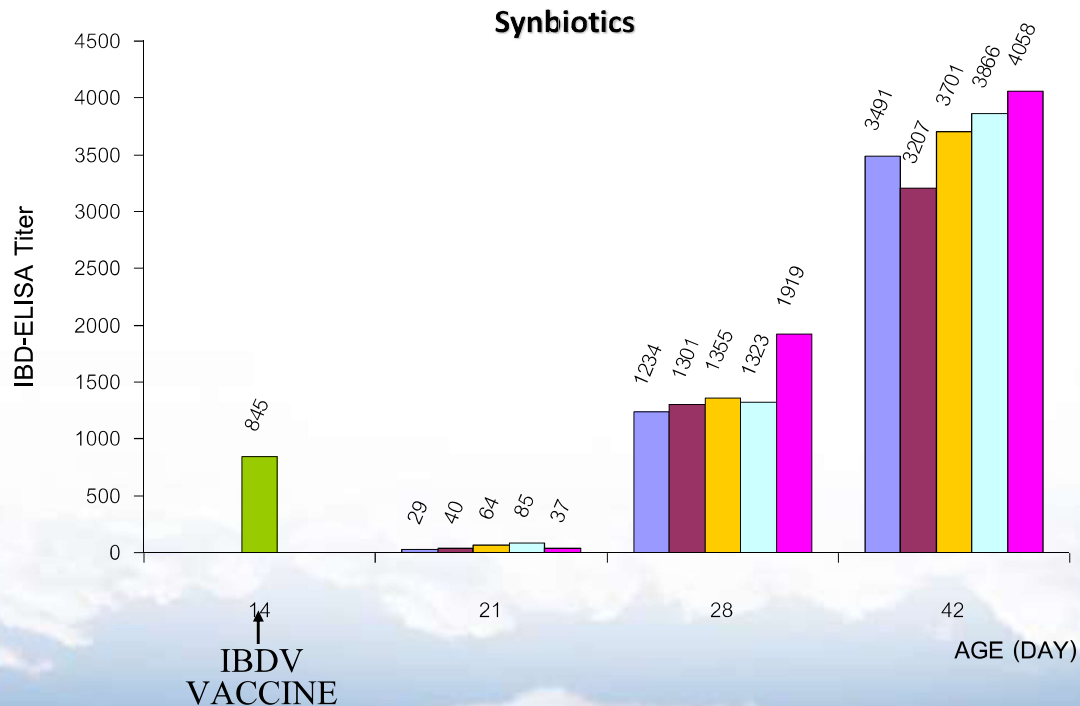
SEROLOGICAL RESPONSE AFTER ND VACCINATION



SEROLOGICAL RESPONSE AFTER IBV VACCINATION



SEROLOGICAL RESPONSE AFTER **IBD** VACCINATION



BASIC REQUIREMENT FOR CHICKEN PRODUCTION



MANAGEMENT IN CHICKEN PRODUCTION

1. BASIC MANAGEMENT

WATER-FEED-DENSITY-LITTER

TEMP/VENTILATION

2. DISEASE PREVENTION

BIOSECURITY

VACCINE

诚邀您的莅临

家禽:

蛋白质对于人体健康的价值

XXIst
WVPAC
2019 世界兽医家禽协会大会
曼谷 泰国
九月-16 - 20, 2019
曼谷国际贸易展览中心(BITEC) 曼谷 泰国

主旨发言提供中文翻译

CONGRESS PARTNERS

DIAMOND



RUBY



GOLD



VET PRODUCTS RESEARCH & INNOVATION CENTER



วิเคราะห์ วัตถุดิบและ อาหารสัตว์

รับวิเคราะห์วัตถุดิบและอาหารสัตว์แก่
บุคคลทั่วไปด้วยเครื่องมือ ที่ทันสมัย วิธีการ
ที่ได้มาตรฐานและรายงานผลรวดเร็ว



vrivetproducts@gmail.com



NIRs : NEAR-INFRARED SPECTROSCOPY

ประเภทตัวอย่าง : ข้าวโพด, ปลายข้าว, รำสด, รำสาคู, มันสำปะหลัง,
กากถั่วเหลือง, ถั่วอบ, ปลาป่น

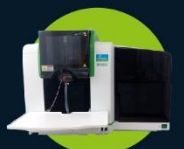
ปริมาณตัวอย่าง : 500 กรัม บรรจุในถุงพลาสติกปิดสนิท



สารพิษจากเชื้อรา MYCOTOXIN



ปริมาณตัวอย่าง : 500 กรัม บรรจุในถุงพลาสติกปิดสนิท



แร่ธาตุ MINERAL



ปริมาณตัวอย่าง : 300 กรัม บรรจุในถุงพลาสติกปิดสนิท



ทดสอบประสิทธิภาพ เครื่องผสมอาหาร MIXER TEST

Manganese cv test (ส่วตัวอย่าง 10 Sample ต่อ ชุดการตรวจ)

Salt CV Test (ส่วตัวอย่าง 10 Sample ต่อ ชุดการตรวจ)

Micro Tracer (ส่วตัวอย่าง 12 Sample ต่อ ชุดการตรวจ)

ปริมาณตัวอย่าง : 300 กรัม บรรจุในถุงพลาสติกปิดสนิท



วิเคราะห์ทางเคมี MET CHEM

ประเภทตัวอย่าง : Protein, Fat, Ash, Fiber, Moisture, Calcium
Phosphorus, Salt, Iodine Value, Particle Size
Gross Energy, Insoluble, Free Fatty Acid

ปริมาณตัวอย่าง : 300 กรัม บรรจุในถุงพลาสติกปิดสนิท



การตรวจยาปฏิชีวนะ ANTIBIOTIC



ปริมาณตัวอย่าง : 1 กิโลกรัม บรรจุในถุงพลาสติกปิดสนิท



ชุดทดสอบ TEST KIT



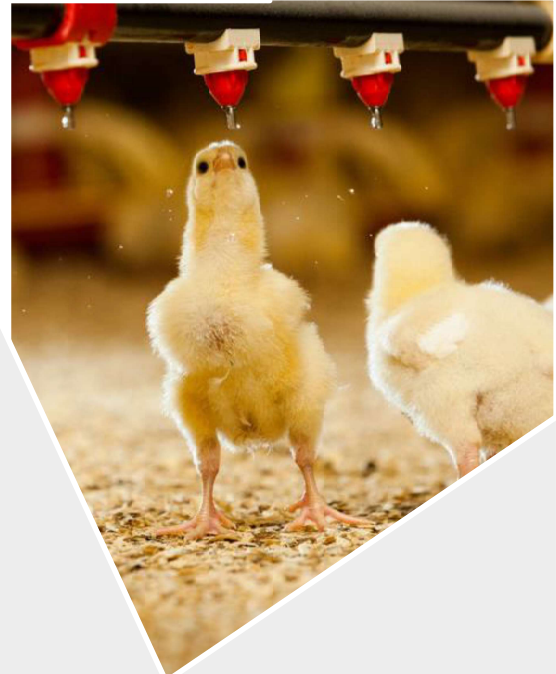
ตรวจสารปลอมปนยูเรีย :
(ปลาป่น หุยมะพร้าว ไบโกล)

ตรวจสารปลอมปนหินปูน :
(ปลาป่น รำสด รำสาคู)

ชุดน้ำยา
Mini GMP

Gut health and Nutrition in Antibiotic –Free Challenge

Yuwares Ruangpanit, Ph.D.
Department of Animal Science,
Faculty of Agricultural at Kamphaeng Saen
Kasetsart University, Kamphaeng Saen Campus,
THAILAND
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Poultry gut health management

PAST

PRESENT



WORKING AGAINST
MICROBIAL

WORKING WITH
MICROBIAL



Mode of action of AGPs

- Inhibit subclinical infections
- Reduction use of nutrients by microbes
- Reduction of growth-depressing metabolites
- Enhance the uptake of nutrients through the thinner intestinal wall
- Anti-inflammatory effect

(Apajalahti, 2017)



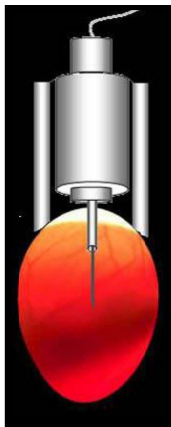
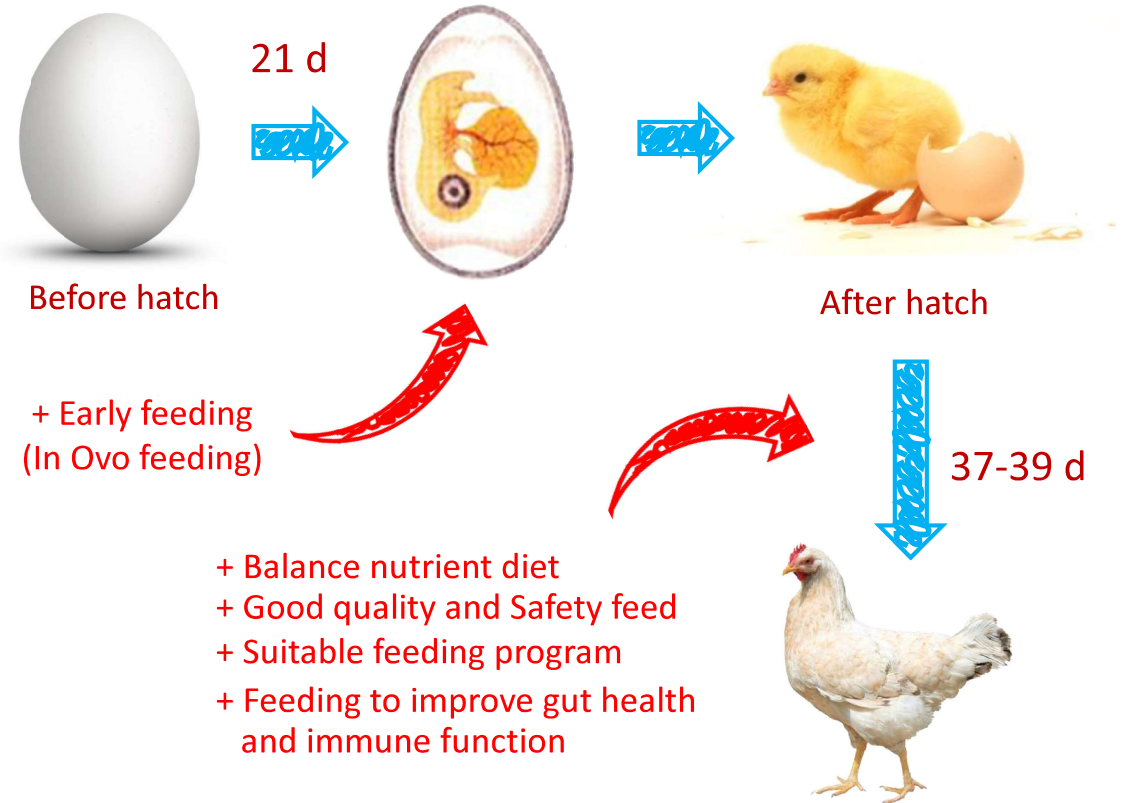
Strategies for managing enteric ecosystem for poultry



- Ecosystem of microflora-Eubiosis
- Gastrointestinal tract
 - ▲ Macro structure
 - Gizzard and length of intestine
 - ▲ Micro structure
 - Enterocyte
 - Villi height, crypt depth, villi width and surface area
 - Unstirred water layer
 - Gut lumen



Current feeding strategy for poultry



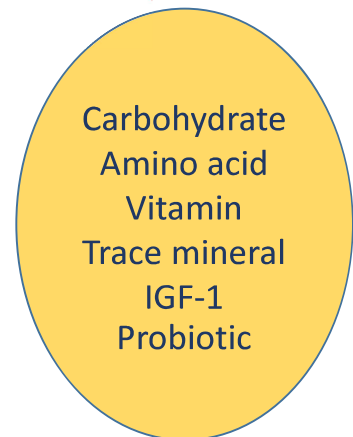
Injection of Feeding Solution into the Amnion Few Days Before Hatch

Nutrient supplement amnion is orally consumed by the embryo and presented in the enteric tissues

Elevated available energy (or stored)

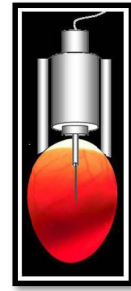
Enhances intestinal gene expression and function

Support development and growth





Competitive exclusion Direct fed microbial (1990)



In ovo feeding probiotic

1. Time of inoculation
2. Site of injection
 - Amnion inoculation
3. Bacteria species and strain
4. Dosage



Against Salmonella

Competitive exclusion Direct fed microbial (1990)



In ovo feeding probiotic

1. Time of inoculation
2. Site of injection
 - Amnion inoculation
3. Bacteria species and strain



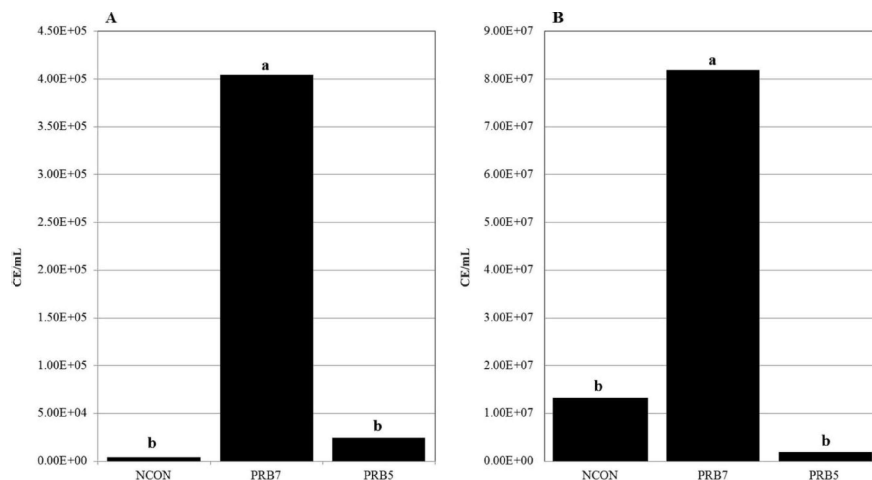


Figure 3. Number of bacteria present in the gut after in ovo inoculation of probiotics (PRB; measured by quantitative PCR and converted to cell equivalents, CE/mL). (A) Number of bacteria cells in the gizzard of chicken embryos 48 h after inoculation (19E). (B) Number of bacteria cells in the ceca of chicks at hatch (all dose 1). NCON = negative control (noninjected). Columns with different letters (a,b) within the same chart differ significantly ($P \leq 0.05$).

From: In ovo inoculation of chicken embryos with probiotic bacteria and its effect on posthatch *Salmonella* susceptibility

Poult Sci. 2014;93(4):818-829. doi:10.3382/ps.2013-03409

Poult Sci | © 2014 Poultry Science Association Inc.



After Hatch-Market Strategies

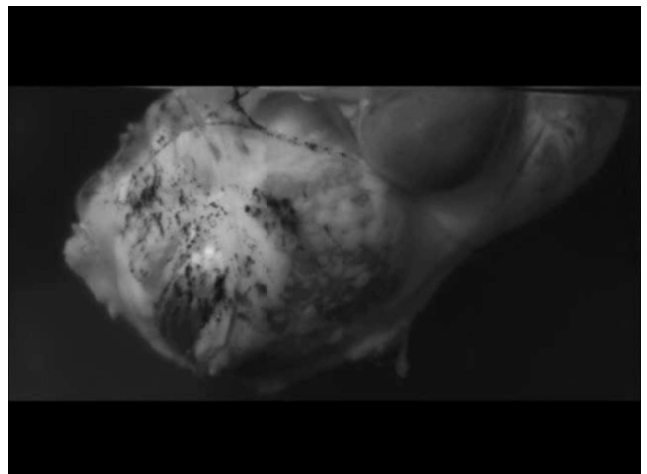
- Feeding to improve gizzard function
- Feeding to improve intestinal integrity
- Feeding to balance microflora
- Feeding to minimize stress and inflammatory

Feeding to improve gizzard function



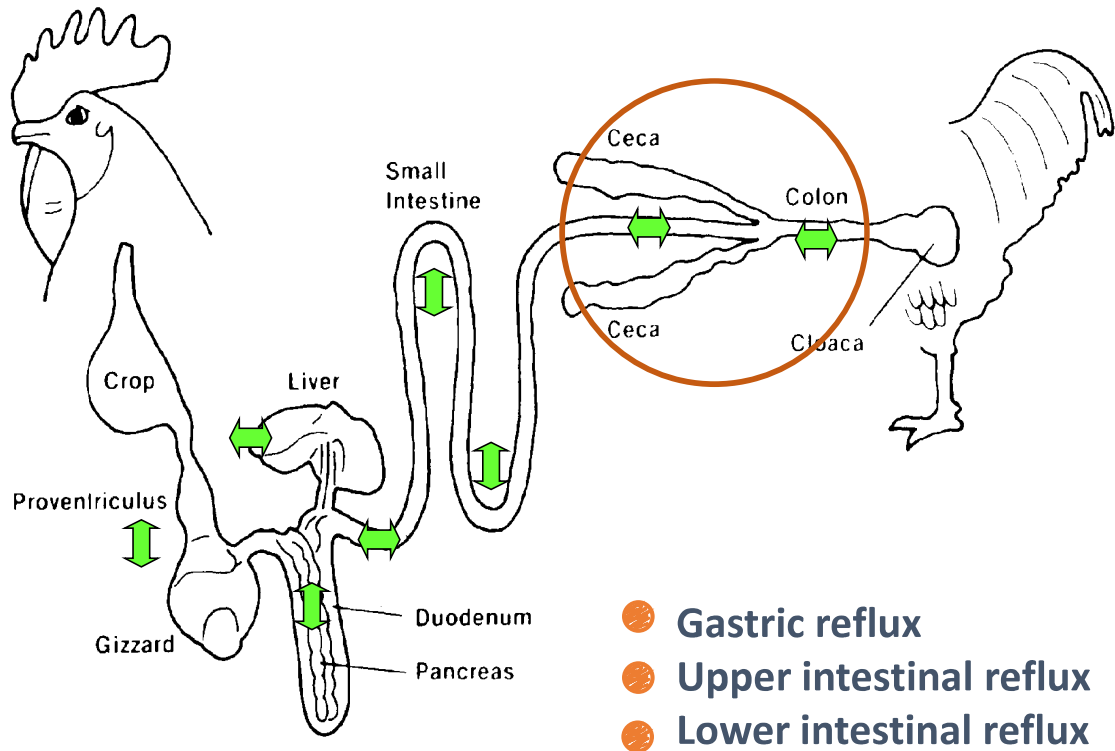
Macro structure-Gizzard “Pace-setter” of Gut Motility

- Pristine feed stimulates gizzard action
 - ▲ Normalizes feed passage rate
 - ▲ More complete peptic digestion?
- Factor affecting gizzard function
 - ▲ Feed texture
 - ▲ Level of fiber
 - ▲ Type of fiber





Reverse Peristalsis



Texture of feed

Effect of dietary inclusion of whole wheat (20%) on pH and gut microflora of broilers

Gut Ecosystem Measurement	Ground wheat	Whole wheat
Gizzard pH	3.34 ^a	2.88 ^b
Anaerobic bacteria in gizzard (log cfu/g)	7.98 ^a	7.56 ^b
<i>C. perfringens</i> in ileum (log cfu/g)	6.44	5.72
Lactobacilli in jejunum (log cfu/g)	7.53 ^b	8.28 ^a

^{a,b} Means within columns with no common superscript differ significantly ($P < 0.05$)

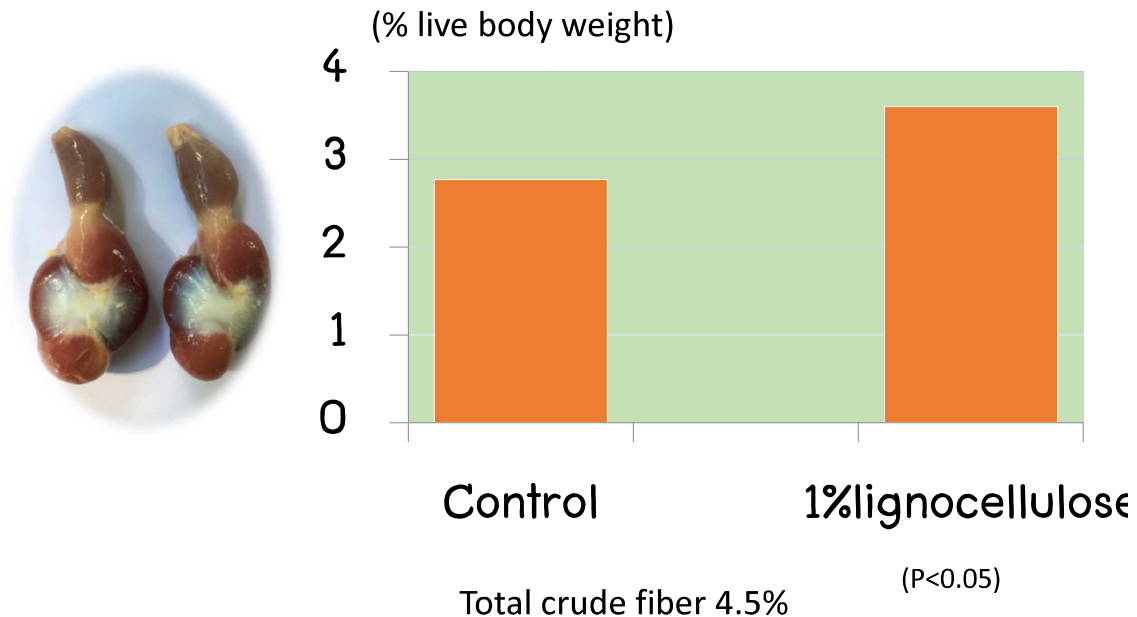
Engberg et al. (2004)



Structural fiber

Supplementation of lignocellulose increase gizzard weight of pullet (7-17 WOA)

Will effective with suitable level of crude fiber



Feeding to improve
intestinal integrity



Potential problem of intestinal structure

- Poor villi development
 - ▲ Low cell turn over rate
- Inflammation (thicken of lumen)
- Unstirred water layer can become damaged
- Leaking gut
- Acute physical damage (parasite)
 - ▲ Coccidia
 - ▲ Bacteria



Feed Additives for Gut Health

Antibiotics

Herbs, spices and essential oil
Organic Acids

Enzymes
Probiotics
Prebiotics

Decrease
microbial load



Shift microflora



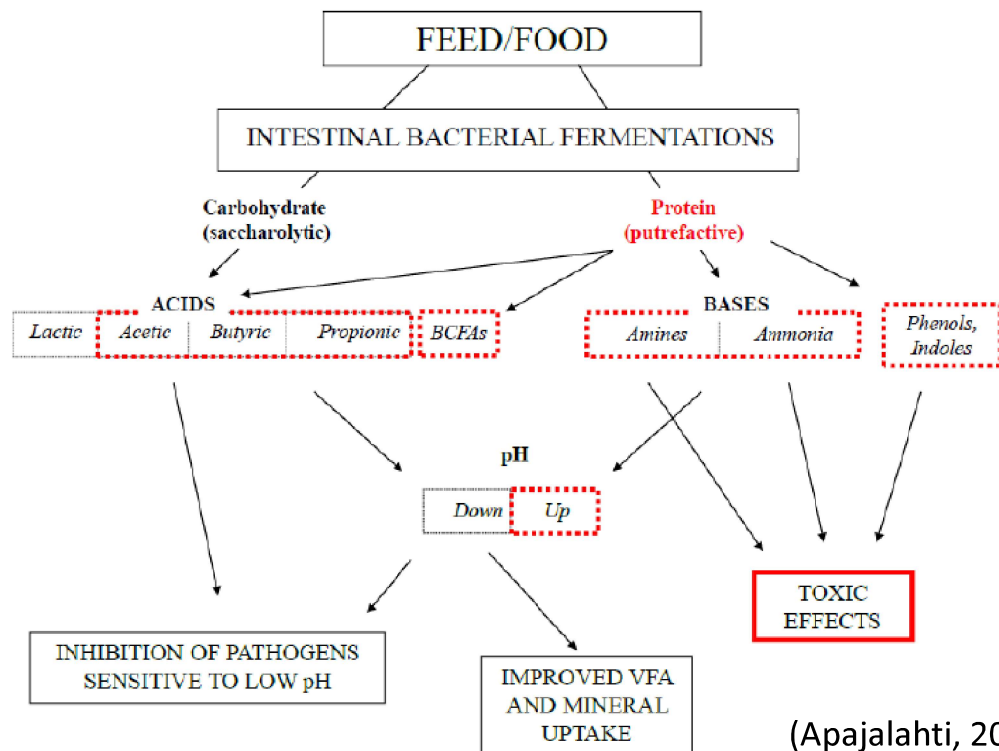
Competitive exclusion



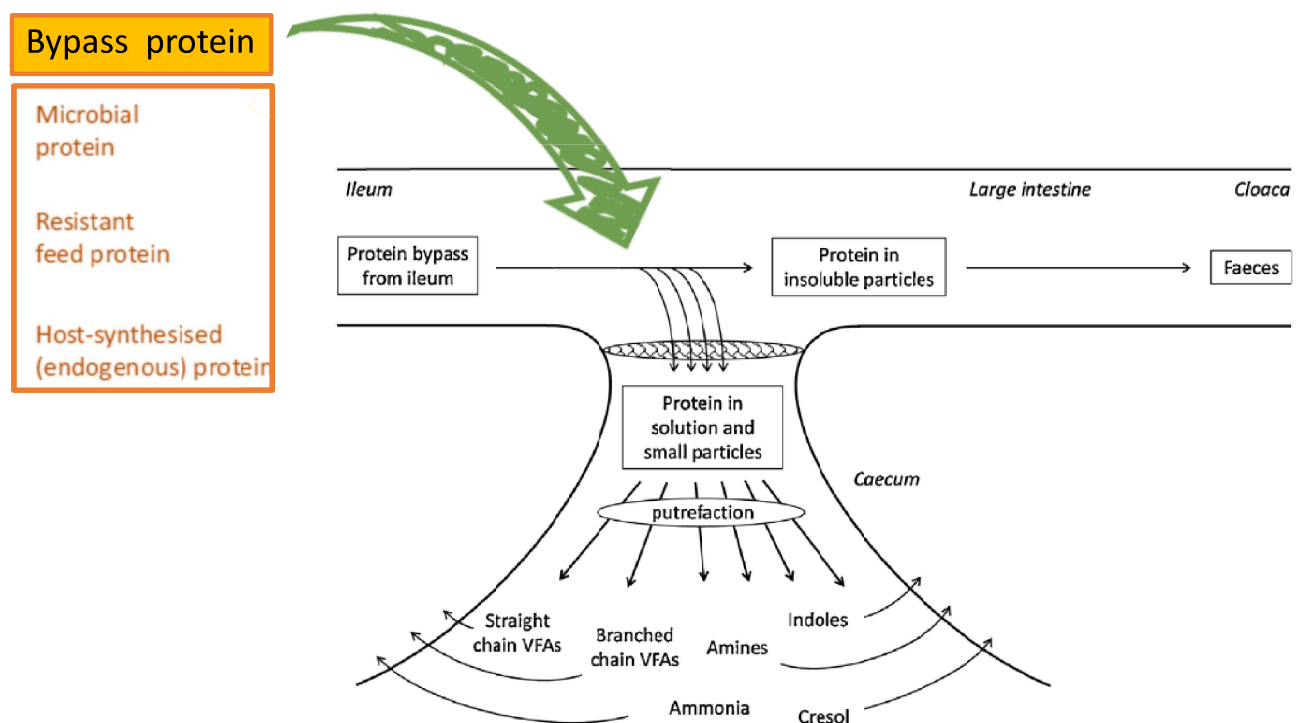
Promote intestinal health



Flow of carbohydrate and protein to large intestine is important for gut health



Protein fermentation of ileal bypass protein in caecum



(Apajalahti and Vienola, 2016)



Negative effect of undigested protein in hind gut

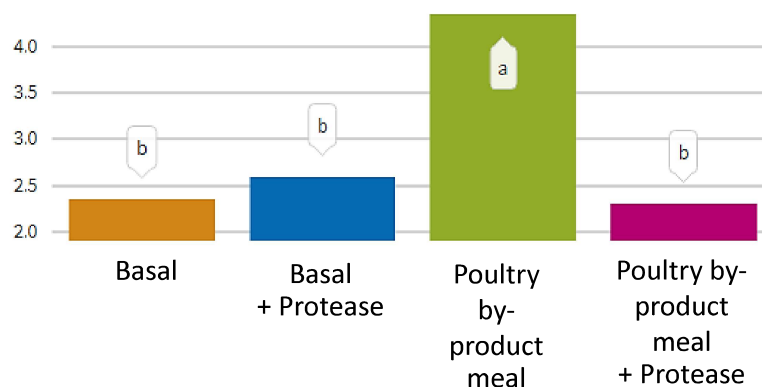
Feed	A	B	C	D
Feather meal (%)	0.0	0.0	1.5	3.0
Digestibility protein (%)	92.5	91.5	89.5	82.2
Fermentable protein (g/kg residue)	73	77	96	138
Cumulative production of:				
Ammonia (mmol)	9.5	13.8	13.1	15.4
Phenol (umol)	0.0	0.0	8.9	14.0
Sulfide reducing Clostridia (10^{\log} cfu/ml)	5.1	5.8	6.3	6.8

(De Lange, 2010)



Protease supplementation and *C. Perfringens* count of ileum content

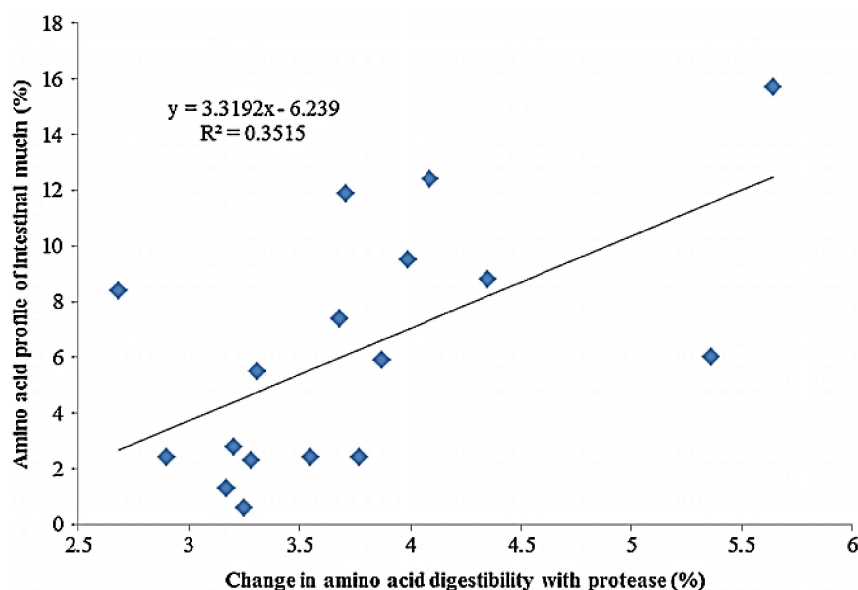
Clostridium counts (log)



Impact on Clostridium counts between different digested protein diets with the addition of protease enzyme (Bhojar, 2017)



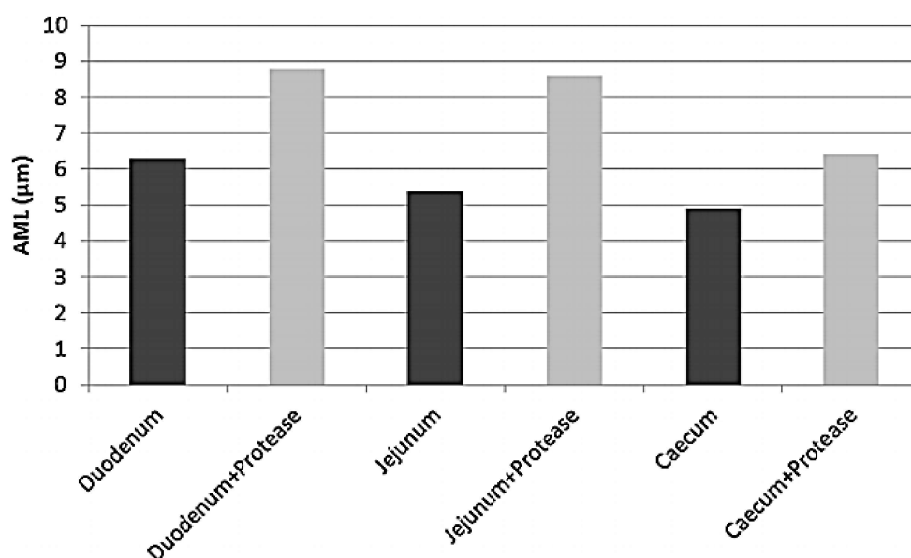
AA digestibility vs AA of intestinal mucin



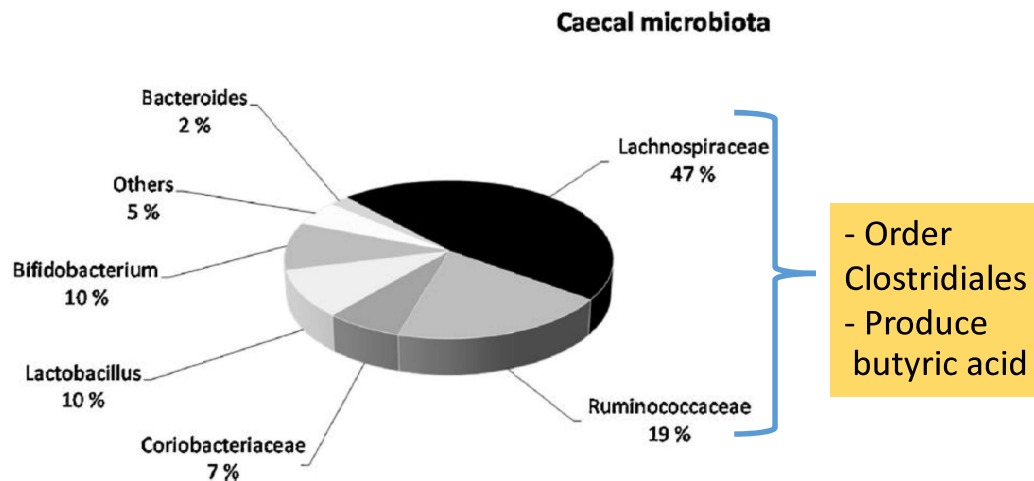
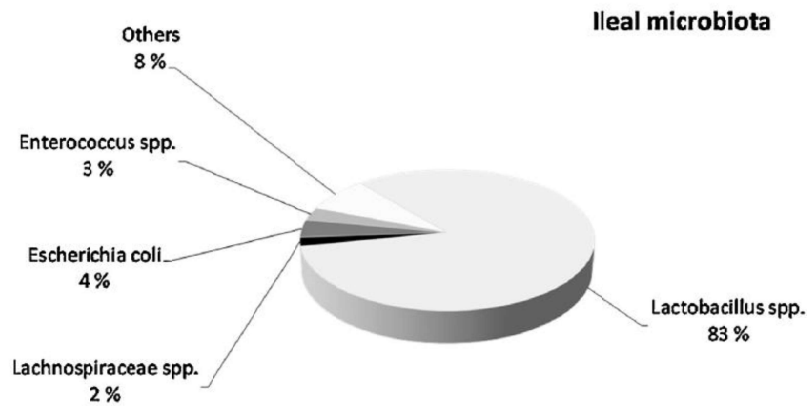
Correlation between the amino acid profile of intestinal mucin and the effect of protease on ileal amino acid digestibility ($P = 0.012$). (Cowieson and Roos, 2014)



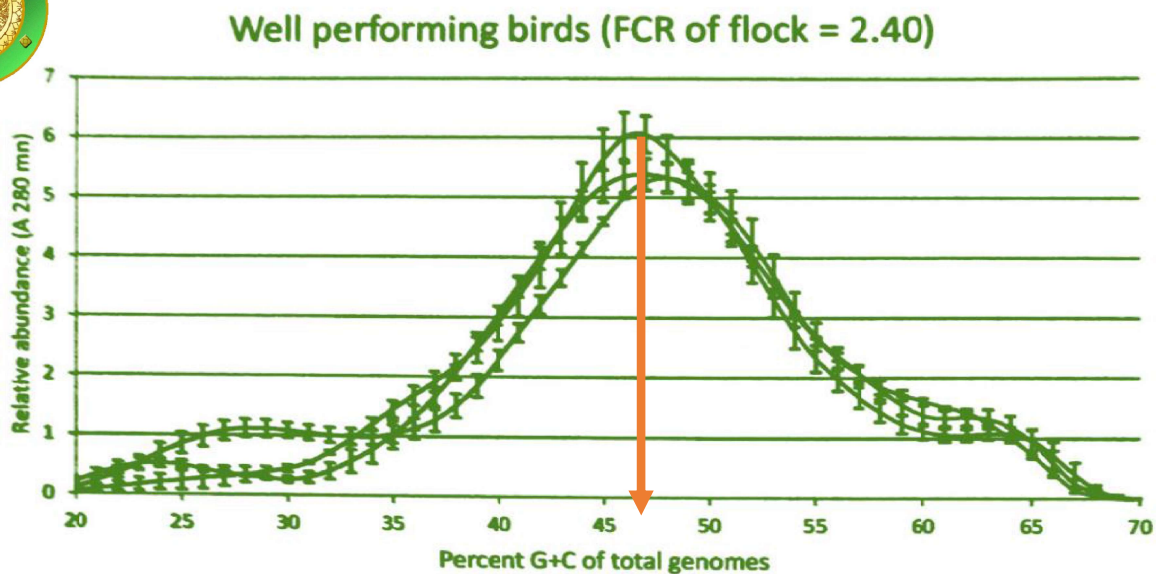
Protease and thickness of mucus layer



Effect of exogenous protease on the thickness of the adherent mucus layer (AML; μm) in three intestinal segments in broilers. The effect of protease was statistically significant in each segment. (Cowieson and Roos, 2016)



(Apajalahti and Vienola, 2016)



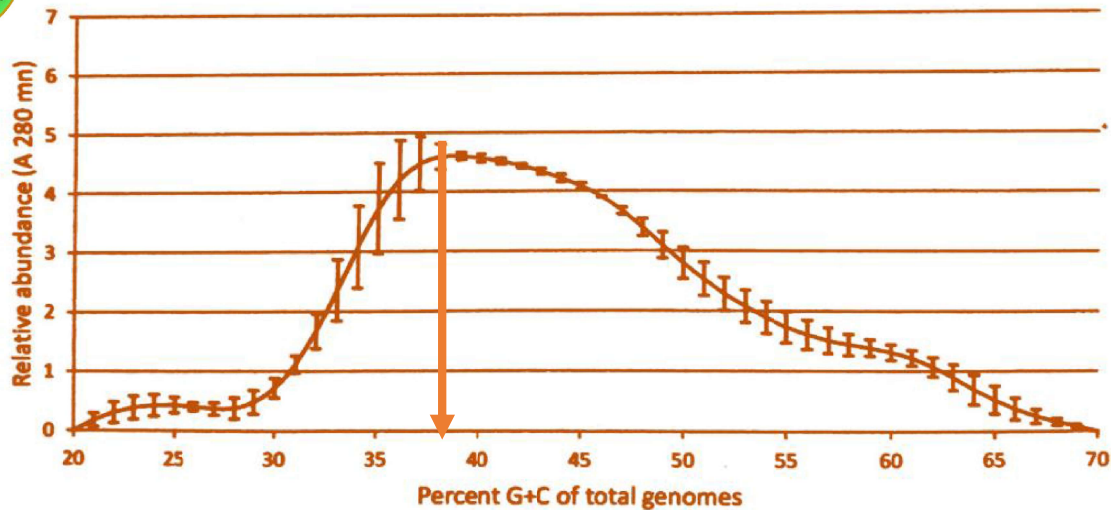
- High performance (FCR 2.40)
- High proportion of butyrate
- producing family *Lachnospiraceae* (G+C approximately 47%)

Cecal microbiota related to performance

(4 commercial broilers/curve)
(FCR based on carcass weight)
Rinttila and Apajalahti (2013)



Poorly performing birds (FCR of flock =2.58)



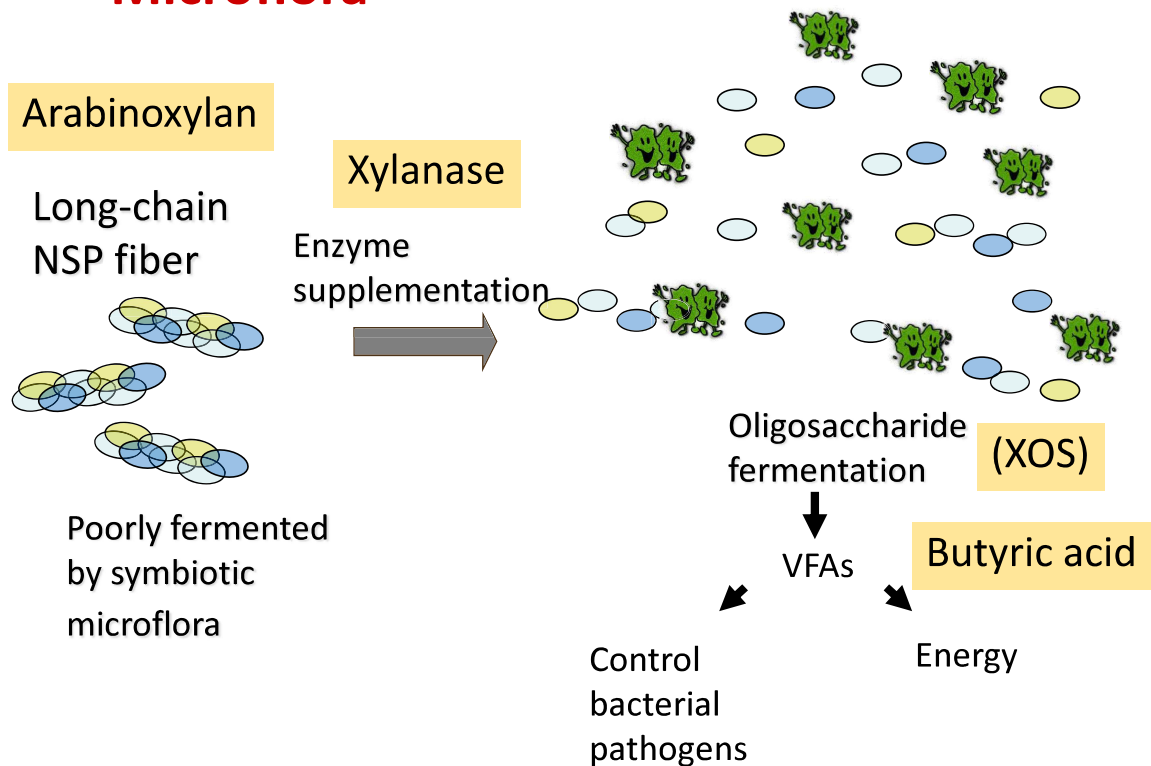
- Poor performance (FCR 2.58)
- Lower proportion of G+C (33-37%)
- *Genus Megamonas*
- *Propionic producing*

Cecal microbiota related to performance

(4 commercial broilers/curve)
(FCR based on carcass weight)
Rinttila and Apajalahti (2013)



NSP-Enzymes and Symbiotic Cecal Microflora

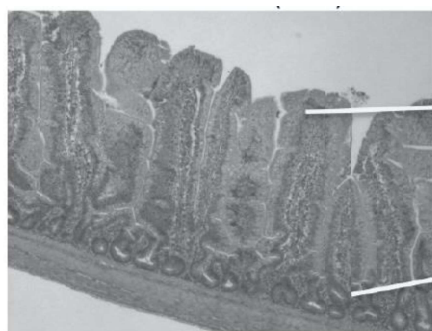




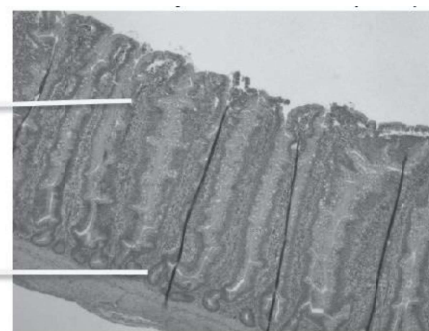
Beneficial effect of xylanase

Xylanase reduce nutrient availability for pathogens, there by indirectly helping to protect mucosal morphology and absorptive capacity of the intestine (Tyus, 2016)

Control d28



Control+xylanase



Villi

Crypt



Mode of action of *Bacillus subtilis*

Isolate	Amylase	Protease	Glucanase	Xylanase	Phytase	Lipase	Pectinase
S1	+	+	-	-	-	-	-
S2 ^a	+	+	+	+	-	+	+
S3	+	+	-	-	-	-	-
S4	+	-	±	-	-	-	-
S5	+	+	-	-	+	-	-
S6	+	-	-	-	+	-	±
DB430	+	-	±	-	-	-	-

^a Strain selected and indentified as HB2 DMS 104747



High level of enzymes production



Secretion of antimicrobial compounds



Bacillus subtilis

- Increase villi height/crypt depth ratio
 - ▲ Normal situation (Aliakbarpour et al., 2012)
 - ▲ Heat stress
- Increase villi density
- Increase goblet cell
- Reduce Salmonella in cecal
- Reduce CD4/CD8 ratio-improve anti-inflammatory effect
- Increase successful of vaccination



Bacillus licheniformis

- Improve lipid metabolism
 - ▲ Bind cholesterol and excrete
 - ▲ Increase HDL-C
 - ▲ Lower LDL-C
- Improve oxidative status
 - ▲ Increase SOD, GSH-PX and CAT
 - ▲ Lower MDA
- Improve nutrient digestion
 - ▲ Protease
 - ▲ Amylase
 - ▲ Lipase



Probiotic and mycotoxin detoxification

- Probiotic – mycotoxin adhesion present damage of GI tract
- Aflatoxin
 - ▲ *B. Subtilis* (ANSB060) detoxify and reduce adverse effect of aflatoxin in broiler and layer fed aflatoxin-contaminated diets (Mat et al., 2013; Fan et al., 2015) , Laccase enzyme
- ZEA
 - ▲ *B. Subtilis* (ANSB01G) reduce –DDGS, Swine feed
 - Reduce adverse effect in gilts
 - ▲ Lactonohydrolase enzyme
- DON
 - ▲ *Bacillus* sp. LP100 detoxify DON in contaminate by deepoxidation



Stress in poultry and gut health

- Stressors could induce responses on (Shini et al. (2009)
 - Behavior
 - Physiology (perturb endocrine, immune and metabolic homeostatic and allostatic mechanisms)
 - Performance and growth responses
- Stress and inflammatory
 - Heat stress
 - High stock density
 - Mycotoxin contamination

Feed additive that reduce stress and inflammatory

Changing genotypes – broilers

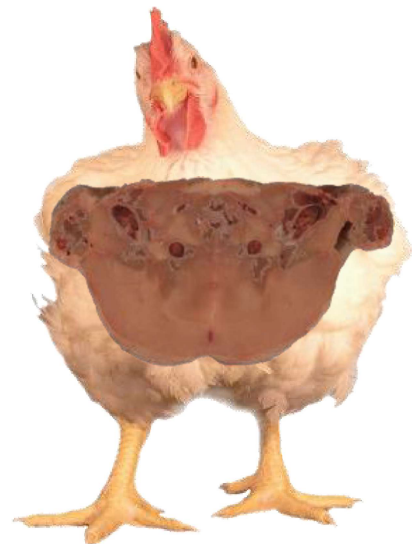
- Growth rate has more than tripled in the last several decades (Havenstein et al. 2003)



Broiler 50 years ago



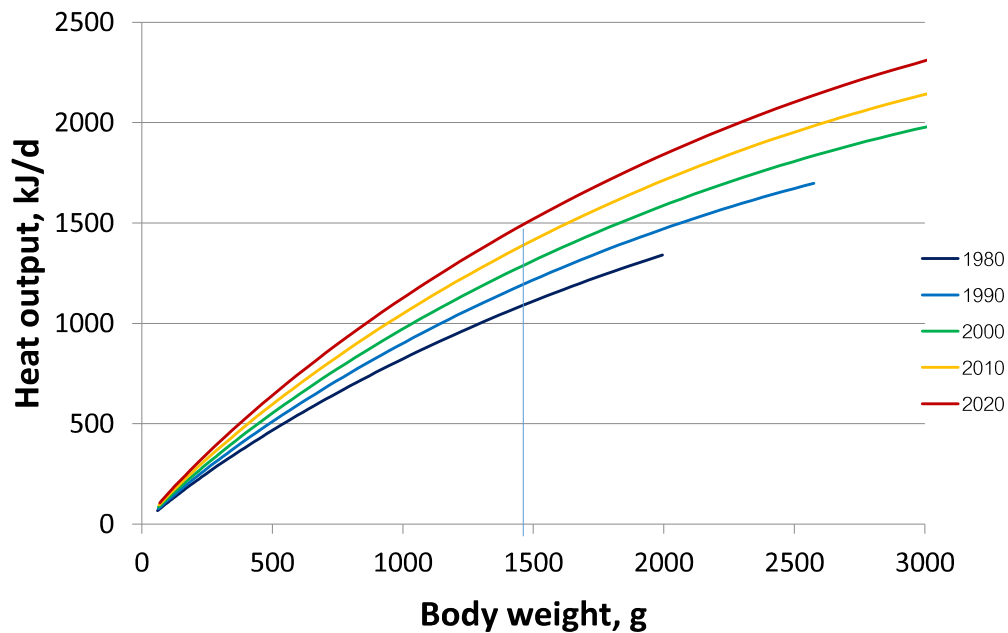
Broiler 30 years ago



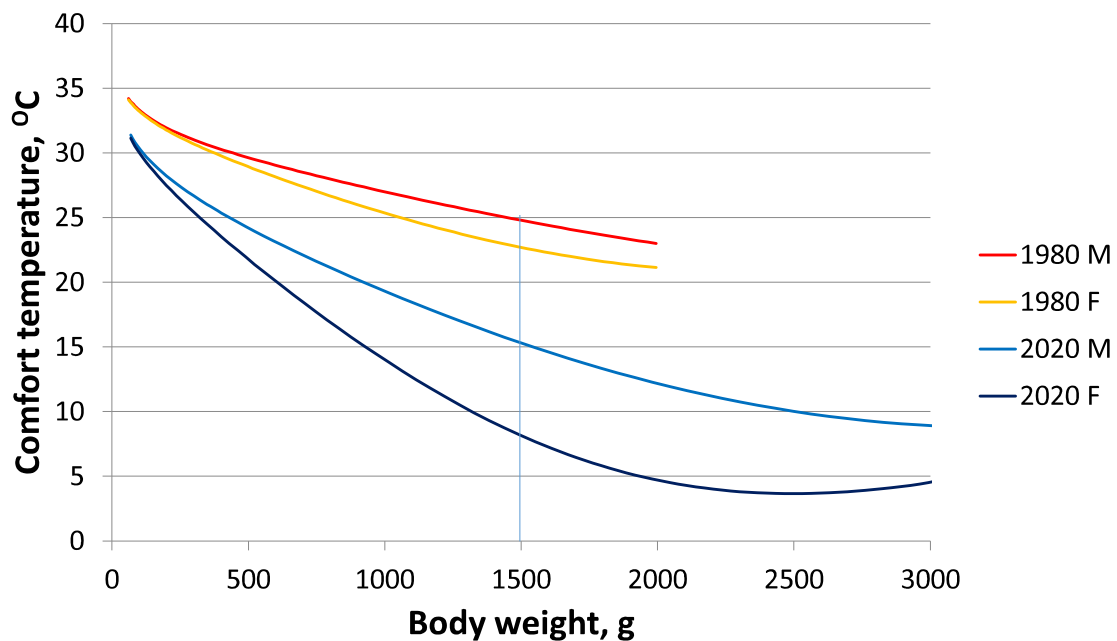
Today's Broiler
Zuidhof et al., 2014



Predicted heat output vs. body weight from 1980 to 2020



Comfort temperature vs. body weight for males and females in 1980 and 2020





Heat stress in broiler and gut health

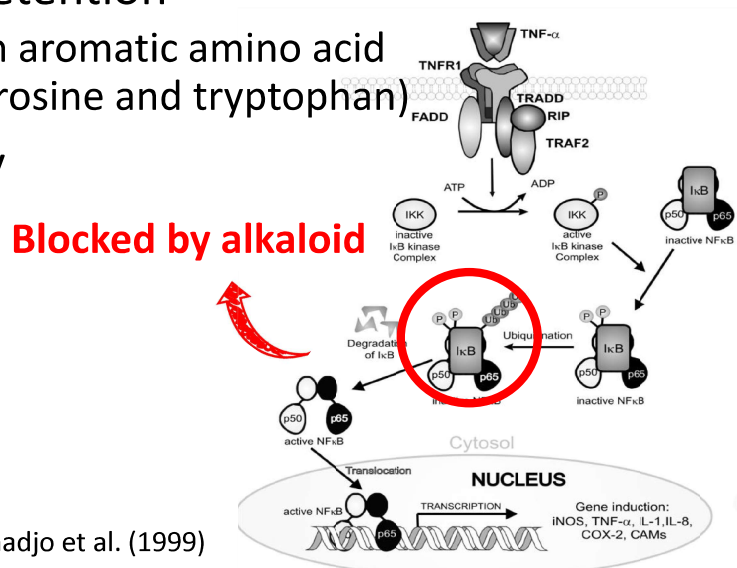
- Gastric and intestinal lesions could be a results of stress (Cosen-Binker et al., 2004)
- Chickens subjected to acute heat stress (30°C/24 h) had a reduction of the ileum's crypt depths but no significant differences in the villus height and villus:crypt ratio (Burkholder et al., 2008)
- Chickens submitted to chronic heat stress had a decrease of villus heights and jejunum weight (Mitchell and Carlisle, 1992)



Role of Alkaloid extract

Quaternary Benzophenanthridine alkaloids (QBA) and Protopine Alkaloids (PA)

- Antimicrobial
- Improve protein retention
 - Improve utilization aromatic amino acid (phenylalanine, tyrosine and tryptophan)
- Anti-inflammatory



Budihadjo et al. (1999)



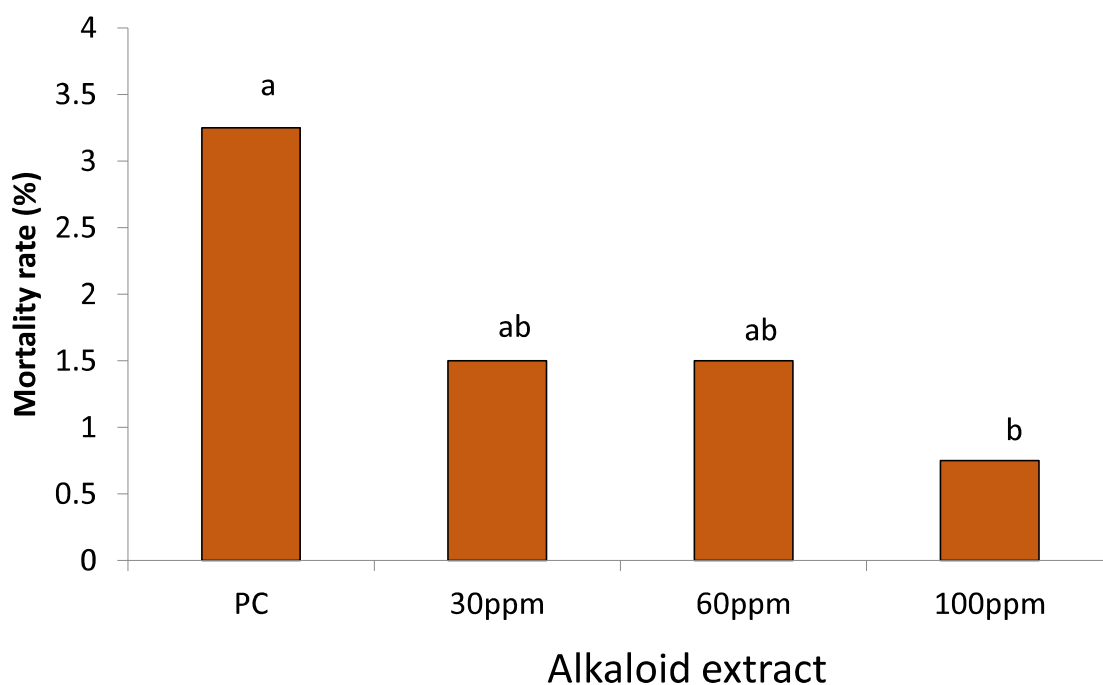
Jejunum histology (17 DOA)

Alkaloid	Crypt depth (μm)	Villi height (μm)	Villi width (μm)	Villi height : Crypt depth ratio	Villi surface area (mm ²)
PC	98.91	718.95	88.27	6.93	0.0679 ^a
30ppm	99.19	857.88	102.52	7.98	0.0939 ^b
60ppm	101.80	913.53	104.83	8.35	0.1018 ^b
100ppm	104.42	883.03	115.80	8.47	0.1085 ^b
P-value	0.9533	0.1489	0.1218	0.3123	0.0024
SEM	3.8723	31.6679	3.9895	0.3181	0.0038

^{a,b} Means within columns with no common superscript differ significantly (P<0.05)

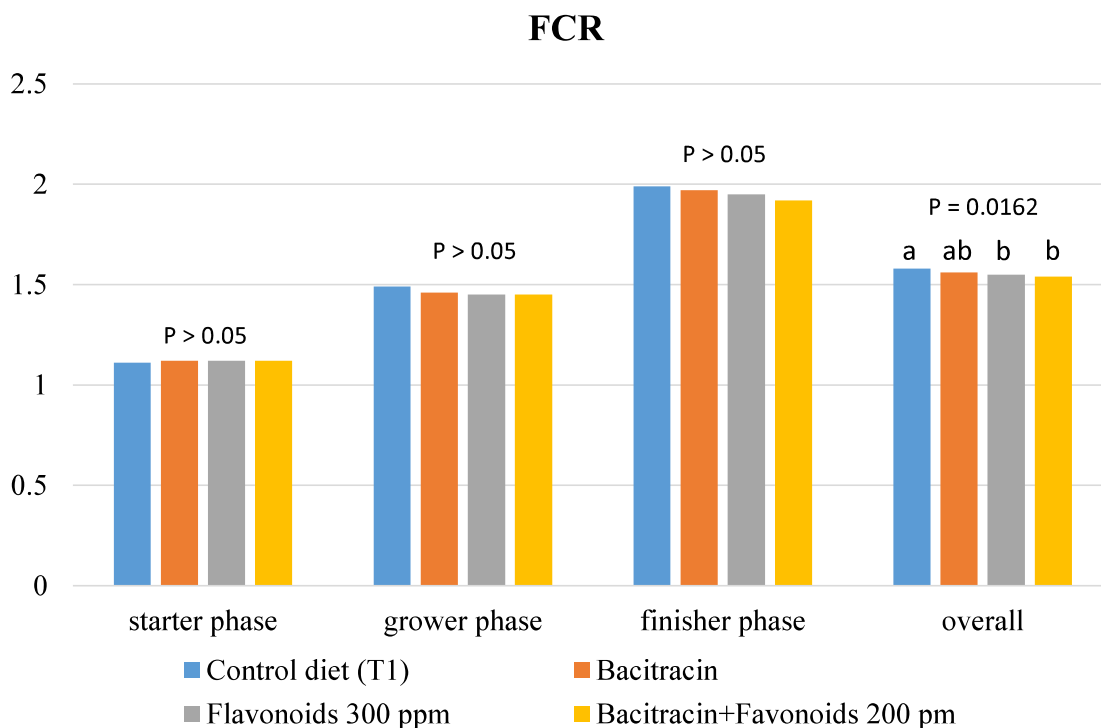


Mortality rate (1-35 DOA)





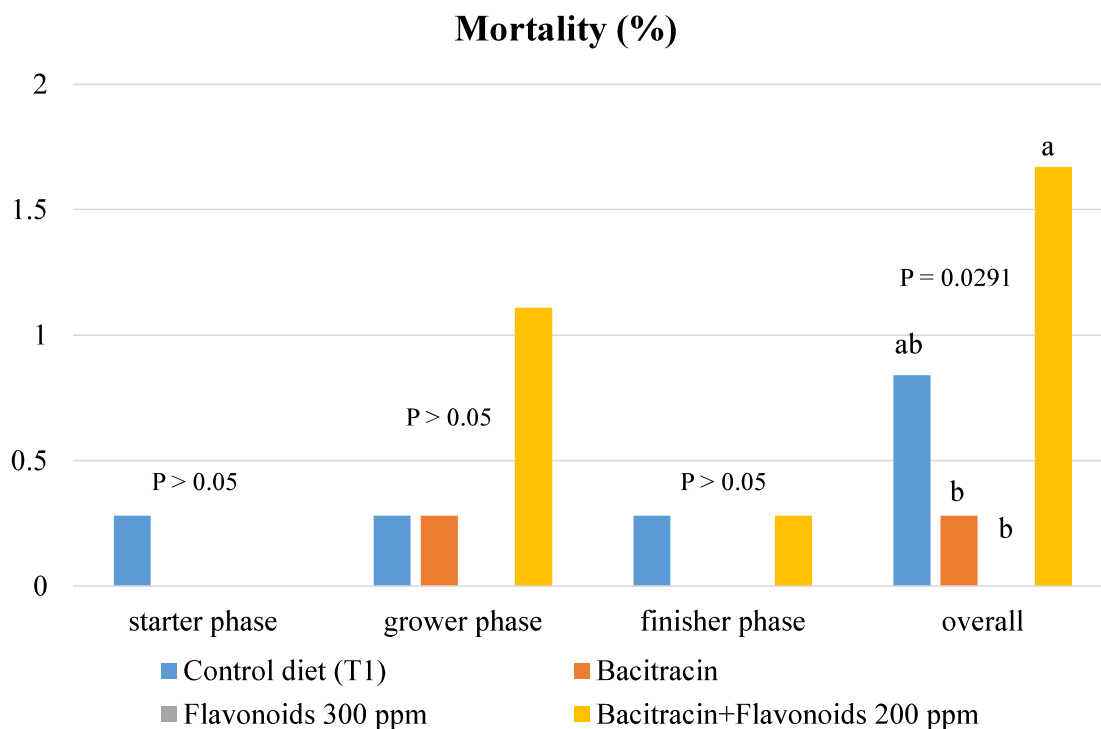
Effect of citrus flavonoids on growth performance of broiler



43



Effect of citrus flavonoids on growth performance of broiler



44



Body weight of death bird

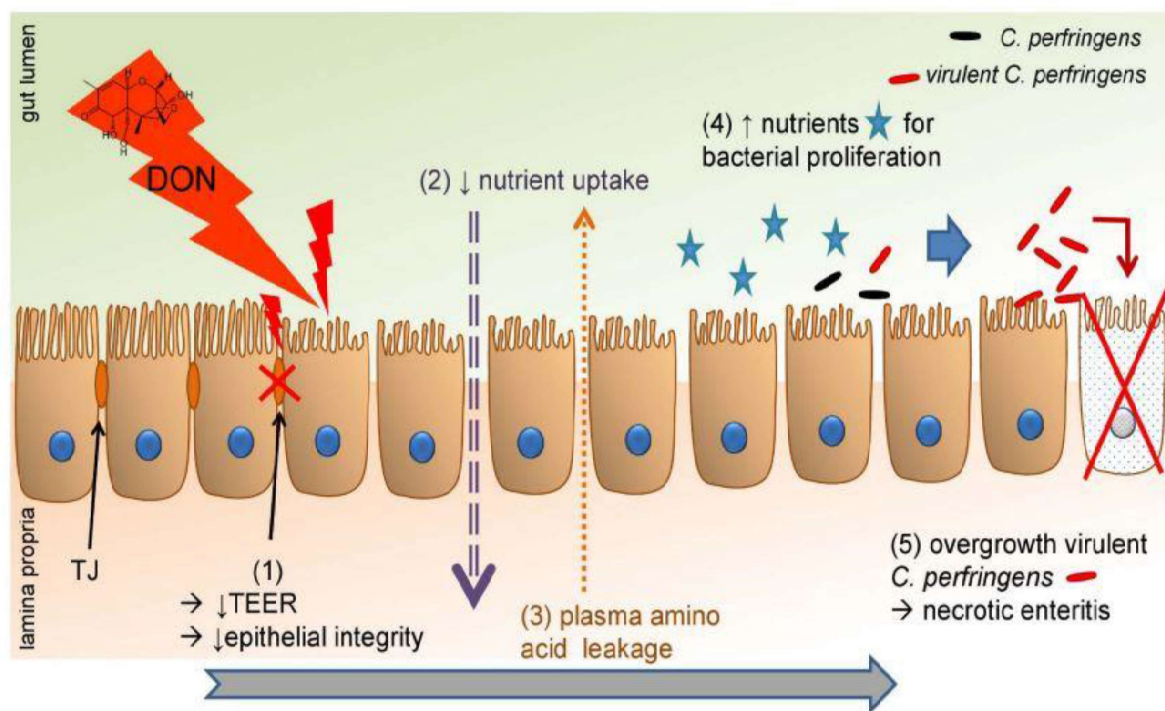
DOA	Std. body weight (g)	Weight of dead birds (g)				
		T1	T2	T3	T4	
0	42					Starter phase
1	57	40				
7	185				220	
15	538				638	Grower phase
18	730		762		782	
23	1116				1204	
30	1765	1422			2000	
32	1965	1480			2356	Finisher phase

45

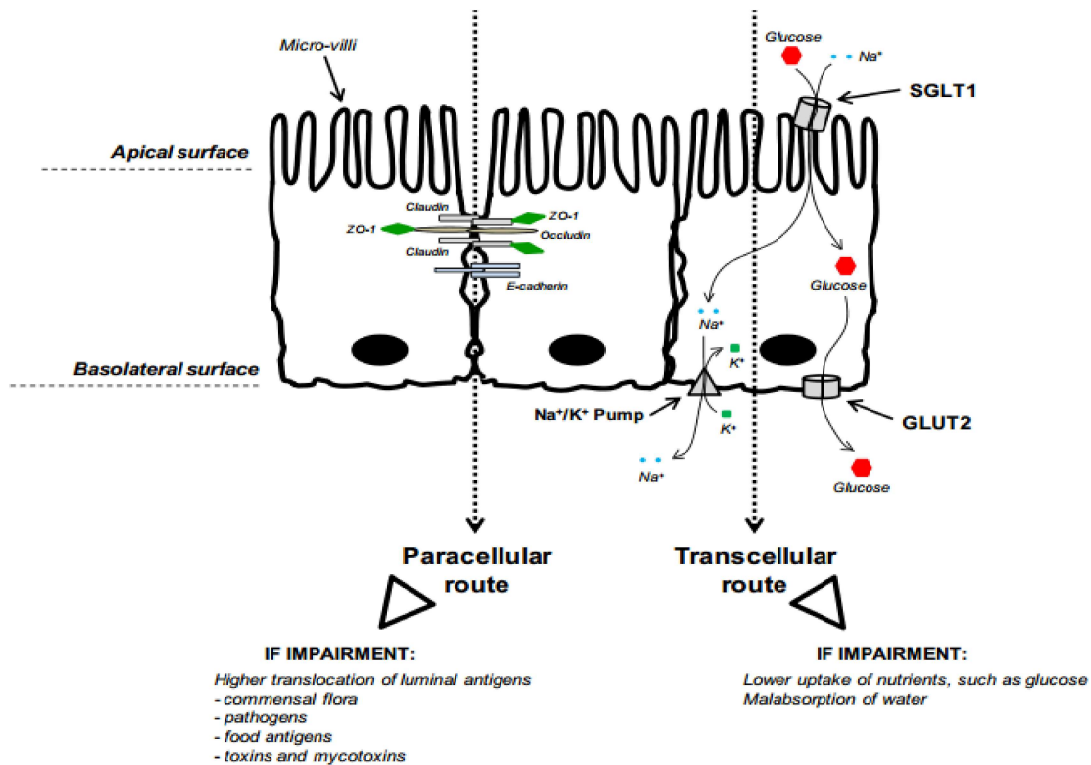


Mycotoxin causes gut leaking

Deoxynivalenol Predisposes for Necrotic Enteritis in Broiler Chickens



Intestinal Epithelial Cells (IECs) transcellular and paracellular pathways.



Mycotoxin causes gut leaking

	Aflatoxin	Deoxynivaleno I (DON)	Fumonisin
Gut barrier function	1.5 ppm AFB1 significant effect of increasing the (L:R) ratio	4 ppm DON FITC-dextran flux inhibited the claudin protein expression	FB1 has been reported to lead to reduced TEER
Nutrient digestion and absorption	Decreased apparent digestibility of crude protein	Reducing villi height	
Gut immunity	AF decrease the intestinal IgA cell numbers and negatively affect the mRNA expression of IgA, pIgR, IgM, and IgG	Found on markers for gut inflammation (IL-8, IL-10, and SOCS1).	



Conclusions

Under a prohibition of AGPs usage in food-farming animal

- A revision in good farm management is in needed
- Nutritional strategy is one of the most effective way to help sustain poultry industry
 - Reduce general stress and oxidative stress
 - Reduce inflammatory effect
 - Improve gut health



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Enzyme

Feed Additive

Toxin Binder

Disinfectant

Pet Products



Environmental Problems in Poultry Farm and Management

Dr. Suwit Chotinun, DVM., Ph.D

Department of Food Animal Clinic, Chiang Mai University, Thailand

Suwit Chotinan



Teaching

- Infectious poultry diseases
- Production medicine

Research

- Focus on health and production medicine
- Antimicrobial resistance

Postgraduate supervision

Technical services

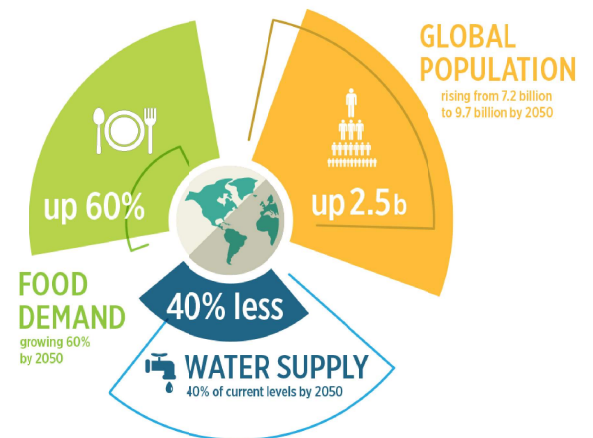
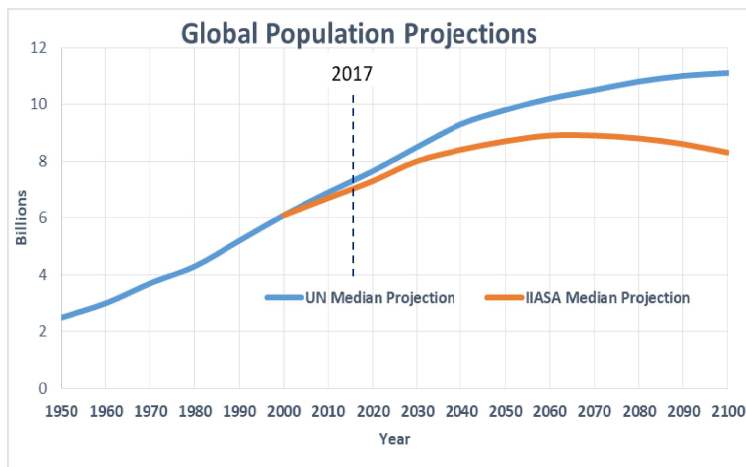


Topics

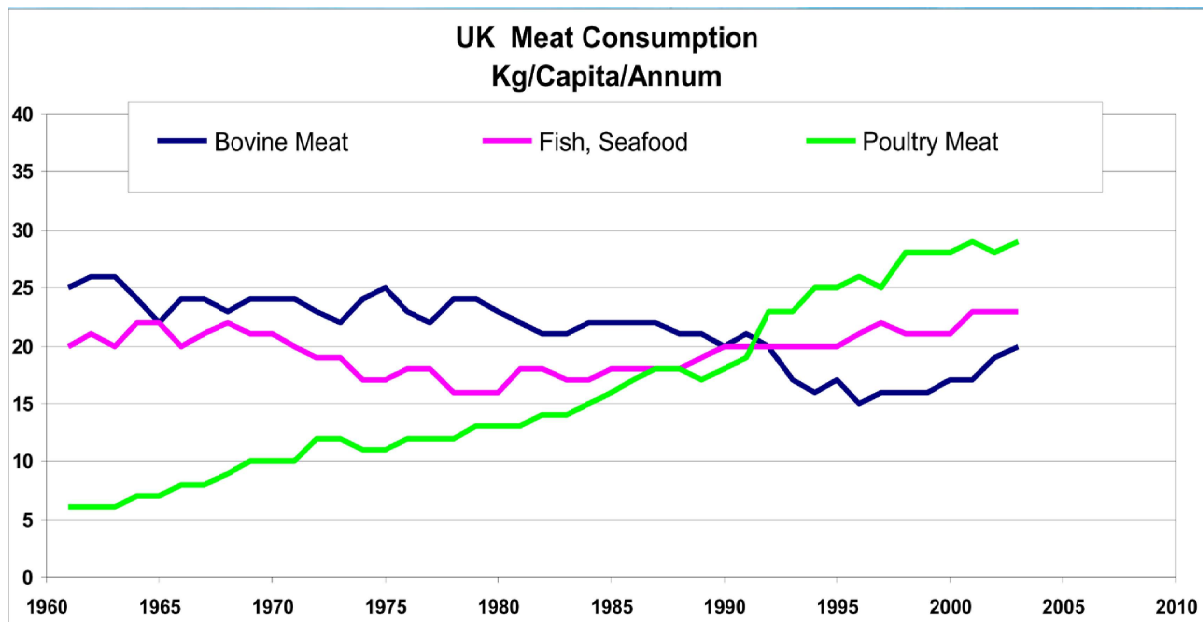


- Poultry production : World and Asia
- Environmental issues and impact
- Environmental management in poultry farm

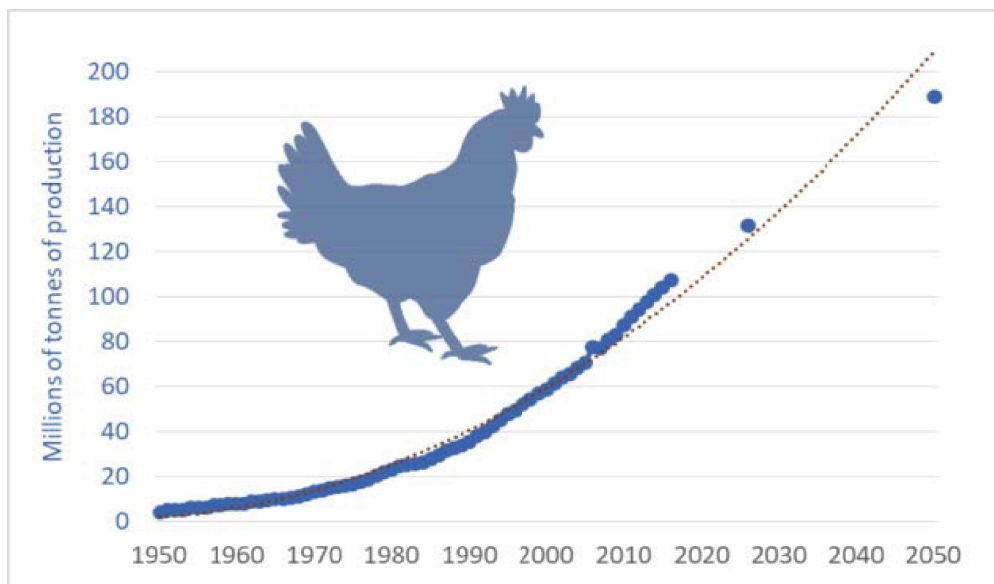
Global population situation and food demand



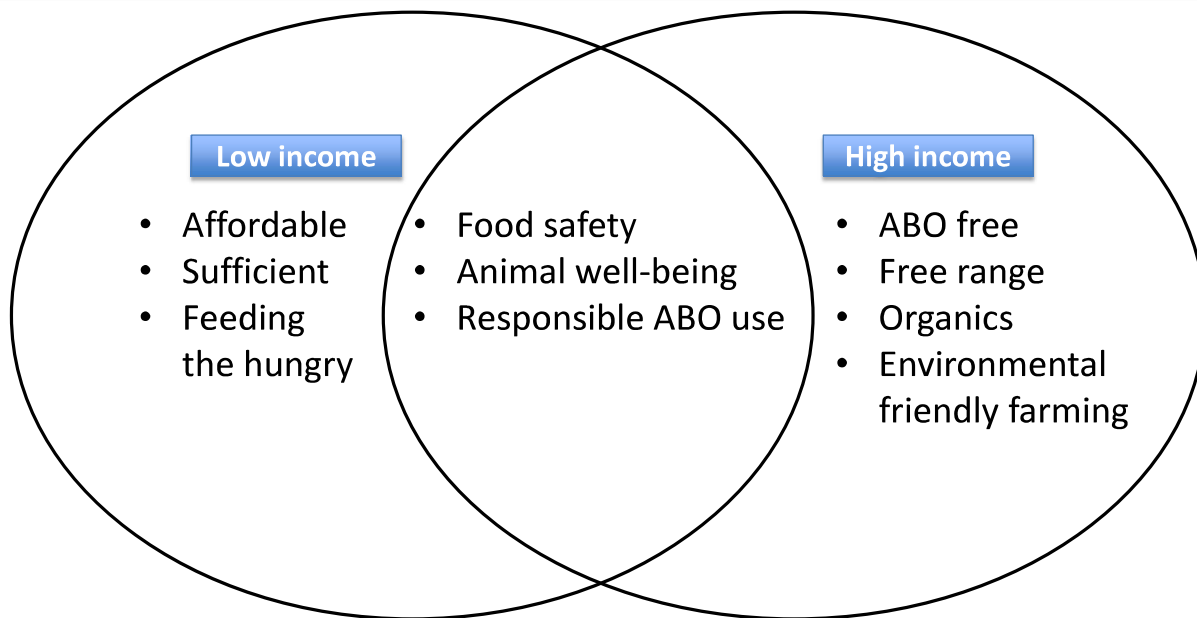
UK meat consumption trend



Global chicken meat production: past & future



Need to change



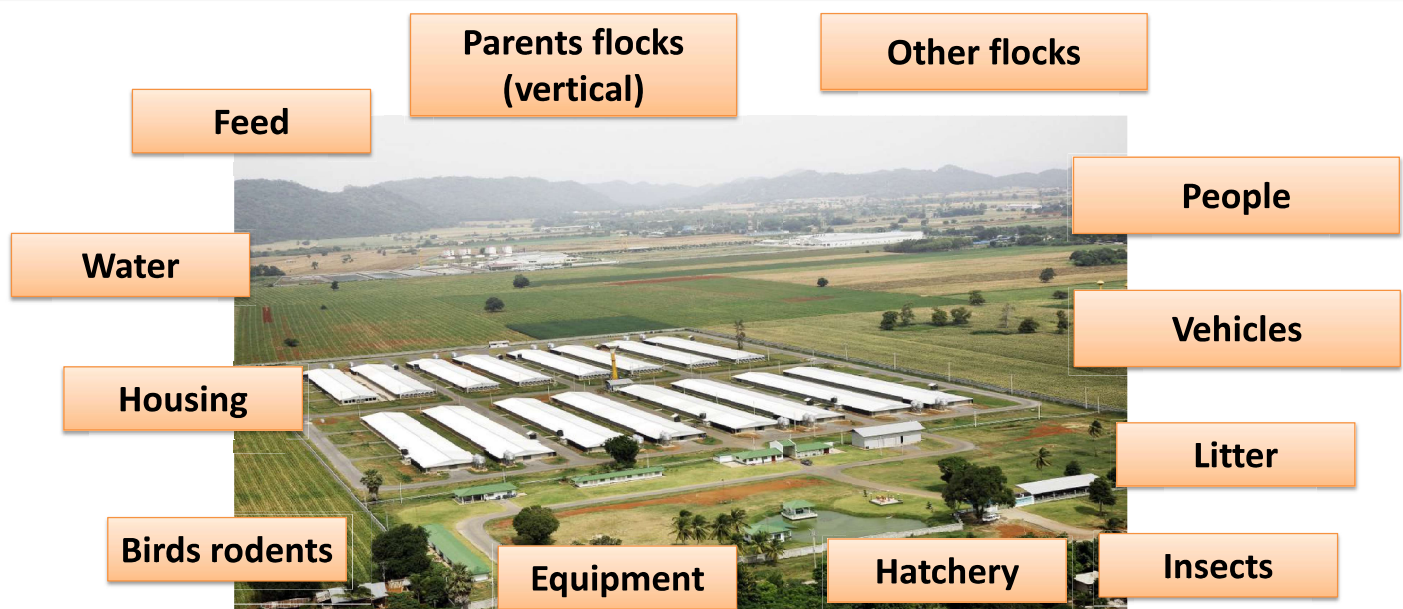
Consumer behavior is changing



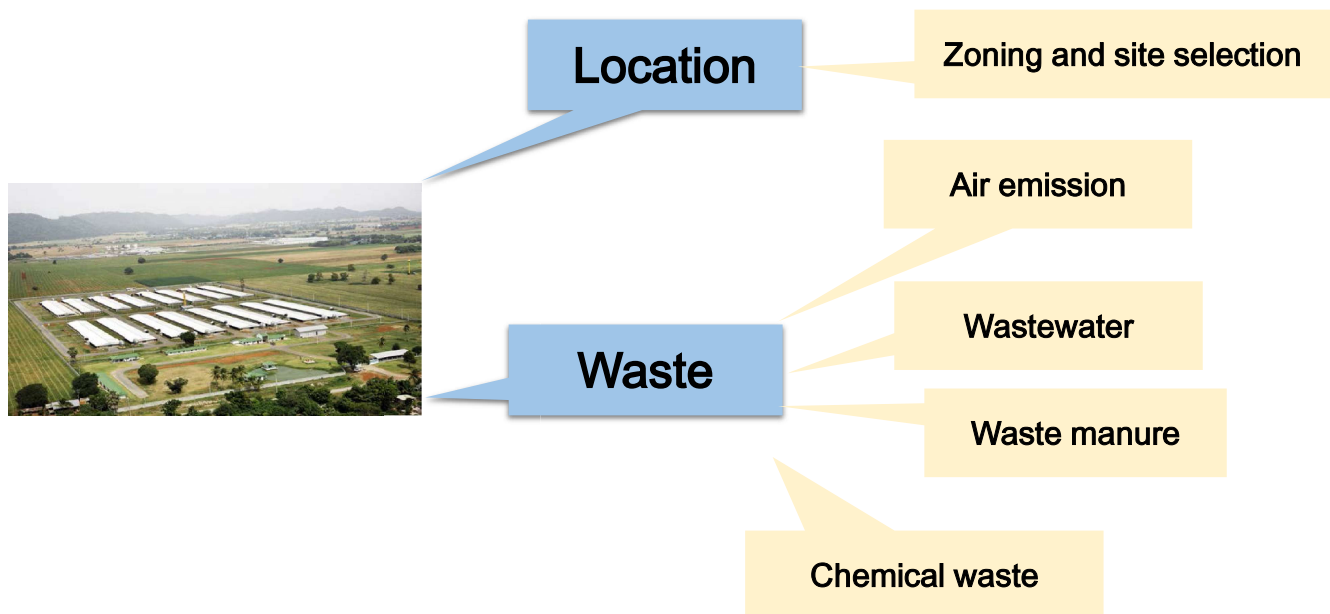
Consumer behavior is changing



Sources of infections



Major issues of environmental concern

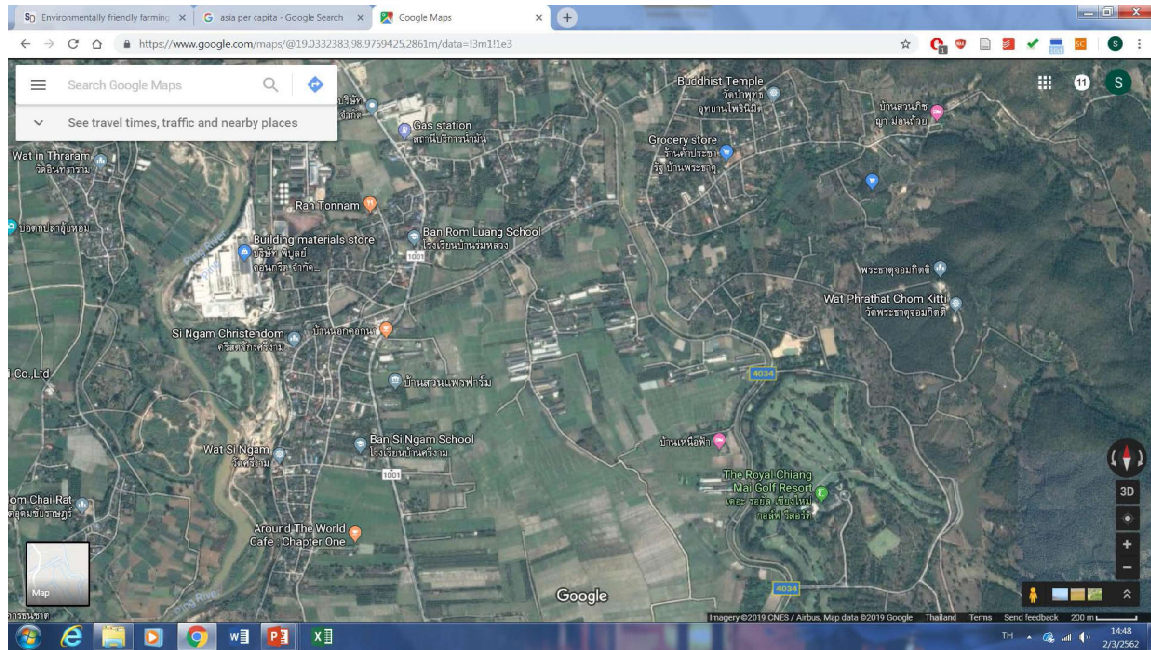


Zoning and site selection

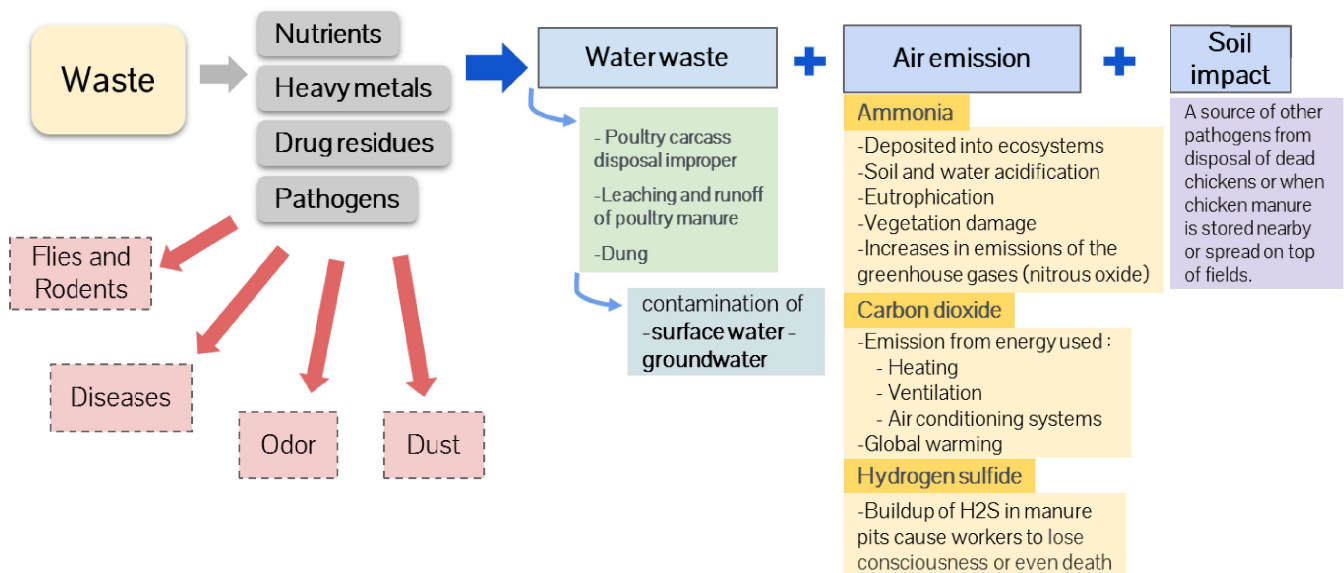


- Should be far away from settlement boundaries: sensitive land uses (slaughterhouse, other farms, schools, hospital)
- Located distance from other poultry farms
 - Should follow to domestic regulation
- Located distance from waste disposal sites
- Located in agricultural zone and outside irrigation system

Source of disease outbreak



Environmental problems



Solid waste management



- **2 type of farming system**
 - Litter system → bedding materials and droppings with spilled feed
 - Battery system → form of dropping
- **Improper management** would contribute to odor, and contaminate to surface and underground water



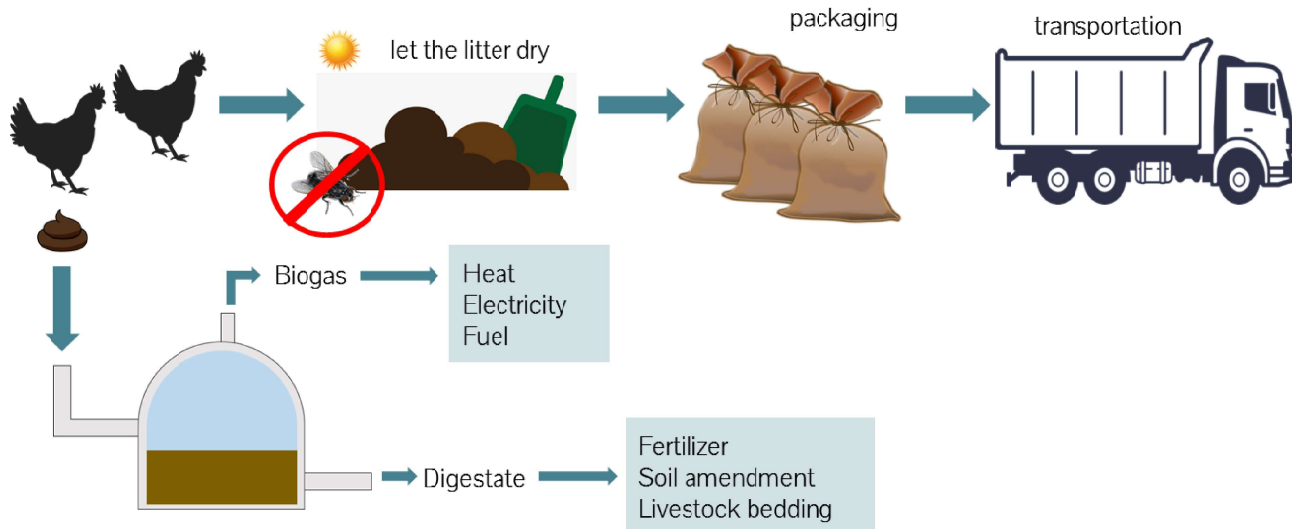
Solid waste management



- **Broiler litter**
 - Be kept as dry as possible
 - Scraped instead of flushed with water
 - Remove at the end of each cycle and carted away
 - Should not be stored in farm
- **Layer farm (battery system)**
 - Be kept as dry as possible
 - Scraped instead of flushed with water
 - Should be removed 2-3 times/week



Solid waste managements



Antibiotic residues in the environment



ANTIMICROBIAL RESISTANCE IN SOUTH EAST ASIA

Antibiotic residues in the environment of South East Asia

Cecilia Stålsby Lundborg and **Ashok Tamhankar** discuss how antibiotic residues in the environment contribute to antibiotic resistance in South East Asia and propose actions to mitigate the problem

The global action plan on antimicrobial resistance¹ emphasises the One Health approach—seeing humans, animals, the food chain, the environment, and the interconnectedness between them as one entity. With growing economic development in South East Asia, the production and use of antibiotics—and therefore also their residues in the environment—are expected to increase.

Antibiotic residues in the environment lead to resistant bacteria through selective pressure. Theoretically, a chance interaction between a single molecule of an antibiotic and a bacterium can trigger natural selection for resistance, or a mutation favouring resistance. Subsequently, a vertical gene transfer (from one generation to another) or a horizontal gene transfer (transfer of resistance genes from one bacterium to another through a plasmid) may occur (Fig. 1). Identification of a complete

effectiveness of antibiotic may result in prolonged or poorly controlled infections. In this paper, we identify pathways that contribute to antibiotic residues in the environment and propose priority actions for South East Asian countries to monitor and limit this.

Sources of antibiotic residues in the environment

India and Bangladesh are major contributors to global pharmaceutical production.² Antibiotics are also widely used in South East Asia for therapeutic and non-therapeutic purposes in humans, animals, aquaculture, and agriculture—including use for growth promotion. These activities produce antibiotic residues that contaminate the environment (Fig. 2). Antibiotics like fluoroquinolones and sulphonamides are chemically stable. Their residues are frequently detected in the environment, and

concentrations of 28 000 µg/L and 31 000 µg/L on two consecutive days.³ Multiplying these concentrations by the amount of water released each day shows that several kilograms of antibiotics are released daily into the environment, and tons are released every year.³ Antibiotic concentrations measured in lakes close to the cluster showed ciprofloxacin concentration up to 6500 µg/L.⁴ There are several such clusters in India and Bangladesh.⁵ Smaller production units also contribute to residues.

From human consumption, conservative estimates suggest that nearly half of consumed antibiotics are released, in active form, through excretion.⁶ Studies from South East Asia^{7,8} report residues of several antibiotics in hospital wastewater. However, it should be noted that the majority of antibiotics are used in the community, and this also contributes to environmental residues.

The use of antibiotics in animals contributes equally to residue. Studies

- Maintaining good animal health
- Limiting the use and types of antibiotics, particularly “critically important antimicrobials”, in animal production
- Antibiotics should not be used as a feed additive
- Use the label dosage and method of administration
- Alternatives to antibiotics such as herbal materials
- Management of manure containing antibiotics

- Composting eliminates on average 50–70% of some antibiotics

(Sharma et al. 2009; Storteboom et al. 2007; Wang et al. 2012; Wu et al. 2010).

Water waste management



- Arising from washing and cleaning of poultry houses and facilities
- Contain residual of dropping and waste feed
- **Proper management**
 - Litter should be scraped before flushing of houses with water
 - No waste water discharged to ground water sources



Odor management



Odor sources

- ✓ wet litter
- ✓ poultry bedding that is overloaded with manure
- ✓ wet manure below caged layer houses
- ✓ spoiled or moldy feed
- ✓ dust from feeders and animals
- ✓ exhaust ventilation air
- ✓ uncovered manure piles
- ✓ poorly managed stacking sheds
- ✓ improper disposal of dead animals



Odor management



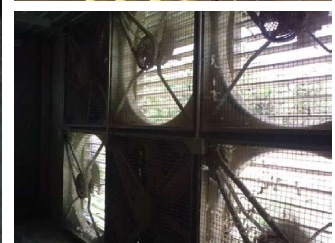
- Provide adequate bedding for each flock of birds.
- Remove manure from the building as often as possible
- Repair all leaky pipes
- Clean feeding equipment regularly
- Remove spoiled feed regularly and dead animals and dispose of them promptly
- Make sure ventilation fans are cleaned regularly and airflow rates are appropriate



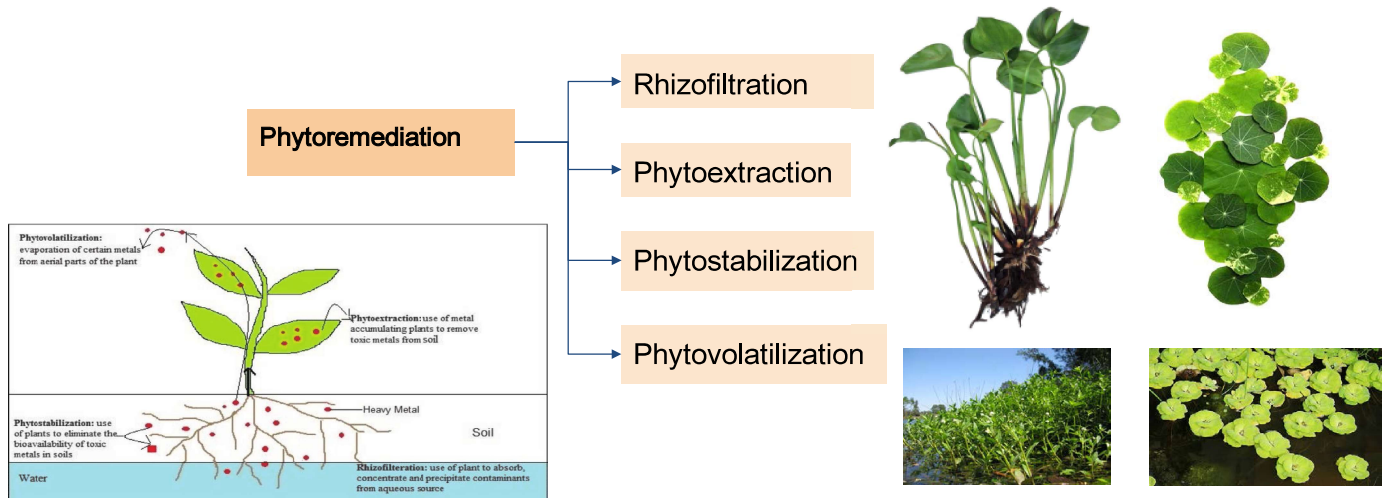
Odor management



- Cover litter stockpiles completely with a tarp weighed down
- Avoid excess moisture in stacking sheds
- In high-rise layer houses → the airflow should be equipped with lower level, exhaust fans that pull air in through well designed inlets, past the birds, and out past the manure storage area to promote manure drying and to improve indoor air quality



Heavy metal management



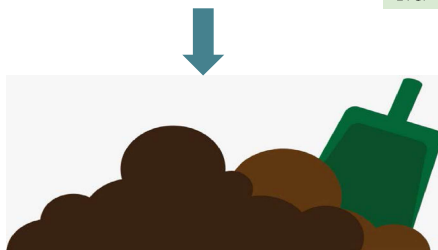
Heavy metal management



Physio-chemical method during composting

Reducing agents

Natural zeolite
Lime and sodium sulfate
Bamboo charcoal
Red mud
ETC.



Reduce heavy metals by

- Removing or changing mobile and available form of metals to less mobile or residual or less available form

Take home message



- Increasing of world population resulting in food demands
- Small scale poultry farming could disappear → large scale farms
- Consumer behavior change → need more environmental friendly products
- For environmental management, complex approach is needed
- Prevention better than solving
- Should be aware of local legislation, which may influence the management practices



Thank you

Poultry farm management and international standards for exporter

Sompiss Jullabutradee

15 March 2019

@AVANI Riverside Bangkok Hotel

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IS this **YOUR**
consumer who
wants to know
everything?



OR IS IT **SOMEONE**
WHO JUST NEEDS
SOMETHING
AFFORDABLE TO EAT?!



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THE WORLD WILL LOOK VERY DIFFERENT (ESPECIALLY FOR OUR INDUSTRY) IN 2050 WITH 9.5 BILLION PEOPLE

POPULATION M	2017	2025	2035	2050
AFRICA	1,223	240	330	500
M.EAST	322	40	40	45
CHINA	1,379	30	-20	-45
INDIA	1,281	110	120	140
JAPAN	126	-3	-6	-10
ASIA	1,215	100	100	90
EUROPE	834	10	-2	-20
N.AMERICA	576	40	40	45
S. AMERICA	417	30	30	20
WORLD	7,405	+600	+640	+730

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This
consumer
wants
to know



1

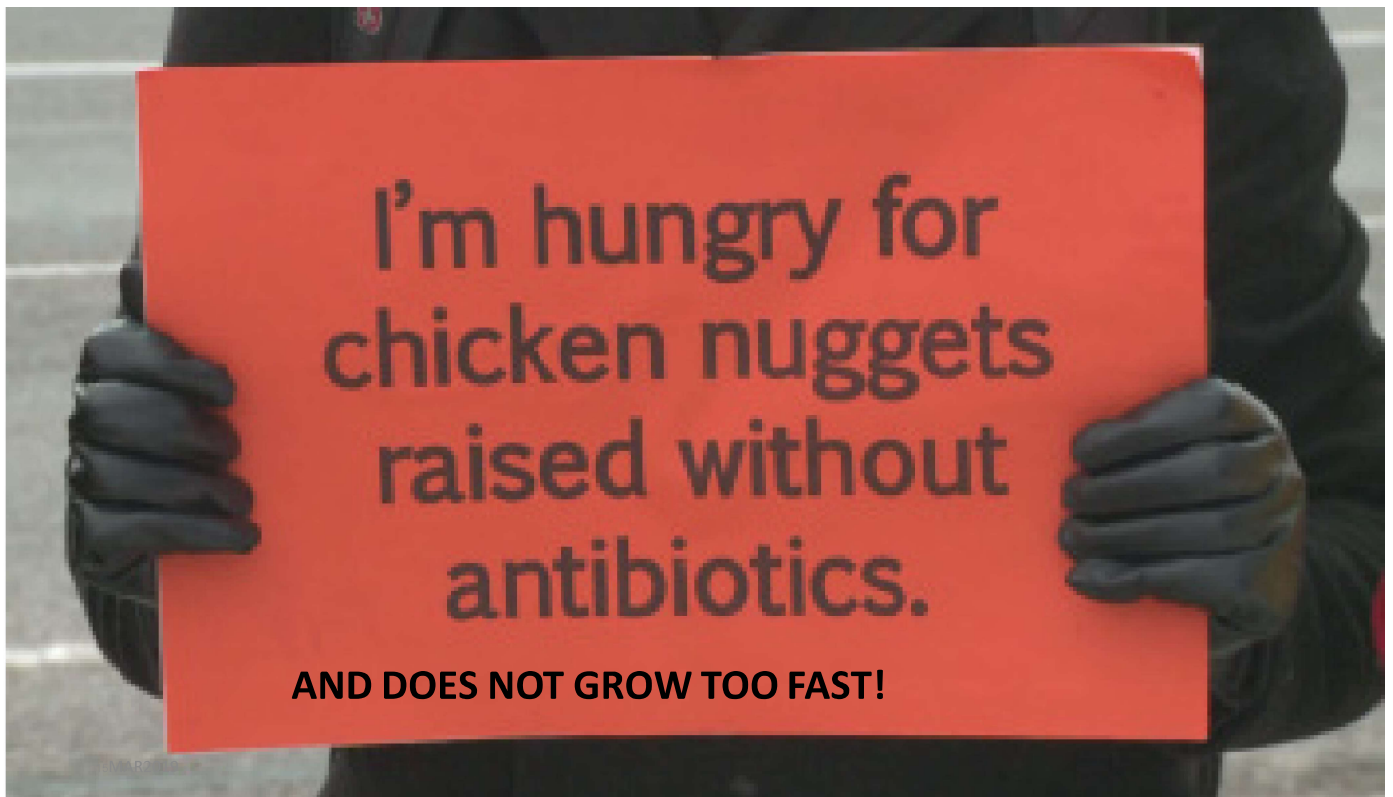
What's in it?

2

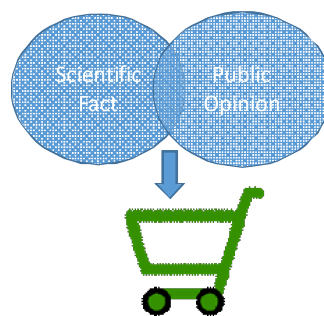
Where does it come from?

3

How is it made?



The Retail Position - An example of where they are....



- Animal Welfare - Emotive - Yes?

- Factual-in part?

- BUT retailers represent the commercial interface between scientific fact and public opinion and cannot afford to be in a 'do nothing' position.. They are challenged daily by customers, media, welfare NGO's and those with an interest. They need robust science, evidence and FACT to allow them to support their suppliers and farming supply base.

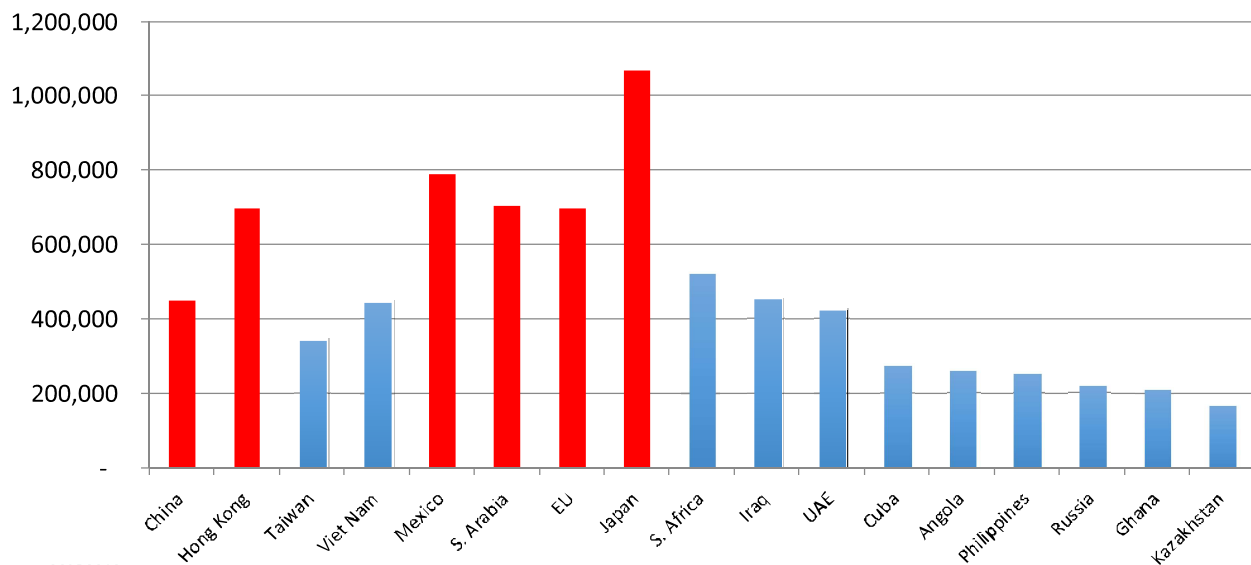
Environmental enrichments (Trend)

- Perching
- Pecking
- Density
- Drinker availability
- Feeder availability
- Natural light

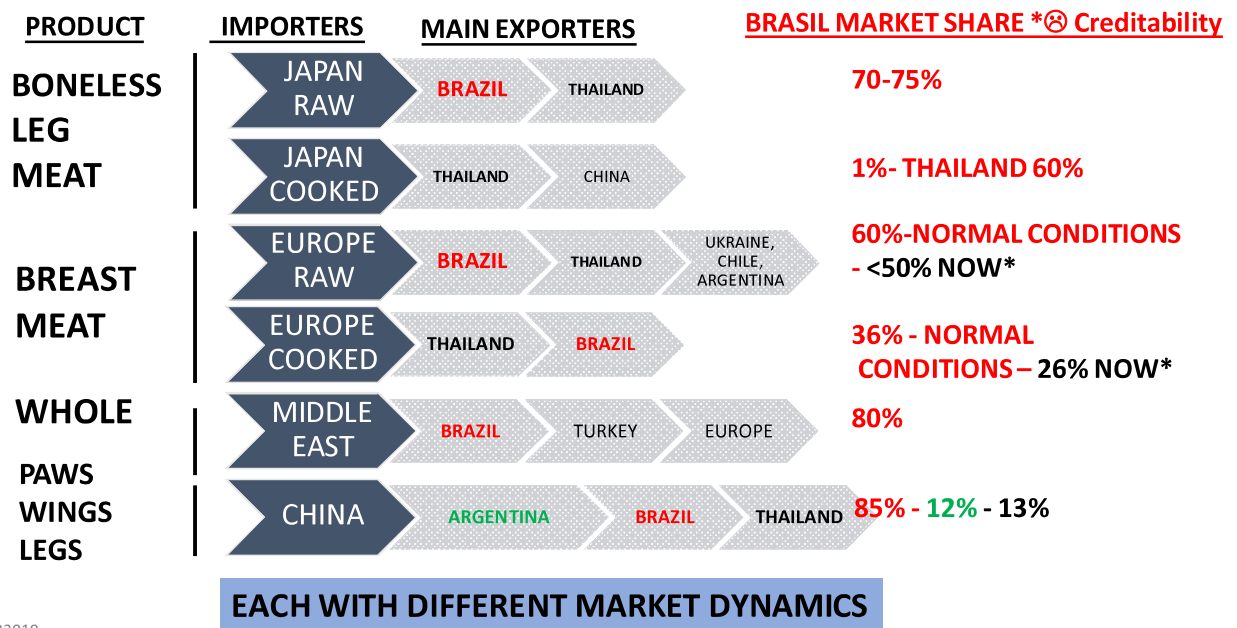
Slow growth rate

THE LARGEST IMPORTERS

MT



MAIN MARKETS COMPETITION – MARKET SHARE



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CUSTOMERS REQUIREMENTS










- Much tighter specifications
- More monitoring of processes through unannounced audits

All without PAYING MORE!

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ASSURANCE STANDARDS FOR POULTRY FARM

Welfare (animal + staff), environment, food safe, traceability, sustainability

Livestock	EU	UK	Others
Poultry	Global GAP QS ALO <u>Genesis GAP</u>    	RTA Freedom Foods – RSPCA Lion Quality mark (SE) Laid in Britain (CE,HACCP) <u>Genesis GAP</u>   	HACCP GMP ISO9000 ISO22000 FSSC22000 SQF KFC McDonald M&S Tesco Migros  

Labelling/claim?

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Thai most recognize poultry farm GAP



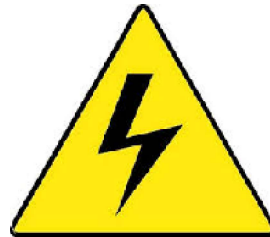
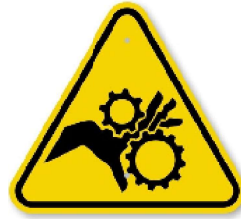
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Site Management, Housekeeping & Security 2. Business Management & Quality Planning 3. Farm Workers, Subcontractors & Visitors 4. Hygiene, Pollution Prevention and Conservation of Natural Resources 5. Animal Welfare & Stockmanship 6. Animal Health & Human Food Safety | <ol style="list-style-type: none"> 7. Water & Feed 8. Buildings, Machinery & Equipment 9. Identification & Traceability 10. Quality Planning & Record Requirements 11. Bird Health Planning, Bio-security & Salmonella Control 12. Others |
|--|---|

++Catching, Transport, Lairage and Slaughtering

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1. Site Management, Housekeeping & Security

- No entry-exit obstacle
- International signage



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1. Site Management, Housekeeping & Security



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1. Site Management, Housekeeping & Security



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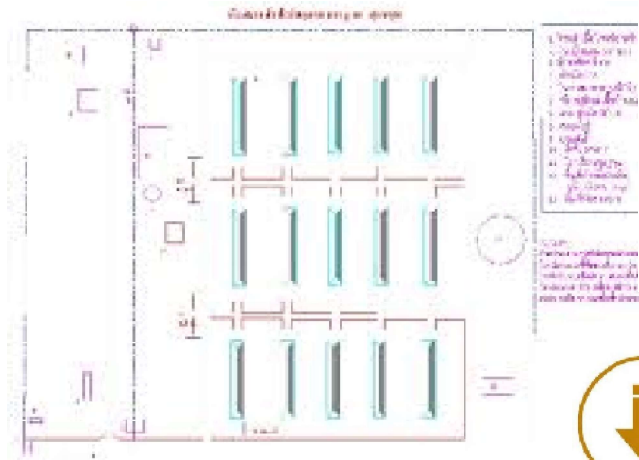
1. Site Management, Housekeeping & Security



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2. Business Management & Quality Planning

- Management manual



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2. Business Management & Quality Planning

- Risk assessment (food safety, welfare, environment, Health and safety)
- Product recall

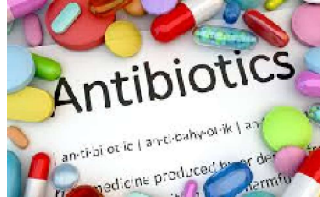


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Probability / Severity	Minor injury	Lost time/ Ill Health	Major / >3 days	Perm. Disability	Fatal/ Site Loss
Highly Unlikely	1	2	3	4	5
Unlikely	2	4	6	8	10
Possible	3	6	9	12	15
Probable	4	8	12	16	20
Certain	5	10	15	20	25

2. Business Management & Quality Planning

- Internal audit (Corrective action to complaint/NC)
- Update customer requirements/trend



- Business sustainability plan

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CAR Evidence for HACCP Master – 19 October 2017

#	Ref	Detail of non-conformity	Corrective action taken	Root cause analysis and proposed action plan	evidence
1	2.10.4	This is where you write in what the issue was. You can copy from the report provided by the auditor.	This is where you type in what you did to fix the issue that was identified during the audit.	This is where you type in the issue occurred in the first place and how you are going to make sure that it doesn't happen again.	Issue in call head over meeting
2	2.14.1	This is where you write in what the issue was. You can copy from the report provided by the auditor.	This is where you type in what you did to fix the issue that was identified during the audit.	This is where you type in the issue occurred in the first place and how you are going to make sure that it doesn't happen again.	Post Carded Policy Book Certificate for Nemat
3	3.1.1	This is where you write in what the issue was. You can copy from the report provided by the auditor.	This is where you type in what you did to fix the issue that was identified during the audit.	This is where you type in the issue occurred in the first place and how you are going to make sure that it doesn't happen again.	Internal Audit Schedule - HACCP No

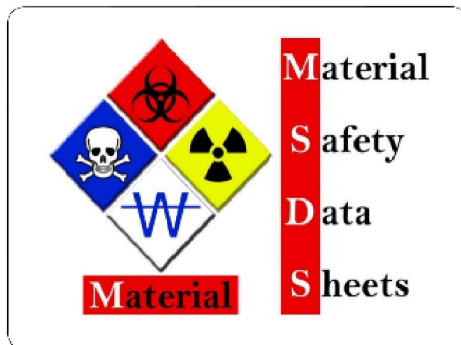


3. Farm Workers, Subcontractors & Visitors



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3. Farm Workers, Subcontractors & Visitors



ARE YOU EQUIPPED?

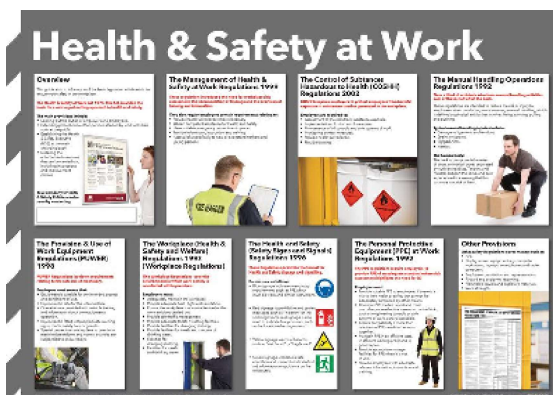


Always wear the correct PPE for the task.



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3. Farm Workers, Subcontractors & Visitors



Accident report

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3. Farm Workers, Subcontractors & Visitors

- Staff facilities
- Fare pay
- Social assurance
- Freedoms



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4. Hygiene, Pollution Prevention and Conservation of Natural Resources

Personal Hygiene Training

Daily General Cleaning Schedule				Date:	
Area to Clean	How to Clean	Cleaning supplies	Times	Staff Initials	Agmt. Initials
Bathroom Floor (daily and as needed)	Sweep, mop	Approved sanitizer			
Bathroom Surfaces (daily and as needed)	Use paper towel to wash, rinse and sanitize	Approved bath room cleaner			
Building Exterior (daily and as needed)	Sweep, up debris, pick up trash	Broom			
Cleaning Cloths (daily and as needed)	Wash, rinse, sanitize	Laundry detergent			
Condiment Containers (daily and as needed)	Wash, rinse, sanitize	Dish machine			
Dish Rack (daily and as needed)	Wash, rinse, sanitize	Warm soapy water and 200 ppm sanitizer			
Dish Rack (daily and as needed)	Wash, rinse, sanitize	Warm soapy water and 200 ppm sanitizer			
Drain Cover (daily and as needed)	Clear debris, wash, rinse, sanitize	Dish machine			
Dry Storage Areas (daily, and as needed)	Sweep, mop	Approved sanitizer			
Floors (daily, and during shift as needed)	Sweep, mop	Approved sanitizer			
Hand Washing Sink (daily, and as needed)	Wash, rinse, sanitize	Warm soapy water and 200 ppm sanitizer			
Hood Filter (daily)	Soak in degreaser, rinse, air dry	Dispenser			
Hood Grease Pan (daily and as needed)	Remove with degreaser, wash with dishwater	Dish machine			
Mop/Bushes (daily)	Wash, rinse, sanitize long mop/disk to dry	Warm soapy water and 200 ppm sanitizer			
Preparates (daily and as needed)	Wash, rinse, sanitize	Warm soapy water and 200 ppm sanitizer			
Recess in Cooler (daily and as needed)	Wash, rinse, sanitize	Warm soapy water and 200 ppm sanitizer			
Storage Bins (daily and as needed)	Use a clean, damp cloth to wipe interior	Warm soapy water and 200 ppm sanitizer			
Trash Bins (daily, and as needed each shift)	Use a clean, damp cloth to wipe interior and exterior	Warm soapy water and 200 ppm sanitizer			
Walk-in Cooler (daily and as needed)	Sweep, mop, wipe outside and inside	Approved sanitizer			

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4. Hygiene, Pollution Prevention and Conservation of Natural Resources



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4. Hygiene, Pollution Prevention and Conservation of Natural Resources



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4. Hygiene, Pollution Prevention and Conservation of Natural Resources

- Manure removal after each harvest



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5. Animal Welfare & Stockmanship

- Breeding program
- No mutilation
- No isolate for treatment in broiler



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5. Animal Welfare & Stockmanship

	14L	17L	20L	23L
Inactive resting	+	+	-	-
Walking	+	+	-	-
Standing	+	+	+	-
Feeding	+	+	-	-
Drinking	+	+	+	-
Preening	+	+	-	-
Dustbathing	+	+	+	-

- Training and supervision
- Sign agreement



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5. Animal Welfare & Stockmanship



Five freedoms

- ***Freedom from hunger and thirst***
- ***Freedom from discomfort***
- ***Freedom from pain, injury or disease***
- ***Freedom to express normal behavior***
- ***Freedom from fear and distress***

3S

"Suppress, Substitute, Sooth"

- Suppress
- Substitute
- Sooth

Welfare index

Mortality	5%
PMI rejects	1.5%
Hock burn	15%
Pododermatitis	-
DOA	<0.5%

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5. Animal Welfare & Stockmanship

- Health inspection, report to manager or vet
- Density – turn around, sit, stretching



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5. Animal Welfare & Stockmanship

- Humane handling



- Promptly treatment – responsible vet
- Culling

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5. Animal Welfare & Stockmanship



- Heat stress management (weather forecast)

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5. Animal Welfare & Stockmanship

- **> 20 lux** >80% of floor space
- Or follow vet recommend
- Recommend natural light



<u>PS chicken</u>	<u>Broiler Chicken</u>
Pullet ≥ 10 lux or breeder recommend	
Laying ≥ 10 lux or breeder recommend	> 20 lux
Pullet > 8 hr light (0-20 weeks/start to lay)	
Laying $< 14-16$ hrs light	Dark 6 hr - except 7 d, 3 d to catching

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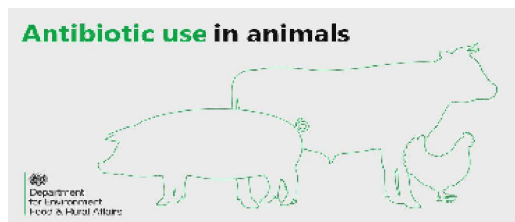
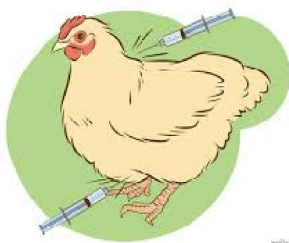
5. Animal Welfare & Stockmanship

- <0.3% mortality/day
- Training: Welfare, hygiene, bio-security, health & safety and manual handling + first aid
- Environmental enrichment



6. Animal Health & Human Food Safety

- Only use antibiotic when necessary – under vet POM
- Withdrawal period



No flourquinolones and 3rd + 4th generation of cephalosporins in Broiler

6. Animal Health & Human Food Safety

- Medicine and vaccine storage (manufacturing recommend)



- Correct disposal – empty pack, expired, needle

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7. Water & Feed



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7. Water & Feed

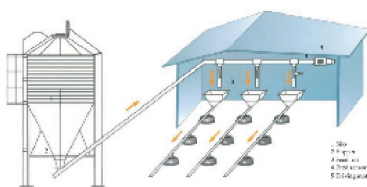
PS	Broiler
Chicken	Chicken
Potable	Potable
1:20 (nipple)	1:20 (nipple)
Available all time	Available all time



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7. Water & Feed

- Water storage 24 hrs



- No prohibit material
- Feed withdrawal < 9 hrs before catching

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7. Water & Feed

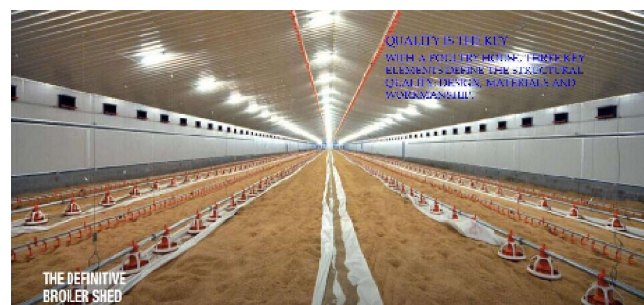
- Nutrition, quality
- Feed sample retention



AGE IN DAYS	TYPE OF FEED	FEED INTAKE DURING PERIOD
0-10 days	Chicken Starter Crumble	250 gr
11-30 days	Broiler Grower Crumble	2 kg
30 days-slaughter	Broiler Finisher Feed	2 kg

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8. Buildings, Machinery & Equipment



- Clean, good working condition
- Automatic system daily check

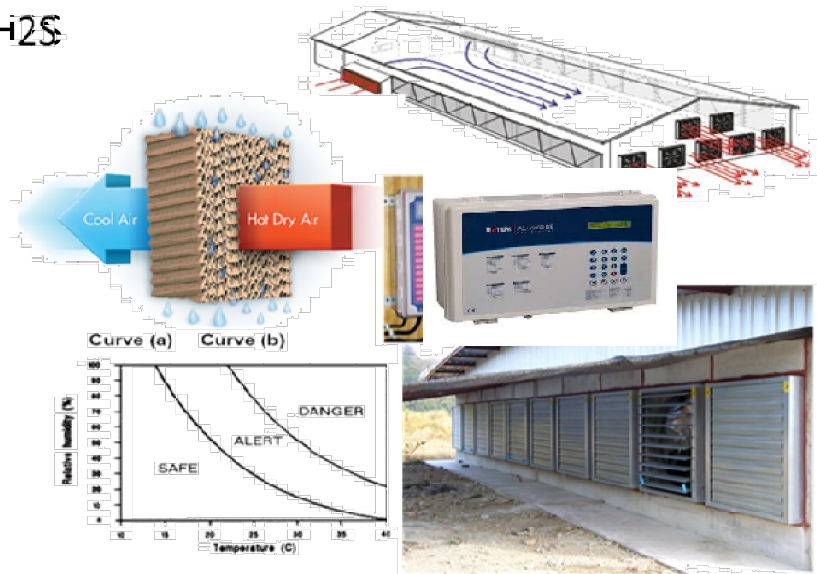
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8. Buildings, Machinery & Equipment

- GAS: NH₃, CO, CO₂, H₂S

- NH₃ < 20 ppm
- CO₂ < 3000 ppm

No share equipment



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8. Buildings, Machinery & Equipment



Malfunction during electrical main supply shortage is .. **economic disaster**



Alarm test: alert <+5C from max target temp

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8. Buildings, Machinery & Equipment



- Loading area clean

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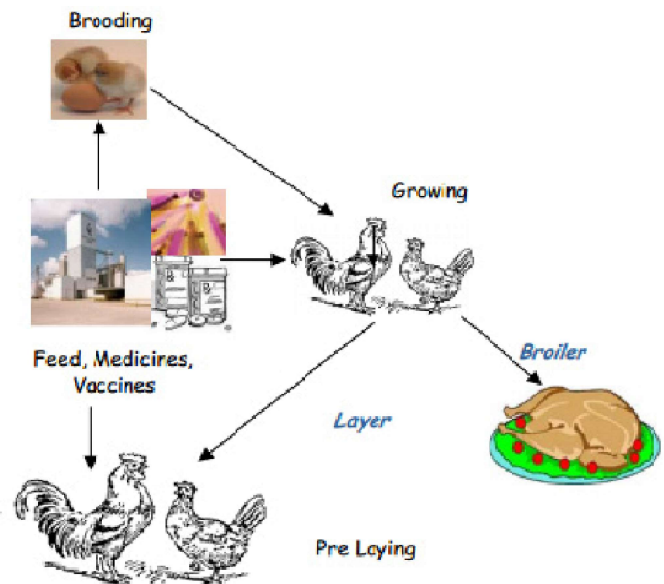
9. Identification & Traceability

- Records, invoice, delivery note, movement document



- From Genesis certified source

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10. Quality Planning & Record Requirements

- Records ++
- Water meter
- Antibiotic =mg/kg

FARM		CROP	
No. PLACED	26125		
DATE PLACED	2/11/09		
FLOCK CODE	LSL		
Hatchery Sex	Cont		
P. Age	E. Age	40	

DAY NO	LEG CULLS	OTHER CULLS	DEAD	MORTALITY		DAILY %	CUM %	LWT (g)	REMARKS
				DAILY TOTAL	CUM TOTAL				
0									
1		12	14	26	26	0.1	0.1		Linco
2	7	35	64	106	132	0.41	0.51		Linco
3	12	41	74	127	259	0.49	0.99		Linco
4	7	37	36	80	339	0.31	1.30		
5		17	10						

TER	TEMP INSIDE (C)	ALARM SETTINGS (C)		ALARM ON	ALARM TEST	EQUIP CHECK*	2nd CHECK	3rd CHECK	INITIAL
		Max	Min						
0.5	34.3/32.1	3.6	2.8	Y	11.09	Y	18.10		chl
1.1	33.4/32.7	3.6	2.8	Y	8.25	Y	12.05	17.45	chl
1.9	33.0/32.3	3.6	2.8	Y	9.05	Y	12.20	17.10	chl
2.4	32.6/32.2	3.6	2.8	Y	8.55	Y	12.10	17.20	chl
4.1	33.7/30.7	3.6	2.8	Y	8.10	Y	12.14	17.23	chl

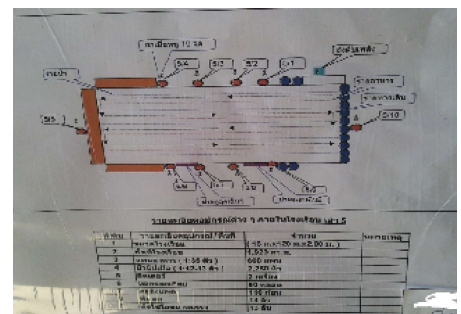
* EQUIP = FEEDERS, DRINKERS, FANS, VENTS, HEATERS

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10. Quality Planning & Record Requirements

Flock records:

- Daily alarm test
- Weekly generator test
- Water test 6 months
- Salmonella test – 3 wks before catching
- Lighting program
- Treatment
- Vet recommend, autopsy
- Placement date, quantity and breed



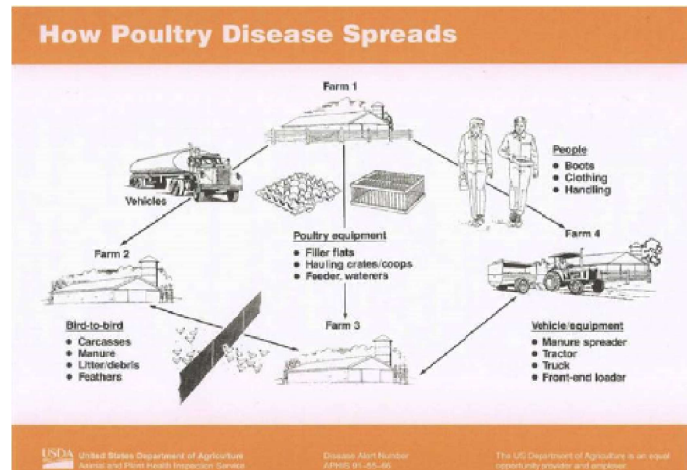
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11. Bird Health Planning, Bio-security & Salmonella Control

- Vet health plan – vaccine, sampling plan, salmonella/disease control, contingency plan, acceptable threshold



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11. Bird Health Planning, Bio-security & Salmonella Control



From Thai DLD website

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11. Bird Health Planning, Bio-security & Salmonella Control

[illegible]

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11. Bird Health Planning, Bio-security & Salmonella Control



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11. Bird Health Planning, Bio-security & Salmonella Control



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11. Bird Health Planning, Bio-security & Salmonella Control

- Traffic control

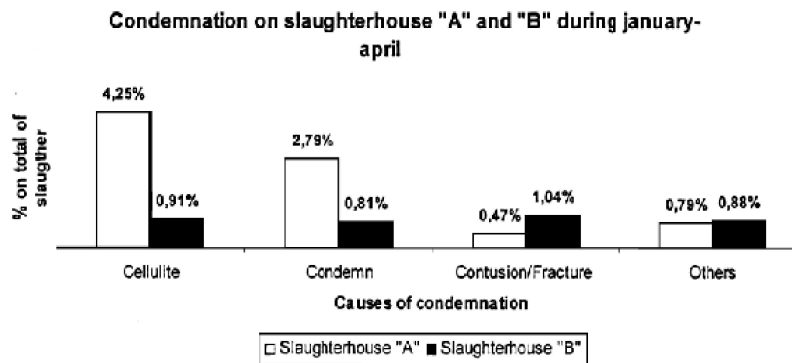


- Deep cleaning and disinfection after salmonella positive flock

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12. Others

- Density < 38 kg/m²
- House information
- Feed back from slaughterhouse – hock burn, footpad, DOA +++



Income - sustainability

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12. Others

- Management review 6 months



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GAP ASSURANCE STANDARD ADVANTAGES



- Consumer confidential
- Protect producer
- Avoid food scandal
- Retailer confidential

??? Retailer own standard

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jullabutradee@gmail.com

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SOLVING PROBLEMS BY ADVANCED SOLUTION

หลากหลายผู้เชี่ยวชาญ พร้อมบริการตอบโจทย์ ตรงจุด ทุกประเด็น



Farm Management
งานบริการด้านการ
จัดการฟาร์ม



Farm Herd Health
งานบริการสุขภาพสัตว์



Nutritionist
งานบริการด้านอาหาร
สัตว์และโรงอาหารสัตว์



Standard Farm
งานบริการด้านมาตรฐาน
การเลี้ยงสัตว์



iTAC Training Center
งานบริการด้านการจัดอบรม



Balanced amino acid
for broiler and layer
performance



Balanced amino acid to improve
broiler and layer performance

AA concentrate gold® is balanced amino acid base mix and contained with gold factor which can promote good feed conversion ratio, gut health and improve carcass quality. AA concentrate gold® was tested in field farming and scientific trial to find convenience dosage for farmers. Moreover, AA concentrate gold® also reduced any mistakes and feed cost.

There are many raw materials producers, manufacturers and dealers around the world that tend to differentiate of nutritional fact. 3 years ago, Vet products research and innovation center(VRI) surveyed feed raw materials in South East Asia and China and found that most of them have below nutritional facts than certification and it directly effects to farmers. Poultry will be malnutrition or lower performance than breed standard in proper farming and nutritional management. In the case of poor management farm with human errors, they may found animals abnormalities. Above-mentioned, VRI developed AA concentrate gold® to balanced amino acid base mix for broiler and layer.



Vet Products Research and Innovation Center Co.,Ltd.
Thailand Science Park, 145 NC2-D building, Floor 11, Room 1109-1111,
Phahonyothin Road, Khlong Nuang, Khlong Luang, Pathum Thani 12120, Thailand
Tel. +66 2937 4888 Fax. +66 2937 4901
Website : www.facebook.com/vetproducts E-mail : info@vetproducts.co.th



AA concentrate gold® functions

Improve gut health

Reduce Foot Pad
dermatitis

Preserve energy

Increase digestibility

Improve carcass
quality



•Balanced amino acid •Gold factors

- Preserve energy : induce minerals and water absorption without energy usage
- Increase digestibility : promote feed digestibility
- Improve gut health : strengthen mucosa cells
- Reduce foot pad dermatitis occurrence : excellent digestibility and absorptive capacity can decrease NSP complex, gut viscosity, resulting in lowering of manure that sticks to the footpads
- Improve carcass quality : metabolism activated provide good meat performance.



Presentation : 25 kg/bag

Indication of usage

Broiler 20 kg per ton of feed
Layer 10 kg per ton of feed

CONCENZYME NSP II

Multi-Enzymes to
improve digestion
for poultry



CONCENZYME NSP II

Multi-concentrated Enzymes
& NSP-complex Enzymes
plus Phytase



49th International Exhibition
of Inventions of Geneva



29th INTERNATIONAL INVENTION,
INNOVATION & TECHNOLOGY
EXHIBITION 2017 (IITEC'17)



Honorable mention
from Taiwan

Concenzyme NSP II® is a multi-concentrated enzymes used in swine and poultry for releasing nutrient from non-starch polysaccharides(NSP). NSP has effects on reducing digestibility and increasing viscosity in gastrointestinal tract leading to bacterial overgrowth. Moreover, Concenzyme NSP II® also has phytase for specific digestion of phytate, the primary storage of phosphorus and anti-nutritional factor in feedstuff.

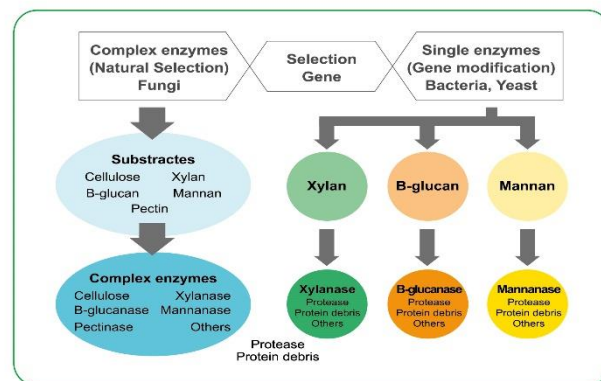
At present, the animal production business has a limitation in feedstuff supply to produce animal feed. According to this problem, poor quality feedstuffs with high fiber or alternative feed ingredients were introduced to animal feed production instead of high digestible feedstuff. Thus, exogenous enzyme supplement is an important option for livestock business especially NSPs enzyme. Enzyme supplementation is greatly important in improving animal digestion allowing them to receive more energy and nutrients. However, enzyme selection for using in individual farm or feedmill should consider carefully about matching and suitable for their own formula



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Tel. +66 2937 4888 Fax. +66 2937 4901
Website : www.facebook.com/vetproducts E-mail : info@vetproducts.co.th



Concenzyme NSP II® with 2 different point



Matching of enzyme

- **Cellulase, Xylanase, Pectinase, Mannanase and Beta-glucanase** composed in Concenzyme NSP II® digest non-starch polysaccharide (NSP) specifically to release the nutrients from digestion.
- **Phytase** digests phytates which are the primary storage of phosphorus.

Specific enzyme

- **Glucosylase** is an enzyme that splits glucose unit from the end of polysaccharide chain for glucose supply.
 - **Acidic protease** digests protein in suitable condition.
- All compositions work synergistically to improve animal digestion to release nutrition within feedstuffs.

In Vitro Digestibility Test



Indication of usage

Poultry : 0.75-1.00 kg per ton of feed

Presentation : 25 kg/bag

Oxipro®

ออกซิโปร

ผลิตภัณฑ์สำหรับทำความสะอาดและฆ่าเชื้อ

โพแทสเซียม
เพอร์ออกไซด์
โซเดียมไฮโปคลอไรต์

FMD
Bacteria
Virus
PRRS



สรรพคุณ

- ออกฤทธิ์กว้าง
- ออกฤทธิ์ได้ทั้งในน้ำและบนพื้นผิว
- ประสิทธิภาพสูง & ความเป็นพิษต่ำ



Oxipro®

ออกซิโปร

ผลิตภัณฑ์สำหรับทำความสะอาดและฆ่าเชื้อ

ส่วนประกอบ : potassium peroxymonosulphate as active oxygen

3.5 %

ประโยชน์ :

ออกซิโปร เป็นผลิตภัณฑ์ทำความสะอาดและฆ่าเชื้อแบคทีเรีย สำหรับเครื่องมือ ฟาร์มเลี้ยงสัตว์ เครื่องจักรในโรงฆ่าสัตว์ โรงงานแปรรูปผลิตภัณฑ์สัตว์ และโรงงานผลิตอาหารสัตว์

วิธีการใช้ :

ใช้ทำความสะอาดและฆ่าเชื้อโดยผสม ออกซิโปร กับน้ำในอัตราส่วน 1:100 (ใช้ผลิตภัณฑ์ 1 กิโลกรัมต่อน้ำ 100 ลิตร) แล้วนำไปฉีดพ่น ถูราหรือจุ่มเช็ดบริเวณที่ต้องการฆ่าเชื้อ ทิ้งไว้อย่างน้อย 10 นาที แล้วล้างออกด้วยน้ำสะอาด

คำเตือน/ข้อควรระวัง

1. ห้ามรับประทาน
2. ระมัดระวังอย่าเข้าตา ถูกผิวหนัง หรือสูดดม
3. ต้องใช้ด้วยความระมัดระวัง ขณะฉีดพ่นควรอยู่เหนือลม
4. ต้องสวมถุงมือยาง รองเท้ายาง หน้ากากเพื่อป้องกันไม่ให้ผลิตภัณฑ์สัมผัสร่างกายในระยะปฏิบัติงาน
5. ห้ามสูดดม รับประทานอาหาร หรือสูบบุหรี่ขณะใช้ผลิตภัณฑ์
6. ภาชนะบรรจุเมื่อใช้หมดแล้ว ให้ล้างน้ำ 3 ครั้ง ก่อนทำลายแล้ว มีดินหรือร่วนก็ให้ปลอดภัย
7. ห้ามเทสารละลายที่เหลือหรือน้ำล้างภาชนะบรรจุอุปกรณ์ เครื่องมือสารละลายในแม่น้ำ ลำคลองและท่อระบายน้ำสาธารณะ
8. ถอดแว่นตา สะดวก เปลี่ยนเสื้อผ้า ซักชุดที่สวมทำงานให้สะอาด หลีกเลี่ยงปฏิบัติงานเสร็จแล้ว
9. ห้ามคน สัตว์ เข้าไปในบริเวณที่ใช้ผลิตภัณฑ์อย่างน้อย 24 ชั่วโมง (กรณีใช้ในโรงเรือนสัตว์เลี้ยง)

อาการเกิดพิษ

1. หากสูดดม อาจก่อให้เกิดการระคายเคืองในระบบทางเดินหายใจ ถ้าสูดดมเป็นเวลานานอาจขึ้นหรือแสบจมูก
2. หากสัมผัสผิวหนัง อาจก่อให้เกิดการระคายเคืองอย่างรุนแรง
3. หากเข้าตา อาจก่อให้เกิดการระคายเคืองหรือไหม้ เมื่อสัมผัสเป็นเวลานาน อาจทำให้ตาบอด
4. หากกลืนกิน อาจก่อให้เกิดแผลไหม้ในช่องปาก ลำคอและอวัยวะส่วนอื่นของระบบ กลืนเนื้อเกร็งและอาเจียน

วิธีแก้พิษเบื้องต้น

1. ถ้าสูดดมให้นำผู้ป่วยไปยืนบริเวณที่มีอากาศถ่ายเทสะดวก
2. ถ้าสัมผัสผิวหนังให้ล้างออกด้วยน้ำจำนวนมาก ถ้าเป็นเสื้อผ้า ให้รีบถอดออกและรีบชำระร่างกายด้วยสบู่และน้ำให้สะอาด
3. ถ้าเข้าตาให้ล้างด้วยน้ำสะอาดจำนวนมาก จนอาการระคายเคืองทุเลา ถ้าไม่ทุเลาให้ไปพบแพทย์
4. ถ้ากลืนกินให้ รับประทานยาล้างท้องทันที พร้อมดื่มน้ำมากๆ ห้ามอาเจียน


การเก็บรักษา

ต้องเก็บ ออกซิโปร ให้มิดชิดในภาชนะเดิมที่ปิดผนึกแล้วและวางให้อยู่ในที่ที่แห้งและเย็น ห่างไกล จากเด็ก อาหาร น้ำดื่ม สัตว์เลี้ยง เปลือกไข่ ภาชนะ

คำแนะนำสำหรับแพทย์ : รักษาตามอาการ

NET CONTENTS : 4 KG






Innovative Product from **VRI**
Vet Products Group

SHELLGUARD PLUS

High Bioavailable Chelated Trace Minerals for Laying Hen




• อัตราครวมในรูปโปรตีนแคลเซียม และ ซิลิเนียมสูงสุดที่เคลือบ ประสิทธิภาพสูง สำหรับไก่ไข่

• ช่วยเพิ่มความแข็งแรงของเปลือกไข่

• เพิ่มความหนาและลดการสูญเสีย จากปัญหาเปลือกไข่แตก

อัตราการใช้ 1-1.5 kg./ton feed



Certified by ISO 9001 : 2008, GMP, HACCP

ASP logo

ผู้ผลิต : บริษัท เอนวิรอนเม้นท์ ฟาร์มาซูติคอล (ประเทศไทย) จำกัด
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โปรท็อกซ์...ครอบคลุม คุ่มค่า เต็มประสิทธิภาพ

การสำรวจสารพิษจากเชื้อราในภูมิภาคเอเชียตะวันออกเฉียงใต้ (South-East Asia)



กราฟ 1 เพื่อใช้ในการตรวจพบการปนเปื้อนของสารพิษจากเชื้อรา



กราฟ 2 เพื่อใช้ในการตรวจพบการปนเปื้อนของสารพิษจากเชื้อราในวัตถุดิบต่างๆ

สารพิษจากเชื้อราพบได้ในวัตถุดิบทั่วไปแล้วคุณเสี่ยงหรือไม่..?

ProTOX ช่วยคุณได้... ProTOX ออกฤทธิ์...

- ครอบคลุม
- กระตุ้นภูมิคุ้มกัน
- ไม่จับกับสารอาหาร

ProTOX
ใช้ผสมอาหาร 1.0-1.5 กก./ตันอาหาร

