SciCom Symposium

Trend watching and food safety control

Federal Agency
for the safety
of the food chain

Application of trend watching in food chain control: expectations of the risk manager

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Mission & Core process of FASFC

Our mission is to preserve the safety and the quality of our food in order to protect humans, animals and plants.

Overview

1. Trend observation of contextual factors
2. Application of trend watching in annual update of control program
3. Application of trend watching to support management decisions
4. Trend watching as a tool for indirect surveillance
5. Trend watching and communication
6. Trend watching and early identification of emerging issues

1. Trend observation of contextual factors

- Socio-economical factors
  - Global scale: climate change, migration, etc.
  - National scale: increase of internet sale, etc.
- Evolving consumer habits
  - Short supply circuits, consumption of insects, etc.
- Budgetary restrictions

  → business plan

2. Application of trend watching in annual update of control program

- Analysis program:
  - updated annually
  - increase or decrease sampling frequency in the next program based on expert opinion
  - by control policy experts
- Expectation : complementing expert opinion by analyzing trends using BO-tools :
  - the frequency of unfavorable or non-conform results and/or ,
  - the frequency of detections of contaminants and/or ,
  - the medians of contaminant concentrations.

- Three periods with 2 consecutive increases: extraction from database of selected combinations

2. Application of trend watching in annual update of control program

- Analyzing trends (continued)
  - Trend analysis in R
  - In-house developed R-tools (Shiny):
    - Logistic regression app for evaluating trends in frequencies of non-conformities
    - Log-linear regression app for evaluating trends in contaminant concentrations
  - Automatic calculation of trend slope and significance

- SciCom advice 21-2015
  - Protocol for application of trend observation & trend analysis on the results of the control plan of the FASFC

2. Application of trend watching in annual update of control program

Example: Checklist SCS – number of unfavorable inspections

Uploading Files

Choose CSV File from local drive, adjusting parameters if necessary

Browse... Inspectieresultaten autocontrole ACS voor trendanalyse

Upload complete

choose your method

control score

Select the date column

Datum

Select the Y-column

Contr.score

Logistic Regression Results

Data summary | Summary | Plot | Data | Summary all

Year	Nr of observations	% Unfavourable	Unfavourable	Favourable
2010	12700	45.98	5840	6860
2011	17936	36.73	6587	11349
2012	17661	34.69	6127	11534
2013	19223	26.13	5023	14200
2014	23801	24.55	5843	17958
2015	22886	22.07	5050	17836
Totals	114207	30.18	34470	79737

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Slope of the logistic regression curve: -0.0006033626
Signicance value p: 0
There is a significant decreasing trend at p = 0.05
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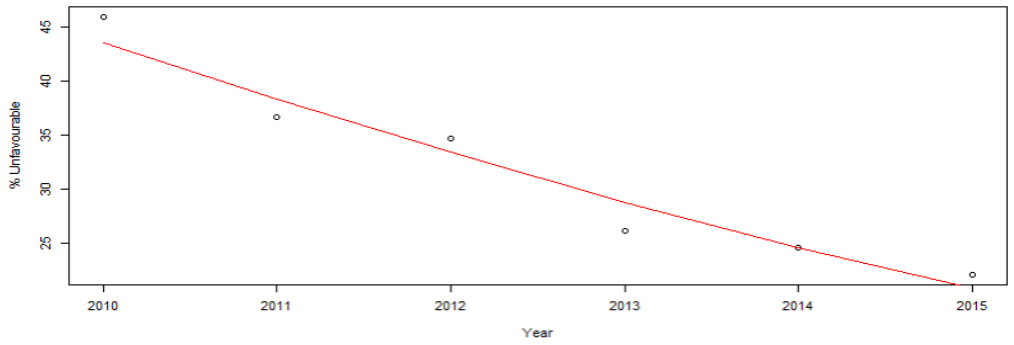
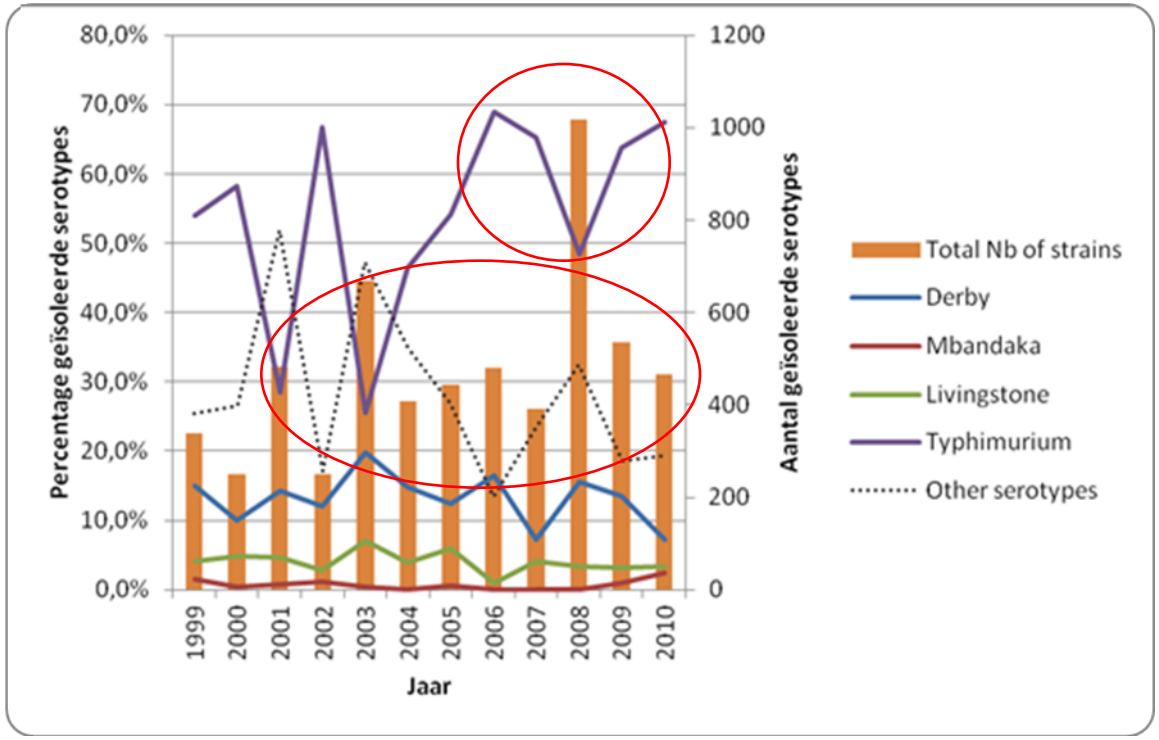


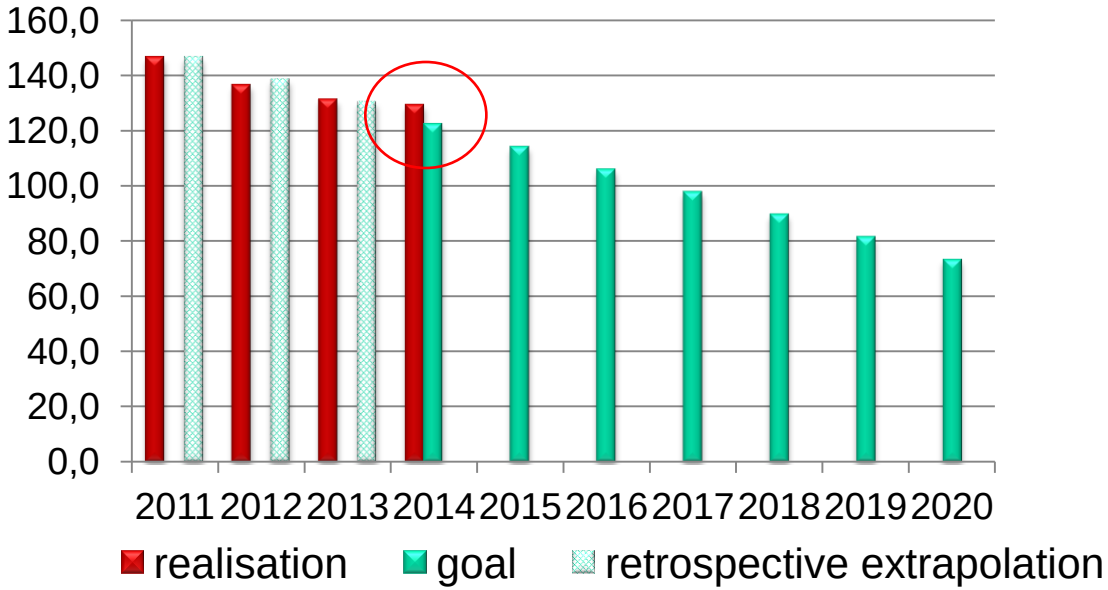
3. Application of trend watching to support management decisions

Example 1. *Salmonella* surveillance in pigs



3. Application of trend watching to support management decisions

Example 2. Surveillance of antibiotic consumption in animals



4. Trend watching as a tool for indirect surveillance

Monitoring consumer complaints

- Since 2006, more than 15,000 complaints
- Since 2013: new classification of foodstuffs
- Trend watching of number of complaints in various classes
- 3 periods (week or month) that exceed 90th percentile
- Until now no cases detected

=> future : using other data sources (RASFF, control program,…), evaluation of usability

4. Trend watching as a tool for indirect surveillance

Mortality surveillance in cattle and pigs

- Syndromic surveillance
- Data from Rendac: single carcass renderer in BE
- Details on holding (operator, address), classification of carcass (visual weight estimation), collection date
- Grouping of holdings according to activity type
- Selection of high mortality holdings within groups:
  - Evolution of number of carcasses during the last 12 months
  - Bench marking of relative mortality on a monthly basis

4. Trend watching as a tool for indirect surveillance

Mortality surveillance in cattle and pigs (continued)

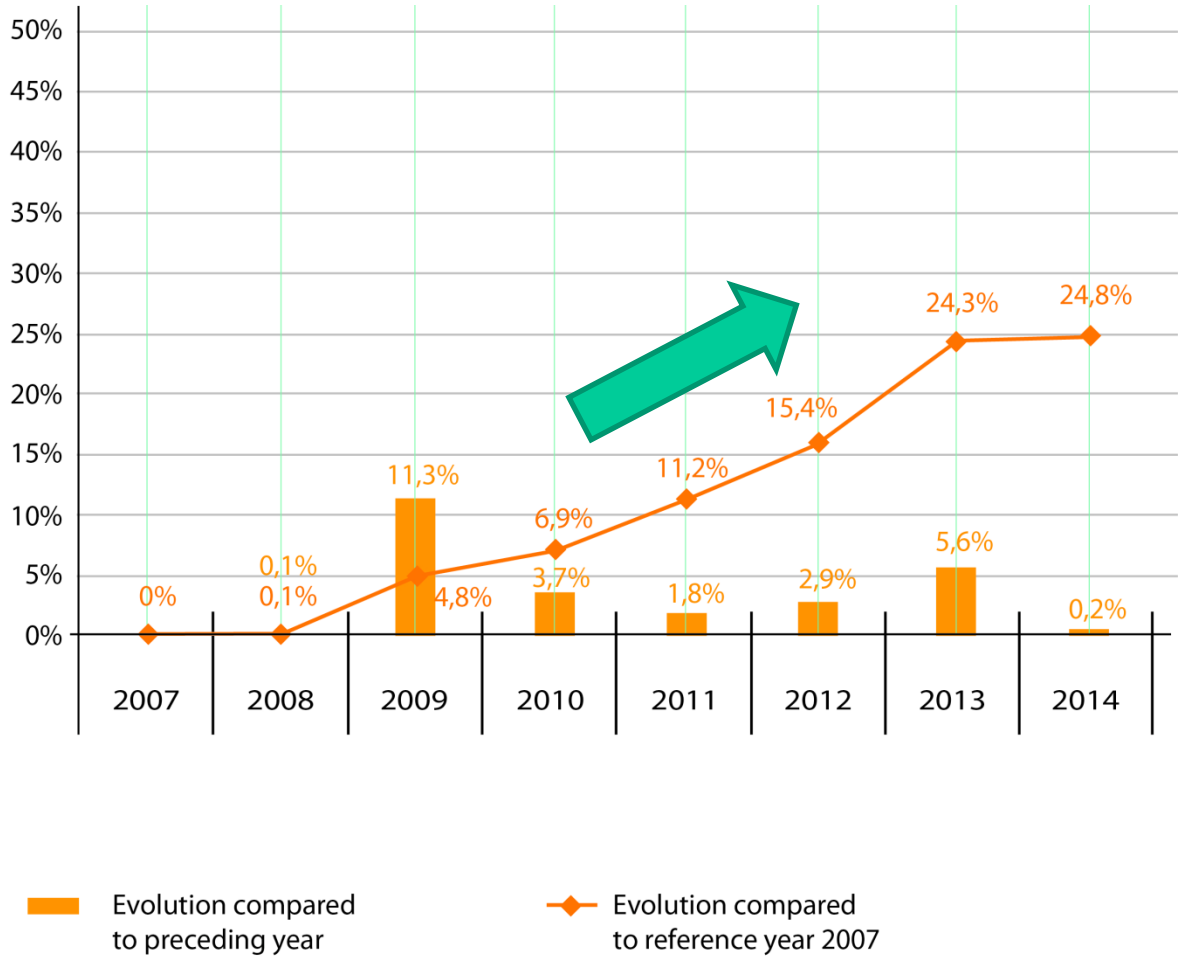
- Selection of upper 1% of holdings with high mortality, 1 page health survey to investigate the origin of mortality, symptoms of diseases and awareness of vet

Conclusions

- more than 95% of vets respond
- Actual frequency of datatransfer: too slow to detect emerging diseases
- But : can be used to raise the farmers' and vets' awareness about the abnormal situation
- Future : use as a risk factor monitoring for early warning

5. Trend watching and communication

Food safety barometer



6. Trend watching and early identification of emerging issues

= Challenge

- No practical functioning system for early warning or prediction of emerging issues is available

Conclusions

Possible application of trend watching	Expectations of risk manager
Contextual factors	To be continued
Annual update of control program	To be more elaborated
Support of management decisions	To be applied whenever possible
Tool for indirect surveillance	To be further developed
Communication	To be continued and to be futher improved (cfr. SciCom & HoA – measuring outcome; MANCP plans)
Early identification of emerging issues	To be developed and applied