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Keys to Successful Artificial Insemination (AI)

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Semen collection, semen processing, estrous check and sow insemination must be properly conducted to achieve optimal reproductive performance, and these processes are the key factors towards successful artificial insemination (AI). The aim of this article is to encourage pig producers and breeding technicians to audit and check the AI procedures in their operation thoroughly to improve reproductive performance.

There are 4 major processes contributing to optimal reproductive performance in breeding herd.

1. Semen collection
2. Semen processing
3. Estrous checking
4. Sow insemination

The guidelines of each process are as follow:

1. Semen collection

- Prepare semen extender at least 6 hours before it is ready to be used.
- It is recommended to add 200 mg gentamicin sulfate into the 1 liter of extender.
- Place the semen extender into a 36-37°C water bath before it is ready to be used.
- In the collection pen, ensure that the rubber mat is correctly positioned behind the dummy. Also, ensure that the dummy sow is not loose and the cover is properly fastened.
- Assemble the semen collection equipments such as wide-neck thermos bottle with plastic bag inside and covered by 2 layers of sterile filter secured by rubber band.
- Bring the boar into the collection pen. Handle the boar as quietly as possible.
- Wash hands and put on a vinyl glove.
- Allow the boar to mount the dummy sow.
- When the boar starts to ejaculate, collect the sperm-rich (milky) fraction, and stop when the gel come out.
- Send the semen to the laboratory immediately after collection.
- Return the boar to its pen.

2. Semen processing

- Avoid exposing the semen to rapid changes in temperature, direct sunlight or ultraviolet light.
- Record the semen volume collected in a recording book.
- Place one drop of the undiluted semen onto the glass slide and observe the sperm motility under a microscope. Rate the degree of motility and record in the recording book.

- Measure the sperm count using Spermacue, calculate the dilution rate and record in the recording book.
- Mix the semen with the semen extender that has been warmed at 36-37°C, and ensure that the mixture is well mixed.
- Check on the sperm motility of the diluted semen once again and record.
- Repeat the process stated as above for another boar.
- Fill each plastic tube with diluted semen and label the tube with boar ID and date.
- These processes stated above should not take more than 10 minutes.
- Keep the left over packed semen tubes in the refrigerator at 16-17°C. Keep it in the proper temperature not longer than 3 days.
- It is not necessary to warm the semen before it is ready to be used.

3. Estrous checking

- Detect heat twice a day with an active boar in the morning (8:00-8:30 am) and in the evening (4:00-4:30 pm).
- Shower the sows 15-20 minutes before heat checking process.
- To ensure those sows which are on standing heat, massaging those sows is recommended.
- Perform the first insemination for those sows on standing heat as follow:
    - Gilts, repeated sows and delayed estrous sows (weaning to first service interval (WFS) > 7 days) on the first day that you detect standing heat.
    - Normal sows (WFS < 7 days) on 12 hours after standing heat is detected.

4. Sow insemination

- Store semen in a thermo-cabinet at normal temperature (not necessary to warm semen before use). Protect semen from sunlight exposure.
- Massage the sows before inserting the catheter into vagina.
- Clean the vulva, lubricate the catheter, insert it upwards and forwards into the vagina and turn it counter-clockwise until you obtain a lock.
- Invert the semen tube several times to get a well mix and remove the tip of the tube.
- Place the semen tube into catheter, continue to massage the sows. Insemination should take about 5-7 minutes.
- If semen leaking from the vulva is seen, re-lock the catheter and continue to massage the sows.
- Keep massaging the sows for a few minutes after semen flow is completed.
- Take out the catheter from vulva.
- Inseminate again 12 hours after the first insemination. Inseminate sows which are not on standing heat is prohibited.

Serological Response to PRRS Vaccination Using a Mycoplasma Bacterin (MYPRAVAC® SUIS) as a Diluent for Live Attenuated PRRSV Vaccine (AMERVAC®-PRRS) under Field Conditions

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Introduction

With the advent of vaccines combination, administration convenience and its efficacy under field conditions have been the primary concern. Since the recommended vaccination program for *Mycoplasma hyopneumoniae* is at 7 and 21 days and for PRRSV is 21 days, the second dose of Mycoplasma can be given simultaneous with PRRSV vaccine. Previous study (Bruguera *et al.,* 2009) has demonstrated that PRRSV vaccine can survive under laboratory conditions using a mycoplasma bacterin as the diluent. In this study, the objective is to determine whether PRRSV vaccine (AMERVAC®-PRRS) could elicit serological response using a mycoplasma bacterin (MYPRAVAC® SUIS) as the diluent under field conditions.

Materials and methods

A total of one hundred 7 day-old piglets were randomly selected and allocated into 2 groups.

Group A (AMERVAC®-PRRS + MYPRAVAC® SUIS). A total of fifty 7 day-old piglets were allocated and ear notched. This group were vaccinated with 2 mL dose of a *Mycoplasma hyopneumoniae* bacterin (MYPRAVAC® SUIS) at 7 days of age. The same group of animals was vaccinated with a combination of PRRSV vaccine (AMERVAC®-PRRS) and *Mycoplasma hyopneumoniae* bacterin (MYPRAVAC® SUIS) at 21 days of age. A total 15 piglets out of 50 were randomly selected for serial bleeding which were conducted every 2 weeks.

Group B (AMERVAC®-PRRS and MYPRAVAC® SUIS). A total of fifty 7 day-old piglets were allocated and ear notched. This group were vaccinated with 2 ml dose of a *Mycoplasma hyopneumoniae* bacterin (MYPRAVAC® SUIS) at 7 days of age. The same group of animals was vaccinated with a PRRSV vaccine (AMERVAC®-PRRS) and *Mycoplasma hyopneumoniae* bacterin (MYPRAVAC® SUIS) in separate injection sites at 21 days of age. A total of 15 piglets out of 50 were randomly selected for serial bleeding which were conducted every 2 weeks.

Blood samples were taken at day 0, 14, 28 and 42 during the experiment.

Results

Vaccination with the combination and separate injection has no significant difference in terms of serological response.

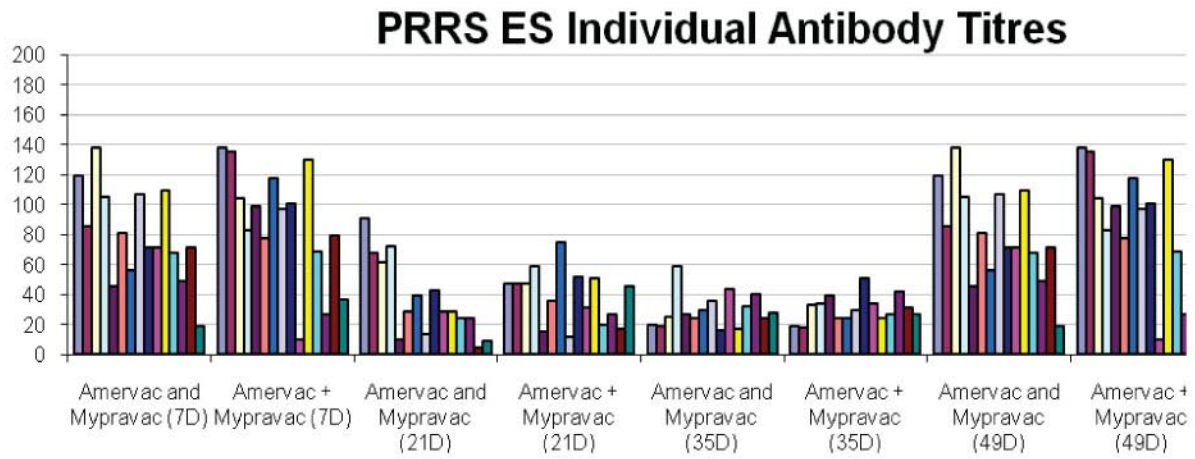

Figure 1. Individual antibody levels in each group using (CIVTEST™ SUIS PRRS E/S). AMERVAC®-PRRS + MYPRAVAC® SUIS (Group A); AMERVAC®-PRRS and MYPRAVAC® SUIS (Group B).

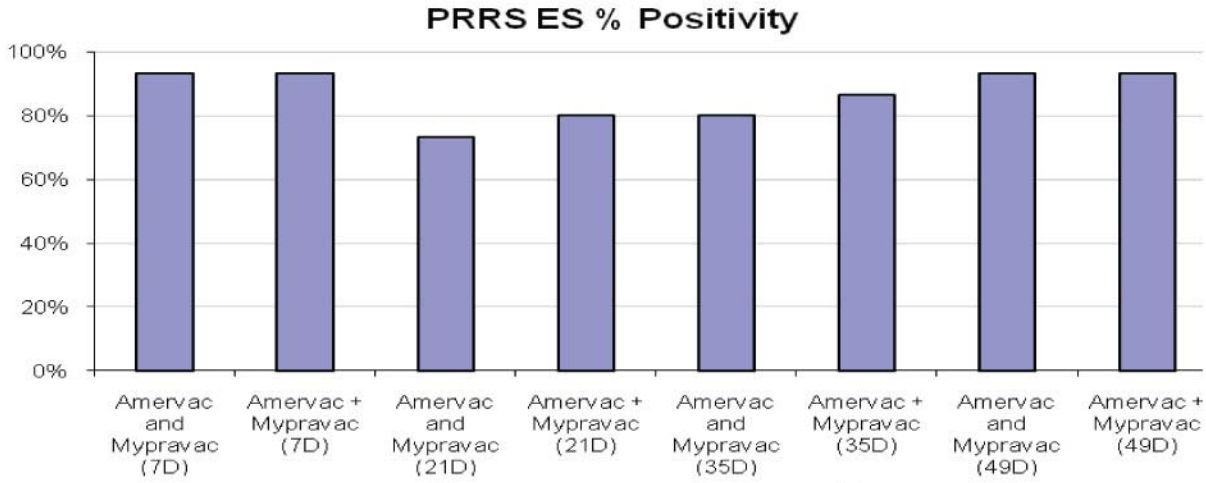

Figure 2. Percentage of positive animals in each group using (CIVTEST™ SUIS PRRS E/S). AMERVAC®-PRRS + MYPRAVAC® SUIS (Group A); AMERVAC®-PRRS and MYPRAVAC® SUIS (Group B).

Discussion

Under field conditions, simultaneous vaccination of modified live vaccine PRRSV and MYPRAVAC® SUIS has been proven valid because it can reduce stress to the animals and reduce cost. In this study, the combination of modified live vaccine PRRSV (AMERVAC®-PRRS) and Mycoplasma bacterin (MYPRAVAC® SUIS) can be a useful tool to control these two diseases.

Conclusion

With the use of the two vaccination protocols, no difference was observed serologically in the two groups of animals. We can therefore recommend that the two vaccines (MYPRAVAC® SUIS and AMERVAC®-PRRS) can be used separately or in combination without reducing their efficacy.

References

1. Bruguera *et al.* 2009. Proccedings of Asian Pig Veterinary Society. Tsukuba, Japan

NOVUS
SOLUTIONS SERVICE SUSTAINABILITY

Feed Cost Reduction by Using Protease Enzyme

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Current price situation

Feed cost depends on the different nutrient requirements (Figure 1) of the animals and the source of origin. Corn and soybean meal will drive the final price of the feed as they are, most of the time, the main sources of energy and amino acids in the feed.

At present, we are facing high priced feed due to an increasing demand on raw materials in the growing market, the competition between the biofuel production and livestock needs, and recently, there has been a dramatic increase due to the drought in USA. In this situation, when the price of corn or/and soybean meal increases, we tend to use "alternative" raw materials to reduce the feed cost. However, this will have an impact in the feed cost saving, and it will be lower than we think. Their prices will go up following the trend of corn and soybean meal prices, and the digestibility of these raw materials is not as good as corn or soybean meal.

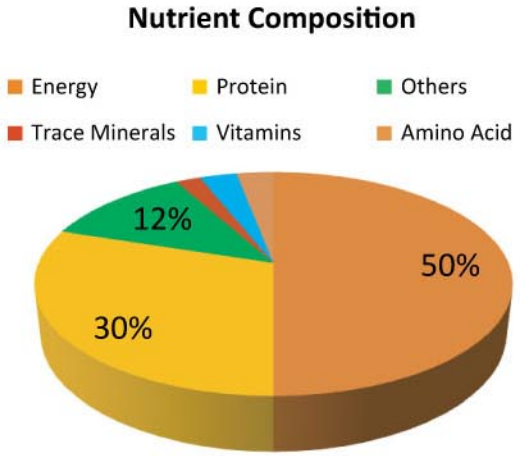


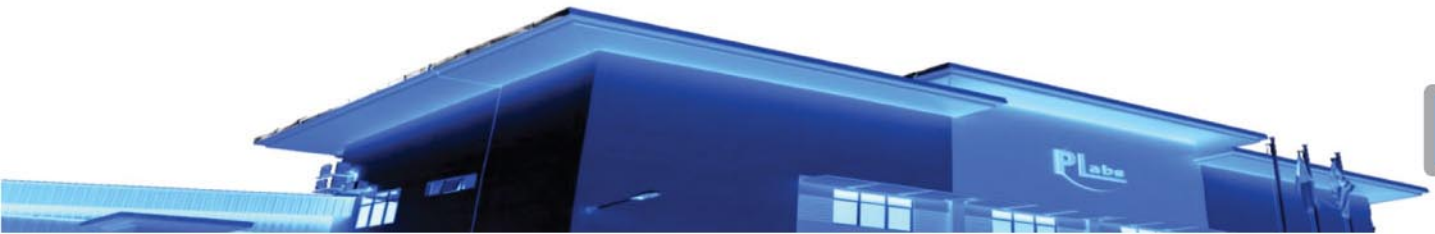
Figure 1. Nutrient composition of animal feed.

Increasing the digestibility of the feed is an interesting strategy for **feed cost saving**. The digestibility of the feed can be increased by feed processing, e.g. through grinding and the use of enzymes. **Enzymes** can increase the digestibility of different nutrients, and hence, we can expect an improvement in the use of the raw materials by the birds.

Nowadays, when the price of soybean meal is at historical high prices, the use of a protease will make much more sense than in the past. The **protease enzyme** will increase the digestibility of the **protein**, releasing the **amino acids** for a better absorption.

Feed cost saving alternative

Extensive commercial experience and research has been carried out using the enzyme **CIBENZA™ DP100** of Novus International Inc., and it has shown that this **protease** allows producers to use diets formulated with proteins and amino acids that are **5% to 7.5% lower** than the recommended industry standards with no sacrifice on the performance of broilers and layers and providing considerable savings in the cost of production.



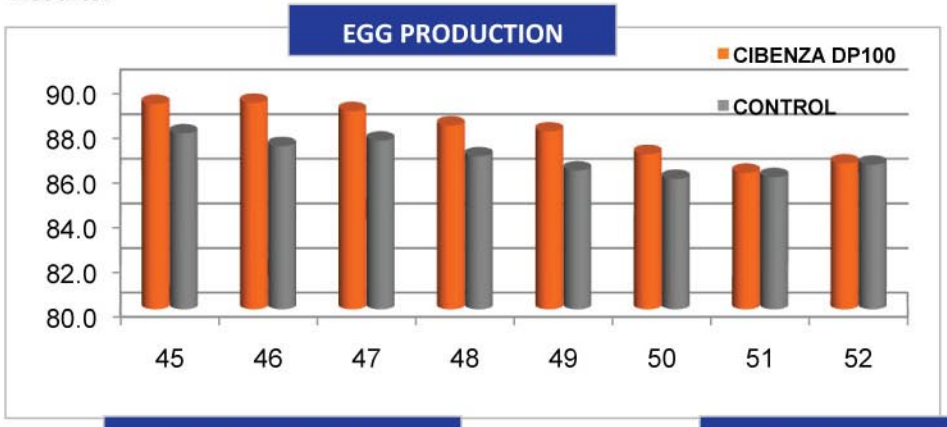
Cibenza DP100

CIBENZA DP100, is a protease feed additive that is particularly aggressive and **heat-stable**. The broad spectrum single protease activity **complements with the animal's endogenous enzymes** to hydrolyze the less digestible protein in feed ingredients of animal and plant sources into peptides and amino acids, the constituent components of protein which are directly absorbed by the gut.

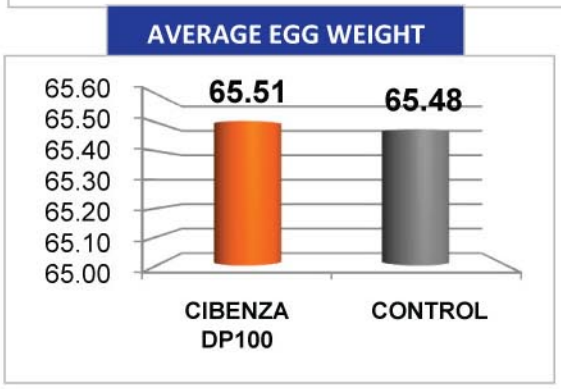
Broiler feed at the current soybean meal and corn prices supplemented with CIBENZA DP100 with a conservative 5% crude protein and amino acid reduction show feed cost saving of around **USD 2.5 (RM 8.00) per ton of feed**.

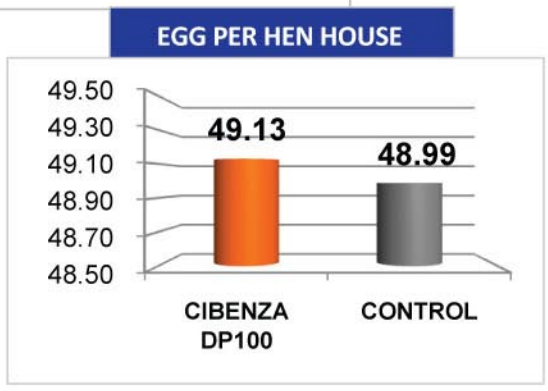
In **layer feed**, we can use a more aggressive approach of 7.5% crude protein and amino acid reduction, and the performance is not affected with a feed cost saving of **USD 3 (RM 9.60) per ton of feed**.

Results:



- Design
  - Control vs. DP 100 500 g/ton (6,792 birds)
- Treatments used
  - Reduce 7.5% Crude Protein and Amino Acid
- Record
  - Percentage of Egg production, Crack egg, White shell egg, Feed intake, FCR, Egg mass
- Age : 45 week
- Date Start : October-November 2011 (8 weeks)
- Breed : H&N





Summary

Feed cost usually contributes 70% of the total cost of animal production. Under the current situation of limited raw materials and high soybean meal and corn prices, the use of protease enzyme CIBENZA DP100 is a unique solution to reduce feed cost. By using CIBENZA DP100 to increase protein and amino acid digestibility by 5% to 7.5%, with the similar bird performance will result in feed cost savings and reduce the overall cost per kilogram of meat produced.

PeterLabs team Building One Day Program

On the 14th of July 2012, PeterLabs had organized a "Team building one day program" for all the staffs at the beautiful Nilai Spring Resort Hotel. It started at 8 on a lovely Saturday morning with some warm up exercises, and then, all participants were divided into 5 groups. Each of the group came up with their respective creative group names, flags and war cry.

BRIEFING


TEAM WORK

With high spirit, we started competing in the outdoor games. Every member in the group contributed a collective effort to overcome challenges in the games. Everybody had a good work out and lots of fun! After that, we had our buffet lunch break where everybody enjoyed a lot of delicious food.


LUNCH TIME

After the break, we continued to play some less stressful games before heading to the seminar hall. In the hall, we were given a task to send every group member to a destination using only 2 chairs with a condition that our feet not touching the floor! With the full co-operation from everyone, every group managed to complete the task. This shows that as long as we are united, we can overcome any challenges. The program then came to an end after prizes were given away to every group for their excellent performance.

PeterLabs 简报

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人工授精 (AI) 的成功关键

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采精、处理精液、检查发情和母猪人工授精的步骤必须适当，以达到最佳的繁殖性能，而这些过程是人工授精 (AI) 迈向成功的的关键因素。这篇文章的目的主要是鼓励养猪户和养殖技术人员进行审核，并检查 AI 的操作程序，彻底地改善母猪的繁殖性能。

4 个主要的过程影响种猪群的繁殖性能:

1. 采精
2. 精液的处理
3. 发情的检查
4. 母猪人工授精

每个过程的指导方针如下:

1. 采精

- 至少在 6 个小时前准备精液稀释剂 (extender) 以便使用。
- 建议在 1 公升的精液稀释剂内添加 200 毫克的硫酸庆大霉素 (gentamycin sulfate) 。
- 使用前，将精液稀释液放在 36-37°C 的恒温水槽内。
- 在采精栏内，确保假母猪台背后的橡胶垫位置是否正确。此外，也确保假母猪台不松动和橡胶垫已经绑紧。
- 组装采精设备，如宽颈暖瓶内方塑料袋和使用橡皮筋固定两层的无菌过滤器。
- 将公猪赶到采精栏内，尽量让公猪平静。
- 洗手和戴上乙烯基手套。
- 让公猪架乘假母猪台。
- 当公猪射精时，收集精子丰富的部分（乳白色），看到凝胶出来时就停止采精。
- 采集后立即把精液送到实验室。
- 把公猪赶回原栏。

2. 精液的处理

- 避免让精液曝露于变化快速的温度，直射阳光或紫外线。
- 在记录本里记录采集的精液量。
- 将一滴未稀释的精液放在载玻片上，在显微镜下观察精子活力。评估精子活力和记录在记录本内。

- 利用 Spermacue 测量精子数量，计算稀释比例和记录在记录本内。
- 把已经在 36-37°C 下加温的稀释液和精液混合均匀。
- 再检查稀释精液的精子活力并作记录。
- 对另一头公猪重复上述过程。
- 把稀释精液装入塑料管内并记录公猪耳号和采精日期
- 上述的所有过程不可超过 10 分钟。
- 把装好的精液保存在 16-17°C 的冰箱里，在适当的温度里保存不可超过 3 天。
- 在使用前没有必要将备用精液加温。

3. 检查发情

- 每天早上 (8:00-8:30 am) 和下午 (4:00-4:30 pm) 利用活跃的公猪检测母猪发情，一天两次。
- 在检测发情前，替母猪淋浴 15-20 分钟。
- 为了确保母猪发情，建议替母猪按摩。
- 对于发情之母猪，执行人工授精的程序如下：
    - 在发情的第一天为女猪、重发情和延迟发情之母猪（离乳后至第一次发情 >7 天） 配种。
    - 在发情的 12 小时后为一般的母猪（离乳后至第一次发情 <7 天）配种。

4. 母猪人工授精

- 把精液存放在正常温度的恒温柜子内（没有必要在使用前温热精液）。保护精子不受阳光照射。
- 在插入授精棒进阴道前，替母猪按摩。
- 清洗外阴，在授精棒上抹润滑剂，将其向上和向前插入阴道内，并在反时针方向上锁。
- 将精液管倒置数次，以混合均匀，并拆除该管的前端。
- 将精液管插入授精棒，继续替母猪按摩。人工授精大约需要 5-7 分钟。
- 如果有精液从外阴流出，重新锁定授精棒和继续替母猪按摩。
- 当精液都完全流入阴道后，持续按摩母猪多几分钟。
- 从外阴取出授精棒。
- 第一次授精后，12 小时后再做一次人工授精。禁止为没有发情之母猪做人工授精。

在现场以猪霉浆菌不活化疫苗 (喜可舒，MYPRAVAC®SUIS) 为猪繁殖与呼吸道综合症（蓝耳病）弱化活毒疫苗 (爱美益，AMERVAC®- PRRS) 稀释剂对于蓝耳病之血清学反应

Michael Felipe E. Quilitis[3], Sergi Bruguera[1], Zoilo M. Lapus[4], Redentor A. Manuel[3], Maria I. Torres[2], Criselda T. Bautista[2], David Llopart[1],
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介绍

在现场，疫苗组合的应用便利和疗效程度是主要的考虑因素。由于建议的猪肺炎霉浆菌(*Mycoplasma hyopneumoniae*) 疫苗注射计划是在第 7 和 21 天，而蓝耳病疫苗 (PRRSV) 则是在第 21 天，因此第二剂的霉浆菌可以与蓝耳病疫苗同时接种。研究 (Bruguera *et al.*, 2009) 显示在实验室的环境下，使用蓝耳病疫苗配合猪霉浆菌疫苗 (Mycoplasma bacterin) 为稀释剂的稳定性。这项研究的目的是要检测以猪霉浆菌疫苗（喜可舒，MYPRAVAC®SUIS）作为稀释剂，是否可以在临床的情况下显示蓝耳病疫苗（爱美益，AMERVAC®-PRRS) 的血清反应。

材料与方法

100 头 7 日龄之仔猪随机分配至两个处理组。

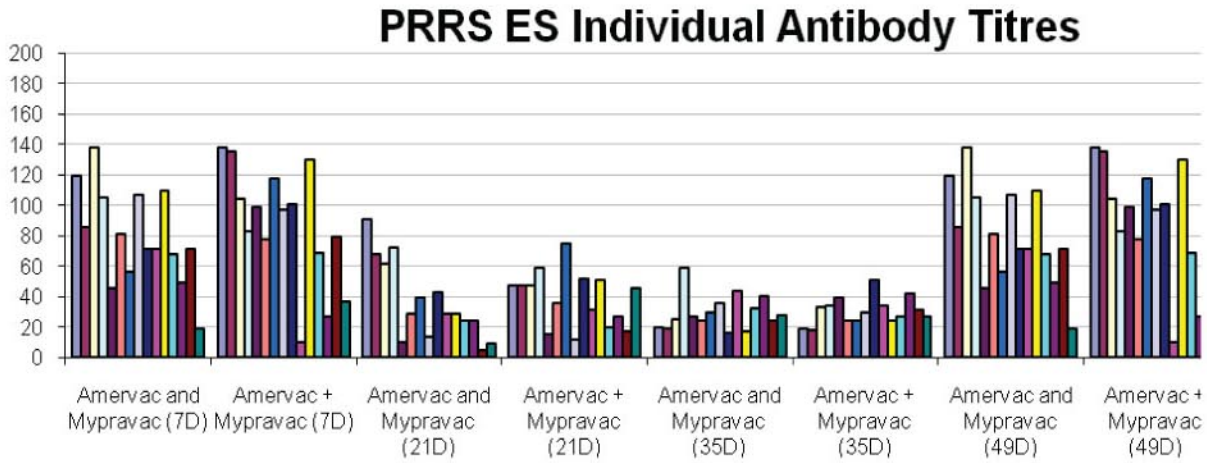
A 组 (爱美益，AMERVAC®-PRRS + 喜可舒，MYPRAVAC®SUIS)。共有 50 头 7 日龄仔猪并打上耳标。这些猪只在 7 日龄接种 2 mL 剂量的猪肺炎霉浆菌疫苗 (喜可舒，MYPRAVAC®SUIS) 。同组的猪只在 21 日龄接种一剂组合以猪肺炎霉浆菌疫苗（喜可舒，MYPRAVAC®SUIS）为稀释剂的蓝耳病疫苗（爱美益，AMERVAC®-PRRS) 。在 50 头猪只中随机选择 15 头猪，每两周抽血检验。

B 组 (爱美益，AMERVAC®-PRRS 和喜可舒，MYPRAVAC®SUIS) 。共有 50 头 7 日龄仔猪并打上耳标。这些猪只在 7 日龄接种 2 mL 剂量的猪肺炎霉浆菌疫苗 (喜可舒，MYPRAVAC®SUIS) 。同组的动物在 21 日龄，在不同的注射部位，接种蓝耳病疫苗 (爱美益, AMERVAC®-PRRS) 与猪肺炎霉浆菌疫苗 (喜可舒，MYPRAVAC®SUIS) 。在 50 头猪只中随机选择 15 头猪，每两周抽血检验。

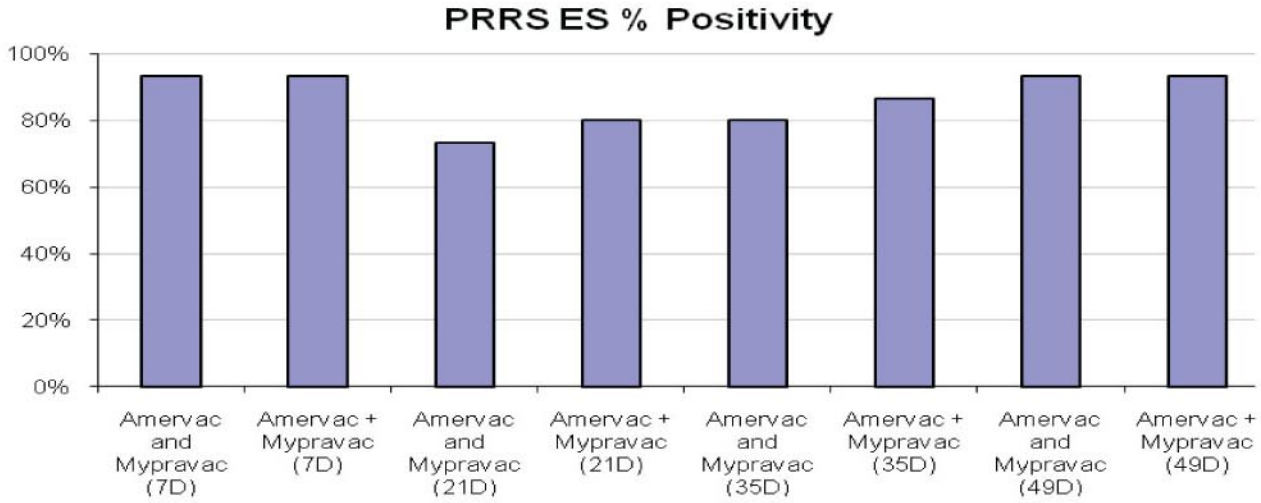
在实验期间的第 0，14，28 和 42 天抽取血液样品。

结果

疫苗组合和个别注射接种疫苗对血清反应并无显着差异。



图一、使用 CIVTEST™ SUIS PRRS E/S 试剂检验个别动物的抗体水平。（A 组）爱美益，AMERVAC®-PRRS + 喜可舒，MYPRAVAC®SUIS; （B组）爱美益，AMERVAC®-PRRS 和喜可舒，MYPRAVAC®SUIS 。



图二、使用 CIVTEST™ SUIS PRRS E/S 试剂检验每组动物呈蓝耳病阳性之百分比。（A组）爱美益，AMERVAC®-PRRS + 喜可舒，MYPRAVAC®SUIS; （B组）爱美益，AMERVAC®-PRRS 和喜可舒，MYPRAVAC®SUIS 。

讨论

在临床的环境下，同时接种改良性弱化活毒蓝耳病疫苗 (PRRSV) 及喜可舒 (MYPRAVAC®SUIS) 的猪只已被证实是有效的，因为它可以减轻动物的紧迫，并且降低成本。在这项研究中，配合改良性弱化活毒蓝耳病疫苗 (爱美益，AMERVAC®-PRRS) 和猪霉浆菌疫苗 (喜可舒，MYPRAVAC®SUIS) 有效于控制这两种疾病。

结论

在这两种不同的疫苗接种方案下，两组动物的血清反应并没有差异性。因此，我们认为这两种疫苗（喜可舒，MYPRAVAC®SUIS 和爱美益，AMERVAC®-PRRS），无论是个别使用或联合使用，都不会降低其功效。

参考文献

1. Bruguera *et al.* 2009. Proccedings of Asian Pig Veterinary Society. Tsukuba, Japan

NOVUS SOLUTIONS SERVICE SUSTAINABILITY

利用蛋白酶降低饲料成本

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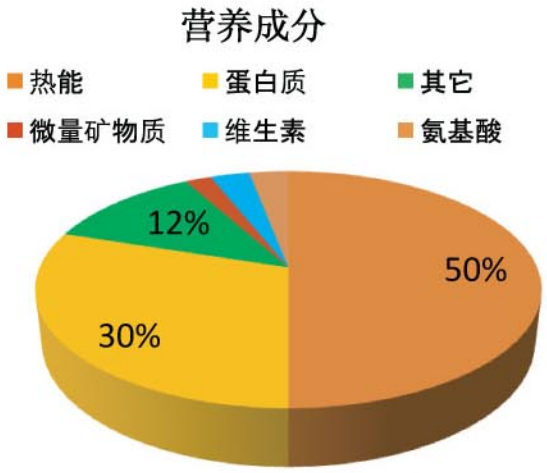
当前的价格形势

饲料成本取决于动物不同的营养需求（图一）和原料的来源。玉米和豆粕将决定饲料的最终价格，因为它们是饲料中的能量和氨基酸的主要来源。

目前，由于市场对原料的需求在不断地增长，生物燃料的生产和牲畜需求之间的竞争，再加上最近美国的干旱，我们正面临着高价位饲料的挑战。在这种情况下，当玉米和/或豆粕的价格高涨时，我们往往会使用“其它”的原料以降低饲料成本。然而，这对节省饲料成本有一定的影响，而且比我们所想象的低。它们的价格会跟随玉米和豆粕的价格趋势，而这些原料的消化率也不比玉米或豆粕来得好。



图一、动物饲料中的营养成分

提高饲料消化率是一个可行的**节约饲料成本**策略。提高饲料消化率可经由饲料加工，例如碾磨和酶的使用。**酶**可增加不同营养物质的消化率，因此，我们可以改善动物对于原料营养的利用。

如今，豆粕的价格是史上最高的，在饲料中添加蛋白酶会比过去更有意义。蛋白酶将增加蛋白质的消化率，所释放的**氨基酸**的吸收会更佳。

节约饲料成本

广泛的现场经验和研究成果显示 Novus International Inc. 的 **CIBENZA™ DP100（蛋白酶）**在不影响肉鸡和蛋鸡生产性能的状况下，推荐生产者可**降低**饲料蛋白质和氨基酸的 **5%** 至 **7.5%**，让业者节省生产成本。

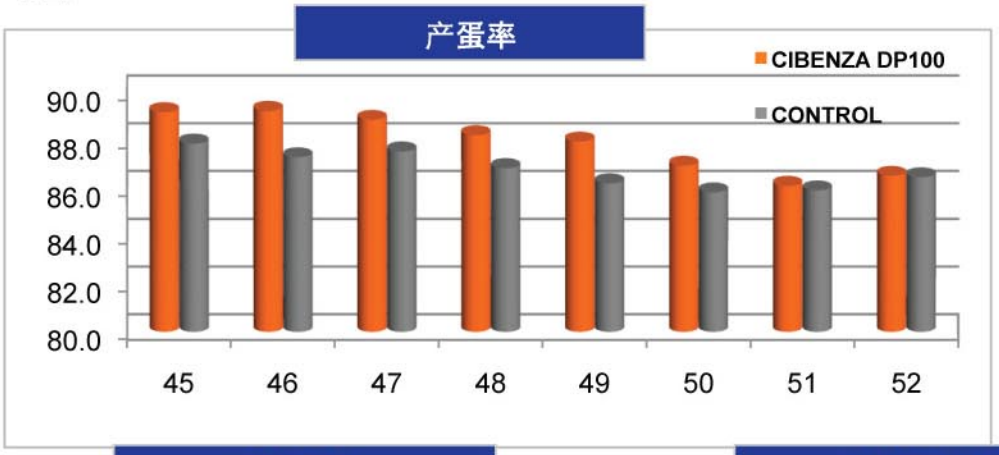
Cibenza DP100

CIBENZA™ DP100，是一种热稳定的蛋白酶。范围广泛的单一蛋白酶 CIBENZA™ DP100 活性可辅助动物的内源性酶，可以水解在饲料中动物性和植物性较低的可消化蛋白质成为肽和氨基酸，这些成分可直接由肠道吸收。

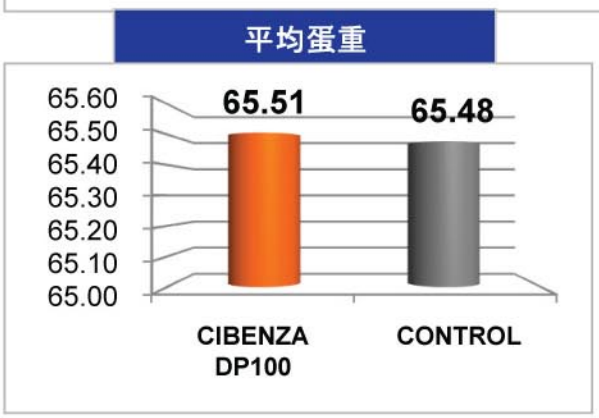
根据目前许多现场的试验结果显示，以目前的豆粕和玉米价格和在饲料中添加 CIBENZA™ DP100 以及降低粗蛋白和氨基酸的5%，**每吨肉鸡饲料**可节省饲料成本约 **2.5 美元（8 零吉）**。

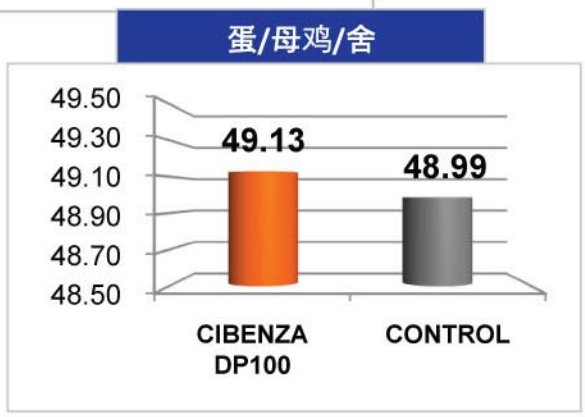
在不影响生产性能的情况下，在**蛋鸡饲料**中，我们可减少7.5%的粗蛋白和氨基酸，每吨饲料节省饲料成本约**3美元（9.60零吉）**。

结果



- 实验设计
  - 对照vs.蛋白酶DP100 500克/吨（6792只鸡）
- 处理
  - 减少总蛋白质和氨基酸7.5%
- 纪录
  - 产蛋率、破蛋、白壳蛋、摄食量、换肉率、蛋重
- 周龄：45周
- 实验期：2011年10月-11月（8周）
- 品种：H&N





结论

一般上，饲料成本是动物生产总成本的70%。在原料供应有限和豆粕及玉米价格高涨的当前形势下，使用的蛋白酶CIBENZA™ DP100是一个降低饲料成本的解决方案。使用CIBENZA™ DP100可增加5%至7.5%的蛋白质和氨基酸消化率，在相同的生产性能下，节省饲料成本和降低整体生产每公斤肉类的成本。

PeterLabs一日团队建设规划

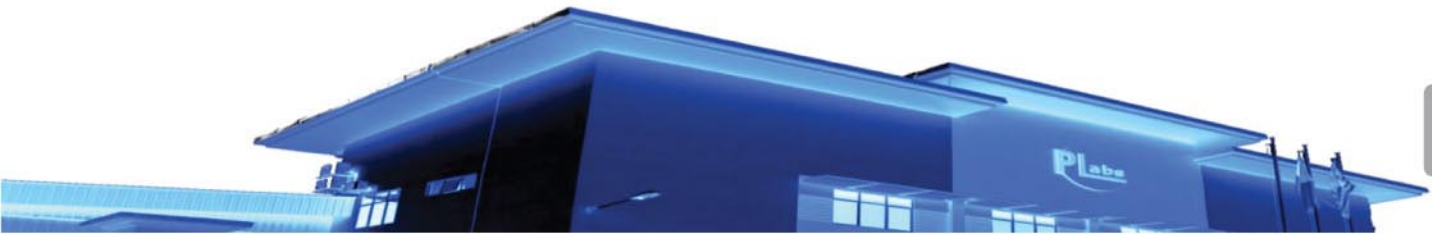
PeterLabs于二零一二年七月十四日在Nilai Spring Resort Hotel为职员们举办了一日团队建设规划。在那个美丽的星期六早上八点，大家聚集在一起做热身操，为精彩的一天做好准备。然后，大家被分成五个小组，每组必须自创一个有趣的组名，口号以及制作一面具有代表性的旗子。

讲解


团队精神

一切准备就绪后，大家以高昂的情绪开始具有挑战性的户外活动。在所有组员的高度配合下，每一组都成功地完成了各项挑战。接着大家享用丰富的午餐，分享各项挑战的经验。


午餐



小休片刻以后，我们参与了一些轻松有趣的游戏，大家玩得不亦乐乎，欢笑连连。之后，我们进入礼堂进行另一项团体游戏。在脚不能碰地的情况下，我们只能用两张椅子把所有组员送到一个指定的目的地。在大家的通力合作下，我们成功地完成了任务！这证明了只要大家齐心合力，所有困难都能迎刃而解的。节目来到尾声就是公司颁发了奖品给各项优胜的小组，在一片欢笑声中结束了当天的活动。


游戏