

Views from Brazil - risk-based meat safety assurance systems

Safepork 2023 – New Orleans – USA

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OV In charge of RBI System (Pork and Poultry) - MAPA –
from Brazil



Embrapa

Suínos e Aves



Development of Risk-Based Meat Safety Assurance Systems (RB-MSAS)

Workshop on 15 May 2023, in relation to SafePork 2023 in New Orleans, USA

Many resources are spent on ensuring meat safety - either during the preharvest phase, at harvest or during postharvest. The question is how this could be made in a more cost-effective way than seen at current. An international network called RIBMINS is working on this through the development of risk-based meat safety assurance systems (RB-MSAS) in Europe.

At the workshop, the basic principle of RB-MSAS will be presented. This will be divided into four areas: 1) MSAS definition and implementation, 2) farm risk categorization and pre-harvest strategies, 3) abattoir risk categorization and harvest strategies, and 4) risk-based meat inspection. Furthermore, case studies using new vision-based technologies will be presented.

Different representatives have been invited to provide feedback/critics about the feasibility of the whole concept while also giving a status for the modernisation of meat inspection including way of working with this issue in their country.

Draft agenda

- 9.00-9.05 Introduction to the workshop and the concept of RB-MSAS – **Lis Alban** (DK)
- 9.05-9.25 Farm risk categorization and pre-harvest strategies – **Diana Meemken** (DE)
- 9.25-9.45 Abattoir risk categorization and harvest strategies – **Bojan Blagojevic** (SR)
- 9.45-10.05 Risk-based meat inspection – **Madalena Vieira-Pinto** (PT)
- 10.05-10.25 New vision-based technologies – **Andrea Capobianco Dondona** (IT)
- 10.25-10.45 Meat inspection from a distance - **Arja Helena Kautto** (SE)
- 10.45-11.05 Ante-mortem inspection from a distance – **Maybritt Kiel Poulsen** (DK)
- 11.05-11.20 COFFEE BREAK
- 11.20-11.40 Views on RB-MSAS from USA – **Barb Masters** (US)
- 11.40-12.00 Views on RB-MSAS from Brazil – **Elenita Ruttscheidt Albuquerque** (BR)
- 12.00-12.20 Views on RB-MSAS from Denmark – **Anne Klottrup** (DK)
- 12.20-12.40 Views on RB-MSAS from low- and middle-income countries – **Fred Unger / Delia Randolph** (International Livestock Research Institute VN)
- 12.40-13.00 Views from a Food Business Operator's point of view – **Derk Oorburg** (NL)
- 13.00-13.10 Summing up – **Lis Alban**

Organizers: Lis Alban, Bojan Blagojevic, Madalena Vieira-Pinto, Arja-Helena Kautto, Diana Meemken

Outreach: Based on the workshop, a paper will be written and published in the popular-scientific journal *Fleischwirtschaft International* (<https://english.fleischwirtschaft.de/>) with all presenters invited as coauthors.

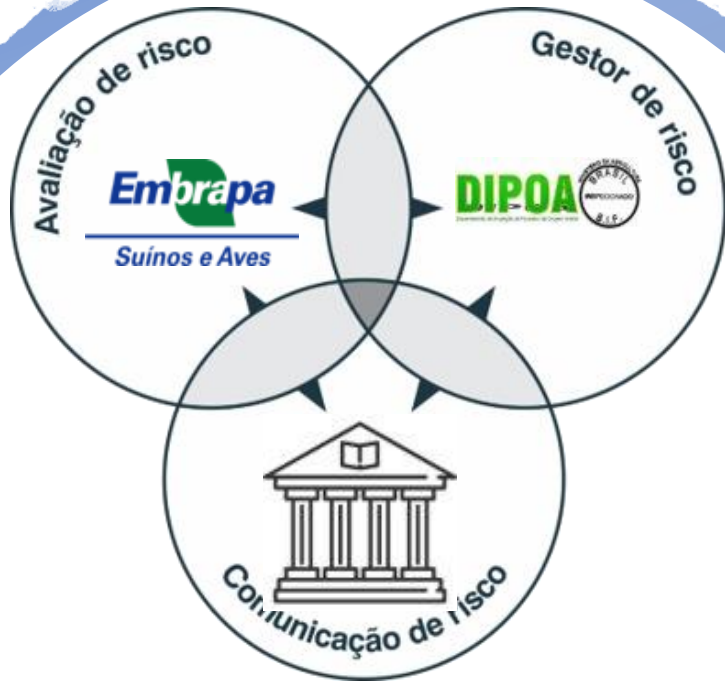
For more information about RIBMINS, please see: <https://ribmins.com/>



Working Group topics

- 1) MSAS implementation;
- 2) farm categorization and pre-harvest strategies;
- 3) abattoir categorization and harvest strategies;
- 4) new technologies;
- 5) risk-based inspection.

Remembering...



*Predictions: GUIDELINES FOR THE
DEVELOPMENT OF RISK-
BASED INSPECTION PROCEDURES
(CAC/RCP 58-2005, item 5)*

I - **Data collection - information production**

- Hazards assessed and prioritized (AMR)
- Proceeded with the statistical study of the abnormalities found by the traditional inspection (Brazil)

II – **Decision making**

- Search among the most frequent abnormalities, which ones were correlated with the prioritized hazards
- if the abnormality was not correlated with risks to public health or animal health, the inspection procedures were transferred to companies (self-control - Vet)

Implementation

III – Scientific Opinion

<https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream/doc/1131118/1/final9663.pdf>

IV – Regulation (Normative Instruction 79/2018)

- Comprehensive changes in *post-mortem*
- Some challenges in *ante-mortem*

V - WTO communication (2019)

• https://www.in.gov.br/materia/-/asset_publisher/Kujrw0TZC2Mb/content/id/55444279/do1-2018-12-17-instrucao-normativa-n-79-de-14-de-dezembro-de-2018-55444116

VI – Training program

- 120 private veterinarians trained
- 170 official veterinarians trained

VII- Status

- Only 3 abattoirs (one fully implemented)



WORLD TRADE
ORGANIZATION

G/SPS/N/BRA/1482

13 February 2019

(19-0832)

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Committee on Sanitary and Phytosanitary Measures

Original: English

NOTIFICATION

1.	Notifying Member: BRAZIL If applicable, name of local government involved:
2.	Agency responsible: Ministry of Agriculture, Livestock and Food Supply (MAPA)
3.	Products covered (provide tariff item number(s) as specified in national schedules deposited with the WTO; ICS numbers should be provided in addition, where applicable): Swine meat
4.	Regions or countries likely to be affected, to the extent relevant or practicable: <input checked="" type="checkbox"/> All trading partners <input type="checkbox"/> Specific regions or countries:
5.	Title of the notified document: Normative Instruction (Instrução Normativa) nº 79 of 14 December 2018. Language(s): Portuguese. Number of pages: http://www.in.gov.br/materia/-/asset_publisher/Kujrw0TZC2Mb/content/id/55444279/do1-2018-12-17-instrucao-normativa-n-79-de-14-de-dezembro-de-2018-55444116 https://members.wto.org/cnattachments/2019/SPS/BRA/19_0855_00_x.pdf
6.	Description of content: Approval of ante-mortem and post-mortem inspection procedures based on risk for swine.



Requirements for the farms

I - Only intensive industrial swine production (raised exclusively indoors)

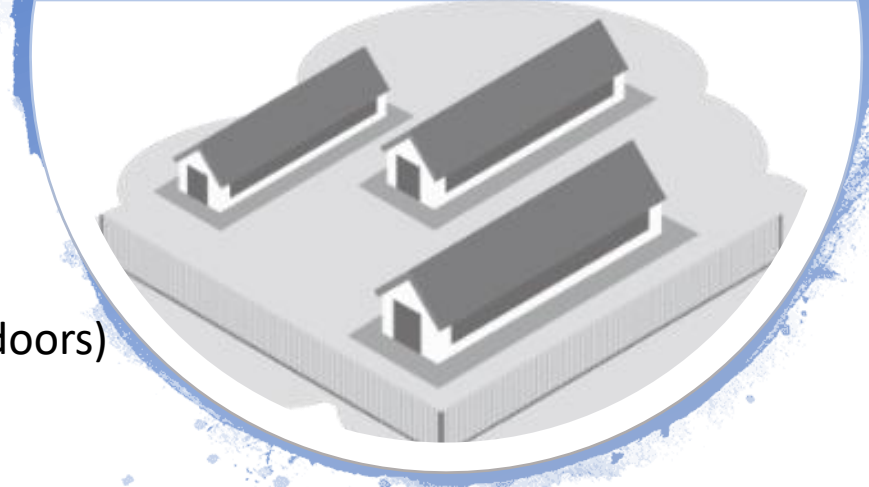
II - Pigs under 6 months

III - Herds under an integrated system or another capable of showing full control of the animal origin, feed, veterinarian assistance, and traceability – by the FBO

IV - Food Chain Information (Health Bulletin) Implemented by herd

✓ **Clinical evaluation applied to 100% of pigs**

*In outdoor and non-controlled pigs, breeders, sows and boars, traditional inspection system must take place.



**HEALTH BULLETIN
(Art. 89, Decree 9013/2017 -RIISPOA)**

Farm identification
 Registration number at the Official Veterinary Service:
 Georeferencing: _____ Count/State: _____
 Veterinarian responsible for animal health (MVS) and CRMV: _____

Information regarding the breeding establishment sending the animals for slaughter:
 Certified Breeding Farm - GRSC
 Commercial farm of origin (place of birth, rearing and finishing of pigs) (2)
 Commercial farm of origin (place where the animals are finished) (3)
 Others

Declarations regarding the health status of the breeding property:
 () There was **no occurrence** of any of the notifiable diseases for pigs, provided for by the Normative Instruction 50/2013/DSA/SDA, within one year before the date of loading for slaughter; or
 () There was occurrence of the following notifiable diseases provided for by Normative Instruction 50/2013/DSA/SDA in the period of one year before the date of loading for slaughter.
 Confirmed diagnosis of: _____ end date of the case (or pig slaughter): ____/____/____"

Pig farming systems:
 integrated farm Cooperativism independent farmer

Loading date	Animal transit document number	Number of pigs scheduled per load (7)	Loading destination SIF/UF (8)

Information for defining the ante and post mortem inspection system to be used:
 Finished domestic pigs reared indoor during all stages of their life; or
 Finished domestic pigs reared on an extensive or field basis at some stage of their life; or
 Domestic breeding pigs, such as more than 6 months old (9); or
 Non-breeding domestic pigs (disposal) (9); or
 Other swine (wild or feral) raised in rural establishments or obtained by legalized hunting.

In the case of any pigs slaughtered for disposal, inform here the individual condition that determines such destination: (5)(9)

Animals sent for sanitary slaughter as determined by the Official Veterinary Service? (10)	Yes	No
Has there been a violation of the critical mortality limit established by law in any of the rearing stages? (10)	Yes	No
Clinical suspicion or confirmed diagnosis of notifiable disease or zoonosis subject to any preventive measure applied at slaughter? (10)	Yes	No

Clinical signs/diagnosis (when detected)	Therapeutic and non-therapeutic treatments				
	Drug name	Active principle	individual or collective(12)	Date of end	Withdrawal compliance statement

Information regarding the laboratory results of monitoring carried out on the farm, in compliance with the applicable legislation or self-controls:

Fasting and water diet: The feed withdrawal schedule provides for the attendance of ____ hours of fasting and water diet fulfilled in rural establishment.

Declarations to comply with specific additional requirements for export applicable to the slaughter lot:
 The undersigned declares that the animals identified above were evaluated before loading onto the farm and were considered healthy; _____

What about the categorization of farms?

- Already applied during the official verification of the Health Bulletin (24 hours before the slaughter – not systematized).
- *Post-mortem* finds could reflect the biosecurity level of farm and be useful for their categorization, including animal welfare.

Additionally...

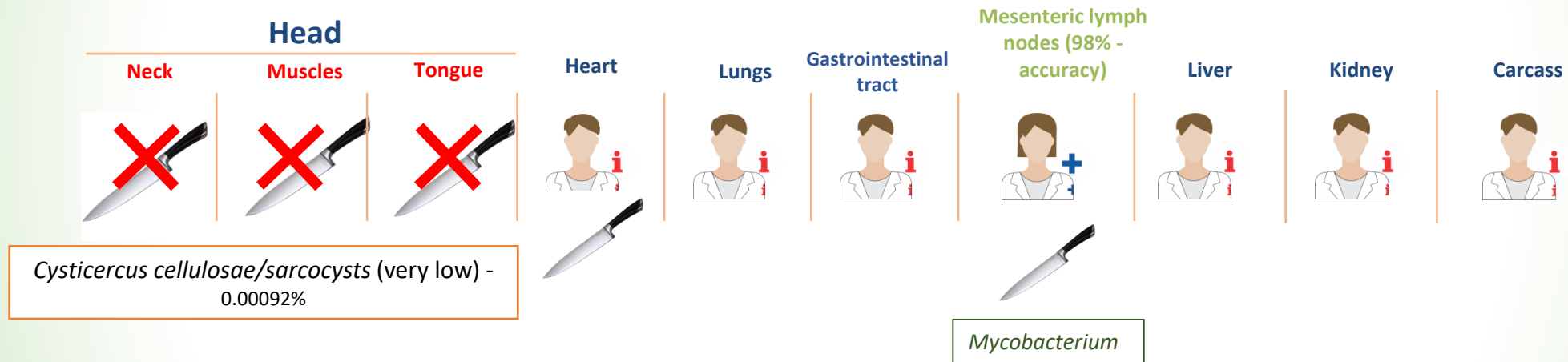
- It could be useful to FBO – availability of data, even before the loading of pigs.
- It could be very helpful to abattoir – to prevent cross contamination

However...

- Establishing standards for the categorization of farms in legislation may not be adequate...

RBI (MSAS) post-mortem

- Most public health hazards were correlated with non-visible gastrointestinal contamination
- Insert a mandatory Performance Objective (PO): *Enterobacteriaceae* criteria in carcass



- Individual carcasses inspection - by an official veterinarian (*Mycobacterium* spp)
- Official Verification of the online procedures (evaluation and classification procedures);
- Official Verification of the outline procedures (private veterinarian); and
- Official Verification of the non-visible gastrointestinal contamination control (PO) .

New technologies could replace human labor, increasing productivity without losing, or even raising, the quality and safety of food.

When applied in the slaughter process or for self-control procedures (validation)



When applied instead of a procedure performed by a government employee



Can it still be considered an official task?



Meat safety assurance system impacts

INSPECCIONADO



Less invasive approach of inspection
Less lymph nodes exposure

Impact with changes



Less time spent with corrective actions in carcasses
More time for offline activities (process evaluation under public health perspective)



SIF716

slaughtered pigs/shift: 3600

pigs slaughtered/hour: 550 pigs/h

adjustment factor (tolerance): 10% (time)

Steps	TIME DEMANDED IN OFFICIAL VETERINARIAN'S TASKS	Tempo (Min)				Impact
		Traditional	Traditional adjusted	RBI	RBI adjusted	
Ante-mortem activities						
1	Changing clothes (blue uniform)	5	5	5	5	0
2	Walking from the office to the pig reception area	10	10	10	10	0
3	Food Chain Information - epidemiological evaluation	15	17	15	17	0
4	Clinical evaluation of resting pigs	64	70	64	70	0
5	Clinical evaluation of pigs in movement	148	163	0	0	-163
6	Necropsy evaluation (post-loading mortality average of 0.06% - 5 minutes per carcass)	11	12	11	12	0
7	Clinical evaluation of segregated pigs (1 min/pig, segregated 0.3%)	11	12	11	12	0
8	Walking back to abattoir	10	10	10	10	0
Post-mortem activities						
Activities (self-control) under Oficial verification - by OV (minimum sampling)						
1	Changing clothes (white uniform)	8	8	8	8	0
2	walking from the recption to abattoir area	5	5	5	5	0
3	Pigs reception, evaluation and classification (pre-evisceration) (60 carcasses)	0	0	7	8	8
4	Evaluation of the evisceration process (carcass after sawing) (60 carcasses)	0	0	7	8	8
5	Evaluation and classification of carcasses and heads (60 procedures)	0	0	7	8	8
6	Heart evaluation and classification(60 procedures)	0	0	7	8	8
7	Lung evaluation and classification (60 procedures)	0	0	7	8	8
8	Liver evaluation and classification (60 procedures)	0	0	7	8	8
9	White offals evaluation and classification(60 procedures)	0	0	7	8	8
10	Kidney (when edible) evaluation and classification (60 procedures)*	0	0	7	8	8
11	Procedures and allocation/condemnation by the private Veterinarian	0	0	10	11	11
12	Processing and packaging of carcasses destined for heat treatment (once a week -randomic)	0	0	15	17	17
Post-mortem inspection of carcasses and offals sent to the DIF						
1	Post-mortem inspection (0.67 min/carcass - 18.5% of deviation with 1.1% lymphadenitis)	446	491	29	29	-462
2	Change of clothes (civilian)	15	15	15	15	0
Total time spent (hours)		12:28	13:38	4:24	4:45	8:53

Brazilian strategies for *ante-mortem*



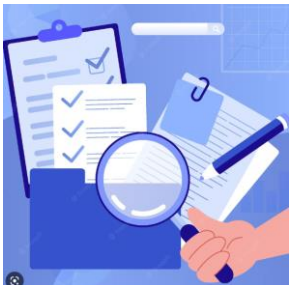
- Visible and individual abnormalities (prolapse, tail biting, traumatic injuries) that may impair the slaughter hygiene should be controlled by FBO



- Searching for clinical signs of hemorrhagic /vesicular /neurological or respiratory syndromes (laboratory conformation/ notification - WOAH).
- Identification of signs of populational disease, based on epidemiological data and clinical signs detected in the lot – FCI

- To improve the reliability of FCI – issued by the SV

- Establishing a validated sample of pigs - for clinical evaluation in search of relevant population diseases (high morbidity and mortality)



Thanks!

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