

Experience With Risk Based Meat Inspection of Fattening Pigs in Germany

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Risk based procedures in food hygiene

*Regulation (EC) No 854/2004: nature and range of inspection in premises depends on the result of **risk assessment***



Risk based meat inspection

*EU Regulation (EC) No 882/2004: official controls in premises on the basis of a **risk assessment***



Risk based control of food business operators

Risk based sampling of food at retail level





General provisions:

... meat inspection on the basis of risks – not hazards

Article 4 Reg (EC) No 854/2004:

the nature and intensity of auditing tasks ... shall depend upon the **assessed risk** ... the competent authority shall regularly assess:

- (a) **public** risks and,
- (b) where appropriate, **animal health** risks;
- (b) in the case of slaughterhouses, **animal welfare** aspects;
- (c) the type and throughput of the **processes** carried out; and
- (d) the **food business operator's past record**



Regulation (EC) No 854/2004 (EU hygiene package)

Annex I

Fresh meat

Section IV: specific requirements

Chapter IV: domestic swine

B. post-mortem inspection

2. The competent authority may decide, on the basis of **epidemiological** or **other data** from the holding, that fattening pigs housed under **controlled housing conditions** in **integrated production** systems since weaning need, in some or all of the cases ... only undergo **visual inspection.**

controlled housing?
integrated production?

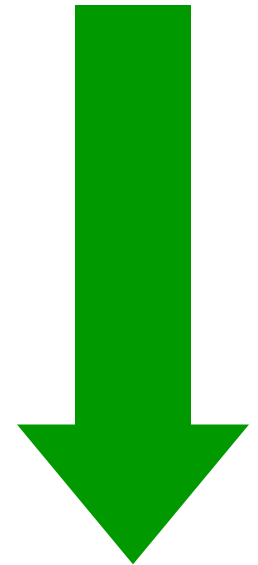
Reg. (EC) No 1244/2007 explains as follows:



Controlled housing? integrated production?

(a) “**controlled housing** conditions and **integrated production systems**” means a type of animal husbandry where animals are kept under conditions in compliance with *the following* criteria:

- a) **Feed** according to Regulation (EC) No 183/2005
- b) **All-in/all-out** system
- c) No access to **outdoor** facilities
- d) Extensive **information** concerning animal / keeping conditions
- e) Using **bedding**: disease prevention
- f) Hygienic work conditions for **staff**
- g) Control of **access**
- h) Restrictions for **tourists / camping**
- i) No access to **garbage dumps** or household garbage
- j) **Pest** management
- k) No **silage** as feed
- l) No access to **effluent and sediment from sewage** treatment plants



QS – Ihr Prüfsystem
für Lebensmittel

Application of legal background: Guideline for authorisation:

CRITERIA

A Food chain information concerning Reg (EC) No 853/2004

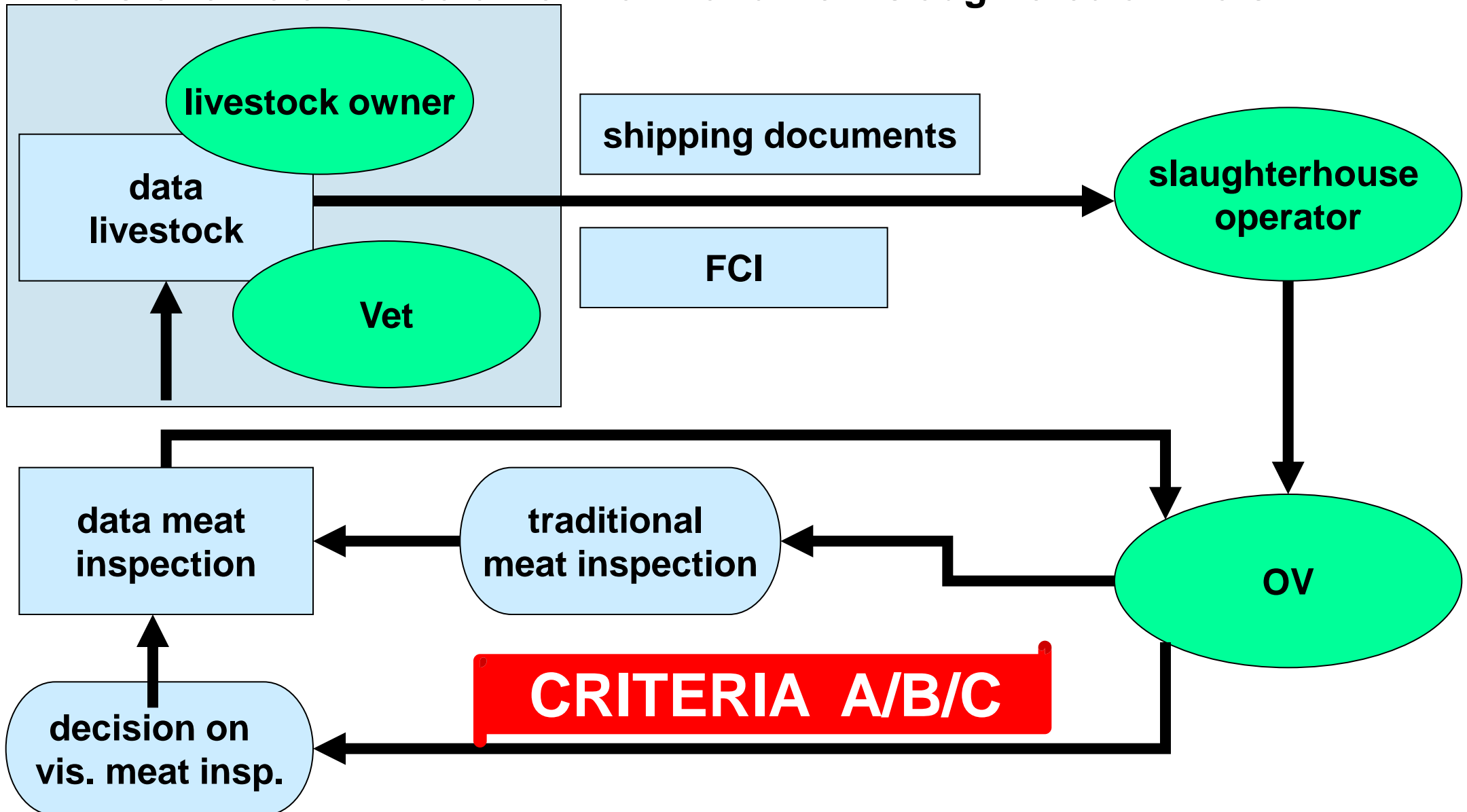
B Reg (EC) No 1244/2007 (“controlled housing conditions and integrated production systems”)

C „additional intrinsic factors“

1. **Farm data** recorded electronically and evaluated to be presented to the **OV at meat inspection**
2. **Logistic organisation** of meat inspection by **slaughterhouse operator**
3. Presentation of **relevant information** at the slaughterline
4. **Verification** of findings (follow-up examination of chilled carcasses)
5. Personal **training** (farmer, slaughterhouse staff, inspection personnel)
6. **Serological / microbiological monitoring** of relevant health risks

Model to comply

Transfer of relevant data from farm and from slaughtered animals



„Cornerstones“ of visual meat inspection for fattening pigs

farm

- 1 FCI
- 2 integrated production system
- 3 controlled housing condition

slaughterhouse

- 4 data terminals at slaughter line
- 5 logistic arrangements for slaughter
- 6 post-processing line in operation

competent authority

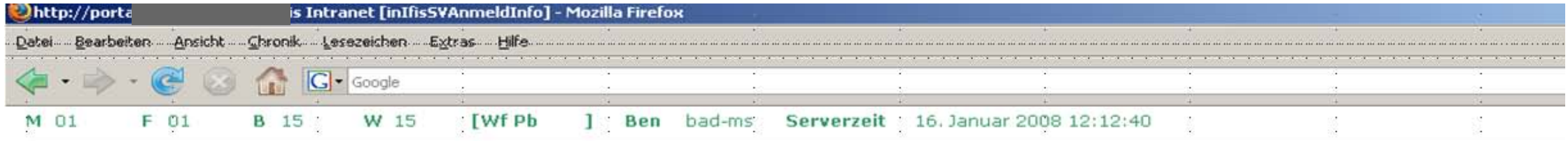
- 7 microbial/bacteriological monitoring in place
- 8 verification of visual meat inspection
- 9 verification of controlled housing conditions
- 10 training of farmers, slaughterhouse staff and inspection personnel

Competent authority
authorises start of
„visual meat inspection“

Field trials – first results

Example 1:

Internet based animal registration list (1)



KURZNAME	V	BQs	KAT	Betriebs-Nr.	Eins.-Z	MELDUNG		Ank.Zeit	Salmo-Status	LKI	kontr. Haltung	Befunde letzten 6 Monate	Art der Untersuchung
						Spill	Ist						
						1	0						
	2	1	SN		42410	1	0		I			2288	V
						60	41						
	2	1	SN		66736	60	41	06:30:00	I			1449	V
						30	25						
	2	1	SN		60019	30	25	06:30:00	I			785	V

Time of arrival

Animals foreseen

“Historical” findings in the last 6 month

Inspection mode: vis / trad

Name of the holding

ID number of the holding

courtesy D. Meermeier

Example 1: Internet based animal registration list (2) data file on „historical“ meat inspection findings

http://... - Ifis Intranet [inIfisIQSBefunde] - Mozilla Firefox

File Edit View Chronik Lesezeichen Extras Help

← → ↻ × 🏠 🔍 Google

M 01 F 01 B 15 W 15 [Wf Pb] Ben bad-ms Serverzeit 17. Januar 2008 14:27:35

- Befunde pro Betriebsstätte

Auskunftsparameter:
Geschäftspartner:
Betriebsnummer:
Datum: 17.01.2008
Zuordnungsnummer:

Selected findings per customer

Block	Befunde	von Tieren	Ist-Wert	Richtwert	Richtwert- überschreitung
1 Teilschäden	17	1471	1,16%	2,00%	n
3 Leberbefunde	507	1471	34,47%	25,00%	j
4 Pleuritis	144	1471	9,79%	15,00%	n
5 Pneumonie	41	1471	2,79%	8,00%	n
6 Pericarditis	70	1471	4,76%	8,00%	n

Laufzeit der Auswertung: 0 Sekunden.

Zurück | Menü | Be...
Ifis Intranet [inIfisIQSB...
Quelle dieses Aufrufs: 1...
Version: 1.03 16.01.2008; Blockbezeichnung jetzt aus DB-Tabelle 'qsblock'; iw
JDBC Version: com.informix.jdbc.IfisDriver | 2.21

Findings

Limit (%)

above or below limit (%)

damages by slaughter findings at the liver
pleuritis
pneumonia
pericarditis

courtesy D. Meermeier

Example 1: internet based animal registration list (3) data file on „historical“ meat inspection findings

	findings	animals	found (%)	limit / threshold (%)	limit exceeded
damages by slaughter	3	1305	0,23	2,20	no
findings at the liver	24	1305	1,84	25,00	no
pleuritis	23	1305	1,76	19,00	no
pneumonia	27	1305	2,07	8,00	no
pericarditis	24	1305	1,84	8,00	no
parts Mycobacteria found	1	1305	0.08	0,25	no



	findings	animals	found (%)	limit / threshold (%)	limit exceeded
damages by slaughter	60	1442	4,16	2,20	yes
findings at the liver	110	1442	7,63	25,00	no
pleuritis	307	1442	21,29	19,00	yes
pneumonia	170	1442	11,79	8,00	yes
pericarditis	28	1442	1,94	8,00	no
unfit for human consumption	1	1442	0,07	0,25	no
parts Mycobacteria found	1	1442	0,07	0,25	no



courtesy D. Meermeier

Example 1:

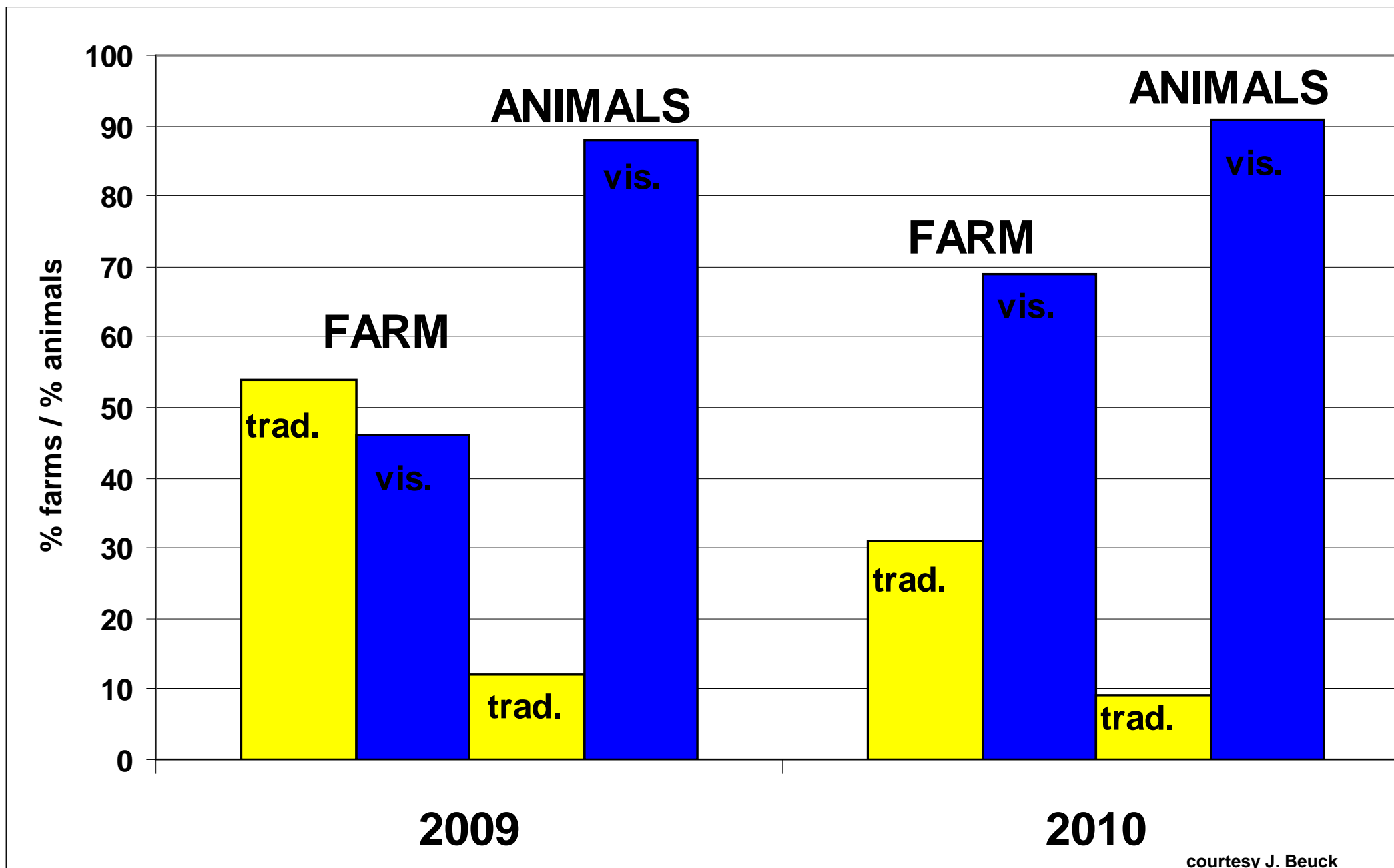
Display terminal for (visual) meat inspection at slaughter line



courtesy D. Meermeier

Example 1:

growing acceptance for visual meat inspection procedures



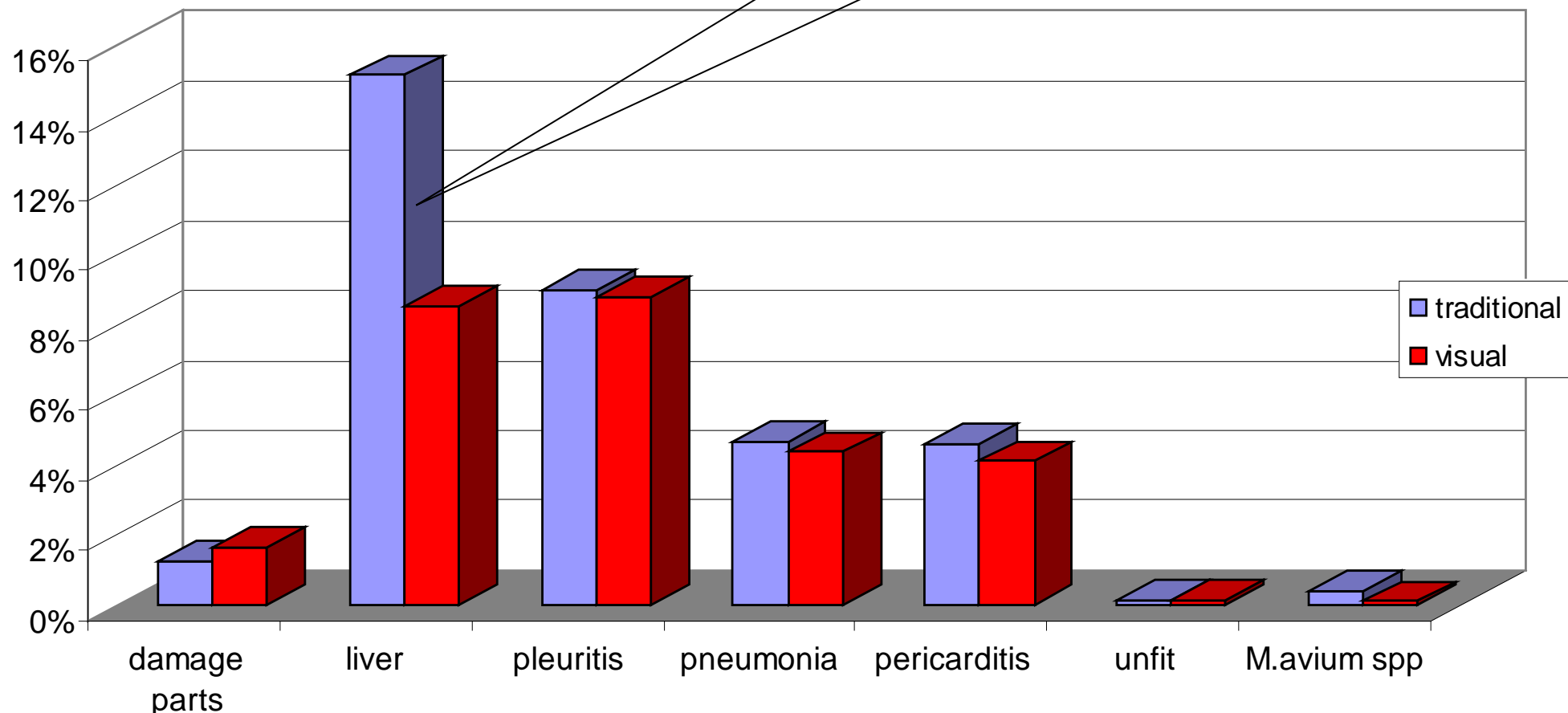
courtesy J. Beuck

Example 1:

Results in meat inspection n = 562 885 pigs

enhanced liver findings
due to preselection of
slaughter batches ???

Findings in meat inspection



courtesy D. Meermeier

Example 1:

Erysipelothrix rhusiopathiae (E.) symptoms found

Year	slaughtered animals	E. total	lesons at joints	leasons at heart valve	leasons at skin
2008	1.045.610	86	63	7	16
2007	956.279	106	73	11	22
2006	861.890	73	59	8	6

> findings of leason at heart valve negligible concerning *Erysipelothrix rhusiopathiae*

courtesy D. Meermeier

Example 1:

Microbial inhibition test (Three plate test, TPT)



Year	slaughtered animals	random samples taken	samples taken in suspicion	results	
				kidney pos.	kidney + muscle pos.
2008	1.045.610	4523	68	1	-
2007	956.279	4580	64	2	2
2006	861.890	5377	80	1	2

> findings of residues with TPT negligible

courtesy D. Meermeier

Example 1:

Further ongoing projects:

**multiserological monitoring with meat juice:
Salmonella, Yersinia, Toxoplasma, *Mycoplasma hyopneumonia***

Case study on farm level:

identify origin of entry

C&D

meat insp.

minimise cross-contam.

logistic slaughter

meat not fit for raw consumption ?

Case study on farm level:

Cats on farm? Cat feaces?

meat not fit for raw consumption ?

Farm of origin (No)	Year	Salmonella (%)	Yersinia (%)	Toxoplasma (%)	<i>Mycopl. hyopneumonia</i> (%)
4	2009	10	10	10	90
4	2010	80	0	20	60

Find reasons for low prevalence

courtesy Th. Blaha

Example 1:

Further ongoing projects:

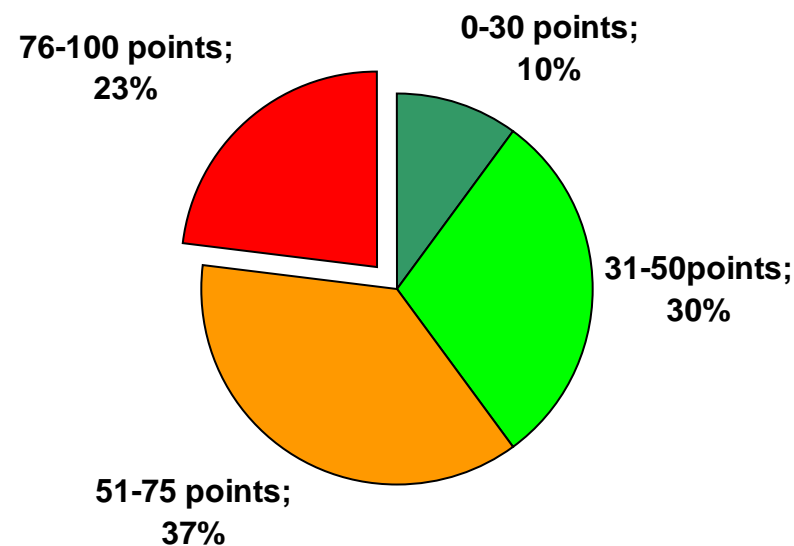
Health index for farms of origin:

- 1) mortality of pigs (herd book)
- 2) fattening niveau (low / average / high)
- 3) level of medication

**> 76
points**

**mentoring for
better animal
health**

- 240 farms evaluated 2010
- average: 58 points



courtesy J. Beuck

Example 2:

Build up a serological *M. avium* - profile

Sampling of batches for MAP (since 2008)
(MAP ELISA ID Lelystad/ Prionics)
[validation / approval of the test still pending]

Categorisation of farms:

Neutrale → approval for vis.
Low → meat inspection

farms with positive findings:

high blood risk profile → trad. meat
(enhanced sampling frequency) inspection

Example 2:

internet based animal registration list (1)

blood risk profile (BRP)		QS-status			TPT		Controlled housing condition			
Lieferungen:	54	Teilung:	unbekannt: 20 niedrig: 20 neutral: 25 hoch: 1	zuziehende Proben:	k.H.: 53 k.H. = Ja: 48 k.H. nicht leer: 49 Hemmst.-Test:s 7	vis. F.u.:	43	Tiere:	2503	
Tiere:	3.312	QS:	53	vis. F.u.:	43	Anzahl Tiere:	2503	visuelle F.u.:	43	
Schlagzeichen	BRP	zu ziehende Proben	k.H.	Hemmst.-Test	QS	vis. F.u.	VVVO-Nr.	Name	Tiere	FHA
	neutral		Ja		✓	✓			180	
	niedrig		Ja		✓	✓			20	
	neutral		Ja		✓	✓			7	
	neutral		Ja		✓	✓			90	
	unbekannt (neu)				✓				4	
	unbekannt (neu)		Ja		✓				70	
	neutral		Ja		✓	✓			15	
	neutral		Ja		✓	✓			50	
	niedrig		Ja		✓	✓			95	
	unbekannt (neu)		Ja		✓				45	
	unbekannt (neu)				✓				60	
	neutral (auf Bewährung)		Ja		✓	✓			40	
	neutral (auf Bewährung)		Ja		✓	✓			90	
	niedrig		Ja		✓	✓			40	
	neutral		Ja		✓	✓			80	
	niedrig		Ja		✓	✓			80	
	niedrig		Ja		✓	✓			80	
	niedrig		Ja		✓	✓			50	
	neutral (auf Bewährung)		Ja		✓	✓			38	
	niedrig		Ja		✓	✓			40	
	niedrig (auf Bewährung)		Ja	✓	✓	✓			55	
	unbekannt (neu)				✓				20	
	niedrig		Ja	✓	✓	✓			64	
	niedrig		Ja		✓	✓			20	
	niedrig				✓	✓			25	
	unbekannt (neu)				✓				120	
	neutral				✓	✓			90	
	neutral				✓	✓			40	
	neutral		Ja	✓	✓	✓			70	
	neutral		Ja		✓	✓			70	
	neutral		Ja		✓	✓			7	
	neutral		Ja		✓	✓			10	

Example 2:

Serological investigation on *M. avium* (date 2009)



1187 farms sampled
787 farms classified

no pos. titer for antibodies

41% farms with „neutral“ profile

49% farms with low profile



approval for vis.
meat inspection

increased positive / high positive titer

2% farms



trad. meat
inspection

further
investigation

Example 2:

Tuberculinisation on farm in suspicious case

36 h after injection:

- **swollen skin > 4 mm**
- **erythema**
- **central necrosis and exudation**



courtesy G. Klein

Example 3:

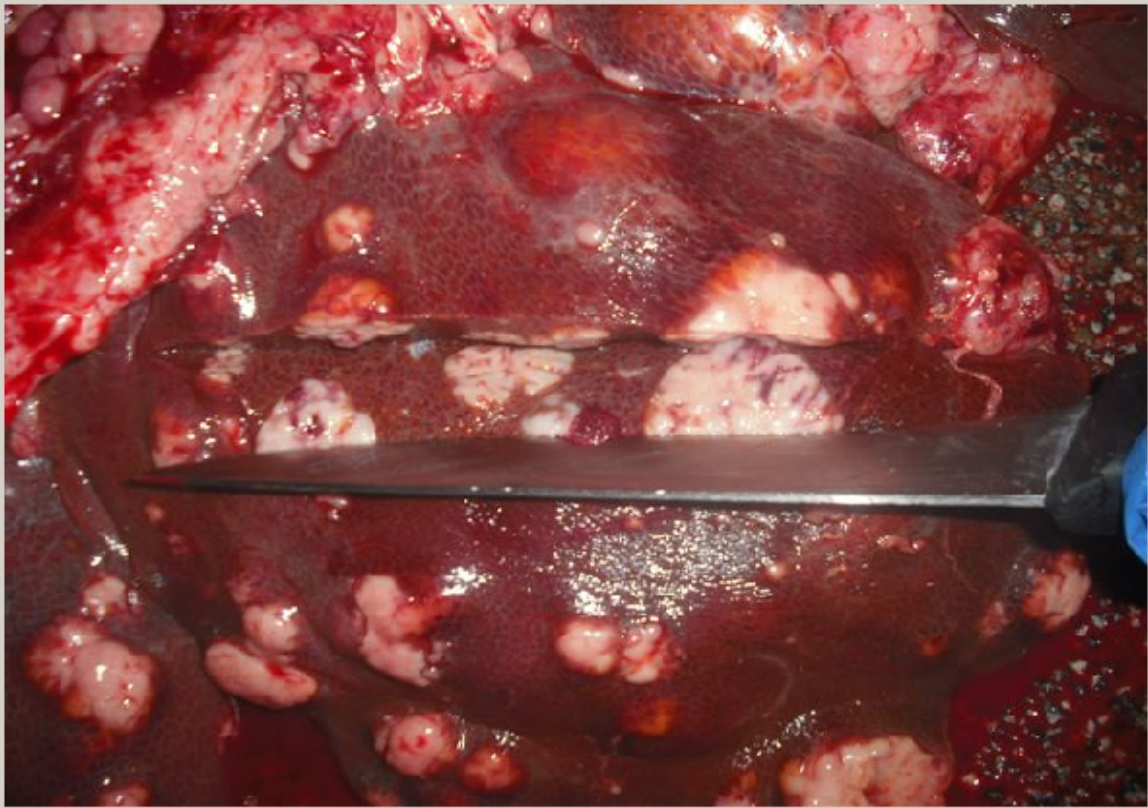
QA of meat inspection: towards uniform understanding of findings

Fleischuntersuchung

Aktualisieren Leber-Leukotische Durchsetzung

siehe lymphatische Leukose

- Diagnose
 - Rind
 - Schwein
 - Schwarte Schwein
 - Gliedmaße Schwein
 - Kotelett/Wirbelsäure Schwein
 - Bauch Schwein
 - Brust Schwein
 - Kopf/Hals Schwein
 - kein Lebensmittel Schwein
 - Konfiskat Schwein
 - multiple Abszesse
 - Polyarthritis
 - hgr. Peritonitis
 - Abmagerung
 - hgr. verändertes Magen-Darm-Paket
 - Schlachtschaden (Konfiskat)
 - hgr. Ikterus
 - hgr. PSE
 - Rotlauf
 - hgr. Mastitis
 - V.a. tuberkulöse Veränderungen
 - Lymphatische Leukose
 - Magen-Darm-Trakt
 - Magen-Darm-Trakt-Lymphosarkom
 - Magen-Darm-Trakt-Lnn.
 - Peritoneum-Lymphosarkome
 - Leber-Leukotische Durchsetzung**
 - Niere- Lymphosarkom
 - Pleura-Lymphosarkome



VO (EG) 854/2004, Anhang I, Abschnitt II: Maßnahmen im Anschluss an die Kontrollen, Kapitel V: Entscheidungen bezüglich Fleisch 1. Fleisch ist für genussuntauglich zu erklären, wenn es ... u) laut Urteil des matischen Tierarztes, nach Prüfung aller zweckdienlichen Informationen, ein Risiko für die Gesundheit von Mensch und Tier darstellen kann

Summary and perspective for risk based meat inspection

Pro's:

Feasible in practice

Aims on targeted and risk based diagnostic procedures

„Advocates“ contact between slaughterhouse operator, farmer and inspection personnel to enhance both food safety and animal health to minimise risks in primary production

Con's:

Reliable FCI?

More costs?

Farm conditions: integrated production and controlled housing: Who controls?

Needs:

Training – communication of all stakeholders

Benchmarking for public health, animal health and animal welfare

Acceptance of vis. meat insp. in the primary production

Data base for all participants

Which risks are relevant: Salmonella, Yersinia, *M. avium*, *Toxoplasma gondii*

Microbial/serological/microarray methods to detect hazards associated with meat

Thank you for your attention

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