Biosecurity and livestock production

The proceedings of a Nordic-Baltic seminar on biosecurity highlighting experiences gained in livestock production, and future challenges with special reference to motivation, training and economic aspects, 6–8 May 2014, Rimbo, Sweden

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Elisabet Lindal and Jørgen M. Westergaard

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Summary

The Nordic-Baltic seminar on Biosecurity; experiences, training, motivation and economic aspects was held in Rimbo Stockholm Sweden during 6th–8th May 2014.

The objectives of the seminar included:

- Highlight recent research in the field of biosecurity and the future demands and challenges to consider.
- Elucidate and discuss different aspects related to biosecurity, especially:
 - Motivation to enhance biosecurity.
 - Training and education.
 - Economic aspects.
 - How to increase the awareness and knowledge on biosecurity measures.
- Stimulate networking and exchange of knowledge and useful experiences between participants from different countries.

The participants gathered in the evening before the seminar to register and start networking during the buffet dinner. Day one of the seminar was a long day starting with a session on definition of biosecurity, experiences from several existing systems and future demands in relation to the upcoming EU animal health regulation. Furthermore focus during the day, both through lectures and a workshop, was set on farmers motivation for biosecurity, how to increase their awareness, training and education.

A workshop was conducted concerning biosecurity at farm level. During the workshop the participants discussed the elements of greatest importance for the creation of and maintaining biosecurity in different kinds of animal holdings. Biosecurity plans should preferably be economically viable and at the same time promote animal health, animal welfare and food safety.

Day two focused mainly on economy and biosecurity and also aspects on compartments. Economical aspects in relation to biosecurity were illustrated with presentations from studies in three countries; Finland, Denmark and Sweden. The session on compartments and

compartmentalization included a presentation from OIE about international standards and guidelines, a presentation on compartmentalization for poultry production in the Netherlands with special reference to avian influenza and a presentation by the European farmer's organization, COPA-COGECA, highlighting the organizations view on compartmentalization and biosecurity.

The seminar showed the importance of the farm veterinarian both to provide information and for the process of introducing biosecurity measures on farms. The ownership of the biosecurity plans are important as well as close cooperation with different partners.

The seminar had about 90 participants from 10 different countries; Belgium, Denmark, Estonia, Finland, Iceland, Latvia, Norway, Sweden, the Netherlands and the United Kingdom.

The presentations made during the seminar and the workshop provided an excellent basis for a valuable exchange of views between the experts from the participating countries. Based on the exchange of views during the seminar 3 recommendations were adopted.

The recommendations covered aspects of

- the importance of the farm veterinarian
- educational and motivational activities
- simulation exercises.

The full text of the recommendations is given in the section: Observations, conclusions and recommendations (chapter 3).

1. Opening Session

The participants of the seminar were at the opening session welcomed by Dr. Ingrid Eilertz, Chief Veterinary Officer of Sweden and by Dr. Sirpa Kiviruusu, chairman of the Nordic-Baltic Veterinary Contingency Group.

In the opening speech Dr. Ingrid Eilertz expressed a warm welcome to all participants and the pleasure of seeing so many experts coming to Rimbo, Stockholm for sharing views and discussing the important issues of biosecurity. Dr. Eilertz emphasized the development and achievements in this area but also the importance of continued improvements especially in the light of future changes in the animal health law. Thanks were expressed to the organizing committee for choosing Sweden as host country for the seminar and the best wishes were given for a success of the seminar.

The speech given by Dr. Sirpa Kiviruusu is presented below:

“In 2006, the Nordic Council of Ministers adopted a strategy which included plans for a closer cooperation between the Nordic and Baltic countries in the field of veterinary contingency planning. The plan emphasized that that exotic infectious animal diseases, with zoonotic potential as well as emerging diseases, should be prioritized. Subsequently the Nordic-Baltic Veterinary Contingency Group was established.

The primary objective of the group is to improve cooperation, communication and exchange of information and experience between the veterinary authorities within the Nordic-Baltic region, in the context of contingency planning and during animal disease crises. Secondary objective is to increase awareness of epizootic diseases among professionals and stakeholders within the region, identify areas of improvement in contingency planning and also to obtain and spread knowledge related to fighting infectious animal diseases by building bridges both within the Nordic-Baltic region and on international level.

In order to reach these goals, the group has arranged a number of activities over the years. Those include international simulation exercises on epizootic diseases, seminars with invited speakers, expert meetings and regular meetings of the group, training activities and so on. The group consists of experts from veterinary authorities in the eight Nordic and Baltic countries.

I will now introduce you to the current members of the group. From Iceland comes our preceding chairperson Audur Arnthorsdottir, from Denmark Hanne Hansen, from Estonia Maarja Kristian; the head of the organizing committee for this seminar comes from our host country Sweden, Elisabet Lindal, from Norway Siri Løtvedt and from Latvia Edvins Olsevskis. Unfortunately we are missing a Lithuanian colleague at the moment. Last but not least our invaluable consultant from Denmark Dr. Jørgen Westergaard who has been our support in all efforts from the very beginning.

The organizer of this seminar and responsible for practical arrangements comes from Jordbruksverket Sweden, Lena Stenevi.

This seminar on biosecurity that we are attending now aims to:

- Highlight recent research in the field of biosecurity and the future demands and challenges.
- Elucidate and discuss different aspects related to biosecurity, especially:
 - motivation to enhance biosecurity
 - training and education
 - economic aspects
 - how to increase the awareness and knowledge on biosecurity measures.
- Exchange knowledge and useful experiences between participants from different countries.

We should not forget, that one very important purpose of this seminar is also to build bridges and network with colleagues and experts in the field of animal health and biosecurity coming from our neighboring countries and other countries Nordic and Baltic region.

As a current chairman of the Nordic-Baltic Veterinary Contingency group I wish you all warmly welcome to this seminar.

Thank you.”

2. Abstracts

2.1 Session I – Biocurity: Definitions, Experiences and Future Demands

2.1.1 ***Future Animal Health Regulation: A step forward to a better biosecurity?***

Dr. Barbara Logar, European Commission, Directorate-General Health and Consumers, Directorate G – Veterinary and International Affairs

Abstract

EU legislation for the prevention and control animal diseases and to ensure safe trade in animals and their products has been in place since many decades. An evaluation of Community Animal Health Policy and subsequent consultations with the stakeholders completed in recent years, broadly agreed that the current system of EU animal health legislation functions well. But they have also identified a number of areas with the possibilities for improvements, such as an improved focus on disease prevention, with a particular emphasis on the need for increased biosecurity.

The EU Animal Health Strategy 2007–2013 adopted by the European Commission in 2007 with the motto “Prevention is better than cure” has addressed the issues from the evaluation. One of the actions foreseen was to create a new, single “Animal Health Law”. This legal framework has been considered as a key element to implement the objectives of the Strategy. A proposal for a Regulation on Animal Health was adopted by the Commission on 6th May 2014.

In line with the EU Animal Health Strategy, prevention represents one of the most important new principles of this legal framework. Biosecurity alone, or in combination with an effective surveillance system are crucial elements for applying it.

According to the new proposal, biosecurity represents an overarching approach in its broadest sense. It is neither limed to any specific measure nor understood in a narrow context. Responsibilities of all involved actors for prevention and control of diseases are defined. There are elements for more biosecurity on farms and in operations that represent higher risk of

spreading diseases. Those measures should be in accord with already existing legal requirements, such as the hygiene package.

Finally and most importantly, biosecurity is to contribute to a better overall health status and husbandry. The incentives for application are without any doubt the most important.

2.1.2 The Danish SPF System for pigs – The best strategy for protecting farms from infections? Experiences and challenges for the future

Dr. Bent Nielsen, Head of Department, Danish Agriculture and Food Council

Abstract

The Danish SPF (Specific Pathogen Free) System for pigs was established in 1971 in order to promote the production of healthy pigs. The SPF concept combines documented high biosecurity on herd level, regularly disease testing, publishing of disease status and subsequent trade and transport of pigs in special built SPF trucks according to the certified disease status of the herds.

Today the Danish SPF system involves the pig disease agents *Actinobacillus Pleuropneumonia* (APP), *Mycoplasma hyopneumonia* (Myc), PRRS, *Brachyspira hyodysenteria* (Swine dysentery), *Toxigenic Pasteurella Multocida* (Atrophic Rhinitis), *Haematopinus suis* (lice) and *Sarcoptes scabie* (mange). The SPF system is divided into two levels, Red and Blue herds. Red herds are all breeding and multiplier herds (270 herds). These herds are visited on monthly basis by a certified swine veterinarian from the Pig Research Center. During the visit the veterinarian will clinically examine a representative number of pigs and take blood and nose samples for the relevant SPF diseases. Based on the results the herd is assigned to a given SPF status declaring disease freedom or infection status. Blue SPF herds are commercial sow and finisher herds (2,850 herds), which are clinically examined one a month by the local veterinarian and blood and nose sampled for the SPF diseases once a year. In total 75% of the Danish pigs are produced within the SPF system. Among the Red herds, 100% are free of lice, mange, swine dysentery and atrophic rhinitis, 93% are free of APP, 87% free of PRRS and 63% free of Myc. Denmark exports 10 million of the annually 30 million produced pigs. Biosecurity in the pig trucks, washing and disinfection stations at the borders are key focus areas for the pig industry as the trucks drives to many countries in Europe, including areas with African swine fever, Classical swine fever and Aujeszky's disease.

2.1.3 Backyard farming and classical swine fever. Experience and challenges dealing with backyard pig farms during CSF outbreak in Latvia

Dr. Edvins Olsevskis, Food and Veterinary Service, Latvia

Abstract

In November 2012 after 16 years of being country free from classical swine fever (CSF) the outbreak of CSF was confirmed in a hunted wild boar submitted for testing in a framework of CSF monitoring program implemented by the Food and Veterinary Service (FVS) of Latvia. The location of the infected animal was less than 10 km from the border with Belarus. Immediately after confirmation the measures according to Council Directive 2001/89/EC were implemented resulting detection of further CSF cases in wild boar. Few weeks later, in a framework of monitoring in the infected area CSF outbreaks were confirmed in three backyard pig farms with low biosecurity level. No further cases in pig farms were detected, however, despite of the introduction of oral vaccination of wild boar few cases in wild boar are found monthly. The number of 76 virus positive animals has been found from more than 4,000 wild boars tested within the infected area since November 2012.

Intensive checks were carried out by the FVS in order to perform clinical examination and sampling of pigs in all pig farms within the CSF infected area. Large number of veterinary inspectors, veterinarians and assistants was involved in order to carry out all farm checks in a possibly short time. During farm visits significant discrepancies between data in National registration data base and real situation in a field were discovered. All farmers were provided with information on CSF and mandatory notification on diseased and dead pigs as well as biosecurity measures to be implemented in farm to avoid the introduction of CSF virus.

There are 3,273 pig farms within the infected area (~9,000 km²) with 21,992 pigs (95% backyard farms). All pig farms were subjected to categorization to adapt monitoring system for the each of four farm categories. Large resources and time is necessary to ensure regular CSF monitoring in backyard farms. Education and information of backyard farmers are essential tools.

2.1.4 The Norwegian Healthier Goats project

Dr. Dag Lindheim, Department of Goat Health Services, TINE Norwegian Dairies, Ås, Norway, and Dr. Liv Sølverød, Department of Mastitis Laboratory, TINE Norwegian Dairies, Molde, Norway

Abstract

The aim is to eradicate Caprine arthritis encephalitis (CAE), Caseous lymphadenitis (CLA) and Johne's disease from the Norwegian goat population

A health survey in 2000 showed high prevalence of CAE, CLA and respiratory diseases. Johne's disease was enzootic in parts of southern Norway, and vaccination has been compulsory in these areas to avoid clinical outbreaks. Johne's disease and CAE are notifiable diseases. "Healthier Goats" was started in 2001.

Educational programs on Biosecurity

A variety of educational efforts for farmers, advisors and veterinarians are carried out to motivate participants and build knowledge in "every day biosecurity".

The eradication principles "Snatching" kids; Kids are taken from birth channel and moved from the infected barn immediately, housed in a clean barn, given cow colostrum and raised on milk replacer, water, concentrate and hay. Adult goats are slaughtered at the end of the lactating period. Thereafter, the barn and near surroundings are cleaned and disinfected. Healthy goats are then moved back to the barn to start their first lactation. The sanitized flocks are monitored for 5 years by clinical observation and antibody detection in serum and bulk tank milk.

Results

Test results verify that farmers manage to do the sanitation process (snatching) and to follow the projects procedures very accurate. Test positive animals in sanitized flocks are slaughtered.

Out of 602 sanitized flocks; 3 CAE reinfections, 1 Johne's disease re-infection and 8 CLA re-infections have been observed. Re-infected flocks are carefully monitored and test positive animals are slaughtered. During 2012 and 2013 there were no new outbreaks of those diseases in sanitized flocks.

By the end of 2014 all goat milk processed by TINE Norwegian Dairies will come from sanitized flocks.

2.2 Session II – Behaviour and Motivation

2.2.1 ***Biosecurity on Swedish livestock farms – attitudes and behaviours among farmers and professional visitors***

Dr. Jenny Frössling,¹ Dr. Maria Nöremark² and Dr. Susanna Sternberg Lewerin³

Abstract

In recent years, the National Veterinary Institute (SVA) has conducted a number of studies that deals with different aspects of on-farm biosecurity. They stem from the everyday contingency work that is performed at the institute and focus primarily on farmers, but also on other categories of professionals that handle or come into contact with livestock. Taken together, these studies contribute to our knowledge on how to act in order to improve the prevention and control of contagious diseases.

The studies show that there is a large variation in biosecurity level both among and within farms of different types. According to some farmers, they would increase their biosecurity level in case of an outbreak. However, this strategy ignores the silent first phase of disease outbreaks, and results show that outbreak information from authorities and health organisations does not reach all farmers. Focus group discussions indicate that farmers are more aware of diseases included in specific surveillance programmes, and tend to forget other endemic or emerging diseases.

Our results confirm that Swedish farmers consider their farm veterinarians their most important source of information as regards animal health and biosecurity. However, many farmers have the opinion that professional visitors, including veterinarians, need to improve their biosecurity level. Many professional visitors, on the other hand, think that on-farm biosecurity is the farmer's responsibility and that many farms provide insufficient basic means for visitors to avoid introduction or spread of infectious diseases. This is alarming since results also showed that some herds have large number of visitors.

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² Department of Animal Environment and Health, Swedish University of Agricultural Sciences (SLU), Skara, Sweden.

³ Department of Biomedical Sciences and Veterinary Public Health, Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden.

2.2.2 Biosecurity attitudes and beliefs of Finnish farmers

*Dr. Leena Sahlström, Jonna Kyyrö, Terhi Virtanen, Tapani Lyytikäinen.
Risk Assessment Research Unit, Finnish Food Safety Authority Evira, Finland*

Abstract

The biosecurity level on Finnish pig, cattle and sheep farms was surveyed in 2011. A questionnaire was sent to 4,866 farmers and the response rate was 44%. The survey included questions about several different on-farm biosecurity measures as well as the farmers' thoughts and attitudes on biosecurity. Biosecurity measures included in the study were for example pest control, personal biosecurity routines such as the use of protective clothing and boots and the use of hygiene barriers. Animal trade-related activities were also surveyed.

More biosecurity measures are usually implemented on pig farms than on cattle farms and the most important reason for the farmer to implement biosecurity is to protect his own farm, and secondly to protect neighboring farms. Earlier disease problems influence the implementation frequency significantly. There is still improvement potential on all farm types. According to the cattle farmers, most improvement potential lies in the visitors' use of protective clothing and boots as well as control of rodents and birds. Pig farmers on the other hand recognize most improvement potential in control of rodents and birds, a hygiene barrier that separates the clean and dirty areas, a separate loading area, a carcass collection container outside the stables, and keeping doors locked.

We were able to define a group of farms that would continue farming for at least 6 years. These so called "future farmers" used more biosecurity measures and they were more willing to improve the on-farm biosecurity than other farmers. This might imply a tendency towards higher biosecurity as it seems that the "future farmers" are more motivated to implement and improve on-farm biosecurity.

2.2.3 Barriers and motivation for biosecurity in Danish cattle farmers

Dr. Esben Jakobsen, Specialist of Dairy Herd Health Management, Denmark

Abstract

To implement biosecurity measures at farm level is a motivational challenge to dairy farmers as emerging diseases and their consequences largely are unpredictable. One of the reasons for this challenge is that outcomes are more likely to benefit society than the individual farmer. From the individual farmer's point of view the impacts of zoonotic risk, international trade and welfare concerns appear less obvious than the direct costs at farm-level. Consequently, a social dilemma may arise where collective interests are at odds with private interests. To improve biosecurity at farm-level farmers must be motivated to change behaviour in the "right" direction which could provide selfish farmers with unintended possibilities to exploit the level of biosecurity provided by other dairy farmers' collective actions.

Farmers' perception of risk of disease introduction into a dairy herd was explored by means of Q-methodology. Participating farmers owned very large dairy herds and were selected for this study because Danish legislation since 2008 has required that larger farms develop and implement a farm specific biosecurity plan. However, a year from introduction of this requirement, none of the participating farmers had developed a biosecurity plan.

Farmers' perception of biosecurity could meaningfully be described by four famillionies of perspectives, labelled: cooperatives, confused, defectors and introvert. Interestingly, all famillionies of perspectives agreed that sourcing of animals from established dealers represented the highest risk to biosecurity at farm-level.

Farmers and policy-makers are faced with important questions about biosecurity at farm-level related to the sanctioning system within the contextual framework of social dilemmas.

To solve these challenges we propose the development of a market-mediated system to (1) reduce the risk of free-riders, and (2) provide farmers with incentives to improve biosecurity at farm-level.

2.3 Session III – Training and Education

2.3.1 “Smittsäkrad besättning” – A Swedish biosecurity program for cattle farms – to be launched in 2015

Dr. Sofie Anderson and Dr. Anna Ohlson, Växa, Sweden

Abstract

A new biosecurity program for cattle herds in Sweden, “Smittsäkrad besättning”, is under development and is planned to be launched in 2015. Previous organized measures against infectious diseases in Sweden have been designed as control programs; each focused on one specific agent (for example bovine leucosis, bovine paratuberculosis, bovine viral diarrhea virus (BVDV) and salmonella). These programs have been successful in controlling the specific infection, but not as successful in terms of generally increasing the biosecurity level. Recent research has shown that Swedish cattle farmers in comparison with pig farmers have a lack of knowledge on the spread and prevention of infectious diseases, and there were also large variation between herds regarding biosecurity measures. Structural changes with increased herd size and increased production costs as well as public health concerns including the development of antibiotic resistance are demanding a higher level of biosecurity in cattle herds. The aim of the new biosecurity program is to increase the biosecurity in cattle herds by enhancing the farmers’ knowledge of how infectious diseases are spread between farms and how this can be prevented, and to provide tools for implementing on-farm biosecurity routines.

The program consists of two levels; base and advanced. All criteria for the base level needs to be fulfilled before accessing the advanced level. The base level includes an on-line theoretical course and an on-line questionnaire designed to identify the biosecurity risks for each farm. The risk assessment inquiry is covering eight areas; animal contacts (with other cattle herds), visitors and staff, transports and shared equipment, stall hygiene and health monitoring, feed, manure and environmental sources. The advanced level includes a veterinary visit and a biosecurity course. The veterinary visit is repeated every second year. It consists of a control part where the farm has to pass basic biosecurity and hygiene check points, and an education part. The education part is based on the result of the on-line risk assessment and the control check points.

For both levels there are regulations for animal movements. Animals can only be bought in from herds that are on the same or higher level of the program and all herds that sell animals must be enrolled in the BVDV programme. In addition, all dairy herds that sell animals to other herds within the program need to be tested negative for *Salmonella* spp., *Streptococcus agalactiae* and *Mycoplasma bovis*. The analyses are carried out on bulk tank milk samples four times per year by automatic subscription.

Herds enrolled in the program are entitled to higher economic compensation in case of salmonellosis from the Board of Agriculture. In Sweden, detection of salmonella in a herd implies hygiene and eradication measures that often are costly. Other economic advantages might also be incorporated in the program, this is currently under investigation. The program has an open-access web page with information on infectious diseases and biosecurity measures (www.smittsäkra.se), it also includes animations and videos where farmers are sharing their lessons learned after experienced an infectious outbreak. The program has been developed by Växa Sverige in cooperation with Swedish Animal Health Service (Svenska Djurhälsovården) and the National Veterinary Institute, and the work is financed by the Swedish Board of Agriculture.

2.3.2 Focus on prevention – Voluntary measures in joint venture in Finland

Dr. Pirjo Kortetniemi, the Association for Animal Disease Prevention, Finland

Abstract

In Finland we started in 1994 to develop new voluntary practices in primary production to manage risks with animal diseases. Traditionally animal health situation has been on high level in Finland. EU-membership 1995 brought new challenges with a free trade –ideology. The membership moved responsibility of diseases prevention more to stakeholders. Food Industry and Farmers Union took action and The Association for Animal Disease Prevention – ETT ra – was founded 1994, to carry out preventive operations in joint venture. The idea was – already then – prevention is better than cure and cheaper.

Slaughterhouses, dairies, egg packing companies, Farmers Union, feed companies, Advisory Center, veterinary practitioners, and other operators in primary production have all been active in joint venture to aim at the same target – keeping Finland and farms free from contagious diseases. During last twenty years voluntary practises and common national rules have formed and adopted in primary production. Focus has

been on prevention: biosecurity at the farm, rules in animal trade, frequently veterinary visits with documentation, herd health schemes, health classification, transport logistic, group-insurance conditions. We have managed quite well this far; only few new diseases have occurred and, at the same time, we have managed to eradicate some diseases. But the work continues even harder.

2.4 Session IV – Biosecurity and Economic Aspects

2.4.1 *Costs of endemic infectious disease and preventive measures for endemic infectious diseases in pigs and cattle*

Dr. Karin Persson Waller and Dr. Per Wallgren, Department of animal health and antimicrobial strategies, National Veterinary Institute (SVA), Uppsala, Sweden

Abstract

Pigs and cattle in Sweden are, in general, very healthy. In herds with healthy animals good animal care is combined with high productivity. Swedish animals are free from many diseases present in other countries. Both pigs and cattle are, however, affected by more or less severe endemic infectious diseases, which cause animal suffering as well as considerable economic losses. The knowledge about costs of endemic infectious diseases, and of preventive measures against such diseases is, however, limited. Therefore, studies were performed to evaluate costs of relevant endemic infectious diseases in pigs and cattle. Moreover, cost efficiency of improving biosecurity within and between herds in existing pig and cattle herds through building measures with the aim to prevent infectious diseases was evaluated using different evaluation models.

The economic consequences of infectious diseases increase with herd size due to the fact that the risk for spread of infections between animals increases. In addition, measures to control diseases may be more difficult to implement in larger herds. The information generated in this project can be used to visualize and motivate the benefits of introducing preventive biosecurity measures. The costs for such measures should be related to their expected benefits, and the value of these benefits should in turn be related to the investment using principles of business economics. If the calculations suggest a long term positive economical outcome, they ought to contribute to increased activities in disease

preventing measures. If a producer sees an economic advantage of measures that improves biosecurity it is reasonable to assume that the motivation for performing such measures increases. As it for natural reasons is cheaper to do the right thing from the start, it is emphasized that these aspects should be considered already at the planning of new buildings or when rebuilding.

2.4.2 *Costs of biosecurity and factors contributing to biosecurity in Finland*

Dr. Jarkko K. Niemi and Jaakko Heikkilä, MTT Agrifood Research, Finland

Abstract

Biosecurity can be regarded as the management of risks of specific hazards such as contagious animal diseases. This presentation reviews recent Finnish research in the field of economics of biosecurity. The costs of biosecurity measures vary by the type of measure and farm. The costs increase by farm size, but the costs per animal seem to be lower on large farms. Hence, there may be economies of scale in biosecurity. Simple practices such as wearing clean protective clothing and boots when entering an animal shelter can be quite inexpensive, yet effective. Typically they cost perhaps a few hundred Euros per farm per year. When all measures are taken together typical biosecurity measures, for instance for a batch of 75,000 broilers have been estimated to be EUR 2,700 per batch.

Studies suggest that the adoption of biosecurity measures depends on farm-specific factors such as production type and farm size, and on the type of measure. Pig and poultry farms tend to use more biosecurity measures than cattle farms. The adoption of biosecurity measures is reduced when the costs of using a measure increase. This is particularly important for measures which require investments. Besides developing more cost-efficient practices, biosecurity can be promoted through the training of livestock producers.

Biosecurity is a public good, because all can benefit from it, and it can be consumed endlessly once produced. Livestock and biosecurity are produced jointly and the costs are typically carried and biosecurity decisions made by individual economic agents such as livestock producers. Hence, it is important that the use of biosecurity is promoted by public policies and production contracts.

2.4.3 *Economic incentives for exotic disease prevention in pig and cattle herds in Denmark – based on an empirical survey of Danish farmers’ attitude to biosecurity and biosecurity plan*

Dr. Mogens Lund, Research director, Norwegian Agricultural Economics Research Institute, Oslo, Norway

Abstract

The aim of the presentation is to investigate farmers’ attitudes to biosecurity and use of biosecurity plans. The presentation is based on a questionnaire distributed to Danish farmers with cattle and pigs in 2013.

The survey is limited to medium and large farms, i.e. farm with 200 animal units or more. The questionnaire was sent out to a total of 531 farmers, where some have made biosecurity plans and others have not. The survey covers only Danish cattle and pig farms. A total of 136 farmers (25.6%) responded to the questionnaire within the prescribed time limits.

The presentation provides a descriptive analysis of the respondents’ answers and hence formulating hypotheses about the importance of e.g. the educational background, differences between cattle – and pig farms and the difference between those farmers who have biosecurity plans and those who have not. The presentation also assesses the relationship between attitudes towards biosecurity plans and the economic importance of disease prevention. These hypotheses are tested with standard χ^2 test to test for significant differences. It is concluded, among other things, that the veterinarian is the most used source of information and education means that respondents are demanding more knowledge about biosecurity.

2.5 Session V – Compartments and Compartmentalisation

2.5.1 *OIE standards and guidelines on biosecurity and compartmentalisation*

Dr. Nadège Lebouc, OIE Sub-Regional Representative, Brussels

Abstract

Historically, the OIE as part of its international standards has provided recommendations to Members aimed at seeking disease freedom from their entire territory. While the ultimate goal continues to be disease

freedom from countries and regions, other tools permit a risk based approach for the safe trade of animal and animal products, even when the absence of diseases cannot be guaranteed in an entire territory and can also assist disease control or eradication within countries.

Thus, according to Chapters 4.3 and 4.4 of the OIE Terrestrial Animal Health Code, zoning and compartmentalisation may be implemented with a view to defining sub-populations of distinct health status within a territory for the purposes of disease control and/or international trade. While zoning is applied to an animal sub-population defined primarily on a geographical basis (using natural, artificial or legal boundaries), compartmentalisation applies to an animal sub-population defined primarily by management and husbandry practices related to biosecurity. The definition of compartment may revolve around common animal ownership or management, membership in associations, industry improvement plans or breed registries with prescriptive biosecurity guidelines, or similliar functional demarcations.

Fundamental to the application of compartmentalisation is the official Veterinary Services' control over the compartment and the free exchange of information necessary to convince importing countries that the risk of disease introduction from trade is minimised. In this regard, compliance by OIE Member Countries with Chapter 3.1 on Veterinary Services is an essential prerequisite.

Compartmentalisation cannot be applied to all diseases but separate requirements will be developed for each disease for which the application of compartmentalisation is considered appropriate. Compartmentalisation may be particularly applicable in intensive production systems which are vertically integrated. Concrete examples will be provided.

2.5.2 Biosecurity measures for compartments with respect to avian influenza: practical aspects

Dr. Martine Laurijssens, Food and Consumer Product Safety Authority, the Netherlands

Abstract

Commission Regulation (EC) No 616/2009 applies to compartments with respect to avian influenza. This regulation covers aspects related to biosecurity measures.

It is not too difficult to determine the criteria for a high level of biosecurity and prescribe the preventive measures to be taken. However, implementing all these measures in such way that they are effective is a great challenge.

Defining effectiveness is a subject of ongoing discussion. Does it mean that the risk of introduction and spread of avian influenza is zero? This seems unrealistic, as there are still gaps in knowledge about the ways the virus is introduced and spread, and the way in which it survives.

It is more realistic to consider that we can be confident Avian Influenza will not be spread or introduced to and from a compartment if all the possible biosecurity measures are taken. Here, the importance of HACCP (Hazard Analysis Critical Control Point) becomes clear. Not all risks of contamination with the avian influenza virus can be totally excluded: Wild water birds prefer agricultural areas as a habitat; poultry have to be transported; it is not possible to control wind, which transports particles with possible attached viruses; human error, etc.

The compartment manager will have to clarify how these risks are controlled and what the corrective measures will be in case of non-compliance.

A critical factor for success is mutual unconditional confidence between the compartment and the Competent Authority. Both have to be absolutely clear about what they can expect and what they can do.

This lecture will address the aspects of biosecurity measures in an approved compartment with respect to avian influenza in the Netherlands.

2.5.3 European farmers and agri-cooperatives' views on compartment and biosecurity

Dr. Mette Kirkeskov Sie, COPA-COGECA

Abstract

Throughout the history of animal husbandry, it has been natural for farmers to ensure the welfare of their animals, and to keep them from suffering or pain and to provide adequate conditions for their animals. Animals are observed on a regular basis in order to ensure that the first signs of disease are detected and that appropriate action is taken at the earliest opportunity. In this context, farmers are very committed to prevent as much as possible outbreaks of diseases on their farms and their further spread into the environment. Good animal health is a significant part of animal husbandry and is also important for production reasons.

However, it is important to remember that disease prevention goes far beyond farmers' responsibility (e.g. avian influenza). Everyone, stakeholders and public authorities alike, has a role to play in ensuring healthy animals in Europe. Farmers, veterinarians, transporters, slaughterhouses and other input providers all play a role, together with consumers and travelers around the world. At the same time, public

authorities both at EU and Member State level are also responsible when it comes to biosecurity at borders, awareness raising, surveillance programmes, early action and proper funding.

Differences between countries and regions in health statuses and the spread of diseases must be taken into account. Compartments, in line with OIE standards, may be a useful tool to address this specific point, provided that does not become a technical barrier to trade.

Furthermore, Copa-Cogeca is not in favour of extending HACCP principles for primary production or implementing very specific and strict rules. On the contrary, a more flexible and tailor-made system for biosecurity is favoured based on the “type of production system” by taking into consideration any voluntary quality assurance schemes already in place at farm level, including any guidance documents of good practices. At the same time, cost and benefits of biosecurity have to be both taken into account. Improving biosecurity has to be promoted within a clear framework of incentives (e.g. the EU Veterinary Fund and rural development programmes, etc.), together with more awareness and knowledge on disease prevention.

It is important to guarantee that all relevant tools are available at farm level to ensure good animal health in Europe. Good hygiene, proper feed, an appropriate animal environment and good management are at the top of farmers’ priorities. However, it is important to ensure the availability of veterinary medicines to tackle specific diseases, including new smart, effective and alternative tools to cure animals; the development of early warning systems; more on-farm tools for early, rapid diagnosis and control of diseases; together with more resistant breeds.

As part of the prevention strategy, Copa-Cogeca supports the need for an open dialogue and cooperation between farmers and veterinarians, including any other special advisors, when appropriate, if specific risks/irregularities are detected on the farm. However, Copa-Cogeca is very concerned when such dialogue and cooperation has to be based on fixed criteria, without taking into account concrete needs on the ground. The current scope of the animal health visits introduced by the European Commission in the animal health proposal has the great risk to turn into a costly and paper work exercise, without bringing any benefits to European farmers. Copa-Cogeca believes that it is the operators’ responsibility to make sure that the establishment under their control is

subject to visits with a frequency based on specific needs of the farmed animals. A desk office approach with static criteria will not deliver the expected results both in terms of prevention and control of disease. Building trust, knowledge transfer, and exchange of information between operators and authorities have proven to be more successful.

3. Observations, conclusions and recommendations

3.1 Observations and conclusions

The Nordic-Baltic seminar on Biosecurity; Experiences, Training, Motivation and Economic Aspects was held at Johannesburg Castle, Rimbo, Sweden from 6th–8th May 2014.

The objectives of the seminar on biosecurity were to:

- Highlight recent research in the field of biosecurity and the future demands and challenges to consider.
- Elucidate and discuss different aspects related to biosecurity, such as:
 - Motivation to enhance biosecurity.
 - Training and education.
 - Economic aspects.
 - How to increase the awareness and knowledge on biosecurity measures.
- Stimulate networking and exchange of knowledge and useful experiences between participants from different countries.

The seminar had a total of 90 participants coming from ten countries.

The presentations made during the seminar by speakers coming from the European Commission, the World Organisation for Animal health (OIE), Denmark, Finland, Latvia, Norway, Sweden, the Netherlands and the UK provided an excellent basis for:

- A valuable exchange of views between the invited speakers and the participants of the seminar.
- Network building.

Day one of the seminar had focus on:

- Definitions, experiences gained and future demands for biosecurity.
- Behaviour and motivation.
- Training and education.

The information provided during the presentations was very valuable for fruitful discussions related to the questions:

- What do we understand by biosecurity?
- How do we measure good biosecurity?
- What are the most important elements for obtaining good biosecurity?
- How much biosecurity do we already have in place?

The workshop gave all participants a good opportunity for the exchange of views on the elements of greatest importance for the creation of and maintaining biosecurity plans at farm level accepted by and beneficial for the farming community. Such plans should be preferably economically viable and at the same time promote animal health, animal welfare and food safety.

The ownership of a biosecurity plan is important. However it must be recognized that biosecurity and partnership is strongly linked together, see below:

Figure 1: Biosecurity calls for expertise and cooperation

It was evident from the discussions that good Biosecurity at farm level calls for a set of practical measures to prevent entrance of infection into a livestock population and to control the spread of infection within the farm and from the farm. The measures may include and deal with elements and facts concerning:

- Herd information: owner, address, number of animals and type of animals.
- Geographical location: surrounding areas and livestock units.
- Production system: Layout, structure and marketing system.
- Movement of animals to and from the farm and within the farm.
- Movements of people, equipment and vehicles to and from the farm.
- Animal health records.
- Animal welfare requirements.
- Carcass management.
- Insect and rodent control.
- Cleaning and disinfection.
- Facilities at farm for staff.
- Training programme for staff.
- Information about service providers.
- Documentation for protective and preventive measures.

The measures listed, however will not be applied without the appropriate knowledge and motivation by the owner.

The second day highlighted:

- The links between biosecurity and economics.
- Compartmentalization and the importance of the biosecurity element.

It was noted with satisfaction that studies on economic incentives for disease prevention, among other things, could support views expressed during the day 1 session about the value of the veterinarian as the most important source for information on biosecurity matters.

Studies also showed that there are benefits from good biosecurity plans and benefits to stable production, lower running costs and less disease. However, there are still shortcomings concerning the benefits.

The presentations covering compartmentalization outlined in a comprehensive way the standards and guidelines and highlighted the biosecurity measures applied in an approved compartment.

3.2 Recommendations

- The deliberations concerning input of knowledge into the development of and the application of biosecurity plans at farm level highlighted that the farm veterinarian plays a very important role concerning biosecurity matters.
It is recommended that the Nordic-Baltic Veterinary Contingency Group consider conducting activities, which can assist the farm veterinarian in being fully aware of the many different biosecurity elements and ways and means to enhance motivation and knowledge of livestock owners. Future EU legislation, also provides for that.
- Knowledge, motivation and economic incentives are important elements for successful biosecurity at farm level.
It is recommended that the Nordic-Baltic Veterinary Contingency Group considers conducting seminars with the objective to promote educational and motivation activities important for the creation of and maintaining biosecurity measures related to the livestock production. The participants of the seminar shall represent the many different organisations and institutions involved in biosecurity at farm and at country level.
- Simulation exercises are an important tool for testing contingency plans.
It is recommended that the Nordic-Baltic Veterinary Contingency Group takes the initiative in future simulation exercises to rehearse and examine the application of biosecurity.

Literature

Proposal for a Regulation of the European Parliament and of the Council on Animal Health, European Commission, COM (2013) 260 Final; 2013/0136 (COD).

Acknowledgements

The organizers of the Nordic-Baltic seminar on Biosecurity; experiences, training, motivation and economic aspects would like to express their thanks to the Nordic Council of Ministers for the political support and the financial support made available for the preparation, implementation and valuation of the seminar.

The support made it possible for the national experts from the Nordic and Baltic countries to meet with representatives of international organizations and discuss topics of mutual interest within the context of biosecurity and contingency planning.

A special thank shall be addressed to all the speakers for the well prepared presentations, the chairmen managing competently the different sessions and to all the participants for active contributions to the success of the seminar. It is our hope that many valuable networks have been established for the future work concerning animal disease preparedness and contingency planning.

The seminar could not have been conducted with success without the valuable support given by Dr. Ingrid Eilertz, the Chief Veterinary Officer of Sweden and the staff of the Swedish Board of Agriculture.

Sammanfattning

Ett Nordiskt-Baltiskt seminarium om biosäkerhet genomfördes i Rimbo utanför Stockholm 6–8 maj 2014. Seminariet fokuserade på erfarenheter, utbildning, motivation och ekonomiska aspekter i relation till biosäkerhet.

Syftet med seminariet var att:

- Belysa och peka på nya forskningsresultat inom området biosäkerhet särskilt med avseende på framtida krav och utmaningar
- Belysa och diskutera olika aspekter av biosäkerhet och särskilt:
 - motivation att förbättra biosäkerheten
 - utbildning och kunskapshöjande åtgärder
 - ekonomiska aspekter
 - hur man kan öka kunskapen och medvetenheten om biosäkerhetsåtgärder.
- Stimulera utbyte av kunskap och erfarenheter samt skapa kontakter mellan deltagare från olika länder.

Seminariedeltagarna samlades kvällen före seminariet för registrering och informellt kunskapsutbyte under den gemensamma buffén.

Dag ett var en lång seminariedag som inleddes med en session som handlade om definitioner av biosäkerhet, erfarenheter från flera av de system vi har idag samt framtida krav i relation till den kommande gemensamma djurhälsolagstiftningen inom EU. Genomgående under dagen låg fokus på djurhållarnas motivering att införa och höja biosäkerhetsåtgärder samt hur man kan öka medvetenheten och kunskapen inom området.

En workshop om biosäkerhet på gårdsnivå genomfördes. Under workshopen diskuterade deltagarna olika faktorer av stor betydelse för att upprätta och öka biosäkerheten i olika typer av djurhållning. Biosäkerhetsplaner och åtgärder bör helst vara ekonomiskt lönsamma samtidigt som de främjar djurhälsa, djurvälstånd och livsmedelssäkerhet.

Dag två handlade huvudsakligen om ekonomi och biosäkerhet men även om kompartiment och kompartmentalisering. Ekonomiska aspekter på biosäkerhet illustrerades genom tre olika presentationer från Sverige,

Danmark och Finland. Sessionen om kompartment innehöll en presentation över internationella standarder och vägledningar från OIE, en presentation av kompartmentalisering i praktiken i samband med fågelinfluensa i Nederländerna samt en presentation som belyste de europeiska lantbrukarnas organisation COPA-COGECA's syn på kompartment och biosäkerhet.

Seminariet visade på den stora betydelse som besättningsveterinären har både för att sprida information om biosäkerhet och för åtgärder i besättningen. Ägarskapet och ansvaret för biosäkerhetsplanen är viktigt liksom en nära samverkan mellan olika samarbetspartner.

Vid seminariet deltog cirka 90 deltagare från 10 olika länder, Danmark, Finland, Island, Norge Sverige, Estland, Lettland, England, Nederländerna och Belgien.

Presentationerna och workshopen utgjorde en bra grund för ett värdefullt utbyte av erfarenheter och synpunkter mellan deltagarna från de olika länderna. Utifrån presentationerna och diskussionerna på seminariet antogs tre rekommendationer.

Rekommendationerna behandlade:

- betydelsen av besättningsveterinären
- motivations- och kunskapshöjande åtgärder
- beredskapsövningar.

De fullständiga rekommendationerna återges i kapitlet "Observations, conclusions and recommendations" (kapitel 3).

Annex 1

Programme for the Nordic-Baltic seminar on biosecurity; experiences, training, motivation and economic aspects

Table 1: Programme for the Nordic-Baltic seminar on biosecurity; experiences, training, motivation and economic aspects. 6th–8th May 2014, Johannesburg Castle, Rimbo, Sweden

Time	Sessions	Chair/Speaker
6th May		
8:30	Opening session	Dr. Sirpa Kiviruusu, Finland, President of the Nordic-Baltic Veterinary Contingency Group (NB VCG) Dr. Ingrid Eilertz, Chief Veterinary Officer, Sweden
	Session I: Biosecurity; Definitions, Experiences Future Demands	Dr. Ingrid Eilertz, Chief Veterinary Officer, Sweden
8:45	Biosecurity, Foot and Mouth Disease and the real world	Dr. Emma Rose, Veterinary Adviser, AHVLA, UK
9:25	Future EU Animal Health Regulation: a step forward for better biosecurity?	Dr. Barbara Logar, European Commission
9:55	<i>Coffee Break</i>	
10:20	The Danish SPF System for pigs – The best Strategy for protecting farms from infections? Experiences and challenges for the future	Dr. Bent Nielsen, Head of Department, Danish Agriculture & Food Council
11:00	Experiences and challenges dealing with backyard pig farms during CSF outbreaks in Latvia	Dr. Edvins Olsevskis, Food and Veterinary Service, Latvia
11:25	The Norwegian Healthier Goat Project	Dr. Dag Lindheim, TINE Norwegian Dairies, Norway
12:00	<i>Lunch</i> Session II: Behaviour and Motivation	Dr. Maarja Kristian Veterinary and Food Board, Estonia
13:00	Biosecurity on Swedish livestock farms – attitudes and behaviours among farmers and professional visitors	Dr. Jenny Frössling, National Veterinary Institute, Sweden
13:35	Biosecurity and beliefs of Finnish farmers.	Dr. Leena Sahlström, Finnish Food Safety Authority Evira
14:10	Barriers and motivation for biosecurity in Danish cattle farmers	Dr. Esben Jakobsen, Inno Vet-Ko, Denmark
14:45	<i>Coffee Break</i>	

Time	Sessions	Chair/Speaker
	Session III: Training and Education	Dr. Hanne Hansen, Veterinary and Food Administration, Denmark
15:15	“Smittsäkrad besättning” – A Swedish biosecurity program for cattle farms – to be launched in 2015	Dr. Sofie Andersson and Dr. Anna Olson, Växa, Sweden
15:55	Focus on Prevention – voluntary measures in joint venture in Finland	Dr. Pirjo Kortetniemi, The Association for animal disease prevention ETT, Finland
16:40	Workshop on Training and education	Dr. Esben Jakobsen, Inno Vet-Ko, Denmark
18:00	Close of session	
19:00	<i>Dinner</i>	
7th May	Session IV: Biosecurity and Economic Aspects	Dr. Siri Lötvedt, Food and Safety Authority, Norway
8:30	Costs of endemic infectious diseases and preventive measures for endemic infectious diseases in pigs and cattle	Dr. Karin Persson Waller, National veterinary Institute, Sweden
9:10	Costs of biosecurity and factors contributing to biosecurity in Finland	Dr. Jarkko Niemi MTT Agrifood Research, Finland
9:45	Economic incentive for exotic disease prevention in pig and cattle herds in Denmark	Dr. Mogens Lund Norwegian Agricultural Economics Research Institute, Norway
10:20	<i>Coffee break</i>	
	Session V: Compartments and Compartmentalisation	Dr. Audur Arnthorsdottir, Food and veterinary Authority, Iceland
10:50	OIE standards and guidelines on biosecurity and compartmentalisation	Dr. Nadège Leboucq, OIE sub-regional Representation, Brussels
11:20	Biosecurity measures for compartmentalization with respect to avian influenza: practical aspects	Dr. Martine Laurijssens, Food and Consumer Product Safety Authority, the Netherlands
12:00	European farmers and agri-cooperatives' views on compartment and biosecurity	Dr. Mette Kirkeskov Sie, COPA-COGECA
	Summary and Conclusion	
12:30	Plenum discussion, conclusions and recommendations. Closing of seminar	Dr. Jørgen M. Westergaard, ADC-Consult. Dr. Sirpa Kiviruusu, President of the Nordic-Baltic Veterinary Contingency Group
13:00	<i>Lunch</i>	

Annex 2

The Organizing Committee

The organizing committee established by the Nordic-Baltic Veterinary Contingency Group for the preparation and implementation of the Seminar on biosecurity; experiences, training, motivation and economic aspects consisted of:

- Elisabet Lindal, Swedish Board of Agriculture, Sweden.
- Hanne M. Hansen, Veterinary and Food Administration, Denmark.
- Maarja Kristian, Veterinary and Food Board, Estonia.
- Sirpa Kiviruusu, Food Safety Authority EVIRA, Finland.

The work of the Committee was in the Technical Secretariat assisted by Lena Stenevi, Secretary, Swedish Board of Agriculture, Sweden.

Annex 3

Evaluation

An evaluation form was a part of the handouts given to all participants at the time of registration. The form consisted of three sections:

- General questions.
- Evaluation of the presentations.
- Complementary comments.

The evaluation scale to be used during the evaluation was 1–5, where 1 = poor and 5 = excellent. The evaluation forms, total of 51, were collected at the end of the seminar and compiled. Information and feedback from the forms is highlighted below.

Table 1: General questions

General question	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	No answer/ not relevant
Did the seminar meet your expectations in relation to networking and sharing experiences?	0	0	8	43	43	6
Did you feel you had the necessary prerequisites (knowledge, skills etc.) to be able to benefit from the seminar?	0	0	6	35	53	6
The choice of topics for sessions were topical and relevant	0	0	8	43	43	6
How did you find the supplied material on the website, handouts, etc.?	0	2	22	41	28	8
The seminar has improved my knowledge of Biosecurity	0	0	24	53	18	6
How did you find the practical arrangements, premises etc.?	0	2	6	43	43	6
Over all, how did you find the seminar?	0	0	0	55	32	6

From the answers received to the general questions it is clear that the participants by and large used 4 or 5 on the evaluation scale with the exception to the question about the supplied material and hand-outs. To the question “Over all how did you find the seminar” 87% of the participants rated as 4 or 5, a result that must be considered as very satisfactory.

Registration to the seminar was administered via a website. In the seminar management plan and in the guidelines prepared for abstracts and presentations it was scheduled that abstracts should arrive not later than 24th of March, and PowerPoint presentations not later than 15th of April. Abstracts and presentations from the speakers were published as soon as they were received by the organizing committee. However many of the speakers were not able to send their PowerPoint presentations beforehand or provided them very late. Thus it was not possible for the participants to gain access to many of the presentations until the day of the seminar or after the seminar. On the other hand the Seminar website was open for at least six months after the seminar with all documents related to the seminar (abstracts, presentation, conclusions, participants etc.) available. It was also possible to send the evaluation form via the website.

Table 2: Evaluation of the presentations

Valuation of Sessions, the mean value of the points for all presentations in each session	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	No answer/ not relevant
I Definitions, experiences and future demands	0	1	15	49	31	3
II Behaviour and Motivation	0	4	16	48	31	2
III Training and Education	0	1	15	53	31	0
III Workshop	0	4	8	39	43	6
IV Biosecurity and Economic aspects	1	12	29	45	12	1
V Compartments and compartmentalization	0	4	21	40	22	13

All five sessions appears to have been well received with slightly lower points for session IV on economic aspects. The scores, using 4 and 5 on the evaluation scale together, for the different sessions were: for Session I: 80%, Session II: 78.5%, Session III: 84%, Session IV: 57% and Session V: 73%.

With regard to complementary comments to the evaluation form the participants were invited to respond to the aspects or issues listed under the following four headings:

- Comments (in particular on points where your answer was negative) (12 comments).
- What was the best part of the seminar? (25 comments).
- What could be improved? (21 comments).
- Suggestions for activities to be dealt with by the Nordic-Baltic Veterinary Contingency Group in 2015 or 2016 (9 comments).

The handwritten comments (a total of 67) made by the participants with regard to the presentations and discussions during the different sessions and to the management of the seminar were very valuable and re-enforced the views expressed in the two tables shown above. The comments for instance concerned technical problems at the start of the seminar, to include other species than cattle and pigs, the availability of the presentations on the website, more time between each speaker and for discussion. Examples on positive remarks are: a well balanced program, networking and discussions with colleagues from other countries, session on behavior and motivation, the underlining of the importance how to communicate the message, the workshop.

With regard to topics for future seminars or workshops or activities a number of topics were mentioned including:

- Biosecurity and official controls in aquaculture.
- Discussions on parallels between terrestrial and aquatic animal health.
- Use of antimicrobials and antimicrobial resistance, comparison between countries.
- The role/risk of non-commercial (hobby) farms for outbreaks.
- How to communicate contingency related issues to farmers.
- How to communicate on biosecurity – practical implementation.
- The Animal Health Law – how to bring it in to practice.
- Best use of future diagnostics, interpretations and relevance of results. What will be the role of veterinarians? Bioinformatics? Big data administrators?
- Effort in controlling/eradicating Paratuberculosis – comparisons between countries.
- Follow-up from this meeting.

Annex 4

Lists of Participants

Table 1: Lists of Participants

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Annex 5

Organization chart

The activities of the Nordic-Baltic Veterinary Contingency Group are carried out within the framework of allocations given to Nordic working group for microbiology and animal health/animal welfare.

Figure 2: Contingency planning an activity of the Nordic working group handling animal health/animal welfare

Annex 6

Publications prepared by the Nordic-Baltic Veterinary Contingency Group

The Nordic-Baltic Veterinary Contingency Group has since 2007 published a number of documents on different aspects of contingency planning within the area of animal health. Information on the publications is shown in the table below.

Table 1: Documents published by the Nordic-Baltic Veterinary Contingency Group

Year of publication	Name of document	Issued by*
2015	TROUT 2013 – simulating VHS outbreaks: Report on Exercise TROUT 2013 – Implementation of and activities related to a Viral Haemorrhagic Septicaemia (VHS) simulation exercise for the Nordic and Baltic Countries conducted 4th–5th December 2013, Bergen, Norway. TemaNord 2014:571, ISSN 0908-6692.	Nordic Council of Ministers
2014	Wildlife and Infectious Animal Diseases. The Proceedings of a Nordic –Baltic seminar on the role of the wildlife as reservoir and/or spread of infectious animal diseases in the coastal areas of countries bordering the Baltic Sea 2nd–3rd October 2013, Gdansk, Poland. TemaNord 2014:508, ISSN 0908-6692.	Nordic Council of Ministers
2014	Contingency Planning for Animal Diseases. The Proceedings of a Nordic-Baltic Seminar on “Contingency Planning for the next Decade” held 19th–20th September 2012 Helsinki, Finland. TemaNord 2014:509, ISSN 0908-6692.	Nordic Council of Ministers
2013	Operational Expert Groups for Animal Diseases. Report on Ad-Hoc meeting on the operational expert groups for animal diseases: How to maintain expertise? Copenhagen, 3rd–4th December 2012. Nordic Working Papers NA2013:926.	Nordic Council of Ministers
2013	Strengthening and Adaption of the Preventive Measures to Existing Risks of African Swine Fever. Introduction from Eastern Neighbouring Countries to Nordic – Baltic Region. Report on Workshop 29th–31st October 2012, Latvia, Sigulda. Word Document.	Latvia
2012	Exercise AUTUMN-2011, Nordic – Baltic African Swine Fever Exercise, October 2011, Nordic Working Papers NA2013:907.	Nordic Council of Ministers
2010	Nordic-Baltic Seminar on Risk Based Animal Health Surveillance and Contingency planning, 1st–3rd September 2010. PDF file.	Sweden

Year of publication	Name of document	Issued by*
2010	Seminar on the Importance of Vectors in the Spread of Animal Disease Today and in the Future, Riga, 13th and 14th of October 2009 Proceedings PDF-file.	Sweden
2010	Exercise SPRING, Nordic Baltic West Nile Fever Exercise 2009, 3rd June 2009, Proceedings PDF-file.	Sweden
2009	Nordic-Baltic Bluetongue Simulation Exercise "HOT-AIR", 14th–16th May 2008. Report.	Norway
2008	A foot and mouth disease simulation exercise involving the five Nordic countries. J.M. Westergaard, C.B. Andersen & S. Mortensen. <i>Rev. sci. tech. Off. int. Epiz.</i> , 2008, 27 (3), 751–758.	OIE
2007	Seminar on Risk Analysis: Risk Assessment, Risk Management and Risk Communication with special Reference to infectious animal diseases. In Oslo, Gardermoen, 3rd–4th of December 2007. Proceedings.	Norway

Note: * All publications prepared by the Nordic-Baltic Veterinary Contingency Group and published by the Nordic Council are available on: www.norden.org/nordpub; publications not issued by the Nordic Council may be available from the National Veterinary Administrations of the Nordic Baltic countries.

Biosecurity and livestock production

Biosecurity is important for a healthy livestock production; it may be defined as the prevention of disease causing agents entering or leaving any place where livestock including poultry are present. A number of biosecurity measures are available to minimize the risk of introducing and of spreading diseases of which some are zoonotic; i.e. diseases transmissible between animals and humans.

This report provides information on biosecurity measures safeguarding animal health and animal welfare and it highlights topics such as barriers and motivation to biosecurity, training and education, value of partnership and economy.

Broadly speaking biosecurity describes the process and objective of managing biological risks associated with food and feed production in agriculture and fisheries.

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