PESTICIDES UNIT

Residues trials and MRL calculations

Proposals for a harmonised approach for the selection of the trials and data used for the estimation of MRL, STMR and HR

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Foreword

The following guidance documents were considered to recommend the approaches proposed in this document:

- OECD guideline 509 on crop field trials (OECD, 2009),
- OECD Guidance document on crop field trial, Series on pesticides No. 66 (OECD, 2011) and its 2014 draft revision 4 (not yet published)
- OECD Guidance document on overview of residue chemistry studies, Series on testing and assessment No 64 and Series on pesticides No 32 (OECD, 2009)
- OECD MRL Calculator, spreadsheet for single and for multiple data sets (OECD, 2011)
- FAO Plant Production and protection paper 197 on the submission of pesticide residues data for the estimation of maximum residue levels in food and feed (FAO, 2009).
- Guidance document SANCO 7525/VI/95 rev.9, Guidelines on comparability, extrapolation, group tolerances and data requirements for setting MRLs (EC, 2011).

The approaches described in the above documents are not fully harmonised and may lead to different interpretations. This document aims to provide a common understanding of these different documents, in order to propose a common approach for the assessment of the data on MRL setting and to avoid potential discrepancies within the evaluations conducted at Member states level.

It is proposed to apply the recommendations listed hereafter to dossiers submitted according to the "old data requirements" (Reg. (EU) No 544/2011, EU guidelines in 1607/VI/97 rev.2) **and to dossiers submitted according to the "new data requirements"** (Reg. (EU) No 283/2013, EU Notice 2013/C 95/01, OECD guidelines), since the use of the OECD MRL calculator has been agreed by the Member States and since the merging of residue datasets and the use of the proportionality approach are new approaches in data interpretation, that can be considered generally applicable to all dossiers.

1 – Wording: "trials"

The word "trial" is sometimes misleading as it is occasionally used to refer to the different experimental conditions investigated in a single location and at other times, to the different locations where studies have been performed. Considering the table below, summarising trials conducted on grape, data may be reported as a total of 16 or 8 trials.

Table 1.1: Residue studies on grapes

cGAP 4x 150 g/ha, PHI 21 days					**Applications**								Residues PHI 21 (mg/kg)
N°	Reference study	MS	Location	Variety	Formu-lation	Date T1	Date T2	Date T3	Date T4	Water (l/ha)	a.s. (g/hl)	a.s. (g/ha)	
1	03-6060	FR	Grisolles	Cabern.	?	19/08	29/08	08/09	18/09	1000	15	150	0.81
2	03-6060	FR	Grisolles	Cabern.	?	19/08	29/08	08/09	18/09	400	37.5	150	0.90
3	03-6061	FR	Bastide	Negrette	?	18/07	28/07	07/08	18/08	1000	15	150	0.38
4	03-6080	FR	St Paul	Ugni B.	?	29/08	08/09	18/09	29/09	1000	15	150	0.44
7	03-6063	SP	Hermanas	Airen	?	11/07	21/07	31/07	11/08	1000	15	150	0.11
5	03-6063	SP	Hermanas	Airen	?	11/07	21/07	31/07	11/08	400	37.5	150	0.09
6	04-6037	FR	Caromb	Syrah	46C SC	20/07	30/07	09/08	19/08	1000	15	150	0.19
7	04-6037	FR	Caromb	Syrah	46B SC	20/07	30/07	09/08	19/08	1000	15	150	0.09
8	04-6038	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	15	150	0.26
9	04-6038	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	15	150	0.26
10	04-6037	FR	Caromb	Syrah	28B SC	20/07	30/07	09/08	19/08	1000	12.5	125	0.28
11	04-6037	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	10	100	0.19
12	04-6050	It	S Croce	Merlot	?	23/07	02/08	13/08	23/08	1000	15	150	0.20
13	04-6057	Sp	Palacios	Airen	46D SC	13/07	13/07	03/08	12/08	1000	15	100	0.20
14	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	15	150	0.82
15	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	15	150	0.70
16	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	12.5	125	0.42

The requirement concerning the number of trials to be provided refers to a minimum number of different "*geographical locations that should reflect the main weather conditions, the main type of agricultural practices…"*. The magnitude of residues is assessed using only a limited dataset (commonly less than 10 trials). For this reason it is important that such a limited dataset reflects as much as possible the true

variability of agricultural systems. Therefore trials need to be performed at separate geographical locations. Different experimental conditions investigated at the same location and at the same time, will be considered as not independent and referenced as "**replicates**" in the case where all experimental conditions are identical (same formulation, dose, variety, treatment dates…).

However, in some cases an expert judgment is needed to conclude whether two studies conducted in the same location have to be concluded as two independent trials and therefore, taken into account for MRL calculation. The revised version of the OECD Guidance on crop field trials (not yet published) provides recommendations for considering the independence of trials and recommends that "*trials may be considered independent if two or more factors are modified simultaneously, even when considered in isolation these factors would not suffice to make the trials independent"*. It is proposed to adopt this approach, providing that the two modified factors are assumed, following an expert judgement, to have a significant impact on the final residue levels. For instance:

- Two studies conducted in the same location, on different crop varieties with significantly different treatment dates are independent and considered as two distinct trials.
- In contrast, two studies conducted in the same location on different crop varieties with two different water volumes/ha (same application rate/ha) are considered as a single trial, since the volume/ha is assumed to have no significant impact on the final residue level.

In some cases, one factor might be sufficient to conclude that two studies are independent. For example, two studies conducted in the same location, on the same crop variety with the same experimental conditions but over two different growing seasons are independent and considered as two distinct trials.

Based on this approach, the studies reported in Table 1.1 should therefore be considered as a total of 8 independent "trials", with different experimental conditions (formulation types, water volumes, dose rates…), investigated in a total of 8 different locations and leading to a total of 16 residue values (see Table 1.2). For MRL calculation, 8 independent residue values should therefore be selected (see section 3.1).

Table 1.2: Residue trials on grapes

cGAP 4x 150 g/ha, PHI 21 days					**Applications**								Residues
N°	Reference Study	MS	Location	Variety	Formu-lation	Date				Water (l/ha)	a.s. (g/hl)	a.s. (g/ha)	PHI 21 (mg/kg)
						T1	T2	T3	T4				
1	03-6060	FR	Grisolles	Cabern.	?	19/08	29/08	08/09	18/09	1000	15	150	0.81
	03-6060	FR	Grisolles	Cabern.	?	19/08	29/08	08/09	18/09	400	37.5	150	0.90
2	03-6061	FR	Bastide	Negrette	?	18/07	28/07	07/08	18/08	1000	15	150	0.38
3	03-6080	FR	St Paul	Ugni B.	?	29/08	08/09	18/09	29/09	1000	15	150	0.44
4	03-6063	SP	Hermanas	Airen	?	11/07	21/07	31/07	11/08	1000	15	150	0.11
	03-6063	SP	Hermanas	Airen	?	11/07	21/07	31/07	11/08	400	37.5	150	0.09
5	04-6037	FR	Caromb	Syrah	46C SC	20/07	30/07	09/08	19/08	1000	15	150	0.19
	04-6037	FR	Caromb	Syrah	46B SC	20/07	30/07	09/08	19/08	1000	15	150	0.09
	04-6038	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	15	150	0.26
	04-6038	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	15	150	0.26
	04-6037	FR	Caromb	Syrah	28B SC	20/07	30/07	09/08	19/08	1000	12.5	125	0.28
	04-6037	FR	Caromb	Syrah	78D SC	20/07	30/07	09/08	19/08	1000	10	100	0.19
6	04-6050	It	S Croce	Merlot	?	23/07	02/08	13/08	23/08	1000	15	150	0.20
7	04-6057	Sp	Palacios	Airen	46D SC	13/07	13/07	03/08	12/08	1000	15	100	0.20
8	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	15	150	0.82
	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	15	150	0.70
	04-6057	SP	La Seca	Verdejo	46B SC	30/07	10/08	20/08	30/08	1000	12.5	125	0.42

2 – Trials Selection

2.1 - The ±25 % tolerance rule

Trials have to be conducted in compliance with the cGAP. As a general principle, trials may deviate by ±25 % on no more than one parameter. However, based on an expert judgment, minor deviations on more than one parameter may be accepted, especially if the residue level remains in the range of the levels observed in the GAP compliant trials (e.g. trial conducted with applications at 1100 g/ha and a 16 day PHI may be considered in compliance with the a GAP defined as 1000 g/ha with a 14 day PHI).

- **The dose rate**: If the cGAP is defined as an application at 1000 g/ha, trials conducted in the range of 750 to 1250 g/ha are acceptable for the MRL calculation.

- **The pre-harvest interval** (PHI): Studies with PHIs of 11 to 18 days are acceptable if the cGAP is defined with a 14 day PHI. Deviation from cGAP has to be considered on a case-by-case basis when the PHI is defined as a growth stage. For instance, deviations around growth stages 60 to 70 "*flowering-development of fruit*" might have an important impact, since the final residue level at harvest may be significantly different if the consumable part of the crop was present or not at last application.

- **The number of applications**. For non-persistent compounds and when the cGAP is defined with a large number of applications (≥3), the contribution of the first application(s) to the final residue levels can be considered negligible and trials conducted with a higher number of applications selected for MRL calculation. For instance, when residues at or close to the LOQ were measured in the samples collected just before the last application, trials conducted with more than 4 applications can be selected in support of a cGAP defined with a total of 4 applications.

As reported in the OECD Guidance on crop field trials *"at least 50% of trials should be conducted at or above (within 25%) the GAP"* and therefore, deviation from the GAPs has to be regarded as an exception. This recommendation implies that additional trials have to be required if the entire dataset refers to trials conducted all with a deviation of -25%. However, in such a case (e.g. most of the trials conducted at 750 g/ha only in support to a GAP defined at 1000 g/ha), it is now proposed to apply the proportionality approach by the scaling of the entire dataset to the nominal dose of 1000 g/ha (see section 2.2)

2.2 – Proportionality approach (scaling)

The proportionality approach was agreed at the 2013 CCPR meeting and endorsed by the Codex Alimentarius Commission at their 36th meeting in July 2013. Details are reported in Annex VIII of REP13/PR. It is also mentioned in the draft OECD guideline 509 on crop field trials. The proportionality concept assumes a linear relationship between application rates and residue levels. Therefore, residue data from trials conducted with variable application rates can be used for MRL calculations, assuming a scaling to the nominal application rate. The main JMPR recommendations on the scaling approach are reminded here below:

- The use of the concept for soil, seed and foliar treatments has been confirmed by analysis of residue data. Active substances confirmed included insecticides, fungicides, herbicides, and plant growth regulators, except desiccants. Proportionality cannot be used for post-harvest situations at this time. It is also recommended that the concept is not used for hydroponic situations due to lack of data.

- The proportionality concept can be applied to data from field trials conducted within a rate range of between 0.3x and 4x the GAP rate. This is only valid when quantifiable residues occur in the dataset. Where there are no quantifiable residues, i.e. values are less than the limit of quantitation may only be scaled down. It is unacceptable to scale up in this situation.

- Scaling is only acceptable if the application rate is the only deviation from critical GAP (cGAP). In agreement with JMPR practice, additional use of the ±25% rule for other parameters such as PHI is not acceptable. For additional uncertainties introduced, e.g. use of global residue data, these need to be considered on a case-by-case basis so that the overall uncertainty of the residue estimate is not increased.

- Although the concept can be used on large datasets containing 100% scaled residue trials, at least 50% of trials at GAP may be requested on a case-by-case basis depending for example on the range of scaling factors. In addition, some trials at GAP might be useful as confirmatory data to evaluate the outcome in cases where the uses result in residue levels leading to a significant dietary exposure.

Moreover, it is highlighted that:

- When proportionality approach is used, the scaling has to be applied to the entire dataset, including the trials conducted at dose rates within the ±25% tolerance rule,

- The proportionality approach may be used where the dataset is otherwise insufficient to make an MRL recommendation. This is where the concept provide the greatest benefit. The concept has been used by JMPR and different national authorities on a case by case basis and in some cases MRLs may be estimated from trials where all the data (100%) has been scaled.

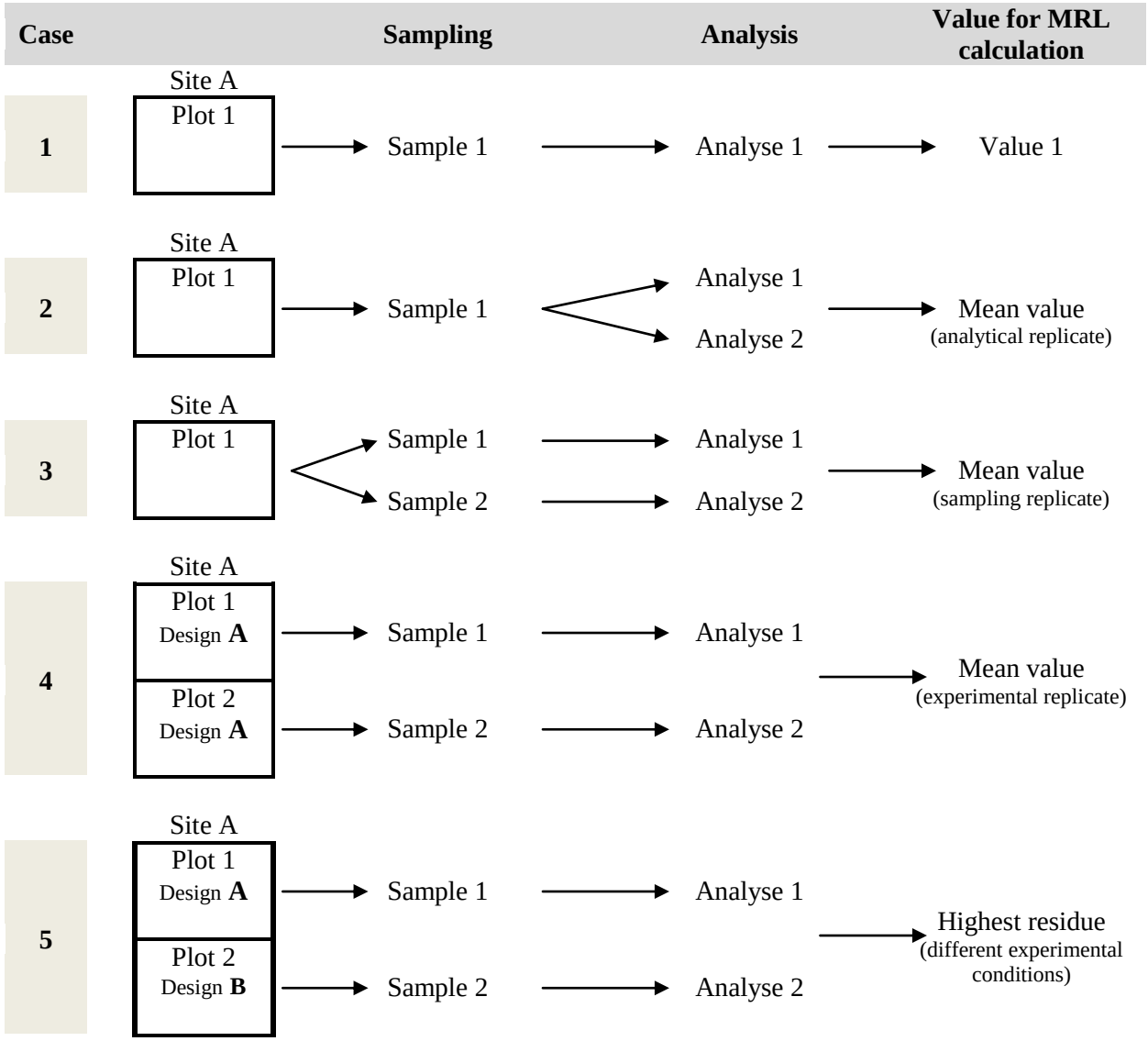
3 – Data selection

3.1 Several residue values per trial/location (replicates/duplicates)

Values for MRL calculation should be independent and therefore, **only one value has to be selected from each trial (same experimental location site)**. In some cases, trials have been conducted with different experimental conditions (formulations, varieties, dose rates…) often reported in the DAR as "replicates or duplicates", even if referring to different situations (e.g. two analyses on a single sample, two analyses on two different samples collected in the same plot or in two different plots...). Possible situations are illustrated in the Figure 3.1 below.

According to the OECD recommendation (agreed by the 2010 JMPR meeting), the mean residue value is considered for replicate field trial values (cases 2, 3 and 4, **where each value might be considered as a repetition of a same experimental condition**). In contrast, when the experimental conditions differ, the highest value only is selected (case 5).

Figure 3.1



Case 5 has to be understood as different experimental conditions within a same trial (within the same experimental site) such as:

- Several different crop varieties,
- Several different formulations/PPPs,
- Several spray conditions (high/low water volume…)
- Several nominal dose rates (highest residues selected from plots within ±25% the supported dose)

When different dose rates are experimented within the same trial, the highest residue observed in the different dose rates compliant with the ±25 % tolerance rule has to be selected (e.g. representative use 100 g/ha, the highest residue level observed within the plots conducted with dose rates of 75 g/ha to 125 g/ha is selected).

Considering the residue trials reported in Table 1.2 and using the rules displayed in Figure 3.1, the selection of the residue values for MRL calculation is summarised in Table 3.1.

Table 3.1: Selection of the residue value (HR or mean value) for the MRL calculation

cGAP on grape: 4x 150 **g/ha**, PHI 21 days					**Application**				Residues PHI 21 (mg/kg)	**Selected values**	**Comment**
N°	Reference Study	MS	Location	Variety	Formu-lation	Water (l/ha)	a.s. (g/hl)	a.s. (g/ha)			
1	03-6060	FR	Grisolles	Cabern.	?	1000	15	150	0.81	**0.90**	**highest residue**
	03-6060	FR	Grisolles	Cabern.	?	400	37.5	150	**0.90**		
2	03-6061	FR	Bastide	Negrette	?	1000	15	150	**0.38**	**0.38**	
3	03-6080	FR	St Paul	Ugni B.	?	1000	15	150	**0.44**	**0.44**	
4	03-6063	SP	Hermanas	Airen	?	1000	15	150	0.11	**0.11**	**highest residue**
	03-6063	SP	Hermanas	Airen	?	400	37.5	150	0.09		
5	04-6037	FR	Caromb	Syrah	46C SC	1000	15	150	0.19	**0.28**	**highest residue**
	04-6037	FR	Caromb	Syrah	46B SC	1000	15	150	0.09		
	04-6038	FR	Caromb	Syrah	78D SC	1000	15	150	0.26		
	04-6038	FR	Caromb	Syrah	78D SC	1000	15	150	0.26		
	04-6037	FR	Caromb	Syrah	28B SC	1000	12.5	125	**0.28**		within ±25%
	04-6037	FR	Caromb	Syrah	78D SC	1000	10	100	0.19		Non GAP
6	04-6050	It	S Croce	Merlot	?	1000	15	150	**0.20**	**0.20**	
7	04-6057	Sp	Palacios	Airen	46D SC	1000	15	100	**0.20**	**0.20**	
8	04-6057	SP	La Seca	Verdejo	46B SC	1000	15	150	0.82	**0.76**	**Mean** (replicate)
	04-6057	SP	La Seca	Verdejo	46B SC	1000	15	150	0.70		
	04-6057	SP	La Seca	Verdejo	46B SC	1000	12.5	125	0.42		within ±25%

3.2 Decline studies

In decline studies, when a residue level is higher at a later PHI than the recommended one, this highest value is selected for MRL calculation, as illustrated in Table 3.2.

Table 3.2: Selection of the residue value for the MRL calculation in decline residue trials

cGAP: 1x 600 g/ha, **PHI 7 days**			**Treatment**		**Residues** (mg/kg) **PHI** (days)					**Values for MRL calculation**	
	Ref.	**Variety**	No	g/ha	**0**	**3**	**7**	**14**	**21**	mg/kg	Comments
1	AU01	Veltliner	1	600	1.00	0.72	**0.62**	0.49	0.46	**0.62**	
2	GE01	Spät-burgunder	1	600	1.10	0.63	0.49	**0.74**	0.15	**0.74**	PHI 14 days
3	GE02	Riesling	1	600			**0.45**	0.29		**0.45**	
4	GE01	Spät-burgunder	1	600	0.75	0.38	**0.25**	0.16	0.18	**0.25**	
5	GE02	Weiss-Burgunder	1	600			**0.37**	0.23		**0.37**	
6	FR01	Riesling	1	600	0.60	0.47	0.06	**0.15**	0.02	**0.15**	PHI 14 days
7	FR01	Grenache	1	600	0.35	0.4	**0.37**	0.22	0.07	**0.37**	
8	GE01	Müller-Thurgau	1	600	1.00	0.52	0.19	0.01	**0.23**	**0.23**	PHI 21 days

Note: When the residue definitions for monitoring and risk assessment differ and for the purpose of conversion factor calculations, values should be taken at their effective PHI.

4 - MRL calculations

4.1 – OECD Calculator

The **OECD MRL calculator** has been adopted at international level and therefore, MRL proposals should be now based on this calculator. However, the Excel spreadsheet "*MRL_Calculator EU-OECD 2015a.xls*" proposes calculations according to the different approaches (OECD, R_{max} and R_{ber}).

It is noted that the OECD calculation is similar to the R_{max} approach, but using a constant *k* factor of 4 (MRL_{OECD}= mean + 4SD) and considering the "HR" and "3 means" values as a "*baseline proposal*". Usually, the OECD calculator gives higher MRL proposals than R_{max} and R_{ber} calculations.

However, particular attention must be paid to data related to post-harvest applications. The OECD calculator may result in an MRL proposal significantly higher than the nominal application rate. For instance, experience has shown that residues measured following a post-harvest application on cereal grains are often around 70% of the nominal application rate. The OECD calculator will therefore suggest as MRL, 3 times the nominal rate (3 means = 3 times 70 % nominal rate = 2.1 nominal rate, rounded to 3 nominal rate).

For post-harvest applications, the option "*3 means*" in the OECD calculator has to be disregarded and the MRL proposal based on the HR, mean + 4SD (OECD calculator) or on the EU approach (R_{max}/R_{ber} calculations). Nominal application rate should also be considered.

4.2 - Outliers

The issue of potential "outliers" is discussed in the OECD guidance on crop field trial and in the OECD MRL Calculator Statistical White Paper No 57 (OECD, 2011) where it is recognised that "*it is very difficult to classify a certain high value as an outlier for small datasets".* The Dixon's Q-test, as proposed in the EU guideline 7039/VI/95 5EC, 1997), was included in the Excel spreadsheet "*MRL_Calculator EU-OECD 2015a.xls*", to check whether an extreme value has to be considered as an outlier. However, the Dixon's Q-test should be used with extreme caution since it assumes a normal distribution of the data population. Moreover, Dixon's Q-test is not applicable when several values below the LOQ are entered in the calculation. Therefore, it has mostly to be taken as a **warning to check whether some experimental conditions might explain the "abnormal" result**.

Extreme values should however be handled with care, especially when using the OECD MRL calculator, since the HR is systematically proposed as a "*baseline value*" to guarantee that the proposed MRL is always greater than the highest residue level. Normally, a value should not be disregarded if a reason explaining the deviation from the rest of the data set is not given.

However and based on an expert judgment, an abnormal value can be rejected even when no clear explanation is provided in the study report, as illustrated by the following example. A total of 36 trials have been conducted on oilseeds according to the same GAP. All values are below 0.48 mg/kg, except in one trial on rapeseed where the residue level is 3.0 mg/kg. This extreme value, highlighted as an outlier by the Dixon's Q-test, results in an MRL of 5 mg/kg, while an MRL of 0.7 mg/kg only is proposed when the value of 3.0 mg/kg is disregarded from the calculation. In such a case **and based on an expert judgment**, it might be concluded that the value of 3 mg/kg has to be removed from the calculation, considering that treatment was not made at the growth stage BBCH 89 (fully ripe) as reported in the study report, but at a later growth stage (with pods already opened) resulting in significant abnormal high residue levels.

Rapeseed	2x 250 g/ha,	14 d	0.10, 0.11, 2x 0.14, 0.15, 0.22, 0.44 **and 3.0**
Sunflower	2x 250 g/ha,	14 d	0.01, 0.02, 0.06, 2x 0.08, 0.23, 0.25, 0.48
Soybean	2x 250 g/ha,	14 d	11x <0.01, 3x 0.01, 2x 0.02, 0.04, 0.05, 0.06, 0.18

4.3 – Values <LOQ

Residues below the LOQ are used in the MRL calculations considering a value equal to the LOQ (0.01 if reported as <0.01 mg/kg). **LOD (limit of detection) should not be reported and used for MRL calculations**. It must be noted that the OECD calculator introduces a correction factor in the calculation in order to take into account the number of values below the LOQ (censored data). Data below the LOQ must therefore be entered in the calculator with an asterisk (*).

MRL calculators must not be used when all values are at and below the LOQ. In such a case, the MRL proposal should be driven by the LOQs achieved by the analytical methods used to analyse the samples from the residue trials.

4.4 – Grouping of residue data sets (Use of the U-test or H-test)

Since a larger data set provides a more accurate estimation of the mean and SD (and therefore of the estimated MRL value), FAO and OECD guidelines recommend the merging of residue data sets, providing that trials were conducted according to the same GAPs. This approach is commonly used in the JMPR evaluations. Statistical tools (U-Test and H-Test) are available to ascertain if datasets come from populations characterised by similar mean and variance. **It is emphasised that these tests should be**

applied with caution for residues below the LOQ in populations to be compared. In addition and as reported in the OECD Guidance on crop field trials, it should be borne in mind *"that if the tests show differences it is rather likely that the data sets do not belong to the same population and thus it will be inappropriate to combine the data sets. If the tests do not show differences, sets may be combined, but all relevant information should be considered before doing so"*.

When northern and southern EU data sets **related to the same GAPs** are available, it is therefore proposed as a first step, to verify whether they can be considered statistically different or not, using the U-test (comparison of two data sets with a minimum of 3 and 4 values). If not statistically different, both data sets are combined to provide a more accurate MRL estimate.

- Example 1: Field (Outdoor) residue trials

NEU: 0.12, 0.12, 0.15, 0.20, 0.23, 0.26, 0.42, 0.48 mg/kg (major crop)

SEU: 0.11, 0.20, 0.28, 0.44 mg/kg (minor crop)

NEU and SEU data sets not statistically different (U-test, 5%), the MRL calculation is based on the merged data: n = 12 MRL_{OECD}: 0.77 rounded to 0.8 mg/kg

- Example 2: Field (Outdoor) residue trials

NEU: 0.20, 0.22, 0.24, 0.31, 0.33 mg/kg

SEU: 2x 0.08, 0.10, 0.11, 0.15, 0.18, 0.21, 0.23, 0.25 mg/kg

NEU and SEU data are significantly different (U-test, 5%), MRL calculations are therefore performed separately for both data sets:

NEU	n = 5	MRL_{OECD}: 0.77/**0.8**	STMR: 0.24	HR: 0.33
SEU	n = 9	MRL_{OECD}: 0.46/0.5	STMR: 0.15	HR: 0.25

The MRL is derived from the data set leading to the highest MRL proposal (NEU, 0.8 mg/kg) and the highest STMR and HR values are considered for the consumer risk assessment.

U-test should be used:

- To combine northern and southern data sets, **provided that all trials were conducted according to the same cGAP.**

- To confirm that an experimental design is more critical than another one (varieties…) as illustrated below by the trials conducted on tomato:

→ Indoor, standard tomato: <0.001, 2x 0.001, 2x 0.002, 0.003, 2x 0.004

→ Indoor, cherry tomato: 0.003, 2x 0.004, 0.006, 0.007, 2x 0.008, 0.010

MRL on tomato is derived from the indoor trials conducted on cherry tomato since residue levels were significantly higher than on standard tomato (U-test, 5%).

U-test should not be used:

- To combine trials not reflecting the same cGAP,

- To combine outdoor and indoor trials,

- To decrease the overall number of trials required per zone (4 and 8 trials respectively, on minor and major crops).

In general, a greater place should be given to the use of combined datasets for minor crops, since only 4 trials are requested per zone and therefore, a more accurate estimation is done when the merging of the NEU and SEU data is possible, as relying on a total of 8 values.

4.5 - Residue trials on protected crop (Indoor)

Since climatic differences between diverse production areas within EU are assumed to be of limited impact on the final residue levels for the crops grown under greenhouse conditions, the geographic distribution of the trials is not considered and northern and southern trials are combined together for MRL calculations.

However, special attention should be given to active substances known to undergo photochemical degradation. In such cases, indoor trials conducted in NEU and SEU under different growing seasons

might lead to significantly different residues levels, as illustrated by the residue trials conducted on lettuce with a photo-degradable active substance:

Indoor SEU: 0.052, 0.060, 0.072, 0.100, 0.180 (harvest June to November)

Indoor NEU: 0.153, 0.161, 0.195, 0.260, 0.300, 0.330, 0.400, 0.615 (harvest October to February)

Indoor NEU population significantly differs from SEU (U-test, 5 %) and therefore, the MRL proposal is derived from the Northern data set: n = 8 (Indoor NEU) MRL_{OECD}: 0.91/1.0

When an active substance is applied <u>according to the same GAP</u> on crops grown either under greenhouse (indoor) or field (outdoor) conditions, experience has shown that generally, the use on protected crop leads to higher residue levels. It is therefore usually not necessary to request the submission of the entire dataset for both, the indoor and outdoor uses. In such a case;

- The entire data set should be requested for the indoor uses in any case,
- In contrast, a limited data set only (around 50 %) is required for the outdoor uses in order to confirm that the outdoor practice is less critical.

The MRL is derived from the trials conducted under indoor conditions, and it is concluded that the proposed MRL covers the outdoor uses of the active substance (providing that the limited outdoor dataset confirms that residue levels are lower or at least similar to the levels observed under indoor conditions).

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