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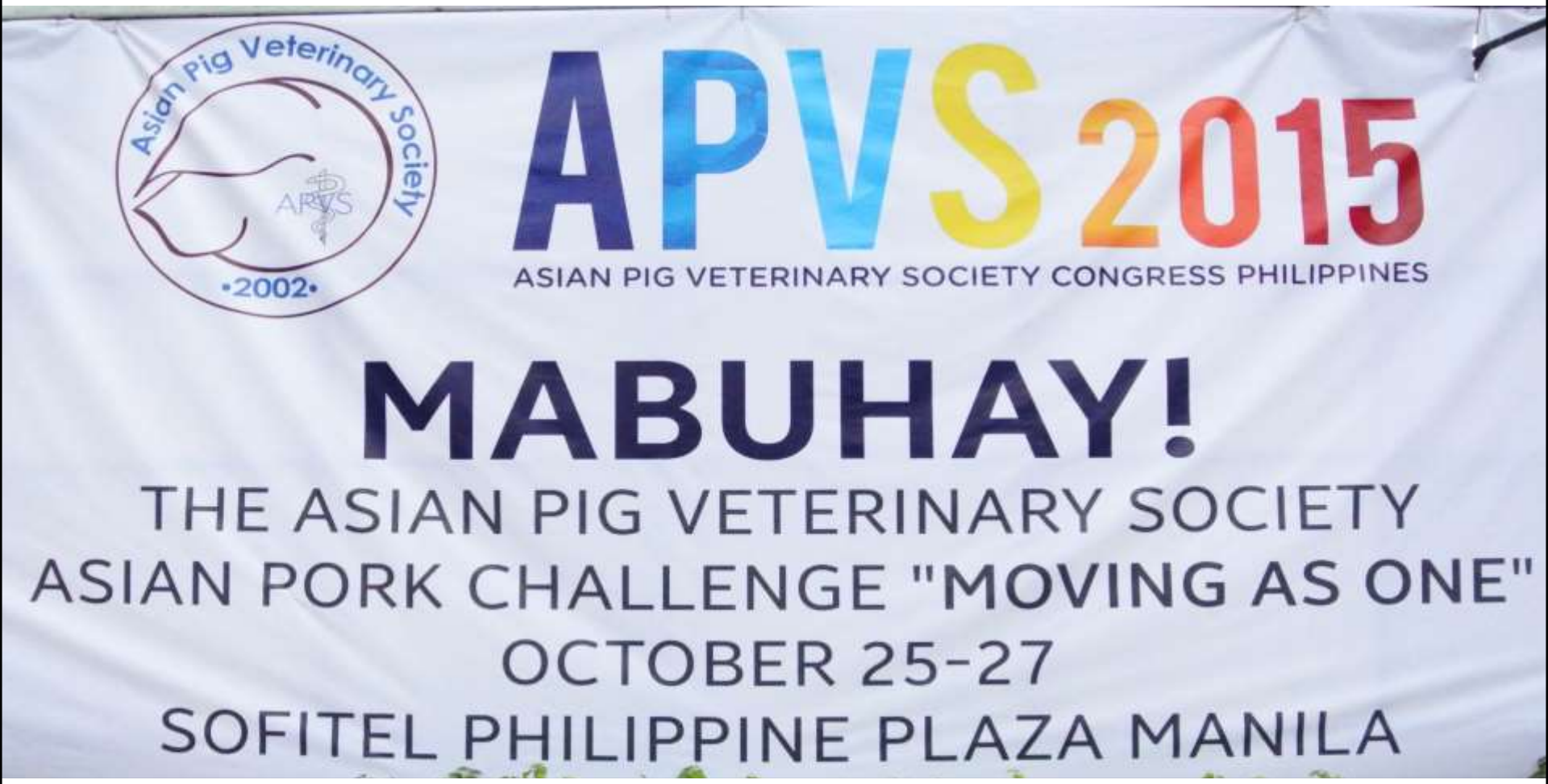

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Department of Clinical Sciences and Public Health, Faculty of Veterinary Science

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Conference Place

APVS 2015
PROGRAM

DATE	TIME OF THE DAY	ACTIVITIES
Saturday, October 24, 2015		Arrival of Delegates
Sunday, October 25, 2015		Day 1
	10:00am - 12:30pm	Ingress of Booth
	1:30pm	Registration - Ribbon Cutting Harbor (Tent)
	Dinner	Welcome Ceremonies Opening Remarks - Dr. Zoilo Lapus, APVS 2015 President Inspirational Welcome Remarks - Guest Speaker
Monday, October 26, 2015		Day 2
		Country Reports
	8:00am - 8:15am	China
	8:15am - 8:30am	Japan
	8:30am - 8:45am	Korea
	8:45am - 9:00am	Philippines
	9:00am - 9:15am	Thailand
	9:15am - 9:30am	Vietnam
	9:30am - 9:45am	Taiwan
	9:45am - 10:00am	Coffee Break (Plenary Hall)
	10:00am - 10:45am	China
	10:45am - 11:30am	Japan
	11:30am - 12:15pm	Responsible Use of Antibiotic in Veterinary Medicine - *Dr. Shabbir A. Simjee Ph.D.*
	12:30pm - 1:30pm	Lunch at Plenary Hall
	1:30pm - 3:15pm	zoetis Satellite Session (Davao Room)
	3:15pm - 3:30pm	Coffee Break (Plenary Hall and Harbor Tent)
	3:30pm - 5:00pm	

Break Out Session 1
(Leyte - Samar Rooms)
Transboundary Disease/ Antibiotics and Human Health
Amiel Santiago Moderator

Break Out Session 2
(Romblon + Mindoro Rooms)
Diseases Endemic to Asia (Aujeszky and PRRS)
Max Montenegro Moderator

Break Out Session 3
(Davao Room)
Diseases Endemic to Asia (PRRS & PCV2)
Satoshi Otake Moderator

Break Out Session 4
(Boracay Room)
Diseases Endemic to Asia (PRRS & Coronaviruses)
Won Hyung Lee Moderator

3:30pm - 4:45pm

Assessing Biosecurity Practices in 290 Korean Pig Farms: Preliminary Results
KyuWook Kim1, SungHyun Choi1, Sonil Pak1 Moderator

The Efficacy of Ingelvac Aujeszky's MLV Administered by Intranasal Route in a 300 Sow Level Malaysian Farm
Evonne Lim Moderator

The Analysis Results of PRRS Vaccination for Growing Pigs
SeungYoon Lee Moderator

Pathogenicity of Vietnamese Strain Highly Pathogenic Porcine Reproductive and Respiratory Syndrome Virus to Sows in Late and Mid-Gestation
Mitsutaka Ikezawa1, Tomoyuki Shibahara1, Kenji Kawashima1, Argamjav Bayanzu 2, Nachiko Hattori1, Kazufumi Kuga1, Michihiro Takagi1 Moderator

APVS2015
PROGRAM

DATE	TIME OF THE DAY	ACTIVITIES

3:45pm - 4:00pm

Break Out Session 1
(Leyte - Samar Rooms)

The Effect of Antimicrobial Substances on the Outer Membrane of Gram-Negative Bacteria and their Efficacy in Weaning Pigs

Nataliya Roth(1), Attila Kovacs(1), Si Yeong Choi(2) Moderator

Break Out Session 2
(Romblon + Mindoro Rooms)

Efficacy of Akipor 6.3 Against a Novel Pseudorabies Virus Variant Affecting Bartha-K61-Vaccinated Herds in China

Max Montenegro Moderator

Break Out Session 3
(Davao Room)

Genetic Characterization of ORF5 and ORF7 Gene of Porcine Reproductive & Respiratory Syndrome Virus Found in Malaysia

Seetha Jaganathan Moderator

Break Out Session 4
(Boracay Room)

Oral Delivery of Enteric-Coated TGE Vaccine Protects Piglets from TGE by Passive Transfer of Maternal Antibodies

Natsumi Takeyama1, Tetsuo Sato1, Tomoko Hosokawa1, Ichiro Sato1, Mamoru Sugiyama2, Ko-ichi Kusanagi2 Moderator

4:00pm - 4:15pm

PCV2 Expression in the Porcine Ovary P.

Tummaruk, P. Pearodwong Moderator

Application of SEBS (Site Evaluation of Biosecurity System) for PRRS Arc in Korea

SeungYoon Lee Moderator

Comparison of Antibody Titer of Porcine Reproductive and Respiratory Syndrome (PRRS) via Oral Fluid and Serology Detection Method in Malaysia

Cheah Zi Herk Moderator

First Results of Ped Control in the Philippines by Means of a Modified Live Ped Vaccine

Maximino Montenegro1, Carlo Maala2, Marika Genzow2 Moderator

4:15pm - 4:30pm

Swine Enteric Coronavirus Disease (SECD) Elimination and Prevention in a Genetic Multiplication System in North America

Angel Manabat Moderator

PRRS Arc Program in Yaro Danji, Korea: A Case Study

SeungYoon Lee Moderator

Genetic Characterization of Type I Porcine Reproductive and Respiratory Syndrome Virus in South Korea

Dong U. Lee 1, Jung Y. Shin 1, Jung J. Byun 1, Sang H. Je 1, Sung J. Yoo1, Young S. Lyoo1 Moderator

Survivability of Porcine Epidemic Diarrhea Virus in Slurry

SD Jeon 1, YJ Lee 2 Moderator

4:30pm - 4:45pm

Bacteriospermia of Boar Semen, Antibioterapia and Efficiency of Dicol®

Y Dahmani1, R Ausejo1, N Mendoza1 Moderator

Effect of Ingelvac PRRS MLV Pig Vaccination in a Wean-To-Finish Farm in Taiwan

Chien Ho Yu Moderator

Comparison of Two PCV2 Vaccines in a Commercial Farm in the Philippines

Maria Carabelle Moderator

Effects of Porcine Epidemic Diarrhoea Outbreak on Swine Productivity in Japan

Itsuro Yamane, Hisanori Yamazaki Moderator

4:45pm - 5:00pm

Case Study: Accidentally Use of Antibiotics in Enterisol Ileitis Vaccinated Piglets

Supachai Jamawat1, Wattana Sampoapanit2, Nathaya Duangwhae1, Sopon Kongtes1 Moderator

Pseudorabies in Nursery Pigs

Chien Ho Yu Moderator

Field Experience of Whole Herd Approach for PRRS Control in a Japanese Pig Farm Locating in Pig Dense Area

Maria Carabelle Moderator

Evaluation of the Ped Vaccine, RNA Harrisvaccine

Dante Palabrica Moderator

APVS 2015
PROGRAM

DATE	TIME OF THE DAY	ACTIVITIES
Tuesday, October 27, 2015		Day 3
	8:00am - 9:00am	PRDC math does not add up: 1 + 1 = 4 - Dr. Alex Ramirez
	9:00am - 10:00am	Transboundary Disease Transmission and Regional Cooperation - Dr. Satoshi Otake
	10:00am - 10:15am	Coffee Break (Plenary Hall)
	10:15am - 11:15am	Major Endemic Swine Diseases in SouthEast Asia - *Dr. Rungroje Thanawongnuwech, DVM, PhD, TBVP*
	11:15am - 12:15pm	African Swine Fever - *Dr. Gregorz Wozniakowski, NVRI Pulawy Poland*
	12:30pm - 1:30pm	Lunch at Plenary Hall
	1:30pm - 3:15pm	Satellite Session Ceva Boracay Room
	3:15pm - 3:30pm	Coffee Break (Plenary Hall and Harbor Tent)
	3:30pm - 5:00pm	

Break Out Session 1
(Leyte - Samar Rooms)
Diseases Endemic in Asia
(Enteric Diseases)
Steven McOrist Moderator

Break Out Session 2
(Romblon + Mindoro Rooms)
Diseases Endemic to Asia
(PED & Others)
Roongroje Thanawongnuwech Moderator

Break Out Session 3
(Davao Room)
PRDC
Tom Acorda Moderator

Break Out Session 4
(Boracay Room)
PRDC & Small Producer Cooperation
Metta Makhanon Moderator

3:30pm- 3:45pm

Production of Recombinant Chimeric Swine PKR-APAF1 Proteins in E.Coli From Porcine Alveolar Macrophages Infected with US-PRRSV
*Vo Phong Vu Anh Tuan1 and Athipoo Nuntaprasert1** Moderator

Genetic Characterization of Porcine Epidemic Diarrhea Virus in Korea from 1998 to 2013
SeongHee Kim1, JungMin Lee1, JongSun Jung2, BangHun Hyun1, InJoong Kim1, HyunIl Kim3, CholKyu Park4, JaeKu Oem1, YeonHee Kim1, MyoungHeon Lee1, ByungJae So1, KyoungKi Lee Moderator

Comparison of the Efficacy of PCV-2 Inactivated Vaccine Between 1 Shot and 2 Shot Administration
Cheah Zi Herk Moderator

Field Observation on the Efficacy and Economic Improvement of the FLEXcombo
Aiguo Wang1, Jianwei Qi2, Jun Zhao3, Liangke Su1, Liande Zhu1 in an integrated swine farm in China Moderator

3:45pm - 4:00pm

Isolation of Fimbriated F18 and Shiga-Toxin Producing Escherichia Coli Associated with Oedema Disease in Post-Weaned Pigs in Malaysia
Kalaiwaney Muniandy Moderator

PEDV Contamination on Pig Moving Truck
DongGyu Lee1, JangWook Jung2, HoChul Kong3, PilSoo Jeong4, SeungYoon Lee 5 Moderator

A MHYO-PCV2-PRRS Vaccine Mixture Achieves Comparable Results as Separate Injections of a MHYO, PCV2 and PRRS Vaccine Under Thai Swine Farm Conditions.
Winai Thongmak1, Theerayuth Yongsripanyarit2, Nathaya Duangwhae3, Jitjaroen Channarong3 Moderator

Vaccination with Ingelvac CircoFLEX Reduces Pro-Inflammatory Cytokine Response after PCV2B Challenge
R Patterson1, B Grosse Liesner2, D Werling1 Moderator

APVS 2015
PROGRAM

DATE	TIME OF THE DAY	ACTIVITIES
	4:00pm - 4:15pm	
		Break Out Session 1 (Leyte - Samar Rooms) In Vitro Study of Organic Releasing Chlorine Disinfectant (Virusnip) Contact Time for Porcine Epidemic Diarrhoea Virus (PEDV) *Settasart Sonna* Moderator
		Break Out Session 2 (Romblon + Mindoro Rooms) RT-LAMP-BASED Assay: Quick and Economical Ped Surveillance and Diagnostic Test *Domingo, CYJ, Alili RP, Valino LS, Tangonan AC* Moderator
		Break Out Session 3 (Davao Room) Field Application of 3 FLEXTM in a PRDC Case Farm *Yusik Oh2, Choi Wook1* Moderator
		Break Out Session 4 (Boracay Room) The Success of Streptococcus Suis Type 2 Vaccine to Prevent Production Losses in Intensive Pig Farming in Thailand: Case Report *Metta Makhanon* Moderator
	3:30pm- 3:45pm	
		Reduced Days to Market by Use of Enterisol Ileitis under Application of Medicated Feed *Yoshihiro Muzikami* Moderator
		High Path Porcine Epidemic Diarrhoea PCV2a in the Ukraine in 2014 *John Carr* Moderator
		Imuvant - A Novel Adjuvant; Efficacy and Safety Properties in Hyogen Vaccine *Miklos Tenk, Anna Kollar, Ferenc Misak, Mariann Ivok, Nimrod Palmai, Zoltan Penzes* Moderator
		Evaluation of PRRSFREETM Subunit Vaccine of Nursery Piglets and Pregnant Sows under Field Conditions *Szu-Wen Wang* Moderator
	4:30pm - 4:45pm	
		The Field Efficacy of PRO-VAC PED-Fc Vaccine in Pregnant Sows on Sows and Piglets Performance in Thai Pig Farms *Athipoo Nunparasert1*, HoKyoung, Jung2* Moderator
		Genetic Diversity of Porcine Epidemic Diarrhea in the Philippines *Dante Palabrica* Moderator
		A Field Trial of Porcilis PCV2 M Hyo in Hungary *Foldi, J1, Nell, T2, Jolie, R3, Fachinger, V2, Witvliet, M2, Biksi, I4* Moderator
		Operationalizing Ecohealth Approach: Balancing Environment and Animal Health Decisions in Smallholder Swine Farms in the Philippines *Tamsin Barnes* Moderator
	4:45pm - 5:00pm	
		Effects of Sows Reproductive Performance During 1 Year Before- and After-Porcine Epidemic Diarrhea Virus Outbreak *Jung-Da Lin1, Cheng-Kui Huang1, Wen-Bin Chung2,3, Ming-Tang Chiou2,3, Chao-Nan Lin 2,3* Moderator
		BioChek PCV2 qPCR *Alex Eggen* Moderator
		PRV Vaccine AUSKIPRA GN (A3 solvent; Bartha k61 strain) Provide Quick and Strong Protection Against Chinese PRV Variant *Zeng R 1, Wang J 2, Torrents D3, Martinez C 3, Pedrazuela R3, Gale I3* Moderator
		Ecohealth in the Philippines Phase 1: Survey of Smallholder Pig Farmers in San Simon, Pampanga *Tamsin Barnes* Moderator
	5:00pm - 7:00pm	Satellite Plenary Sessions Elanco (Visayas Room) Hipra (Mindanao Room)
	7:00pm - onwards	Gala Dinner and Closing Ceremonies


HIPRA
zoetis
zoetis


FLEX


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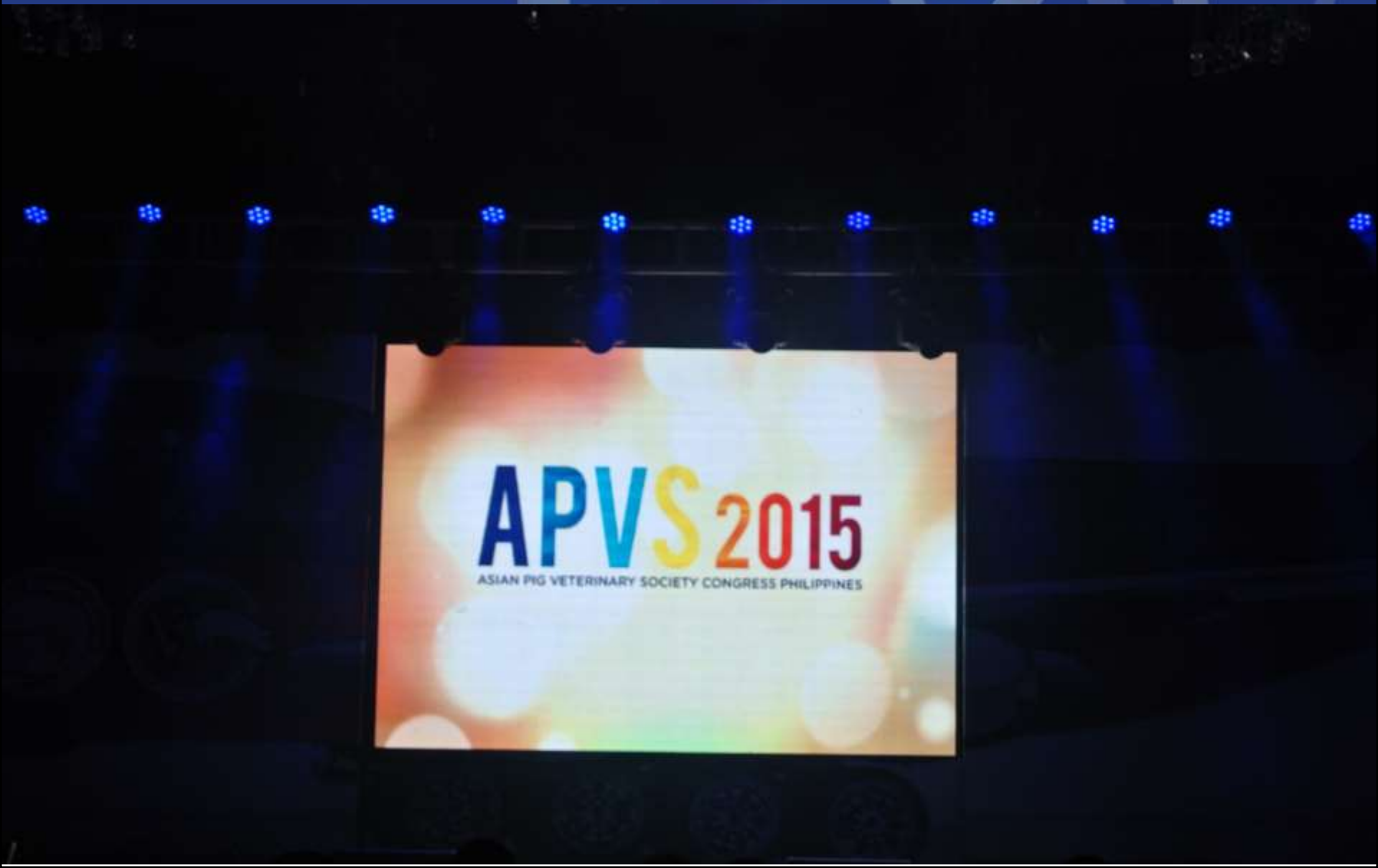
FEVER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ASIAN PIG VETERINARY SOCIETY CONGRESS PHILIPPINES

Presentation

- Oral Presentation 38
- Poster Presentation 159

Poster Presentation

PRDC	Diseases Endemic to Asia	Antibiotics and Human Health
• 57	• 43	• 27

Environmental Health	**Small Producer Cooperation**	Transboundary Disease Transmission and Regional Cooperation
• 13	• 15	• 4

COUNTRY REPORTS

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Country Report: China

Number of sow decrease

- Jan 2013: 50.68
- Jan 2014: 49.08
- Jan 2015: 41.86
- June 2015: 38.84

Country Report: China

Price of live pigs (RMB/kg)

Jan 2013	Jan 2014	Jan 2015	June 2015
16.95	13.92	13.46	14.81

Country Report: China

Pork price (RMB/kg)

Jan 2013	Jan 2014	Jan 2015	June 2015
26.38	23.40	22.14	23.45

Country Report: China

- Government policy
  - Long and mid-term national plan to prevent and control animal disease (20120-2020)
    - CSF & AD
  - Reward to strong county of pig production
  - Subsidy to excellent breeding
  - Financial support to intensive pig farm development
  - Subsidy to quarantine of pig disease in farm level

Country Report: China

- Diseases
  - Bacteria: *E. coli*, *Heamophilus parasuis*, *Strep. suis*, *Actinobacillus pleuropneumoniae*
  - Virus: PEDV, Rotavirus A, TGEV, AD, PCV-2, PRRS, FMD

Country Report: Japan

- Number of sow 900,000
- Annual pig production 16,772,000 heads
- Market age 27.8 weeks
- Cost (live weight) 276 - 284 JPY/kg (~81 - 85 THB)

Country Report: Japan

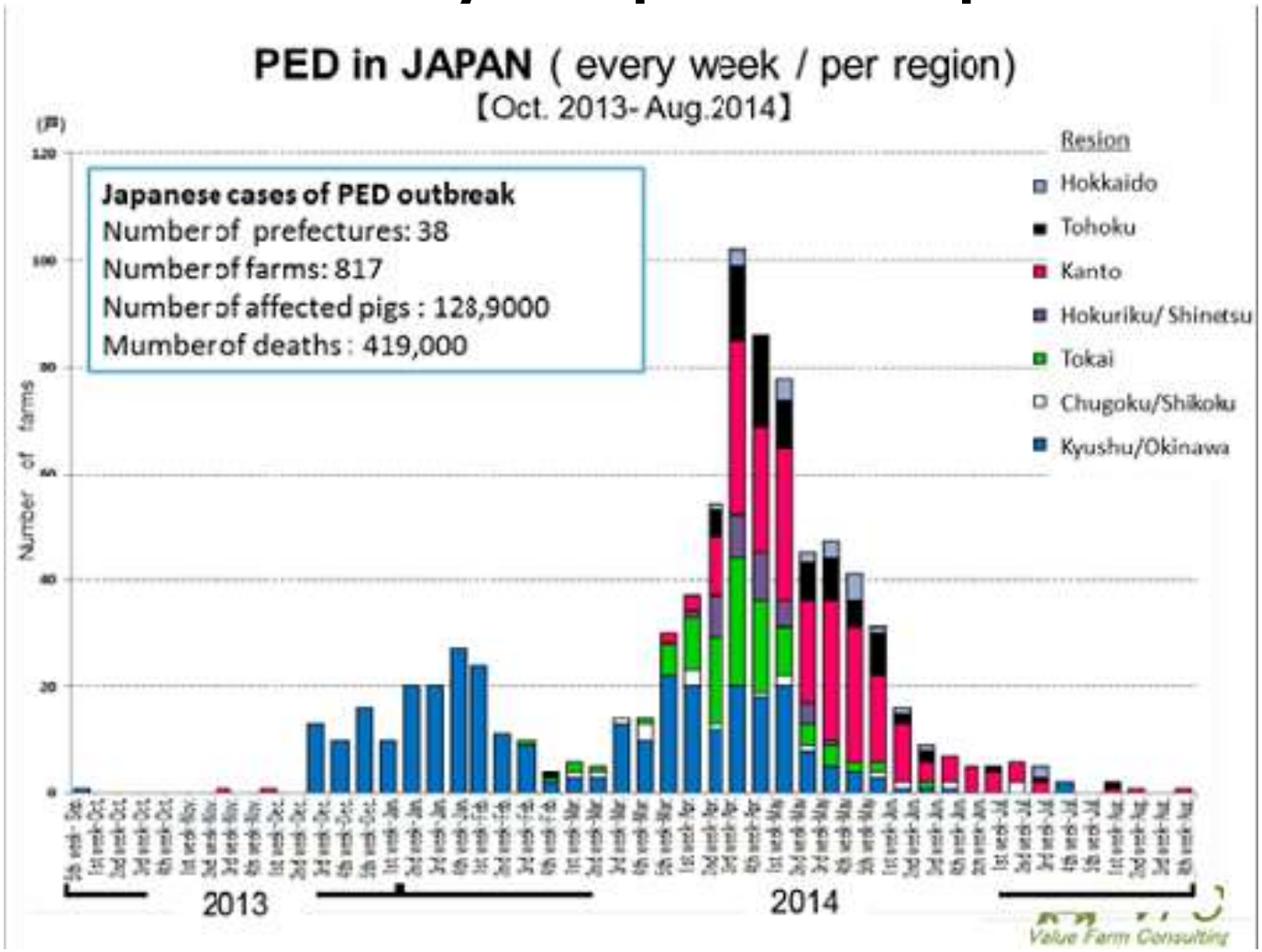
Production information (2014) 145 farms

	Top 10%	Top 25%	Median
#Pig Weaned/S/Y	26.4	25.1	23.4
#Sold/S/Y	25.3	23.4	21.7
Ave Carcass Wt (kg)	78.0	76.9	75.7
Ave Carcass Price (JPY/kg)	537.4	515.1	500.8
W to M Mortality (%)	2.92	3.87	5.87
B to M ADG (g)	691	661	623

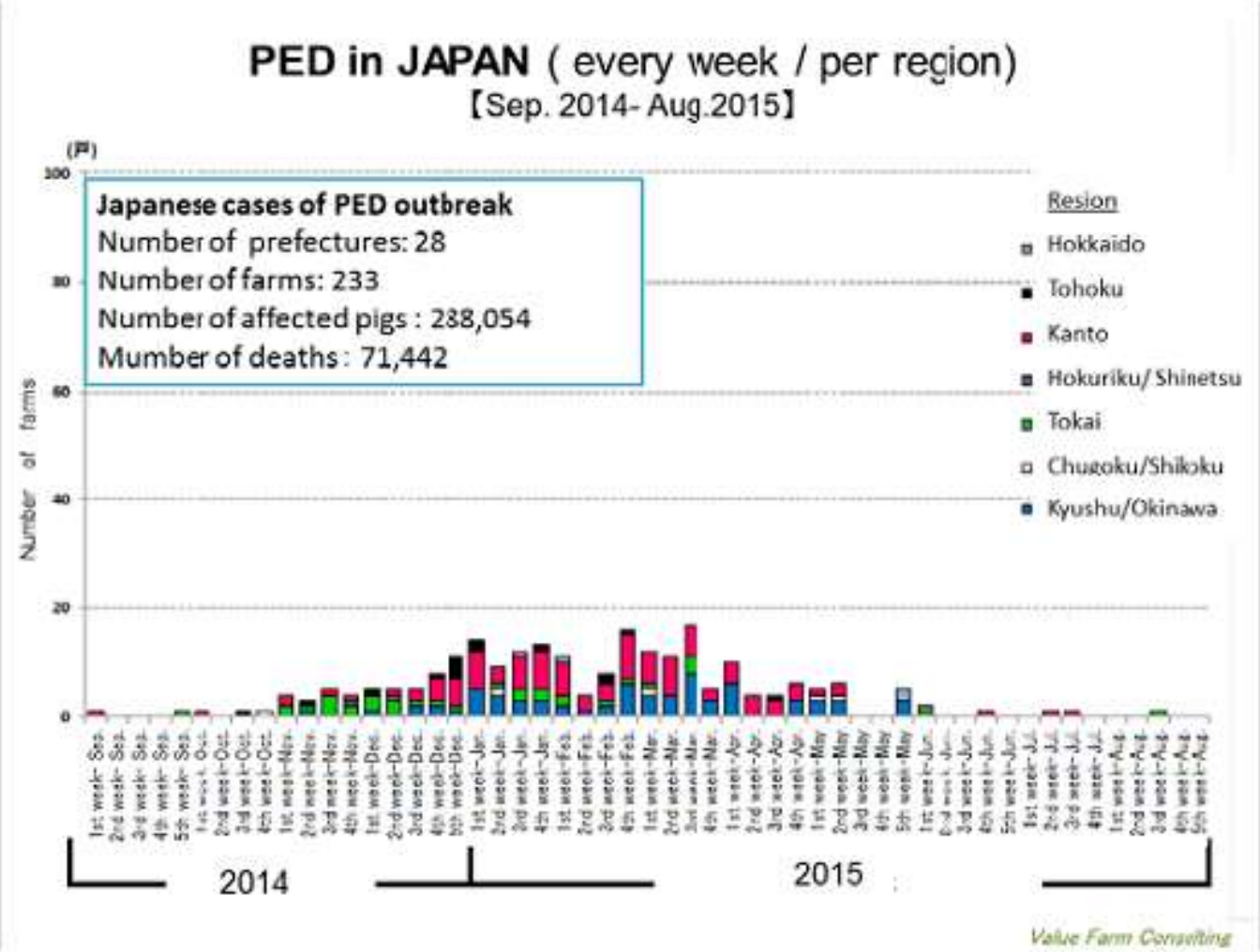
Country Report: Japan

- Disease status
  - FMD free (last outbreak 2010)
  - HC (OIE approved 2015)
  - AD: 37 prefectures are free, 10 prefectures are still positive
  - PED occurred in 2013

Country Report: Japan



Country Report: Japan



Country Report: Japan

- Clean farm: Good sanitation & environment
- Excellent biosecurity
- Segregated production
- Age segregation
- Avoid commingling
- Absolute all-in all-out (at least by building)

Country Report: Korea

Annual slaughtered pigs

2010	2011	2013	2014
• 14.6	• 9.9	• 16.1	• 15.6

Country Report: Korea

Items	2007	2008	2009	2010	2011	2012	2013	2014
Number of farms	9,832	7,700	8,000	7,900	6,300	6,000	5,600	5,177
Pig inventory (k head)	9,606	9,087	9,585	9,881	8,171	9,916	9,912	10,090
Number of sows(k head)	1,004	913	966	976	903	962	895	937
Number of pigs/farm	977	1,183	1,204	1,230	1,287	1,642	1,770	1,949
Number of slaughter pigs	13,597	13,806	13,935	14,619	9,851	9,997	16,130	15,688
Pork imports (k ton)	247.4	214.2	209.8	169.2	345.5	236.2	185.0	273.8
Consumption/capita/y(kg)	19.2	19.1	19.1	19.3	18.8	20.3	20.9	22.2
Feed production (k ton)	5,409	5,307	5,327	5,535	3,630	5,639	6,136	5,962

Country Report: Korea

- Disease status
  - FMD
    - No report after 28 April 2015
    - Establish FMD Vaccine Research Center
  - CSF
    - Eradication program
    - Outbreak in 2013

Country Report: Korea

- Disease status
  - AD
    - Eradication program by using DIVA vaccine and culling strategy
    - No outbreak since 2005

Country Report: Korea

Vaccination Status

Disease	2012	2013
CSF	93.7	91.1
PRRS	78.8	55.8
PCV2	99.7	97.7
Mh	91.5	81.4
B. bronchiseptica	92.7	85.3
P. multocida	23.4	16.3
App	45.8	25.6
H. parasuis	21.5	8.6

Country Report: Korea

	No. Samples	PRRS		PCVAD		CSF	
		Ab	Ag	Ab	Ag	Ab	Ag
2012	32,200	65.5	1.1	75.9	0.8	89.0	0
2013 (1st)	13,982	65.6	1.4	81.2	0.8	87.2	0
2013 (2nd)	13,861	63.5	1.1	83.4	1.5	82.4	0
2014 (1st)	13,396	70.2	0.6	87.9	2.8	85.9	0
2014 (2nd)	13,734	73.4	2.2	86.0	4.5	87.6	0

Country Report: Korea

	No. Samples	Pm	Mh	Hps	App2	App5
		Ab	Ab	Ab	Ab	Ab
2012	32,200	79.1	46.9	60.5	61.3	67.4
2013 (1st)	13,982	84.3	55.7	66.0	60.9	69.9
2013 (2nd)	13,861	88.8	54.3	69.9	65.8	74.2
2014 (1st)	13,396	89.4	49.3	74.1	80.1	84.1
2014 (2nd)	13,734	87.9	49.7	65.5	79.1	83.7

Country Report: Philippines

- Pig Sold/Sow/Year 18 – 19
  - Molecular biotechnology project on genomics to improve PSSY to 20 – 21
- Litter size born alive 10.07
- Pre-weaning mortality 8.5%
- Weaning litter size 9.17

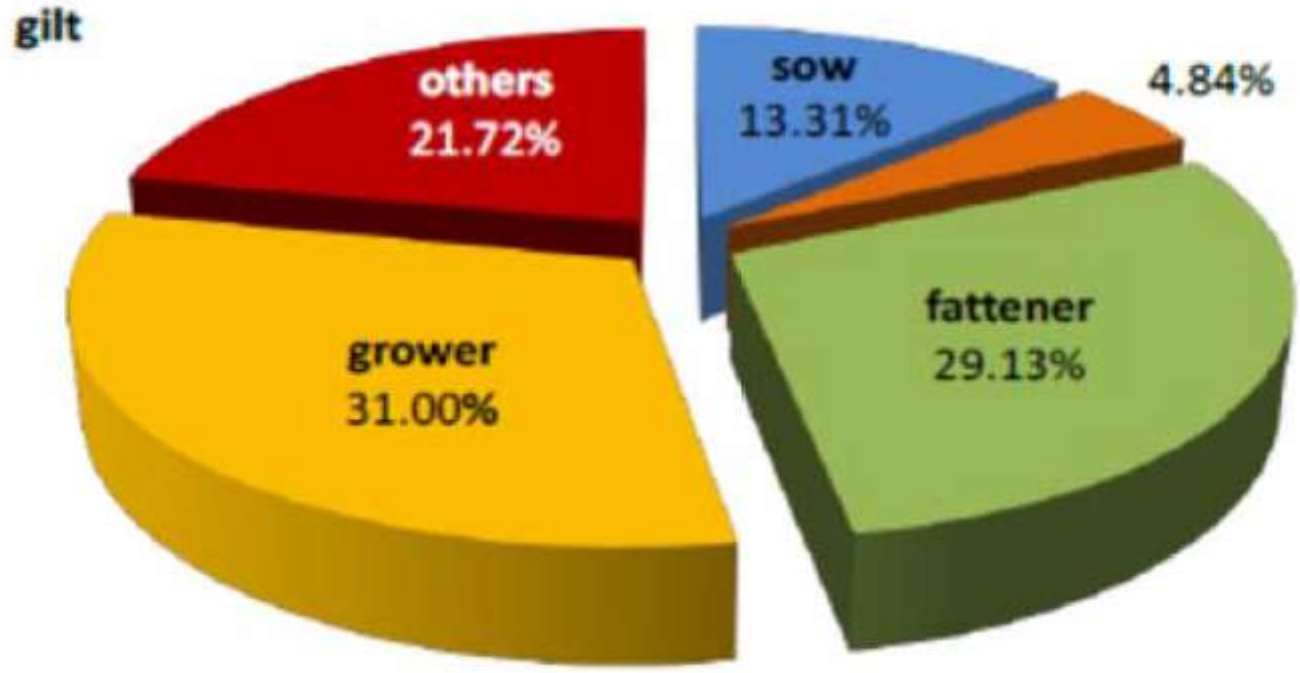
Country Report: Philippines

- Total swine inventory 12 million heads
  - Backyard 65%
  - Sows 1.6 million
- Weanling price PHP 2,500±150 (10 kg ± succeeding weight)
- Gilt (5 – 6 month-old) PHP 18,000 – 21,000
- Feed cost PHP 18 – 19 /kg

Country Report: Philippines

Common Swine Diseases	Emerging Diseases
CSF	PRRS
PPV	SI
Pasteurellosis	PCV2
APP	PED
Hemophilus parasuis	TGE

Country Report: Philippines



Country Report: Vietnam

- 70% of pig production and 60% of pork by small-scale householders
- Large-scale commercial farms supply 15%
- 2011: FMD and PRRS outbreak → Production drop
- Diseases
  - CSF, FMD, PRRS, PED

Country Report: Taiwan

- 8,137 pig farms – 592,000 sows
- Pork imports mainly from US and Canada
- Major challenges
  - International free trade
  - Farm labor
  - Young veterinarians

Country Report: Taiwan

- Diseases
  - CSF, FMD → plan to eradicate by compulsory vaccination
  - PED occurred in 2014
  - PRRS, PCV2, SI
  - Mh, *E. coli*, *Salmonella*, *Strep. Suis*

Country Report: Taiwan

INVITED SPEAKERS

Enhancing Herd Productivity by Veterinary Supportive Measures

By John Carr

- Variation control
- Batch breeding target
- Boar selection
- Cull sow management
- Single Service
- Batch weaning target
- Gilt pool management
- Finishing target

Responsible Use of Antimicrobials in Veterinary Medicine

By Shabbir Simjee

Important political issue

Therapeutic or AGP

US FDA divided into 3 classes

- Human use only
- Veterinary use only → allow to use as AGP
- Shared class → not for AGP

Antibiotics Categories

Veterinary Use Only

Shared Class

Treatment

Control

Prevent

Growth

Responsible Use of Antimicrobials in Veterinary Medicine

By Shabbir Simjee

- Antibiotic resistance monitoring
- Antibiotic usage monitoring
- Antibiotic availability by prescription only
- National formularies and prescriber guideline
- Consideration of the distribution channel

PRDC Math does not Add Up: 1+1=4

By Alejandro Ramires

- 11.8% of2,872 respiratory cases involved by a sing pathogen (Choi et al., 2003)

PRDC Math does not Add Up: 1+1=4

By Alejandro Ramires

	Primary	Secondary	Macrophage	Mucociliary
VIRAL				
Aujeszky's disease virus	X		X	X
Classical swine fever		X	X	
Influenza A virus	X		X	X
Porcine circovirus Type 2		X	??	
Porcine cytomegalovirus		X		X
Porcine reproductive and respiratory syndrome virus	X		X	X
Porcine respiratory coronavirus		X	X	X
Torque teno sus virus		X		

PRDC Math does not Add Up: 1+1=4

By Alejandro Ramires

BACTERIAL				
Actinobacillus pleuropneumoniae	X			
Actinobacillus suis	X			
Bordetella bronchiseptica		X	??	X
Haemophilus parasuis		X		
Mycoplasma hyopneumoniae	X		X	X
Mycoplasma hyorhinis		X		
Pasteurella multocida		X		
Salmonella spp	X			
Streptococcus suis		X		
Trueperella pyogenes		X		

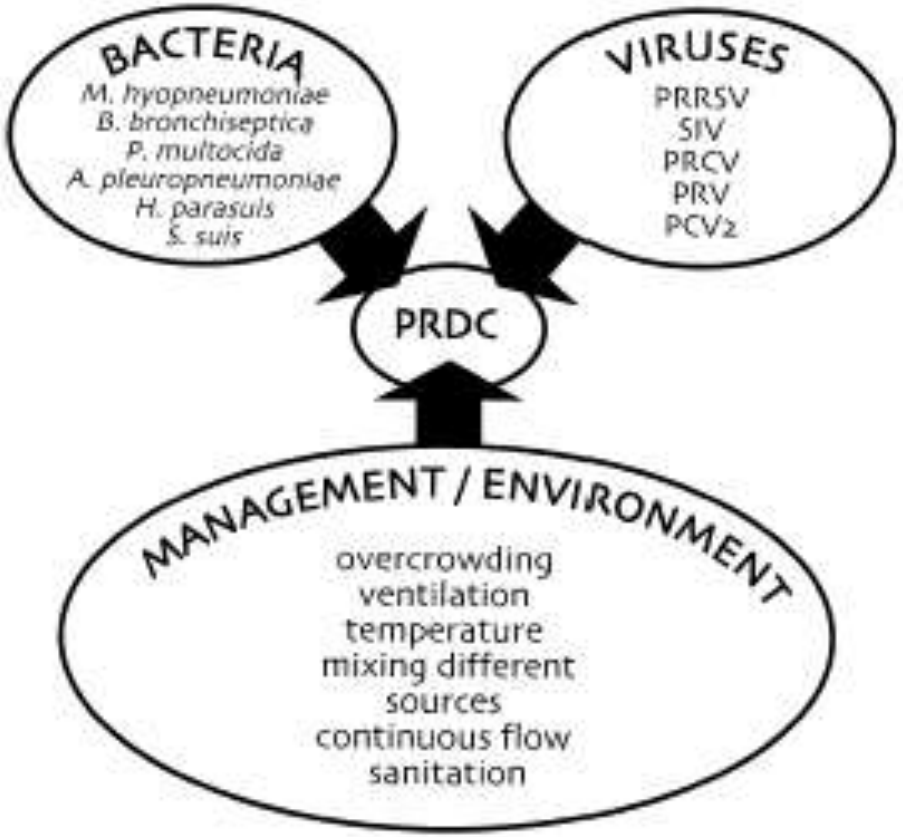
PRDC Math does not Add Up: 1+1=4

By Alejandro Ramires

PARASITIC				
Ascaris suum	X			
Metastrongylus spp	X			
Paragonimus spp	X			

PRDC Math does not Add Up: 1+1=4

By Alejandro Ramires



Brockmeier et al., 2002

Transboundary Disease Transmission and Regional Cooperation

By Satoshi Otake

Definition

- Epidemic diseases which are highly contagious or transmissible
- Have the potential for very rapidspread, irrespective of national borders
- Causing serious socio-economic and possibly public health consequences

Transboundary Disease Transmission and Regional Cooperation

By Satoshi Otake

The 5Ts

- Trade
- Transport
- Travel
- Tourism
- Terrorism

Transboundary Disease Transmission and Regional Cooperation

By Satoshi Otake

- 55% of emergence pathogens are viruses
- Global/National level
  - FMD & ASF
- Regional/Farm level
  - PRRS, PED, PCV2
- Public health concern
  - Influenza, ABO resistant bacteria

African Swine Fever

By Grzegorz Wozniakowski

- Contagious viral disease
- Affecting hosts belonging to *Suidae* family
- *Asfarviridae* family, genus *Asfivirus*
- Soft ticks, *Ornithodoros* genus

INTERESTING ISSUES

Assessing Biosecurity Practices

- Restrictions of feed-delivery vehicles (51.9%)
- Off-site supply room for feeds (50.0%)
- Off-site pick-up location for finishers (44.4%)
- Driver restrictions on farm entrance for market pig movement (42.2%)

SECD Elimination and Prevention

- The system focused on 5 major risk areas
  - Feed ingredients, reception, manufacturing and delivery
  - Transportation decontamination and inspections
  - People training and engagement
  - Manure management
  - Mortality disposal

Site Evaluation of Biosecurity System (SEBS)

Internal Biosecurity		**External Biosecurity**	
Checklist	**Value**	**Checklist**	**Value**
AIAO	40	Pig related	56
Acclimation	25	Semen	20
Hospital for sick pigs	15	Truck/Cars	10
Needle management	9	Neighbors	5
Sanitation	3	Visitors	3
Cross-fostering	3	Materials	3
Boots change	2	Others	3
Carcass	1		
Regular monitoring of SEBS	1		
Vermin / Insect	1		
Total	**100**	**Total**	**100**

Most PRRS stable herds were placed on higher external biosecurity level

Pathogenicity of Vietnamese Strain HPPRRS to Sows in Late- and Mid-Gestation

- Late-term: 90 days of gestation (4)
- Mid-term: 60 days of gestation (3)
- Intranasal inoculation with $1x10^5$ $TCID_{50}$
- Serum collection: 0, 1, 3, 5, 7, 10, 14, and 17 days post inoculation (dpi)

Pathogenicity of Vietnamese Strain HPPRRS to Sows in Late- and Mid-Gestation

- Both groups
  - Body temperature increase from 2 dpi and peaked in 8 dpi (>40 °C)
  - Mild respiratory distress
- Group 1 aborted at 11 – 17 dpi
- Group 2 aborted at 10 – 12 dpi

Pathogenicity of Vietnamese Strain HPPRRS to Sows in Late- and Mid-Gestation

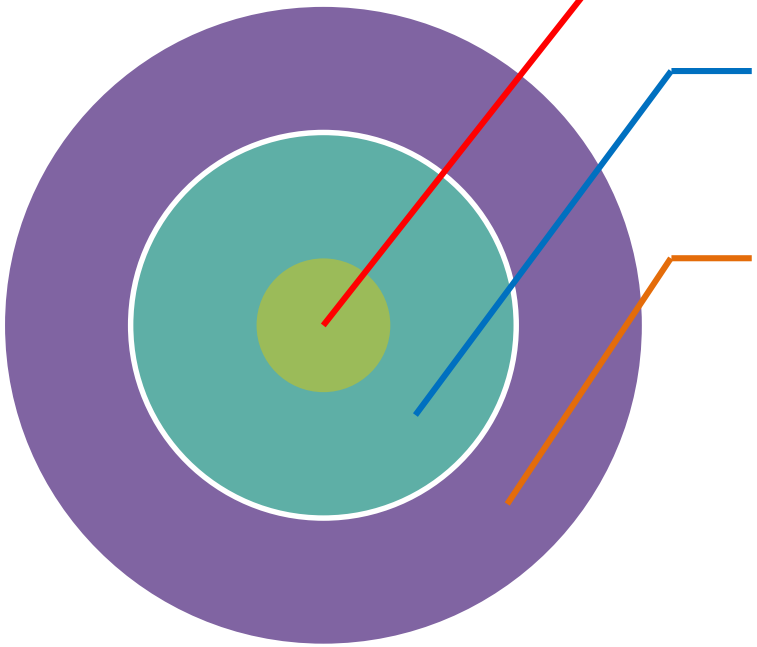
- Histology
  - Mild interstitial pneumonia
  - Small necrotic foci in lymph nodes
- Viral antigens were detected in lung and lymph nodes lesions, and uterus
- Fetus: normal with autolysis

Pathogenicity of Vietnamese Strain HPPRRS to Sows in Late- and Mid-Gestation

- Viral RNA was detected in blood samples from 1 dpi
  - At 5 – 10 dpi: approximately 10^5 to 10^6 $TCID_{50}$/ml
  - Uterus and fetal organs (lung and spleen) also detected

Oral Delivery of Enteric-Coated TGE Vaccine

Three layers capsules



Hydrophilic: Live attenuated TGE H5 strain

Lipophilic → Intermediate layer

Enteric outer shell

Oral Delivery of Enteric-Coated TGE Vaccine

- Sow 1: TGEV capsule – boosted with IM live attenuated TGEV H5 strain
- Sow 2: Oral administration of virus and vaccine
- All piglet were challenged with TGEV virulence strain at 2 day-old

Oral Delivery of Enteric-Coated TGE Vaccine

- Piglets fed with artificial mild showed severe TGE clinical symptoms at 1 dpi and most of them died by 4 dpi
- Piglets fed with sow's milk were delayed showing signs and can survived through the experimental period

Survivability of PEDV in Slurry

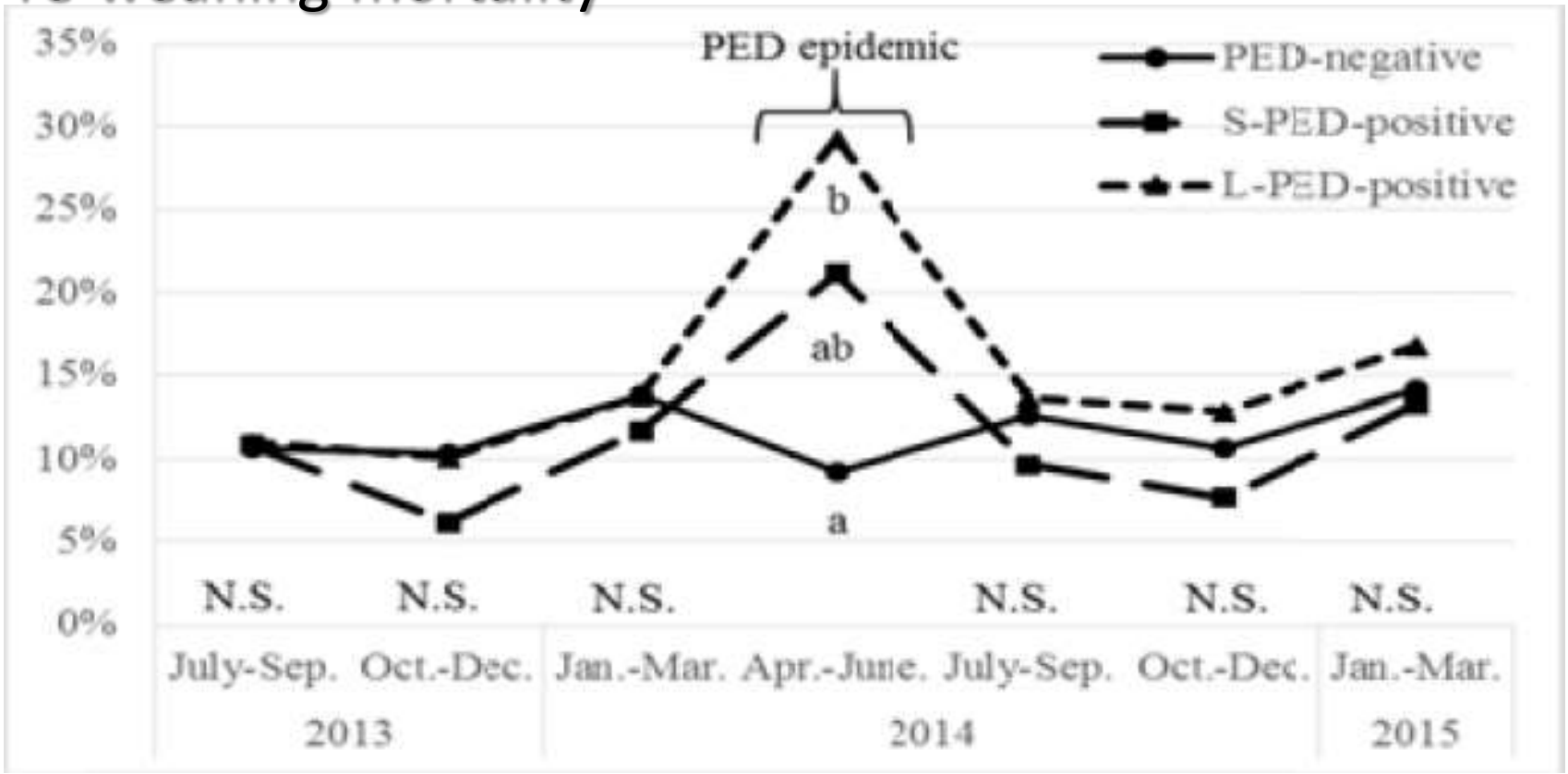
days Post depop	41	55	62	76	82	107	120	161
PCR + /n	2/4	2/4	2/4	0/4	3/4	4/4	1/4	4/4

Survivability of PEDV in Slurry

Post depop days(n)	Test method	0hr	24hr	48hr	72hr
82-a	fecal swab PCR	-	-	+	+
	IHC	N/T	N/T	N/T	+
107-b	fecal swab PCR	-	N/T	-	-
	IHC	N/T	N/T	-	-

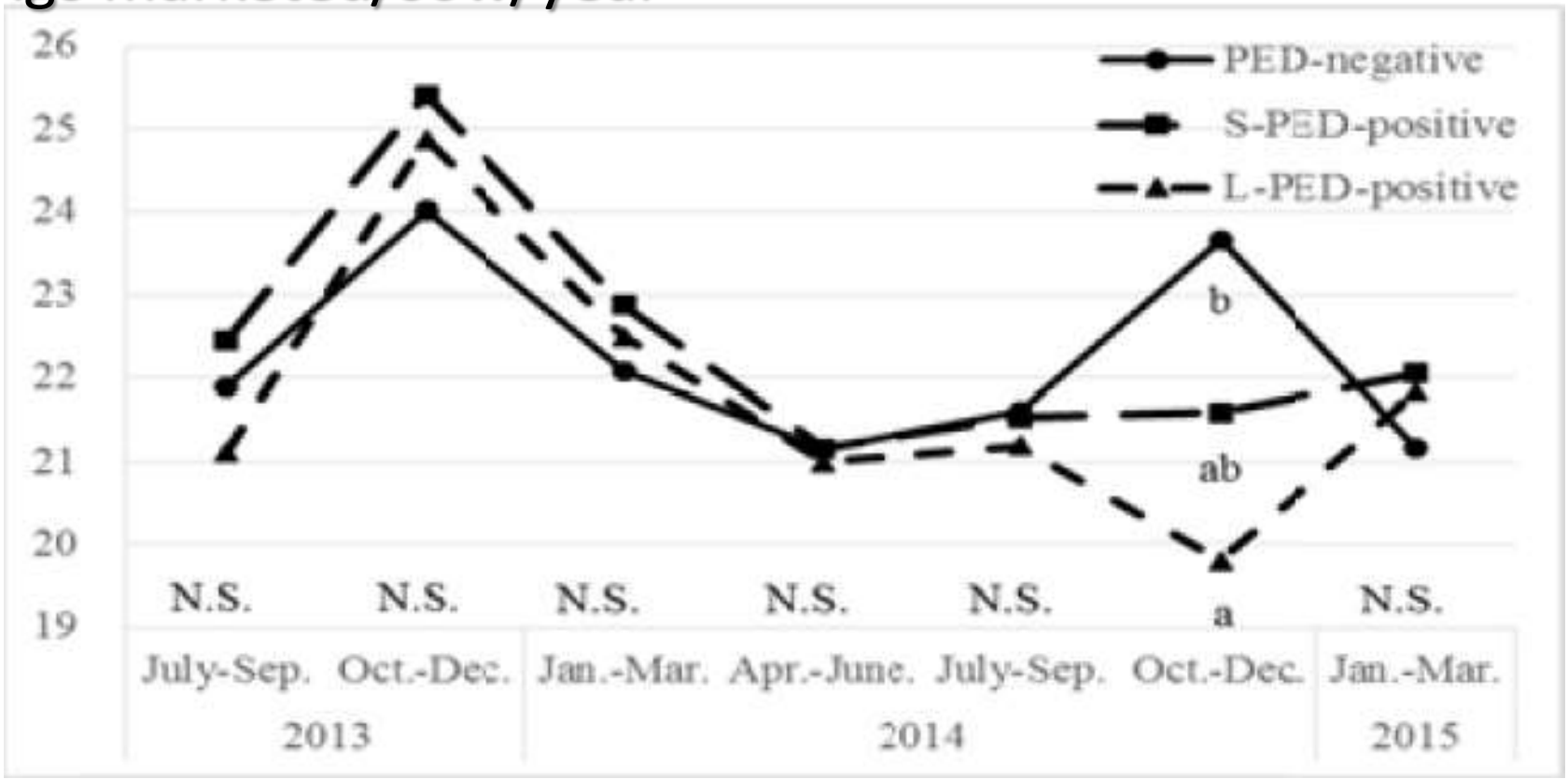
Effects of PED Outbreak - Japan

Pre-weaning mortality



Effects of PED Outbreak - Japan

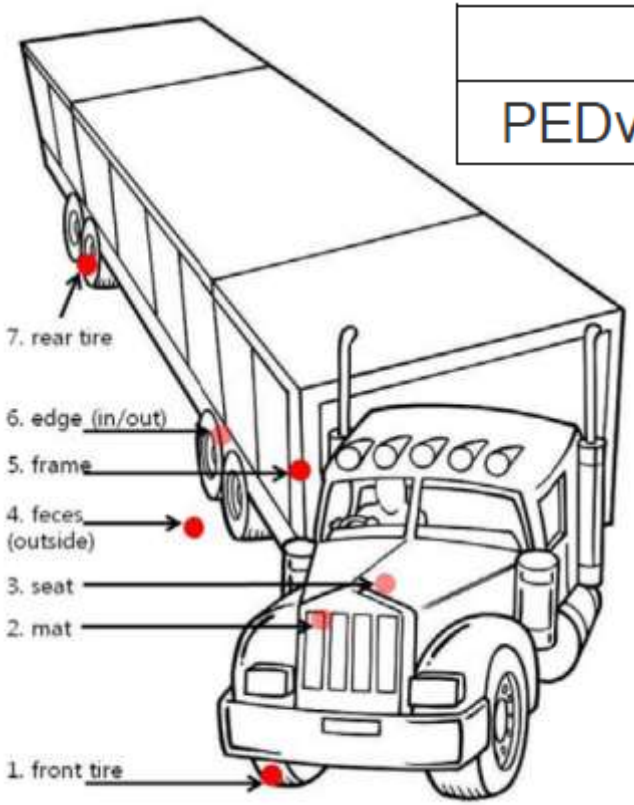
Pigs marketed/sow/year



Effects of Sow Reproductive Performance during 1 Year Before-After PED Outbreak - Taiwan

Reproductive!data!	Before!PEDV!outbreak!	After!PEDV!outbreak!	Difference!	P!value!
Number!of!matings!	5873!	5931!	+58!	>0.05!
FR!(%)!	90.5!	80.9!	K9.6!	<0.001**!
RR!(%)!	8.1!	17.9!	+9.8!	<0.001**!
Number!of!farrowing!	4786!	4572!	K214!	>0.05!
TB!(piglets/litter)!	13.7!	12.1!	K1.6!	<0.001**!
BA!(piglets/litter)!	12.6!	11.5!	K1.1!	<0.001**!
WP!(piglets/litter)!	10.7!	9.6!	K1.1!	0.03*!
Mean!gestational!period!(days)!	116.2!	116.0!	K0.2!	0.04*!
WSI!(days)!	5.4!	6.2!	+0.7!	0.02*!
FFI!(days)!	149.4!	152.4!	+3!	0.006*!
NPD!(days)!	42.4!	49.3!	+6.9!	0.01*!
Replacement!rate!of!sows!(%)!	48.9!	48.0!	K0.9!	>0.05!
Sow!culling!rate!(%)!	32.2!	39.4!	+7.2!	0.03*!

PED Contamination on Pig Moving Truck

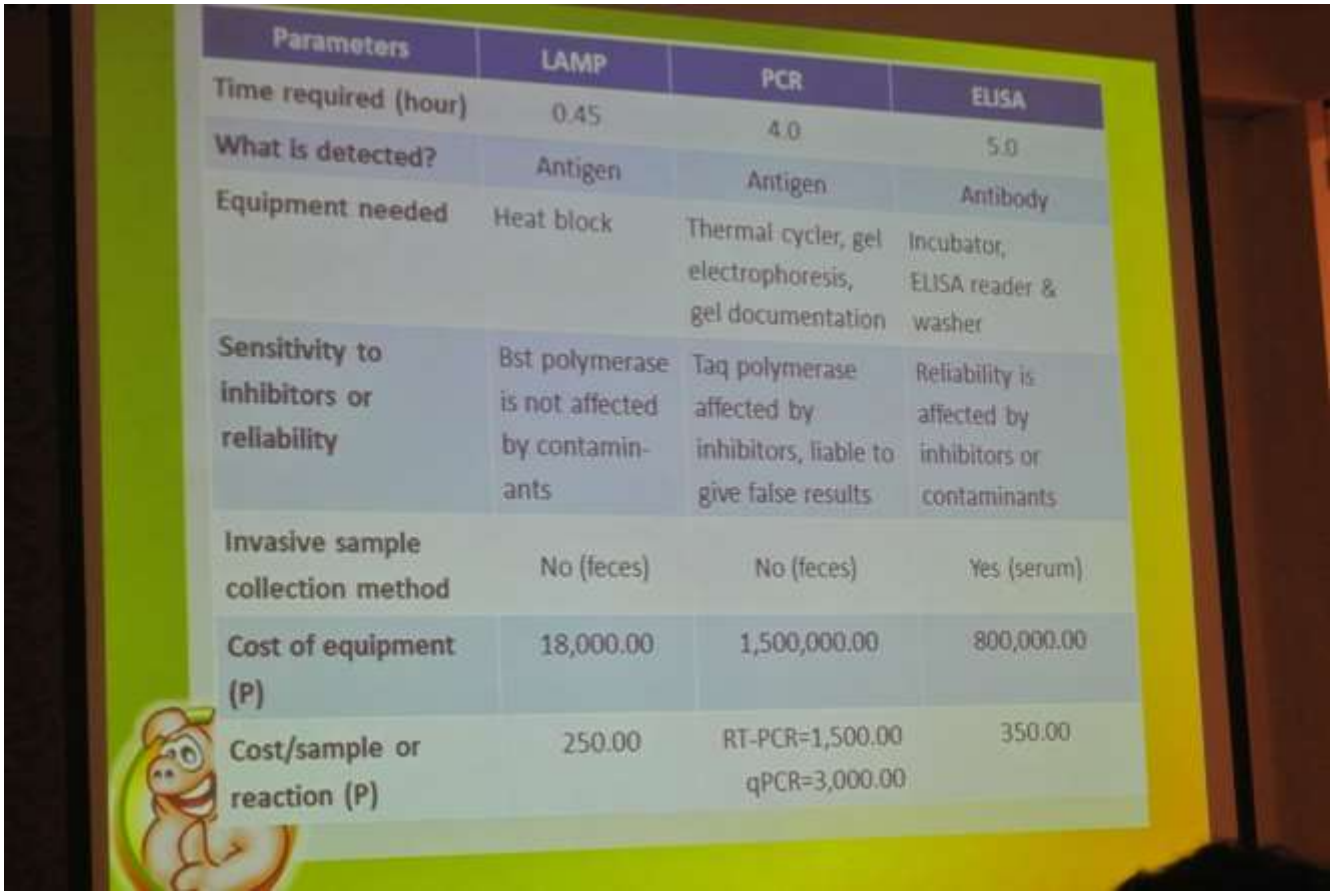


	1	2	3	4	5	6	7
PEDv	-ve	**+ve**	**+ve**	-ve	**+ve**	**+ve**	-ve

RT-LAMP Assay: PED

- LAMP = Loop-mediated isothermal AMPlification
- Incubation at 60 – 65 °C for 60 min
- Gold standard: RT-PCR
- Results
  - Optimized temperature 63 °C for 30 minutes
  - Sensitivity 100%, Specificity 64 – 97%

RT-LAMP Assay: PED



Parameters	LAMP	PCR	ELISA
Time required (hour)	0.45	4.0	5.0
What is detected?	Antigen	Antigen	Antibody
Equipment needed	Heat block	Thermal cycler, gel electrophoresis, gel documentation	Incubator, ELISA reader & washer
Sensitivity to inhibitors or reliability	Bst polymerase is not affected by contamin-ants	Taq polymerase affected by inhibitors, liable to give false results	Reliability is affected by inhibitors or contaminants
Invasive sample collection method	No (feces)	No (feces)	Yes (serum)
Cost of equipment (P)	18,000.00	1,500,000.00	800,000.00
Cost/sample or reaction (P)	250.00	RT-PCR=1,500.00 qPCR=3,000.00	350.00

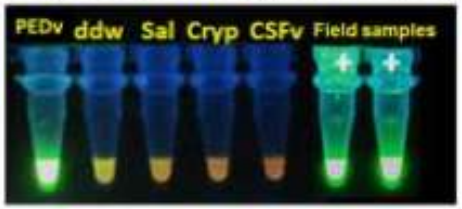
RT-LAMP Assay: PED

PED rt-LAMP

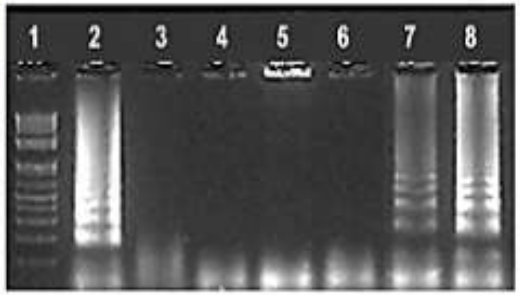
Dye Test

Tube 1 – positive control (PEDv), 2 – ddw, 3 – Salmonella, 4 – CSFv,
5 and 6 – infected fecal samples (green color and with greenish fluorescence)

Flourescence Tests (UV light)



Gel electrophoresis



1 – Marker, 2 – PED (cloned), 3 – ddw, 4 – Salmonella DNA, 5 – Crypto DNA,
6 – CSF virus (vaccine), 7 and 8 – PEDv infected fecal samples

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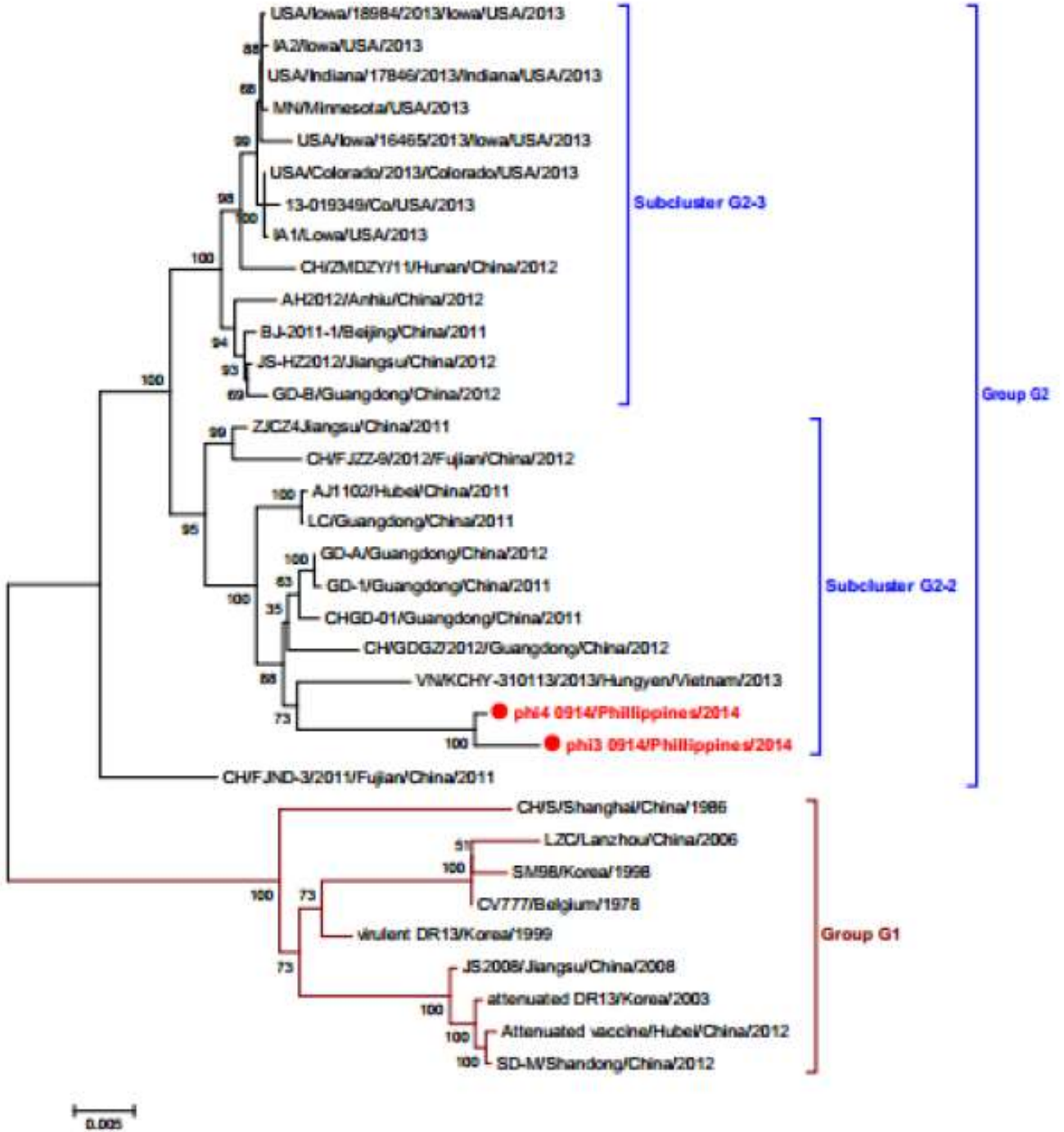
Genetic Diversity of PED - Philippines



Thank you