Practical Health

Insight (17)

Alex Eggen
info@alexeggen.com

Message from the APVS 2015

Manila, the jam-packed capital of the Philippines, was the recent host of the 2015 and 7th Asian Pig Veterinary Society (APVS) Congress. The Philippine College of Swine Practitioners was in the driving seat for the second time, as they were for the 2nd APVS congress that was held 10 years before in 2005. It was again an excellent meeting.

The college, led by Dr Zoilo Lapus, was able to attract over 1000 delegates to the congress and had made a program that combined plenary sessions covering interesting topics with an umbrella view in the morning with four parallel break-out sessions in the afternoon that went into much more relevant details for Asian pig veterinarians.

It has become a tradition for the APVS to start with country reports from the seven members that form the constitutional members of the APVS. Taiwan has just joined forces with the APVS and it is very good to have both China and Taiwan represented.

The country reports make it absolutely clear why the regional congresses are becoming more important. In this part of the world, where over 60% of all pigs in the world are present, interest is still very much focused on diseases such as Classical Swine Fever and Foot and Mouth. The PED and PRRS situations are very different and transboundary disease control is still a dream.

The different keynote speakers were selected to address these specific issues. One of the dreams of the Asian Tigers was confronted with political reality of the Old World (Europe).

Keynote speakers

The keynote speakers from both Thailand (Professor Roongroje, Dean of the Chulalongkorn University in Bangkok) and Japan (Dr Otake) stressed the importance of regional exchange of information on disease situations between countries. FMD has provided many such cases in the past.

Countries were often taken by surprise and had to cope with the economic and social consequences of suddenly finding a new FMD virus in their country.

Often later was it often found that this strain was identical to a FMD virus strain present in their neighbouring country.

Stricter border control on animal movement and regional vaccination programs with the relevant serotypes can only be implemented when the complete FMD picture in the region is known.

Hanoi in the north of Vietnam is a major market for pork meat. Live pigs are brought in from China to meet the demand in Hanoi.

With the length of the border and the rough landscape, good border control is very challenging. It is no wonder that FMD outbreaks occur along these trading routes and by targeted vaccination at least a reduction of the potential damage will be noticed.

Mass vaccination

The proof of this principle was shown in 2005 when all the cattle, buffaloes and pigs in three different villages were vaccinated against FMD. After a number of outbreaks in the years before the program was implemented, all the animals stayed free of clinical FMD symptoms in the period after the mass vaccination. But again only when the vaccine that was used in this program in the North of Vietnam also contained the strains prevailing in the bordering part of China.

The spread of HP PRRS virus from China into Vietnam followed exactly the same route and principle, only in the PRRS case protection by vaccination was an even greater dream.

Firstly, because regional PRRS vaccination does not have any support from the different stakeholders and, secondly, because FMD vaccines are giving a higher level of protection than can be expected from the current PRRS vaccines in relation to the HP PRRS strain.

This spread of the HP PRRS virus strain was also taken as an example of a clear uncontrolled cross boundary spread of a major infectious disease, followed by PED some years later. Who is next?

Fresh meat markets will always be difficult to control, but the lessons to learn are simple. Control starts with knowledge. Knowledge is based on education, experience and information. Education in Asia has taken a great leap forward. A complete new generation of very well educated scientists are now in key positions and they will move their countries forward.

A fresh meat market in the Philippines.

Experience is also abundant, not always planned and often disastrous but it provides definitive learning cases.

Now they are working on the information part – and they take that part seriously. OIE, FAO, and even WHO, will have a difficult time catching up with the demands in Asia for diagnostics and a clear and transparent system of information exchange.

The keynote lecture on African Swine Fever in Europe made it clear that in Central Europe this dream of 'One World – One Health' that the officials of OIE, FAO and WHO are preaching, is still very far away.

All ASF outbreaks in Poland in the wild boar population are close to the Belarusian border. But there are no reports from Belarus that there are ASF outbreaks on their side of the border.

No records are shared on the number of cases investigated by the Belarusian authorities, no samples are sent to the ASF reference laboratory for double checking and there is no information on how the ASF field situation investigations are undertaken.

According to the national census the pig population in Belarus is declining, more pork is imported to meet national demand and no reason is given.

The border region in Poland where the ASF outbreaks occur is a rather isolated part of Poland with little contact with other pork producing areas.

There is a wild boar population on both sides of the border and wild boar do just roam around and do not travel large distances. For the epidemiologist it is clear that ASF plays a role on both sides of the border but the information is simply lacking.

When the OIE, WHO and FAOs of this world are not capable of getting the European leaders so far that they are transparent then what to expect from others? And why? Political motives do not always take the interest of common people into account.

Dream versus reality

In transboundary disease control exchange of disease information is crucial.

The pledge made by the Asian speakers is 100% valid. The lecture on ASF made it clear that this exchange of information is not even practiced in the region where OIE, FAO and WHO have their headquarters!

These organisations should make it absolutely clear that the socio-economic impact in the affected rural areas is simply too big to let things just happen without any serious attempt for cross-border collaboration on disease information and disease control.

The world is getting more complex through decisions made by politicians with the aim to safeguard local and national interest. But there is no need to add more complexity to make it worse! ■

Practical Health

Insight (18)

Alex Eggen
info@alexeggen.com

Self-sufficiency versus Imports

The animal protein industry has a bright future ahead. The world population of meat consumers is increasing, not only in numbers but also in income and their (meat) purchasing power is therefore increasing too. At the moment pork is still the most widely consumed animal protein, influenced mainly by consumption in Asia.

It is predicted that by 2020 poultry meat will take over from pork as the major source of animal protein (Fig. 1). Religious factors besides, a much better developed fast food outlet system is the major reason for this shift.

But what about the relation between self-sufficiency and imports? The amount of pork meat traded internationally is very limited. It is estimated to be between 4-6% of all the pork produced, but the impact for the importing country can be enormous. Local producers are always afraid of imports because it will have a negative impact on local prices. This is a true and valid problem. Pork meat is normally stored for a short period only. Pork meat is eaten either wet (slaughtered and eaten the dame day) or fresh when stored for a few days at 4°C.

Deep freezing pork is only done when very exceptional circumstances prevail and it is, in fact, only moving the oversupply problem to a later moment. For many countries it is a choice between the desire to be self-sufficient to secure supplies in the shops, be less dependent on imports and other priorities.

Examples of other priorities are the reduction of the environmental impact, space in general, competition between humans and pigs for water and feed etc. There are countries that have a different look at these priorities. Japan, Russia and China provide us with some interesting cases.

Japan

Japan was 100% self-sufficient for pork meat until around 20-25 years ago when the government decided to follow the successful strategy followed by the poultry meat producers and shift part of the production to other countries and rely more on imports. Environmental problems, lack of space and cost of production were the main reasons for this shift.

At the moment Japan is dependent on imports for around 50% of their pork meat. Both fresh meat from countries that can meet the import requirements, but also ready to use (pre-cooked) components from other countries are imported. This process is strictly regulated by the Japanese authorities; import levies are collected and they narrow the gap between cheaper imports and local cost of production. This facilitates the reduction of the number of smaller farms to get more economy of scale in the local production system. Even multiple smaller farms join each other to create a larger farm with shared ownership by several families. All in all, this is a very successful strategy, it keeps the rural economy alive and when pork on the world market is in short supply, the Japanese can easily fill up their requirement by allowing more poultry meat to be imported or simply eat more sushi.

Russia

Russia was only 25% self-sufficient some 20 years ago with extremely outdated production facilities. Now they are close to 80% self-sufficient and modernisation has happened very quickly throughout the whole chain. How did they do this? First of all, there was backing for this expansion from the central government but it also needed to be financed. The trick was very simple, it is still used today and it works. Just find a reason to close the border for imports and the local prices go up.

Pork meat is not easily replaced in the Russian diet so the consumers are, to a certain extent, prepared to pay the higher price. The result? Those parts of the chain that are vertically integrated get more money and can modernise and expand their business.

This means that the consumers in the streets of Moscow and St Petersburg are helping to finance the restructuring of the Russian swine industry, as well as the subsidy given by the central government.

Producers in Europe still feel the effect of such a strategy and so did Brazil many years ago when they were the leading exporter to Russia.

At a given moment one case of Aujeszky's disease was found in Brazil. Russia, from north to south and east to west, full with Aujeszky's disease virus, immediately closed the border for pork from Brazil and up went the local Russian pork prices.

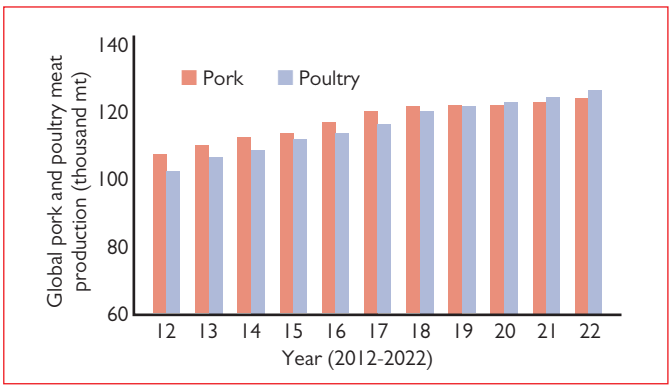


Fig. 1. Predicted world production of pork and poultry meat. In 2020 poultry meat will be the leading source of animal protein in human diets (data courtesy of odconsulting).

China

China is at a crossroads and must choose between self-sufficiency in pork production and imports. It is no secret that the whole world is eagerly waiting to see which way China will decide to go. Pork meat is an essential part of a Chinese meal, which is also the reason why the government will tell us that China wants to be self-sufficient in pork production. Experts do repeat this official position. However, if they choose self-sufficiency, they will have no other option than to import feed ingredients. This will have an enormous impact on world feed prices. They will also have to find a way to get more (rain) water. Already now they have a shortage of clean water for bathing and for growing crops for their human population and pork production requires a lot of water.

If they choose to import pork meat they will not need to buy additional feed, they will not need additional water and they will have less pollution. However the world market price for pork will definitely go up. The cost of production in China is among the highest in the world, so to pay for imported pork is no issue.

With the Chinese population moving more and more to the urban areas, the link with the wet market served by backyard and smaller producers will gradually be replaced by prepacked goods sold in the supermarkets. Here the consumers will look for meat quality and for the right cuts, not for the origin.

It is as if the larger Chinese pork producing companies are already preparing for this scenario by buying swine farms all over the world. They have time now to prepare themselves for arranging exports to their homeland. We all know that land will be required outside China to feed their citizens in the future. When a process like this, with the size of China, gets its momentum the outcome will be enormous but it is still unpredictable, whatever the experts say. ■

A typical Japanese swine farm on Kyushu Island in southern Japan.

Practical Health

Insight (19)

The certified veterinarian

Alex Eggen
info@alexeggen.com

In today's world two things are happening everywhere – there is more trade than ever and you will find traders that want to get rich quick. There are enough examples, from all over the world, of traders cutting corners to increase their margins or simply by cheating their customers.

This is a nightmare for every government when it relates to foodstuff, especially when it involves products that are used every day. By definition they are huge in their volume and the number of human casualties when things go wrong is large. This goes together with exposure on both television and in newspapers around the globe and it can take years to overcome a ruined reputation. The dairy industry in China is still suffering from their infant milk powder scandal.

How are governments reacting to this situation? There is only one option for them. Regulating the flow of products from the start of production to the kitchen and to be able to impose sanctions when things go wrong. But when looking at the immense scale of food production and how scattered it is over countries, no government can afford to monitor all the details involved in this enormous flow of goods.

In my younger years that was the case and governmental inspectors would visit different parts of the food chain, from farms to slaughterhouses to shops and restaurants. They still do so, but at a very much reduced scale simply because they no longer have the money.

In the new style of 'control' the industry has to check themselves and this was seen as the solution to solve the matter. Put the responsibilities where the action takes place. This is a nice idea when you are a politician sitting behind a desk in a nice office for a nice salary, but the world outside is very different. As a general statement in trade, money rules, and words like quality and customer focus are reserved for marketing. The focus of governments is on regular supplies of food in enough quantity and that the products comply with agreed and documented safety standards.

How can these different objectives be merged so that the consumer is sure that they buy the right quality food at an affordable price? Here are some examples from around the globe.

Western Europe

In Western Europe the flow of animal health products from pharmaceutical industry to pigs is channelled through practising veterinarians. The majority of drugs are in the prescription only medicines (POM) class. This means that only a licensed veterinarian can prescribe these medicines and the owner can give, in certain defined cases, these medicines to the pigs but always under the responsibility of the veterinarian.

The veterinarians have to keep records of what is supplied to farms under their care and it is their responsibility that the owner stores the medicines correctly. They have to fill in the record forms and they have to make sure that the owner is aware of the withholding periods when medicines are given before slaughter. This on-farm system is checked by governmental officers but only when there are indications to do so. Slaughterhouse findings can show that there are leaks in the process which may affect the meat quality, which in turn might lead to human health concerns.

North America

Around two years ago, in North America, the installation of the Common Swine Industry Audit (CSIA) took place which is a continuation of what the National Pork Board had started up before.

Although their focus is very much on animal welfare their objective is to come to a cost wise acceptable farm verification system in agreement with the national packers.

The Industry Audit Task Force is formed by pork farmers, the meat packers, practicing veterinarians and animal scientists.

Consumers interests are taken into account by focusing on animal welfare (an excellent item in marketing) but consumer safety aspects are also addressed in the audit. Keeping treatment records are part of the audit.

Asia

In Asia new developments are noted in this field. Thailand is becoming the kitchen of the world. More and more ready to use pre-cooked meals or part of meals are shipped from Thailand to various places in the world. To protect this industry Thailand need professionals that understand and safeguard this business. As a consequence of this development a complete new university degree curriculum has been set up in Thailand to meet the demands of the industry.

These new professionals will play a key role in this consumer oriented industry to make sure that it lives up to their customer base expectations.

Their involvement in the chain will be from the very start at the producer level and covering all aspects, through the various processing plants up to the moment the goods are shipped to their final destination.

This is a really exciting development showing the rapid developments that are taking place inside Thailand to expand and safeguard their presence on the world market.

China

China, the giant in this field, is also taking the matter seriously. At the last Chinese veterinary Congress in November 2015 in Fuzhou, the deputy Minister of Agriculture made it absolutely clear that control on food production will change. He focused very much on the role of the veterinarian.

The Chinese government wants the veterinarian to be the central point in prescribing medicines. No other party will be allowed to treat food producing animals with antibiotics in the near future. To reach this goal veterinary education will be upgraded as well as the social status of the veterinarian, his income and his responsibilities.

He made it very clear that in all aspects of food production responsibilities, accountabilities and sanctions will be implemented. This will be a long term goal but that is the nature of these processes.

As long as the end goal is well defined and building the structure towards this goal shows regular progress, the industry will follow and adapt.

Those that cannot adapt for whatever reason will leave the scene.

Certified veterinarians

Europe might take the lead in the introduction of the certified swine veterinarian. In every European country the number of swine veterinarians is declining. Universities find it increasingly difficult to deliver graduates that have the skills and can handle the complexity the modern swine veterinarian is confronted with.

They cannot afford the staff required to educate students in all these aspects. The only option is for universities in different countries to set up a comprehensive curriculum by making use of the expertise they have. This process will create a new level of (EU-) certified swine veterinarians. But who will be the driving force of developing such a curriculum?

The university scientists will need students to justify their existence but the top swine veterinarians and the meat packers should also have a strong voice. They are directly impacted when things go wrong.

However, a certificate only has value if you have to make an effort to get it, when it gives the certificate holder an extra reward in terms of higher salary and when someone can take it away from you when you do not adhere to the agreed rules and regulations.

The pork industry is becoming more and more international. National standards or certificates will be of little value in the future.

When private industry has to take the lead in food safety then it is: responsibility, accountability, reward and sanction. Of these elements sanction is essential – especially when money rules! ■

Fresh pork meat in Thailand.

Practical Health

Insight (20)

Alex Eggen
info@alexeggen.com

Spotlight on the AASV 2016

New Orleans in Louisiana, USA, originally founded by the Spanish, was the host for the 2016 meeting of the American Association of Swine Veterinarians (AASV). A record number of 1160 attendees were present, including 278 from outside the USA and 138 students from 25 veterinary schools.

This most important American meeting for swine veterinarians is extremely successful in more than one meaning. It is instrumental in disseminating knowledge between its members; it helps to make the AASV financially a very healthy organisation; it is famous for creating conditions for networking; and it is the showplace to attract young (pre-graduate as well as graduate) veterinarians.

Finance

The AASV provides its members with different tools to connect with each other and to disseminate information. Their weekly e-newsletter keeps everyone updated on the latest issues, new job positions etc.

Their printed magazine, the Journal for Swine Health and Production (JSHAP), completes this stream of information with articles and reviews of interest to their members.

The JSHAP board is working hard to get a Medline listing. The majority of their publications (including the original research, practice tips, brief communications, case reports and observations) are peer-reviewed by a peer-review board following strict scientific review standards. This is of course besides the news items and editorials.

All this has a value and is reflected in their membership number and makes their membership fee a good value-to-offer proposition. But more than this their annual congress has an excellent business model and is a real money maker for the AASV organisation. All congresses make money, so what is the difference? There are several differences.The AASV secretariat, headed by Dr Thomas Burkgren with excellent assistance of Sue Schulteis, executes the task of the Professional Congress Organization (PCO), besides of course other duties that are relevant to the AASV.

Other veterinary congresses involve an outside commercial PCO and this is normally done at a high cost. Secondly, any PCO holds the contacts with the preferred congress hotels and here the AASV has all the bargaining positions in their own hands. These savings, and you talk real money, is of benefit to the AASV.

Next to this all expenses are sponsored by one of the participating companies that actually pay very little to be present. In this way the companies save money that can be used to expose themselves with selected items of their choice, like receptions or lunches.

However, the AASV congress organisers safeguard that there is no commercial sponsorship of any of the scientific seminars, workshops or presentations to ensure the integrity of the continuing education which is the cornerstone of the meeting.

No large booths, but small technical tables, again less expenses for the companies and no large convention centre required. An excellent business model.

Besides this there is the famous AASV foundation auction. Headed the last time by Dr Warren Wilson, this auction is a money maker for the AASV foundation.

Selection of a new venue, negotiations with possible congress centres is all done by the AASV secretariat in their function of AASV Congress PCO. The AASV board decides in the end where to go to avoid conflicts of interest.

The AASV ensures that the money generated by the industry through this type of activity remains inside the industry for the benefit of those that have actually brought-in the money. It sounds fair and easy but worldwide this is the only example we have among the major swine congresses.

Knowledge

This time the AASV brought us everything, ranging from very basic stuff to high level applied research. Dr Scott Dee had a very good and thorough report on the survival of PED virus in feed materials.

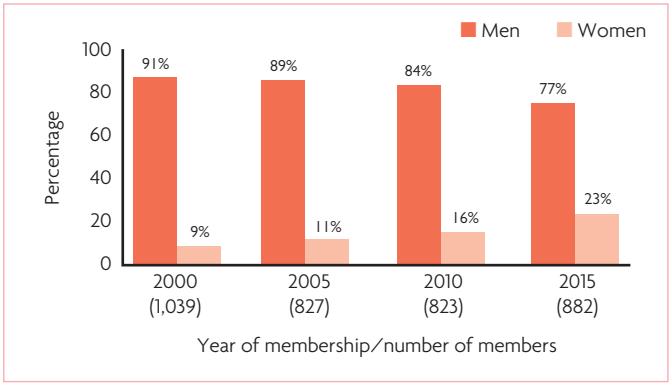
Mimicking in great detail the logistics conditions from China to Iowa. John Harding was awarded the Howard Dunne memorial lecture and brought the audience up to date with the ongoing research on Brachyspira spp and focusing on B. hampsonii. With antibiotic usage more and more under pressure a close surveillance on these pathogens is more than needed.

Peggy Anne Hawkins gave a personally tinted Alex Hogg memorial lecture focusing very much on the rise of the female swine veterinarian in the USA.

Dr Hesse gave a presentation on young piglet immunity and how maternally derived humoral and cell mediated immunity react to, for example, cross fostering.

The humoral immunity aspect is not necessarily affected if the piglets are moved to another dam immediately after birth but for the cell mediated component this has a big impact as it relies also on genetic similarity between the piglet and the dam. Next to these research reports there are also reports that come directly from the field.

The 'company-good-news' show is a completely separate activity at the congress. The signal is clear, the animal health industry has a platform but the AASV is only facilitating. Everybody is aware of that, including the audience. A real differentiator with other swine congress!



AASV membership by gender and year (courtesy AASV).

Networking

About 50-60% of the delegates are always present at any AASV congress. They are the opinion leaders from both the academic and the private sector. You can actually plan your meetings beforehand. The newcomers quickly realise that it takes very little effort to start a discussion with anyone that is present. It is a very low threshold audience. You listen to a lecture, you have a question that you forgot to ask, just locate the speaker, tap him or her on the shoulder and off you go. It sounds easy and it truly works.

Recruiting the new generation

In any country it is difficult to recruit new swine veterinarians but the industry needs them. In the AASV they do everything to attract veterinary students to participate in the AASV congress so that they get a touch of what it is like to be a swine veterinarian.

When the students prepare a poster or give a lecture in the student seminar, they are financially supported by the AASV, and many make use of this opportunity.

There is a special students reception, hosted for many years by Merck/MSD AH where students and veterinarians or industry can easily get acquainted with each other. The percentage of female veterinary students at the universities in the USA is more than 85%. Their percentage in veterinary practice stands now at 60% across all species and is growing.

The number of female swine veterinarians in the USA is only 23%. The total number of swine veterinarians stands at 1% of the total number of veterinarians in the USA. It is clear that it will take a real effort for the USA to keep its required number of swine veterinarians. The AASV knows that and works hard on it with different means. It has to work because the industry needs qualified swine veterinarians! ■

Practical Health

Insight (21)

Alex Eggen
info@alexeggen.com

Cost of Disease Eradication

It is a good tradition to ask about the costs involved in any action that is planned. Especially when the need to undertake the action is subject to debate. Discussion quickly diverts to aspects that cannot be quantified in financial terms.

Everyone knows that we will not be able to include all aspects involved in this activity. Simply because we lack the necessary working experience to include all details. But we have some good examples from the past that will help us to take the decision to work on disease eradication.

The first question is, of course, why should we work on disease eradication? Followed by, what are the important factors to consider?

Diseases will always be with us, irrespective of how well we keep our pigs. New diseases will appear and this is inevitable. We see that not only in the human field (Aids, Ebola) but also in our world (PRRS, PCV2).

When we take all diseases together that are still present in certain parts of the world, we have to acknowledge that, for example, vaccination schemes are becoming almost impossible to implement.

We still have the advantage that our pigs live a relatively long time. In the poultry field it has already become an art to fit in all vaccinations/treatments. So, basically, we have no choice. We need to reduce the number of diseases for which we give treatment in order to make room for the inevitable new ones that will come along. This is next to the financial consequences of vaccination or medication, infections, market reach and interruptions in providing pork to a market that can easily switch from supplier.

Learn from history

Whenever we want to undertake the effort of disease eradication we need to be aware of relevant historical experience. History is full of success stories and full of failures.

When it comes to disease eradication we have many success stories in the veterinary field.

Many regions and continents are free of important diseases, such as CSF, FMD, Aujeszky's disease, and mange. Relapses do occur from time to time teaching us how important it is to be vigilant as these surprises always come with tremendous cost.

The most important aspect of why one should study the history of disease eradication is simple: avoid making known mistakes and when adapting programs to local conditions please include the essentials of the original program. Of the diseases that are subject to successful eradication programs, the epidemiological factors are often well known.

This does not mean that they can always be controlled easily. The characteristics of these pathogens are often very different and some pathogens are simply too difficult to control in a failproof manner. Here, PRRS is the most frustrating example.

Success stories

Let us look at some success stories and the techniques used. The most simple one is the medication technique as used in the eradication of mange (Sarcoptes scabiei var suis).

Sarcoptes scabies infected pig.

Introduction or contact with S. scabiei var suis infested breeding stock is often the reason for infection.

Transmission of S. scabiei var suis occurs rapidly through direct contact of infested and naive pigs and through contact with S. scabiei var suis contaminated fomites.

Survival of the mite eggs away from the host is limited. Survival is <1 hour at temperatures >30°C.

Ivermectins and analogues given by either in feed medication or injection are extremely successful as an aid in an eradication program but withdrawal times for meat need to be taken into account.

Taking all experiences together, the cost of control is far less than the potential economic damage. A real silent success story and one that is copied all over the world with similar success rates!

Another technique used in disease eradication is vaccination, eventually combined with tests and removal.

Pathogen exposure when no vaccines are available, as was done for TGE for example, is also a good alternative.

With vaccination we have many examples including: vaccination only (atrophic rhinitis), removal of infected pigs (Aujeszky's disease) or total depopulation of affected farms (CSF and FMD).

In all these cases discipline in the execution of the program is by far the most important factor. No matter how good the protocol is, unless management and staff follow the rules exactly, failures are likely to occur.

So now we have identified some important factors – historical experience translated to local conditions and discipline in the execution of the program and in the organisation.

But there is still an enormous difference in the success rate of disease eradication programs, which is the main reason many of us do not embark on any of these programs.

Why? In general, because tools and conditions are not the same and cannot easily be replaced by locally available equivalents. With tools we do not only mean 'soft' factors like the available veterinary infrastructure and educational level of farm owners and labourers on the farm but also the 'hard' factors, like availability of the required medication/vaccines and the standard of diagnostic support.

They are all an essential part of the tools that we need to successfully complete an eradication program. When these tools are not available the producer has to make a choice and then wrong assumptions are often made.

Vaccines indicated for the same disease and admitted to the market by the same type of organisation are often considered to be the same and can therefore be replaced.

Well it is here that things can often go wrong. For example, in the case of CSF (classical swine fever) vaccines, and considering the different countries where CSF remains a problem, we notice that there are many different officially released vaccines.

They range from very safe to those that still have pathogenicity and from those that are highly efficacious to those that are very, very weak and give hardly any protection.

CSF virus infected pig.

CSF vaccines often operate on a very restricted market that is exclusive to products that are available through national organisations.

CSF eradication programs that are highly effective and use a specific CSF vaccine may not be successful when executed with another vaccine, even when other 'tools' are comparable.

The best documented example here is the experience gathered with the Aujeszky's disease eradication program with the 'Golden Standard' vaccines.

Out of 28 plus Aujeszky's disease vaccines only five qualified in the Dutch Aujeszky's disease virus eradication program. For those that did not pass, the important reasons for exclusion were all in the area of efficacy and safety.

Different vaccines

Comparing different vaccines can only be done under well defined conditions with well elaborated protocols complying with high scientific and independent standards.

When we consider OIE list A diseases for which eradication programs are executed by using vaccines, only those vaccines that meet criteria set by international standards should be allowed on the market.

Why? Well, farmers that do spend the money cannot assess safety and efficacy themselves and need assurance that they can get high quality vaccines to fight these important diseases.

Any cost involved in disease eradication is too high when the tools are useless. For the pork producing global community the rewards are also considerable.

Better control of the CSF virus worldwide in infected countries means less chance of introducing this costly virus in free countries.

Enormous financial savings in costs involved in eradication can be gained from applying lessons learned! ■

Practical Health

Insight (22)

Alex Eggen
info@alexeggen.com

The IPVS/ESPHM Combination

This June in Dublin we witnessed a 'first of its kind'. The merger of two major congresses. Actually, it was more or less a coincidence. The Grand Old Lady, the worldwide-covering IPVS with a history of 47 years (24th Congress), was held together with the upcoming regional star, the European-focused ESPHM, having a history of only seven years (8th Symposium).

This was definitely an unique experience but, without a doubt, organising such a major novel exercise encountered the usual differences of opinion, problems along the route to execution and frustrations. What are the advantages of such a combination for the swine veterinary community in and outside of the involved region? What are the disadvantages? And what is the way forward?

Before embarking on answers, let us first see what the Dublin IPVS/ESPHM congress 2016 did bring us.

The location where the congress was held perfectly fitted the stature of a Grand Old Lady. The prestigious Royal Dublin Society, the venue of the congress, was founded in 1731. It is committed to economic and cultural development of Ireland but is also a philanthropic society supported by members. In Ireland agriculture is still very important and thus also for the RDS. For example, 2016 marks the 143rd year of the Dublin Horse Show, one of Ireland's premier events.

In total 3,552 delegates attended this IPVS/ESPHM event coming from 71 countries. They could choose from and listen to 18 keynote lectures and 120 oral presentations. The program that was set up by the scientific committee was excellent. A wide range of topics attracted the attention of the delegates and filled up both larger and smaller lecture rooms until the last day. There was a fine balance between topics of international interest, for example on PRRS. Professor Fernando Osorio (USA) gave an excellent PRRS lecture including both a historical overview and new developments in the search towards a consensus vaccine with broad spectrum protection and genetic resistant pigs. Topics of more general interest, like pain perception in pigs by Sandra Edwards of Newcastle (UK), were also included.

An example of the regional touch was the introduction to the meeting of the clinical club sessions chaired by David Chennells. He has handled this type of session for years at the UK PVS meetings, where practical cases are presented and discussed.

Professor Martelli (chair) and Professor Nathues (co-chair) of the scientific committee were congratulated on their excellent job by Pat Kirwan, President of the IPVS 2016, also on behalf of Quim Segales from the ECPHM/EAPHM.

All in all, this meeting was a success and not just because of the nice weather in Ireland, which definitely added to the uniqueness of the meeting!

What are the advantages?

The first advantage, of course, is in the cost savings, not only for the five partners, 30 exhibitors and 10 media partners (who do not need to design, ship and build stands, and send personnel to two different locations), but also for the delegates and speakers.

The main purpose of these meetings is, and will always be, to exchange knowledge and to discuss problems with colleagues. These colleagues may come from countries with different conditions and sometimes work in completely different fields, yet their view on your problems can be an eye opener.

This IPVS/ESPHM combination attracted a much larger variety of delegates from many more different countries than an ESPHM, an AASV or an APVS meeting alone, will ever do.

With the openness inside the worldwide swine veterinary community and the genuine interest that we have in our work the access to this enormous wealth of experience is impossible to quantify in any measurement system but is enormous.

The disadvantages noted were more in the category of 'childhood' diseases. This was the first of its kind, so there is no routine, there were competence battles between the different organising groups and there were differences of opinion.

All completely acceptable and although the process might have been a difficult one, the outcome was great. When the event was over and the sky was clear again all agreed that the regional organisations and the IPVS have a lot to offer to each other. They can create a sustainable scenario for the future if they find the way to work together.

What is the way forward?

Well the main question will be if the way the IPVS is currently organised is sustainable. The cost of organising such an event is enormous and has to be financed by partners, sponsors and through delegates' fees, often also paid by the sponsoring companies for their invited customers.

The budget has to make sure that possible unforeseen costs are covered because there is no significant buffer that has been built up in the successful (read money-making) 24 editions in the past.

The AASV and the EAPHM do have this type of structure to save the profit made so that it can be used when necessary and to serve the pig industry. The regional congresses are also becoming more and more popular to attend because they handle the topics of interest to the region and are normally held at a short flight distance.

The logical way forward is to rotate the IPVS over the regional organisations, with an interval of three or even four years. The regional player, either AASV or EAPHM and even the APVS will be/can be the driver of the event. In this way we will keep our worldwide IPVS, have no competence struggle and we will serve our industry in the best possible way.

The IPVS will go to China for the IPVS 2018 and then to Brazil (Florianopolis) for the IPVS 2020. Brazil successfully beat Leipzig (Germany) in the voting procedure that ended with a narrow 530 to 517 victory for Brazil. So for the coming four years the IPVS is taken care of.

China, with its enormous number of swine veterinarians and research groups, will guarantee a large number of submitted papers and delegates. This was shown at the APVS of 2007 in Wuhan and the symposium will be there again in 2017.

Brazil has many attractive aspects to offer to the delegates but the majority of them will have to travel far. Intercontinental travelling for a 3-4 day visit is becoming more and more of an issue.

To keep the IPVS for the years thereafter, the suggestion is to combine the IPVS with the regional player in the lead! ■

Entrance to the Royal Dublin Society: venue of the IPVS/ESPHM 2016.

A night at the races: part of the social program at IPVS/ESPHM 2016.

Practical Health

Insight (23)

Alex Eggen
info@alexeggen.com

Seneca A & Pesti virus

New swine pathogens are always contributing to our constantly changing world in a regular pattern. In previous columns, attention was paid to PRRS, PCV2 and swine influenza virus (SIV) to highlight that new pathogens will always cross our path. But there are also new developments in the field of diagnostics that make it possible to now identify and characterise pathogens that are involved in diseases that have been known for some time but the causative factor was never discovered.

Seneca Valley virus (SVV) or Seneca virus A (SV-A) is definitely a new virus affecting our pigs and, although its pathogenicity might be limited at the moment, for health officials and for international trade this virus is a nightmare.

The new pesti virus, that was found and proved to be one of the factors that causes congenital tremor, is an excellent example of the capabilities of new diagnostic techniques that were originally developed on the human side with a spin over to animal health.

Seneca virus

Seneca virus was described in 1988 in the USA but the number of infections has recently increased dramatically and the virus is now present in the USA and Canada, New Zealand and Australia, Brazil, Italy and China.

Currently, no direct epidemiological link has been found between outbreaks in the same country or between countries. Transportation is seen as a factor in Brazil for spreading the virus. Seneca Virus A belongs to a family of viruses that are very small (=pico) and RNA based (therefore the family name picorna viruses).

Foot and mouth disease (FMD) virus and Swine vesicular disease (SVD) virus belong to the same family and they give comparable clinical signs, just as infections with vesicular stomatitis and vesicular exanthema virus.

This is the number one reason for the importance of this seneca virus. Simply because FMD and SVD appear in the differential diagnostic list, additional laboratory diagnostics must be performed to make absolutely clear that FMD or SVD can be ruled out. Even an experienced clinician can not differentiate between these diseases.

With more than 70% of farms in Brazil infected it is easy to understand how this viral disease causes an enormous burden on the diagnostic capacity of Brazil.

Although the economic clinical importance of SV-A is still limited there is definitely financial and managerial damage. In piglets we can see an acute increase in mortality in litters that are younger than seven days of age.

They seem to catch the disease immediately after being born and this may be noticed together with diarrhoea. The confusion with other diseases is already mentioned but, when diarrhoea is seen the other factors causing diarrhoea in young pigs also have to be taken into account.

Morbidity and mortality is in the range of 30-60% for a period of 4-7 days. In growers, lameness and lesions are seen around the coronary bands and vesicles at the snout. No preventive measurements or treatment, except supportive treatment, is currently available.

In conclusion, Seneca virus A is still of minor importance in the majority of the pork producing countries but it has all the characteristics to become a factor that contributes to raising the cost of production.

The diagnostic work in combination with the clinical disease will take care of that.

Left, coronary band lesions caused by FMD virus and, right, FMD lesions on a pig's tongue.

Sows infected with APPV give birth to piglets showing not only typical symptoms of CT, but also splay leg and poor doing piglets (pictures courtesy of MSD AH, R&D department).

Pesti virus

Pesti virus is a very different story. It is not a new disease, but a very old clinical picture that finally gets an identified causative factor. The family of pesti viruses is well known in our industry because classical swine fever is also part of this family.

Congenital tremor (CT) was always divided into two different groups, type A with agreed and well described changes with a partially agreed aetiology and Type B, where we agree that the causative factor or aetiology is not known. Among type A we have five sub-groups (A1-5). The sub-group A-2 was always thought to be caused by a virus but no virus was identified until recently. Two independent research groups, in Ames, Iowa, USA and from MSD AH in Boxmeer, the Netherlands, headed by Ad de Groof, both used a next generation sequencing method to analyse samples coming from pigs with CT and from clinically healthy pigs. Next generation sequencing is a very powerful tool that will help us to identify unknown pathogens.

How does it work? Well on one hand it is the result of years of investing in building up databases and in information technology infrastructure to access these databases in a very structured manner.

On the other hand, major progress has been made in widening up the highly specific PCR methods. The pathogen discovery method, called VIDISCA, is capable of detecting both DNA and RNA parts of organic material, including bacteria or viruses, in tissue or blood samples of piglets suffering from unknown diseases without any prior knowledge of the causative agent.

These detected parts are, in fact, certain amino acid sequences. These amino acid sequences are now entered in the enormous database that was built up over years.

At the end of the search, indications are given of which known viruses or bacteria have in their structure a similar sequence.

In this case, the virus that was found proved to be very closely related to a Chinese bat pesti virus.

Now we know where to look (Pesti virus), the diagnostic work performed on piglets suffering from, for example CT, can now be more specific.

This resulted in finding Pesti virus specific RNA in piglets suffering from CT and with serum from these piglets sows were infected.

The virus was again recovered in 83 of 83 clinically affected piglets showing the typical symptoms of CT. This Pesti virus has been given the name of Atypical Porcine Pesti Virus (APPV).

Seneca virus and APPV causing CT are two very different examples. A new virus and an old virus detected by means of a very new method.

For pork producers it does not matter where these viruses come from or how they are found as long as the industry comes with an appropriate answer to limit their spread and economic damage.

But here, only time will tell. ■

Practical Health

Insight (24)

PRRS ON THE RUN

ALEX EGGEN
info@alexeggen.com

PRRS virus is continuously causing problems. Sometimes it looks as if the industry has just simply accepted that little can be done to control this disease. Is that a good position? And is there indeed so little we can do? This observed position is the worst option the industry can adopt and, although frustrating from time to time, there are signs that certain disease control and management decisions may work.

New, and more pathogenic, PRRS strains are appearing everywhere in the world and these new strains do emerge suddenly. The industry even sometimes helps the emergence of these strains a little bit in different parts of the world. It is time to become serious, really serious!

An overview

In the USA from 1986 onwards and in Europe from 1990, PRRS virus started to cause disease and was therefore discovered. The typical abortion storms that flew over Europe coming from the East and ending in the West in the UK, left a big impact and enormous damage behind.

Since then the situation in Europe has been relatively quiet. Only Denmark suffered from major problems later that century but it is also fair to say that in this specific case the combined industry was at fault.

Here the industry witnessed what can happen when the potential danger of a modified live RNA vaccine is neglected. In the USA more pathogenic PRRS virus strains were described and these new strains caused major problems on individual farms.

In Asia both Type 1 and Type 2 PRRS strains were, most likely, imported with the trade in live pigs and semen. But also here 'modest' PRRS virus related problems were present, when compared with what happened later.

China and its neighbours

PRRS virus was first discovered in China in 1995 and in 2004 vaccination against PRRS started. In 2006 the pig world was shocked by the reports coming from China about the enormous mortality on pig farms.

Heavy hogs, sows, boars and younger pigs without exception were all killed by, initially, an unknown infectious agent. Why unknown? Well, all kind of different pathogens were detected by numerous laboratories in these diseased pigs. High fever and high mortality were the constant factors. A large number of experts flew into China to study this suddenly appearing disease. Most ended up with different possible causes.

Only sometime later was it agreed that a new strain of PRRS virus was the origin of this disease. Initially, in different high level biosecurity laboratories, challenge experiments were done with PRRS viruses isolated from field material and the typical high fever was detected in challenged pigs. But mortality was often absent or low in these initial studies.

Through the work of Guo and Lager the industry learned how important it is to have the correct genetic material for doing studies that are representative of what has happened in the field.

In their studies, besides high fever, a high level of mortality was also induced (see Fig. 1).

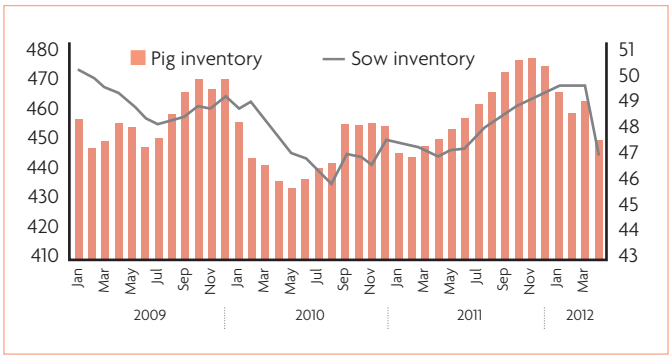
The HP-PRRS strains moved across borders and now all pig raising countries surrounding China are infected. Of course the industry had to respond and new vaccines based on the HP PRRS virus isolates were made and introduced in 2011. Even vaccines containing multiple modified live strains appeared on the market.

In 2015 new PRRS virus strains were detected again. PRRS virus can mutate easily and quickly. But when vaccinating with multiple-strains containing modified live PRRS vaccine in a herd undergoing an active PRRS virus infection, recombination between the infecting PRRS virus field strain and the vaccine strains is a possibility.

When the two viruses infect a target cell at the same moment, elements of the two viruses can be exchanged, making a recombination virus possible.

Only those recombinants or mutants with good survival ability will prevail and when they are also more pathogenic than the parents were, the industry has created their own new problem. PRRS virus is really on the run in Asia!

Fig. 1. Pig numbers in China and the consequence of HP-PRRS infection, 2009-2012. Between December 2009 and May 2010 roughly 33 million pigs died).



In Europe PRRS is also on the run

The new PRRS strains originating from Eastern Europe have been known for some time. The Belarussian strains like the Lena strain (subtype 3) has been studied extensively and is much more pathogenic than the normal European Type 1 subtype 1 PRRS strains.

Although PRRS virus moved very easily from the East to the West in the 1990s in Europe, now it seems as if there is a blockade somewhere for spreading these East European PRRS strains. In Belgium they are present but France seems to be free.

Does this mean that the situation is stable in Europe? No, there are new reports and they are worrying.

Austria has reported a new Type 1 (subtype 1) PRRS field strain since 2015. This strain is on ORF5 86% homologous with the Lelystad virus and on ORF7 91% homology was found. The strain has been given the name Acro and is currently also reported from Hungary and was detected in Germany. This PRRS strain shows a high variability in level of damage in infected herds but in most cases the damage is significant.

The PRRS reports from Italy are also worrying. On one large integration a substantial increase in mortality was seen in connection to the isolation of a new PRRS strain.

This was most likely a Type 1, subtype 1 and belonging to the Italian cluster. Again proving the fact that sequencing ORF5 or ORF7 tells us very little about the pathogenicity!

Further details will be disclosed in the future when the researchers dealing with this outbreak are 100% sure. PRRS virus is really on the run in Europe!

What is new to control PRRS virus infections?

Well, actually there is very little news to be reported here. It has only been surprising that after many years of complaining about the economic damage related to PRRS infections in the USA that the US pork industry needed a PED outbreak to really get serious about biosecurity. And, as a consequence, the number of PRRS outbreaks reduced!

Although this is not new it shows clearly that the industry can limit PRRS related damage by just stepping up their level of biosecurity. Costs are of course involved when a higher level of biosecurity is necessary.

To make this decision two aspects are important:

- What is my current cost involved in the PRRS infection that my herd is undergoing?
- What is my current level of biosecurity and what needs improvement?

At this moment tailor made APPs for electronic devices are being developed to get a much better insight into these parameters so that well thought out decisions can be taken.

Biosecurity, for many reasons but very much so in the case of PRRS, should be number one on the list of every farm manager.

The different stakeholders in the industry should work together in their understanding that there is a lot to win by upgrading both internal and external biosecurity.

It is time to get serious! ■