ORAL PRESENTATIONS

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Session I. Animal disease control

WP 1.1

Development and coordination of on-farm biosecurity measueres to prevent animal disease outbreaks in the Dutch- german border region

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Goal of this work package is the cross-border exchange about on-farm biosecurity measures to reduce the probability of an outbreak and the spread of animal diseases.

In the course of this project as a first step current biosecurity regulations for livestock (pig, cattle, poultry) have been outlined. Regarding the compliance of farms with biosecurity requirements three classes have been defined: Group one with farms complying with current regulation, group two with farms that exceed legal requirements with additional measures and group three representing farms that lay below legal regulations. Group three is calculated as the difference between all known holdings minus the holdings proving their biosecurity in some way.

Within the scope of biosecurity during an animal disease outbreak (foot and mouth disease) there are rules published for transporting horses during an animal disease outbreak.

To improve on-farm biosecurity measures there is a test to minimize the colonization of broiler-herd with Campylobacter species as example for intensive-held farm animals.
First we enquire one day-old chicken to prove if there is a contamination with Campylobacter species. All one day-old chicken are negative so far. After that there will be further analyses in several farms e.g. well water (used for broilers), hygienical hatch, flies and- if possible- staff. The broilers will be checked at the end of the fattening period.

There were further meetings with QS GmbH to find matching questions for biosecurity measures for audits by QS and inspections by local veterinary authorities. Seven questions have been agreed on, in the beginning of 2011 the local authorities should have the possibilities to compare evaluation of QS with the results of official controls.

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Session I. Animal disease control

WP 1.3

Umgang mit der Milch in den Restriktionszonen eines Maul- und Klauenseuche Tierseuchenausbruchs“

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The Foot- and Mouth Disease (FMD) is counted to the exotic animal diseases in Europe. More than 2.6 billion recipient animals are living in countries with permanent FMD presence. At the same time in this countries production and trade with animals and animal products is still increasing. Thus, the risk of virus spread to FMD free countries is rising. The veterinary authorities need to be prepared for FMD outbreaks.

Milk can be a virus carrier – even if the infected cattle is not showing any clinical symptoms yet. Therefore there have to be regulations of how to deal with milk from FMD restriction areas. This management approach contains practical issues like e.g. the equipment of milk tank lorries with desinfection tools. It is necessary to find different individual solutions for a vast number of practical challenges in order to be prepared to collect, dispose or manufacture raw milk from FMD restriction areas.

In this work package experiences and solution ideas have been exchanged and discussed between Dutch and German stakeholders. A manual has been written that contains the knowledge of veteriary authorities and companies from the milk sector. This guideline is dealing with crisis management issues as well as practical material like e.g. checklists and information handouts that will contribute to a better level of preparation in times of crisis.

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Session I. Animal disease control

WP 1.4

A PathwayDiagram for introduction and prevention of Blue Tongue Virus 8

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In August 2006 North-Western Europe was struck by surprise by Blue Tongue Virus Type 8 (BTV8). In 2006-2007 both the veterinary and economic impact was considerable. This example of a vector-borne emerging infectious disease (EID) clearly shows the need for preparedness with regard to prevention and control of such 'unknown' diseases. Moreover, it is well-recognized that in the next decade the risks of EIDs will increase, i.e. there is an increasing demand of decision support information by the veterinary authorities.
One area of preparedness is prevention. Although quantitative data with regard to EID are still scarce, elaboration of a systematic qualitative overview of pathways of introduction and possibilities for prevention is possible using existing knowledge. Such a PathWayDiagram (PWD) would provide decision makers with basic prevention information and scientists with a framework for subsequent quantitative data collection and analysis. This contribution presents an elaborated PWD for BTV8, including introduction pathways, various domestic sub-populations involved and ways for prevention. Furthermore, relevance and use of this decision support tool by authorities will be discussed, e.g. use in priority setting of introduction risks and execution of preventive measures. Moreover, a more generic application to other EIDs will be discussed.

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Session I. Animal disease control

WP 1.4

Preparation of public and private management systems on emerging infectious disease outbreaks

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Emerging Infectious Diseases (EIDs) are upcoming animal diseases associated with a large amount of uncertainties and knowledge gaps. It is well-recognized that EIDs of any kind will be a continuous threat to the Euregion NRW-NDS-NL in the next decade. Therefore, public and private decision makers in livestock production have to prepare their systems for EIDs. As elaborated by Breuer (2011) access to information is a crucial part of crisis prevention and management of epizootics, but when a cross-border dimension is added preparatory work to improve information access becomes a complex and demanding task. Monitoring and surveillance systems (MOSS) are an important part of preventive animal health strategies all over world. Such systems are typically designed and maintained by public veterinary services. Moreover, enterprises in the agri-food sector are just establishing adequate structures that allow to collate data from self-check systems and make them available for further analysis and monitoring. Hence, regarding EIDs we have an increased demand for descriptive, diagnostic and predictive information facing a growing number of information sources on both sides of the border. This study had the aim to show what monitoring and surveillance systems exist and how they might contribute to improved preparedness for EIDs. Based on literature research and discussion with experts in the field of veterinary epidemiology a classification scheme for MOSS was developed. An inventory of existing MOSS was elaborated and each system was characterized and classified. Results are an overview („map“) of available MOSS and a classification of current MOSS according to epidemiological criteria and methods.

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Session I. Animal disease control

WP 1.5

Cross border crisis management concept: Establishing cooperation measures between Dutch and German veterinary authorities in animal disease control

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In WP 1.5 a cross border cooperation concept has been developed that provides veterinary authorities with all steps that have to be taken for the preparation, execution and evaluation of cross border crisis management exercises. The main findings give insight in the basic differences in animal disease control in the Dutch German border area. At the same time they underline the benefits and limitations of crisis management training for a better cross border cooperation in crisis.

The design of this concept has been described in several sequences and its capabilities have been illustrated in a single case study. As a core result, the evaluation of this crisis management concept made clear how benefits of cross border cooperation can be implemented and, at the same time, how to deal with a variety of limiting factors that are standing in the way of a successful implementation.

Based on the results of this study the standardization of cross border crisis management by means of an integrated concept is highly recommended, but stakeholders have to participate and decide for official agreements in normal times. As soon as a crisis is at hand, there is no more room for debate about cross border cooperation. The majority of Dutch and German stakeholders support the principle of cross border cooperation in animal disease control. But, the findings of this research show that in every single cooperation plan the benefits always depend on the perspective a stakeholder has on this very subject. Thus, crisis management cooperation is a dynamic process that needs systematic innovation.

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Session I. Animal disease control

WP 1.6

Towards an integrated approach to intensify cross-border collaboration in the field of highly contagious livestock diseases: a general framework for decision support

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This paper analyses the potential for increased cross-border cooperation for border regions with a reasonable or large cross-border reliance on production and consumption of livestock commodities. The extended cross-border region of the Netherlands (NL), North Rhine Westphalia (NRW), and Lower Saxony (NDS) is a particular example in this respect. Despite the EU single market, both in peace time (i.e. without outbreaks of highly contagious livestock diseases like Classical Swine Fever) and crisis (i.e. during such outbreaks) situations, trade barriers for livestock and livestock commodities among Member States exist or are further established, resulting in (major) economic consequences. In this paper, a general framework including all critical factors, (inter)relations and (im)possibilities associated with the challenges of cross-border collaboration is presented. Furthermore, difficulties in disease control harmonization and collaboration due to current borders, as well as possibilities for future cross-border cooperation, are discussed for the cross-border region NL-NRW-NDS. To reduce the financial-economic impact of the borders, this study suggests applying veterinary routine measures more efficiently, harmonizing current veterinary control measures as well as adding economic instruments to current veterinary control measures. Moreover, a future-oriented approach should be used, which should include an analysis of changes in (contact) structure of the livestock sector in the coming ten years. Changes in such factors are a result of changing (global) autonomous drivers and institutional conditions, such as changes in consumer preferences and EU agricultural policies. Changes in (contact) structures affect the risks of disease introduction, spread and control and accordingly, the consequences of strategies to manage these diseases.
The integrated approach as proposed in the general framework as well as the inventory of cross-border difficulties and possibilities for the case study NL-NRW-NDS can be used and should be regarded as a starting point to further quantify the financial-economic impact of improving cross-border collaboration and harmonization.

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Session I. Animal disease control

WP 1.7

Minimization of the impact of Aujeszky's disease outbreaks in the Netherlands: a conceptual framework

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Control of Aujeszky's Disease (AD) in the Netherlands is based on vaccination and movement restrictions; while this approach avoids the socio-ethical concerns associated with culling of infected animals or welfare slaughter, it will in most cases generate new animal welfare problems. Movement restrictions can create large surpluses of live animals on farms, particularly affecting piglets in densely populated livestock areas. In turn, surpluses inside the movement restriction zones (MRZs) and associated shortages outside the MRZs can result in market disruption and price changes, with consequent economic impacts.
A deterministic simulation model was developed to estimate the extent of these problems and analyze the impact of possible solutions. The results show that in the case of complete movement restrictions, a large pool will arise of piglets varying in age and vaccination status, both on individual farms and throughout the MRZ. This situation is especially likely in the event of an epidemic of AD lasting more than 10 weeks. The study indicates that these surpluses can be reduced by relaxation or early lifting of the restrictions.
It was concluded that channeling of live piglets during an epidemic of AD within and, if needed, outside the MRZ, is an important instrument to reduce the economic and animal welfare impacts of containment measures. These measures have most impact in areas where piglet production is higher than the number of available places at fattening farms.

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Session II. Zoonoses

WP 2.1

Salmonella monitoring: early warning of farmers by means of a data-based information system

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In cooperation with JZ Investments the Erzeugergemeinschaft Rheinland developed a data-based system that provides fattening farms with decision relevant information in better time. A message is spread to the farmer as soon as it has been detected that:

-no samples have been taken;
-not enough samples have been taken within a 67 days time frame;
-during a period of three weeks changes have been made in salmonella antibody status (especially in category II and III).

This system guarantees that a farmer is informed about all relevant issues within a supply that can finally lead to an alteration of status concerning the categories II or III.

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Session II. Zoonoses

WP 2.2a

Internet based checklist for the risk assessment of Salmonella contamination in finishing pig herds, abattoirs and cutting plants.

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Monitoring systems are in place to categorize pig finishing herds, abattoirs and cutting plants for their level of Salmonella contamination. In order to improve their status, if necessary, the companies and their advisors need to implement an improvement plan. This can be based on a strengths and weaknesses analysis in relation to all factors that contribute to the Salmonella contamination level. To do this analysis in a uniform, structured and repeatable way, internet based checklists were developed.
In the checklist for herds questions relating to Salmonella status of the introduced piglets, transport hygiene of piglets, housing, management, cleaning and disinfection, feeding, disease status, rodent and fly control, and unloading practices are listed. Standard protocols will be available on the website for references on, for example, cleaning and disinfection, rodent and fly control, sampling and testing of weaned piglets / growers and hygiene checks.
In the checklist for abattoirs questions relating to for example transport, holding area, slaughter, chilling, cleaning and disinfection, and hygiene are listed.
For cutting plants questions relating to for example the quality of received goods, chilling, cutting, packaging, transport, hygiene, documentation, and cleaning and disinfection are listed.
Expert opinion is and will be gathered to weigh the different chapters and sub-questions in the checklists. The final score allows comparison to previous checks and to peers. Scores per chapter allow a ranking of most urgent points to be remedied in order to improve the Salmonella status. The internet application allows access to the checklist from any location at any time; however, pdf-documents of blank or completed checklists can be printed when desired. Logins provide sufficient privacy protection. Storage of the data in a central database provides data security. The checklists will be available in German, Dutch and English. User feedback will be used to improve all aspects of this tool continuously.

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Session II. Zoonoses

AP 2.2b

Concerted practices for pig sampling and diagnostic methods between Germany and the Netherlands

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The focus of the working group is to harmonize methods to monitor several swine diseases across the border. One reason for the early launch of the WP 2.2.B is, that many regions have developed monitoring programs for regular health checks in pig herds. There is great uncertainty of methodology and comparability in these monitoring programs.
One focus will be a standardization of sampling of piglets before they cross the border between the Netherlands and Germany and are held in German stables until slaughter. There is a special risk of infection and disease.
The working group has agreed to work on significant swine diseases. Named are swine mange, atrophic rhinitis, PRRS, swine dysentery, ileitis (Lawsonia spp.) and PCV2. Mycoplasma hyopneumoniae (M. hyo.) and Actinobacillus pleuropneumoniae are not part of this monitoring system. Most piglets are vaccinated against M.hyo. There is no suitable test available at the moment.
There are recommendations on both sides of the boundary for the methodology and conduct of studies on specific infectious diseases (e.g. SGD standards for atrophic rhinitis, mange and PRRS). The working group had two meetings with representatives from German and Dutch laboratories. Sensitivity of detection, specificity, linearity, repeatability, quantity and time limits were defined for several test kits in different laboratories for the above mentioned diseases. A list has been prepared to compare the methods of investigation between the laboratories in the Netherlands and Germany.
A main focus of the group will also be in the setting of appropriate standards for the monitoring process for pig producers on the said infectious diseases.
Proficiency testing for the tests for the above mentioned diseases is also part of the tasks of this working group. New proficiency tests will be developed for Lawsonia, Brachyspira en PCV2. Some proficiency tests have already been evaluated (i.g. atrophic rhinitis and salmonella), some will follow (PRRS and PCV2) in 2011 and 2012 (Brachyspira and Lawsonia).
The next steps are to define the sampling protocols for local veterinarians. These protocols will be used in both countries. More than ten laboratories have been working with this group so far. All this information will be made available through a flyer, to be given to all swine vets and an internet platform to inform farmers, vets and breeders.

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Session II. Zoonoses

WP 2.3

Prevalence of Methicillin-resistant Staphylococcus aureus (MRSA) in pig holdings in the Euregio (German part)

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MRSA has been recognized as a colonizer of pigs in many European countries. However, its prevalence in pig holdings was reported to be highly divergent. Here we investigated the prevalence of MRSA on farm level in the German part of the Dutch-German border area.
In 2009, we investigated the prevalence of MRSA in swine holdings in the German part of the Euregio. Five dust samples, and, if available one manure probe, were obtained from each pig farm. After pre-enrichment in selective broth, samples were streaked onto a chromogenic medium for the detection of MRSA and suspect colonies were confirmed by coagulase-tube test and mecA PCR. S. aureus protein A gene (spa) typing, tests for the presence of lukS-PV/lukF-PV and cfr genes were performed of all isolates; multilocus sequence typing was done exemplarily.
Overall, 690 dust and 71 manure samples were obtained from a total of 138 different pig holdings. MRSA was detected in 190 probes from 79 farms (57% of all farms included in this study). MRSA was isolated from 25% of all dust samples and 27% of all manure samples, respectively. A total of (128 from dust, 17 from manure) were available for spa typing. Among 145 MRSA isolates available for spa typing (at least one isolate from each of the 79 positive different farms), we determined 11 different spa types. Among the spa types indicative for CC398, t011 (63%) and t034 (22%) were predominant. Two isolates (t1236, t3992) belonged to the CC97 lineage. The genes lukS-PV/lukF-PV and cfr were not detected.
The prevalence (57% of all farms) was higher than documented in European surveys but lower compared to studies from the same region, which analyzed samples from individual animals (70%) instead of environmental probes. Regional differences were found.

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Session II. Zoonoses

WP 2.3

Typing results of Methicillin-resistant *Staphylococcus aureus* (MRSA) resulting from the SafeGuard work package 2.3 "MRSA vet-net"

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Among animals high MRSA colonization rates have been documented especially in livestock (swine, poultry, cattle), which can be the source of zoonotic transmissions. Within work package 2.3 (WP 2.3) of SafeGuard, the partners perform multiple investigations into the occurrence of MRSA among (livestock) animals. The molecular typing of MRSA isolates found in these studies is a central aim of this work package. Since 2009, all MRSA isolated in longitudinal studies and prevalence investigations within the framework of WP 2.3 have been characterized using sequence-based typing of the *S. aureus* protein A (*spa*) gene. *Spa* types were clustered into *spa* clonal complexes (spa-CC) by the Based Upon Repeat Pattern (BURP) algorithm of the Ridom StaphType software. Results of *spa* typing were compared to multilocus-sequence typing (MLST) results available on the central spa-server and in recent publications.

In total, 2147 MRSA isolates were *spa*-typed. Among these strains, 83 samples were from humans, 1800 from pigs or pig holdings, 257 from chickens or chicken abattoirs and 7 from other animals (cats, dogs, guinea pigs, cattle and sheep). Overall, 95% of all MRSA isolates were characterized by spa-CC011 (t011, t034, t108, t1184, t1197, t1250, t1255, t1451, t1606, t2330, t2346, t2576, t3423, t4652, t571, t588, t6247, t6320, t7621), indicative for the clonal lineage CC398 as determined by MLST. Ten isolates were associated with spa-CC002/2164 indicative for MLST CC5. Four isolates were found to belong to spa-CC1236/3992 described to represent MLST CC97. Ten *spa* types (n=61 isolates) indicative for multiple MLST CCs were not clustered with other types (t003, t015, t020, t127, t1430, t151, t1535, t5838, t7496, t899). Six *spa* types were excluded from BURP analysis due to the *spa* repeat length (t1344, t1456, t2383, t2510, t3041, t991).

MRSA of the CC398 lineage were predominant among the isolates characterized in WP2.3. However, rare MRSA *spa* types were determined.

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Session II. Zoonoses

WP 2.4

Endemic flies and (migratory) birds as possible vectors for agents of diseases in the region of Düsseldorf and Duisburg

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Aim of this in progress study is to identify possible pathogenic threads that occur in the environment of Düsseldorf and Duisburg that are possibly spread by flies and/or birds as natural vectors. We chose four areas (3 in Düsseldorf and 1 in Duisburg) that possess watersides, grasslands, similar other vegetation and are open for public access. Flies were caught by net and bird-feces samples were taken periodically in each area from August 2010 to now and submitted to microbiological and parasitological investigation. In the first phase of this study for every sample 3 to 5 flies were caught and pooled to characterize the overall infection of the distinct fly population in each area. As a preliminary result we found Sarcophoridae and Calliphoridae as the dominant genera whilst Muscidae were less present. We found strains of enteropathogenic and enterohemorrhagic *Escherichia coli* (EPEC and EHEC) in over 60 % of all feces samples as well as in flies and in all locations. Over 80% of all samples carried different molds and Candida spp. was found in over 70 % of the samples. Furthermore cystic stages of protozoan and helminthic parasites were found as well on the surface of the flies as in the feces so that they are also important vectors of agents of animal and zoonotic diseases. For the second phase of this study, individual flies are caught to find out if there is an additional assignment of the agent of diseases to the different genera of flies. At this point it seems that the Sarcophoridae are the main vectors and that there is strong seasonal coherence to the number of different agents of diseases that are found per sample. The present results, which will be substantiated with the growing number of samples and investigations, clearly show that absolute need of fly control in many ways.

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Session III. Food Safety

WP 3.1

Cross-border aspects of risk based meat inspection without incision in pork production

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Pork production is an important economic sector in the Dutch-German border region. Each year millions of slaughter pigs are traded cross border for slaughter in the other country. The region can thus be regarded as a single economic region. At slaughter, each pig must be inspected for food safety hazards. Meanwhile, however, new hazards arise and sometimes the traditional meat inspection cannot detect them. Hence, the new European food safety legislation ('hygiene package') allows for a new type of meat inspection. This 'risk based meat inspection without incision' or 'supply chain meat inspection' uses risk assessment based on information from the food chain to derive a veterinary prognosis on the pigs' health and allows for visual inspection of pig carcasses. Slaughter companies who want to implement supply chain meat inspection must develop their risk based system, which must be approved by the competent authority. In a single economic region, the different systems must be mutually recognized by both countries not to hinder common trade. The goal of work package 3.1 was to address issues and coordination mechanisms in a cross-border risk based system. These were derived from literature review and exchange of experience and information between staff from the Dutch and German public authorities, two universities, slaughter companies, product boards and private quality assurance systems. Three topics were addressed: 1) An in-depth comparison of the meat inspection in Germany and the Netherlands was performed, revealing substantive differences in the implementation of the risk based approach. A further analysis identified an optimal role allocation model in supply chain meat inspection from a food safety and an economic perspective. 2) A guidance document for supply chain meat inspection for German authorities was developed. 3) A study dealing with on-site practical issues of verification of the meat inspection procedure was conducted.

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Session III. - Food safety

WP 3.2

Compliance checks for raw milk – cross border reporting procedure about the exceedance of EU limit values.

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In the Dutch-German border region the cross-border trade of raw milk is continuously increasing. Main criteria for the quality of raw milk are: a low germ number indicates hygienic production and milk storage, low somatic cell counts indicate a sufficient udder health and the absence of inhibitors suggests a prudent use of veterinary drugs.
The control of the quality of raw milk is done by independent accredited laboratories. In case that the maximal accepted count of germ or somatic cells is exceeded for more than two (germs) or three (somatic cells) months the dairy farmer will be admonished. Evidence of inhibitors results in an immediate hold of delivery from the dairy farm. The principal specifications of the raw milk control are regulated by the European Union but there are significant differences of the practical procedures among the project areas.
A detailed status survey of the notification process within and between project areas was carried out. The participants of the notification process are the dairy laboratory, the dairy farm, the milk hygiene advisor, the dairy and the competent authorities. The dairy laboratory of North Rhine Westphalia reports direct to all participants if the maximal accepted numbers of germ or somatic cells are exceeded for a period. In Lower Saxony the dairy and the farm are responsible to inform the authority if the limit is exceeded. In the Netherlands, the results are forwarded to the dairy. The dairy is responsible for compliance with legal requirements and the exclusion of the dairy farmer, if the limit is exceeded.
An analysis of critical points of the notification was accomplished. The weaknesses are, amongst others, interpretive problems of some legal provisions, especially in a cross-border notification, differing methods and sampling procedures and need for improvement of the information transfer. The implementation of solutions to the identified weaknesses will be the purpose of this project.

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Session III. - Food safety

WP 3.3

Carry over and analysis of PFAA in animal tissues

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Feeding studies were carried out at the BfR on lactating dairy cows and fattening pigs over a period of 3 and 4 weeks, respectively in order to investigate the carry over of perfluoroalkylacids (PFAA) from feed into food of animal origin. The different matrices (organs, meat, plasma, feed), sampled during the feeding experiment, were analysed at the CVUA-MEL. The samples were measured by liquid chromatography coupled with a tandem mass spectrometer (LC-MS/MS) after destruction of the proteins by using enzymes or concentrated acids to set the PFAA free and subsequent purification steps. Next to PFOA and PFOS high concentrations of further Perfluorosulfonic acids (PFSA) with 4 (PFBS), 6 (PFHxS) and 7 (PFHpS) carbon atoms as well as Perfluorocarboxylic acids (PFCA) with 6 (PFHxA) and 7 (PFHpA) carbon atoms could be detected in the naturally contaminated feed used for both feeding experiments. In the cow experiment accumulation of PFAS could be observed in plasma, organs and meat. The highest concentrations were detected for PFOS in organs (1000 – 2000 µg/kg) but there are also considerable concentrations of PFHxS (60 – 100 µg/kg) in organs. Despite only low PFHpS concentration in feed, remarkable concentrations in organs and plasma could be observed for this compound. The concentrations of PFCA were very low in plasma, organs and muscle tissue.
In the pig experiment accumulation of PFSA could be observed in plasma, organs and meat. The highest concentrations could be observed in organs for PFBS (200 µg/kg) and PFOS (1000 µg/kg). In contrast to the cow experiment a considerable accumulation of PFHxA, PFHpA and PFOA could be observed in plasma, organs (5 – 30 µg/kg) and meat of the pigs. In all animals the concentrations in meat were much lower than in organs.

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Session III. - Food safety

WP 3.5

Bioinvasion of the Pacific Oyster *(Crassostrea gigas)* in the Wadden Sea - microbial and chemical risks for the consumer: current status of ecological, microbiological and chemical investigations.

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In the past three decades, the blue mussel (Mytilus (M.) edulis) was increasingly suppressed by the spread of the Pacific Oyster (Crassostrea (C.) gigas) in the Frisian and Dutch Wadden Sea. The concerns hereby occurred are both, regarding the blue mussel industry as well as food safety aspects of blue mussels and pacific oysters for human consumption. C. gigas settles predominantly on intertidal Mytilus-beds and subsequently create rigid reef-like structures. Insofare C. gigas may have direct or indirect influence on cultivated areas of blue mussels in the wadden region, by the invasion process itself and by microbial and/or chemical risks. Whereas the primary production of classified blue mussel culture areas is regularly controlled by state laboratories according to the EU regulation VO(EG) 854/2004 the wild reefs of Pacific Oysters are not under control of official control programmes for food safety aspects. Moreover, since an increasing temptation of an uncontrolled collecting and marketing of pacific oysters in the wadden sea is observed, a risk assessment of microbial and chemical hazards in Pacific Oysters is needed. The aim of WP 3.5 is to elaborate data on the status of the bioinvasion process in the wadden and to create a suitable database on consisting of relevant biological, microbial, and chemical parameters, analyzed in oysters and adjacent mussel beds for comparison. A sampling scheme was designed which regards both spatial and saisonal distribution to attain a representative coverage. During 2010 and 2011 samples have been taken from 13 designated localisations in the Wadden Sea region for ecological, chemical and microbiological investigations. The ecological data on the abundance, biomass and population dynamics of C. gigas and M. edulis at each location were elaborated. With respect to the food safety parameters a total number of n=284 samples in the Lower Saxony Wadden sea and a total number of n=32 samples the Dutch Wadden Sea area, resp., have been collected. Each sample consists of 6 subsamples, i.e. of 3 oysters and 3 adjacent mussels. The samples were analyzed according to EU-Regulations for shellfish (e.g. 854/2004/EG) using standardized methods. Besides metric data on size and weight the parameters of aerobic plate count at 30°C, E. Coli, Salmonella, Vibrio spp., Clostridium spp., viruses (Noro, hepatitis A), chemical contaminants (PCBs, CKW, heavy metals), Biotoxins (Algae Toxins PSP, DSP, ASP) and shellfish diseases (Marteiliosis, Bonamiosis) were anaylsed.

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Session III. - Food safety

WP 4.1/4.2

Trust and technology enable a successful crisis communication

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Recent crises in the agricultural sector, such as the German dioxin scandal in 2011 or the last swine fever outbreak in Germany 2006, have caused immense economic damage. For these crises German veterinary authorities at district, state and federal level are put into charge as crisis managers and preventively acting organizations. In order to perform their task effectively, high quality of communication as well as cooperation with stakeholders in agribusiness is a basic requirement. However, despite clear evidence that identifies these relationships as crucial, there are few works that directly address communication quality, intensity and its sector specific information and communication systems.
Therefore various methodological approaches to optimize the communication to prevent and manage crisis were applied. On the one hand, based on the causal model and using a cluster analysis, different types of communication in veterinary services are determined. By applying the identified determinants of the quality of communication, as well as the four established types of communication, user-oriented strategies can then be developed, in order to improve communications with government authorities.
Based on expert interviews on the other hand and by considering the Maturity Model (ISO/IEC 15504) the main processes have been identified for the development of a concept to apply a specific engage-exchange-model (EEM) to improve the animal disease control.
The interview results also delivered the most relevant factors to achieve a high level of acceptance by the actors to implement and to use the EEM concept. Trust in communication and a reliable technology are key factors for a successful use of the EEM. Against this background the partial results of the SafeGuard work packages 4.1 and 4.2 were combined and serve as a common basis for the development of an EEM in the field of crisis communication in animal disease control.

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Session III. - Food safety

WP 4.3

Economic optimization of Monitoring and Surveillance systems: a conceptual framework for quantitative analysis

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The issue of economic optimization of surveillance systems has been elaborated from the viewpoint of organizations which operate a portfolio of surveillance activities, i.e. food safety authorities. Their prime aim is to maximize total surveillance performance within resource constraints (e.g. financial and labour). The aim of the conceptual framework is to provide a sound basis for subsequent quantitative decision support to these organizations.
First, the main aspects of surveillance are described, such as definitions, production chain aspects, single hazard surveillance and surveillance portfolio. Subsequently, the various types of single hazard surveillance activities are categorized, with their corresponding technical performance indicators (e.g. High-Risk Period for epizootic hazards). Third, an economic concept was elaborated for single hazard surveillance, including disease dynamics, surveillance system components, trade-offs between technical performance and economic impact and the subjective valuations of these, aimed at providing a basis for choice making. This concept was used to perform a quantitative analysis on surveillance of Classical Swine Fever using combined epidemiological and economic simulation models to demonstrate the validity of the concept. Fourth, the economic concept was further elaborated for a portfolio of single hazard surveillance activities, that includes the same elements as in the single hazard surveillance activities . Subsequently, this concept was used to analyze a fictive surveillance portfolio problem using economic simulation and optimization models. The results of the illustrative quantitative analyses showed the relevance and usefulness of the entire conceptual framework for implementation in concrete decision support to e.g. food safety authorities.

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