RIBMINS

Risk-based meat inspection and integrated meat safety assurance

Newsletter

Issue no. 2 - January 2022

Some of core group members of RIBMINS during an online meeting in 2021. From left to the right Bojan Blagojevic (Chair), Ivar Vågsholm (WG1 leader), Diana Meemken (WG2 leader), Dragan Antic (WG3 leader), Ole Alvseike (WG4 leader), Sophia Johler (WG5 leader), Lis Alban (Vice-chair).

A word from the RIBMINS leaders

Welcome to the second RIBMINS newsletter. We are now halfway into our COST Action, and we have made interesting progress in various areas.

This issue brings an update of our work and achievements together with interviews of several stakeholders and feedback on the training school organised in February 2021.

At the time when we are still delivering this COST Action mainly online, we hope that the post COVID-19 era will commence very soon enabling us to meet you physically at some of our future events.

Bojan and Lis

Bojan Blagojevic, Chair
University of Novi Sad, Serbia.

Lis Alban, Vice-chair
Danish Agriculture and Food Council,
University of Copenhagen, Denmark.

Content

Upcoming events 2022

- 7-8th April 2022, Cordoba (Spain)
  Second RIBMINS Scientific Conference
  Read more about the event here

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Edited by: RIBMINS

Work progress 2020-2021

▶ WG1 - Scope and targets of meat safety assurance system (MSAS)

Leader: Ivar Vågsholm (Swedish University of Agricultural Sciences, SE), vice-leader: Simone Belluco (Istituto Zooprofilattico Sperimentale delle Venezie, IT)

WG1 works on the scope and targets of meat safety assurance systems (MSAS) and intends to publish on these topics in peer reviewed journals. Relevant papers are on STEC in the beef chain and the use of harmonised epidemiological indicators (HEIs) proposed by the EFSA, an update on the EFSA baseline study of *Salmonella* in pigs from 2008, as well as work on antimicrobial residuals in meat. Another focus is on foodborne pathogens and the microbiome. Ultimately, all these activities aim to integrate the information flow on food safety risks along the meat chain. Moreover, the aim is to shape the evidence base for legislation and implementation of MSAS within the EU, thereby transforming the intentions described by EFSA and the EU Commission into action.

▶ WG2 - Controls and risk categorization at farm level

Leader: Diana Meemken (Free University of Berlin, DE), vice-leader: Truls Nesbakken (Norwegian University of Life Sciences, NO)

WG2 covers pre-harvest meat safety interventions. Our work on systematic reviews on interventions in poultry, pig and beef primary production will provide a broad overview on currently available tools and potential for improvement in these different sectors. A joint training school that will be organised in June 2022 in collaboration with WG3 will focus on interventions for improved meat safety at the pre-harvest level and at the abattoir.

▶ WG3 - Abattoir level controls and risk categorization of abattoirs

Leader: Dragan Antic (University of Liverpool, UK), vice-leader: Kurt Houf (University of Ghent, BE)

WG3 works on abattoir-level controls and risk categorisation of abattoirs. Systematic literature reviews and meta-analyses on interventions for the reduction of bacterial loads on beef, sheep, pig and chicken carcasses in abattoirs are ongoing. An important aspect of WG3 work is on computerised vision systems for detection of carcass contamination and gross pathologies, which are mainly developed and used in the poultry industry. Our work also covers the performance assessment of the food safety management systems in abattoirs and the use of harmonised epidemiological indicators in the risk categorisation of abattoirs. WG3 is co-organising the training school on meat-safety interventions.

▶ WG4 - Impact of changes and alternatives to traditional meat inspection

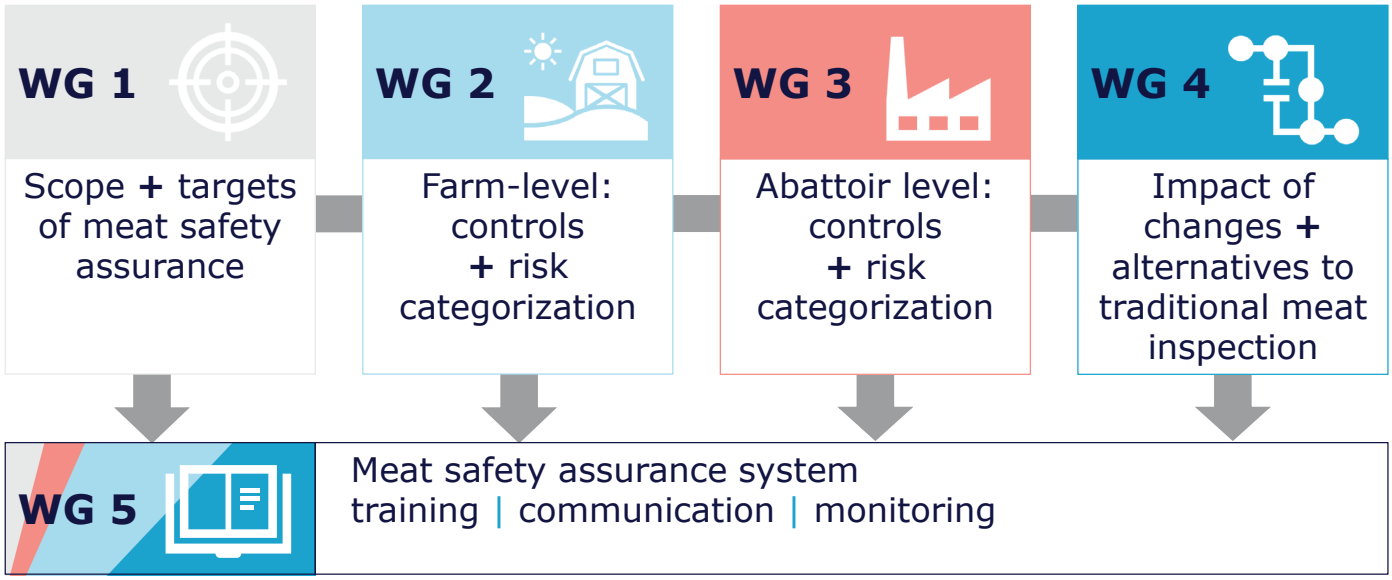
Leader: Ole Alvseike (Animalia, NO), vice-leader: Miguel Prieto-Maradona (University of Leon, ES)

WG4 works on the impact of changes and alternatives to traditional meat inspection. After having successfully completed a training school on the future of meat safety in February 2021, and delivered a comparison of meat inspection lesion systems in Europe, we are now focusing on the impact of camera-based meat inspection systems (together with WG3), and on mapping of condemnation criteria, survey operative elements (programs, practises, methods, national regulations, etc.) in meat safety assurance systems in different European countries, and on innovative bacteriological laboratory methods to assess carcass fitness for human consumption. From January 2022 a systematic literature review on the economics of new tools and methods for control of foodborne zoonoses has been initiated. WG4 holds monthly online meetings that are open for members and interested professionals within the field.

▶ WG5 - Meat safety assurance system, training, communication and monitoring

Leader: Sophia Johler-Illic (University of Zurich, CH), vice-leader: Claudia Guldimann (Ludwig-Maximilian Universität München, DE)

WG5 works on RIBMINS communication. We are working on evaluating the status quo among EU member states on training opportunities for official veterinarians and food business operators. We are also evaluating the existing EFSA documents on meat safety assurance systems and their strengths, opportunities and weaknesses. The output of all working groups will be summarised and made available on the RIBMINS website to ensure its availability beyond the end of the project.



First training school on future meat safety

A virtual training school on the modernisation of meat inspection and the development of meat safety assurance systems (MSAS) was organised by WG4 on 3-5 February 2021. A total of 49 participants from academia, competent authorities, and food business operators from 27 countries attended the training school.

> *The mix of participants in the training school from academia, industry and government allowed for a great exchange of knowledge and ideas, there was the opportunity to dive deep on some of my subjects of interest while gaining a great overview of topics which were really new to me.*
>
> Lian Thomas (Academia, United Kingdom/Kenya)

The aim of the training school was to introduce the concept of MSAS and future safe meat production, quotidian topics, and risk analysis. During the first two days, participants had the opportunity to get expert overviews of the principles for risk-based surveillance and control, meat inspection and hygiene legislation and food chain information systems. After the lectures, participants engaged in active discussions with the trainers, which highlighted their interest in and commitment to the topics covered by the training school. On the third day, the participants worked in groups on different case-studies to put into practice their knowledge learnt during the first two days. The case-studies encompassed a variety of topics, from new ways of collecting information in the food chain, risk management at abattoir level, and cost-efficient control measures for infectious diseases to reduction of industrial waste in meat inspection. All the material from the training school can be accessed on the RIBMINS website.

The participants provided very positive feedback, pointing to the informative and appealing aspects of the training content. The exceptional dedication and enthusiasm of the trainers were transmitted to participants, who defined the training school as "inspiring", "fantastic" and "engaging".

This training school was the first of a series of training schools that are part of the capacity building mission of the RIBMINS Project. Do not miss the chance to learn at first-hand with outstanding experts on the future of meat safety and expand your network. Stay tuned for our next training schools here.

> *Attending the RIBMINS training school was very inspiring, with engaged and motivating teachers and an open and inquiring atmosphere. The last day's workshop gave me a unique opportunity to work closely with colleagues and I'm sure we will continue our discussions – we just started!*
>
> Maybritt Kiel Poulsen (Affiliated with industry and formerly with the competent authority from Denmark)

Word cloud illustrating participants' feedback at the end of the training school.

Views from the stakeholders and national contact points (NCPs)

We contacted some of our stakeholders and NCPs to get their views on different aspects of the meat safety assurance system (MSAS), risk-based meat inspection and expectations of RIBMINS outputs. We selected some of their answers here but there are more!

Read the complete interviews here.

Thierry Chambon
Federation of Veterinarians of Europe

Which results would you wish from RIBMINS?

It would be useful, if the RIBMINS project could outline cost-effective checks and audits, which veterinarians and food business operators could apply in practice. They will need to be adaptable and ideally, lead to suggestions on how to solve problems.

The Federation of Veterinarians of Europe (FVE) believes that effective meat safety controls should advance, relying on the enhanced use of the food chain information and an improved collection & communication of inspection results (FCI/CCIR – FVE guidance). In such a framework, risk-based meat safety controls can contribute to an improved health, welfare and profitability on farms through reduced costs of treating diseases and production losses. Additionally, they can enhance consumers' trust in safe food.

Declan Bolton
Teagasc Food Research Centre, University College Dublin

How can motivation and financial incentives be used to achieve risk-based meat inspection and integrated meat safety assurance in Europe?

Every food processor is legally and morally obliged to produce safe food, which should be sufficient to ensure meat processors and regulators implement the most effective meat safety assurance systems.

Risk-based meat inspection, where standards and inspection activities are based on a scientific knowledge of the risks, are more effective than traditional approaches that focus on identifying and removing abnormalities or carcass/organ condemnation during post-mortem examination. The financial incentive is profit that accrues when retailers and their customers have confidence in the quality and safety of meat, knowing these have been assured using risk-based meat inspection.

Madalena Vieira-Pinto
University of Trás-os-Montes e Alto Douro, Portugal (National contact point in Portugal of RIBMINS)

Susana Santos
General Directorate for Food and Veterinary, Portugal

From your perspective, which are the main knowledge gaps in the context of meat safety assurance systems that the scientific research should address to support the implementation of a modern meat control system in Europe?

There are two important issues to be addressed. First, foodborne bacteria. Specific topics are evaluation of feasible harmonised epidemiological indicators that should be used by FBO to mitigate risk to consumers, as well as definition of feasible and cost-effective procedures that may be used to reduce contamination at animal and carcass level.

Second, the risk-based meat inspection. Here, we need research on the implementation of harmonised additional procedures based on risk analysis, at the national level, to detect and control some important diseases (e.g. tuberculosis, fasciolosis, cysticercosis) during meat inspection, taking into account the national reality of these diseases.

Karsten Maier
European Livestock and Meat Trades Union

Considering the EU meat safety assurance system, which are the initiatives that from your perspective should be promoted or developed to establish a valuable relationship between science, competent authorities and industry?

It is important that meat safety systems are tailored to the individual production, since meat production is highly diverse depending on the animal species, the type of products produced, the country disease profile etc. A relationship between science, competent authorities and industry that builds on clear division of roles, mutual understanding of the working scope, good cooperation and trust is essential to support further development of a balanced meat industry that is able to handle present and future challenges.

We just could repeat what the RIBMINS-website highlights as research coordination objectives and the capacity objectives, which is, so to speak, very well known "among us involved" – what could certainly be an additional task would be an accompanying professional communication both for "newcomers" to make them aware as well as for other interested parties – this was thankfully started with this newsletter and has our full support.

Scientific Publications

The RIBMINS network has been very successful in publishing during the last two years! We provide here some highlights. Access all the papers published by the RIBMINS network through the following link.

The modernisation of European's meat safety system is crucial to ensure public health

Public health is greatly influenced by animal health, and the consumption of meat directly links those two. Meat inspection is therefore crucial to prevent the transference of hazards from animals to humans. However, can traditional meat inspection address the current challenges in ensuring meat safety? The findings published in the journal Food Control indicate that a revision of the traditional meat safety system is necessary. The focus should be placed on the most relevant hazards that cause meat-borne illnesses today, in a cost-effective way. Currently in Europe, the evolution of meat inspection from the traditional system accompanied by end-product testing to a modern, risk-based meat safety assurance system (RB-MSAS) is in progress. This brings many opportunities in cost-effectively improving public health, but there are also numerous challenges associated with the process. Full implementation depends on close collaboration of all the new system's stakeholders and will require further research to fill knowledge gaps as well as ongoing education and training.

▶ *To know more, please have a look at the paper **here** (Blagojevic-2021)*

What can we do to deliver chicken meat without pathogens?

When we buy poultry meat, it is not only meat that we bring home, it could also include millions of pathogens. Poultry meat is an extraordinary environment for the growth of 13 different pathogenic bacteria, and all of them are a threat to human health. So, is there anything we can do to get rid of them? The findings, published in Current Clinical Microbiology Reports, indicate that a combination of pre-harvest interventions, such as prevention, biosecurity (*i.e.* pest control), and management (i.e. hygiene, cleaning, and disinfection) practices are effective in controlling a number of the most prevalent chicken meat pathogens. But not as much as we would like! Apparently, we need an additional strategy, and one of the most promising is targeted chicken immunisation for each pathogen. This could be, in combination with other pre-harvest interventions, the most powerful weapon in delivering poultry meat free of harmful bacteria.

▶ *To know more, please have a look at the paper **here** (Pessoa-2021).*

The European Union control strategy for *Campylobacter* spp. in the broiler meat chain

Since *Campylobacter* spp. is an important health and economic burden in the EU and worldwide, and the consumption of contaminated broiler meat is the most important risk factor for *Campylobacter* infections, an effective control strategy for *Campylobacter* spp. in the poultry meat chain is urgently needed. This review provides a comprehensive summary of the most effective risk mitigation options for prevention and control of *Campylobacter* spp. along the broiler meat chain and as such, the article is also the useful and practical digest for the competent authorities and risk managers involved in poultry meat inspection and production.

▶ *To know more, please have a look at the paper **here** (Nastasijevic-2021).*

Beef abattoir interventions in a risk-based meat safety assurance system

Interventions are an essential component of risk-based meat safety assurance systems. This paper provides recommendations on which interventions are available to risk managers and which contextual factors are important when implementing interventions. It highlights the facts that interventions should be used in situations when an abattoir is unable to sufficiently reduce risks arising from specific farms/animal batches by using process hygiene alone and also whenever food safety authorities identify meat production processes associated with high risks for consumers.

▶ *To know more, please have a look at the paper* ***here*** *(Antic-2021).*

Challenges and opportunities in the implementation of new meat inspection systems in Europe

Meat inspection in European countries is in a phase of modernisation, aiming to replace the traditional meat inspection with risk-based meat inspection, including the elements of a MSAS. Based on a comprehensive survey using an in-depth questionnaire, the level of implementation of the new meat inspection systems in Europe was estimated to be approximately halfway. The main identified obstacles are existing trade agreements with 3rd countries, costs of implementation, inadequate food chain information and resistance from meat inspectors. Overall, the stakeholders are more confident in the new than in traditional systems, which is also characterised by reduced or equal workload.

▶ *To know more, please have a look at the paper* ***here*** *(Antunovic-2021).*

Effectiveness of pre-harvest meat safety interventions in pig herds to control *Salmonella* and other foodborne pathogens

This systematic review aimed to assess the effectiveness of pre-harvest interventions to control the main foodborne pathogens in pigs in the European Union. Examples of successful interventions for most pathogens include the specific pathogen free herd principle, stamping out and repopulating with disease-free animals. More information is needed for specific pathogens, such as hepatitis E, *T. spiralis* and *T. gondii*, to reach a conclusion. Overall, high herd health coupled with good management and biosecurity are effective in controlling or preventing most foodborne pathogens in pigs at the pre-harvest level.

▶ *To know more, please have a look at the paper* ***here*** *(Rodrigues da Costa-2021).*

Risk categorisation of poultry abattoirs on the basis of the current process hygiene criteria and indicator microorganisms

The categorisation of abattoirs according to the level of risk, based on hygiene process performances, has been proposed as a fundamental element of risk-based MSAS. In this study, four differently sized poultry abattoirs from Serbia were targeted to explore the usefulness of risk categorisation based on two criteria: pathogens and indicator microorganisms. Results showed that the classification of the abattoirs according to their level of risk was different depending on the criteria. While the level of indicator microorganisms on chilled carcasses is mainly related to the hygiene process, the presence of pathogens on the same carcasses could be associated with their pre-harvest condition. Further investigation is needed to standardise and investigate risk categorisation of poultry abattoirs.

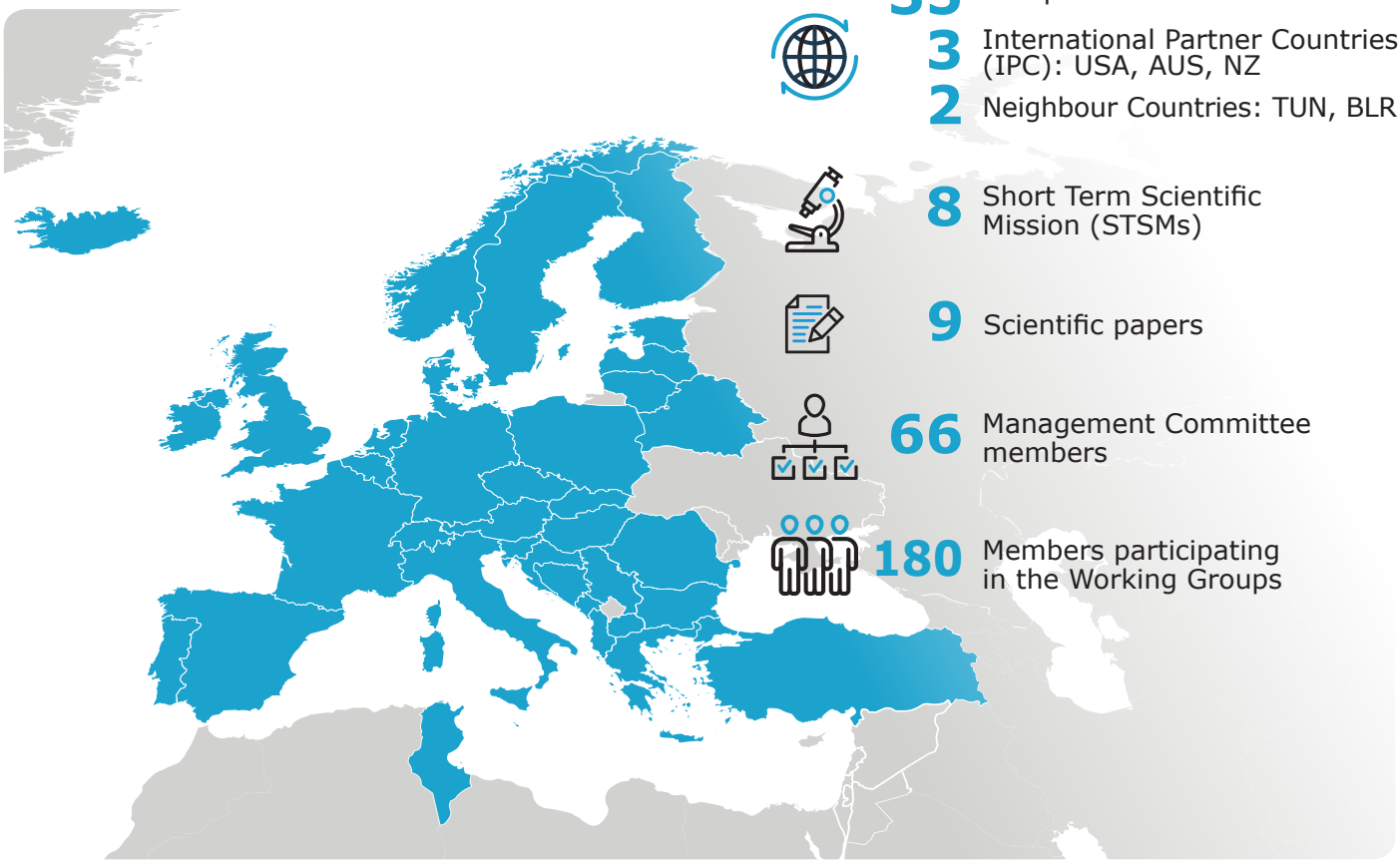
▶ *To know more, please have a look at the paper* ***here*** *(Cegar-2021).*

Differences in code terminology and frequency of findings in meat inspection of finishing pigs in seven European countries

The results show the systems in force vary substantially, and each system has its advantages and disadvantages. Substantial variations in the percentage of condemned pigs and in the terms used were identified, and possible reasons behind this are discussed. The diverse terminology observed makes it a challenge to compare data between countries. We suggest development of harmonised terminology for meat inspection findings as this will enable comparison of data between abattoirs, regions, and countries, while respecting the national epidemiological situation, the local food safety culture, and the trade agreements in force.

▶ *To know more, please have a look at the paper **here** (Alban-2021).*

RIBMINS in numbers



35 European countries

3 International Partner Countries (IPC): USA, AUS, NZ

2 Neighbour Countries: TUN, BLR

8 Short Term Scientific Mission (STSMs)

9 Scientific papers

66 Management Committee members

180 Members participating in the Working Groups

Help us to improve the newsletter and select the topics for the next issue!

(1 min)

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