

Sampling and Analysis as an Inspection Tool: Possibilities and Limitations

A Control Body Perspective

Dr. Jochen Neuendorff



Content

- The German organic market and risks for fraud
- Root causes of nonconformities
- Case studies: Source and origin of residues
- The way out: Investigation

Two major reasons for nonconformities in organic

- › Errors and negligence
- › Fraud (intentionally, financial gain)



The German organic and food marketplace and its food control

- › Organic market, 31.12.2021:
55.180 operators, 19 accredited control bodies
with 552 organic inspectors (31/12/2021)
- › **On average:**
1 organic inspector per 100 organic operators
- › Common goal: ensuring the authenticity of organic products....
- › ... through the **intelligent** application of the “organic inspection toolbox”
- › Official food controls (food safety):
1.211.257 registered food operators, 2500 official inspectors



On average:

1 official inspector per 484 registered food operators



The Organic Inspection Toolbox

- › On-Site-Visit – Tour of the premises
(Plausibility of the production system and the processes)
- › Review of records and bookkeeping
- › Sampling and analysis
- › Traceability checks (cross checks) along the organic supply chain



Dimensions and patterns from the perspective of a German CB

- › Annual rate of operators with major nonconformities at GfRS: 1 – 3% (2014 – 2022)
- › Potential fraud cases in DE: 10 - 15 cases per year (2007 – 2022)
- › Cross-border sales and third country imports are highly relevant (different implementation practices, limited communication)



Controlling organic imports - what are the current challenges ?

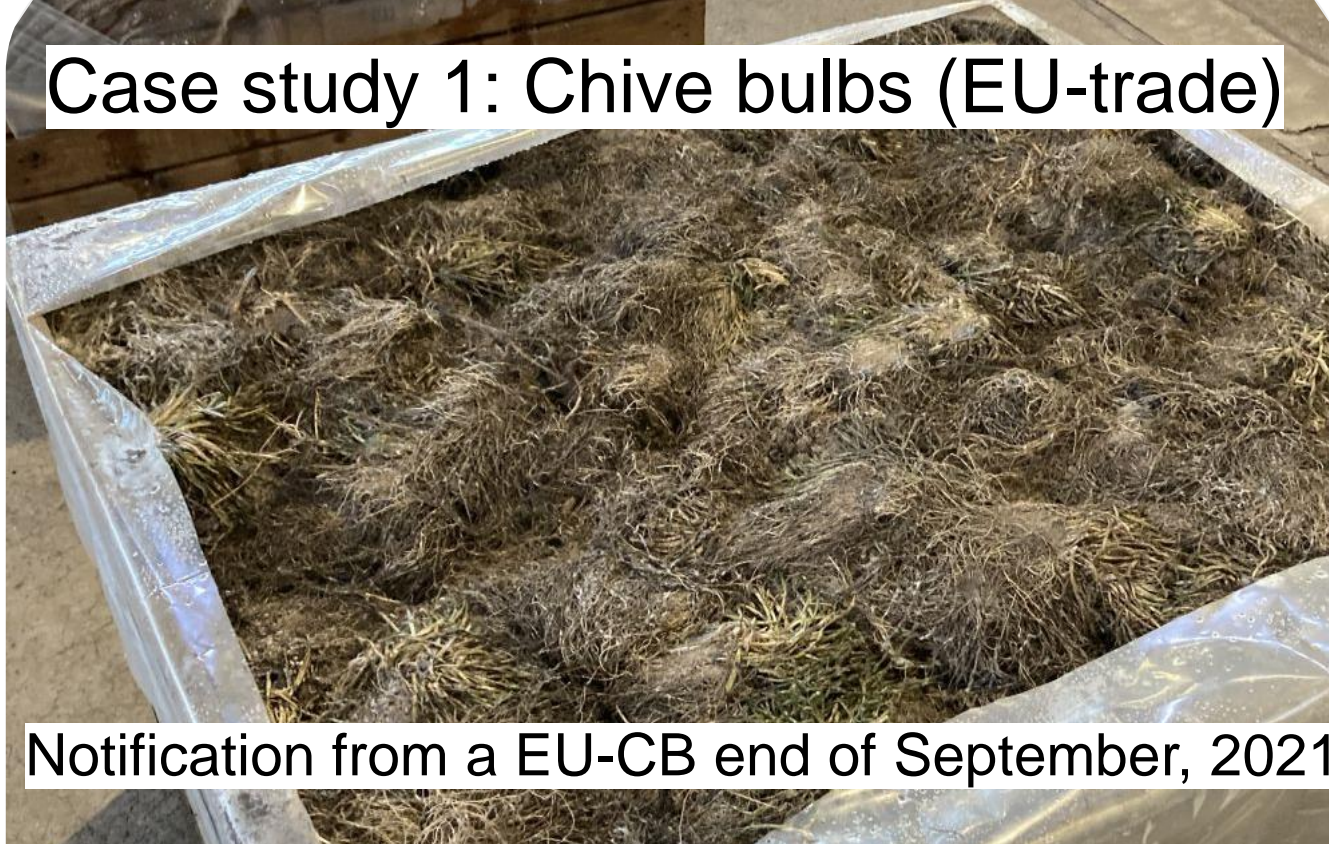
1. Dark farming - cheating with fertilisers and pesticides
2. Transparency lost - mega stratified structures, traders, flexible land, moving targets and harvesting certificates
3. Serial loading and unloading - a risky business
4. Control bodies - hopping, shopping and getting lost
5. Inspectors: harassed, bribed and far-off
6. Operating in bad faith
7. Struggling supervisors

The Organic Inspection Toolbox

- › On-Site-Visit – Tour of the premises
(Plausibility of the production system and the processes)
- › Review of records and bookkeeping
- › **Sampling and analysis as supportive tool, process-related**
- › Traceability checks (cross checks) along the organic supply chain



Case study 1: Chive bulbs (EU-trade)



Notification from a EU-CB end of September, 2021

PRIMORIS

YOUR RELIABILITY IN FOOD ANALYSIS

BELGIUM

Labo nummer: 21/053269

Pagina: 2/8

Datum: 3/09/2021

Gehomogeniseerd staal

GMS - GC-MSMS - accredited

Afgewerkt ☒

Geen analyt(en) \geq RL

LMS - LC-MSMS - accredited

Afgewerkt ☒

Residu	Accr.	Resultaat	Limieten EU	Eenheid	U
boscalid	A	0,023	(a)	mg/kg	(b)
epoxiconazole	A	0,020	(a)	mg/kg	(b)

Case study 1: Investigation (EU-trade)

- Traceback along the supply chain (only one trader and several fully converted organic farms involved)
- Questions back to the EU-CB regarding traceability of the samples
- Beginning of October, 2021: Additional unannounced inspection at trader and farm level, sampling – no residues of Boscalid and Epoxiconazole found (GfRS assumption: due to the different sampling methodology)
- Boscalid and epoxiconazole both active ingredients with relatively long LD₅₀ in soil (484 days / 354 days)
- Feedback to the EU CB mid of October, 2021.
- OFIS notification from the other EU country arrives to DE 4 days later.



Case study 1: Investigation (EU-trade)

- Investigation continues
- Additional additional inspection mid of december, 2021: Sampling and analysis of soil samples, analysis result with Boscalid and Exponicazole
- Conventional neighbour confirms after a personal call the use of both active ingredients prior to renting out the field to the GfRS-certified organic farmer and submits corresponding proof.
- Duration of the investigation: 3.5 month, 89 e-mails exchanged, two inspections on site



Case study 2: Cucumber, delivered from Eastern Europe to DE

- 2018: Flonicamid (LD_{50} (< 4 days in plant matrices) found in cucumber by official food control authorities.

Information of the EU control body involved + OFIS notification

- 2019: Risk-based additional inspection conducted on site by the EU control body, active ingredient found in the sprayer. Suspension of the operator.
- 2020: Suspension lifted by the competent authority because of the use of a non-designated laboratory
- 2021: On site visit (supplier audit).

Crop rotation practices highly susceptible for aphids as potential pest. Sampling of equipment and masks: Non-accredited analysis identifies Flonicamid.





Knowledge Base: Pesticide Residues on Organic Products

Share your knowledge of pesticide residue findings in organic foods.



Organic Foods and Pesticide Residues

The interpretation of residue findings in organic farming is not always easy, particularly if the measured values are not very high. On this platform, control bodies, laboratories and competent authorities can bring their experience to build up a common knowledge base.



Investigations: Critical attitude required!

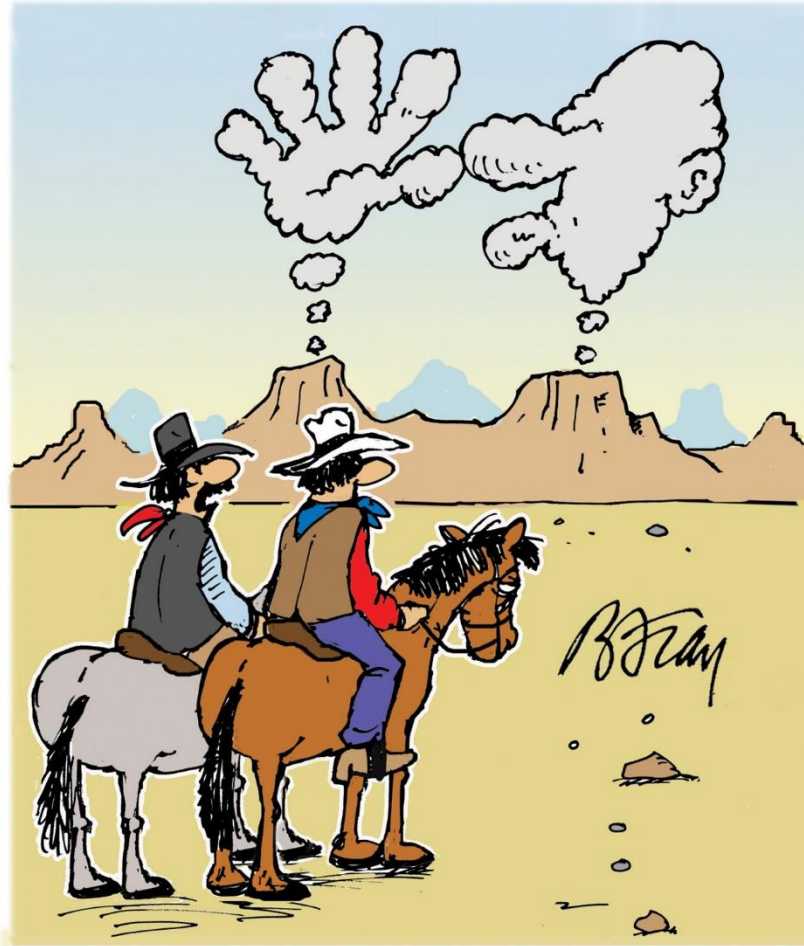
- Risk-oriented on-site inspections (announced/unannounced), annual frequency depends on the risk assessment, higher risk: higher frequency, use of inspector teams
- Risk-oriented review of operator documentation
(Certificates (online), records & bookkeeping, traceability checks (cross checks))
- Risk-oriented, **process-oriented** sampling and analysis with suitable timing (pesticides, GMO, ingredients, processing aids, isotopes)
- Knowledge databases, e.g. resi.bio
- Internally in CB: „Emergency teams“ for critical cases to ensure swift reaction
- Online-information on the certification status of operators with automated notification function in case of changes: www.bioc.info



Summary: Possibilities and Limitations of sampling

- Sampling and analysis is only one of several inspection methods
- Positive analysis results deliver important information but must be evaluated carefully and need to be put into context (sampling, analysis method, possible nonconformities)
- Smart investigation approach required!

Any questions left?



**"JUDGING BY THOSE SMOKE SIGNALS,
THEY KNOW WE'RE HERE AND
THEY'RE NOT AFRAID OF US!"**

Best practices – Sampling and analysis

Sampling

- Sampling during the production process (eg. soil, leaves and inputs)
- Smart sampling (risk-oriented)
- Standardised and meaningful sampling protocol, documentation of objective evidence with the sampling protocol (e.g. copies of invoices and delivery bills, photos etc.)
- Preparation of a retain sample for the operator
- Tamper-proof sealing of the sample
- Timely and careful transport/storage of the sample
- As far as possible: analysis in a testing laboratory that is accredited and competent for the analytical method used

Best practices – Sampling and analysis (2)

Evaluation and official investigation

- Evaluation of the reliability of the analytical result (possible sampling errors (traceability to the sample, conditions of sampling) and analytics (LOD/LOQ, accreditation of the lab method etc.)
- Formulation of an initial hypothesis on the possible root cause
- Case-by-case evaluation process (e.g. active ingredient, plausibility of application, etc)
- Determination of the scope of the official investigation
- **Meaningful official investigation**
- Evaluation of the initial hypothesis, documentation of the results (Article 2.3 and 2.4 Reg. (EU) 2021/279), if possible in a database (resi.bio)
- Immediate transfer of the results in a standardised format to the control bodies involved with information to the relevant competent authorities in cc

Professional training

- Regular training of inspectors and internal staff based on identified knowledge deficits