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Approaching a Reduction in High Repeat Services for Better Breeding Performance

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This article will take an in-depth look on repeat services and its negative effect on breeding performance. In addition to high repeat services, this article will describe the protocol to reduce high repeat services to normal range as Thailand performance (less than 10%).

According to the previous report on the performance of swine breeding herds in Malaysia during 2011, the figure of repeat services in Malaysia farms were demonstrated an average of 21.47%, meanwhile the top 5 farms average at 11% and the range of 6.8-35.9% from participated farms. This figure demonstrates that the wide range of repeat services percentage in Malaysia pig farms. The negative effects of high repeat services percentage on breeding herd were shown in Figure 1.

Table 1. Negative effects of high percentage of repeat services on breeding herd

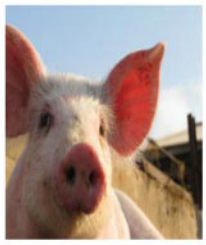
Effects on breeding performance	Effects on investment cost
Lower farrowing rate	Use more sow feed to produce 1 piglet
Lower total pig born	Higher semen cost
Lower pig born alive	Higher cost to produce a kg of pork meat
Lower weaned pigs/litter	Unable to control breeding group size
Lower litter/sow/year	Boring to breeding technicians and workers
Lower pigs weaned/sow/year	Stuck on pig flow management

Most common pattern of high repeat services in breeding herd in Malaysia is high repeat services of gilts and all parities sows (Data from PigLIVE software).

Table 2. Parity distribution report showed high percentage of repeat services in gilts and all parities sows

	Parity								TOTAl
	0	1	2	3	4	5	6	7+	Whole Herd
BREEDING PERFORMANCE									
# Total number of services	262	296	133	67	86	60	47	45	996
# Number of repeat services	69	53	24	15	14	16	3	13	207
% Repeat services	26.3	17.9	18.0	22.4	16.3	26.7	6.4	28.9	20.8
% Multiple matings	0.4	0.7	0.8	1.5	2.3	0.0	2.1	0.0	0.8
Weaning-1st service interval	.	12.9	7.2	6.2	6.2	7.4	5.9	6.4	9.2
% Sows bred by 7 days	0.0	74.1	89.0	90.4	88.9	86.4	93.2	87.5	83.1

There are 4 major contributors that are related to high repeat services in breeding herd :
1. Selected replacement gilts management
2. Estrous checking procedure
3. Boar semen evaluation and AI procedure
4. Post-mating management



The guideline for reducing the percentage of repeat services in breeding herd:

1. Selected replacement gilts management

- Gilts are generally purchased or selected at 160 days with a body weight at 80-90 kg
- Number of replacement gilts need to be determined by period of the time.
- Purchased or selected gilts can be fed with gestation diet until reach the appropriate body weight(130-140 kg) and age (8.5 months old).
- The day of first estrus must be recorded in order to predict the subsequent estrus.
- Gilts that fail to show estrus within 21 days after being relocated should be sold.
- Purchased or selected gilts must be flushed for 10 days before anticipated mating.

2. Estrous checking procedure

- Gilts and sows should be exposed to an active boar regularly in the morning and evening for at least 20 minutes each episode.
- Once the stock person releases a boar in front of the target females (swelling, reddening of vulva, ear setting), the back pressure test should be applied right away.
- Target females must not be exposed to boar prior to heat detection time.
- Some of terget females may need 4-5 minutes of boar contact before displaying a standing response.
- Avoid using too young or too old boars for heat detection.
- Good heat detection practices are dependent on the skill of breeding technician and worker, they should know how to utilize signs of swelling and reddening of vulva, how to use boars and back pressure test simultaneously, how to avoid continuous exposure of boars to target females prior to heat dectection time, how to spend enough time for heat detection, how to use mature active boars to provide maximum boar stimulation.

3. Boar semen evaluation and AI procedure

- Ensure boar semen is evaluated every time after collection. Progressive motility, dead sperm (clumping) and droplets are evaluated before diluting with extender. Recheck diluted semen once again before pack and seal.
- The supplementation of vitamin E, selenium and DHA in the boar diet may help to improve semen quality.
- Vaccination of live viral vaccine in oil may also deteriorate semen quality, producers are advised to separate boars into 6 groups and rotate vaccinations in each group year-round.
- Diluted semen should not be stored in temperature controlled cabinet longer than 48 hours in the range of 16-18°C. However, it is recommended to check the quality of stored semen immediately before using it.
- Ensure that heat detection procedure was performed properly before insemination.
- Always expose in-estrus females to an active boar through out the end of artificial insemination process.
- Ensure the catheter is locked into the cervix.
- Continue stimulating the in-estrus females until the diluted semen is finished. Hold the semen tube for a while.
- Should not see any diluted semen come out from the vulva during the AI process and after taking out the catheter.

4. Post-mating management

- To minimize embryonic losses during pregnancy, move mated females within 24 hours of last mating and not to move them again until 30days post-mating.
- Post-mated females are recommended to limit feed intake at 1.8 - 2.0 kg of gestation diet during first 3 weeks.
- Pregnancy checking is always practice at 21-35 days post mating.
- During pregnancy period, should provide enough non-contaminated drinking water, good ventilation and additional shower. Fan with water dripping or evaporative cooling system is strongly recommended for pregnant gilts and sows thoroughly the pre-farrowing period.
- The supplementation of organic trace minerals (Zn,Cu, Mn, Fe, Se) and DHA in gestation diet can improve feet and leg conditions as well as implantation.

To reduce the percentage repeat services, producers are advised to implement the above guidelines step-by-step. If you need further information or scientific support, please contact us at info@peterlabs.com.my

Beware of Highly Pathogenic Porcine Reproduction and Respiratory Syndrome (HP-PRRS)

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Porcine reproductive and respiratory syndrome (PRRS) is a disease characterised by late-term reproductive failure in sows and gilts, and respiratory problems in piglets and growing pigs. This disease is caused by a small (approximately 62 nm in diameter), enveloped, positive-sensed and single-stranded RNA virus of *Nidovirale* order, *Arteriviridae* family, *Arterivirus* genus (Cavanagh, 1997). It can be further divided into two antigenically and genetically differents strains, (1) Leystad virus (type I) which predominates in Europe and (2) VR 2332 (type II) which is prototype of strains originally exist in North America (Wensvoort *et al.*, 1994).

Since recognition of PRRS, the disease had spread throughout the world causing worldwide economic losses in swine industry. In Malaysia, a seroprevalence study were carried out where more than 90% of the farms involved were seropositive for PRRS and more than 80% of the pigs were seropositive (Jasbir *et al.*, 2008)

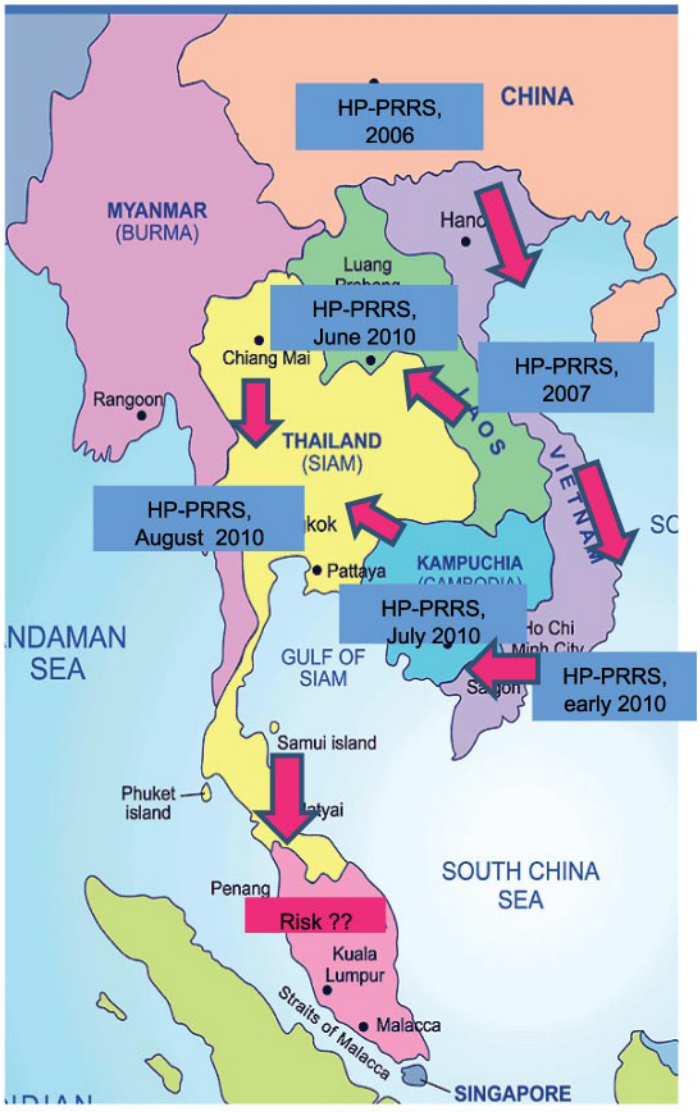

Figure 1. The movement of HP-PRRS in South-East Asia since China outbreak at 2006.

In 2006, a new highly pathogenic PRRS (HP-PRRS) characterized by high fever (41-42°C), skin reddening, high morbidity (50-100%) and high morthality rate (20-100%) emerged in China. The disease was then detected in vietnam in 2007, and again in early 2010. After that, subsequent outbreak were reported in Laos and Combodia in mid of 2010. Thailand was also affected in August 2010. From the spread of disease illustrated, the risk of Malaysia contracting this disease is very high (Figure 1). Yet, this disease is not reported in Malaysia up till now. Great losses up to millions were recorded attributed to HP-PRRS in China and Vietnam due to the high mortality rate (An *et al.*, 2011).

Thus, proper preventive measures should be carried out to avoid the introduction of HP-PRRS into Malaysia. Genome study of HP-PRRSV isolated showed 4 deletions (2 deletions in non-structural protein 2, one deletion in the 5' non-translated region and one deletion in the 3' non-translated region) compare to any other previous isolates (An et al., 2011). Although pigs vaccinated against PRRS were not fully protected against HP-PRRRS, but vaccination helped to reduce the severity of the disease (Ballesteros, 2010).

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OsmoPRE-IMO Isomaltose-oligosaccharide

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Antibiotics have been used or decades as growth promoter for better feed conversion and improving poultry health status. However, an increasing number of incidences on antibiotic resistance pathogen have been reported. Therefore, prebiotic is introduced to become one of the alternative approaches to antibiotics.

Isomalto-oligosaccharide is the composition of OsmoPRE-IMO. OsmoPRE-IMO, which is a prebiotic, is produced in accordance with Good Manufacturing Practice (cGMP) via enzyme hydrolysis of starch raw material such as corn, potatoes, wheat, rice, barley and tapioca. Isomalto-oligosaccharides are glucose oligomers with α-D (1,6) glycosidic bond which is not readily digested by intestinal enzyme if compared with α-D (1,4) glycosidic bond. Thus, it can pass through the upper gastrointestinal tract of poultry without being digested or hydrolysed (Sinovec and Radmila, 2005). Probiotic uses prebiotic as substrate for fermentation and metabolized energy yielded for their growth.

Prebiotic, is generally referred to non-digestible food component that beneficially affect the host by influencing the intestinal microbiota. Promising beneficial effects of IMO such as promoting daily growth rate, alteration of intestinal microbiota and their activies have been demonstrated in many research and studies.

1. Rycroft *et al.* (2001) reported that IMO is an effective prebiotic in increasing the number of bifidobacteria (probiotic).
2. Zhang *et al.* (2003) reported that IMO improved the growth performance of chicks for the first 3 weeks.
3. Research of Mizubuchi *et al.* (2005) have shown that IMO enhanced the immune system.
4. Thitaram *et al.* (2005) reported that IMO increased the number of probiotics in the lower part of the gastrointestinal tract.
5. Saminathan *et al.* (2012) reported that IMO is effective in improving the performance of broiler chicken such as body weight gain, feed intake and feed conversion rate.

Unlike probiotic, probiotic is a food source for the intestinal microbes, especially Lactobacilli and bifidobacteria whereas probiotic is live microoganism. It can selectively stimulate the growth of probiotic or 'good bacteria' and suppress the growth of pathogen. Therefore, immunity of the chicks can be improved.

Development of newborn chick's gastrointestinal tract is crucial for their growth and performance and it should not be overlooked. The development is relying on the gut microbiota. Intestinal villi help in nutrient adsorption. Feeding prebiotic will increase the length of intestinal villi which will lead to increased surface area for nutrient absorption.

	OsmoPRE-IMO
Indications	• Better immune system • Reduces risk of pathogenic infection • Better gut health • Improves body weight gain • Lowers mortality rate • Improves feed conversion ratio
Specification	• Dry solid content : 75% • Percentage on dry matter basis : 50% • Percentage of isomaltose, panose and isomaltotriose on dry matter basis : 35% • pH : 4.0-6.0
Dosage	0.5%in drinking water or 5 ml in 1000 ml of water
Storage Condition	Keep in closed container in cool place. Avoid temperature fluctuation during storage
Packing	1 liter

Reference:

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EXHIBITIONS

PeterLabs at the Exhibitions on April 2012

April 2012 was an important month because for the first time, we participated in an exhibition held in an Arabic country. It ws the 7th International Agriculture SAWSANA Exhibition at Amman International Motor Show, Amman Jordan from 25 to 27 April 2012. As we all know, Arab countries is a huge market for poultry and dairy industry. We were absolutely delighted to explore our business here in Amman, Jordan.

Jordan, Officially the Hashemite Kingdom of Jordan is a kingdom on the East Bank of the River Jordan. The country borders saudi Arabia to the east and south-east, Iraq o the north-east, Syria to the north and the West Bank and Isreal to the west, sharing control of the Dead Sea with the latter. With its population of around 6 million, Jordan itself is not the biggest market, but it has the most Fee Trade Agreements among all Arab countries and the Jordanian market is considered the most developed Arab market outside the Gulf states. It was a successful trip because we managed to introduce our products to Arab countries and able to capture a few important potential customers. We believe this is a very good start for us to venture into Arab countries.

On 24-26 April 2012, PeterLabs has participated in the 5th International conference on Animal Nutrition 2012 (ICAN) organized by Malaysian Agricultural Research and Development Institute (MARDI) at Equatorial Hotel, Melaka. A total of 18 oral presentation and 52 posters were presented. Our invited speaker Dr.Wang Chong from China gave a talk on "Effect of Dietary Rumen-Protected Choline on Milk Performance and Metabolite Profiles of Dairy Cows " and Dr. Lai Pui Wah presented a paper on "Palm Kernel Meal and Enzyme Application in Poultry Diets." Besides introducing our products in the booth, the conference provides a platform for us to inter-act with the participants from local research institutes, university and government sectors.

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减少重发情以提高繁殖性能

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本文将深入探讨重发情和其对繁殖性能的负面影响。除了重发情之外，本文将描述如何减少重发情率，以致设定在一般企业化养猪可接受的正常范围（如泰国的生产性能，重发情率少于10%）。

根据2011年马来西亚猪只繁殖群的性能报告显示，重发情的平均发生率为21.47%，前5名的农场平均值为11%，参与的农场在6.8-35.9%范围内。这个数字显示马来西亚猪场重发情的百分比范围广泛。表一显示高百分比之重发情对种猪群的负面影响。

表一、高百分比之重发情对种猪群的负面影

对繁殖性能之影响	对投资成本之影响
降低分娩率	使用更多的母猪饲料以生产一头小猪
降低总新生头数	更高的精液成本
降低存活新生头数	更高的成本以生产一公斤的猪肉
降低离乳头数/胎	无法控制繁殖族群的大小
降低胎数/母猪/年	育种技术人员和工人感到乏味
降低离乳头数/母猪/年	停留在猪只流动管理

在马来西亚高猪只繁殖群里最常见的多次重发情发生在女猪和所有胎数的母猪（PigLIVE软件的数据）

表二、胎数分佈报告显示女猪和所有胎数的母猪高百分比的重发情

	Parity								TOTAl
	0	1	2	3	4	5	6	7+	Whole Herd
BREEDING PERFORMANCE									
# Total number of services	262	296	133	67	86	60	47	45	996
# Number of repeat services	69	53	24	15	14	16	3	13	207
% Repeat services	26.3	17.9	18.0	22.4	16.3	26.7	6.4	28.9	20.8
% Multiple matings	0.4	0.7	0.8	1.5	2.3	0.0	2.1	0.0	0.8
Weaning-1st service interval	.	12.9	7.2	6.2	6.2	7.4	5.9	6.4	9.2
% Sows bred by 7 days	0.0	74.1	89.0	90.4	88.9	86.4	93.2	87.5	83.1

四个主要导致繁殖族群多次重发情的原因如下:
一、挑选替代女猪之管理
二、检查发情之程序
三、公猪精液的评价和人工授精的程序
四、配种后之管理

如何减少繁殖母猪群重发情率的策略性方法:

一、挑选替代女猪之管理

- 一般上购买或挑选160日龄（约80-90公斤）的女猪。
- 替代女猪之头数必须在特定的时间内确定。
- 喂饲购买和挑选的女猪前期饲料至标准体重（130-140公斤，约8.5月龄）。
- 纪录第一次发情的日期，以预测随后的发情时间。
- 在迁移后21天内没有发情的女猪必须淘汰。
- 购买和挑选之女猪必须在配种前10天催促生理发情(flushing)。

二、检查发情之流程

- 女猪和母猪必须固定地在早上和傍晚接触一头活跃的公猪，每次至少20分钟。
- 每当配种人员把公猪赶至发情之母猪（外阴部红肿,耳朵竖立）前面，应该马上施行背部压力检测。
- 在检测发情前，不要让母猪接触公猪。
- 一些母猪可能需要和公猪接触4-5分钟后才会显示站立反应。
- 避免使用太年轻或年老之公猪检测母猪发情。
- 良好的发情检测实施取决于育种技术人员和工人的技能，他们应该要知道如何利用外阴部红肿的迹象，如何使用公猪和母猪背部压力检测，如何避免在检测母猪发情前让公猪接触母猪，如何利用足够的时间检测发情，如何利用成熟和活跃的公猪诱发母猪发情。

三、公猪精液的评价和人工授精之程序

- 每次採精后，必须评估公猪之精液。稀释精液前，评估精子活力，精虫是否凝结成块。在包装和密封前，再次检查稀释之精液。
- 在公猪饲料内添加维生素E，硒和DHA有助于精液品质。
- 油性活毒疫苗接种可能也会损坏精液的品质，业者可以把公猪分为6组，全年轮流接种疫苗。
- 稀释之精液不应该放在16-18°C范围内的温度控制柜里超于48小时。不过，建议在使用之前立即检查存储的精液质量。
- 在配种前，确保发情检测程序进行正确。
- 在整个人工授精的过程中，发情之母猪必须接触活跃的公猪。
- 确保导管锁定于子宫颈内。
- 持续地刺激发情之母猪直到稀释精液都流进子宫内，拿着授精管一段时间。
- 在人工授精过程中和取出导管后，精液不应该从外阴部流出。

四、配种后的管理

- 为了减少怀孕期间胚胎的损失，在配种后的24小时内尚可移动母猪，此后保持原位至配种后30天。
- 建议在前3周喂饲配种后的母猪前期饲料，摄食量限制于1.8-2.0公斤。
- 在配种后21-35天作妊娠检查。
- 在怀孕期间，应提供母猪足够非污染的饮用水，良好的通风和额外的淋浴。强烈建议在预产期间提供怀孕母猪喷雾风扇或者是蒸发冷却系统。
- 在前期饲料中添加有机矿物质（锌，铜，锰，铁，硒）和DHA可改善蹄和脚的状况和胚胎着床。

为了减少重发情的发生率，业者应逐步实践上述的指引。如果您需要进一步的信息或科学支援，请联系我们info@peterlabs.com.my

预防高病原性猪繁殖与呼吸道综合症 (HP-PRRS)

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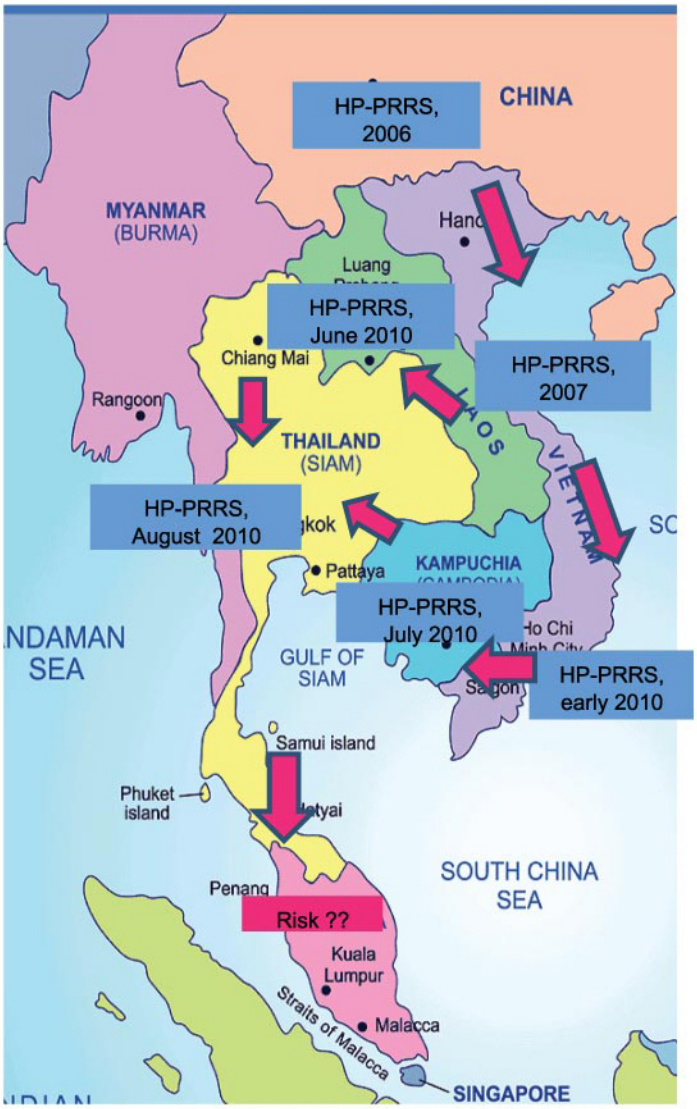
马来西亚博特拉大学兽医系

猪繁殖与呼吸道综合症(PRRS)是一种导致母猪与新女猪后期繁殖障碍，仔猪和大猪呼吸道问题为特征的疾病。这种疾病是由一小（直径约为62纳米）的具封套之正向单股RNA病毒，归属于套式病毒目(*Nidovirale*)，动脉炎病毒科(*Arteriviridae*)，动脉炎病毒属(*Arteriviru*)(Cavanagh,1997)。它可以进一步分为两个抗原性和基因不同的病毒株(1)Lelysta病毒（第一型），主要位于欧和(2)VR2332（第二型），原本存在于北美的原株(Wensvoort *et al.*, 1991)。

自从PRRS被确认，此病已在世界各地传播，并导致全球养猪业巨大的济损失。在马来西亚，一个血清流行病学研究指，超过90%参与研究的农场测出血清学蓝耳病呈为阳性，且有超过80%的猪只为阳性(Jasbir *et al.*, 2008)。



图一、自2006年在中国爆发疾病后，HP-PRRS在东南亚的流向图。

在2006年，一个新的高病原性蓝耳病(HP-PRRS)在中国发生。其特征是高热(41-42˚C)，皮肤发红，发病率高(50-100%)和死亡率高(20-100%)。2007年，在越南也发现有相同症状的疾病，并在2010年初再次爆发。此后在2010年中，相同的疾病在寮国和柬埔寨爆发。在2010年8月，泰国也受到影响。从疾病传播的流向来看，马来西亚感染此病的风险是非常的高（图一）。然而，到目前为止，马来西亚并未报导任何蓝耳病的案例。在中国和越南，蓝耳病所造成的高死亡率已造成数以百万计的巨大经济损失(An *et al.*, 2011)。

因此，马来西亚有必要进行适当的预防措施，以避免HP-PRRS的入侵。比以往任何其他毒株，HP-PRRSV分离株的基因组研究显示四个删除（两个删除发生在非结构蛋白2，一个删除在非转译区5'和一个删除在非转译区3'）(An *et al.*,2011)。虽然蓝耳病疫苗不能完全地保护猪只对抗HP-PRRRS的感染，但接种疫苗有助于减少疾病的严重程(Ballesteros,2010)。

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OsmoPRE-IMO Isomaltose-oligosaccharide 异麦芽寡糖

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在畜牧养殖业应用抗生素已有数十年的历史，主要的功能是促进动物的生长及提高生产率，以改善饲料转换率和禽畜的健康状况。然而，越来越多的研究报告显示病原体对抗生素产生耐药性以及畜产品的药物残留造成人类健康的极大威胁。因此，益生素(prebiotic)成为了其中一种替代抗生素的选择，尤其在一些发达国家，益生素已普遍使用在禽畜生产事业上。

OsmoPRE-IMO含异麦芽寡糖。OsmoPRE-IMO是一种益生素，经由酶水解淀粉质原料如玉米，马铃薯，小麦，稻米，大麦和木薯和採用现行优良药品制造标准(cGMP)生产。OsmoPRE-IMO异麦芽寡糖里的葡萄糖低聚物含α-D(1,6)糖苷键，与α-D(1,4)糖苷键相比，其优点是不容易被肠道里的酶所消化。因此，异麦芽寡糖可以在没有被消化或水解的状况下，顺利地通过禽畜消化道的上方(Sinovec and Radmila, 2005)。禽畜肠道的益生菌会利用益生素为基质大量地繁殖，改进肠道的环境及肠绒毛的发育。益生素可以促进肠道有益菌群的生长。很多研究报告都报道异麦芽寡糖的有效性，例如促进每日增重率，改肠道菌群和活性。

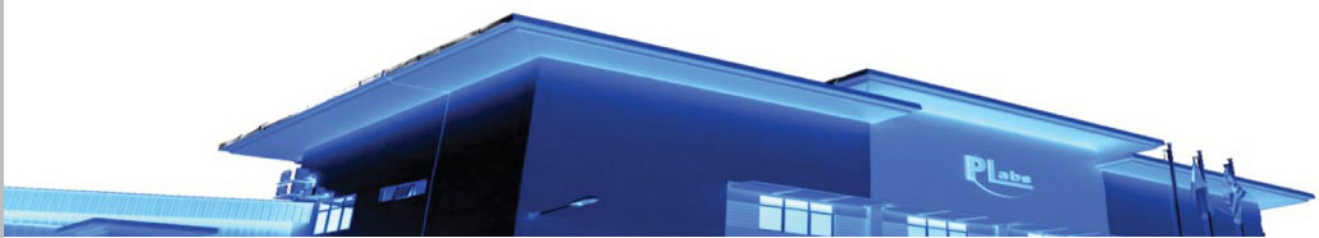
1）Rycroft *et al.*(2001)的研究报告指出有效益生素能增加双歧杆菌（益生菌）的数目。

2）Zhang *et al.*(2003)指出异麦芽寡糖可促进小鸡在前3周的生长。

2）Mizubuchi *et al.* (2005) 的研究报告显示异麦芽寡糖可帮助增进免疫系统。

3）Thitaram *et al.* (2005)报导异麦芽寡糖能 增加消化道下方益生菌的数目。

4）Saminathan *et al.* (2012) 的研究报告显示异麦芽寡糖能改善肉鸡的生长性能如增加体重，摄食量和较好的饲料转换率。



跟益生菌(probiotic)不一样，益生素(prebiotic)是肠道微生物尤其是乳酸杆菌和双歧杆菌的食物来源；反之，益生菌是活的微生物，也需要营养物质来维持其生长。OsmoPRE-IMO益生素可以选择性地促进益生菌或者是“好细菌”的生长和抑制病原菌的生长。因此，改善鸡只的免疫力。

初生小鸡肠道的发育对于它们的生长性能是非常重要和不容忽视的。它的发育依靠肠道内的有益菌群。良好的肠道绒毛可以帮助营养分的吸收。喂饲OsmoPRE-IMO益生素可增加肠道绒毛的长度，提升吸收营养分的面积。

	OsmoPRE-IMO
优点	• 强化免疫系统 • 减少病原菌的感染 • 改善肠道的健康，肠绒毛的发育 • 增加日增重 • 降低死亡率 • 改进饲料转换率
产品规格	• 干固体含量 ： 75% • 干物质为基础的百分比 ： 50% • 异麦芽糖,般若糖和异麦芽三糖的干物质为基础的百分比 ： 35% • pH值 ： 4.0-6.0
用量	0.5%或者是1公升的水添加5毫升的OsmoPRE-IMO
储存条件	存放在紧闭容器中，置放在阴凉处。避免储存期间温差太大。
包装	1公升

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展览会

在2012年4月份PeterLabs所参与的展览会

2012年4月对我们来说具有特别的意义，因为我们第一次参加了在阿拉伯国家的展览会，从4月25日至27日的the 7th International Agriculture SAWSANA Exhibition，此展览会地点在Amman International Motor Show，安曼，约旦的首都。众所周知，阿拉伯是一个很大的家禽和乳牛业市场，而约旦将会是我们探索和打开中东市场的第一站!

约旦，正式称为哈希姆王国是在约旦河东岸的国度。该国北临叙利亚，东临伊拉克，东南临沙特阿拉伯，西临以色列和巴勒斯坦，而死海就是约旦与以色列和巴勒斯坦之间的一道天然分界线。约旦大约有600万人口，本身并不是最大的市场，但它有海湾国家以外的所有阿拉伯国家和约旦市场之间最多的自由贸易协定，被认为是最发达的阿拉伯市场。成功地接洽了几位重要客户，又开拓了眼界，我们向阿拉伯国家介绍我们的产品，可谓不虚此行，相信很快就能打入阿拉伯市场!

在2012年4月24日至26日，PeterLabs参与了在马六甲Equatoriald酒店，由马来西亚农业研究和发展研究所(MARDI)所举办的2012年第五届国际动物营养研讨会(5th ICAN)。一共有18个演讲和52个壁报在研讨会中发表。受邀请来自中国的王翀博士和本公司的黎配华博士的演讲题目为“瘤胃保护型胆碱对奶牛产奶性能和代谢产物之影响”和“在家禽日粮中棕榈仁粕和酶的应用”。除了让我们展示产品之外，这次的会议为我们和来自本地研究中心、大学和政府单位的人员商提供一个交流平台，以促进动物营养和有关饲料工业的最新进展。