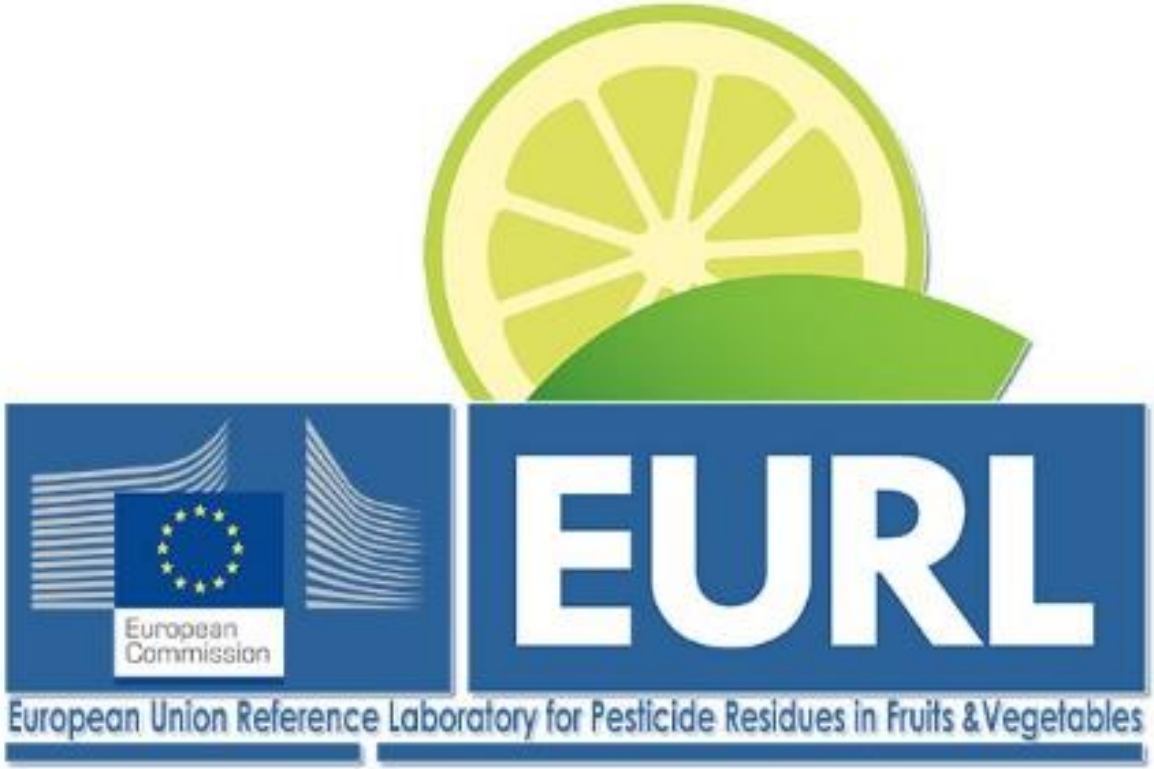


EUPT-FV-20

European Proficiency Test FV-20

EUPT-FV-20

European Proficiency Test FV-20

Green beans

Green beans were grown in a greenhouse in Almería, Spain.

Target List

195 pesticides

Acephate
Acetamiprid
Acrinathrin
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Azinphos-methyl
Azoxystrobin
Benfuracarb
Bifenthrin
Biphenyl
Bitertanol
Boscalid
Bromopropylate
Bromuconazole
Bupirimate
Buprofezin
Cadusafos
Carbaryl
Carbendazim and benomyl (su
expressed as carbendazim)
Carbofuran
Carbofuran-3-hydroxy
Carbosulfan
Chlorantraniliprole
Chlorfenapyr
Chlorfenvinphos
Chlorobenzilate
Chlorothalonil
Chlorpropham
Chlorpyrifos
Chlorpyrifos-methyl
Clofentezine
Clothianidin
Cyfluthrin (cyfluthrin incl. other
(sum of isomers))
Cymoxanil
Cypermethrin (cypermethrin in
isomers (sum of isomers))
Cyproconazole
Cyprodinil
Deltamethrin (cis-deltamethrin)
Demeton-S-methylsulfone
Diazinon
Dichlofluanid
Dichlorvos
Dicloran
Dicofol (sum of p, p´ and o,p´ i
Dieldrin
Diethofencarb
Difenoconazole
Diflubenzuron
Dimethoate
Dimethomorph
Dimethylaminosulfotoluidide (D
Diniconazole
Diphenylamine
Endosulfan alpha
Endosulfan beta
Endosulfan sulfate
EPN
Epoxiconazole
Ethion
Ethirimol
Ethoprophos
Etofenprox
Famoxadone
Fenamidone
Fenamiphos
Fenamiphos sulfone
Fenamiphos sulfoxide
Fenarimol
Fenazaquin
Fenbuconazole
Fenhexamid
Fenitrothion
Fenoxycarb
Fenpropathrin
Fenpropidin
Fenpropimorph
Fenpyroximate
Fenthion
Fenthion oxon
Fenthion oxon sulfone
Fenthion oxon sulfoxide
Fenthion sulfone
Fenthion sulfoxide
Fenvalerate
Fipronil (only parent compou
Flonicamid
Flubendiamide
Fludioxonil
Flufenoxuron
Fluopicolide
Fluopyram
Fluquinconazole
Flusilazole
Flutolanil
Flutriafol
Formetanate
Fosthiazate
Hexaconazole
Hexythiazox
Imazalil

3 New compounds

Target List

Imidacloprid
Indoxacarb (sum of indoxacc
Iprodione
Iprovalicarb
Isocarbophos
Isofenphos-methyl
Isoprothiolane
Kresoxim-methyl
Lambda-Cyhalothrin
Linuron
Lufenuron
Malaoxon
Malathion
Mandipropamid
Mepanipyrim
Metaflumizone
Metalaxyl and metalaxyl-M
Metconazole
Methamidophos
Methidathion
Methiocarb
Methiocarb sulfone
Methiocarb sulfoxide
Methomyl
Methoxyfenozide
Monocrotophos
Myclobutanyl
Omethoate
Orthophenylphenol
Oxadixyl
Oxamyl
Oxydemeton-methyl
Paclobutrazole
Paraoxon-methyl
Parathion-ethyl
Parathion-methyl
Penconazole
Pencycuron
Pendimethalin
Permethrin (sum of isomers)
Phenthoate
Phosalone
Phosmet
Phosmet oxon
Phoxim
Pirimicarb
Pirimicarb-desmethyl
Pirimiphos-methyl
Prochloraz
Procymidone
Profenofos
Propamocarb
Propargite
Propiconazole
Propyzamide
Prosulfocarb
Prothioconazole
Prothiofos
Pyraclostrobin
Pyridaben
Pyrimethanil
Pyriproxyfen
Quinoxyfen
Spinosad
Spirodiclofen
Spiromesifen
Spiroxamine
Tau-Fluvalinate
Tebuconazole
Tebufenozide
Tebufenpyrad
Teflubenzuron
Tefluthrin
Terbuthylazine
Tetraconazole
Tetradifon
Thiabendazole
Thiacloprid
Thiamethoxam
Thiodicarb
Thiophanate-methyl
Tolclofos-methyl
Tolylfluanid
Triadimefon
Triadimenol
Triazophos
Trichlorfon
Trifloxystrobin
Triflumuron
Trifluralin
Triticonazole
Vinclozolin
Zoxamide

3 New compounds

Voluntary Target List

34 pesticides

Working Document SANCO/12745/2013

(Working document on pesticides to be considered for inclusion in the national control programmes to ensure compliance with maximum residue levels of pesticides residues in and on food of plant and animal origin)

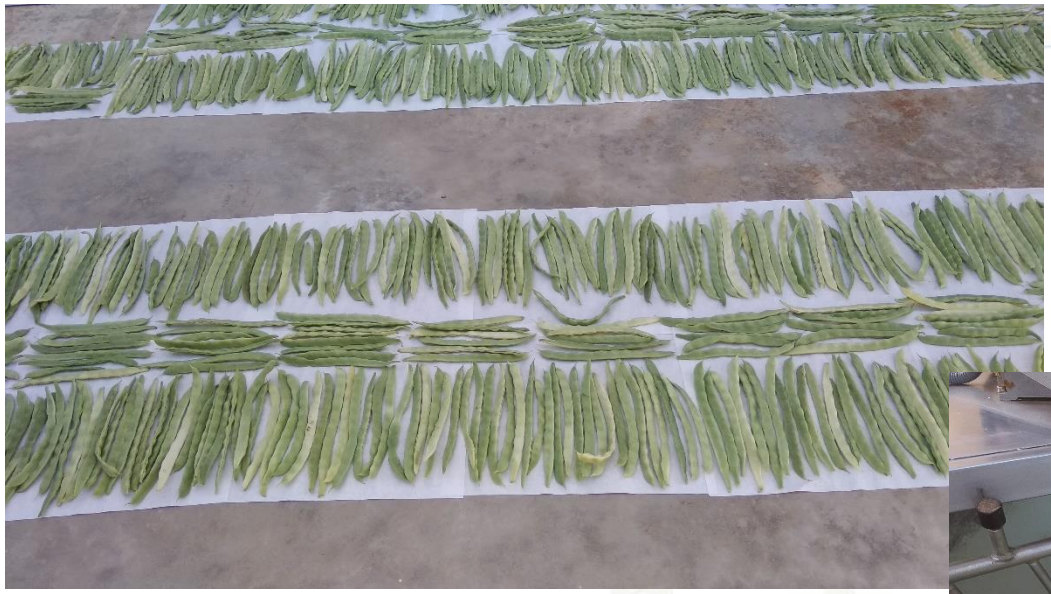
Ametoctradin
Benalaxyl including other mixtures of constituent isomers including benalaxyl-M (sum of isomers)
Benzovindiflupyr
Chlorfluazurone
Clomazone
Cyazofamid
Cyflufenamid
Emamectin benzoate B1a, expressed as emamectin
Etoxazole
Fenpyrazamine
Fluxapyroxad
Heptachlor
Heptachlor epoxide
Isopyrazam
Metrafenone
Novaluron
Penflufen
Penthiopyrad
Prosulfocarb
Pyrethrins
Quintozene
Pentachloro-aniline
Proquinazid
Pyridalil
Pyriofenone
Rotenone
Spinetoram
Spirotetramat
Spirotetramat metabolite BYI08330-enol
Spirotetramat metabolite BYI08330-ketohydroxy
Spirotetramat metabolite BYI08330-monohydroxy
Spirotetramat metabolite BYI08330 enol-glucoside
Sulfoxaflor
Tetramethrin
Tricyclazole

Pesticides used for the treatment

Boscalid	Iprodione
Buprofezin	Metaflumizone (sum of E- and Z- isomers)
Carbendazim	Penthiopyrad
Chlorothalonil	Pyridaben
Clothianidin	Spiromesifen
Diazinon	Tau-Fluvalinate
Dimethoate	Tebuconazole
Etofenprox	Tebufenpyrad
Fenpyrazamine	Thiabendazole
Fenpyroximate	Thiamethoxam
Imazalil	
	Total: 21

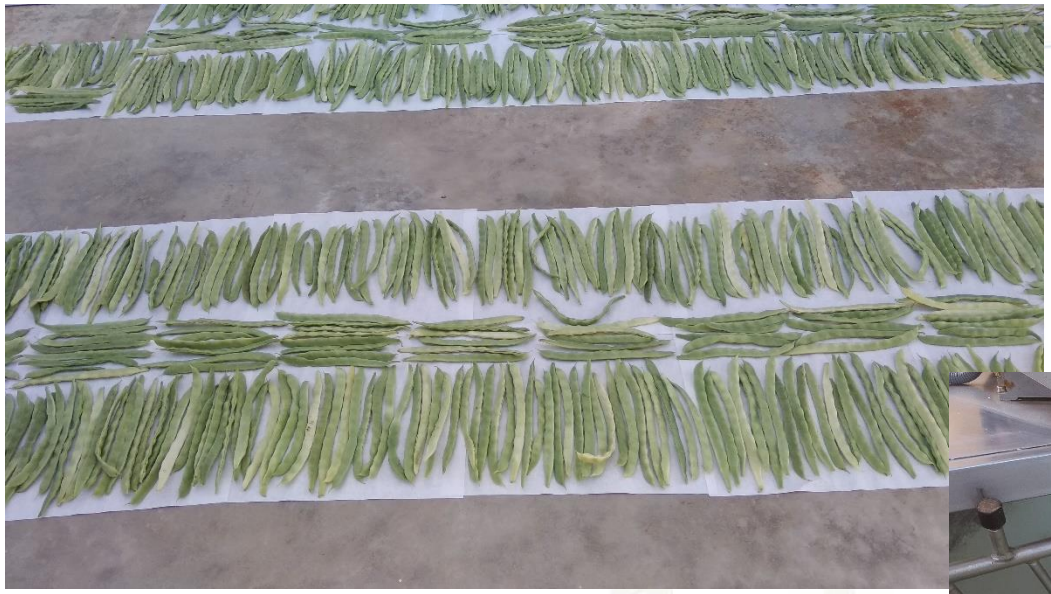
Preparation of the test item

Before harvest, the Green beans plants were treated with pesticides available as commercial formulations



Preparation of the test item

After harvesting, the grean beans were sprayed with analytical standards



Pesticides applied as analytical standards

Boscalid
Carbendazim
Chlorothalonil
Diazinon
Dimethoate
Imazalil
Iprodione
Penthiopyrad
Thiabendazole

Pesticides applied as commercial formulations

Buprofezin
Clothianidin
Etofenprox
Fenpyrazamine
Fenpyroximate
Metaflumizone (sum of E- and Z- isomers)
Pyridaben
Spiromesifen
Tau-Fluvalinate
Tebuconazole
Tebufenpyrad
Thiamethoxam

Homogeneity

The homogeneity in the treated sample was studied using the 2006 Harmonised Protocol.

Stability

1st Analysis - prior to the sample shipment

2nd Analysis - after the deadline for reporting results

3rd Analysis - reproducing the delivery conditions that the samples experienced during 48 hours

Chlorothalonil did not pass the homogeneity nor stability tests

Participation

Total No. of Labs = 184

EU/EFTA Labs = 169

Other countries Labs = 15

Total No. of Countries = 40

EU/EFTA countries = 31

Other countries = 9

2 participants did not submit results

⇩

167 EU/EFTA Labs

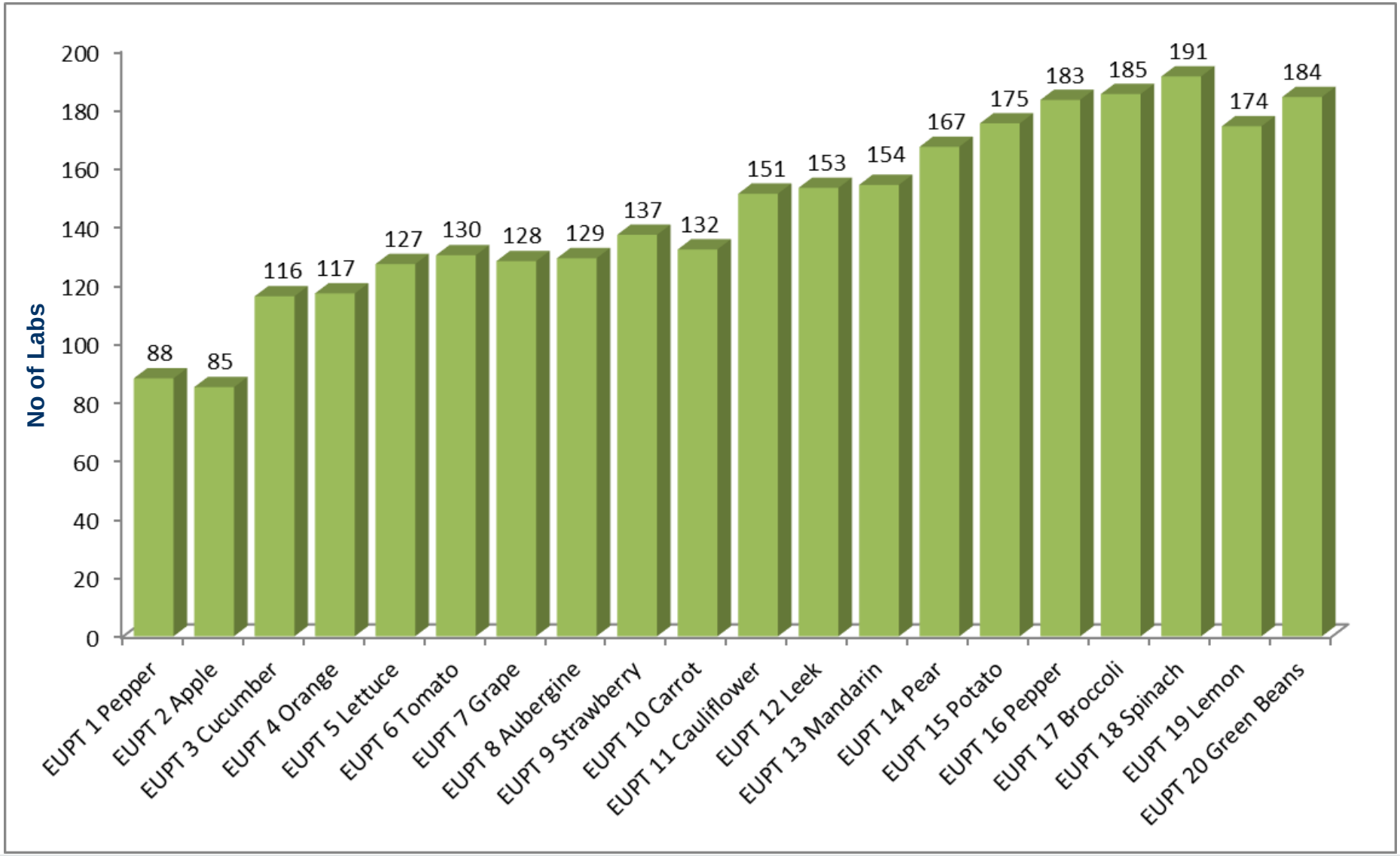
Participation

Member State	No. Labs
Austria	1
Belgium	8
Bulgaria	4
Croatia	9
Cyprus	1
Czech Republic	3
Denmark	2
Estonia	2
Finland	2
France	8
Germany	26
Greece	4
Hungary	4
Iceland	1
Ireland	1
Italy	25

Member State	No. Labs
Latvia	1
Lithuania	2
Luxembourg	2
Malta	2
Norway	1
Poland	11
Portugal	3
Romania	5
Slovakia	2
Slovenija	2
Spain	32
Sweden	2
Switzerland	3
The Netherlands	1
United Kingdom	4

Non-EU/EFTA	No. Labs
China	4
Colombia	2
Costa Rica	1
Kenya	1
Peru	1
Serbia	3
Singapore	1
Thailand	1
Uruguay	1

Participation



Results

Pesticides	No. of Reported Results	No. of False Negative Results	No. of Not Analysed Results	Percentage of Labs Reporting Results (out of 167)
Boscalid	159	1	7	95
Buprofezin	158	2	7	95
Carbendazim	140	2	25	84
Chlorthalonil	93	46	28	56
Clothianidin	141	1	25	84
Diazinon	162	1	4	97
Dimethoate	159	2	6	95
Etofenprox	150	0	17	90
Fenpyroximate	140	3	24	84
Imazalil	154	5	8	92
Iprodione	147	6	14	88
Metaflumizone	116	3	48	69
Pyridaben	157	1	9	94
Spiromesifen	140	1	26	84
Tau-Fluvalinate	149	3	15	89
Tebuconazole	161	0	6	96
Tebufenpyrad	156	0	11	95
Thiabendazole	154	1	12	92
Thiamethoxam	147	0	20	88
Voluntary Pesticides				
Fenpyrazamine	74	1	92	44
Penthiopyrad	70	2	95	42

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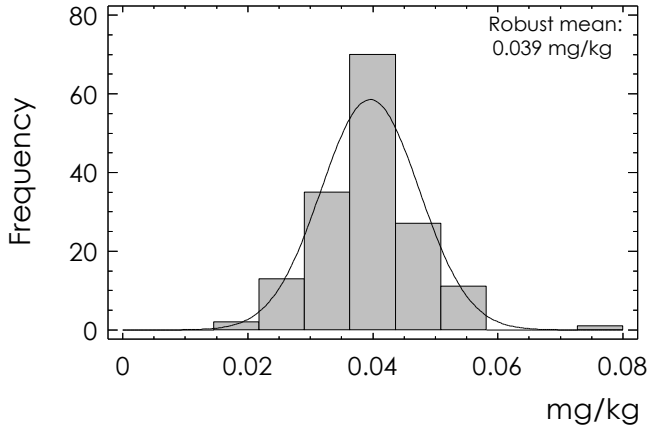
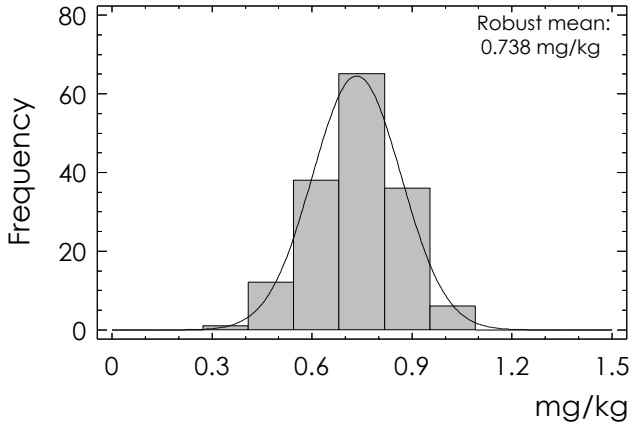
Thiamethoxam	147	0	20	88
Voluntary Pesticides				
Fenpyrazamine	74	1	92	44
Penthiopyrad	70	2	95	42

Histograms

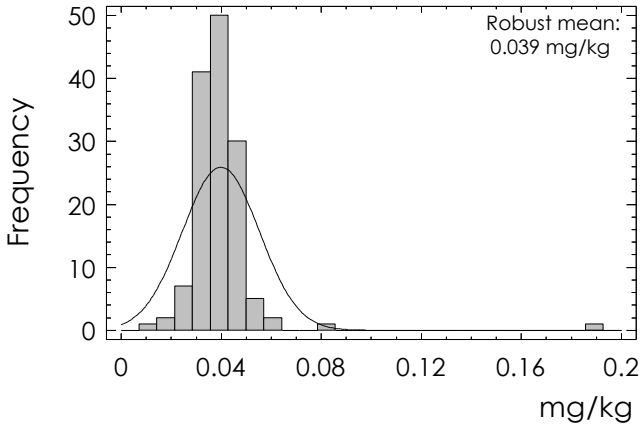
Boscalid



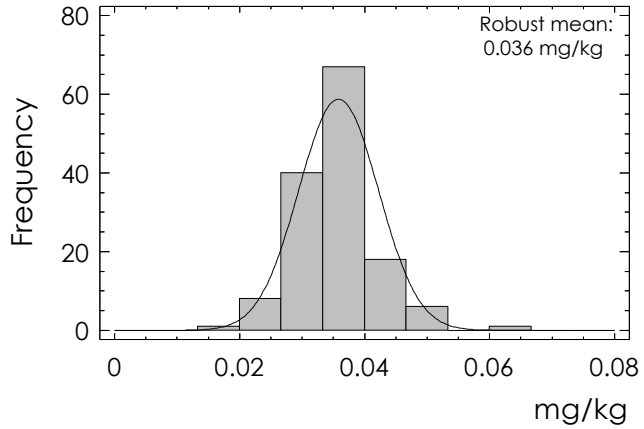
Buprofezin



Carbendazim

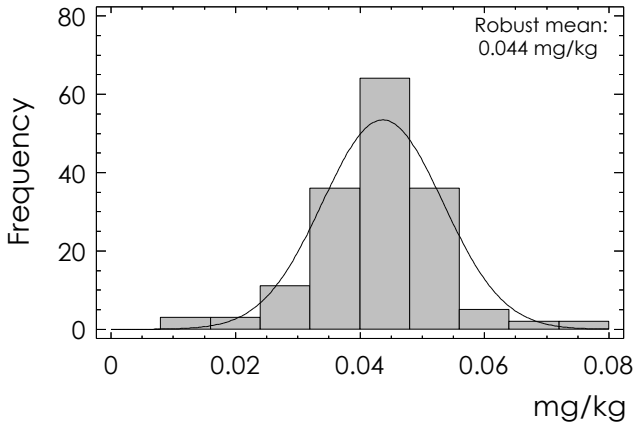


Clothianidin

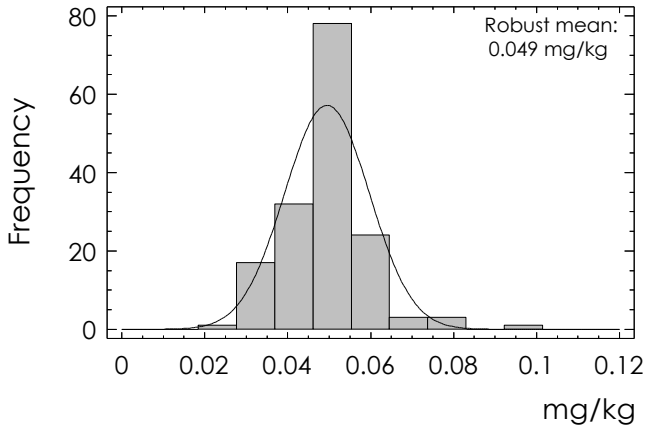


Histograms

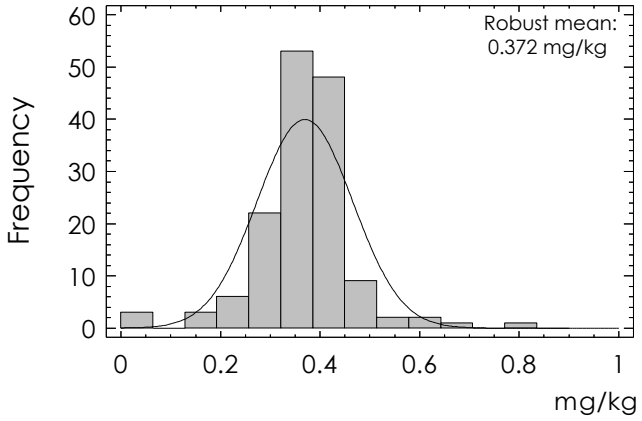
Diazinon



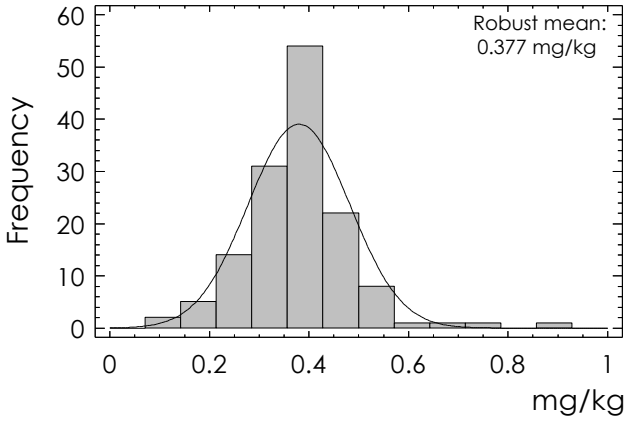
Dimethoate



Ethofenprox

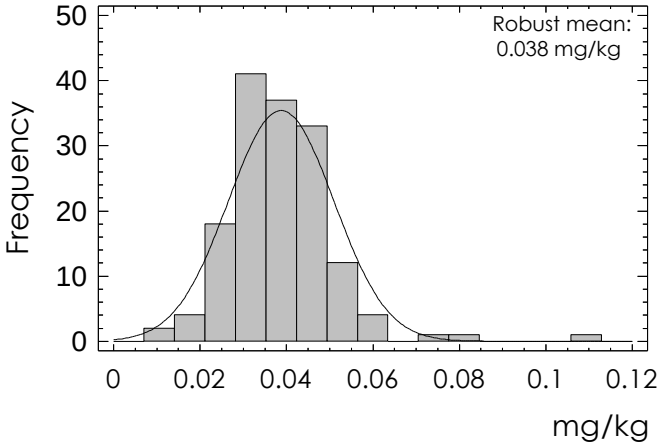


Fenpyroxymate

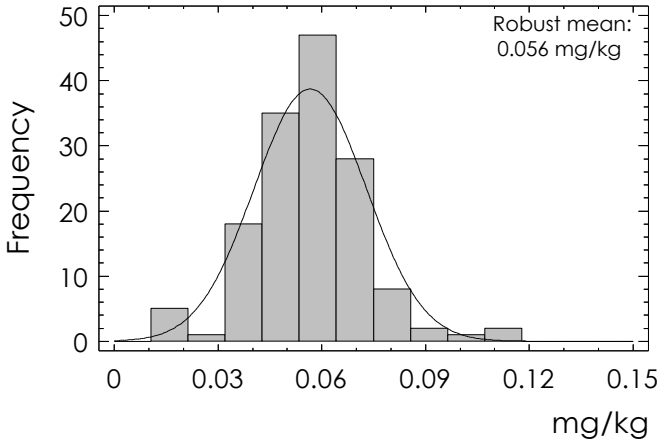


Histograms

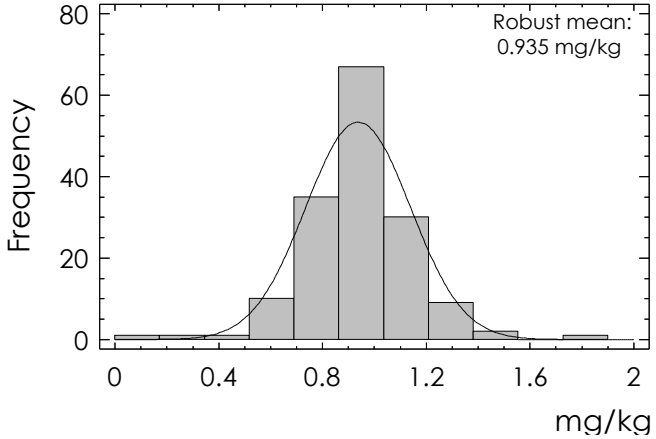
Imazalil



Iprodione

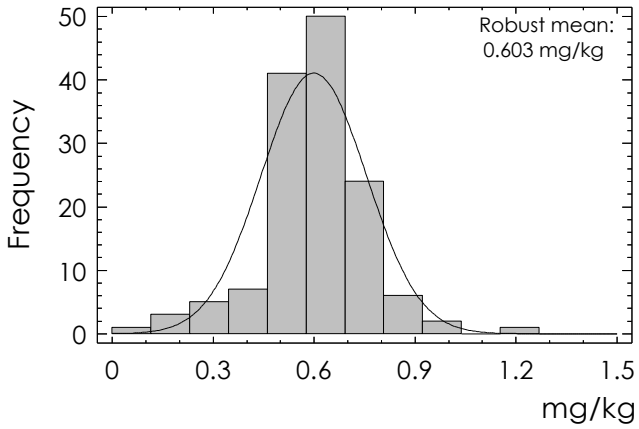


Pyridaben

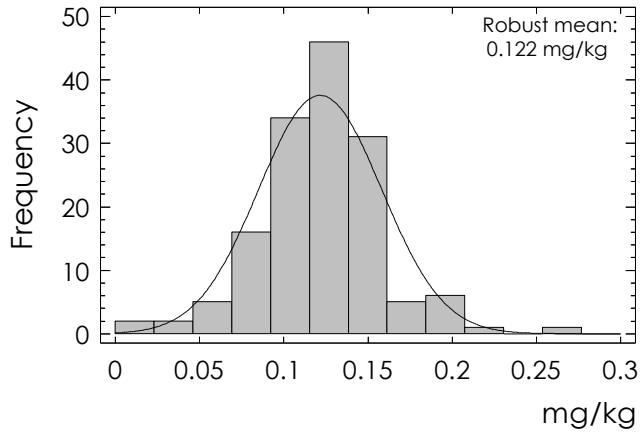


Histograms

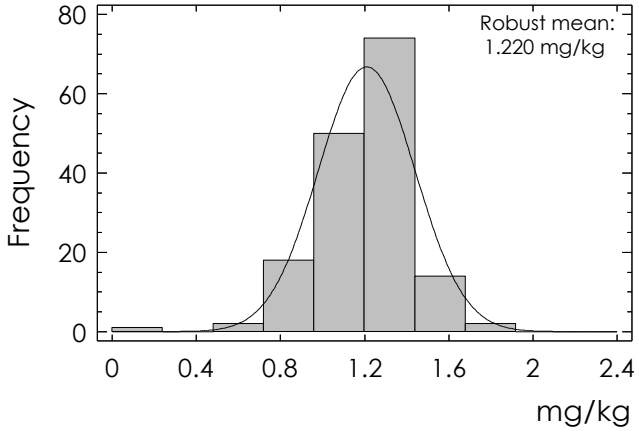
Spyromesifen



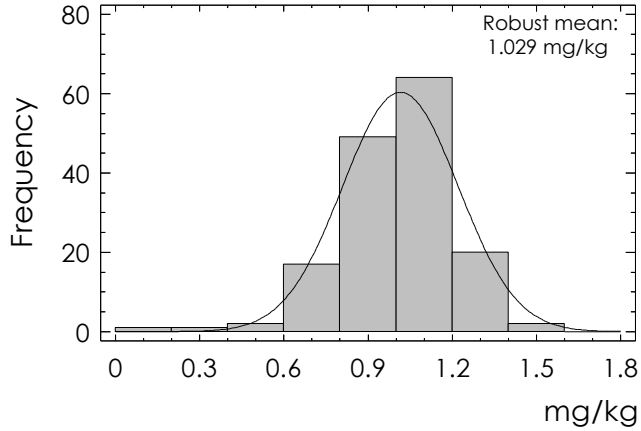
Tau-Fluvalinate



Tebuconazole

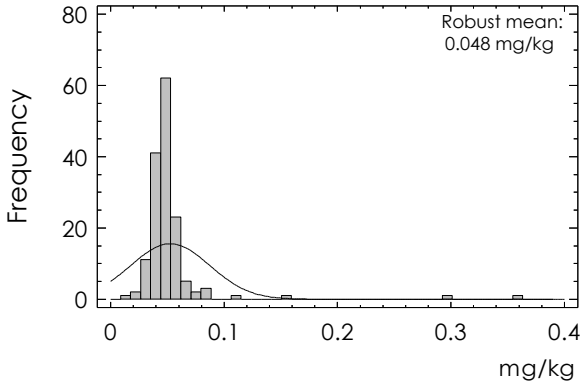


Tebufenpyrad

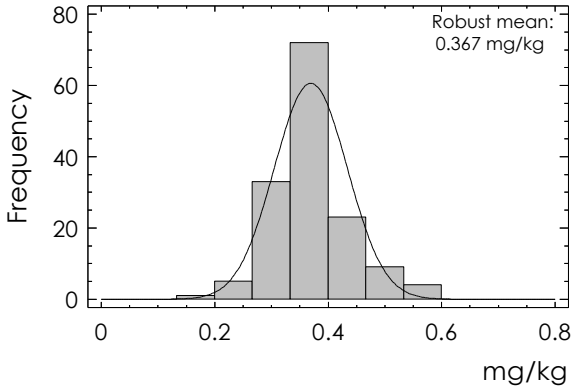


Histograms

Thiabendazole

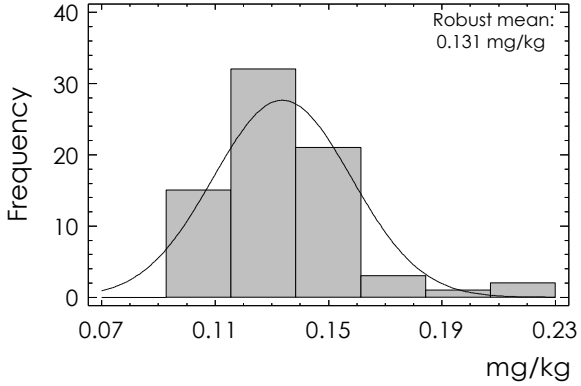


Thiamethoxam

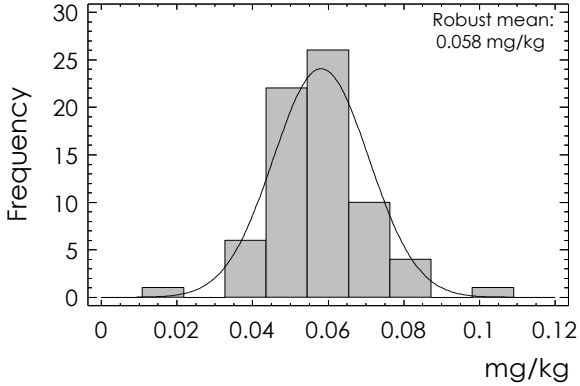


Voluntary pesticides

Fenpyrazamine

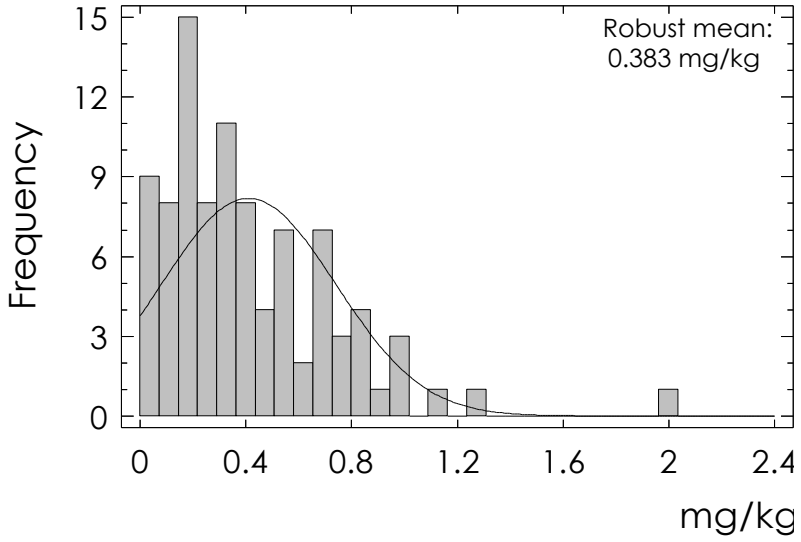


Penthiopyrad

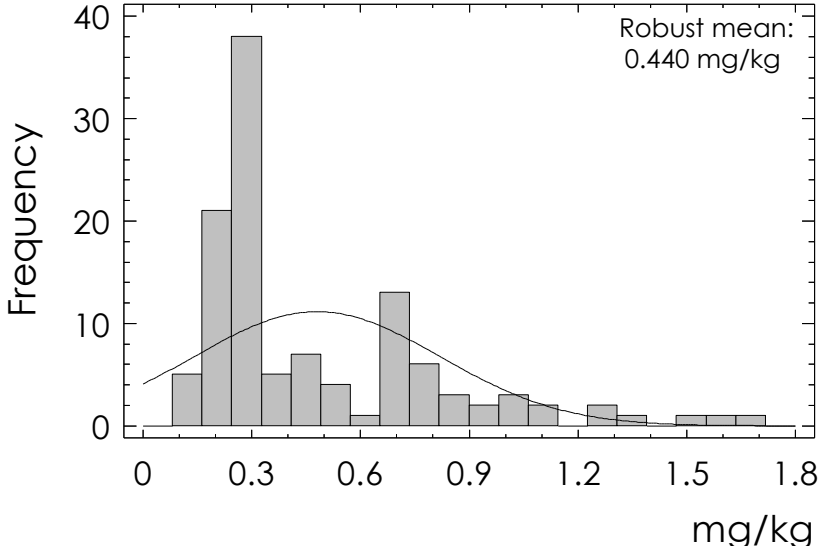


	MRRL (mg/kg)	Robust Mean (mg/kg)	CV (%)	Uncertainty (mg/kg)
Chlorothalonil	0,010	0,381	76,4	0,038
Metaflumizone	0,010	0,440	64,0	0,033

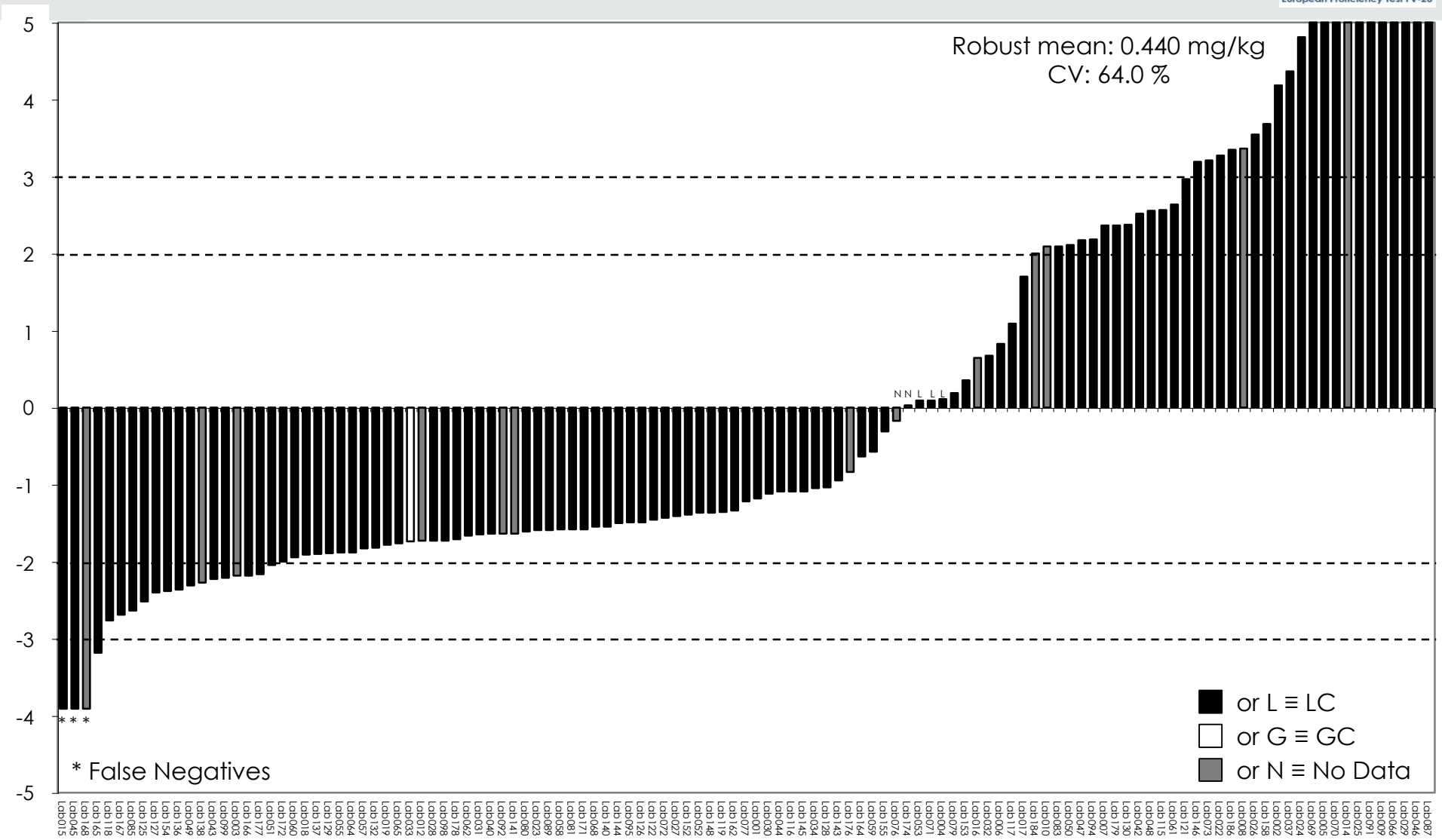
Chlorothalonil



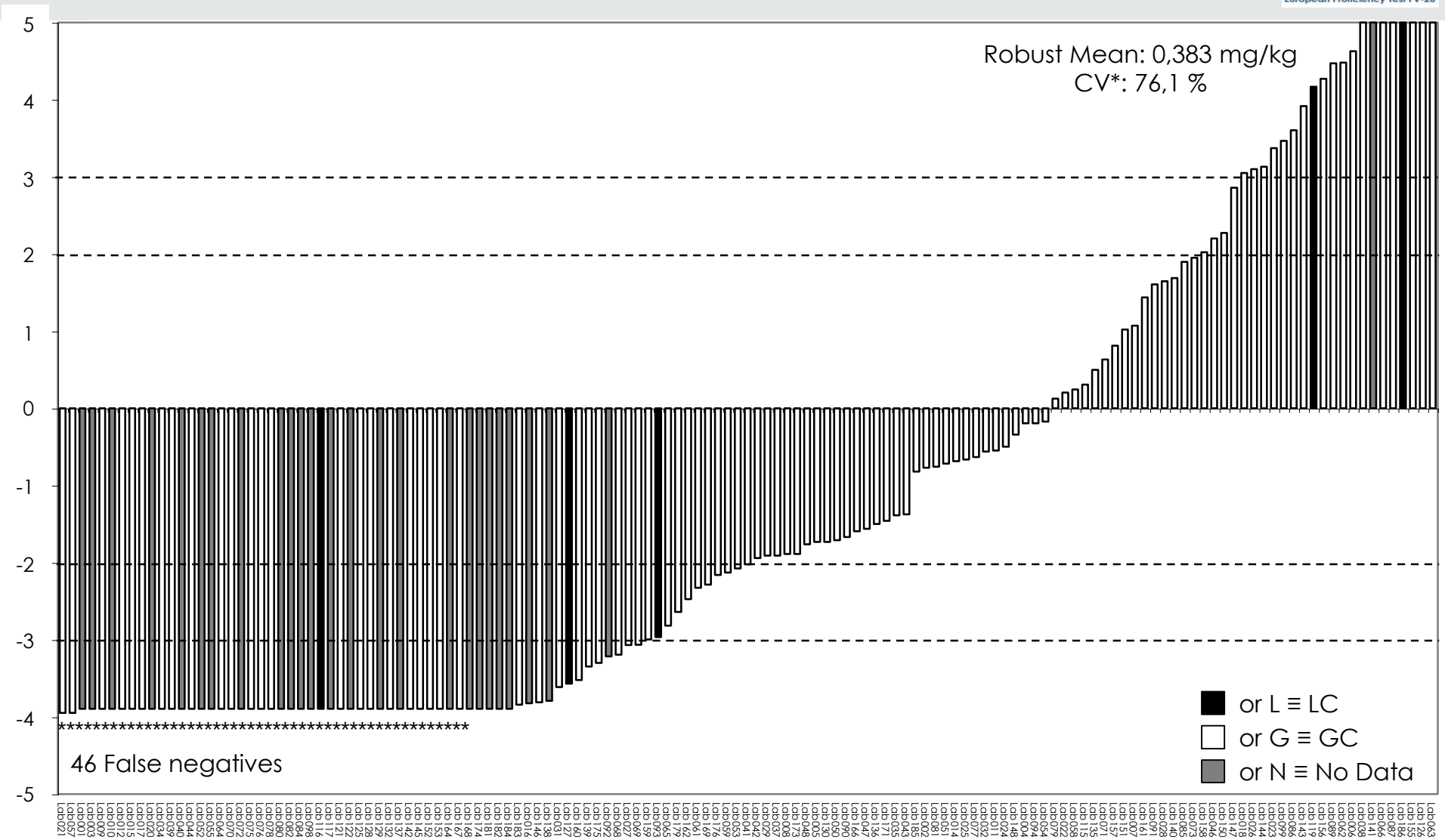
Metaflumizone

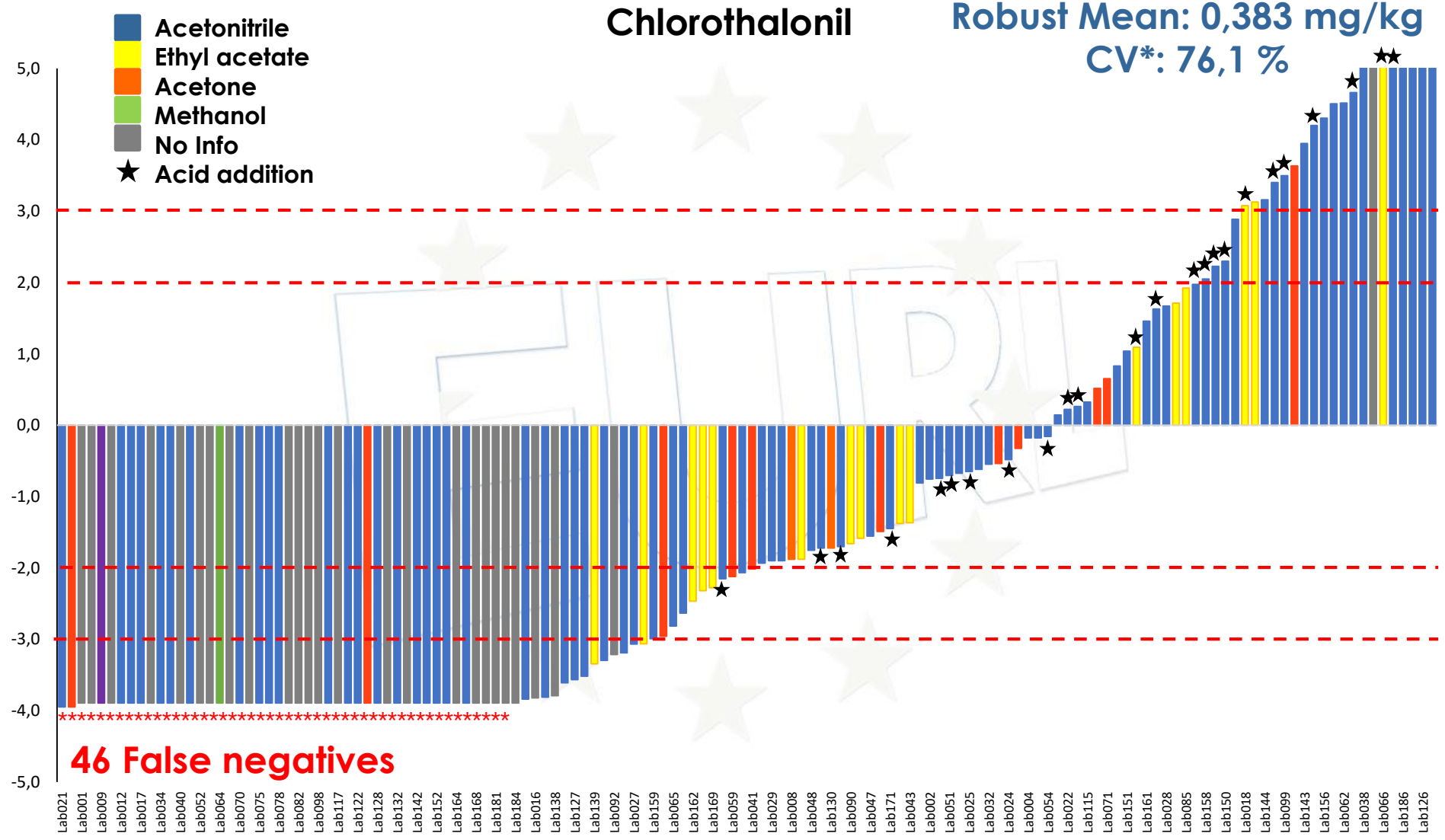


Metaflumizone



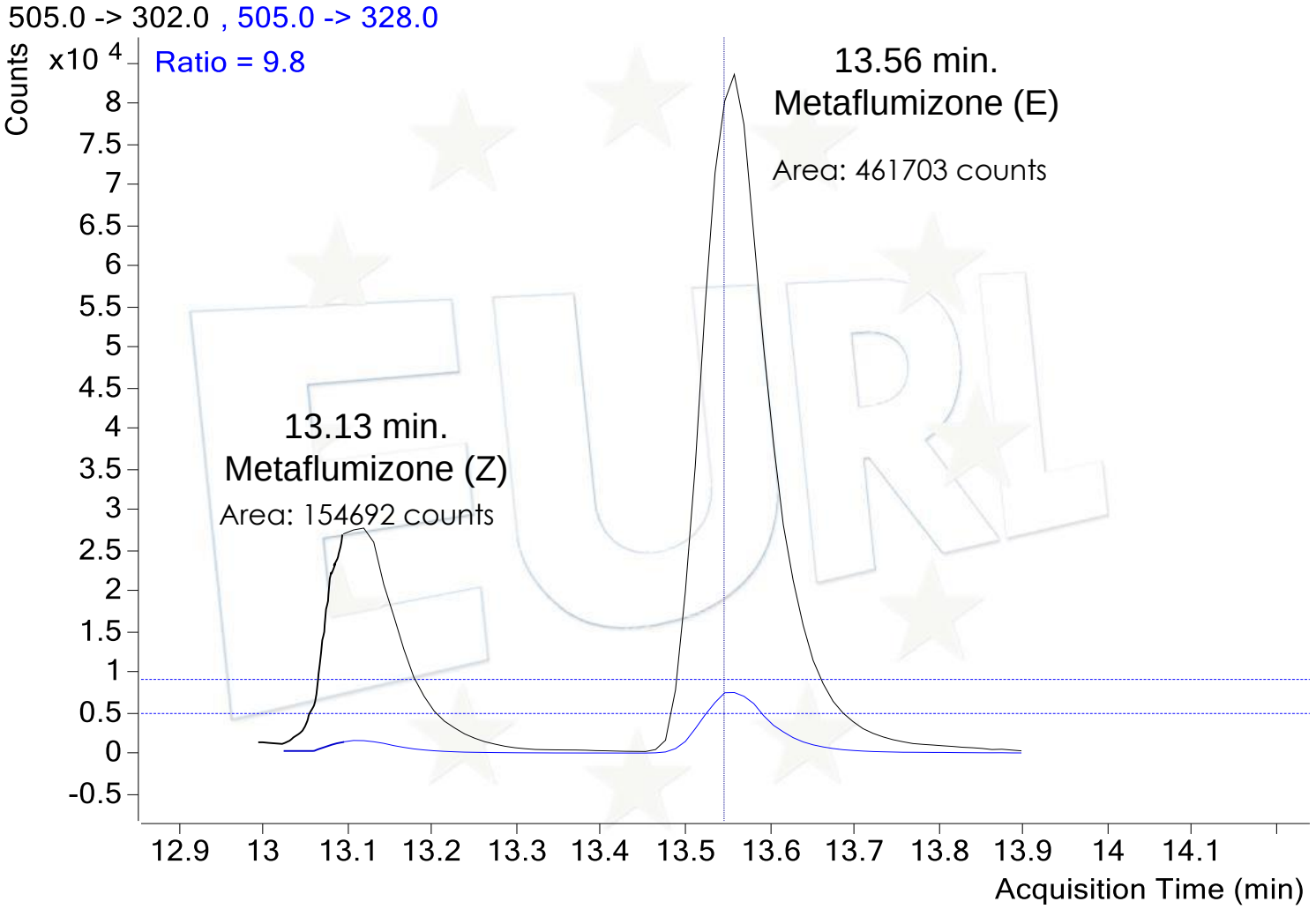
Chlorothalonil




Chlorothalonil
Robust Mean: 0,383 mg/kg
CV*: 76,1 %
Acetonitrile
Ethyl acetate
Acetone
Methanol
No Info
Acid addition
5,0
4,0
3,0
2,0
1,0
0,0
-1,0
-2,0
-3,0
-4,0
-5,0
****
46 False negatives
Lab021 Lab001 Lab009 Lab012 Lab017 Lab034 Lab040 Lab052 Lab064 Lab075 Lab070 Lab078 Lab082 Lab098 Lab117 Lab122 Lab128 Lab132 Lab142 Lab152 Lab164 Lab168 Lab181 Lab184 Lab016 Lab138 Lab127 Lab139 Lab092 Lab027 Lab159 Lab065 Lab162 Lab169 Lab059 Lab041 Lab029 Lab008 Lab048 Lab130 Lab090 Lab047 Lab171 Lab043 Lab002 Lab051 Lab025 Lab032 Lab024 Lab004 Lab054 Lab022 Lab115 Lab071 Lab151 Lab161 Lab028 Lab085 Lab158 Lab150 Lab018 Lab144 Lab099 Lab143 Lab156 Lab062 Lab038 Lab066 Lab186 Lab126

Metaflumizone

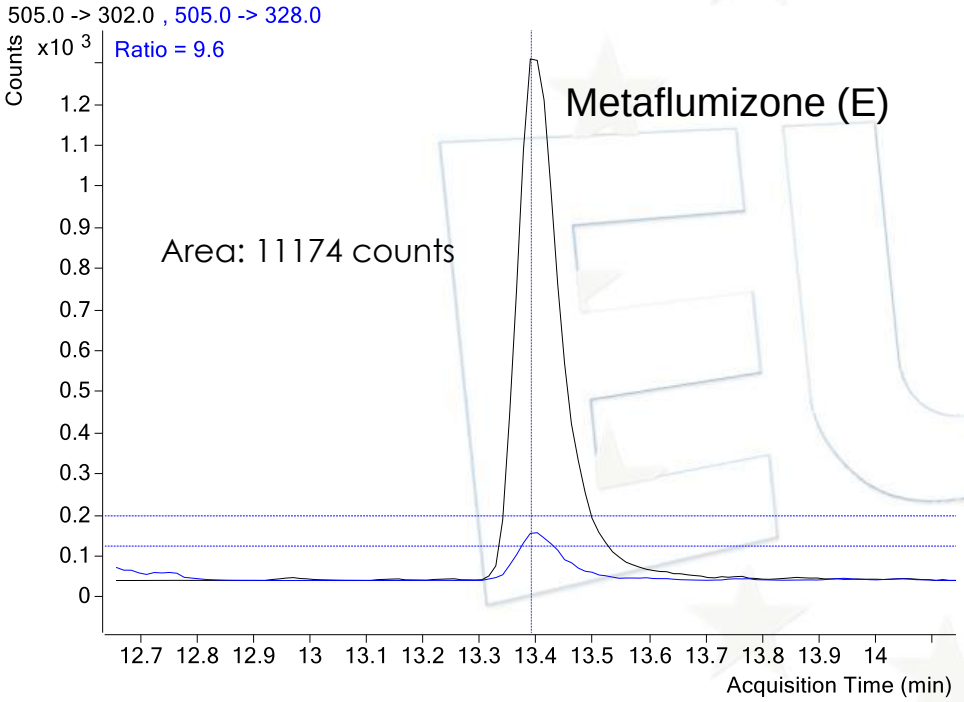
Metaflumizone - Sample 209 FV20



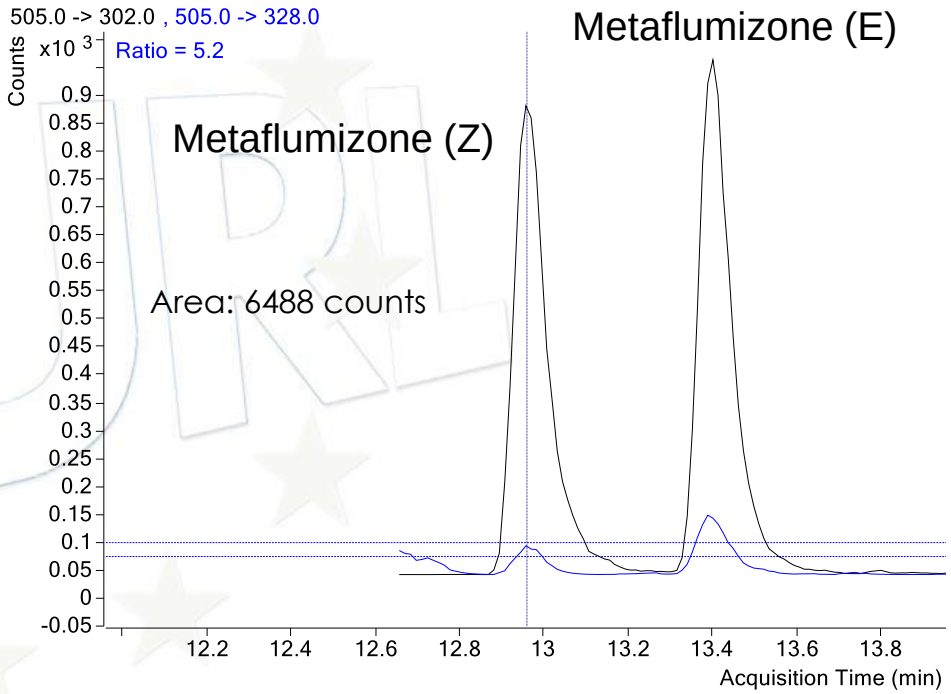
Area ratio (E/Z): 2,9

Metaflumizone – Individual Standards in solvent

Std. Metaflumizone (E) 0,010 mg/L



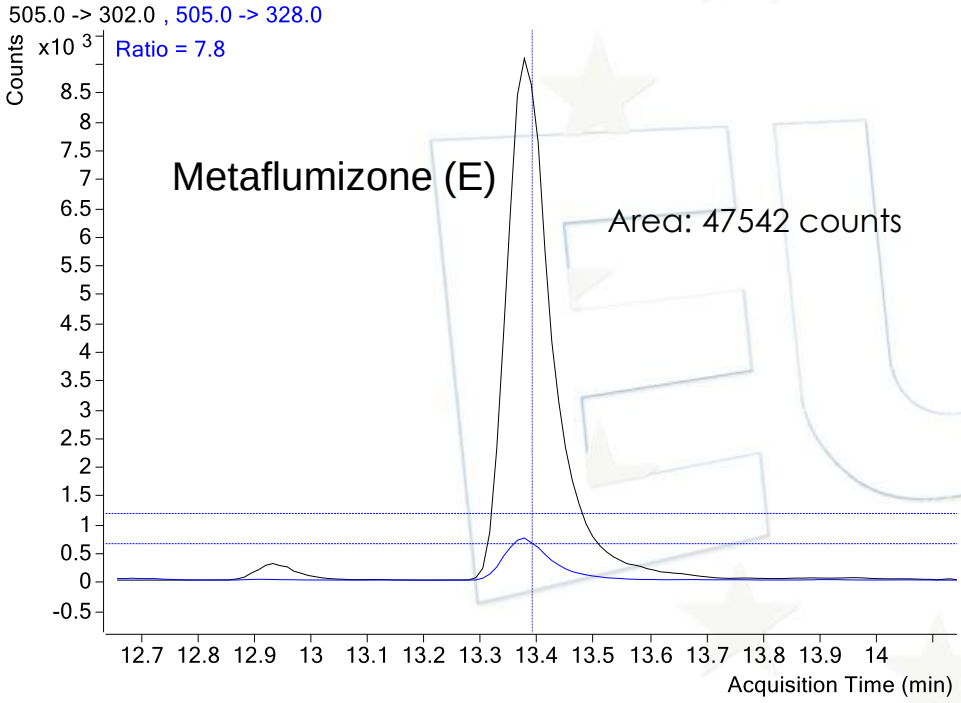
Std. Metaflumizone (Z) 0,010 mg/L



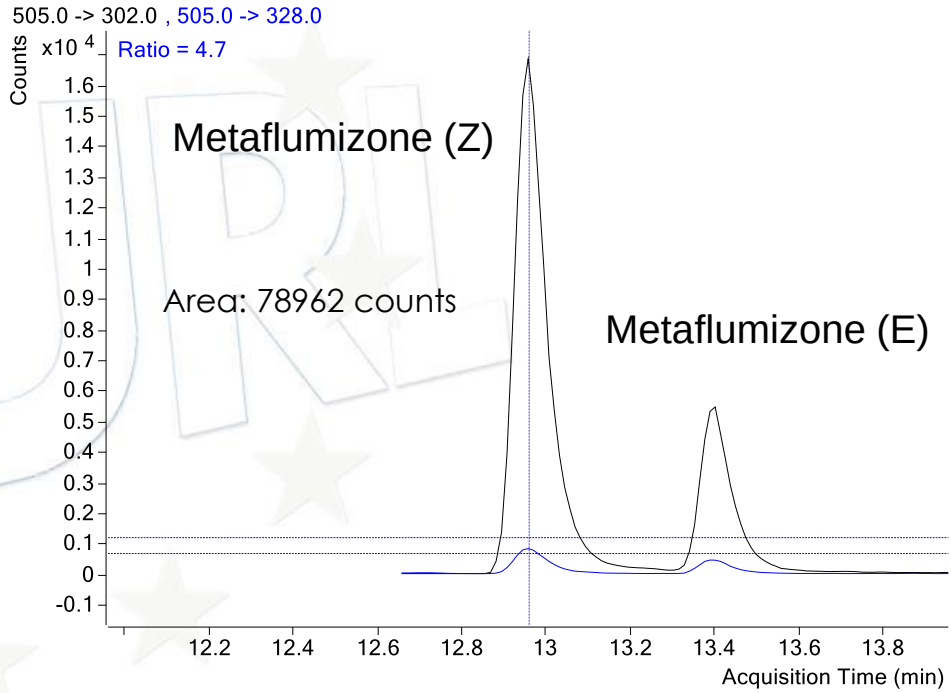
Area ratio (E/Z): 1,72

Metaflumizone – Individual Standards in solvent

Std. Metaflumizone (E) 0,050 mg/L



Std. Metaflumizone (Z) 0,050 mg/L



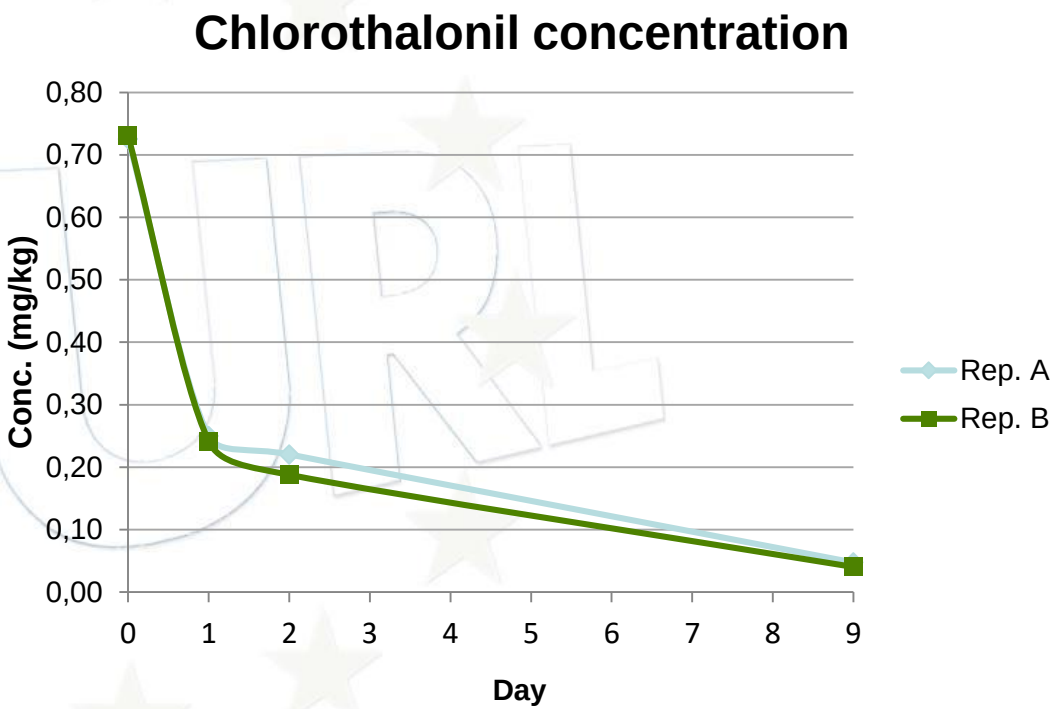
Area ratio (E/Z): 0,60

Chlorothalonil

EUPT-FV20: CHLOROTHALONIL STABILITY

Test item
Green beans

The signals of pesticide chlorothalonil decrease progressively over time



EUPT-FV20: CHLOROTHALONIL STABILITY

Our hypothesis

Sulphur added as an organic pesticide to green beans during the crop growth could interact with chlorothalonil

No sulphur added

100 ppm sulphur

1000 ppm sulphur

Spike with chlorothalonil (100 ppb)

Ethyl acetate extraction

Analysis (Agilent Intuvo 9000)

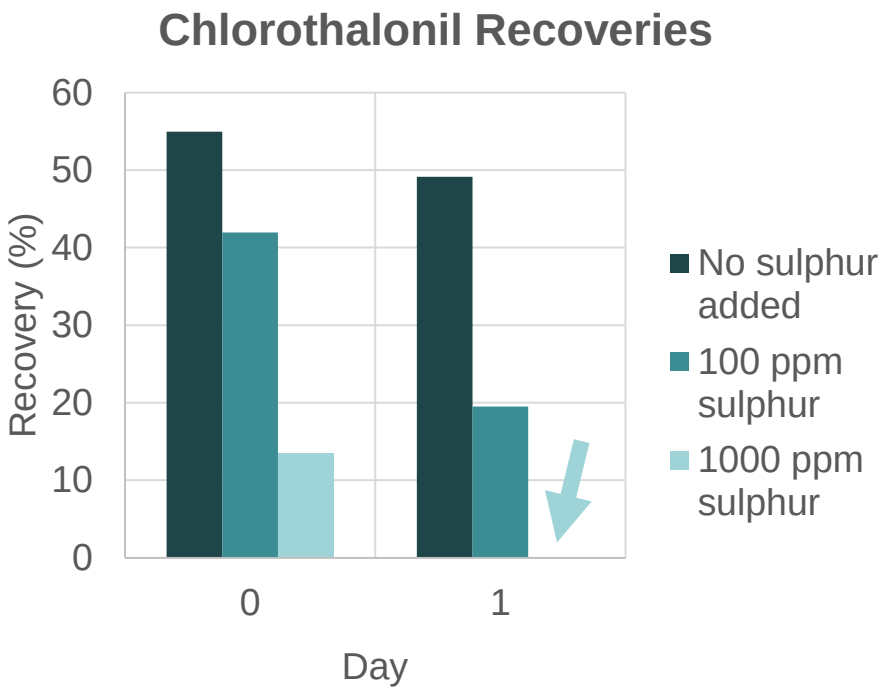
GREEN BEANS

Sample

Green beans with application of sulphur during the crop growth

Results

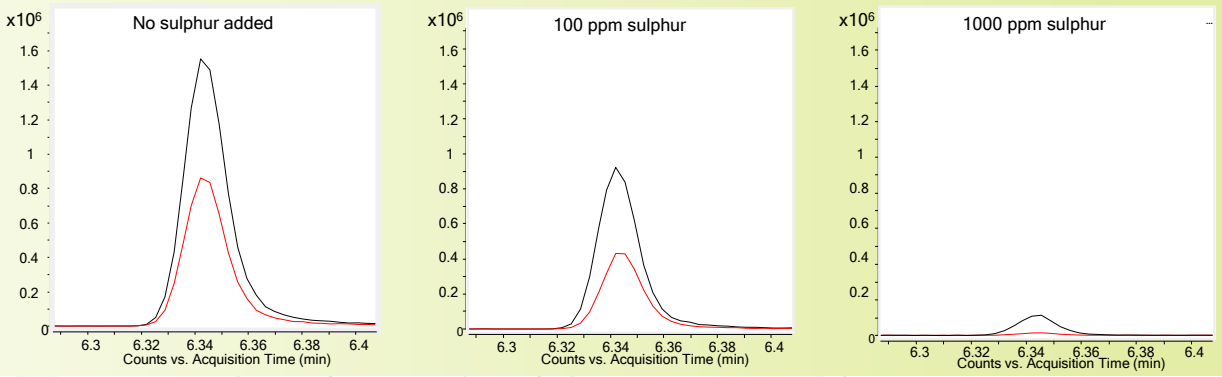
Sulphur has a strong effect on the recovery of chlorothalonil over time



GREEN BEANS

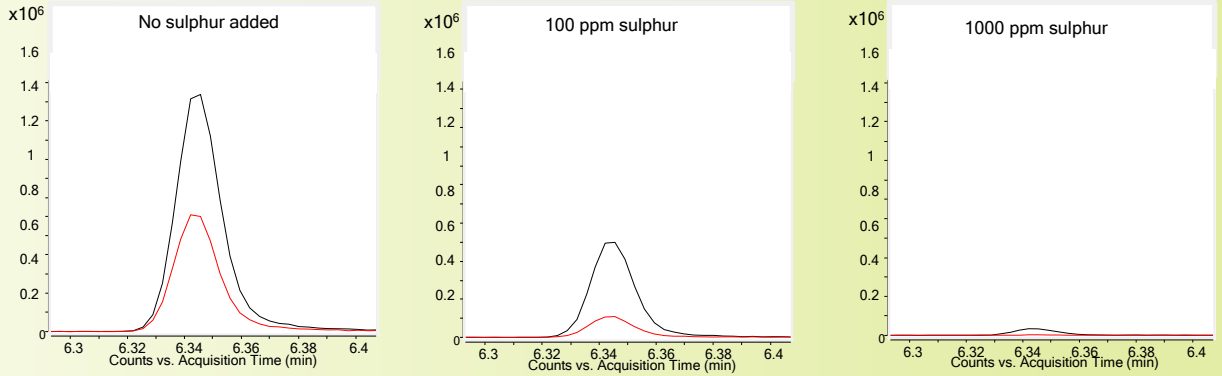
Chlorothalonil transition
266.0 → 133.0

Day 0



Chlorothalonil transition
266.0 → 133.0

Day 1



WASHED GREEN BEANS

Experiment design

Wash of the green beans before sample treatment to remove sulphur added during the crop growth

Results

The addition of sulphur (100 ppm) to samples decreases the recovery of chlorothalonil from 80% to 40%

Wash with water

- No sulphur added
- 100 ppm sulphur
- 1000 ppm sulphur

Spike with chlorothalonil (100 ppb)

Ethyl acetate extraction

Analysis (Agilent Intuvo 9000)

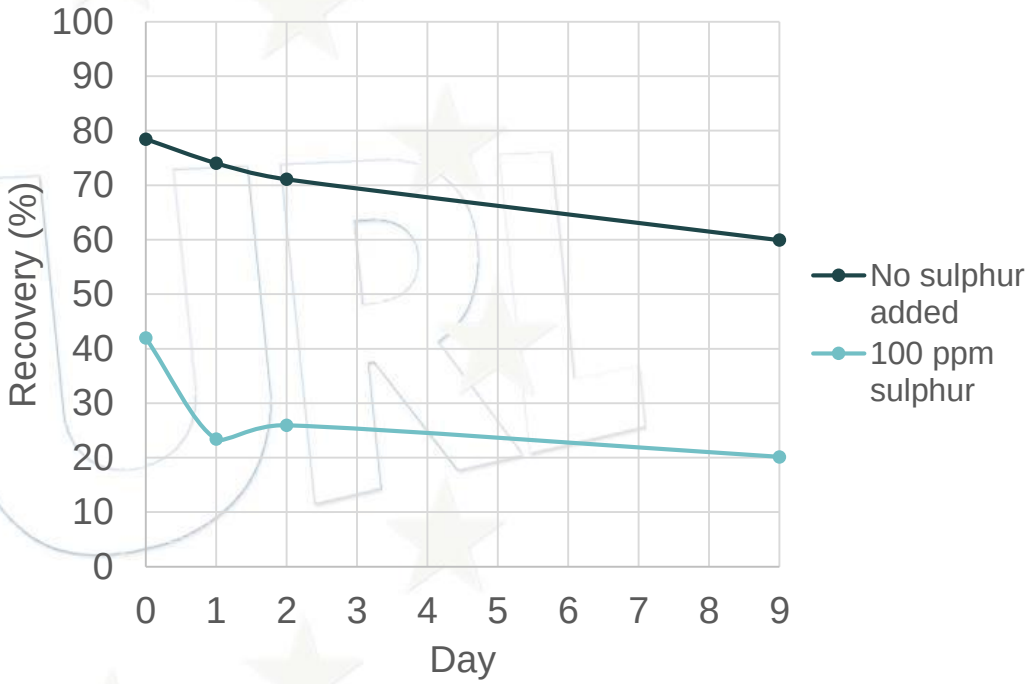
WASHED GREEN BEANS

Experiment design

Wash of the green beans before sample treatment to remove sulphur added during the crop growth

Results

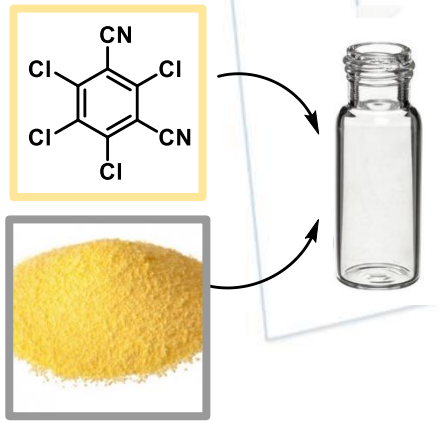
The addition of sulphur (100 ppm) to samples decreases the recovery of chlorothalonil from 80% to 40%

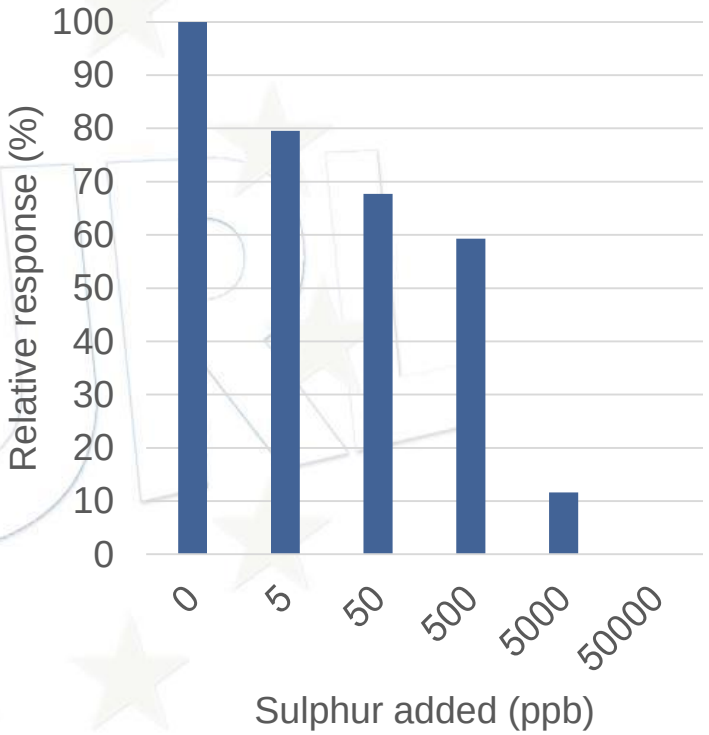


EFFECT OF SULPHUR CONCENTRATION

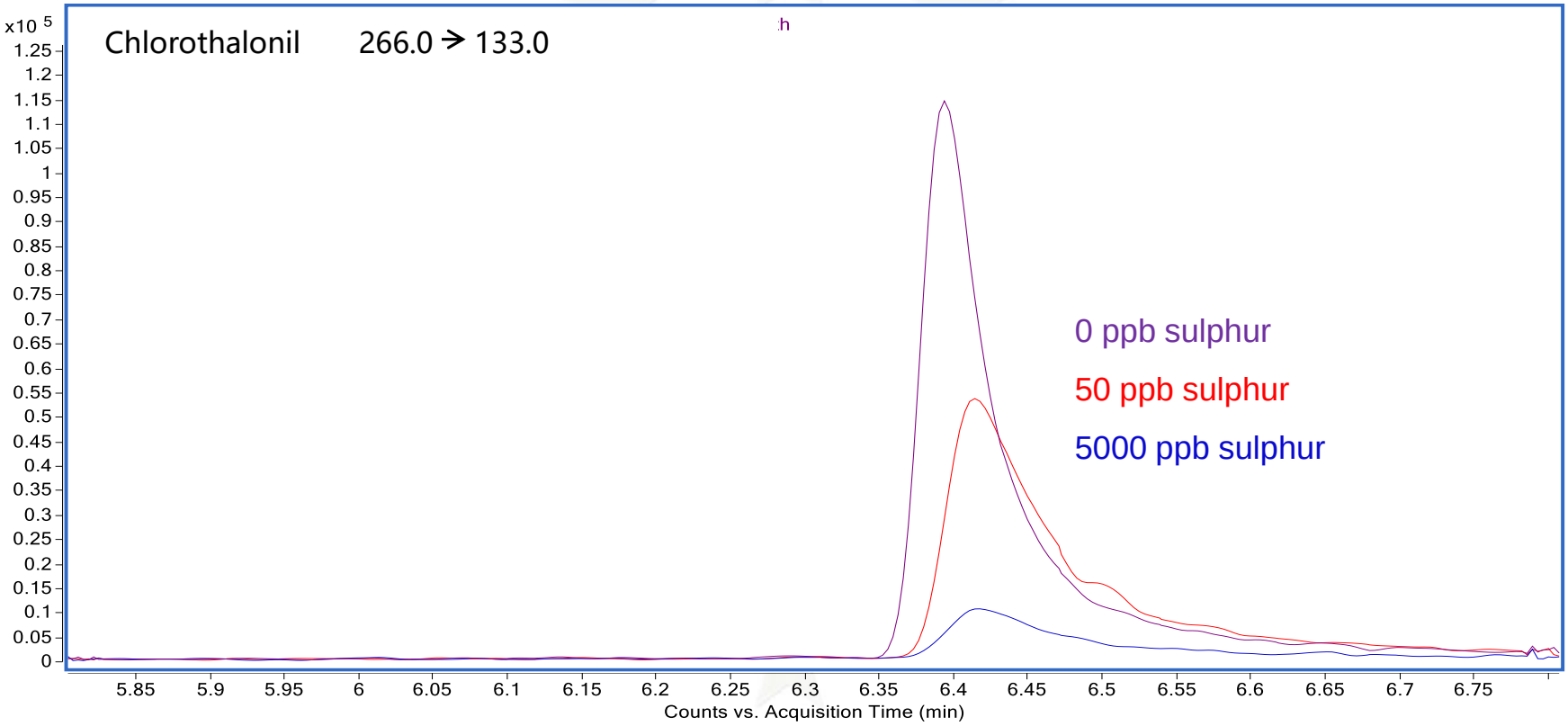
Experiment design

Addition of different amounts of sulphur (0-50ppm) to a standard of chlorothalonil (100 ppb) in ethyl acetate.





EFFECT OF SULPHUR CONCENTRATION



EFFECT OF THE LINER

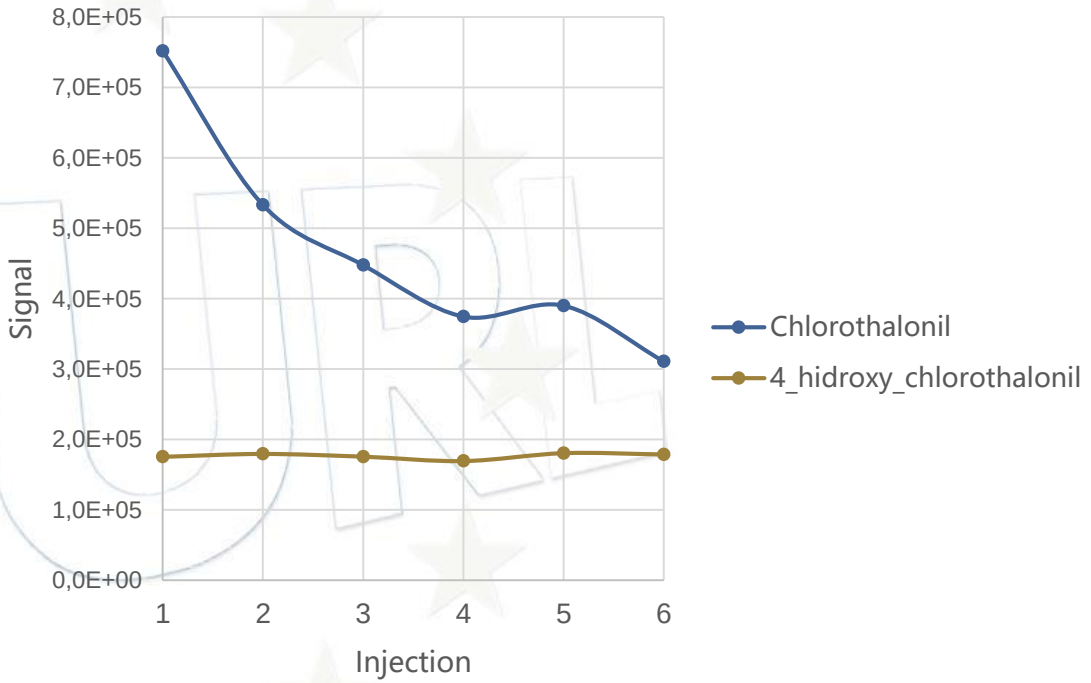
Experiment design

Chlorothalonil (100 ppb) and sulphur (50 ppb) in ethyl acetate.

6 consecutive injections.

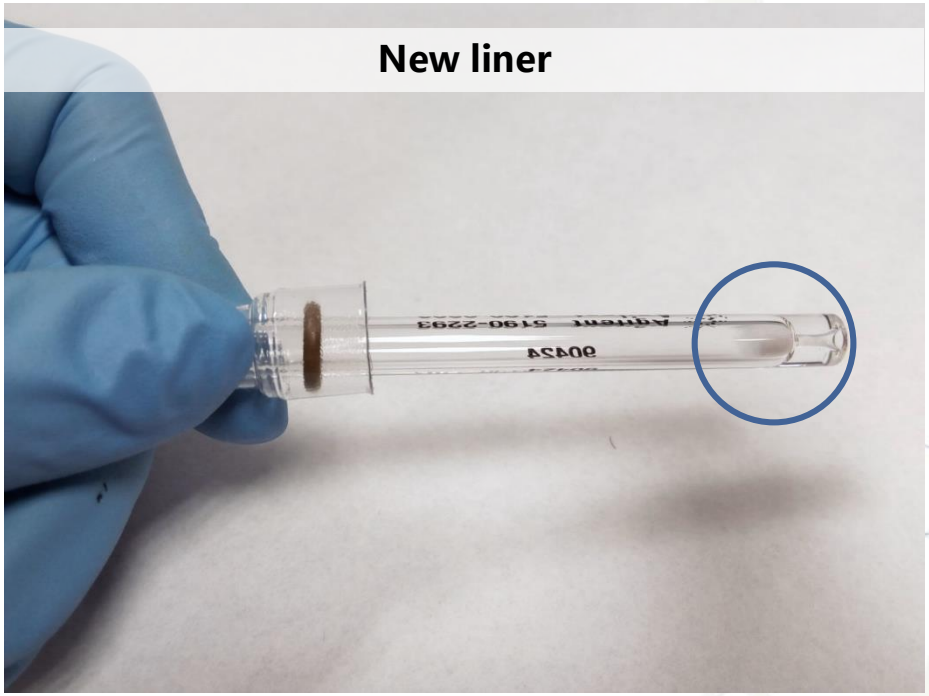
Results

The signals of chlorothalonil decrease progressively in the replicates, but its metabolite is not affected. Chlorothalonil is retained in the liner with sulphur.



LINER EFFECT

New liner



Liner after 6 injections

Evaluated pesticides EUPT-FV20

Boscalid	Iprodione
Buprofezin	Penthiopyrad
Carbendazim	Pyridaben
Clothianidin	Spiromesifen
Diazinon	Tau-Fluvalinate
Dimethoate	Tebuconazole
Etofenprox	Tebufenpyrad
Fenpyrazamine	Thiabendazole
Fenpyroximate	Thiamethoxam
Imazalil	Total: 19 (17+2 voluntary)

For informative purposes:

Chlorothalonil

Metaflumizone (sum of E- and Z-isomers)

Assigned values

Voluntary Pesticides

	Robust Mean X* (mg/kg)
Clothianidin	0,036
Imazalil	0,038
Carbendazim	0,039
Boscalid	0,039
Diazinon	0,044
Thiabendazole	0,048
Dimethoate	0,049
Iprodione	0,056
Penthiopyrad	0,058
Tau-Fluvalinate	0,122
Fenpyrazamine	0,131
Thiamethoxam	0,367
Etofenprox	0,372
Fenpyroximate	0,377
Spiromesifen	0,603
Buprofezin	0,738
Pyridaben	0,935
Tebufenpyrad	1,029
Tebuconazole	1,220

Assigned values

Voluntary Pesticides

0.036-0.058 mg/kg

	Robust Mean X* (mg/kg)
Clothianidin	0,036
Imazalil	0,038
Carbendazim	0,039
Boscalid	0,039
Diazinon	0,044
Thiabendazole	0,048
Dimethoate	0,049
Iprodione	0,056
Penthiopyrad	0,058
Tau-Fluvalinate	0,122
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Pyridaben	0,935
Tebufenpyrad	1,029
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Assigned values

Voluntary Pesticides

0.036-0.058 mg/kg

0.122-0.935 mg/kg

	Robust Mean X* (mg/kg)
Clothianidin	0,036
Imazalil	0,038
Carbendazim	0,039
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Diazinon	0,044
Thiabendazole	0,048
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Spiromesifen	0,603
Buprofezin	0,738
Pyridaben	0,935
Tebufenpyrad	1,029
Tebuconazole	1,220

Assigned values

Voluntary Pesticides

0.036-0.058 mg/kg

0.121-0.935 mg/kg

1.029-1.220mg/kg

	Robust Mean X* (mg/kg)
Clothianidin	0,036
Imazalil	0,038
Carbendazim	0,039
Boscalid	0,039
Diazinon	0,044
Thiabendazole	0,048
Dimethoate	0,049
Iprodione	0,056
Penthiopyrad	0,058
Tau-Fluvalinate	0,122
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Spiromesifen	0,603
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Pyridaben	0,935
Tebufenpyrad	1,029
Tebuconazole	1,220

Pesticides	MRRL (mg/kg)	Robust mean (mg/kg)	Uncertainty (mg/kg)	Number of results (n)	CV* (%)
Boscalid	0,010	0,039	0,0007	159	16,9
Buprofezin	0,010	0,738	0,0129	158	17,6
Carbendazim	0,010	0,039	0,0008	140	20,8
Clothianidin	0,010	0,036	0,0006	141	15,4
Diazinon	0,010	0,044	0,0008	162	17,7
Dimethoate	0,003	0,049	0,0008	159	16,2
Etofenprox	0,010	0,372	0,0069	150	18,1
Fenpyroximate	0,010	0,377	0,0087	140	21,7
Imazalil	0,010	0,038	0,0010	154	27,1
Iprodione	0,010	0,056	0,0014	147	24,5
Pyridaben	0,010	0,935	0,0164	157	17,6
Spiromesifen	0,010	0,603	0,0132	140	20,7
Tau-Fluvalinate	0,010	0,122	0,0032	149	26,0
Tebuconazole	0,010	1,220	0,0201	161	16,7
Tebufenpyrad	0,010	1,029	0,0179	156	17,4
Thiabendazole	0,010	0,048	0,0009	154	18,6
Thiamethoxam	0,010	0,367	0,0057	147	15,1
Voluntary Pesticides					
Fenpyrazamine	0,010	0,131	0,003	74	15,6
Penthiopyrad	0,010	0,058	0,001	70	17,1

Pesticides	MRRL (mg/kg)	Robust mean (mg/kg)	Uncertainty (mg/kg)	Number of results (n)	CV* (%)
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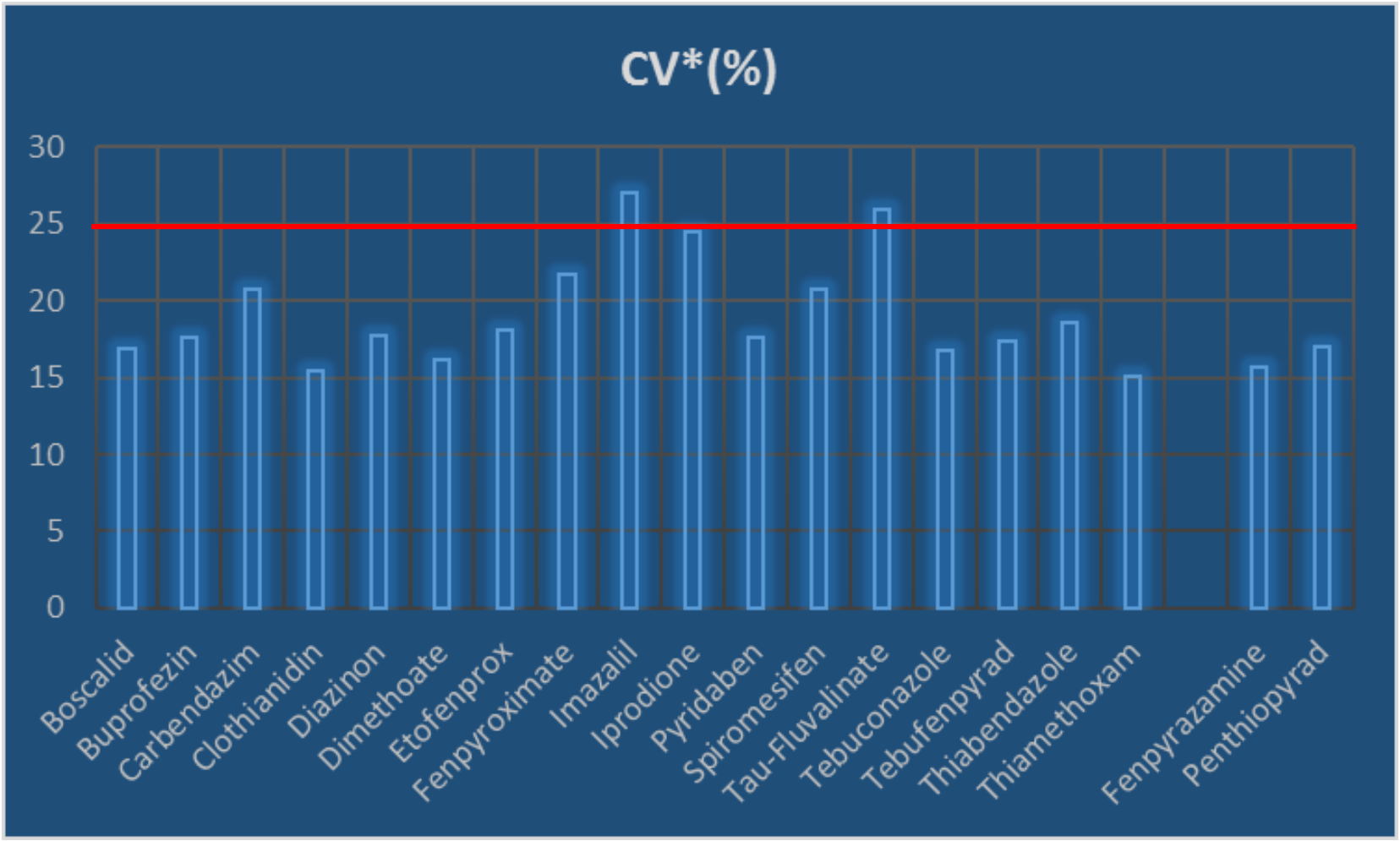
Thiamethoxam	0,010	0,367	0,0057	147	15,1
Voluntary Pesticides					
Fenpyrazamine	0,010	0,131	0,003	74	15,6
Penthiopyrad	0,010	0,058	0,001	70	17,1

Dispersion of Results



z-Scores

Z Scores classification

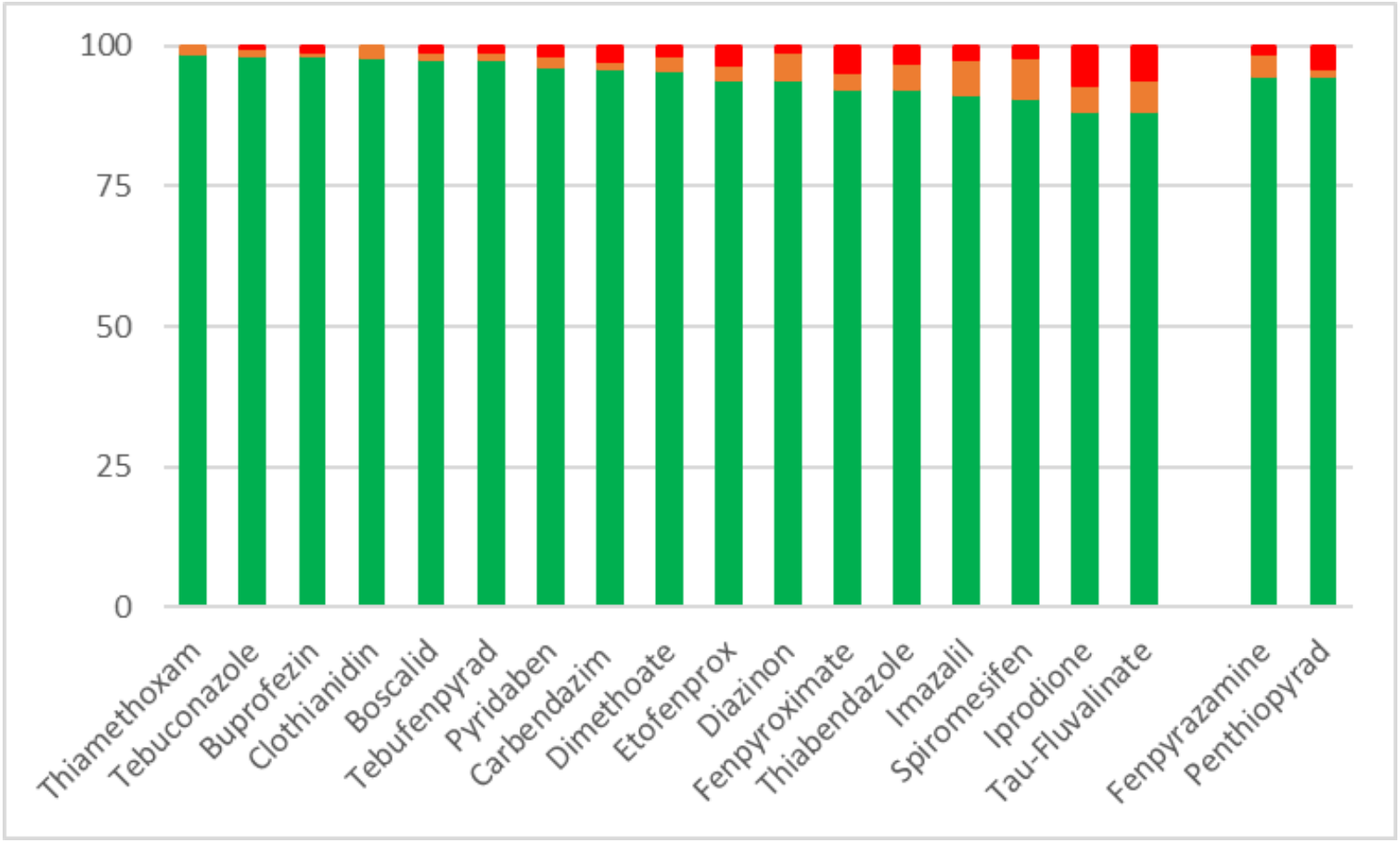
Pesticides	Robust Mean (mg/kg)	% Acceptable z scores	% Questionable z scores	% Unacceptable z scores
Boscalid	0,039	97,5	1,3	1,3
Buprofezin	0,738	98,1	0,6	1,3
Carbendazim	0,039	95,8	1,4	2,8
Clothianidin	0,036	97,9	2,1	0,0
Diazinon	0,044	93,9	4,9	1,2
Dimethoate	0,049	95,7	2,5	1,9
Etofenprox	0,372	94,0	2,7	3,3
Fenpyroximate	0,377	92,3	2,8	4,9
Imazalil	0,038	91,2	6,3	2,5
Iprodione	0,056	88,2	4,6	7,2
Pyridaben	0,935	96,2	1,9	1,9
Spiromesifen	0,603	90,8	7,1	2,1
Tau-Fluvalinate	0,122	88,2	5,9	5,9
Tebuconazole	1,220	98,1	1,2	0,6
Tebufenpyrad	1,029	97,4	1,3	1,3
Thiabendazole	0,048	92,3	4,5	3,2
Thiamethoxam	0,367	98,6	1,4	0,0
Voluntary Pesticides				
Fenpyrazamine	0,131	94,7	4,0	1,3
Penthiopyrad	0,058	94,4	1,4	4,2

Z Scores classification

Pesticides	Robust Mean (mg/kg)	% Acceptable z scores	% Questionable z scores	% Unacceptable z scores
Boscalid	0,039	97,5	1,3	1,3
Buprofezin	0,738	98,1	0,6	1,3
Carbendazim	0,039	95,8	1,4	2,8
Clothianidin	0,036	97,9	2,1	0,0
Diazinon	0,044	93,9	4,9	1,2
Dimethoate	0,049	95,7	2,5	1,9
Etofenprox	0,372	94,0	2,7	3,3
Fenpyroximate	0,377	92,3	2,8	4,9
Imazalil	0,038	91,2	6,3	2,5
Iprodione	0,056	88,2	4,6	7,2
Pyridaben	0,935	96,2	1,9	1,9
Spiromesifen	0,603	90,8	7,1	2,1
Tau-Fluvalinate	0,122	88,2	5,9	5,9
Tebuconazole	1,220	98,1	1,2	0,6
Tebufenpyrad	1,029	97,4	1,3	1,3
Thiabendazole	0,048	92,3	4,5	3,2
Thiamethoxam	0,367	98,6	1,4	0,0
Voluntary Pesticides				
Fenpyrazamine	0,131	94,7	4,0	1,3
Penthiopyrad	0,058	94,4	1,4	4,2

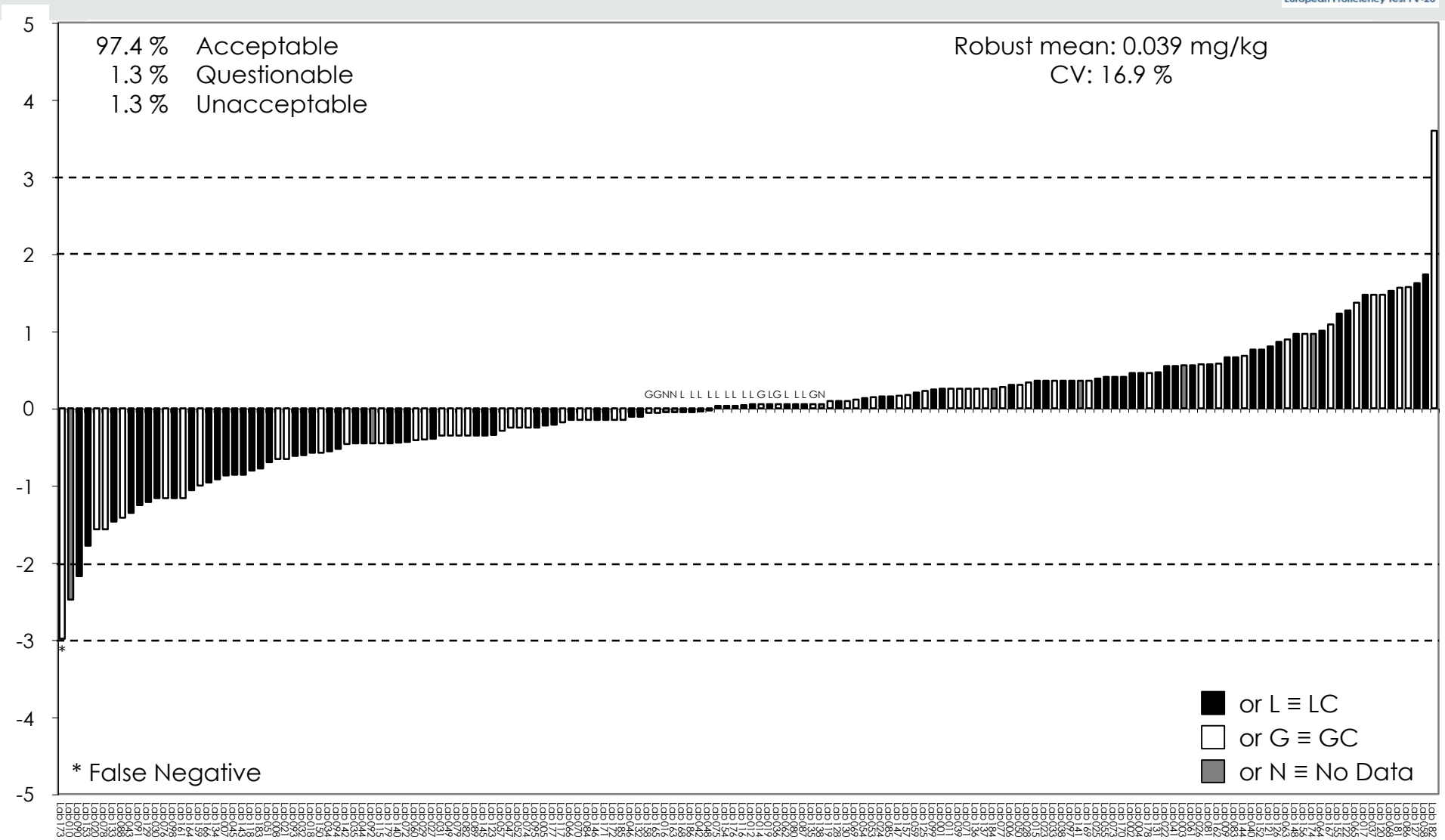
Z Scores classification

EU/EFTA Laboratories

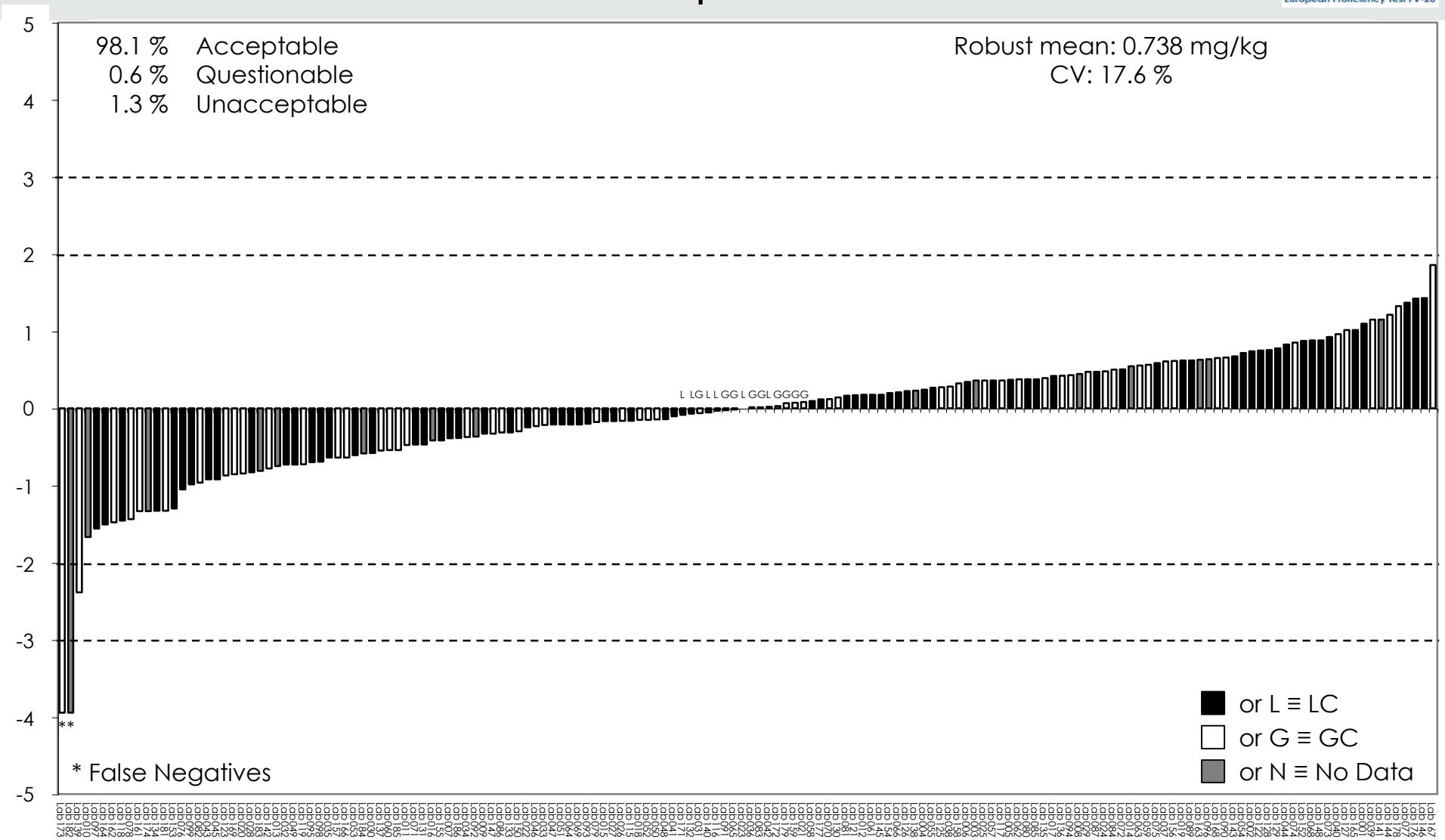


Acceptable **Questionable** **Unacceptable**

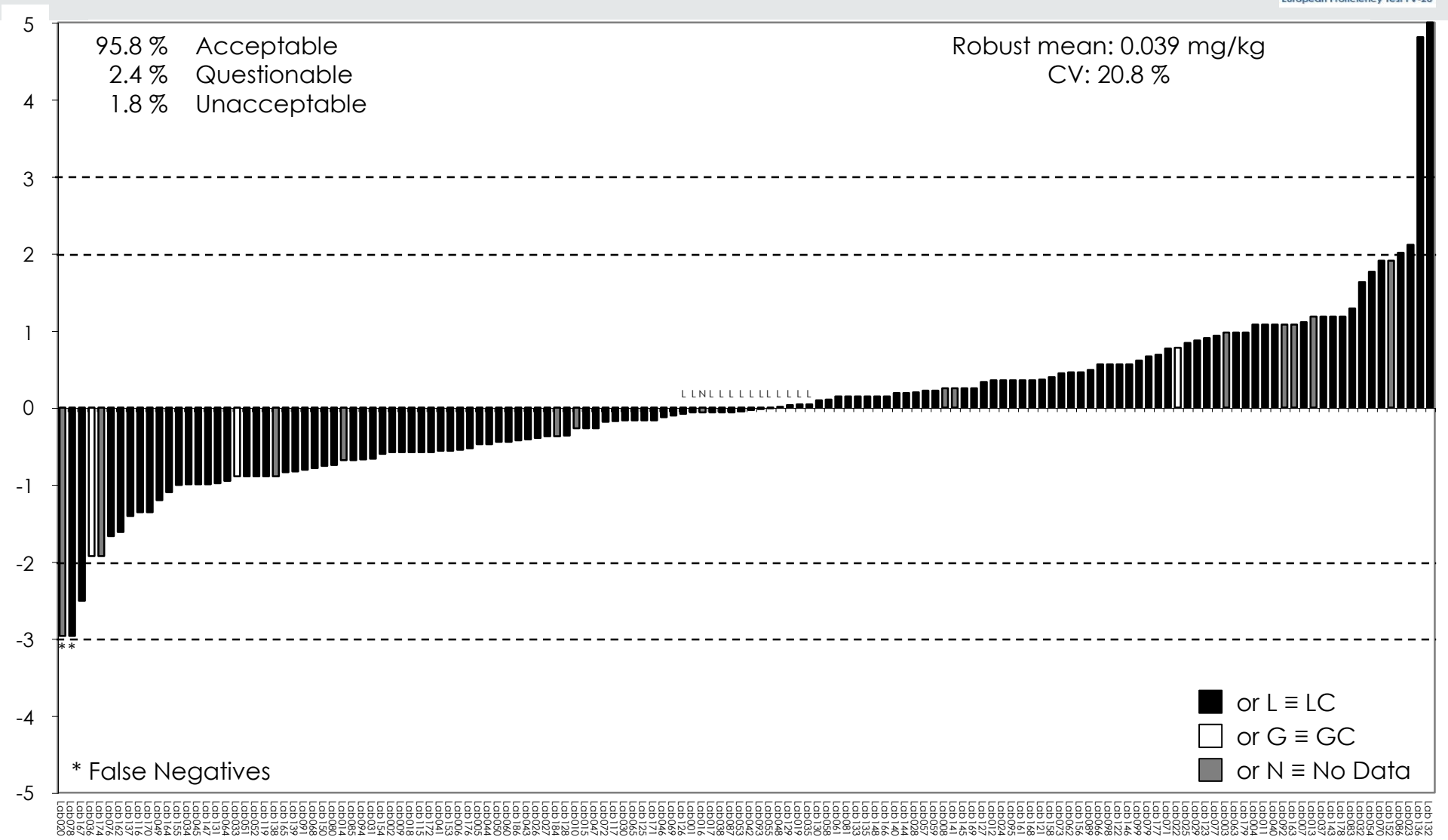
Boscalid


97.4 % Acceptable
1.3 % Questionable
1.3 % Unacceptable
Robust mean: 0.039 mg/kg
CV: 16.9 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
GGNN L LL LL LL LL LL G LG L LL GN
*
* False Negative
or L ≡ LC
or G ≡ GC
or N ≡ No Data

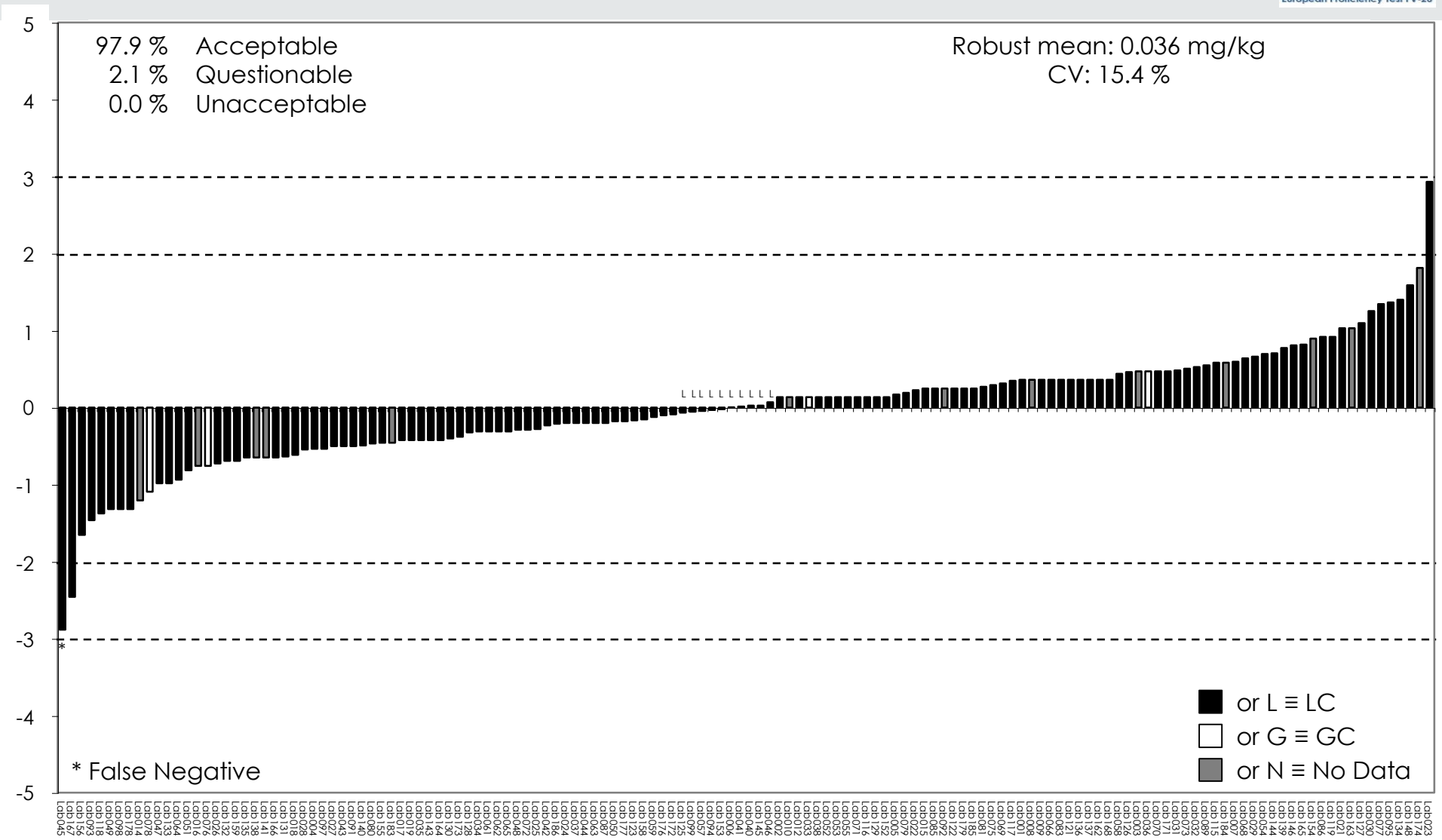
Buprofezin


98.1 % Acceptable
0.6 % Questionable
1.3 % Unacceptable
Robust mean: 0.738 mg/kg
CV: 17.6 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
L LG L L GG L GGL GGGG
**
* False Negatives
or L ≡ LC
or G ≡ GC
or N ≡ No Data

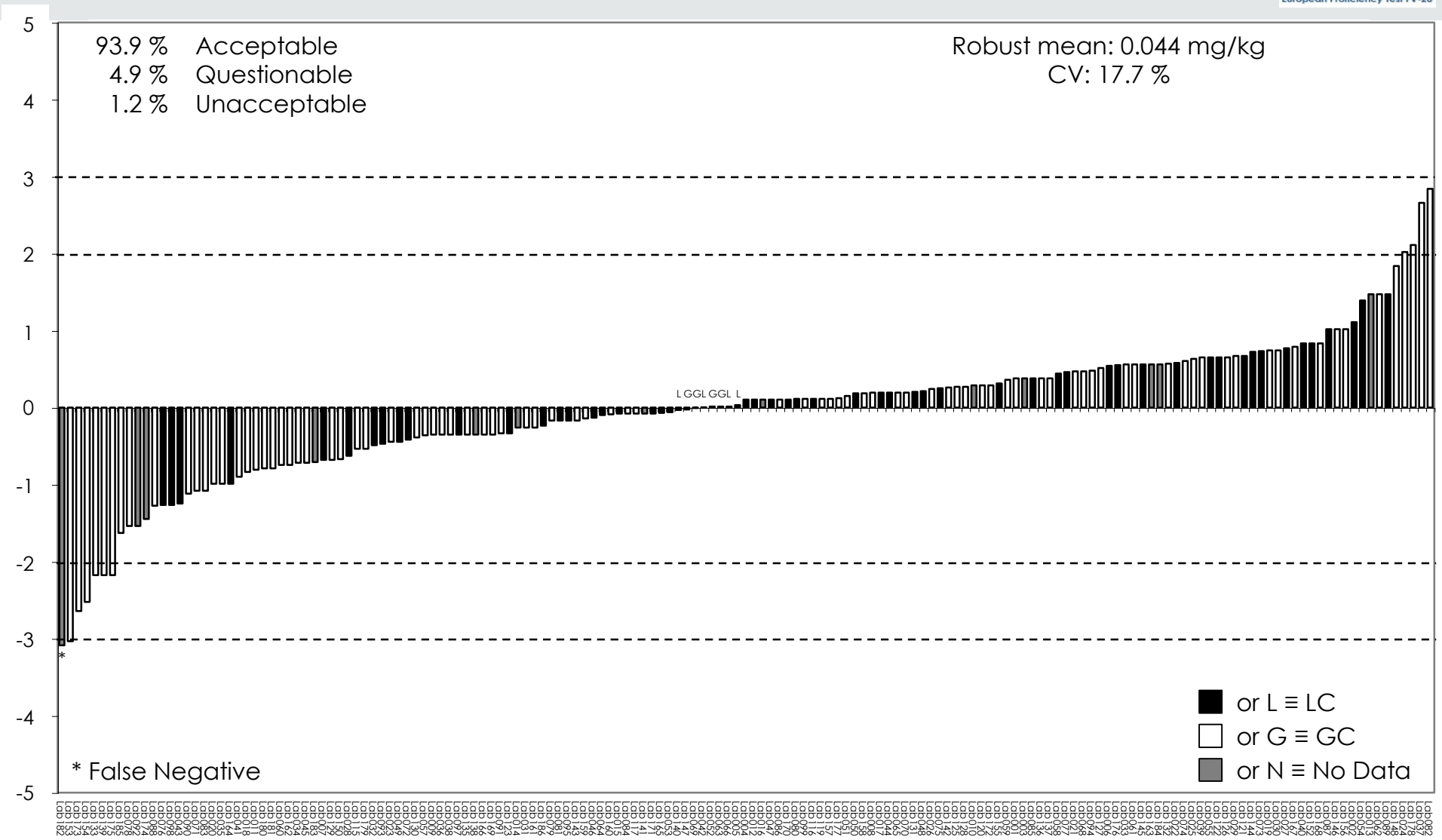
Carbendazim



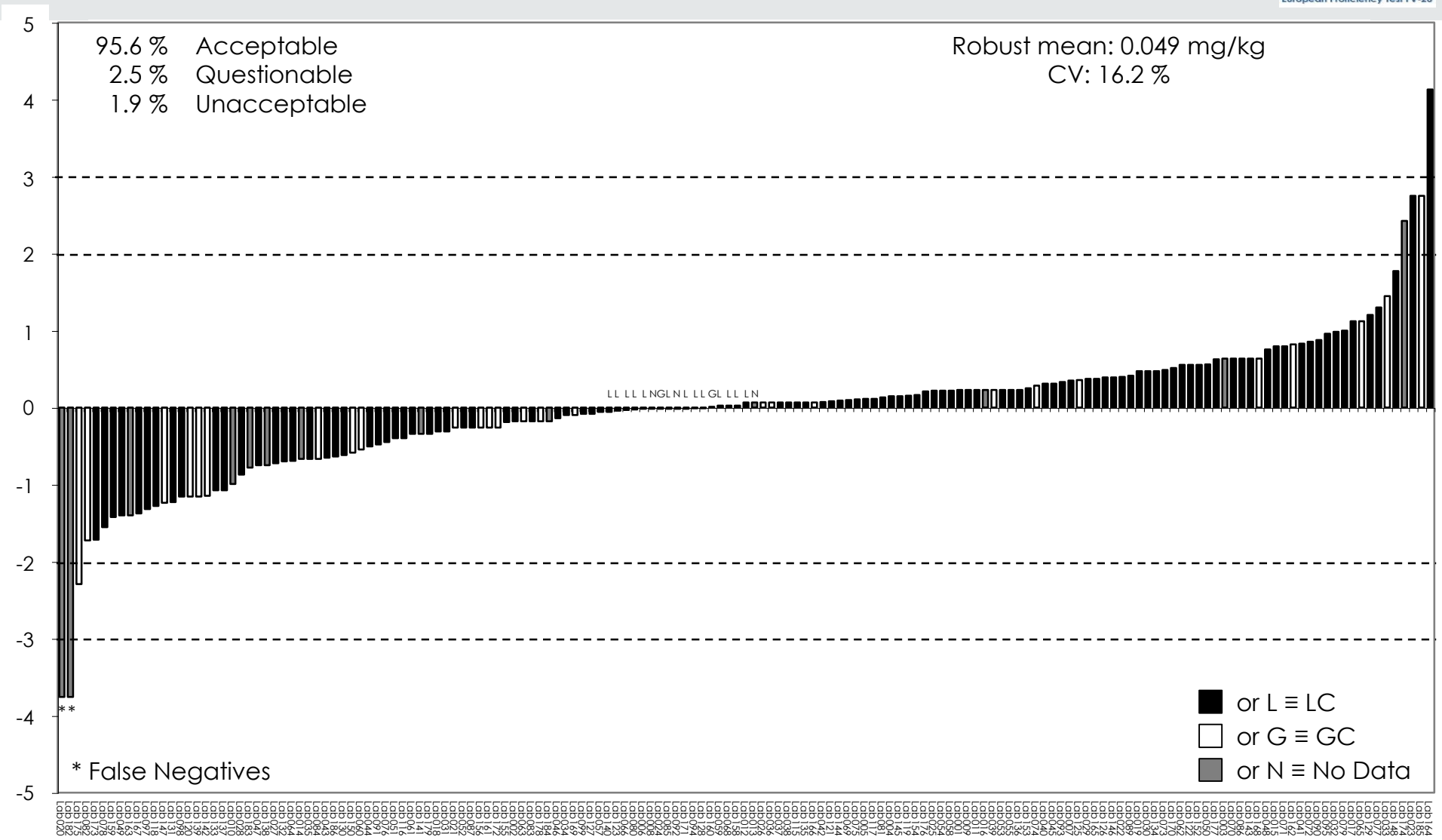
Clothianidin



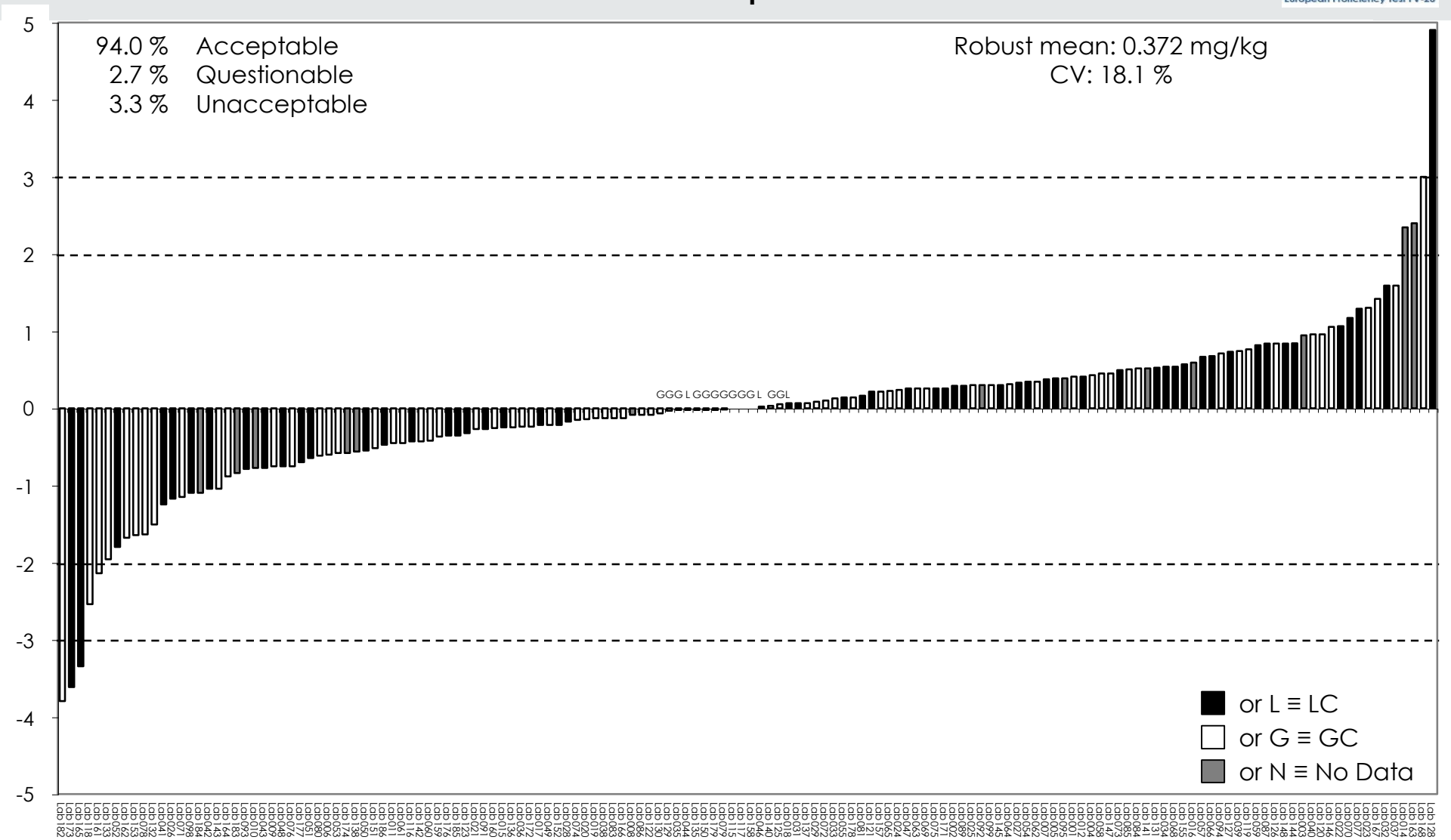
Diazinon


93.9 % Acceptable
4.9 % Questionable
1.2 % Unacceptable
Robust mean: 0.044 mg/kg
CV: 17.7 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
L GGL GGL L
*
* False Negative
or L ≡ LC
or G ≡ GC
or N ≡ No Data

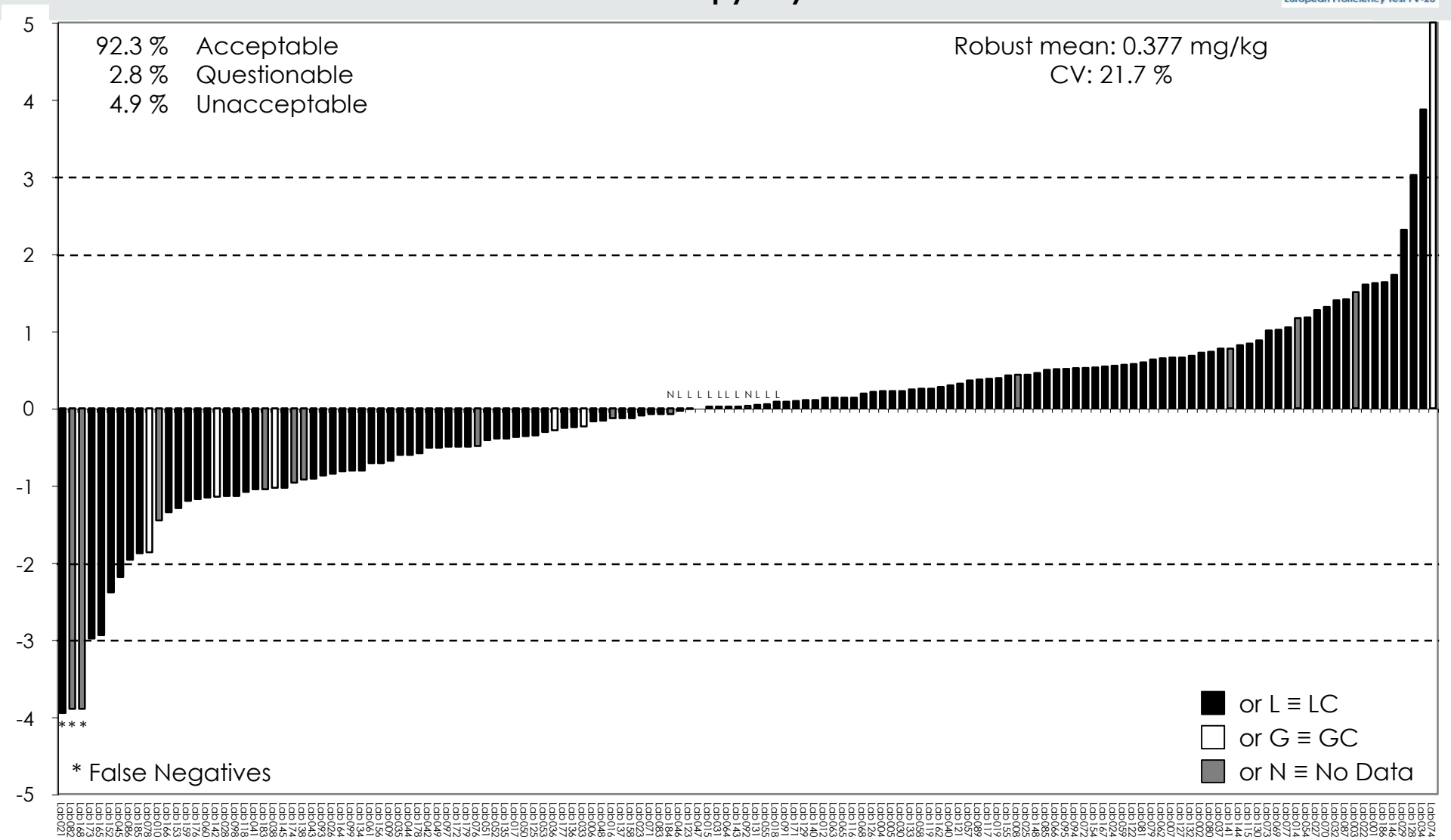
Dimethoate


95.6 % Acceptable
2.5 % Questionable
1.9 % Unacceptable
Robust mean: 0.049 mg/kg
CV: 16.2 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
**
* False Negatives
or L ≡ LC
or G ≡ GC
or N ≡ No Data

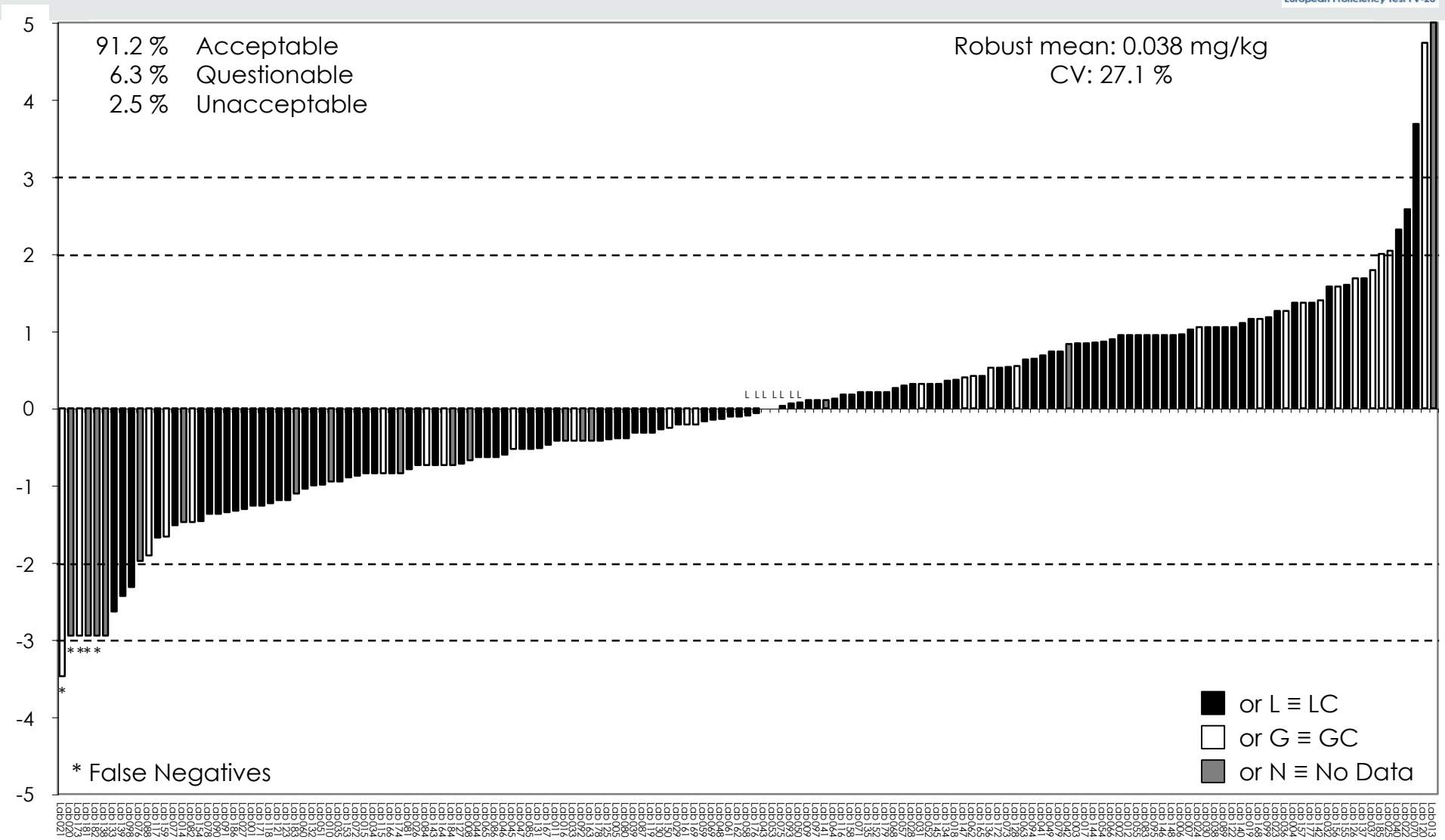
Etofenprox


94.0 % Acceptable
2.7 % Questionable
3.3 % Unacceptable
Robust mean: 0.372 mg/kg
CV: 18.1 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
GGG L GGGGGGG L GGL
or L ≡ LC
or G ≡ GC
or N ≡ No Data

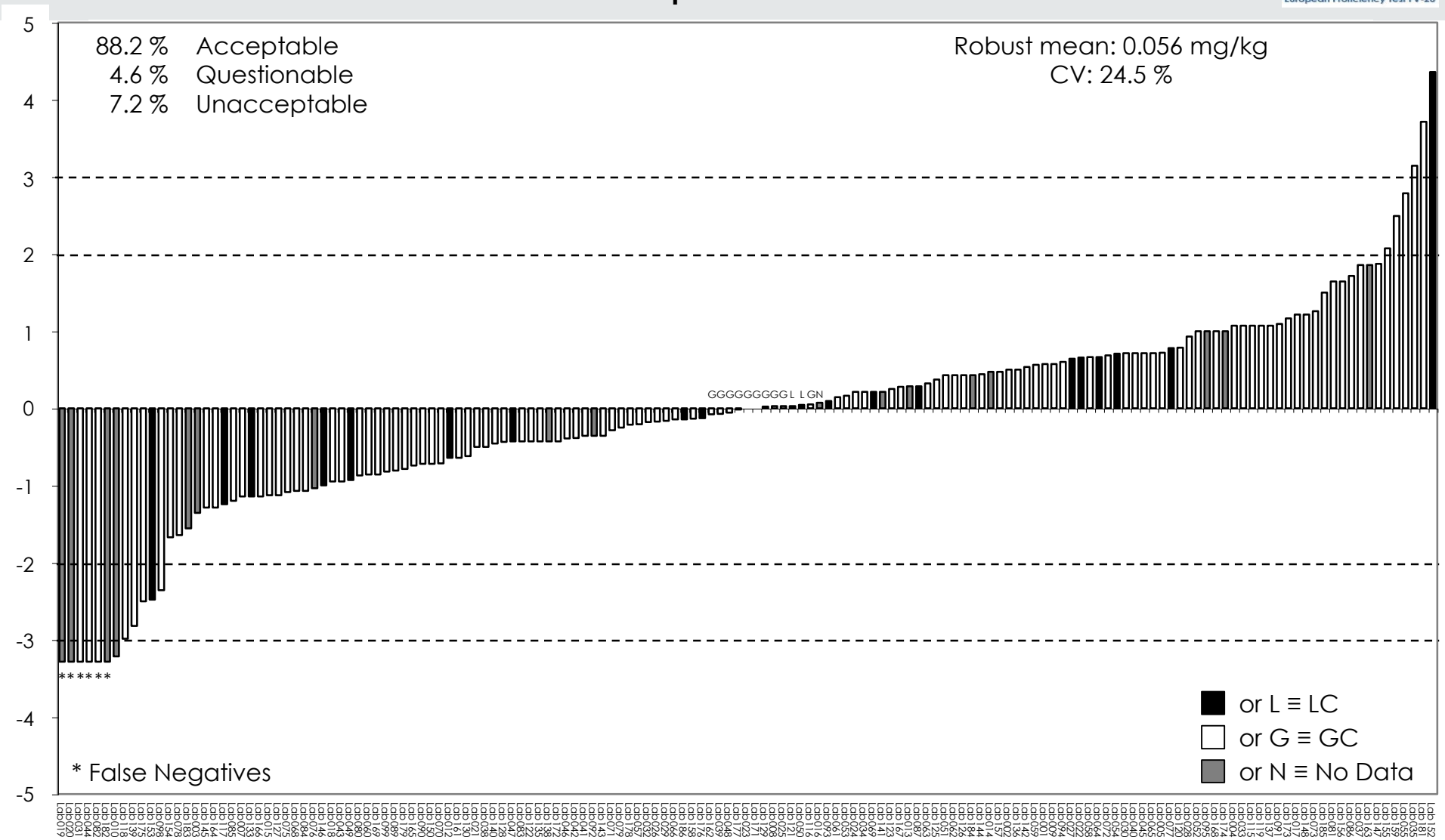
Fenpyroxymate



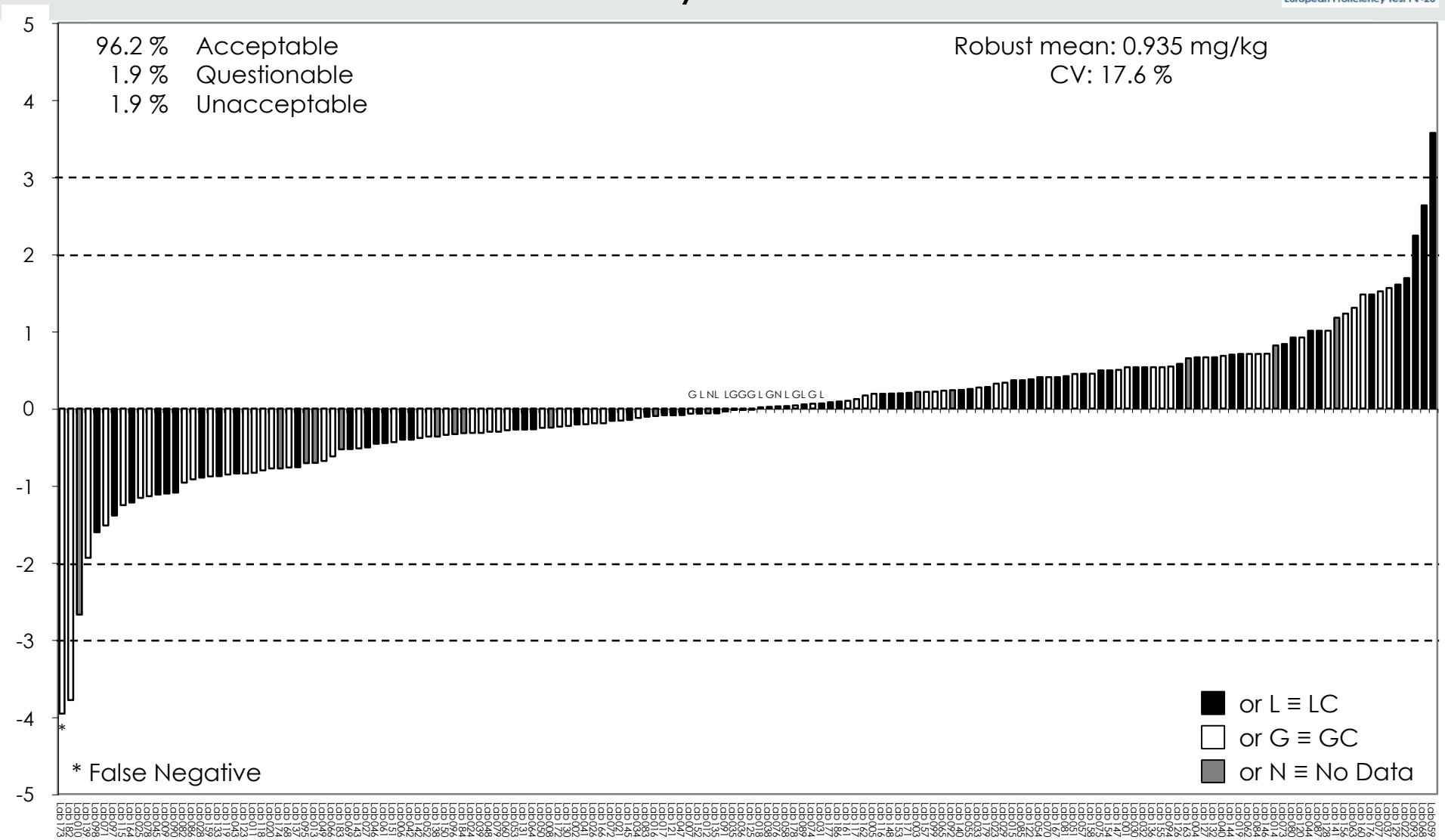
Imazalil


91.2 % Acceptable
6.3 % Questionable
2.5 % Unacceptable
Robust mean: 0.038 mg/kg
CV: 27.1 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
* False Negatives
or L ≡ LC
or G ≡ GC
or N ≡ No Data

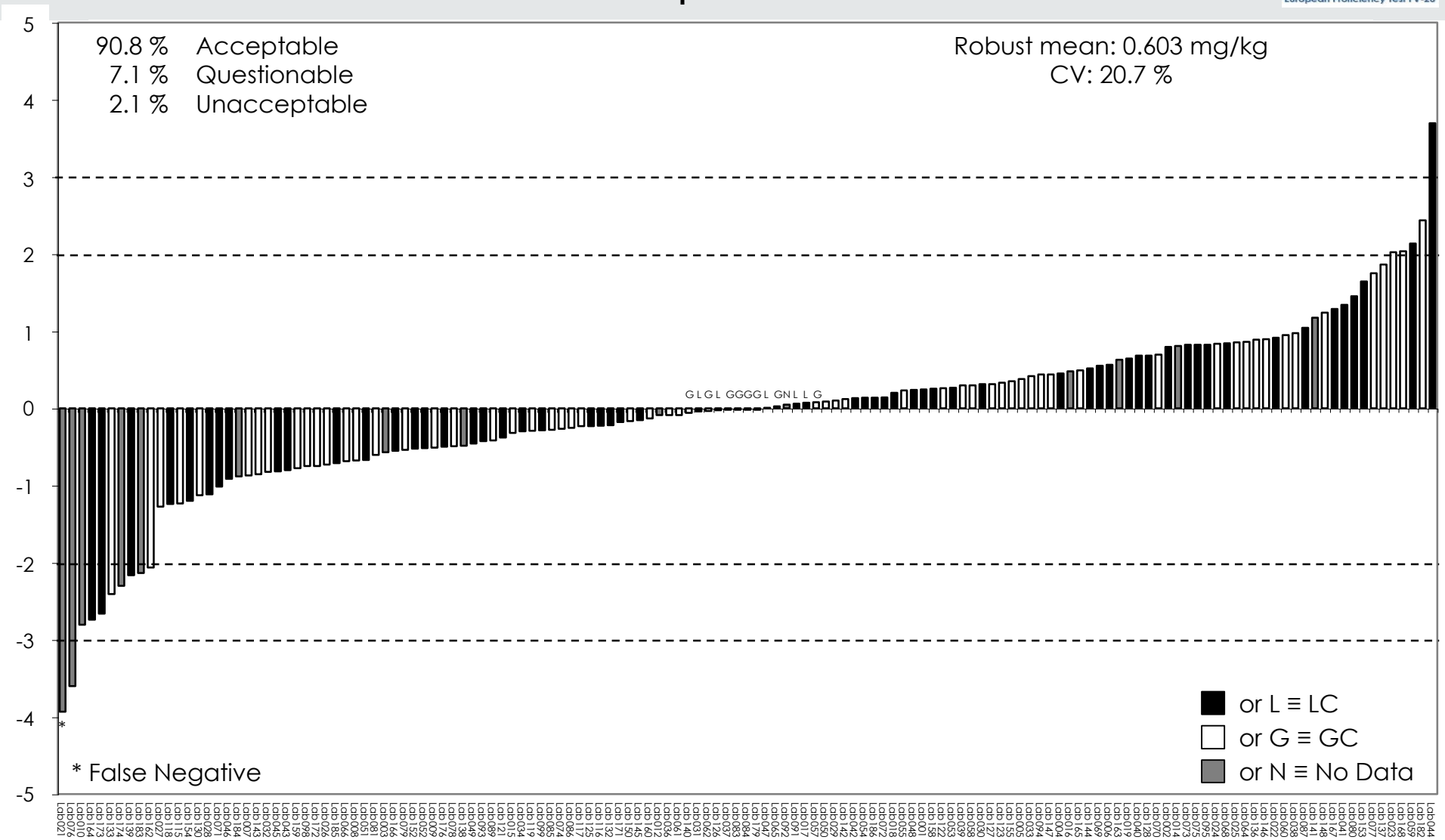
Iprodione


88.2 % Acceptable
4.6 % Questionable
7.2 % Unacceptable
Robust mean: 0.056 mg/kg
CV: 24.5 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
GGGGGGGGG L L GN
******
* False Negatives
or L ≡ LC
or G ≡ GC
or N ≡ No Data

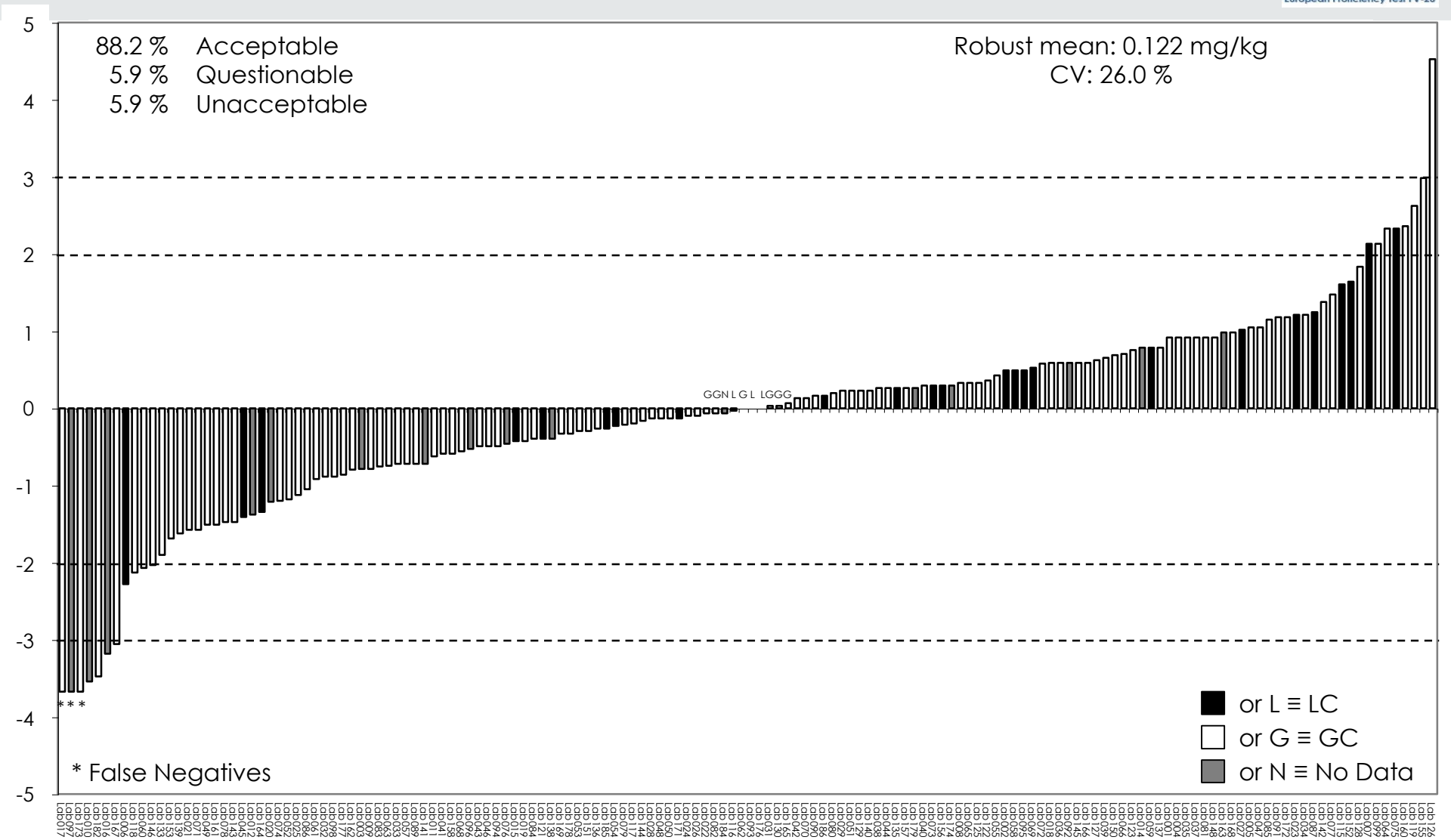
Pyridaben


96.2 % Acceptable
1.9 % Questionable
1.9 % Unacceptable
Robust mean: 0.935 mg/kg
CV: 17.6 %
5
4
3
2
1
0
-1
-2
-3
-4
-5
* False Negative
or L ≡ LC
or G ≡ GC
or N ≡ No Data

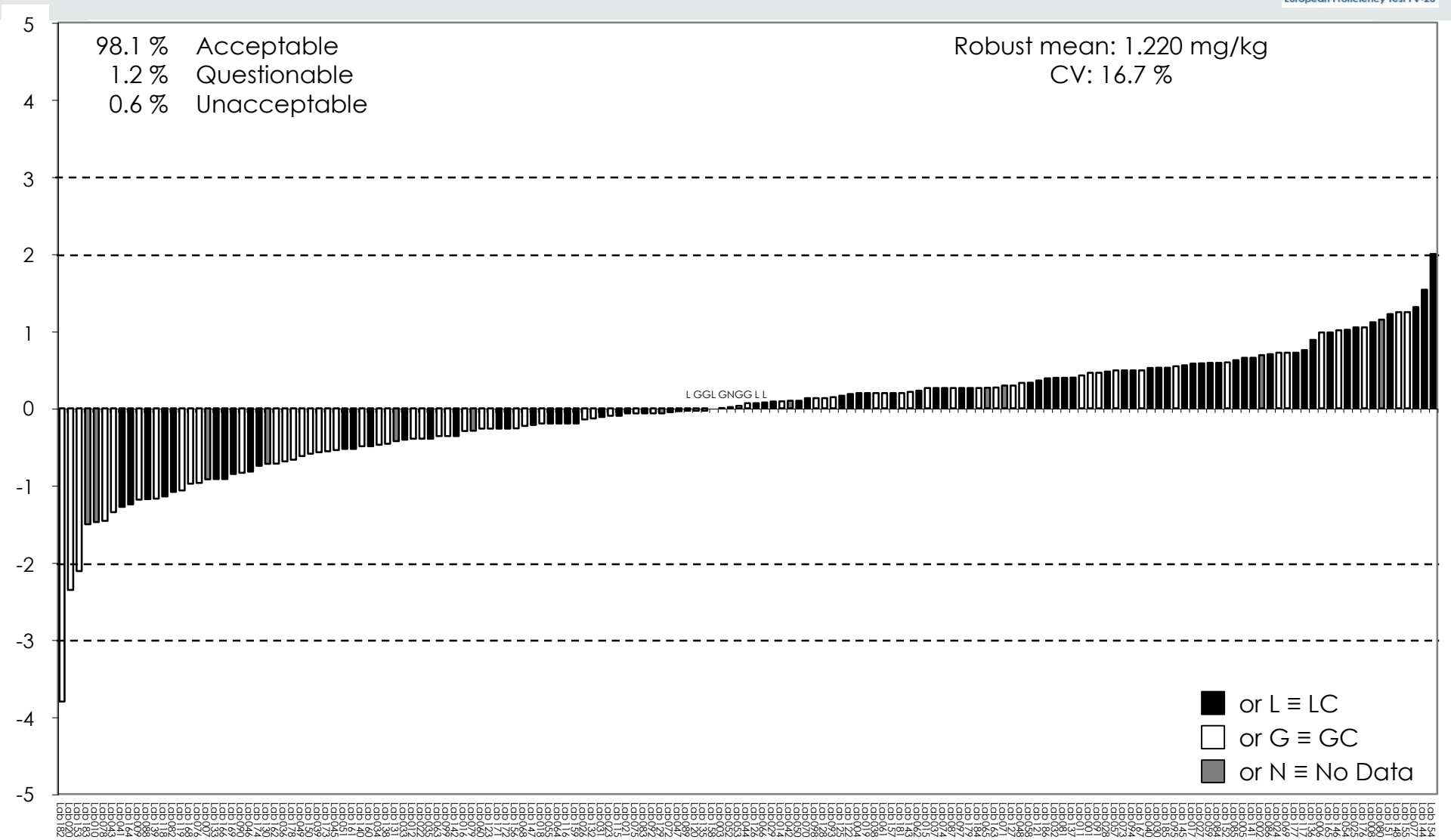
Spiromesifen



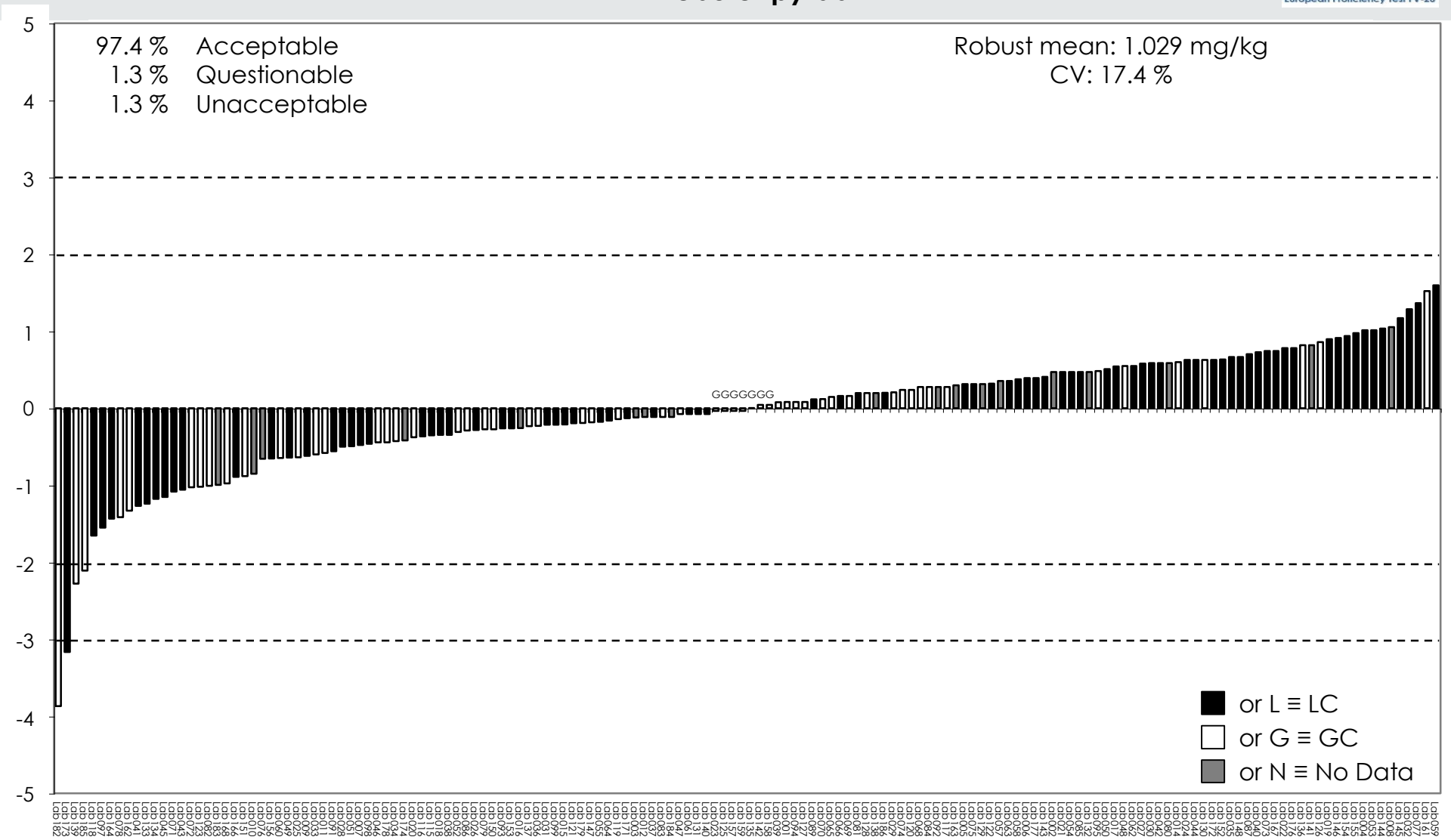
Tau-Fluvalinate



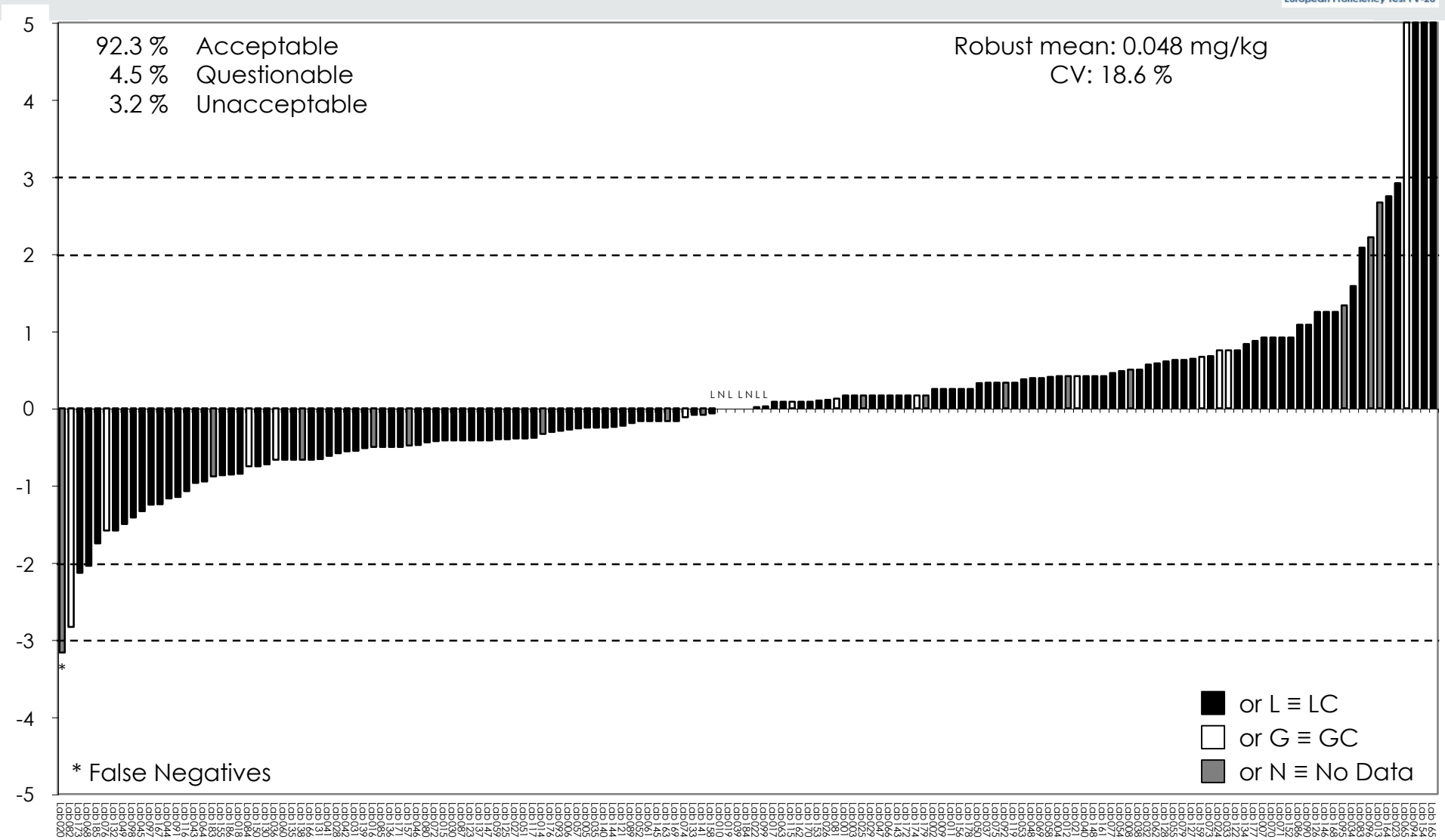
Tebuconazole



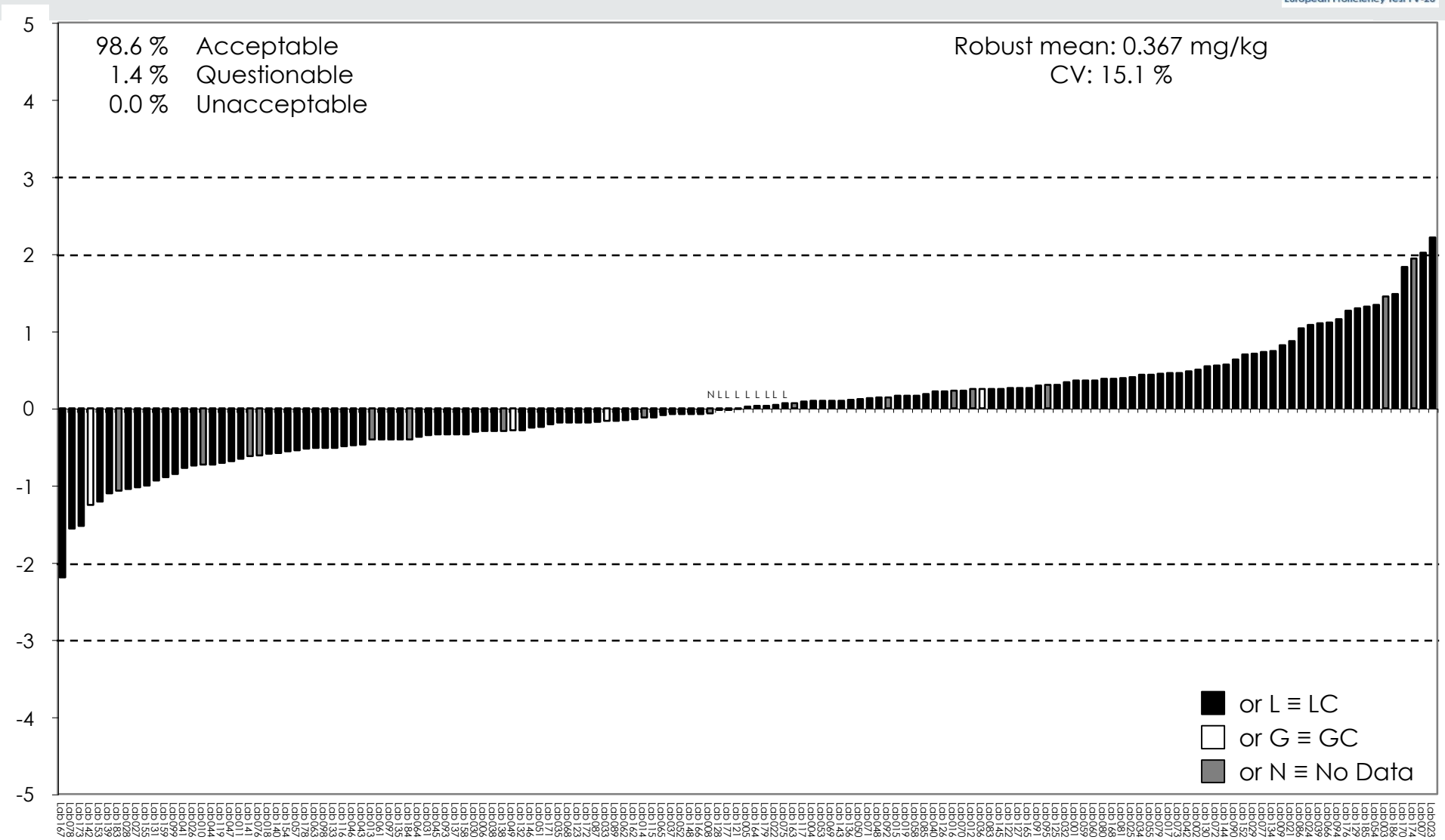
Tebufenpyrad



Thiabendazole

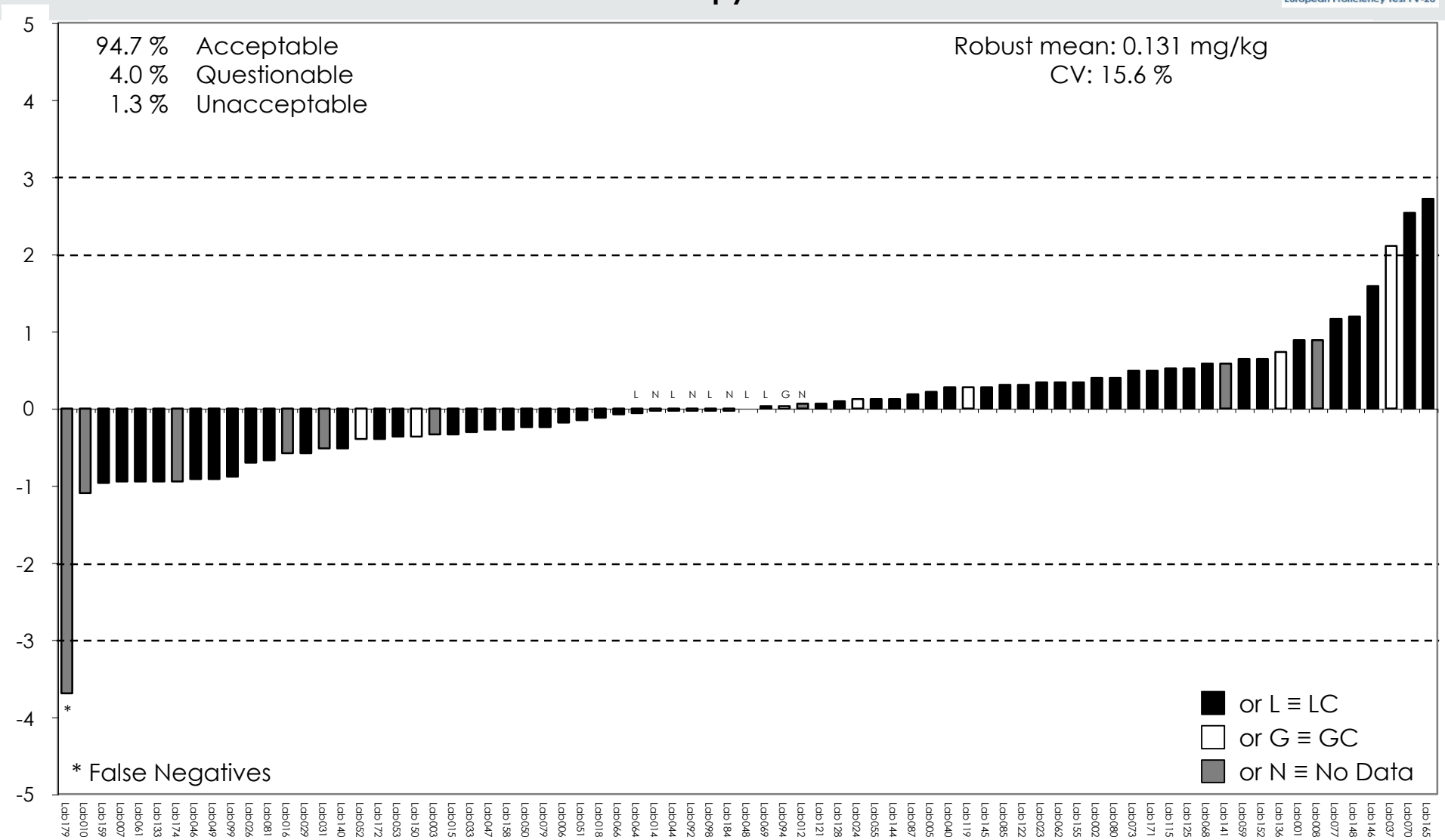


Thiametoxam

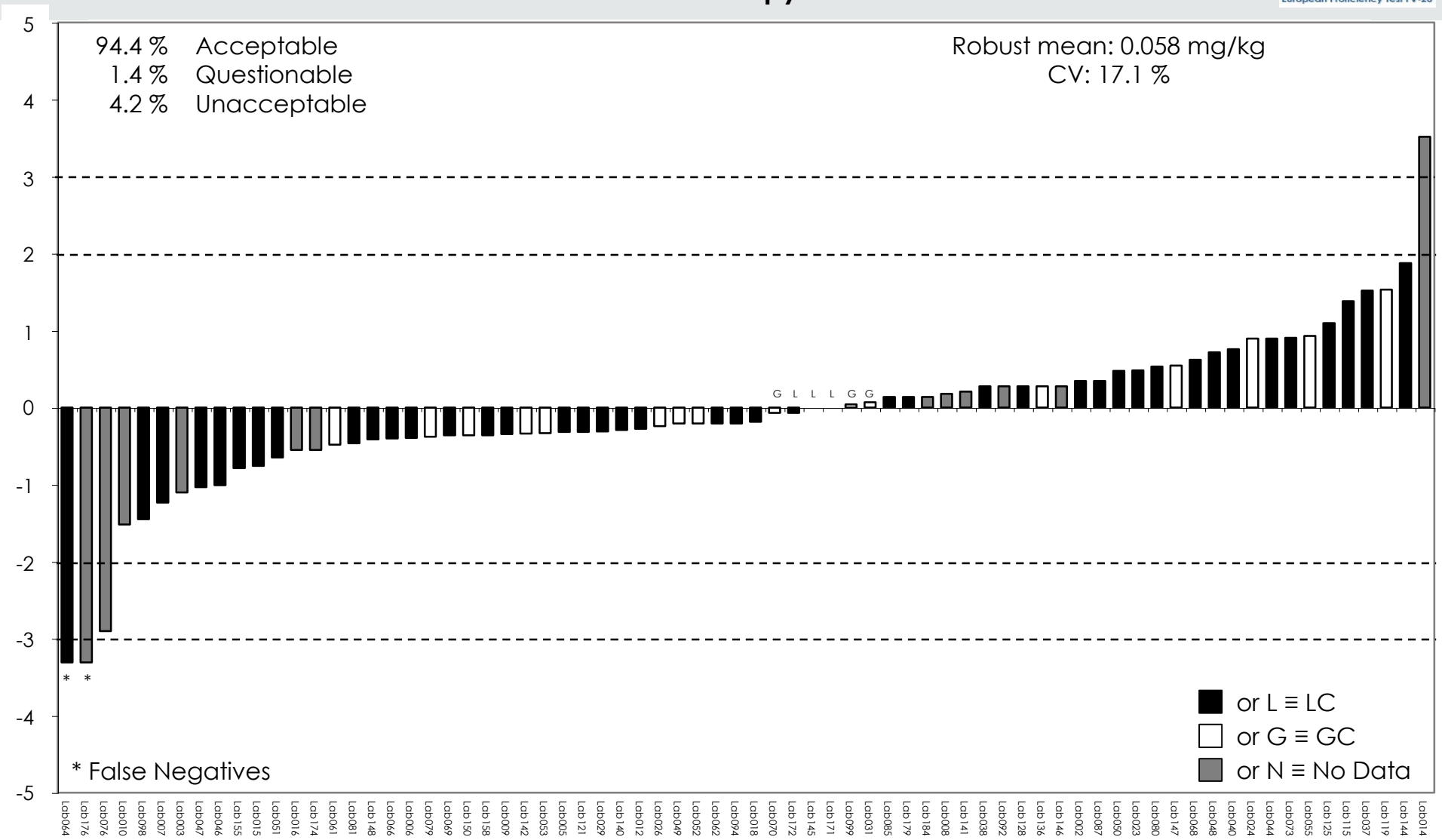


Voluntary Componds

Fenpyrazamine



Penthiopyrad



Combined z-Scores

Average of Squared z-Scores

Chlorothalonil and metaflumizone were not considered for this categorisation

$$AZ^2 = \frac{\sum_{i=1}^{n} Z_i^{\,2}}{n}$$

$AZ^2 \leq 2.0$ Good

$2.0 < AZ^2 < 3.0$ Satisfactory

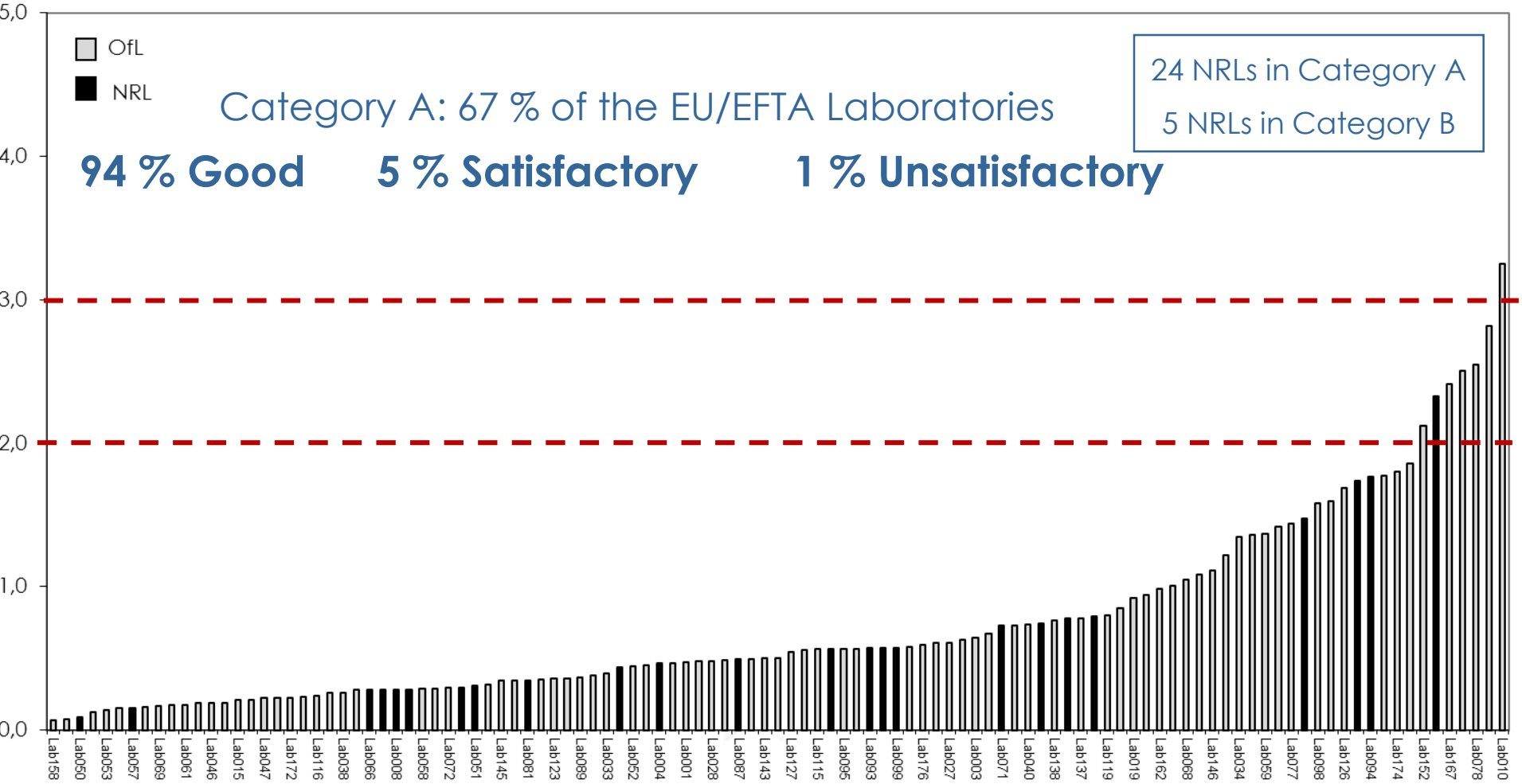
$AZ^2 \geq 3.0$ Unsatisfactory

At least 15 pesticides

Category A

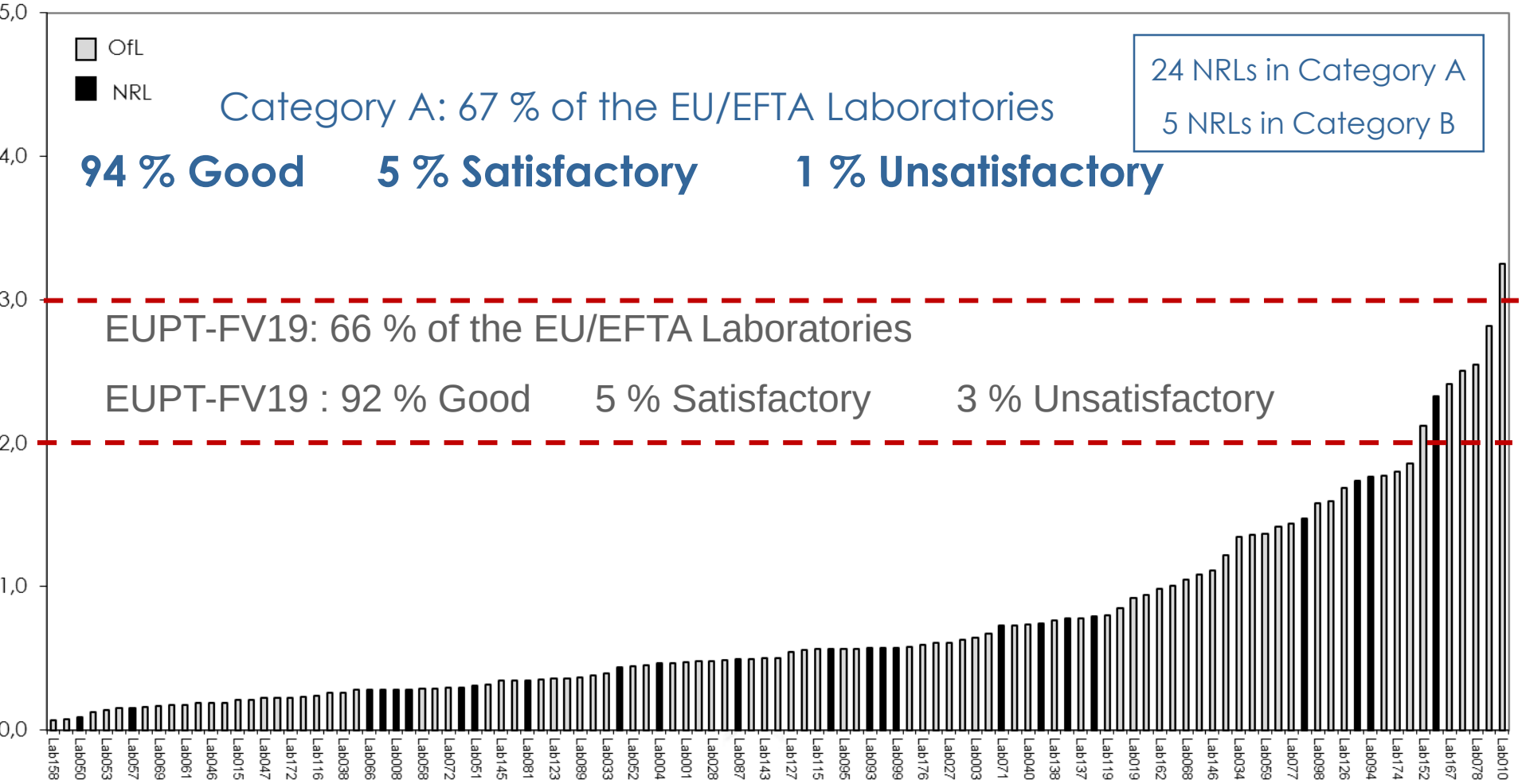
Laboratories that were able to analyse at least **90% of the compulsory pesticides in the target pesticides list**, that detected and quantified at least **90 % of the pesticides present in the Test Item** and reported **no false positives.**

EUPT-FV20 AZ² - Graphical Representation for EU/EFTA laboratories in Category A



EU/EFTA Laboratories

EUPT-FV20 AZ² - Graphical Representation for EU/EFTA laboratories in Category A



EU/EFTA Laboratories

EU/EFTA Laboratories

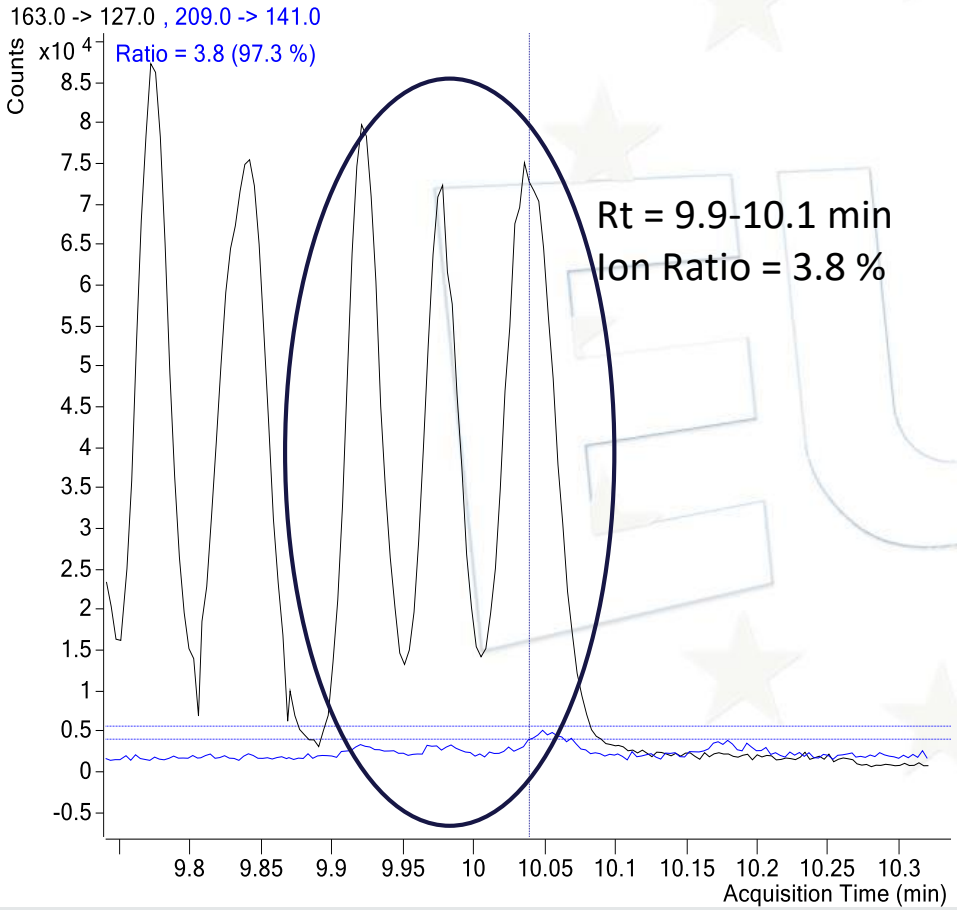
False Positives

4 laboratories from EU/EFTA countries reported **3** pesticides as false positives

Lab Code	Pesticide	Reporting level (mg/kg)	Concentration (mg/kg)	Determination technique
Lab013	Cypermethrin	0,01	0,05	
Lab182	Cypermethrin	0,01	0,411	GC-Ion Trap
Lab039	Epoxiconazole	0,01	0,034	GC-MS/MS (QQQ)
Lab154	Spirodiclofen	0,001	0,0821	LC-MS/MS QQQ

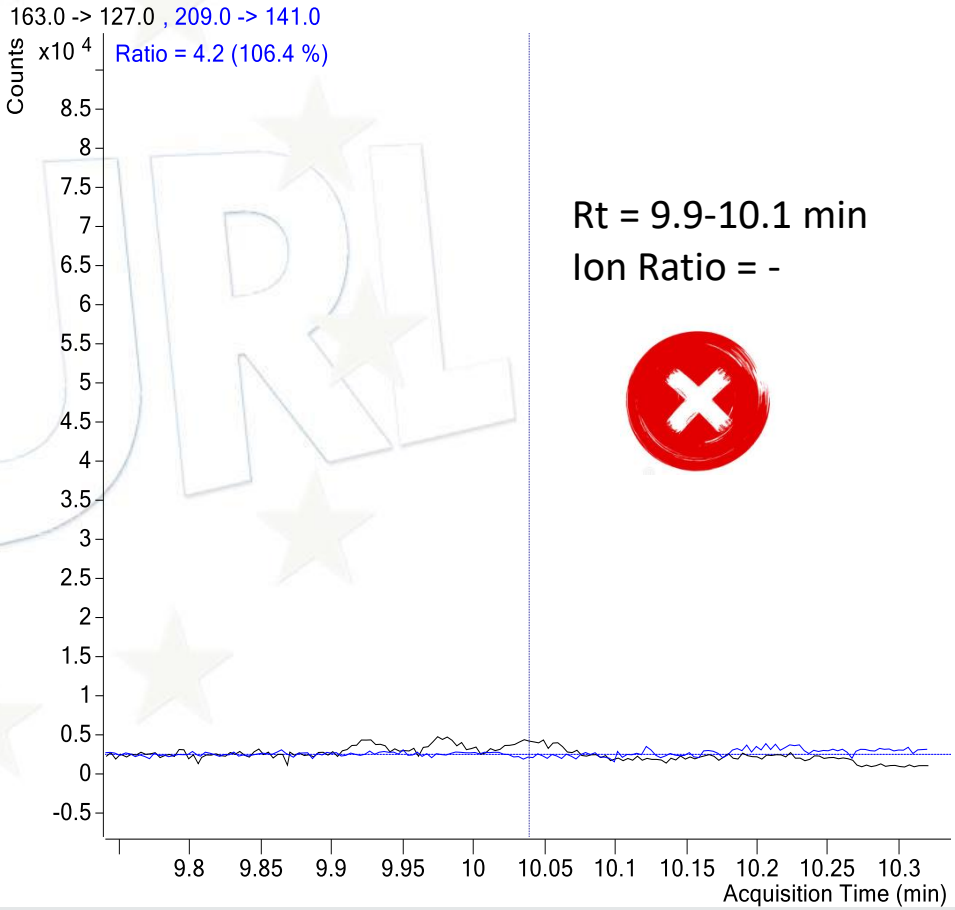
Cypermethrin
GC-QqQ-MS/MS

Std at 0.01 mg/kg in Green Beans



Rt = 9.9-10.1 min
Ion Ratio = 3.8 %

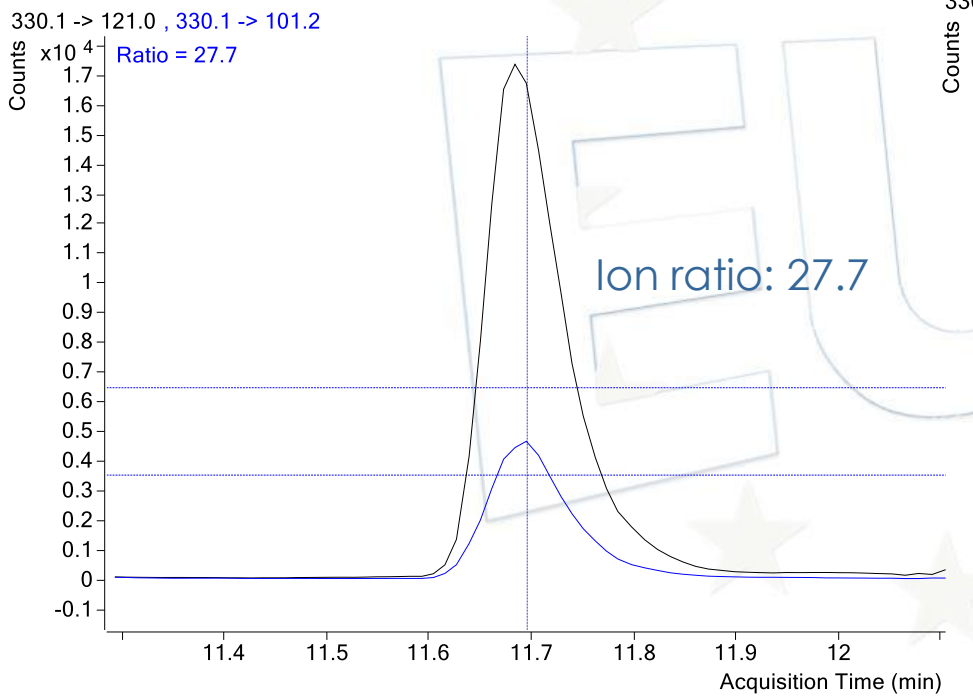
EUPT-FV20 Sample



Rt = 9.9-10.1 min
Ion Ratio = -

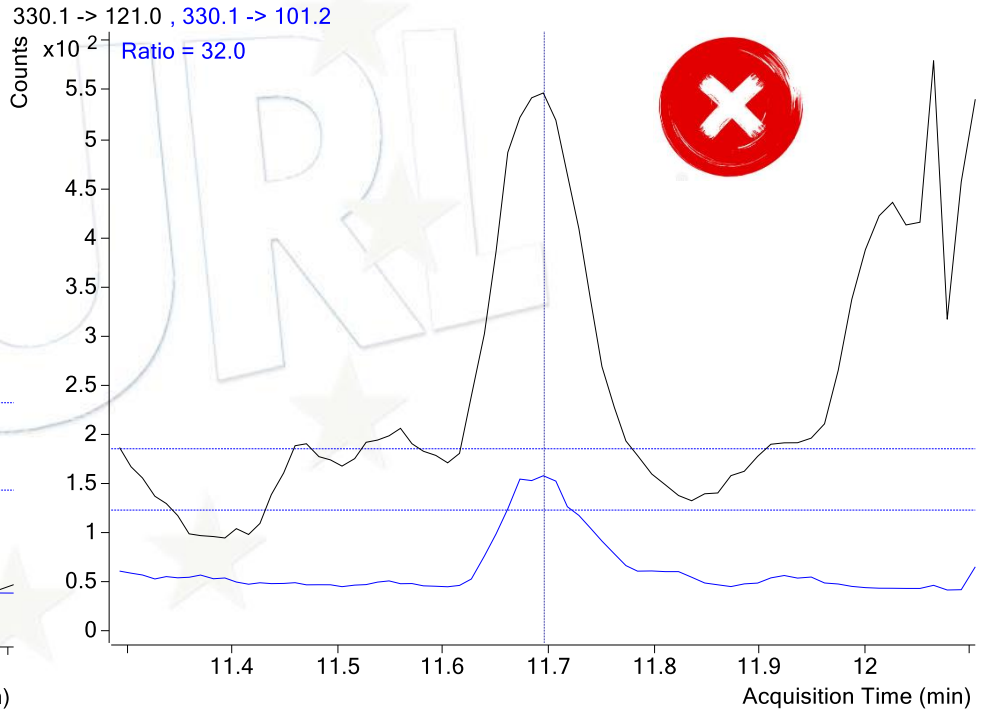
Epoxiconazole
LC-QqQ-MS/MS

Std 0.010 mg/L in Green beans



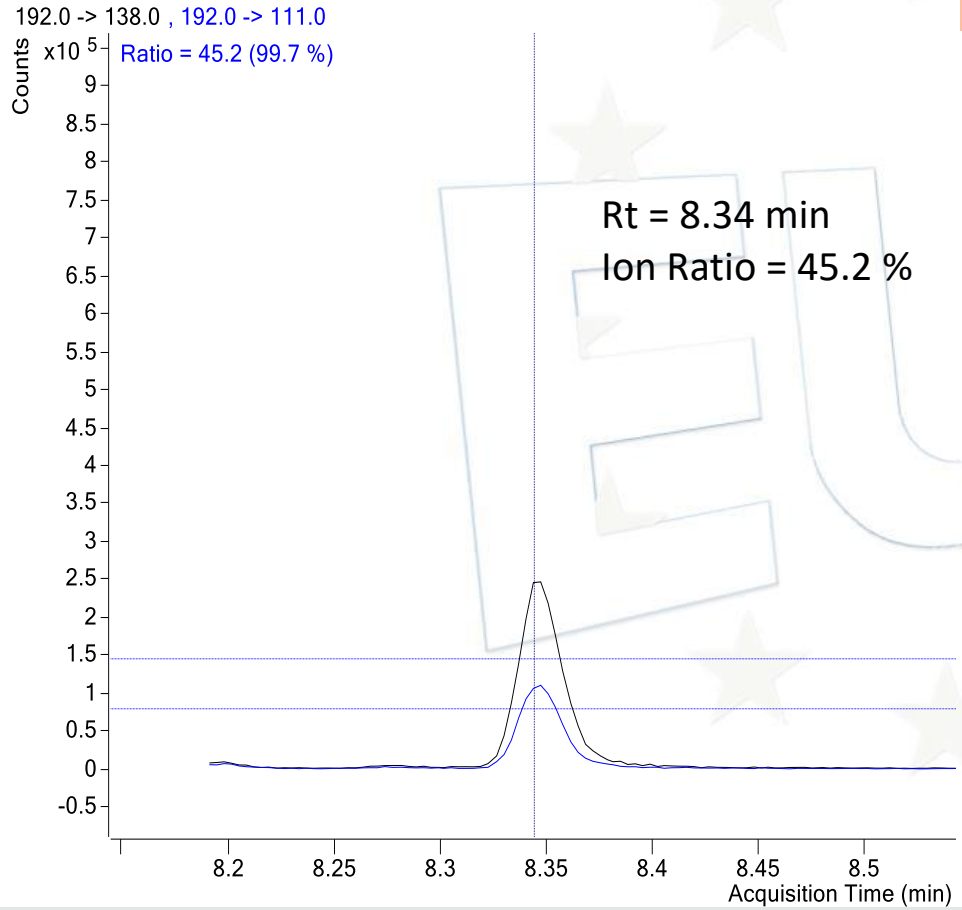
Ion ratio: 27.7

Sample 029 FV20

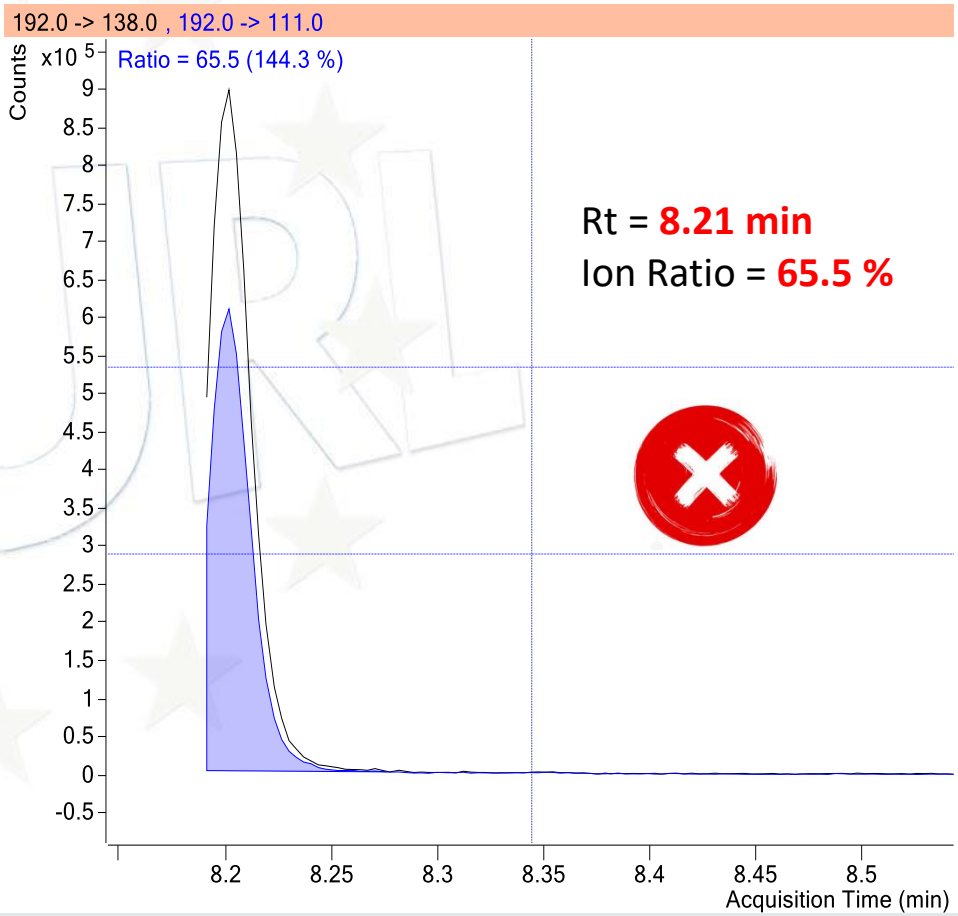


Epoxiconazole
GC-QqQ-MS/MS

Std at 0.01 mg/kg in Green Beans

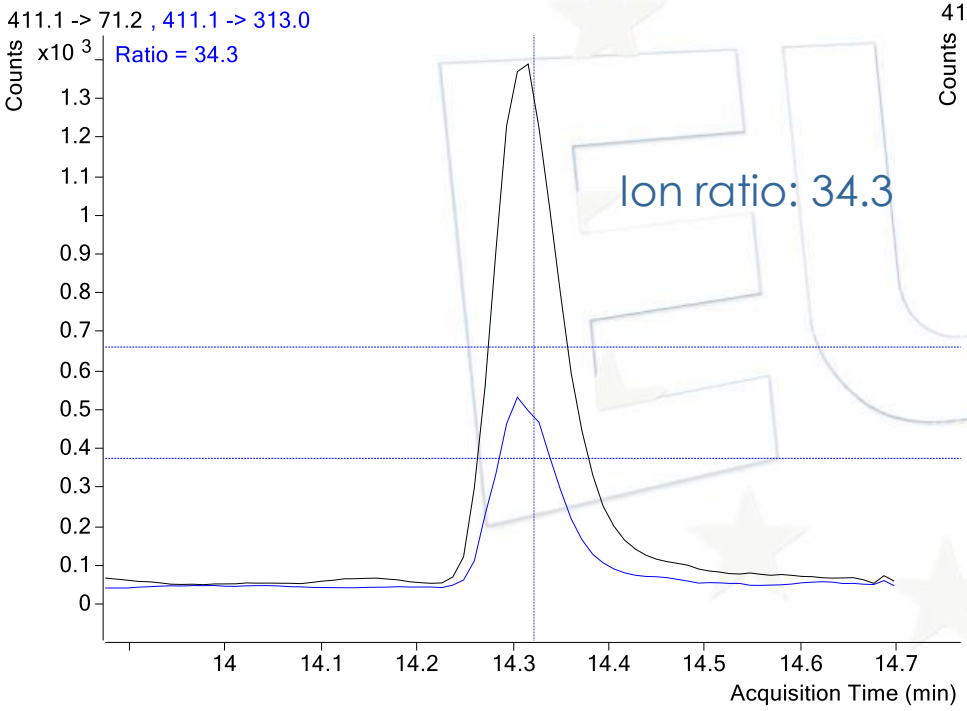


EUPT-FV20 Sample



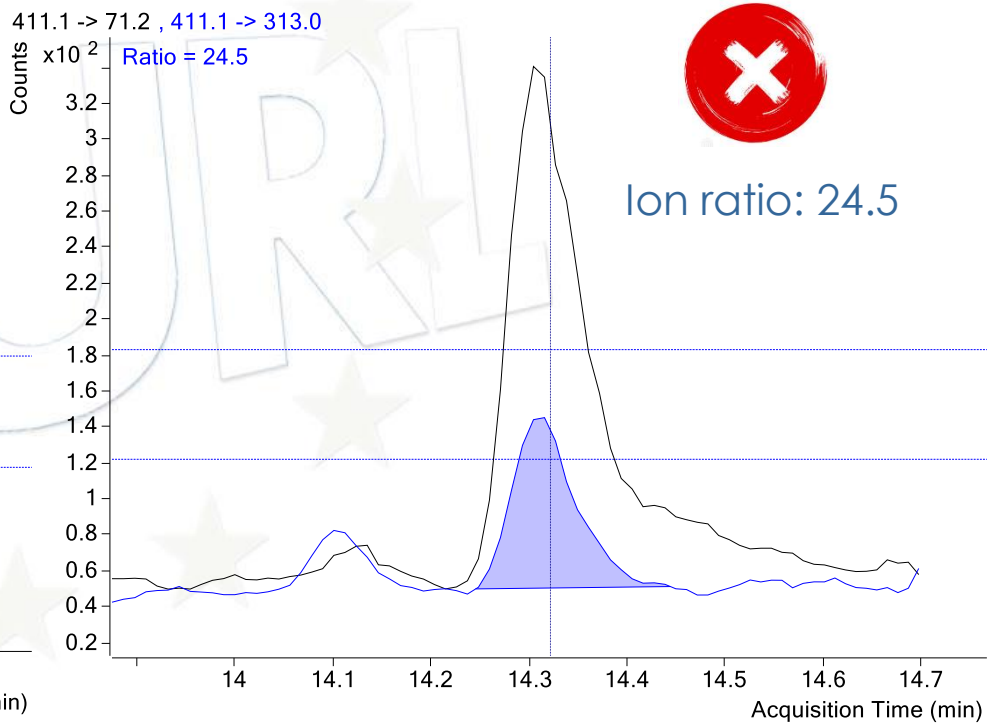
Spirodiclofen
LC-QqQ-MS/MS

Std 0.010 mg/L in Green beans



Ion ratio: 34.3

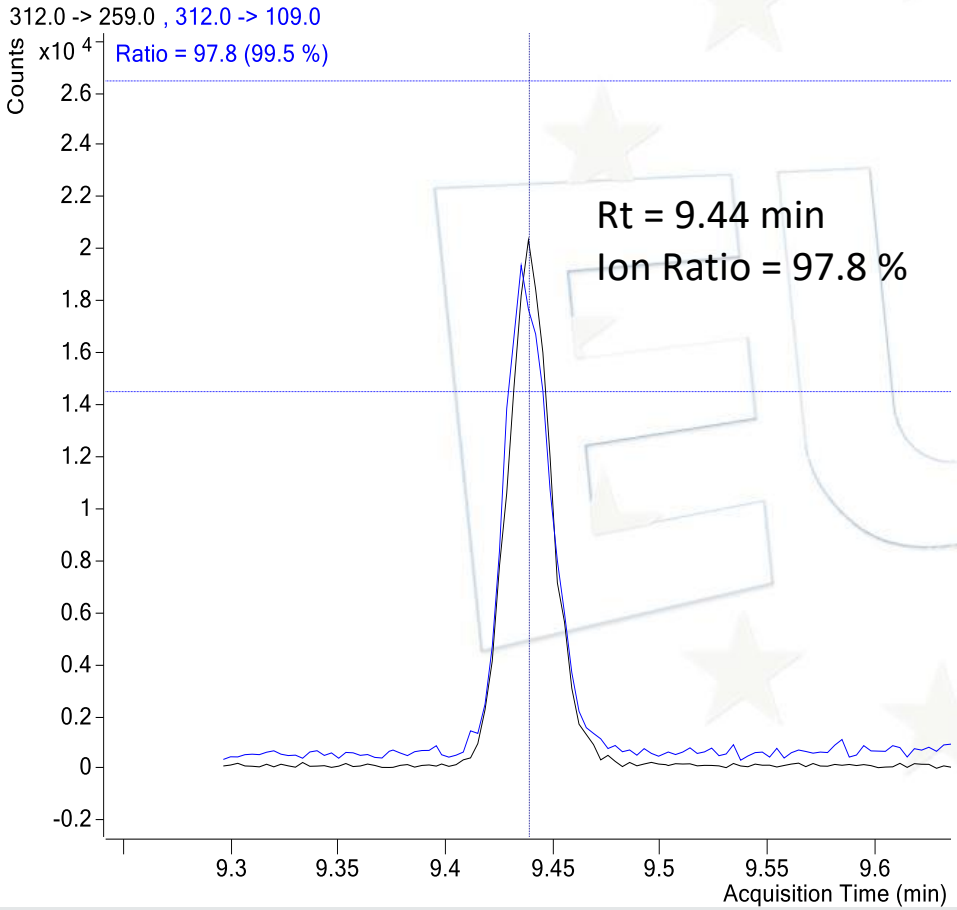
Sample 029 FV20



Ion ratio: 24.5

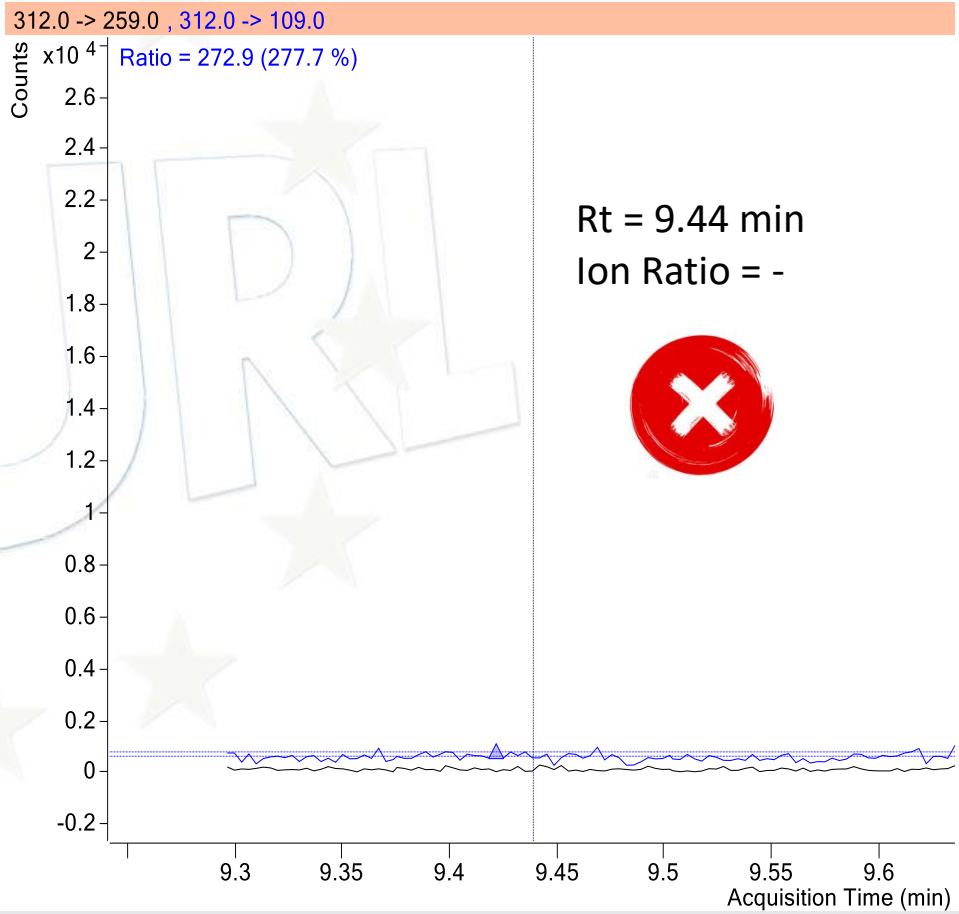
Spirodiclofen
GC-QqQ-MS/MS

Std at 0.01 mg/kg in Green Beans



Rt = 9.44 min
Ion Ratio = 97.8 %

EUPT-FV20 Sample



Rt = 9.44 min
Ion Ratio = -

Thank You
for Your Attention

EURL EUROPEAN UNION REFERENCE LABORATORY