

Deliverable 1.3 Report on contaminants present in food Evaluation of survey results



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Terms and definitions used in this report

In this report, the following terms and definitions are used:

CA	control authority
CB	control body
Contaminants	unintentionally enters the environment / product
De-certification	withdrawal of the organic certificate for a food lot by the certifier
LOD	limit of Detection: The lowest concentration of a substance in a sample that can be reliably detected
LOQ	limit of Quantification: The lowest level that an analyte can be quantitated with a specified degree of certainty
MRL	maximum residue level: the highest permissible concentration of a pesticide residue in or on produce
Operator	organic farmer, processor or trader
QAS	Quality Assurance System
Residue	intentionally released into the environment at some point in this document the term residue refers to a pesticide which is not authorized for organic production (unless specified otherwise).

Foreword

This report contains the results of a survey on contaminants on food and how to deal with them. The survey was done within the IFOAM ORGANICS EUROPE project *Pesticide contamination: ensuring a favourable environment for organic operators through EU legislative frameworks on pesticide residues in organic products*. The goal was to understand how residues reach organic products, how residue findings are managed by actors along the value chain and certification bodies, control bodies and competent authorities, and how the situation could be improved. The results will be used by IFOAM ORGANICS EUROPE for advocating on behalf of the organic sector. With a questionnaire it was possible for organic stakeholders to communicate their current experiences in the field in an anonymous way. We thank all respondents for providing their valuable feedback.

Executive Summary

The goal of this study was to obtain an overview about pesticides residues on food and the handling of residue cases by farmers, companies, label organisations and competent authorities in Europe. For that, an internet-based, anonymous survey was developed. The survey was completed by 130 actors from 24 countries, including various EU countries but also non-EU countries like Switzerland, UK and Norway.

The main findings regarding the overall problem, knowledge and actual instruments, affected commodities and the needs with regard to residues on organic products could be summarized as follows:

Residue cases

- The problematic of residues on organic products is a common problem which occurs in the daily business in the whole food production chain.
- With regard to commodity groups, all plant-based organic products are affected by the problem of residues.
- Grains, cereals and pulses/legumes are more frequently affected commodities by residues followed by spices/herbs and processed fruits.
- The most frequently reported commodities are wheat, sesame, soybean, almond, maize and sunflower.
- The most frequently reported compounds in organic commodities are glyphosate, fosetyl/phosphonic acid, ethylene oxide and 2,4-D.
- The most prominent cause for residues for all organic commodity groups is drift, followed by contamination during storage or transport.
- The downgrading rules for contaminated goods are highly inconsistent in Europe.
- Lightly contaminated goods may be accepted as organic produce in one country while in another country their organic status would be denied.
- Considering that most of the companies producing and selling organic are small and medium-sized companies, the decertification costs are economically incisive.

Knowledge about residues and the residue handling

- The knowledge about residues and the instruments to deal with residues are quite different and a wide diversity of procedures regarding the handling of pesticide residues across European countries could be determined.
- In the majority of the surveyed countries, the level of knowledge on the existing national guidelines is insufficient.
- Apart from national guidelines, also private guidelines are important for some stakeholders and well implemented. For example, the BNN (Bundesverband Naturkost Naturwaren) guidelines are in use in 10 countries.
- A high share of respondents is investigating the causes of every residue case. Nevertheless, for a high share of the investigated cases the causes of the residue contamination remain unclear.
- The respondent farmers are not well aware of the problematic of residues.

Management of residue findings

- The majority of the respondents have already established a quality assurance system (QAS) to deal with residues in organic produce.
- The methodological approach to minimize residues by a risk-based procedure is well established in the surveyed countries and could be adopted also in other countries.
- The residue monitoring is risk-based and well established by many actors in the food chain. This applies for the selection of commodities as well as the selection of substances to be analysed.
- The orientation and threshold value of 0.01 mg/kg is widely used and already well implemented.

Needs regarding the legal situation

- The majority of respondents would welcome more precise and uniform guidance on how to handle pesticide residues in organic produce.
- The need for more harmonization is higher on EU level than on national level.
- Also, the control bodies and competent authorities would like to have more precise and uniform guidelines.
- With regard to possible improvements on the legal side the following improvements were suggested:
 - improvements on the case evaluation procedure
 - general need for a harmonized evaluation approach of residue cases across Europe
- With regard to a de-certification level the responses are quite mixed. The majority of respondents does not support a de-certification level.
- There is a need for clear guidance regarding the duty of information in a residue case to the control body.

- Also, clearer guidance to reduce contamination during storage or transport is welcome.

The results of the survey clearly indicate a need to clarify the procedure to minimize residue contamination and the management of residue cases and to have an equal and traceable handling within Europe.

The results of the survey are a good base to develop workable implementation rules.

Goal and Methodology of the survey

1. Goal

The research was intended to give a good overview about pesticide residues on food and the handling of residue cases by farmers, companies, label organisations and competent authorities in Europe, including non-EU Members like Switzerland, UK, Norway.

A second goal was to identify, based on unpublished data, commodities and origins frequently contaminated with pesticide residues and compare the findings with published data (EOCC, pesticides online <https://www.pesticides-online.eu/home>).

2. Methodology

A structured survey was developed, in order to get an overview of the presence of pesticides residues on organic products and of the handling of residue findings by different actors in different countries. The goal was to get feedback by control bodies/control authorities, competent authorities, standard owners/label organisations, traders, post-harvest, processors and some farmers across Europe. The survey was split into the following six parts (complete survey see annex I):

Table I Structure and research goal of the survey

	Topic of the questions	Research goal of the questions
Part 1	General description of respondents: Company profile, country of work, product groups dealt with and organic turnover.	<ul style="list-style-type: none">• Overview of the respondent• Possibility to qualify the results
Part 2	Current legal or private guidelines and actions taken when handling residues on organic products. Specifically, regarding decision making for downgrading, decertification and notification.	<ul style="list-style-type: none">• How deal the actors with residues• Are there differences between the actors in general?• Are there differences between the handling between the different countries?
Part 3	Questions regarding investigated commodities, residues found on these commodities (substance and concentration) and their cause. Moreover, questions related to the timing and responsibility of investigation of causes.	<ul style="list-style-type: none">• When is an investigation done• Which commodities were regularly investigated• Which substances

		<ul style="list-style-type: none"> Who is responsible for the investigation
Part 4	Respondents can select 1-3 organic commodities and report the frequency, type, concentration and cause of pesticide residues and the financial risk these cases bear.	<ul style="list-style-type: none"> To get some unpublished data To see if there are some similarities between the companies and countries
Part 5	Respondents can select 1-3 conventional commodities and report the frequency, type, concentration and cause of pesticide residues and the financial risk these cases bear.	<ul style="list-style-type: none"> To get some unpublished data To see if there are some similarities between the companies and countries To see if there are differences in the selected commodities, substances and the amount of residues in comparison to the organic products
Part 6	<p>Questions regarding the financial and legal implications of residue cases. Are operators insured, can they take recourse on the supplier?</p> <p>Consequences of residue case with regard to</p>	<ul style="list-style-type: none"> Financial issues The legal heterogeneity across Europe

To ensure confidentiality, an anonymous, internet-based survey was created, using the tool lime survey¹. The tool offers the advantage of performing combined analyses and integrating different languages. The survey was translated into eight languages (German, French, English, Czech, Spanish, Swedish, Italian, Dutch). The survey contained mainly closed questions, but had also some open questions to allow the possibility to give additional remarks to the specific topics. Moreover, the survey contained 35 questions regarding combinations of commodities and the most common pesticides, giving the respondents the possibility to anonymously report residue cases. The complete survey guidelines can be found in the attachment. Prior to its release, the survey was discussed with and adapted by the steering committee of the project.

¹ https://manual.limesurvey.org/LimeSurvey_Manual

The survey was sent to control bodies, label organisations, competent authorities and companies dealing with plant products by IFOAM ORGANICS EUROPE. The survey was online from Mid of July until Mid of September 2021.

The chosen methodology with lime survey as well the availability in a variety of languages distinguishes this survey from other research projects dealing with this sensible topic. Thereby, this survey gathered data from stakeholders excluded in previous projects.

3. Results and Discussion

In the following sections we provide an overview of the results of the survey.

3.1 Overview of respondents

In total we collected 130 complete responses from 21 countries. In the following, we provide an overview of the origin of responses, in order to better understand the basis of the analysis.

3.1.1 Analysis based on countries and type of companies/organisations

Table 2 shows the origin of responses based on countries and the type of company or organisation respondents work for. The responses are distributed across 21 European countries including the non-EU members Switzerland, Norway and United Kingdom. It has to be considered that Germany, Italy, the Netherlands and Austria represent half of the responses. Three responses originated from countries outside Europe. The majority of respondents work in the trading, post-harvest and processing sector (82 responses), while we have also 20 responses from control bodies, 17 responses from farmers and 5 responses each from competent authorities and standard owners/label organisations.

Table 2: Overview of responses based on country and type of company/organisation

	control body/control authorities	compe- tent au- thority	standard owner/label or- ganisation	traders, post-har- vest, pro- cessors	farm- ers	Sum
Austria	0	0	0	8	5	13
Belgium	2	0	1	2	0	5
Bulgaria	0	1	0	3	0	4
Croatia	0	0	0	2	1	3
Czech Republic	1	0	0	2	0	3
France	0	0	0	8	0	8
Ger- many	4	0	1	22	9	36
Hungary	0	0	0	1	0	1
Ireland	2	1	0	0	0	3
Italy	1	0	1	13	0	15
Latvia	2	0	0	0	0	2
Lithuania	1	0	0	0	0	1
Nether- lands	0	0	0	14	0	14
Norway	1	0	0	0	0	1
Poland	1	0	0	0	0	1
Romania	1	0	0	0	0	1
Slovakia	0	1	0	0	0	1
Spain	1	0	0	0	0	1
Sweden	0	1	1	2	1	5
Switzer- land	1	0	1	1	1	4
United Kingdom	2	0	0	3	0	5
Other	1	1	0	1	0	3
Sum	21	5	5	82	17	130

3.1.2 Analysis based on functions of respondents within their companies

For the respondents active in **trading, post-harvest and processing**, we further evaluated the function of the respondents within their companies (see Table 3). 88% of the respondent are coming from quality management and quality security. That are the people with are mainly touched with the topic of residues. We can conclude that we reached the right respondent and with that we can refer to a good experience and thus good data quality in the survey.

Table 3: Functions of respondents within their companies (only traders, post-harvest, processors)

Function	Share
Purchase	4%
Quality management	63%
Quality security	25%
Product development	3%
Production	5%

3.1.3 Analysis of product groups with which companies are working

In addition, we asked the respondents from the **trading, post-harvest, processing** about the areas of activity of their companies (see Table 4). 10 % are active in post-harvest activities and 50 % are working in the field of trade and simple processing of agricultural raw materials, while 40 % are active in food processing and manufacturing. Of the last group 95 % are working with plant-based products while 3 % are processing beverages (excluding fruit and vegetable juices). Companies working in slaughtering, meat and fish processing were explicitly excluded from the survey.

Table 4: Area of activity of traders, post-harvest, processors

	Share
Post-harvest activities such as collection, storage and shelling	10%
Trade and simple processing	50%
food processing/manufacturing	40%

3.1.4 Size of companies

All of the respondents were asked how many people their company or organisation employs. As figure 1 shows, 75 % of respondents work in micro, small and medium sized companies or organisations. The size of the companies or organisations can indicate the possibilities and limitations regarding the handling of residues and risk minimization strategies. Smaller companies tend to be more limited in expertise regarding the handling of residue cases. The distribution of the size of respondent companies within this survey are representative of the overall situation in the organic market.

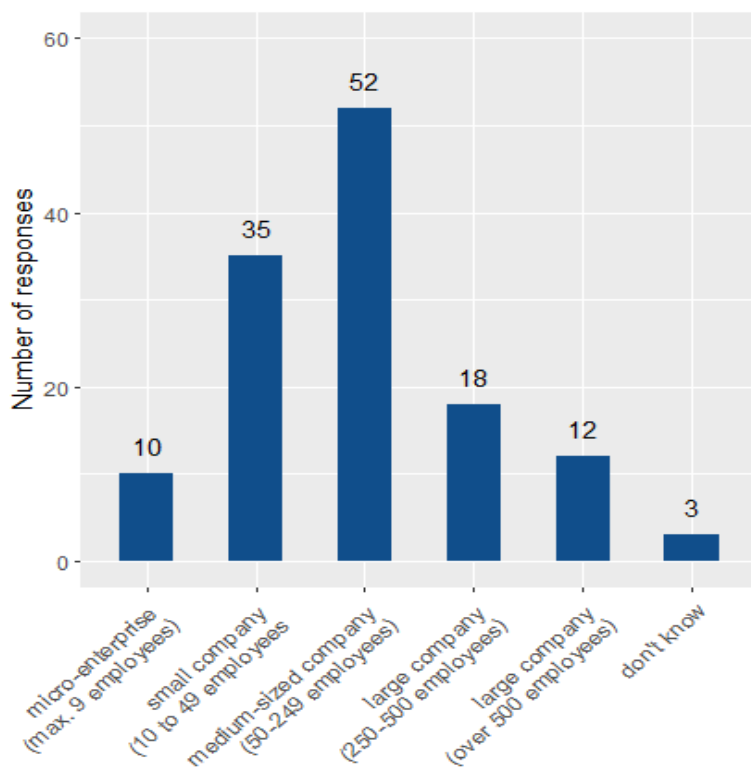


Figure 1: Overview of the company size of the respondents.

3.2 Management of residue findings

The following sections provide insights into the guidelines the respondent's companies or organizations follow when handling pesticide residue cases.

3.2.1 Quality assurance

Since 01.01.2022, the EU Regulation 2018/834 demands for actions concerning suspicion of non-compliance in article 27 as well as for precautionary measures to avoid the presence of non-authorised products and substances in article 28. A quality assurance system helps to fulfil the legal guidelines. The goal is to identify the risk of contamination and with that to define measurements to minimize the risk of contamination as well to define the process when a residue is detected. Of all respondents, over 82 % have a quality assurance system to deal with residues in organic produce. The respondents having no quality assurance system concern control bodies/authorities (6), competent authorities (3), standard owners/label organisations (2), traders, post-harvest, processors (10) and farmers (3).

3.2.2 Guidelines

There exist a variety of national and private guidelines on how to handle residue cases in organic. Over 62 % of respondents know about national guidelines for handling residue cases. However, as Table 5 shows, in the majority of countries the level of knowledge on this topic is insufficient. In all countries, except Croatia, respondents have not answered uniformly whether guidelines for

handling residues on organic produce exist on a national level. The last column of Table 5 compares the answers to the results of a scan on residue regulation by Milan et al. (2019). This information is based on an expert survey with EU member states, however the results have not been verified. The fact that respondents answered inconsistently regarding national legislation within a country and in some cases not reflecting the actual situation – as shown in the last column - reveals a high need for clarification and education regarding the rules for handling residues within the different countries.

Table 5: Knowledge of existing national guidelines for handling residues in organic products by countries?

Country	Yes	No	Sum	Existence of national legislation or provision*
Austria	9	4	13	Yes
Belgium	4	1	5	Yes
Bulgaria	2	2	4	Yes
Croatia	3	0	3	Yes
Czechia	2	1	3	Yes
France	4	4	8	None mentioned
Germany	19	17	36	None mentioned
Hungary	0	1	1	Yes
Ireland	2	1	3	Yes
Italy	9	6	15	Yes
Latvia	0	2	2	not surveyed
Lithuania	1	0	1	None mentioned
Netherlands	9	5	14	Yes
Norway	1	0	1	not surveyed
Poland	1	0	1	Yes
Romania	0	1	1	Yes
Slovakia	0	1	1	not surveyed
Spain	1	0	1	Yes
Sweden	4	1	5	Yes
Switzerland	4	0	4	not surveyed
United Kingdom	3	2	5	None mentioned
Other	2	1	3	
Sum	80	50	130	

*National legislation and provisions as mentioned by respondents of a survey within EU-member states by Milan, Marlene, Bickel, Regula and Speiser, Bernhard (2019) Improving the handling of residue cases in organic production – part 1 "Quick Scan". Research Institute of Organic Agriculture FiBL, CH-Frick

The survey asked respondents to describe the national guidelines for handling pesticide residues. The answers were categorized for each country. At least one respondent from each country refers to national regulations, mostly to the EU regulation. However, it becomes clear, that there is a wide diversity of procedures regarding the handling of pesticide residues across European countries and that in certain cases, there also seems to be different approaches within a country. A main conclusion from this section is that there are not only differences across Europe in the rules on how to handle residues, but that there are also knowledge gaps and different interpretations of certain rules.

Apart from national guidelines, also private guidelines seem to be important. The Figures 2 and 3 give an overview of the private guidelines followed by respondents overall and also split by countries. The BNN orientation value of 0.01 mg/kg is the most frequently followed private guideline and used in 10 countries. The value was developed in Germany and has been established in April 2001. Especially in Germany, this guideline is commonly applied. Also, many respondents have developed an internal procedure to handle residue cases. Therefore, we see, that the question of residue management has a high importance with regard to the food safety and quality management issue and that the respondents are aware of the problematic. In contradiction we can see that the guidelines of IFOAM ORGANICS EUROPE and EOCC are used less often. Here clarification is needed to understand the reasons for the low adoption of IFOAM ORGANICS EUROPE and EOCC guidelines. These could be that the guidelines are not known, not easily applicable or not needed given by existing national guidelines, or not accepted by authorities and other, well established, private guidelines.

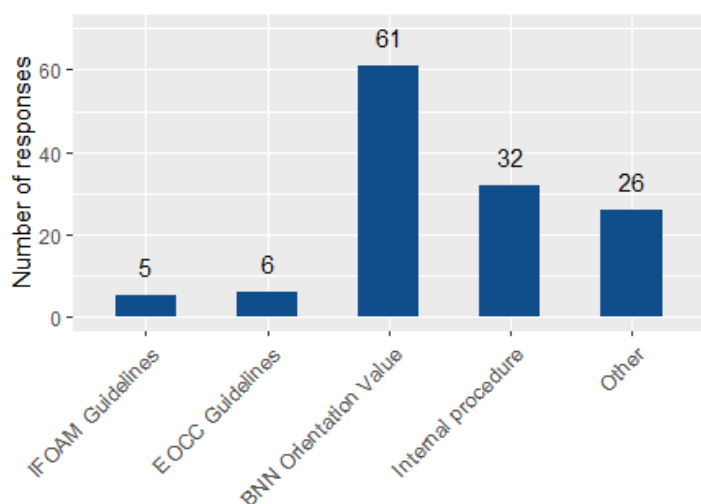


Figure 2: Overview of the private guidelines followed by respondents

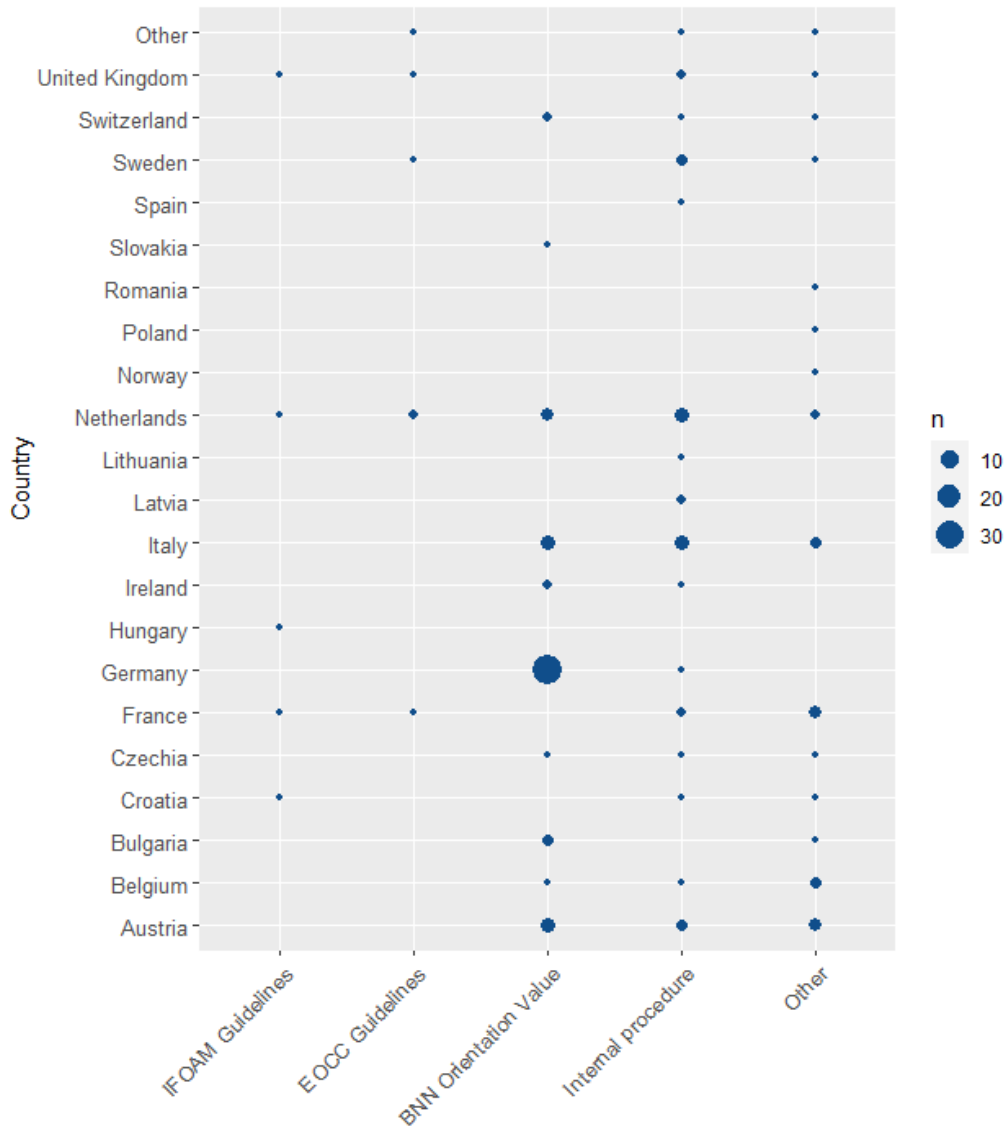


Figure 3: Overview of the private guidelines followed by the countries.

The respondents having selected “Other” private guidelines were asked to further specify. The answers were as follows. Numbers in brackets indicate the number of responses:

- follow no private guidelines (14)
- more than one of the mentioned guidelines (2)
- guidelines of the control body (2)
- guidelines of label organizations (2)
- guidelines of retail (1)
- have a zero-tolerance policy (1)

In addition, four respondents didn't further specify the “other” private guidelines they follow.

3.2.3 Procedure for handling pesticide residues

The research goal of this section was to gain more knowledge about the residue problematic in the different countries, goods and types of pesticides. In special it was focused on the questions; when is an investigation done, which commodities were regularly investigated, which substances and who is responsible for the investigation. Further investigations

Table 6 shows when respondents do further investigations according to the guidelines they follow. The majority of respondents (47%) investigate all residues above the limit of detection (LOD) or limit of quantification (LOQ). Next to LOD and LOQ, 27 of the respondents claimed to follow an orientation value. The orientation value is not legally binding. It indicates when further evaluations should be carried out. In contrary, the threshold value describes a legally binding residue concentration. Products with residues above the threshold value will be decertified. For the orientation value (93 % of respondents named 0.01 mg/kg. For the threshold value 100 % reported 0.01 mg/kg. Also 17 % of respondents do not have fixed rules but decide case by case whether further investigations are needed.

Table 6: When are further investigations necessary?

Rule	Count
All residues above the Limit of detection (LOD)	36
All residues above the Limit of quantification (LOQ)	25
The following orientation value (mg/kg)	27
The following threshold value (mg/kg)	9
No fixed rules, Case by case	22

There were no consistent differences of the investigation decision between countries or company size. The graph below shows, that control bodies/control authorities, competent authorities and standard owner/label organisations investigate often all cases above LOD or LOQ, while traders, post-harvest, processors and farmers also decide case by case.

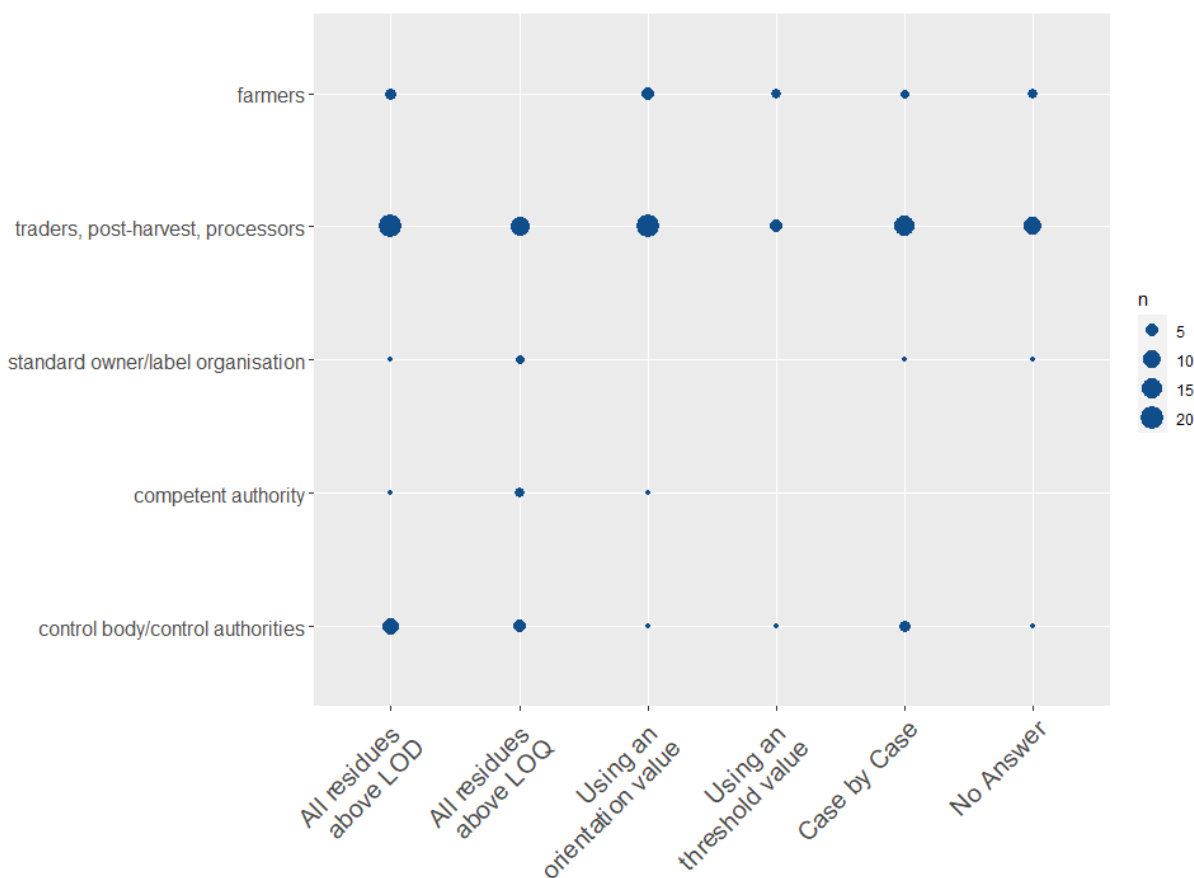


Figure 4: Overview of the rules of handling pesticide residues by type of firm/organization

Also 13 respondents mentioned other rules to determine the need for further investigations. Among those, five respondents mentioned to apply an orientation or threshold value, two the BNN guidelines, two maximum residue limits and one referred to follow the procedure of a control authority.

3.2.3.1 Investigation of causes

The majority of respondents (74 %) always investigate the causes of pesticide residues. While (21 %) investigate the causes depending on certain conditions. The remaining 5 % of respondents do not investigate the causes of residues. The majority of the companies not investigating residues are micro, small or medium sized companies with less than 250 employees.

Respondents who do investigate residue causes only in specific cases apply one or more of the following rules to decide, if an investigation is needed:

- high residue concentration
- multiple cases from same organisation
- first finding of substances (on a product or from country of origin)
- possible dilution of residues

- suspicion of fraud
- concentration above 0.01 mg/kg
- only internal investigation (within own firm), otherwise returned to supplier

Figure 5 shows a more in-depth analysis of when the operator is investigating the causes of residue findings. The results show that a large majority of micro and medium-sized enterprises systematically search for the cause of residues (about 80%). This share is lower in large companies but still represents half of them.

The larger the companies, the more they investigate residue causes given certain case characteristics.

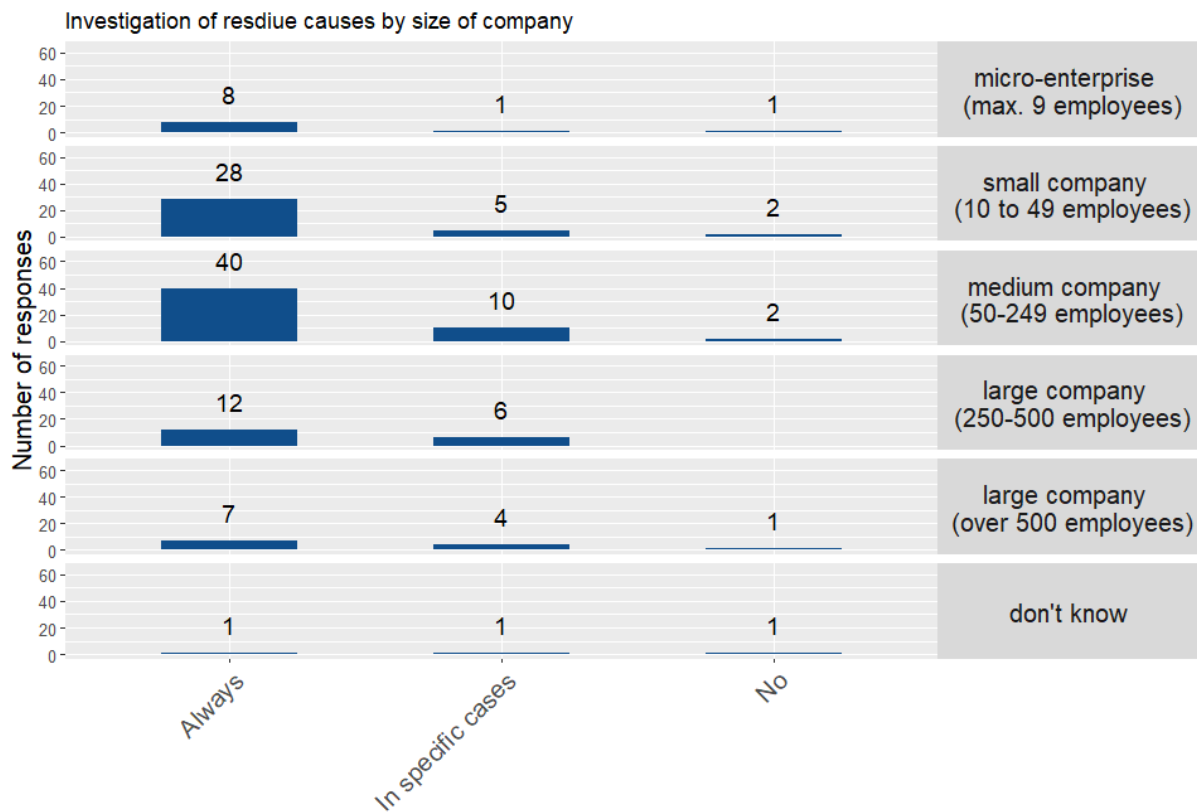


Figure 5: Investigation of causes by size of company

In addition, it was seen most of the companies are investigating the residue cases independently of the type of organisation.

The investigation of the cause of residues usually involves definition of actions and risk minimization for future deliveries or produce. Therefore, the majority of firms or organizations have implemented a continuous improvement process.

3.2.3.2 Downgrading

We also asked respondents about rules for downgrading of organic produce. The downgrading rules are not the same as the investigation rules. The investigation rules describe when it is necessary to evaluate the cause of a residue case. The downgrading rules define when the product is not marketable as organic. Table 7 shows, how many firms or organisations apply a certain rule. The most prominent rules are to follow instructions of the control body. Also, case by case assessments and general downgrading above threshold values (being LOD, LOQ or other value) are common procedure.

Table 7: When is downgrading prescribed?

Rule	Count
all residues above Limit of detection (LOD)	19
all residues above Limit of quantification (LOQ)	10
all residues above a certain value (**)	28
according to instructions of the control body	34
No fixed rules, case by case	32

** For the downgrading value 91 % of respondents named 0.01 mg/kg.

In addition, three respondents mentioned other rules to determine the downgrading of produce. Two respondents mentioned that there are different approaches depending on the region, where the case comes from. One respondent answered that the downgrading decision is based on private guidelines.

Figure 6 shows the downgrading rules by country. The plot shows, that some downgrading rules are only applied in certain countries. The case by case procedure is practiced mainly by respondents from Germany, Switzerland, Sweden, the Netherlands and Belgium.

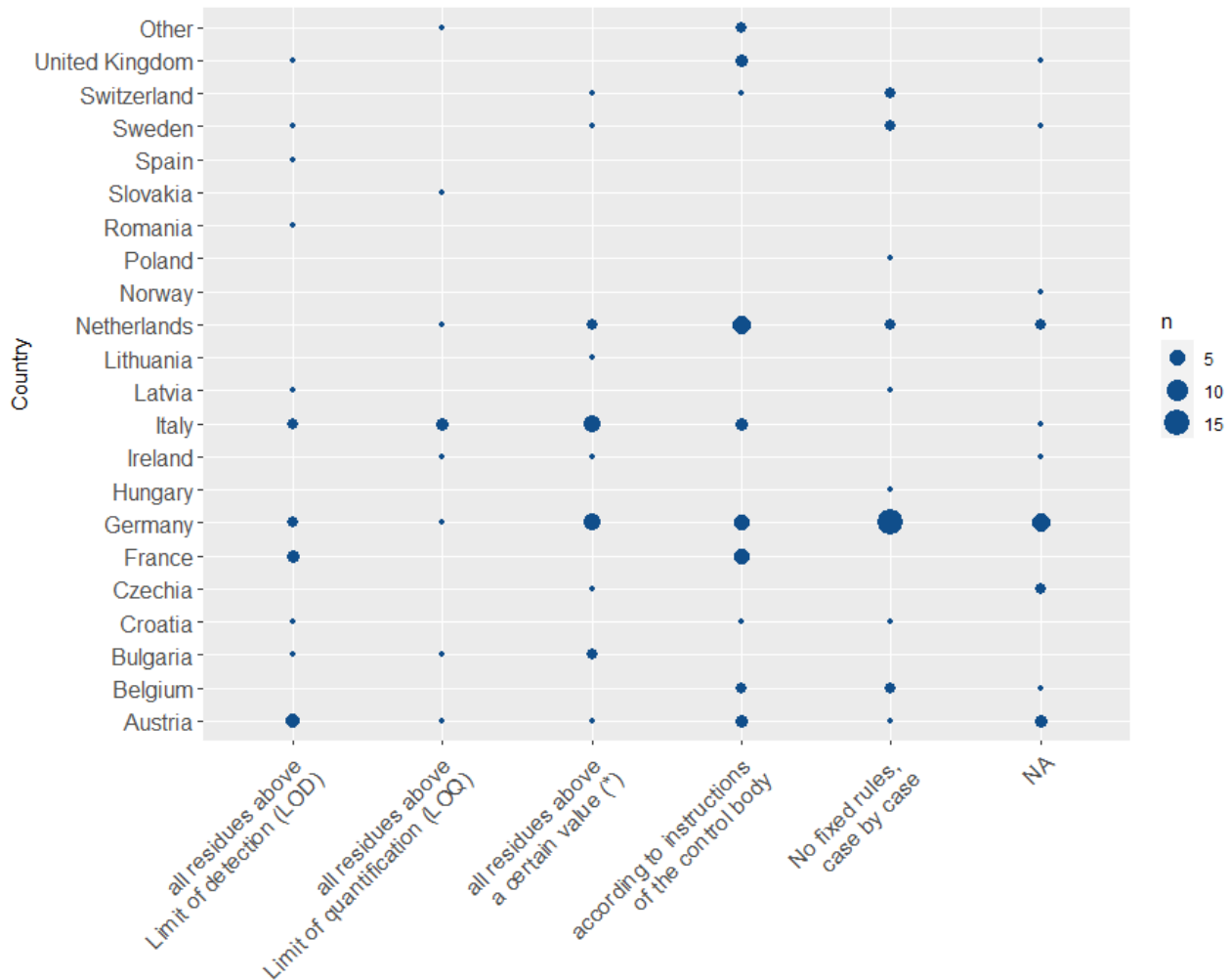


Figure 6: Downgrading rules by country

In addition, we analysed the data for differences between the downgrading rules of firms or organizations of different sizes. No clear pattern between these two variables were indicated. It shows that large companies tend to be on the safe side, so they work more with a certain value as well according to instructions of the control body. With regard to the medium-sized companies downgrading practices are very heterogeneous.

The analysis of the downgrading rules makes evident, that handling of pesticide residues is highly inconsistent in Europe. Referring to the open answers from two respondents, it shows sometimes there are even inconsistencies within a country. As a consequence, lightly contaminated goods may be accepted as organic produce in one country while in another country their organic status would be denied. The results underline the need of a harmonization on EU level.

3.2.3.3 Notifications

Table 8 below shows which other organisations or respondents notify about residue cases. The table shows how frequently certain actors are notified. In the majority of residue cases, the control

body and the supplier are informed. Less often the client or the competent authority are notified about residue cases. Only 4 % of respondents indicated to notify no other organisation.

Table 8: Which actors are notified in case of residues?

Organisation/people	Frequency
Control body	68%
Supplier	62%
Client	40%
Competent authority	36%
No notification to other organisations/people	4%

In addition, 16 respondents indicated to notify some other actors. While some of the answers were repetitions of the options provided above, the following other procedures for notification were mentioned:

- All of above-mentioned actors (2 responses)
- Case by case decision who needs to be notified (4 responses)
- Notification to label organisation (1 response)
- Notification of suppliers control body (2 responses)

3.2.4 Use of downgraded products

Table 9 shows how the respondents deal with downgraded products. Return to supplier is the most frequent answer with 69 %, this shows well that the responsibility is given back to the supplier and with that the financial risk. Also 64 % of respondents indicate to use downgraded products as conventional. Furthermore, 38% of respondents indicated to destroy downgraded products. The 12% of respondents who use downgraded products as feed make the decision case by case, only one respondent indicated to always use downgraded product as feed elaborating further that this is conventional feed.

Table 9: Use of downgraded products

What happens with downgraded produce?	Frequency
Return to supplier	69%
Use as conventional	64%
Destroy	38%
Use as feed	12%

3.2.5 Recording of residue cases

As the graph below shows, the majority of respondents record the residue cases in their QAS system. Most of the six respondents who record residues only in certain cases, mention to apply a threshold value above which they record a residue case (see Figure 7).

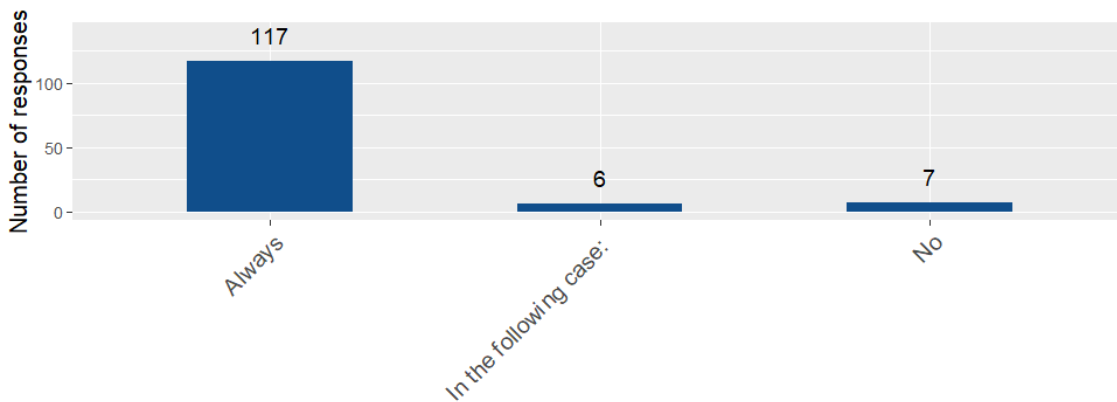


Figure 7: Recording of residue case in Quality Assurance system (QAS)

3.3 Residue cases on selected commodities

In this section of the survey we wanted to gain more knowledge about the residue problematic in the different countries, on different goods and for different substances. On the one hand, we elicited the commodity groups for which respondents investigate residues and collected residue cases for specific commodities (see hereafter). In a second part, we gave respondents the opportunity to report residue cases for any commodities in organic and conventional quality (see Section 3.4).

3.3.1 Investigated commodities

Table 10 provides an overview of the share of respondents investigating residues in commodity groups and in a selection of specific commodities. Multiple answers were possible. The table shows that wheat is the most analysed commodity in the sample. There was also the opportunity to add other commodities where residues are analysed.

37 respondents indicated to investigate residues in other commodity groups. As meat products are not within the scope of this survey, they were excluded from the analysis. The additional commodity groups include:

- Processed foods and convenience food
- Oilseeds and Oils
- Mushrooms
- Juice and concentrates
- Feed
- Wine
- Dairy

- Agricultural inputs
- Soil
- Plant materials (e.g. leaves)

Table 10: Overview of the share of respondents investigating residues in commodity groups and in a selection of specific commodities

Commodity	Share of respondents investigating residues within commodity groups or commodities
Grains and cereals	46 %
wheat	35 %
maize	23 %
Pulses/legumes	38 %
lentils	22 %
soybean	24 %
Processed fruits, incl. dried fruits	34 %
Spices, herbs	33 %
black pepper	11 %
chillies	11 %
Seeds	28%
sesame	20 %
sunflower	19 %
rapeseed	12 %
Fresh vegetables and potatoes	25 %
peppers	13 %
cucumbers	12 %
potatoes	15 %
Fresh fruits	22 %
apple	15 %
citrus	12 %
Nuts	22 %
almond	18 %
Processed vegetables and potatoes	21 %
Coffee, tea, cocoa	19 %

coffee	11 %
black tea	8 %
cocoa	12 %

3.3.2 Pesticides found on commodities

We asked about residues found on a selection of commodities. Thereby we collected 225 cases about pesticide residues on organic produce. Five cases could not be analysed, due to inconsistent data entries. In Table 11 we give an overview of the countries where the cases are reported. It should be noted that Table 11 doesn't allow to draw conclusions on the state of residue problem within countries but is rather correlated with the number of responses per country.

Table 11: Overview of countries reporting residue cases

Country	No. of Cases
Austria	7
Belgium	9
Bulgaria	5
Croatia	1
Czechia	5
Germany	84
Ireland	3
Italy	32
Latvia	10
Netherlands	18
Norway	2
Poland	1
Romania	5
Slovakia	4
Spain	5
Sweden	2
Switzerland	11
United Kingdom	12
Other	9

The graph below gives an overview of the pesticide compounds found on the reported cases. The graph visualizes the number of respondents who reported the compound on the commodity. Of

the 225 reported cases of pesticide residues on a commodity, the most frequently reported compounds are glyphosate (46 reports), fosetyl/phosphonic acid (34), ethylene oxide e (30) and 2,4-D (14). The most frequently reported commodities are wheat (27), sesame (20), soybean (17), almond (16), maize (16) and sunflower (16).

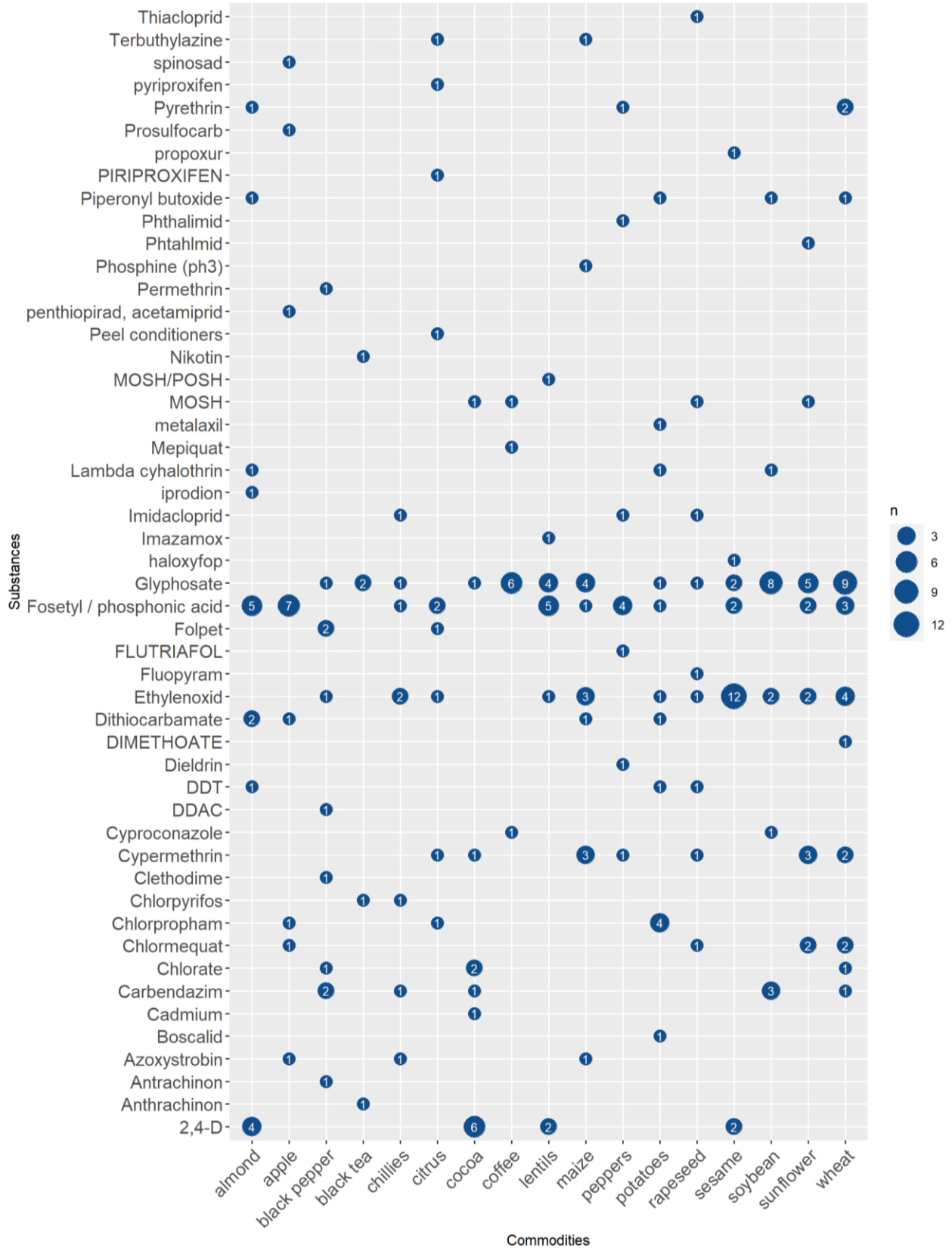


Figure 8: Overview of cases

3.3.3 Residue concentrations

In the survey we offered respondents to indicate one or more of the following concentrations of the residue found on a commodity: the detected minimum level, residue level in 90% of the cases, the detected maximum level. Based on these answers, we also calculated a mean level, in order to better compare the answers.

Figure 9 shows the average minimum level, level in 90% of cases and maximum level of 2,4-D, ethylene oxide and glyphosate. These substances were among the most frequently reported substances in the survey. The mean values for each concentration level are all above 0.01 mg/kg (dashed, red line). However, it needs to be noted, that this observation can partly be explained by the quality management system of a company/organisation as some firms indicated to only record residue values above a certain threshold value. From a food safety perspective, the reported residues do sometimes also exceed the Maximum Residue Limits (MRL) as defined by the European Union. The lowest MRL for food commodities are 0.05 mg/kg (2,4-D), 0.1 mg/kg (glyphosate) and 0.02 mg/kg (ethylene oxide).

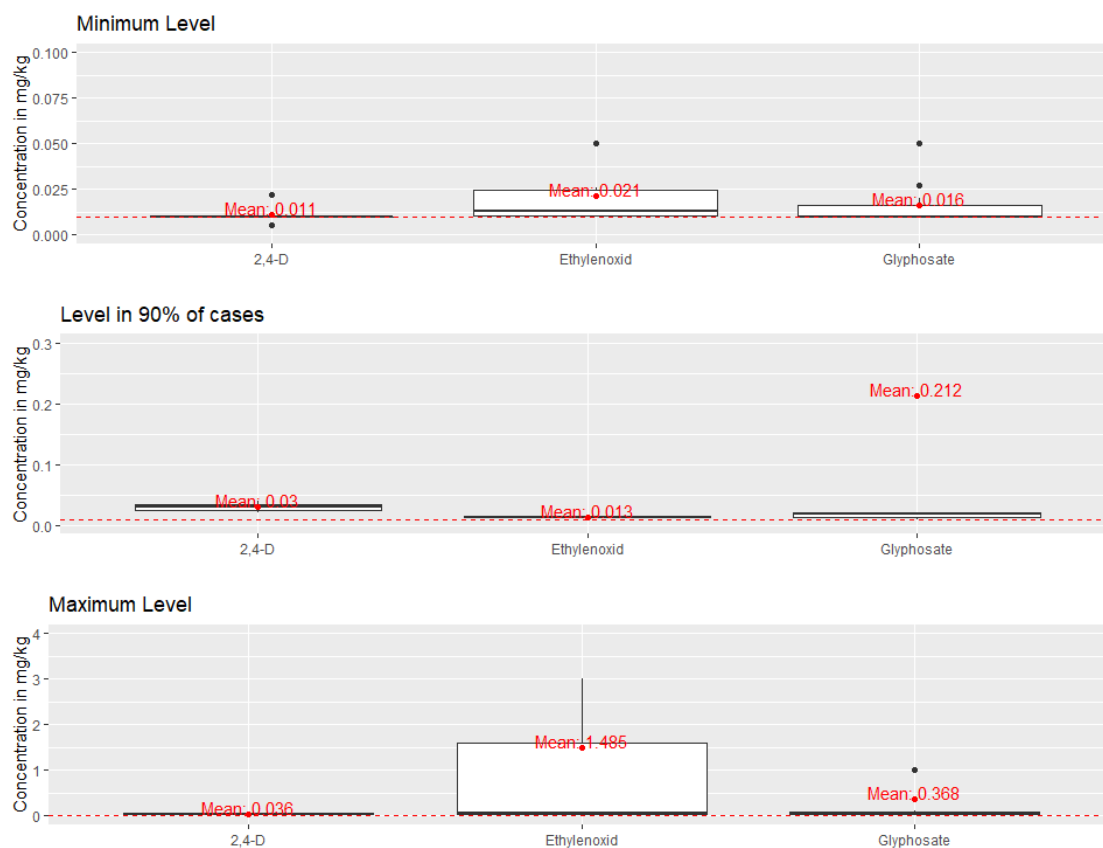


Figure 9: Residue concentrations of frequently reported substances

Figure 10 gives an overview of the mean concentration reported for the eight most reported substances (except Fosetyl / phosphonic acid). The results for Fosetyl/phosphonic acid are shown separately, given the different scale of the residues of this substance.

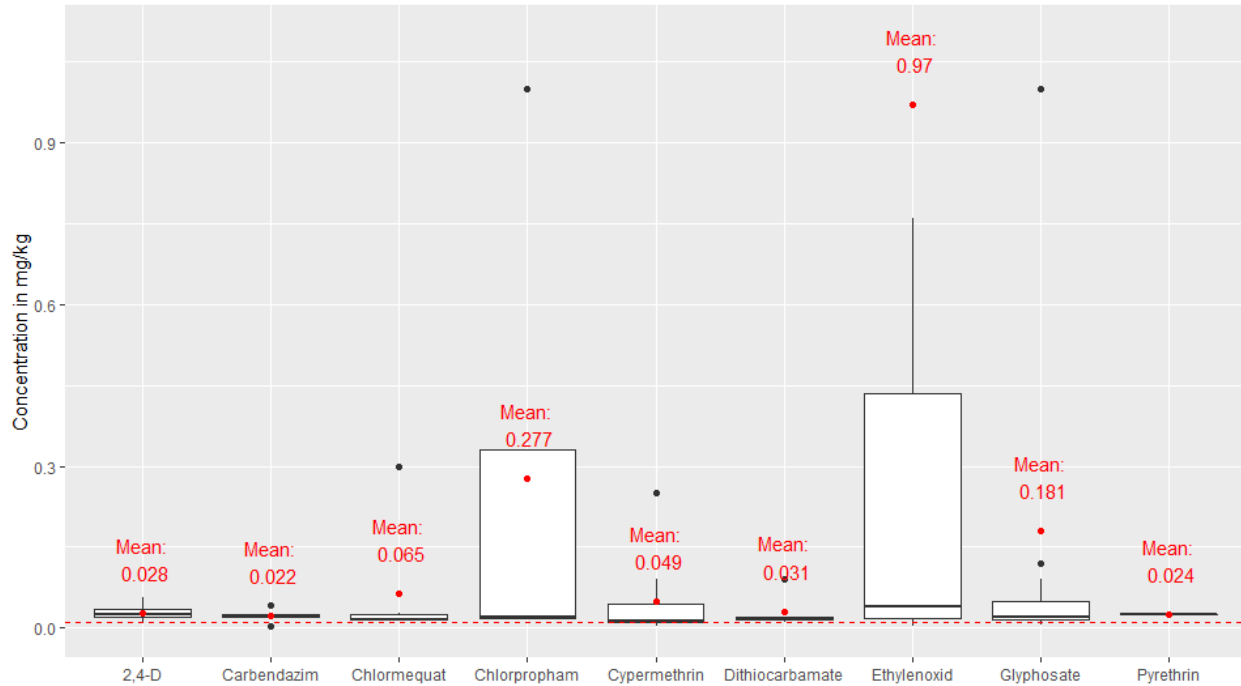


Figure 10: Mean level of reported concentration of residues

Compared to the other substances, residues of Fosetyl/phosphonic acid have a high variability and occur, on average in the highest concentration. Two cases with extremely high residue concentrations were reported. First, a minimum concentration of 18 mg/kg in potatoes, second a maximum concentration of 48 mg/kg in almonds. Given experience of FiBL, these values are on the upper end of reported residues for Fosetyl/phosphonic acid, but are not unrealistic. Therefore, they were not excluded in the analysis.

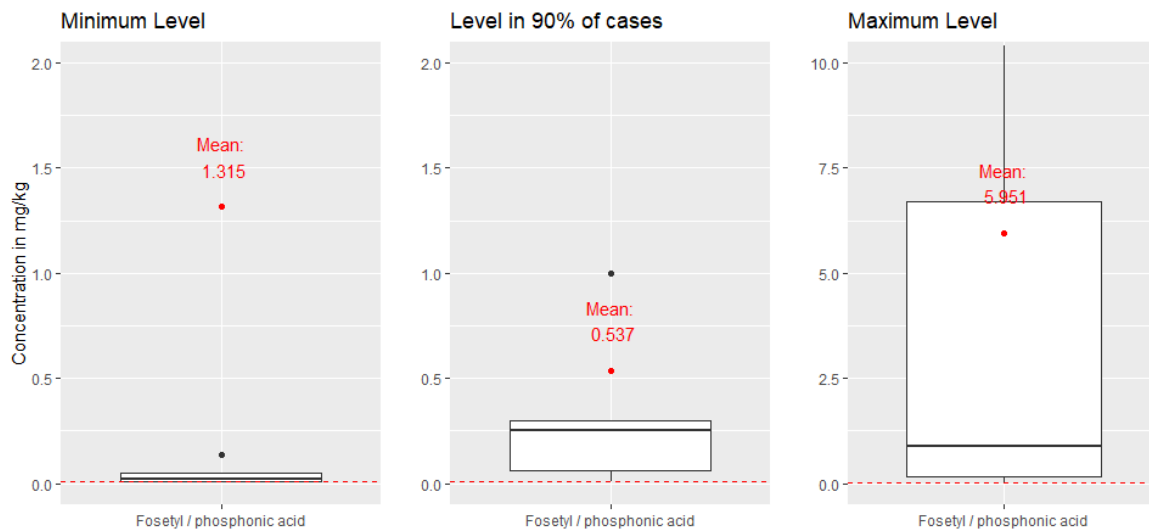


Figure 11: Residue concentrations of Fosetyl/phosphonic acid

3.3.4 Causes for residues

The causes for residues can be analysed based on commodities or based on substances. Table 13 gives an overview of the contamination pathways responsible for residues on the commodities. The most prominent cause for all commodity groups is drift with 67 indications (for 225 cases), followed by contamination during storage or transport with 44 indications. Given the frequent reporting of drift, manageable guidelines for the minimisation of drift would be needed. Also clearer guidance to reduce contamination during storage or transport are welcome, especially since transport is not part of the certification process. However, also in 69 cases, respondents did not know the cause of contamination, indicating the high level of uncertainty when assessing the cause of pesticide residues. Considering that many respondents investigate the causes of residue findings, these results indicate that many investigations come to no conclusion. With regard to the commodities it could be highlighted that all commodities are touched with the problematic of drift (see annex I).

Table 12: Summary of causes for residue findings

Causes for residue findings	Number of responses
Don't know	69
Drift	67
Contamination during storage or transport	44
Contaminated soil	29
Illegal application	26
Contamination during processing	22
Pest control during storage or transport	16
Natural occurrence	13
Not organic	9
Detergents	4
Packaging	3
Microorganisms	1
Plant toxins	1
Abrasion from production facilities	1
Gloves	0

If we look at the causes for residues based on substances (see Annex II), it is sensible to focus on the substances with sufficient reported cases. We focus on the reported contamination pathways for the ten most frequently reported substances. For 2,4-D, carbendazim, dithiocarbamate and glyphosate, drift is reported the most. For chlorpropham and ethylene oxide, contamination during storage and transport is suspected in the majority of cases. For fosetyl/ phosphonic acid contaminated soil is suspected most often. For the other substances, no clear trend is visible, except

that in many cases the cause remains unknown. As shows the last column of the table, the cause of the residue remains unknown in 6 % - 34 % of the cases, depending on the substance.

3.4 Residue Cases on other commodities

In addition to the residue cases within the commodities respondents usually work with, we also gave them the opportunity to report on residue cases of organic and conventional commodities within their monitoring. Respondents were invited to report about the same commodity in organic and conventional quality, providing a baseline to assess the differences regarding the residue problematic between organic and conventional commodities. The overall goal of this section was to get some unpublished data, to see if there are some similarities between the companies and countries and to be able to figure out if there are differences in the selected commodities, substances and the amount of residues in comparison to the organic products

In this part of the questionnaire, we collected 258 residue cases of which 52 have conventional quality and 206 organic quality. However, 135 of the reported examples are incomplete, as no residue concentration or substance has been reported even though the cases were affected by residue findings. We suspect that the substances causing these residue findings were not part of the selection provided in the survey and therefore couldn't be reported.

Given the nature of the questions asked, there were only cases reported of samples containing residues. Therefore, this data set is not suitable to draw conclusions about the prevalence of pesticide residues on organic or conventional food.

3.4.1 Residue data

For the residue examples we calculated the share of samples with residues above 0.01 mg/kg of all samples analysed (see Figure 12). For the conventional cases on median 36.67 % of samples contain residues above 0.01 mg/kg, while for organic cases the median value is at 12.5 %.

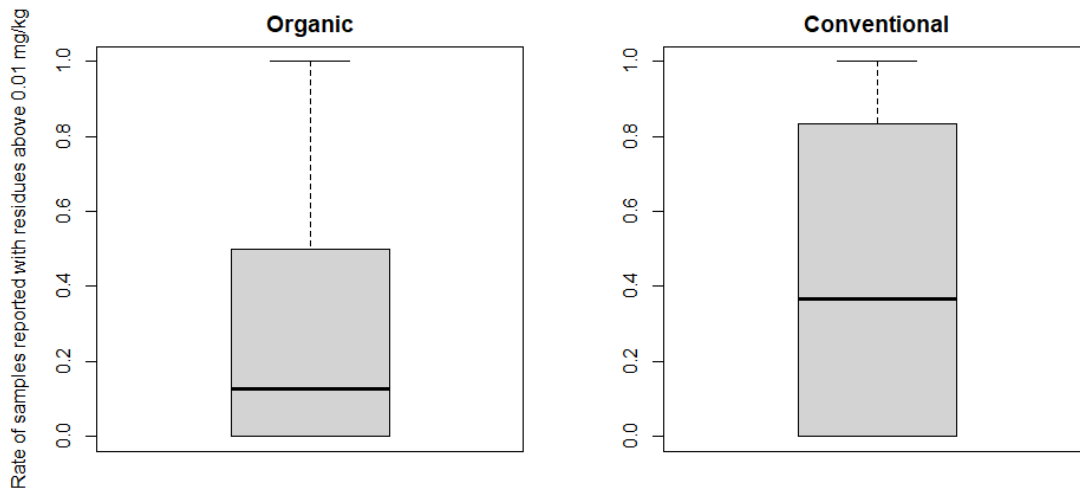


Figure 12: Share of residues above 0.01 mg/kg on the organic and conventional samples

In order to compare the residue cases between conventional and organic commodities, we chose all commodities where at least two examples were reported for conventional and organic quality. These commodities are wheat, spinach, soybean, potatoes, pepper, maize, lentils, elder flower and almonds, resulting in 60 organic cases and 26 conventional cases. For these commodities, the rate of residues above 0.01 mg/kg and the mean residue concentration is lower on organic produce than on conventional produce (Annex II).

Table 13: Share of residues in organic and conventional samples

Quality	Mean of rate of residues above 0.01 mg/kg in %	Mean of total residue concentration [mg/kg]
conventional	33 %	0.61
organic	19 %	0.18

In these residue examples, the substances reported most often on organic are fosetyl/phosphonic acid (31 examples), glyphosate (19 examples), cypermethrin (13 examples), primiphos-methyl (12 examples) and chlormequat (10 examples). For conventional produce, most often reported substances are carbendazim (6 examples), fosetyl/phosphonic acid (5 examples), boscalid (3 examples) and dithiocarbamate (3 examples). For both quality groups, fosetyl/phosphonic acid is among the frequently reported substances.

As elaborated previously, the quality of the reported examples does not allow to draw conclusions regarding the prevalence of multi-residue cases of organic and conventional produce.

3.4.2 Causes of residue findings

For the organic examples, Table 13 provides an overview of the indicated reasons for a residue and how often this was reported. Drift has been reported most often, followed by contamination during processing and from contaminated soil. As all contamination pathways differ in regard to the origin of residues, handling and minimizing residues is challenging. For example, the contamination during processing is more easily manageable than the contamination by drift. In addition, for 93 examples no reason has been reported.

Table 14: Contamination pathways

Contamination pathway	Number of times reported
Drift	36
Contamination during processing (cross contamination)	17
Contaminated soil	15
Contamination during storage/transport	10
Illegal application	9
Natural occurrence	7

based on organic production rules	7
Pest control storage/transport	5
Not organic (conventional delivered as organic)	3
Detergents	1
Microorganism	1
Plant toxins	1
Packaging	1
Abrasion from production facilities	0
Gloves	0
based on conventional application rules	0

3.4.3 Consequences

Residue findings can have severe economic consequences on the organic sector. Of the 206 reported organic residue cases, at least one food lot was decertified in 49 cases. In some instances, this affects goods that have a value above 100'000 Euros. It makes evident that the economic consequences of residue cases can be severe and affect goods of high value.

3.5 Investigation Method

3.5.1 Traders, post-harvest, processors

This section provides insights into the investigation procedures of the respondents from **traders, post-harvest, processors**. Of the 82 respondents, 93 % screen for a predefined set of pesticides on their commodities, 38 % target specific single substances in addition. Among the specific substances, frequently targeted are glyphosate, fosetyl/ phosphonic acid, mepiquat and chlormequat.

As Figure 15 shows, the majority of respondents chose the substances for residue analysis with a risk-based approach. This means analysing those substances that are more likely to occur on a product given its origin, supplier or past experience. A risk-based analysis is the most efficient way to assure high food safety. This result shows that the risk is known and the actors are aware.

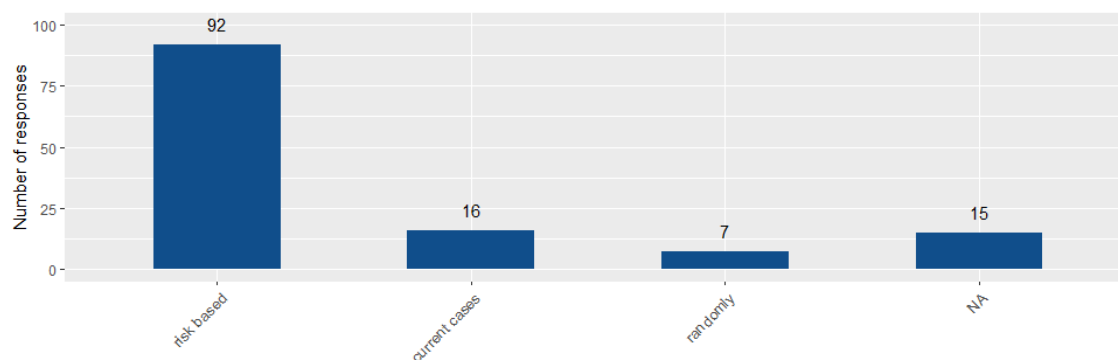


Figure 13: Criteria regarding the substances analysed

No differences between countries were identified for the criteria regarding the question how they are investigating. In almost all countries, the risk-based approach is most practiced. For the countries where this does not apply (Czechia, Hungary, Ireland, Slovakia and Other (= outside Europe)), the set of respondents is very small (three or less). But it shows that the methodological approach to minimize residues by a risk-based procedure is well established and should be established in other countries.

Regarding the commodities and lots analysed for residues, the risk-based approach is also common. However, 22 respondents also indicated to test each incoming food lot for residues. They reported that they analyse residues mainly in spices and herbs (13 responses), seeds (9 responses), grains and cereals (7 responses) and processed fruits (7 responses).

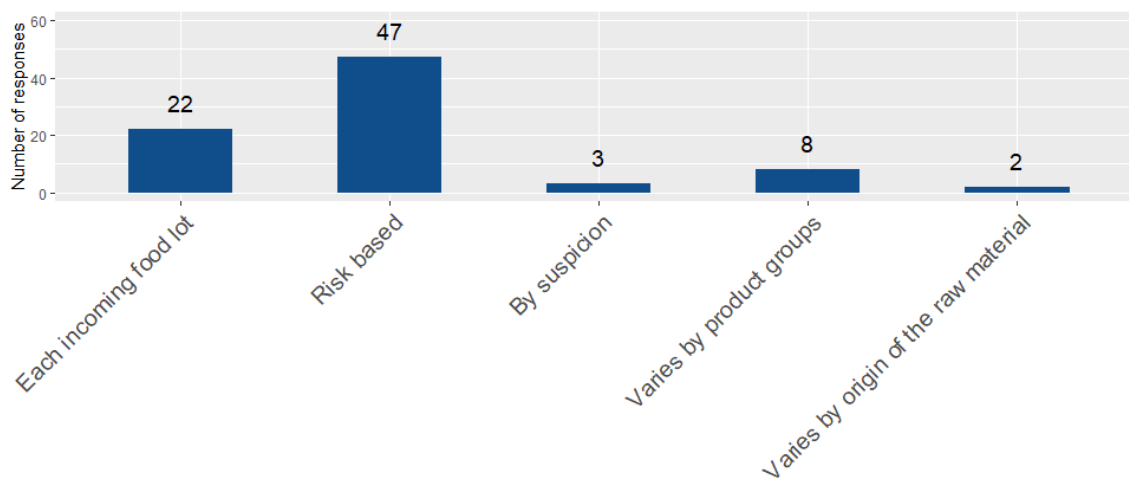


Figure 14: How/when are the companies investigating

Of the respondents indicating to vary the criteria for residue analysis by product groups, the following explanations were given:

- Risk-based (depending on manufacturers history, or the specific product)
- Certain products are analysed more often. Answers include: Dairy, cereals, fruit products, dried products, sugar, arable crops and baby food
- Based on the campaign control plan

The two respondents indicating to vary the criteria for residue analysis by the origin of the raw materials explained as follows:

- Suppliers with higher risks are analysed more often. And supplier from whom we receive many lots are analysed randomly
- Produce from third countries are analysed more often

Ultimately, we also asked the **traders, post-harvest, processors** in which situation they require residue analysis from their suppliers. Table 14 shows, that most respondents require residue analysis by supplier on a risk-based approach (35 %), while also 24 % require an analysis for each incoming food lot and for 23 % the requirement depends on the product group.

Table 15: Requirements for residue analysis by suppliers

Case	Relative importance in %
Risk based	35%
Each incoming food lot	24%
Varies by product groups	23%
By suspicion	16%
not applicable	1%

3.5.2 Farmers

For the 17 **farmers** within the surveyed sample, we asked in which situation they investigate potential residues in their products. As Figure 17 shows, 8 farmers do a general field check, while 6 investigate using a risk-based approach.

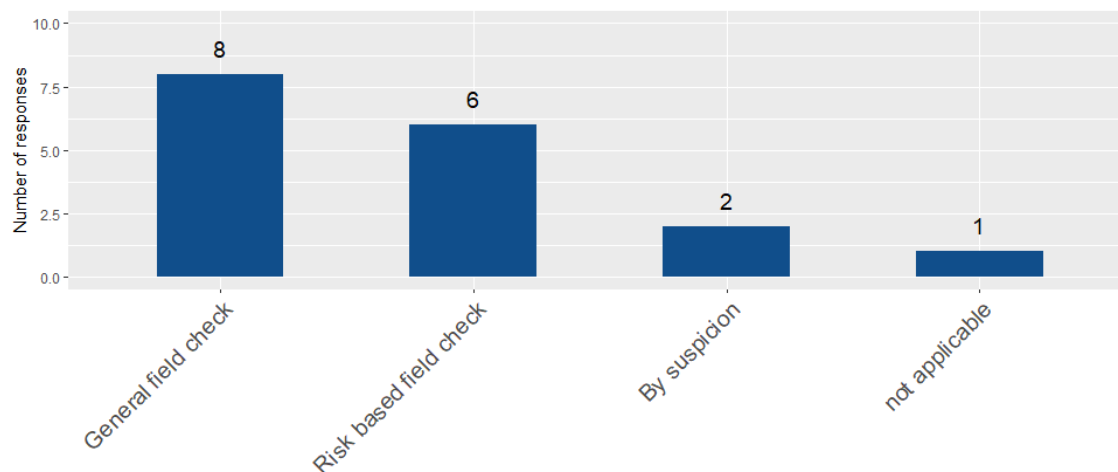


Figure 15: When are farmers investigating residues?

Only three farmers have a containment strategy.

The result shows that farmers are not well aware of the problematic of residues and with that a containment strategy is rarely established by farmers. Based on that result we can determine that education and sensibilisation with regard to residue contaminants of farmers is needed, to enable them to define effect containment strategies and with that to minimize the problem of residues on organic products. Outlook

3.5.3 Current legal situation

In the outlook section we asked the survey participants about the current legislation and their wishes for the future. First of all, it becomes clear, that the majority of respondents would welcome more precise and uniform guidance on how to handle pesticide residues in organic produce. The need for more harmonization is higher on EU level than on national level. Although the majority of respondents would welcome more uniform guidance on both levels accordingly. Interestingly also the control bodies and competent authorities would like to have more precise and uniform guidelines.

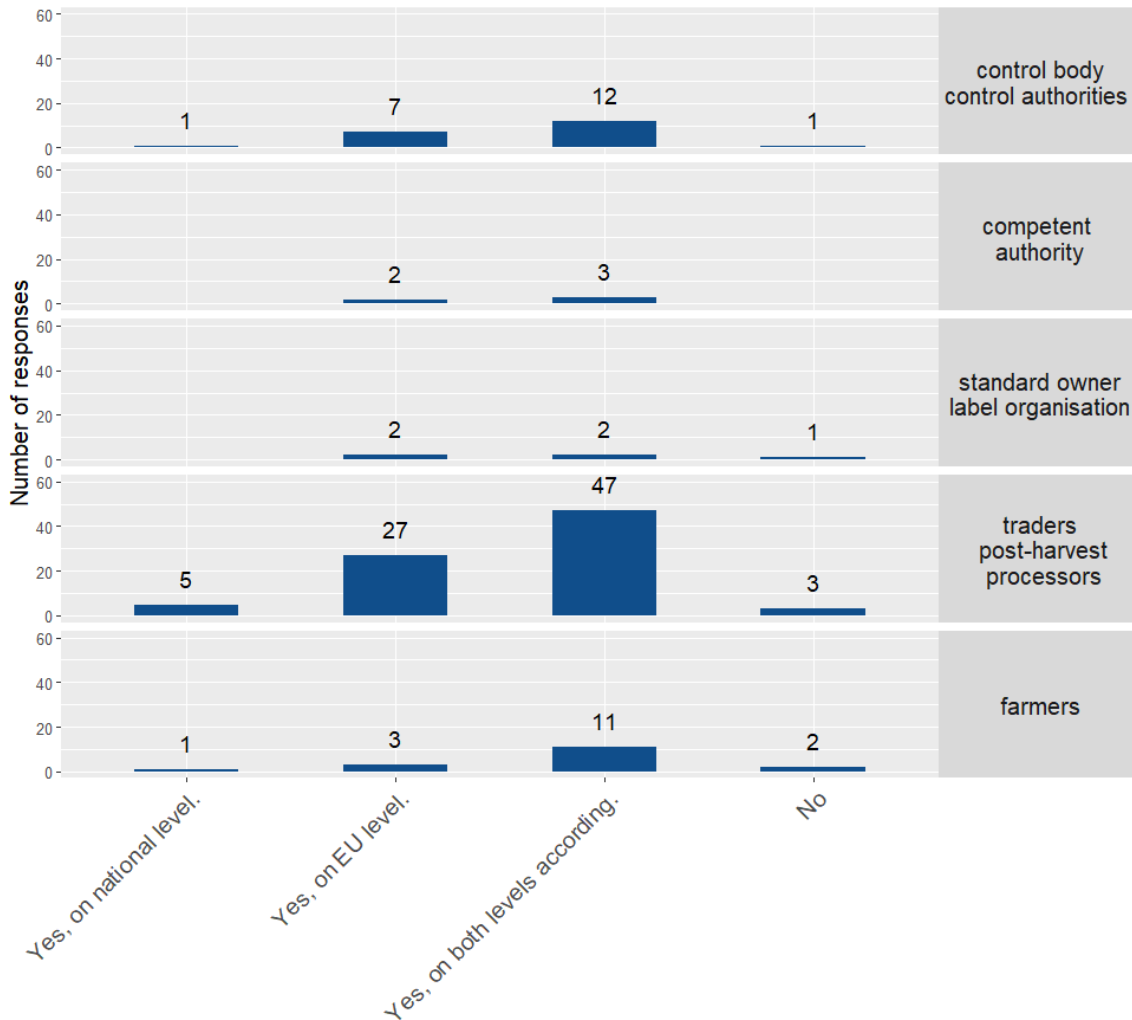


Figure 16: Would you welcome more precise and uniform guidance for handling pesticide residues on organic products?

In addition to this question, respondents had the possibility to elaborate on the improvements suggested. From the 126 answers, 69 suggested improvements on the case evaluation procedure. Within this category, the majority (31 responses) highlighted the general need for a harmonized evaluation approach of residue cases across Europe. Specific proposals include the definition of EU-wide threshold values for organic produce (15 responses) and a common action value (7 re-

sponses), above which a residue is further evaluated. In relation to this, three respondents suggested to regard a residue below 0.01 mg/kg as a background value, not triggering further investigations. In contrary, also four respondents highlighted explicitly the need for a case by case evaluation without relying on pre-defined de-certification values or similar. In addition, 26 respondents highlighted a need for specifications in the handling of residues regarding substances (7 responses), specifically phosphonic acid (3 responses) and processing and drying factors to consider (5 responses). Individual suggestions include to provide more information or support for research regarding environmental contamination, sampling and contamination causes. Also 6 respondents mentioned suggestions related to information flow and information exchange such as the creation of a database for residue cases and their investigation conclusions or to improve the circulation of information between actors and countries. Other responses suggested improvements related to the operation of control bodies (11 responses) such as increased speed for case evaluation, uniform sanctioning and ensure acceptance of certificates between CBs.

Ultimately, some respondents raised more conceptual suggestions regarding the topic. The quality assurance and controls regarding pesticide residues should focus more on health issues and make polluters pay. In general, the certification can be more process based rather than focusing on the quality of the end produce.

In a next question, we asked if respondents prefer a de-certification level with regard to different substances and applications. In this regard, the responses are quite mixed (see Figure 17). The majority of respondents does not support to have a de-certification level.

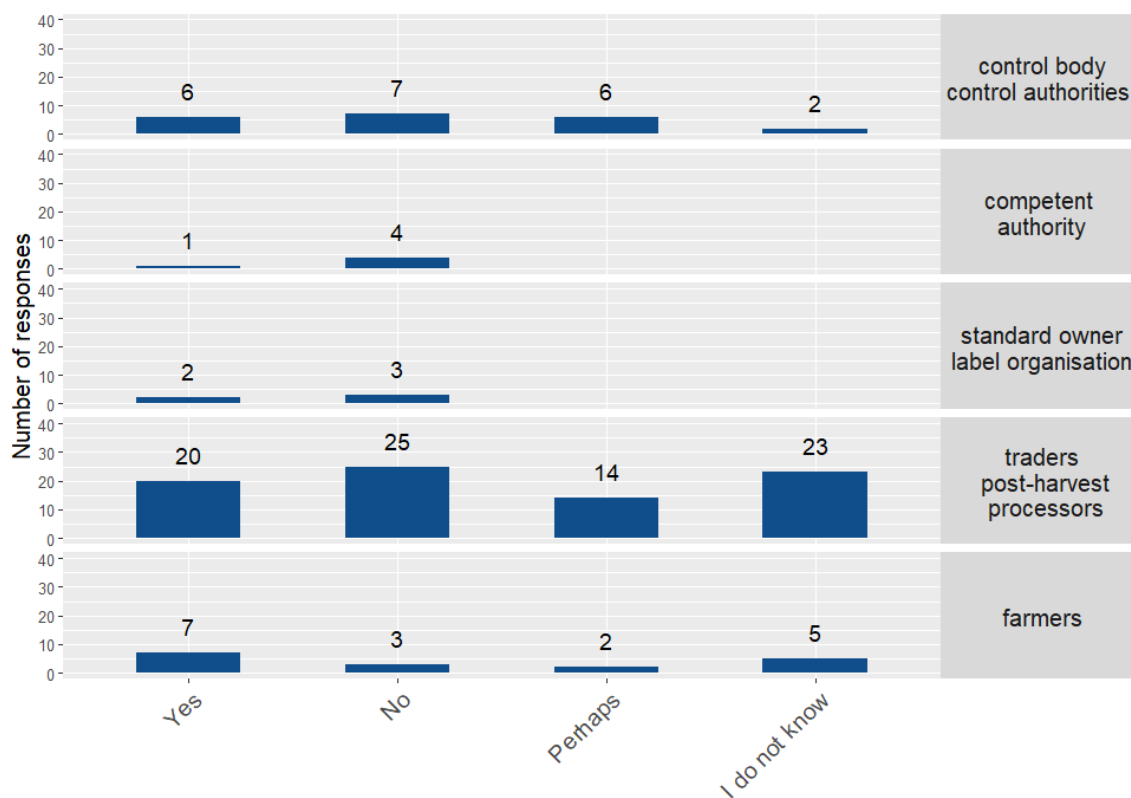


Figure 17: Would you support a de-certification level?

62% of respondents feel that the current situation - heterogeneous national legislation within the EU - impacts negatively their business, while 4 % say it has no negative impact. The remaining 34 % state that the heterogeneous situation has only a negative impact in certain cases. These cases are:

- International sales/trading
- For certain substances
- National legislation is stricter than EU legislation

3.5.4 Consequences of residues

Table 15 shows the share of **farmers and trader, post-harvest, processors** who are insured against damage in the event of blocking or decertification of an organic product due to residues. The insurance against damage caused by blocking of goods is more common (19 %) than against damage caused by decertification (11 %). However, for both types of insurances there is a high share of respondents who do not know about any possible insurances or who do not have access to such an insurance. This also shows that for over 80 % of respondents any financial implications arising with residue cases will be carried by the companies or farmers themselves.

Table 16: Respondents' subscription to insurance schemes

Insurance against damage caused by...	Yes	No	Insurance is not possible	Not aware
... blocking of goods	19 %	33 %	17 %	30 %
... decertification	11 %	39 %	17 %	32 %

In case of decertification, 66 % of respondents can take recourse on the supplier to such an extent, that the supplier must refund the material costs. For 3 % of respondents, the supplier must refund penalties caused by delayed deliveries. The remaining 32 % cannot take recourse on their suppliers. Also some respondents specified other recourse procedures in case of decertification:

- Whether recourse is possible depends on individual agreements and negotiations with each supplier (7 responses)
- Recourse isn't always successful (4 responses)
- In addition to material costs also additional workload or sanctions have to be covered by the supplier (2 responses)
- Recourse is only granted when supplier is liable for the residue (2 responses)
- Refund of material costs is only possible when goods aren't processed yet (2 responses)
- Goods are returned to supplier in case of decertification (1 response)

Regarding a compensation fund for decertification, all respondents said that there is no such fund.

4. Overview and conclusions

The goal of this survey was to get an overview about pesticide residues on food and the handling of residue cases by farmers, companies, label organisations and competent authorities in Europe. With a total of 130 responses from 24 countries, we gathered a sound data basis for the required overview. The results of the survey make clear that residues on organic products are a regular problem and occur in the daily business of the food chain. The majority of the respondents have a QAS to deal with residues in organic produce. A risk-based process regarding the goods and substances analysed for residues is already established by many actors in the whole food chain. A high share of respondents is investigating the causes of every residue case. Nevertheless, for a high share of the investigated cases the causes of the residue contamination remain unclear.

The high share of respondents investigating the reason of residue cases corresponds with the high share of companies which have a QAS implemented. The QAS drives a continuous improvement process and therefore aims to minimize the risk of residue contamination. Only few of the surveyed farmers do monitor and investigate residues.

The knowledge about residues and the instruments to deal with residues are quite different and a wide diversity of procedures to handle pesticide residues could be determined across European countries. In certain cases, there also seems to be different approaches within a country. Apart from national guidelines, also private guidelines seem to be important. For example, the BNN (Bundesverbandes Naturkost Naturwaren) guideline for dealing with residues based on the orientation value of 0.01 mg/kg is the most frequently followed private guideline and is used in 10 countries out of the 24 countries covered by the survey. The conditions triggering further investigations in a residue case are quite variable. Most respondents initiate further investigations when residue concentrations are “above the limit of detection”. But also concentrations “above limit of quantification”, above an “orientation value” or a “case by case” approach are often mentioned conditions. The rules to downgrade produce are quite variable too. Mostly named rules were “according the instruction of the control body” followed by a “case by case” approach. The analysis of the downgrading rules makes evident, that handling of pesticide residues is highly inconsistent in Europe. As a consequence, lightly contaminated goods may be accepted as organic produce in one country while in another country their organic status would be denied.

With regard to the residue problematic on different goods the results show that all plant-based products are touched with the problematic of residues. Grains, cereals and pulses/legumes are more frequently affected by residues followed by spices/herbs and processed fruits.

Form the 225 reported cases the most frequently reported compounds on organic produce are glyphosate followed by fosetyl/phosphonic acid, ethylen oxide and 2,4-D. The frequently reported compounds match quite well with the compounds that receive most public attention (glyphosate), the compounds with a high long-term problematic (fosetyl/phosphonic acid and compounds linked to food safety issues and unequal legal situation in the use in Europe and the US (ethylene oxide). The most frequently reported commodities are wheat followed by sesame, soybean, almond, maize and sunflower.

Drift is the most frequent cause for residues for all commodity groups, followed by contamination during storage or transport. Given the frequent reporting of drift, manageable guidelines for the

minimisation are needed. Also clearer guidance to reduce contamination during storage or transport are welcome, especially since transport is not part of the certification process.

With regard to the selection of the substances which are analysed by the trades, post-harvest and processors, no differences between countries were identified. In almost all countries, the risk-based approach is most practiced. It shows that the methodological approach to minimize residues by a risk-based procedure is well established and can be multiplied for other countries.

Residue findings cause high handling and decertification cost. Considering that the most companies producing and selling organic are small and medium size companies the decertification cost are economically incisive.

With regard to the needed/wished development of the current legislation, the majority of respondents would welcome more precise and uniform guidance on how to handle pesticide residues in organic produce. The need for more harmonization is higher on EU level than on national level. Also the control bodies and competent authorities would like to have more precise and uniform guidelines. Specific Improvements were suggested on the case evaluation procedure and a need to harmonize the evaluation approach of residue cases across Europe.

Proposals for more specific improvements included:

- definition of a common action value above which a residue is further evaluated.
- Handling residues below 0.01 mg/kg as a background value, not triggering further investigations
- need for a case by case evaluation without relying on pre-defined de-certification values or similar providing guidelines for handling residues of specific substances, specifically phosphonic acid guidelines on how to consider processing and drying factors

The results of the survey indicate a need to clarify the procedure to minimize residue contamination and the management of residue cases and to have an equal and traceable handling within the European countries.

The results of the survey are a good bases to develop workable implementation rules.

5. Annex

Annex I: Causes for residue findings per commodity group

commodity	Not organic	Illegal application	Drift	Contaminated soil	Contamination during processing	Contamination in storage/transport	Detergents	Microorganisms	Plant toxin	Natural occurrence	Pest control in storage/transport	Abrasion	Packaging	Gloves	Don't know
almond	0	3	3	7	0	1	0	0	0	1	1	0	0	0	3
apple	1	1	9	1	1	2	1	0	0	3	2	0	0	0	4
black pepper	0	0	2	1	3	0	0	0	0	1	0	0	0	0	4
black tea	0	0	2	0	1	0	0	0	0	1	0	0	0	0	1
chillies	1	2	4	0	1	2	1	0	0	0	0	0	0	0	2
citrus	0	0	3	0	2	3	0	0	0	0	2	0	1	0	3
cocoa	0	1	4	1	1	1	0	0	0	0	0	0	1	0	5
coffee	1	1	2	0	0	0	0	0	0	0	0	0	0	0	3
lentils	2	0	6	3	2	3	0	0	0	2	0	0	0	0	4
maize	0	2	6	1	2	5	0	0	0	1	2	0	0	0	5
peppers	0	1	3	3	1	1	1	0	0	1	1	0	1	0	3
potatoes	0	2	1	4	1	5	0	1	1	0	1	1	0	0	4
rapeseed	1	2	2	1	1	3	1	0	0	1	2	0	0	0	3

sesame	1	4	2	2	1	4	0	0	0	1	1	0	0	0	8
soybean	0	1	6	0	2	5	0	0	0	0	0	0	0	0	6
sunflower	1	3	3	3	1	3	0	0	0	1	1	0	0	0	6
wheat	1	3	9	2	2	6	0	0	0	0	3	0	0	0	5

Annex II: Causes for residue findings per substance

Substance	Not organic	Illegal application	Drift	Contaminated soil	Contamination during processing	Contamination during storage or transport	Detergents	Microorganisms	Plant toxins	Natural occurrence	Pest control during storage or transport	Abrasion from production facilities	Packaging	Gloves	Don't know	Share of unknown cause
2,4-D	0	2	6	2	2	2	0	0	0	0	0	0	0	0	4	22%
Carbendazim	0	0	3	0	0	0	0	0	0	1	0	0	1	0	1	17%
Chloromequat	1	2	2	0	0	1	0	0	0	0	2	0	0	0	2	20%
Chlorpropham	0	0	1	1	2	5	0	1	1	0	2	1	1	0	1	6%
Cypermethrin	1	2	4	1	2	3	0	0	0	0	2	0	0	0	5	25%
Dithiocarbamate	0	0	4	1	0	0	0	0	0	1	0	0	0	0	2	25%
Ethylene oxide	1	4	1	1	2	14	0	0	0	0	2	0	0	0	13	34%
Fosetyl / phosphonic acid	0	3	7	14	3	5	1	0	0	8	1	0	1	0	11	20%
Glyphosate	1	7	21	0	4	7	0	0	0	0	1	0	0	0	14	25%
Pyrethrin	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	33%

Annex III: Questionnaire: base for programming lime survey



20210804_Questionnaire_English.pdf

Annex IV: Relevant national legislation and provisions, overview

Milan, Marlene; Bickel, Regula und Speiser, Bernhard (2019) Improving the handling of residue cases in organic production – part 1 "Quick Scan". Research Institute of Organic Agriculture (FiBL), CH-Frick

The table gives an overview of the country specific applicable directives which have to be respected in handling with residue cases on organic products.

Member State	Name/number of national legislation or provisions
A) Countries for which national legal acts were mentioned	
Austria	<ul style="list-style-type: none"> • EU Quality Regulations Implementation Act (EU-QuaDG) and related publications of the Supervisory Committee according to § 5 EU-QuaDG
Belgium	<ul style="list-style-type: none"> • Flemish Government Decree of 12 December 2008 on Organic Production and Labeling of Organic Products • Decree of Walloon Government (AGW) of 11 February 2010 on the production method and labelling of organic products (M.B. of 15/04/2010, p. 21327) • Decree of the Government of the Brussels-Capital Region of 3 December 2009
Bulgaria	<ul style="list-style-type: none"> • National Ordinance No. 5/2018 on organic production, labelling and control
Croatia	<ul style="list-style-type: none"> • Ordinance on organic agriculture - Narodne novine 19/16 • Law on official controls for food and feed -Narodne novine 81/13, 56/15, 32/19 • Law implementing Regulation 396/2005 on MRL of pesticides in or on food and feed of plant and animal origin- Narodne novine 80/13, 115/18 • Regulation on the designation of official and reference laboratories for food and feed - Narodne novine 86/10, 7/11, 74/13 • Agricultural law - Narodne novine 118/18 and Food Law - 81/13, 14/14, 115/18
Cyprus	<ul style="list-style-type: none"> • National N227(I)/2004 • National sampling guidelines (no details provided about name/number)
Czech Republic	<ul style="list-style-type: none"> • Organic Farming Act 242/2000 • Coll. Act No. 255/2012 on inspection • Methodological Guideline No. 7/2016 sampling, analysis and subsequent evaluation of samples from organic farming

Estonia	<ul style="list-style-type: none"> • Regulation No. 99 of the Ministry of Agriculture • National sampling guidelines (no details provided about name/number)
Greece	<ul style="list-style-type: none"> • Ministerial Decision No. 2543/103240/9-10-2017 of the Hellenic Government
Hungary	<ul style="list-style-type: none"> • Ministerial Decree No. 34/2013 of the Ministry of Rural Development
Ireland	<ul style="list-style-type: none"> • Catalogue of Infringements Republic of Ireland of the Department of Agriculture, Food and the Marine
Italy	<ul style="list-style-type: none"> • Ministerial Decree No. 309/2011 for evaluation of residues • Ministerial Decree No. 29/10/2010 Sampling procedures
Malta	<ul style="list-style-type: none"> • National legislation (no details provided about name/number)
The Netherlands	<ul style="list-style-type: none"> • National legislation (no details provided about name/number)
Poland	<ul style="list-style-type: none"> • Polish Act on Organic Farming of June 2009 • National regulation regarding data on the results of the analysis carried out and on official and reference laboratories and the scope of analysis performed by these laboratories • Regulation and guidelines on types of irregularities or infringements of regulations concerning organic farming and measures certification bodies are obliged to apply in case of identifying irregularities or infringements in control of organic farming
Romania	<ul style="list-style-type: none"> • National legislation - 34/2000 of 17th April 2000 for organic products
Slovenia	<ul style="list-style-type: none"> • Decree No 96/14 on measures to be taken in the event of irregularities and infringements in organic farming • Rules No 8/14 on the organic production and processing of agricultural products or foodstuffs
Spain	<ul style="list-style-type: none"> • National legislation (no details provided about name/number)
Sweden	<ul style="list-style-type: none"> • Law on Control of Organic Production [Lag (2013:363) om kontroll av ekologisk produktion] • Government Ordinance on Control of Organic Production (2013:1059)
B) Countries for which no national legal acts were mentioned	
Denmark	<ul style="list-style-type: none"> • None mentioned
Finland	<ul style="list-style-type: none"> • None mentioned
France	<ul style="list-style-type: none"> • None mentioned

Germany	<ul style="list-style-type: none">• None mentioned
Lithuania	<ul style="list-style-type: none">• None mentioned
Luxembourg	<ul style="list-style-type: none">• None mentioned
UK	<ul style="list-style-type: none">• None mentioned

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