Study Title

Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines

Amendment No. 1 to Report NAX/SP03-2008

2009-03-20
[Date: yyyy-mm-dd]

Study Director

[redacted]

Author of the Amendment

[redacted]

Study Completion Date

2008-10-20
[Date: yyyy-mm-dd]

Reasons for the Amendment

1.
Due to formation problems, the chapter “Material and Methods of the Non-GLP Field Part” was not subject to the consecutive numbering system. This has now been corrected, and “Material and Methods of the Non-GLP Field Part” is now Chapter 4 of the report. The numbering of the subsequent chapters is now n+1.

Consequence for the integrity of the study: None, as purely editorial.

OLD:

MATERIAL AND METHOD NON-GLP FIELD PART

3.1 Test Items

Trade name:	Poncho® / Poncho® PRO
Active substance (a.s.):	Clothianidin
Chemical code:	TI-435
Formulation:	FS 600
Empirical formula:	$C_6H_8ClN_5O_2S$
CAS-Name:	Guanidine, (E)-N-[(2.chloro-5-thaizolyl)methyl]-N'-methyl-N''-nitro-
CAS-No.:	210880-92-5
Indication:	Insecticide
Physical appearance of the FS 600:	Red suspension

Trade name:	Mesurol®
Active substance (a.s.):	Methiocarb
Chemical code:	H 321
Formulation:	FS 500
Empirical formula:	$C_{11}H_{15}NO_2S$
CAS-Name:	3,5-dimethyl-4-(methylthio)phenyl methylcarbamate
CAS-No.:	2032-65-7
Indication:	Insecticide
Physical appearance of the FS 500:	Red suspension

Trade name:	Flowsan 533 FS
Active substance (a.s.):	Thiram
Chemical code:	TMTD
Formulation:	FS 533
Empirical formula:	$C_6H_{12}N_2S_4$
CAS-Name:	Tetramethylthioperoxydicarbonic diamide
CAS-No.:	137-26-8
Indication:	Fungicide
Physical appearance of the FS 533:	Red suspension

NEW:

4 MATERIAL AND METHOD NON-GLP FIELD PART

4.1 Test Items

Trade name:	Poncho® / Poncho® PRO
Active substance (a.s.):	Clothianidin
Chemical code:	TI-435
Formulation:	FS 600
Empirical formula:	$C_6H_8ClN_5O_2S$
CAS-Name:	Guanidine, (E)-N-[(2-chloro-5-thiazolyl)methyl]-N'-methyl-N''-nitro-
CAS-No.:	210880-92-5
Indication:	Insecticide
Physical appearance of the FS 600:	Red suspension

Trade name:	Mesurol®
Active substance (a.s.):	Methiocarb
Chemical code:	H 321
Formulation:	FS 500
Empirical formula:	$C_{11}H_{15}NO_2S$
CAS-Name:	3,5-dimethyl-4-(methylthio)phenyl methylcarbamate
CAS-No.:	2032-65-7
Indication:	Insecticide
Physical appearance of the FS 500:	Red suspension

Trade name:	Flowsan 533 FS
Active substance (a.s.):	Thiram
Chemical code:	TMTD
Formulation:	FS 533
Empirical formula:	$C_6H_{12}N_2S_4$
CAS-Name:	Tetramethylthioperoxydicarbonic diamide
CAS-No.:	137-26-8
Indication:	Fungicide
Physical appearance of the FS 533:	Red suspension

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3.

In the original report, drift values have been calculated on the basis of actually measured values, irrespective whether the actual analytical value was below the limit of quantification or below the limit of detection. However, for a conservative mathematical processing of the dataset, particularly in case of very low values, it is considered more appropriate to replace for mathematical calculations values below the limit of quantification by the limit of quantification itself and to replace the limit of detection by the limit of detection itself. This operation will lead to conservative percentiles and to conservative average values. All calculations have been re-performed which leads to the following results.

In the case of atmospheric drift, there was no value below the limit of quantification and thus, the derivation of conservative percentiles/average values is not appropriate; however, as some clerical and copy/paste errors occurred in the original report (wrong limit of quantification or description, etc.) also amended tables for atmospheric drift are included in the amendment. Moreover, in two Graphs the distance from the zero-line has not been included in the original report – this has now been also amended.

Consequence for the integrity of the study: None, as the changes are made in the mathematical processing and not in the analytical raw data; other corrections are of editorial nature.

Summary section of the report:

OLD:

	90th%ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer; Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DIE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/Un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.662**	**6.455**	**0.271**	**0.183**	**0.287**	**0.195**	**0.265**	**0.161**	**0.121**
3 m	**0.564**	**2.953**	**0.246**	**0.181**	**0.175**	**0.117**	**0.196**	**0.146**	**0.073**
5 m	**0.421**	**2.552**	**0.196**	**0.148**	**0.168**	**0.094**	**0.204**	**0.116**	**0.068**
10 m	**0.311**	**1.911**	**0.157**	**0.111**	**0.198**	**0.083**	**0.179**	**0.115**	**0.050**
20 m	**0.167**	**1.184**	**0.141**	**0.110**	**0.078**	**0.061**	**0.105**	**0.079**	**0.028**
30 m	**0.115**	**0.839**	**0.073**	**0.086**	**0.071**	**0.042**	**0.069**	**0.070**	**0.029**
50 m	**0.081**	**0.546**	**0.055**	**0.058**	**0.041**	**0.039**	**0.054**	**0.060**	**0.026**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

New:

	Conservative[1] 90th%ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	1	2	3	4	5	6	7	8	9
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	0.663	6.455	0.270	0.183	0.287	0.195	0.266	0.161	0.121
3 m	0.565	2.954	0.247	0.182	0.174	0.117	0.195	0.146	0.073
5 m	0.421	2.552	0.197	0.148	0.167	0.094	0.204	0.116	0.067
10 m	0.311	1.912	0.156	0.111	0.199	0.083	0.179	0.114	0.050
20 m	0.167	1.184	0.141	0.109	0.078	0.061	0.105	0.079	0.029
30 m	0.115	0.840	0.073	0.086	0.071	0.042	0.069	0.070	0.029
50 m	0.080	0.546	0.055	0.058	0.041	0.039	0.054	0.060	0.026
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha

OLD:

	90th%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	1	2	3	4	5	6	7	8	9
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	0.030	0.036	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
5 m	0.045	0.019	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
50 m	<LOQ	LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

	Conservative[1] 90th%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	1	2	3	4	5	6	7	8	9
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	0.030	0.036	<LOD	<LOQ	<LOQ	<LOD	<LOD	<LOD	<LOD
5 m	0.044	0.018	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 m	<LOQ	LOQ	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] **For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha**

OLD:

	90th%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKR DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Height above ground	***5 m distance from the "zero-line"***								
1 m	1.465	7.398	0.941	0.892	1.146	0.823	0.841	1.072	0.743
2 m	1.678	6.636	1.072	0.822	0.884	0.791	0.848	0.606	0.522
3 m	1.143	4.108	0.978	0.650	0.960	0.722	0.610	0.401	0.406
4 m	0.804	2.346	0.489	0.432	0.772	0.419	0.479	0.347	0.327
5 m	0.457	1.383	0.390	0.224	0.593	0.288	0.336	0.271	0.212
	30 m distance from the "zero-line"								
1 m	0.796	4.604	0.538	0.681	0.559	0.817	0.446	0.555	0.590
2 m	0.708	3.895	0.626	0.665	0.860	0.543	0.447	0.519	0.523
3 m	0.553	3.977	0.623	0.471	0.617	0.621	0.503	0.486	0.407
4 m	0.554	3.066	0.458	0.457	0.572	0.463	0.345	0.470	0.300
5 m	0.674	1.903	0.371	0.287	0.484	0.372	0.426	0.264	0.268
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

	90th%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKR DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, com-pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Height above ground	***5 m distance from the "zero-line"***								
1 m	1.465	7.398	0.941	0.892	1.146	0.823	0.841	1.072	0.743
2 m	1.678	6.636	1.072	0.822	0.884	0.791	0.848	0.606	0.522
3 m	1.143	4.108	0.978	0.650	0.960	0.722	0.610	0.401	0.406
4 m	0.804	2.346	0.489	0.432	0.772	0.419	0.479	0.347	0.327
5 m	0.457	1.383	0.390	0.224	0.593	0.288	0.336	0.271	0.212
	30 m distance from the "zero-line"								
1 m	0.796	4.604	0.538	0.681	0.559	0.817	0.446	0.555	0.590
2 m	0.708	3.895	0.626	0.665	0.860	0.543	0.447	0.519	0.523
3 m	0.553	3.977	0.623	0.471	0.617	0.621	0.503	0.486	0.407
4 m	0.554	3.066	0.458	0.457	0.572	0.463	0.345	0.470	0.300
5 m	0.674	1.903	0.371	0.287	0.484	0.372	0.426	0.264	0.268
Limit of quantification (LOQ) = 0.020 µg a.s./passive PP-mesh dust collector									

Result section of the report:

OLD:

7 RESULTS

7.1 Ground Deposition

A detailed compilation of all ground deposition results ("primary drift") are presented in Tables 9 - 17 below.

Table 1 90th%ile ground deposition ("primary drift")

	90th%ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 8 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.662**	**6.455**	**0.271**	**0.183**	**0.287**	**0.195**	**0.265**	**0.161**	**0.121**
3 m	**0.564**	**2.953**	**0.246**	**0.181**	**0.175**	**0.117**	**0.196**	**0.146**	**0.073**
5 m	**0.421**	**2.552**	**0.196**	**0.148**	**0.168**	**0.094**	**0.204**	**0.116**	**0.068**
10 m	**0.311**	**1.911**	**0.157**	**0.111**	**0.198**	**0.083**	**0.179**	**0.115**	**0.050**
20 m	**0.167**	**1.184**	**0.141**	**0.110**	**0.078**	**0.061**	**0.105**	**0.079**	**0.028**
30 m	**0.115**	**0.839**	**0.073**	**0.086**	**0.071**	**0.042**	**0.069**	**0.070**	**0.029**
50 m	**0.081**	**0.546**	**0.055**	**0.058**	**0.041**	**0.039**	**0.054**	**0.060**	**0.026**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

8 RESULTS

8.1 Ground Deposition

A detailed compilation of all ground deposition results ("primary drift") is presented in Tables 9 - 17 below.

Table 1 Conservative[1] 90[th]%ile ground deposition ("primary drift")

	Conservative[1] 90[th]%ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.663**	**6.455**	**0.270**	**0.183**	**0.287**	**0.195**	**0.266**	**0.161**	**0.121**
3 m	**0.565**	**2.954**	**0.247**	**0.182**	**0.174**	**0.117**	**0.195**	**0.146**	**0.073**
5 m	**0.421**	**2.552**	**0.197**	**0.148**	**0.167**	**0.094**	**0.204**	**0.116**	**0.067**
10 m	**0.311**	**1.912**	**0.156**	**0.111**	**0.199**	**0.083**	**0.179**	**0.114**	**0.050**
20 m	**0.167**	**1.184**	**0.141**	**0.109**	**0.078**	**0.061**	**0.105**	**0.079**	**0.029**
30 m	**0.115**	**0.840**	**0.073**	**0.086**	**0.071**	**0.042**	**0.069**	**0.070**	**0.029**
50 m	**0.080**	**0.546**	**0.055**	**0.058**	**0.041**	**0.039**	**0.054**	**0.060**	**0.026**
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha

OLD:

Table 2 Average ground deposition ("primary drift")

	Average Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.347**	**4.036**	**0.187**	**0.144**	**0.155**	**0.126**	**0.202**	**0.117**	**0.073**
3 m	**0.322**	**2.157**	**0.158**	**0.124**	**0.121**	**0.090**	**0.141**	**0.110**	**0.044**
5 m	**0.239**	**2.011**	**0.139**	**0.113**	**0.120**	**0.074**	**0.133**	**0.092**	**0.055**
10 m	**0.160**	**1.480**	**0.104**	**0.083**	**0.106**	**0.061**	**0.099**	**0.076**	**0.033**
20 m	**0.101**	**0.906**	**0.075**	**0.074**	**0.050**	**0.042**	**0.069**	**0.056**	**0.017**
30 m	**0.064**	**0.638**	**0.050**	**0.061**	**0.039**	**0.030**	**0.049**	**0.045**	**0.017**
50 m	**0.040**	**0.416**	**0.037**	**0.039**	**0.018**	**0.024**	**0.031**	**0.035**	**0.011**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

Table 2 Conservative[1] average ground deposition ("primary drift")

	Conservative[1] Average Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.347**	**4.036**	**0.187**	**0.144**	**0.155**	**0.126**	**0.202**	**0.117**	**0.073**
3 m	**0.322**	**2.157**	**0.158**	**0.121**	**0.121**	**0.090**	**0.141**	**0.110**	**0.044**
5 m	**0.239**	**2.011**	**0.139**	**0.113**	**0.120**	**0.074**	**0.133**	**0.092**	**0.055**
10 m	**0.160**	**1.480**	**0.104**	**0.083**	**0.106**	**0.061**	**0.099**	**0.076**	**0.034**
20 m	**0.101**	**0.906**	**0.075**	**0.074**	**0.050**	**0.042**	**0.068**	**0.056**	**0.018**
30 m	**0.064**	**0.638**	**0.050**	**0.061**	**0.040**	**0.030**	**0.049**	**0.045**	**0.020**
50 m	**0.041**	**0.416**	**0.037**	**0.039**	**0.021**	**0.024**	**0.032**	**0.035**	**0.016**
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha

OLD:

7.2 Aerial Dislocation of Ground Deposits

A detailed compilation of all ground deposition results ("secondary drift") are presented in Tables 18 - 26 below.

Table 3 90^{tho}%ile aerial dislocation of ground deposits ("secondary drift")

	90^{tho}%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (SFAC-seeds)							
Distance from 0-line									
1 m	**0.030**	**0.036**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
5 m	**0.045**	**0.019**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
50 m	**<LOQ**	**LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

8.2 Aerial Dislocation of Ground Deposits

A detailed compilation of all ground deposition results ("secondary drift") is presented in Tables 18 - 26 below.

Table 3 Conservative[1] 90th%ile aerial dislocation of ground deposits ("secondary drift")

	Conservative[1] 90th%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.030**	**0.036**	**<LOD**	**<LOQ**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**
5 m	**0.044**	**0.018**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**
50 m	**<LOQ**	**LOQ**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**	**<LOD**
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha

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Furthermore, the document may fall under a regulatory data protection regime.
Furthermore, the document may fall under a regulatory data protection regime.
Furthermore, the document may fall under a

OLD:

Table 4 Average aerial dislocation of ground deposits ("secondary drift")

	Average Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.010**	**0.016**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**0.022**
5 m	**0.018**	**0.013**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
50 m	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

NEW:

Table 4 Conservative[1] average aerial dislocation of ground deposits ("secondary drift")

	Conservative[1] Average Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**<LOQ**	**0.019**	**<LOD**	**<LOQ**	**<LOQ**	**<LOD**	**<LOD**	**<LOQ**	**0.026**
5 m	**0.021**	**0.018**	**<LOD**	**<LOD**	**<LOQ**	**<LOD**	**<LOD**	**<LOQ**	**<LOD**
50 m	**<LOQ**	**<LOQ**	**<LOD**	**<LOQ**	**<LOD**	**<LOD**	**<LOD**	**<LOQ**	**<LOD**
Limit of detection (LOD) = 0.004 g a.s./ha; Limit of quantification (LOQ) = 0.014 g a.s./ha									

[1] For the calculation, "<LOD" was replaced by 0.004 g a.s./ha and "<LOQ" was replaced by 0.014 g a.s./ha

OLD:

7.3 Atmospheric Drift

A detailed compilation of all ground deposition results ("atmospheric drift") are represented in Tables 27 - 36 below.

Table 5 90^tho%ile measurements of in-flight dust ("atmospheric drift")

	90^tho%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Height above ground	***5 m distance from the "zero-line"***								
1 m	**1.465**	**7.398**	**0.941**	**0.892**	**1.146**	**0.823**	**0.841**	**1.072**	**0.743**
2 m	**1.678**	**6.636**	**1.072**	**0.822**	**0.884**	**0.791**	**0.848**	**0.606**	**0.522**
3 m	**1.143**	**4.108**	**0.978**	**0.650**	**0.960**	**0.722**	**0.610**	**0.401**	**0.406**
4 m	**0.804**	**2.346**	**0.489**	**0.432**	**0.772**	**0.419**	**0.479**	**0.347**	**0.327**
5 m	**0.457**	**1.383**	**0.390**	**0.224**	**0.593**	**0.288**	**0.336**	**0.271**	**0.212**
	30 m distance from the "zero-line"								
1 m	**0.796**	**4.604**	**0.538**	**0.681**	**0.559**	**0.817**	**0.446**	**0.555**	**0.590**
2 m	**0.708**	**3.895**	**0.626**	**0.665**	**0.860**	**0.543**	**0.447**	**0.519**	**0.523**
3 m	**0.553**	**3.977**	**0.623**	**0.471**	**0.617**	**0.621**	**0.503**	**0.486**	**0.407**
4 m	**0.554**	**3.066**	**0.458**	**0.457**	**0.572**	**0.463**	**0.345**	**0.470**	**0.300**
5 m	**0.674**	**1.903**	**0.371**	**0.287**	**0.484**	**0.372**	**0.426**	**0.264**	**0.268**
Limit of quantification (LOQ) = 0.020 µg a.s./collector									

NEW:

8.3 Atmospheric Drift

A detailed compilation of all in-flight dust measurements ("atmospheric drift") is presented in Tables 27 - 36 below.

Table 5 90^{tho}%ile measurements of in-flight dust ("atmospheric drift")

	90^{tho}%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Height above ground	***5 m distance from the "zero-line"***								
1 m	**1.465**	**7.398**	**0.941**	**0.892**	**1.446**	**0.823**	**0.841**	**1.072**	**0.743**
2 m	**1.678**	**6.636**	**1.072**	**0.822**	**0.884**	**0.791**	**0.848**	**0.606**	**0.522**
3 m	**1.143**	**4.108**	**0.978**	**0.650**	**0.960**	**0.722**	**0.610**	**0.401**	**0.406**
4 m	**0.804**	**2.346**	**0.489**	**0.432**	**0.772**	**0.419**	**0.479**	**0.347**	**0.327**
5 m	**0.457**	**1.383**	**0.390**	**0.224**	**0.593**	**0.288**	**0.336**	**0.271**	**0.212**
	30 m distance from the "zero-line"								
1 m	**0.796**	**4.604**	**0.538**	**0.681**	**0.559**	**0.817**	**0.446**	**0.555**	**0.590**
2 m	**0.708**	**3.895**	**0.626**	**0.665**	**0.860**	**0.543**	**0.447**	**0.519**	**0.523**
3 m	**0.553**	**3.977**	**0.623**	**0.471**	**0.617**	**0.621**	**0.503**	**0.486**	**0.407**
4 m	**0.554**	**3.066**	**0.458**	**0.457**	**0.572**	**0.463**	**0.345**	**0.470**	**0.300**
5 m	**0.674**	**1.903**	**0.371**	**0.287**	**0.484**	**0.372**	**0.426**	**0.264**	**0.268**
Limit of quantification (LOQ) = 0.020 µg a.s./collector									

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OLD:

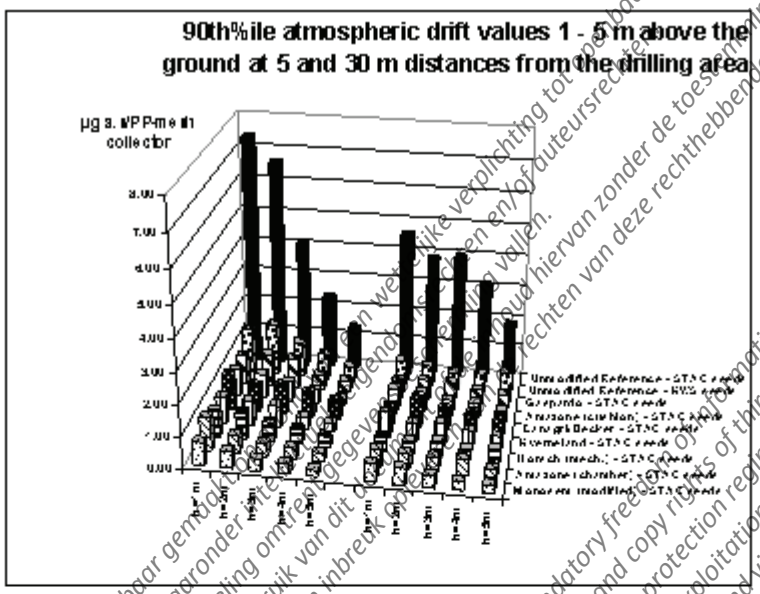

Figure 9 **90th %ile of in-flight dust measurements ("atmospheric drift")**

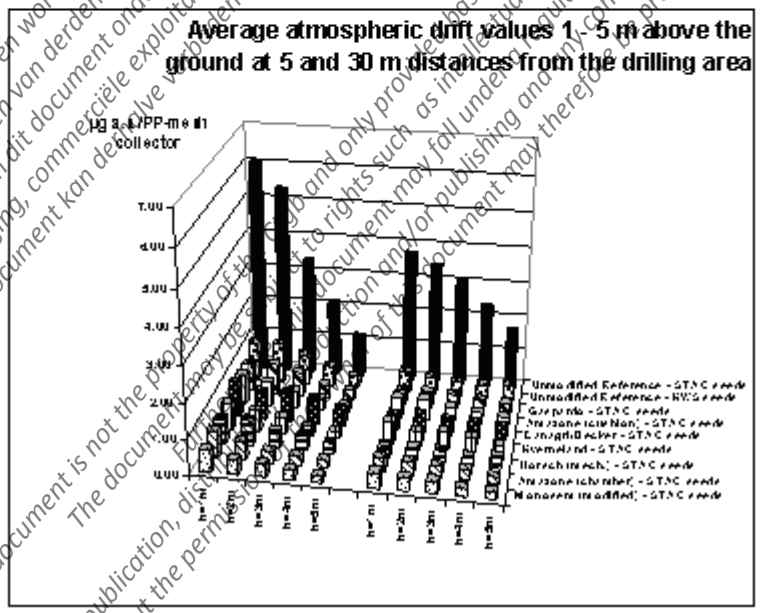

Figure 10 **Average of in-flight dust measurements ("atmospheric drift")**

NEW:

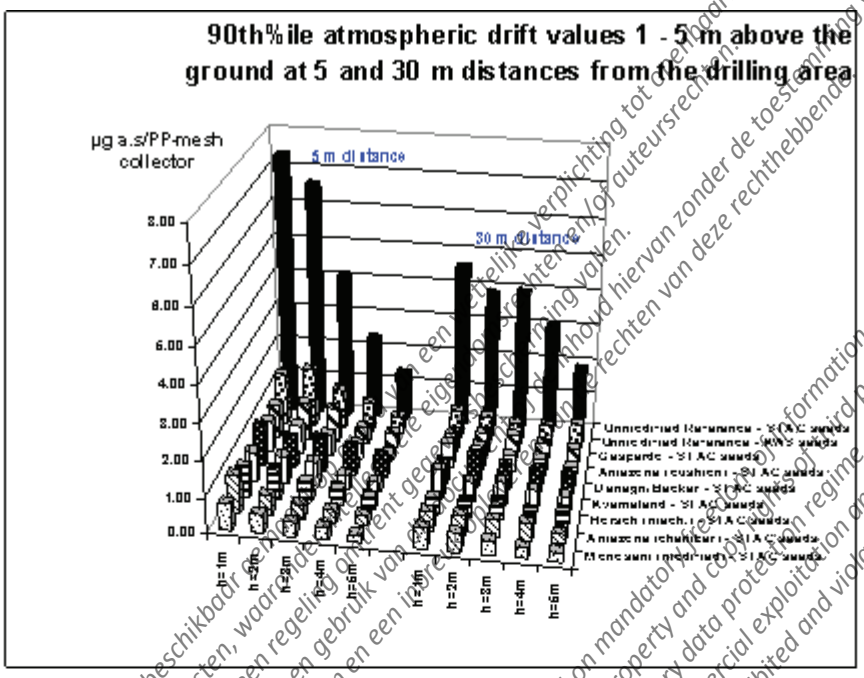

Figure 9 90th%ile of in-flight dust measurements ("atmospheric drift")

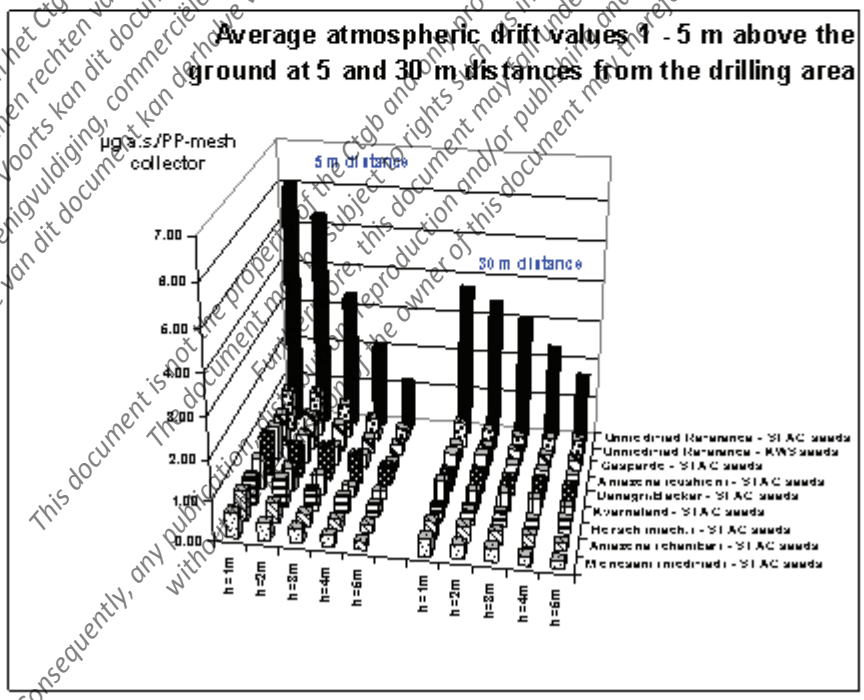

Figure 10 Average of in-flight dust measurements ("atmospheric drift")

4.

In the chapter “Test Location” in the original report, Field No. 6 has been wrongly named “Herbizidfeld VIII”. However, the true name of the field is “Herbizidfeld IX”

Consequence for the integrity of the study: None

OLD:

Field No.	Study Plot Location for Testing Machine No.	Field Size	Field Name	Owner
1	4, 5	18.0 ha	"Steffens Hecke"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
2	8	8.5 ha	"Langenfelder Strasse"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
3	7	4.9 ha	"Diepesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
4	3	7.6 ha	"Töngesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
5	2, 6	8.9 ha	"A XXVI"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
6	9	5.6 ha	"Herbizidfeld VIII"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
7	1	3.8 ha	"Lohrkreuz"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen

NEW:

Field No.	Study Plot Location for Testing Machine No.	Field Size	Field Name	Owner
1	4, 5	18.0 ha	"Steffens Hecke"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
2	8	8.5 ha	"Langenfelder Strasse"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
3	7	4.9 ha	"Diepesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
4	3	7.6 ha	"Töngesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
5	2, 6	8.9 ha	"A XXVI"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
6	9	5.6 ha	"Herbizidfeld IX"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
7	1	3.8 ha	"Lohrkreuz"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen

5.

Chapter “Test Location”: In the original report, it was wrongly stated

OLD:

*”…The study plots were set up shortly before drilling with a perpendicular orientation to the prevalent wind direction (i.e. 180° ± 30° relative **to movement of the tractor/maize drilling machine**…”*

However, the true wording is:

NEW:

*”…The study plots were set up shortly before drilling with a perpendicular orientation to the prevalent wind direction (i.e. 180° ± 30° **relative to the sampling devices** …”*

Consequence for the integrity of the study: None

6.

Chapter “Soil Characterization of the Study Plots and Clothianidin Soil Residue Analysis”: In the original report, it was wrongly stated

OLD:

”… An appropriate fraction of the sieved soil had been further sent to the LUFA in Speyer (Landwirtschaftliche Untersuchungs- und Forschungs - Anstalt, Obere Langgasse 40, D-67346 Speyer, Germany) for the determination of the particle size distribution of the soil (soil texture), the content of organic and inorganic carbon as well the max. water holding capacity (non-GLP analysis)…”

However, correct is:

NEW:

*”… An appropriate fraction of the sieved soil had been further sent to the LUFA in Speyer (Landwirtschaftliche Untersuchungs- und Forschungs - Anstalt, Obere Langgasse 40, D-67346 Speyer, Germany) for the determination of the particle size distribution of the soil (soil texture), the content of organic and inorganic carbon**, the cation exchange capacity (CEC)** as well the max. water holding capacity (non-GLP analysis)…”*

Consequence for the integrity of the study: None (purely editorial)

7.

Chapter “Weather Data”: In the original report, it was wrongly stated

OLD:

*”…An average wind speed of 2 - 5 m/s and a **derivation** of wind direction of maximum ± 30° to the perpendicular wind direction (i.e. 180° to the sampling devices) were the target conditions during drilling…”*

However, correct is:

NEW:

*”…An average wind speed of 2 - 5 m/s and a **deviation** of wind direction of maximum ± 30° to the perpendicular wind direction (i.e. 180° to the sampling devices) were the target conditions during drilling…”*

Consequence for the integrity of the study: None (purely editorial)

CERTIFICATION OF AUTHENTICITY

Signature of the Study Director

[redacted] Study Director 2009-03-20
[Date: yyyy-mm-dd]

Signature of Management

[redacted] Manager Test Facility and Representative of the Sponsor 2009-03-20
[Date: yyyy-mm-dd]

Checked by QA-Unit

[redacted] Quality Assurance Unit 2009-3-20
[Date: yyyy-mm-dd]

Inquiries should be directed to:

Bayer CropScience AG
Institute for Ecotoxicology
D-40789 Monheim, GERMANY
Phone No.: +49 2173 38 3880

M-307851-01-1

Final Report

Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines

Test Guideline

Special designed study following principally the BBA Drift Guideline Part VII, 2-1.1, 1992

Study Director

[redacted]

Authors

[redacted]

Test Facility

Bayer CropScience AG
Institute for Ecotoxicology
Alfred Nobel Str. 50
D-40789 Monheim, Germany

GLP-Study Number

E 308 3537-9

Report No:

NAX/SP03-2008

Report Date:

2008-10-20
[yyyy-mm-dd]

DATA CONFIDENTIALITY STATEMENT

This page is intentionally left blank for the purpose of submitting administrative information that is required by regulations promulgated by various countries.

STATEMENT OF COMPLIANCE

The analytical part of the study was conducted in compliance with the Principles of Good Laboratory Practice: German Chemical Law (Chemikaliengesetz), dated June 20, 2002, current version of Annex 1 and the current OECD Principles of Good Laboratory Practice (GLP), dated 1997-11-26 [C(97) 187/Final].
The test site "BCS-Development, Residues, Operator and Consumer Safety" had been inspected and certified as working in compliance with the Principles of Good Laboratory Practice by the competent authorities (GLP certificate reference: II A 5-31.11.91.02, August 31, 2007).
The residue analytical part of the study was assessed in compliance with the study protocol and the Standard Operating Procedures. The test facility or test site was periodically inspected by the Quality Assurance Unit (QAU) and the dates and the phases of the inspections are included within the final analytical phase report. The final analytical phase report data were audited in comparison to the raw data. A quality assurance statement, signed by the Quality Assurance Unit, is included within the final analytical phase report.

The field part of the study including the seed dressing procedure (commercially dressed seeds) was not conducted under GLP. The field part was performed according to the descriptions given in the study report.

The residue analyses part of the study was conducted under GLP and is described in the analytical phase report MR-08/173 which is attached to this final study report.

Signatures:

Study Director: [redacted] Date: 2008-10-20
BCS-D-ETX

Principal Investigator: [redacted] Date: 2008-10-20
(Residue Analysis)
BCS-D-ROCS

Representative of the Sponsor and Head of the Test Facility: [redacted] Date: 2008-10-21
BCS-D-ETX

CERTIFICATION OF AUTHENTICITY

[redacted]

Study Director

2008-10-20
Date

[redacted]

Principle Investigator (Residue Analysis)

20-10-08
Date

APPROVAL

[redacted]

Head of Institute for Ecotoxicology
And Representative of the Sponsor

2008-10-21
Date

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QUALITY ASSURANCE STATEMENT

Report No **E-308-3537-9** Print Date: 21 OCT 2008
Page

Quality Assurance (GLP)

Quality Assurance Statement

Title: **Drift deposition pattern of seed treatment particels abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines**

Study: E-308-3537-9

The analytical part of this study was inspected and the final report audited by the Quality Assurance Unit. Records of these inspections/audits were submitted to the study director and test facility management as shown below.
As far as can be ascertained following our SOPs, the reported results accurately reflect the original raw data of the study.

Phase of Study	Inspection	Report
Study plan	22 AUG 2008	
Analytics / Determination	03 SEP 2008	03 SEP 2008
Phase report draft	25 SEP 2008	25 SEP 2008
Phase report final	26 SEP 2008	
Final report	21 OCT 2008	21 OCT 2008

[redacted]
GLP Quality Assurance

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1 SUMMARY

Report: [redacted] (2008): Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines. Bayer CropScience AG, unpublished Report No.: NAX/SP03-2008, Date: October 20, 2008.

Guidelines: Special designed study, following principally the BBA Drift Guideline Part VII, 2-1.1, 1992

GLP: The field part was not performed under GLP, only the residue analysis part of the study was conducted under GLP.

Experimental starting and completion date:
Start and end of field activities: August 21, 2008 - September 20, 2008
Start and end of analytical activities: August 22, 2008 - September 24, 2008

Material and methods:
Test item: Dressed maize seeds, treated with the insecticidal seed treatment formulation Clothianidin FS 600 (nominal seed loading: 1.25 mg a.s./maize seed). Two different seed coating qualities were tested, a top seed coating quality, represented by commercial seeds prepared by the seed treatment company KWS ("KWS-seeds") and a moderate seed coating quality ("STAC-seeds"), especially prepared by Bayer CropScience (by intentionally omitting the use of a film coating/ sticker during seed treatment). The KWS-seeds had an analytically verified average seed loading of 1.68 mg clothianidin a.s./maize seed, the STAC-seeds had an analytically verified average seed loading of 1.14 mg clothianidin a.s./maize seed.

The aims of the study were to quantify (i) the ground deposition rate of clothianidin-containing seed treatment particles [g a.s./ha] at various distances from the field margin during the sowing operation of Clothianidin FS 600 treated maize seeds (nominally 1.25 mg a.s./per kernel) with modified and un-modified pneumatic and mechanical sowing machines ("primary drift"), in addition (ii) measurements were made to determine the quantity of clothianidin-containing seed treatment particles [g a.s./ha] transported downwind post-sowing (over a period of 24 h; "secondary drift") and finally to determine (iii) the in-flight clothianidin-containing dust as measured by passive dust-drift collectors [µg a.s./collector] at various distances downwind from the drilling area in different elevations above the ground. The above mentioned measurements (i-iii) were performed for a series of un-modified and modified pneumatic and mechanical maize sowing machines.

The "top quality" seeds (variety "Marcello") were commercial seeds, produced and packed by KWS Saat AG, Grimsehlstr. 31, D-37555 Einbeck, Germany. The commercial seeds, packed by KWS for the upcoming sowing season 2008 were delivered to the headquarter premises of Bayer CropScience in D-40789 Monheim, packet on Euro-pallets by means of a lorry. The seeds were treated with the insecticides clothianidin and methiocarb together with the fungicide thiram (TMTD) and were delivered in originally sealed seed-bags, each containing one German Maize Unit (= 50,000 seeds).

The "moderate quality" seeds (variety "Amadeo") were especially prepared by Bayer CropScience AG's Seed Treatment Application Centre (STAC), Building 5912, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany. The maize seeds were treated with the insecticides clothianidin and methiocarb together with the fungicide thiram (TMTD), but intentionally without the addition of any adhesive/film-coating. Seed treatment was performed with a Rotogard batch treater. In order to generate a certain level of dustiness, simulating handling comparable to commercial seeds (e.g. palletizing of seed bags, transport etc.), the treated seeds were bagged in units of 50,000 kernels (equivalent to one German Maize Unit). Thereafter, the seed bags were palletized on Euro-pallets. After storage of the pallets at ambient conditions for 10 days, in order to let the seed coat dry-up, the packed Euro-pallets were loaded onto a truck-trailer, pulled by a tractor, to be driven along normal roads and field paths for a distance of 16 km in order to simulate mechanical stress of treated seeds during transport. After transport, the Euro-pallets were dismantled and each seed bag was turned-over on solid ground by letting it fall for 5 times in sequence from a vertical to a horizontal position. This procedure aimed to distribute the dust and any transport-related seed treatment abrasion homogenously within the bag before the seed hoppers of the sowing machines were filled. Particular care was taken to quantitatively transfer the entire content of each seed-bag into the hopper, including any contained dust and transport-related seed treatment abrasion.

All clothianidin-containing dust and abrasion particles which deposited at 1, 3, 5, 10, 20, 30 and 50 metres distance from the drilling area during maize sowing ("primary drift") were sampled in polystyrene Petri-dishes (Ø 13.7 cm, 147.41 cm²), filled with an acetonitrile-water mixture (2/8, v/v). For each sampling distance three arrays of 10 Petri-dishes each were installed with a distance of 1 metre between the dishes and 50 m between the arrays. Accordingly, a total of 30 samples were yielded for each sampling distance. After drilling was completed, always an additional waiting period of 15 minutes was employed before the beginning of sampling to allow those dust particles which had not yet been deposited to settle on the sampling area. Sowing always started directly adjacent to the sampling area. In case the air-stream outlet of the maize sowing machine had a defined direction to one particular side (as for the reference machine Monosem PNU), the first drilling path (i.e. the drilling path closest to the sampling area) was always orientated in a way that the air-outlet was directed towards the sampling area. After the additional waiting period of 15 minutes elapsed, the content of each Petri-dish was quantitatively transferred into unequivocally labelled polyethylene flasks by means of a polyethylene funnel and each polyethylene flask was tightly closed with its corresponding polypropylene screw cap. Sampling always started at the 50 metre distance and proceeded towards the drilling area in order to avoid cross-contamination.

Passive dust-drift collectors have been installed at 1 m, 2 m, 3 m, 4 m and 5 m above the soil surface. The dust collectors were made of a polypropylene fabric mesh, build up of filaments with a 0.80 × 0.18 mm cross-section. This type of collector has a slightly oval shape with a length of ≈ 85 mm and a diameter of ≈ 65 mm; at its poles, the diameter is ≈ 50 mm. The polypropylene fabric mesh collectors were pinned on each end of a horizontal metal stick, which in turn were mounted in the respective height on a vertical tripod-pylon (height ≈ 6 m), giving in total 10 collectors per pylon (2 at each height). In all arrays, one pylon was installed at 5 and 30 m distance from the drilling area, respectively, resulting in 6 collectors per height per distance.

The passive dust drift collectors made of polypropylene-mesh were additionally wetted with a glycerol/(Millipore-)water mixture (1/1, v/v). After each polypropylene-mesh collector was pinned on its horizontal metal stick, it was sprayed with the glycerol/water mixture by means of a hand-held sprayer beyond its point of run-off.
In one dust drift trial ("Machine 9"), in addition to the wetted polypropylene-mesh collectors, also one un-wetted pipe-cleaner was hung directly beside each polypropylene-mesh collector in order to obtain comparative atmospheric dust drift measurements with two different sampling equipments. The pipe-cleaners were made of cotton with a fine, fury surface. Once the 30 m - line and later on, the 5 m - line have been reached during the sampling process of the Petri-dishes ("primary drift"; see above), also the passive collectors were sampled and placed in unequivocally labelled plastic containers. In the laboratory, each individual passive collector (both, polypropylene-mesh and pipe-cleaner) has been extracted with an appropriate volume of acetonitrile/water (2/8, v/v) within an ultrasonic bath to enhance the extraction process.

After the Petri-dishes filled with acetonitrile/water (2/8, v/v) and the passive dust-drift collectors have been sampled ("primary drift" and "atmospheric drift", see above), ten new polystyrene Petri-dishes (Ø 13.7 cm, height 1.7 cm, 147.41 cm² surface) were installed on the field ground of the sampling area in all arrays at three distances from the "zero line" (1, 5 and 50 m), respectively. The Petri-dishes were filled with about 100 mL of an glycerol/(Millipore-)water mixture (1/1, v/v) and were exposed for a period of 24 h in order to quantify the amount of clothianidin which may be dislocated from the sowing area via secondary drift processes ("secondary drift"). After 24 h, the content of each Petri-dish was quantitatively transferred into unequivocally labelled polyethylene flasks by means of a polyethylene funnel and each polyethylene flask was tightly closed with its corresponding polypropylene screw cap.

At each day of drilling/sampling, all polyethylene flasks filled with acetonitrile/water ("primary drift") together with all passive polypropylene-mesh dust-drift collectors (+ pipe cleaners for "Machine 9") ("atmospheric drift") were transported by car to the Bayer CropScience AG's Institute for Residues, Operator and Consumer Safety (BCS-D-ROCS, D-40789 Monheim, Germany). The following day, the polyethylene flasks filled with glycerol/water ("secondary drift") were also transported by car to BCS-D-ROCS. The samples were stored at ambient temperature in the laboratory until analysis. Within the following two weeks after arrival, all samples were analysed for their clothianidin content according to method 00554/M001.

Findings:

	90th%ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expan-sion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, comp. pressed air	Vacuum-pneumatic	Mechani-cal, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	0.662	6.455	0.271	0.183	0.287	0.195	0.265	0.161	0.121
3 m	0.564	2.953	0.246	0.181	0.175	0.117	0.196	0.146	0.073
5 m	0.421	2.552	0.196	0.148	0.168	0.094	0.204	0.116	0.068
10 m	0.311	1.911	0.157	0.111	0.198	0.083	0.179	0.115	0.050
20 m	0.167	1.184	0.141	0.110	0.078	0.061	0.105	0.079	0.028
30 m	0.115	0.839	0.073	0.086	0.071	0.042	0.069	0.070	0.029
50 m	0.081	0.546	0.055	0.058	0.041	0.039	0.054	0.060	0.026
Limit of quantification (LOQ) = 0.014 g a.s./ha									

	90th%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.030**	**0.036**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
5 m	**0.045**	**0.019**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
50 m	**<LOQ**	**LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

	90th%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/ Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Height above ground	***5 m distance from the "zero-line"***								
1 m	1.465	7.398	0.941	0.892	1.146	0.823	0.841	1.072	0.743
2 m	1.678	6.636	1.072	0.822	0.884	0.791	0.848	0.606	0.522
3 m	1.143	4.108	0.978	0.650	0.960	0.722	0.610	0.401	0.406
4 m	0.804	2.348	0.489	0.432	0.772	0.419	0.479	0.347	0.327
5 m	0.457	1.383	0.390	0.224	0.593	0.288	0.336	0.271	0.212
	10 m distance from the "zero-line"								
1 m	0.796	4.604	0.538	0.681	0.559	0.817	0.446	0.555	0.590
2 m	0.708	3.895	0.626	0.665	0.860	0.543	0.447	0.519	0.523
3 m	0.553	3.977	0.623	0.471	0.617	0.621	0.503	0.486	0.407
4 m	0.554	3.066	0.458	0.457	0.572	0.463	0.345	0.470	0.300
5 m	0.674	1.903	0.371	0.287	0.484	0.372	0.426	0.264	0.268
Limit of quantification (LOQ) = 0.014 g a.s./ha									

Machine ID-No.	No. of completed drilling paths	No. of completed drilling paths with an average wind speed 2 m above ground out of target range (i.e. 2 m/s < target range < 5 m/s)		No. of completed drilling paths with an average wind direction exceeding target range of ± 30°
		< 2 m/s [min. average]	> 5 m/s [max. average]	>30° [max. average]
1	17	0	0	0
2	17	0	0	0
3	12	0	0	0
4	9	0	0	0
5	9	0	1 [5.2 m/s]	4 [34.9°]
6	9	0	0	0
7	9	3 [1.7 m/s]	0	7 [36.8°]
8	9	5 [1.7 m/s]	0	0
9	12	0	12 [6.8 m/s]	7 [42.8°]

Discussion and Conclusion:

The comparison of a moderate with a very good seed coating quality on an identical, unmodified vacuum-pneumatic maize drilling machine revealed that seed coating quality is a major factor which significantly impacts both, ground deposition and atmospheric drift.

The comparison of the maize sowing equipment which was investigated exclusively with a moderate seed quality revealed that all modified vacuum-pneumatic, mechanical (i.e. no air assistance) and positive-pressurized (i.e. seed separation with compressed air) machines tested performed in a comparable way, leading to a comparable and significant drift reduction compared to an unmodified vacuum-pneumatic maize drilling machine with an air-stream release directly from the fan from one single outlet. This significant drift reduction becomes obvious for all measured endpoints (i.e. ground deposition, atmospheric drift as well as secondary drift processes).

Although there were variable weather conditions within the 24 hours post-sowing period, the data concerning secondary drift processes show a consistent picture: The 90th%ile of all modified vacuum-pneumatic, mechanical and positive pressurized sowing machines was always below the limit of quantification. Residues above the limit of quantification were only observed with the conventional vacuum-pneumatic maize sowing technology. Compared to primary drift (ground deposition during maize sowing), the secondary drift values were at least one order of magnitude lower.

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2 INTRODUCTION

During the drilling operation of maize seeds, some mechanical abrasion of the seed coating occurs predominantly during the process of seed separation in all single-kernel maize sowing machines (seed separation is the pre-requisite for precision drilling of single maize seeds with defined, homogenous intra-row spacing). The abraded dust, containing small amounts of active substance(s) is released into the environment, which might lead to a deposition of active substance(s) in adjacent off-crop areas.
There are three major maize-seed separation principles investigated within this study:

Vacuum-pneumatic seed separation principle (i.e. with negative pressure)

To achieve a precise deposition of the seeds in the soil, seeds are sucked from a deposit via negative pressure on a perforated disk. On the individual perforations of this disk, maize seeds are individualised by sticking to the holes as long as the negative pressure (vacuum) is sustained. Due to the forward movement of the sowing disk, separated seeds will loose their contact to the vacuum and will therefore finally drop into the furrow with a distinct spacing. The rotation of the disks is correlated with the driving speed of the tractor to assure homogenous intra-row spacing. Abraded particles are emitted by the exhaust air of the fan (which generates the vacuum for seed separation), either from one single outlet 1-2 m above the ground (= un-modified) with a rather high release pressure/velocity or from various outlets close to the ground with a reduced release pressure/velocity (= modified).

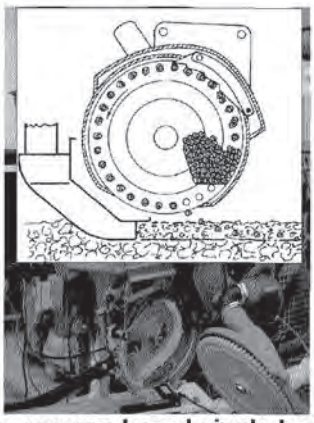
Pneumatic seed separation principle with positive pressure (i.e. with compressed air)

Funnel-shaped cells on the outer rim of a rotating cell-wheel fill themselves by gravitation with several seeds. By means of an air-nozzle, excess seeds are blown-out of the funnel shaped cells with compressed air (positive pressure) so that only one single seed remains on the bottom of the cell – excess seeds fall back into the seed storage unit. After rotation of the disk, individualised seeds drop-off the funnel shaped cells into the furrow by gravitation only, one after the other, with a distinct spacing. The rotation of the disks is correlated with the driving speed of the tractor to assure homogenous intra-row spacing. Abraded particles are rather gently released by the exhaust air, which leaves each seed separation unit close to the ground.

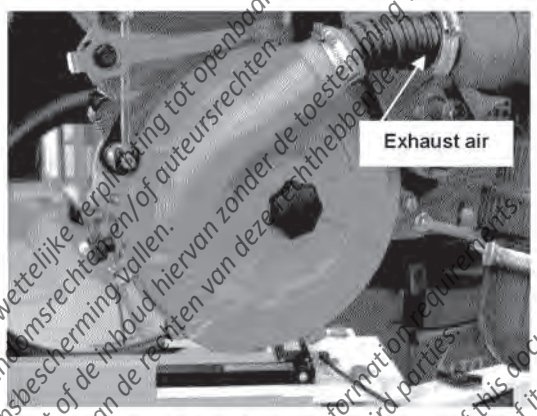
Mechanical seed separation principle (i.e. without air assistance)

Mechanical maize drilling does not operate with any air assistance. In order to accomplish a single-seed deposition, rotating disks with individual talons/cells transport single seed from the storage to the seed outlet, where individual seeds drop via gravitation only into the seed furrow with a distinct spacing. The rotation of the disks is correlated with the driving speed of the tractor to assure homogenous intra-row spacing. Abraded particles are therefore also released by gravitation only close to the ground.

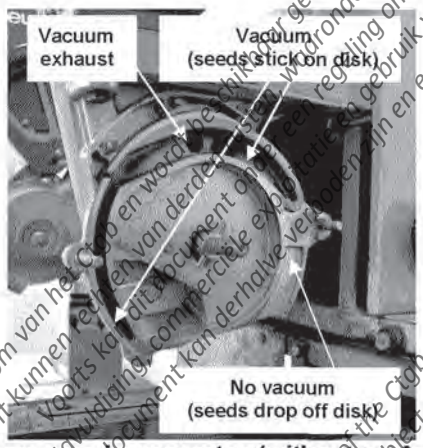
A. Vacuum-pneumatic seed separation principle (i.e. with negative pressure)



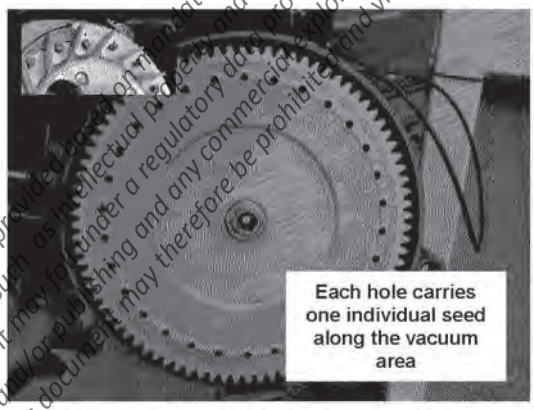
Pneumatic, vacuum-based single-kernel maize sowing device (open separator + cross section)



Closed maize seed separation / separation unit

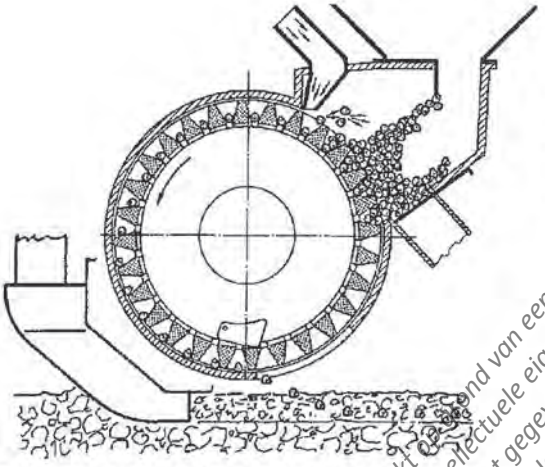


Vacuum area in separator (without perforated disk)



Perforated disk (each hole/cell carries one individual seed)

B. Pneumatic seed separation principle with positive pressure (i.e. with compressed air)



Funnel-shaped cells on the outer rim of the rotating cell-wheel; compressed air released by an air-nozzle removes surplus seeds per cell

Closed seed separation unit with contact to the seed hopper; side-view on the cell-wheel

Open seed separation unit; cell-wheel with funnel-shaped cells at its outer rim

C. Mechanical seed separation principle (i.e. without air assistance)

Details of a mechanical maize seed separation system (talons/cells transporting single seeds)

Mechanical maize seed separation unit after use with dressed maize seeds

Aims of the study

The aims of the study were to quantify (i) the ground deposition rate of clothianidin-containing seed treatment particles [g a.s./ha] at various distances from the field margin during the sowing operation of Clothianidin FS 600 treated maize seeds (nominally 1.25 mg a.s./per kernel) with modified and un-modified pneumatic and mechanical sowing machines ("primary drift"); in addition (ii) measurements were made to determine the quantity of clothianidin-containing seed treatment particles [g a.s./ha] transported downwind post-sowing (over a period of 24 h; "secondary drift") and finally to determine (iii) the in-flight clothianidin-containing dust as measured by passive dust-drift collectors [µg a.s./collector] at various distances downwind from the drilling area in different elevations above the ground. The above mentioned measurements (i-iii) were performed for a series of un-modified and modified pneumatic and mechanical maize sowing machines.

One sowing machine (Monosem PNU), which emits the exhaust air of the fan at an angle of approximately +45° upwards (relative to the ground), can be considered to represent realistic worst-case pneumatic maize sowing conditions with un-modified machinery. This particular machine served as the reference for all investigations.

Overall,

- one un-modified vacuum-based pneumatic maize sowing machine (reference),
- one positive-pressurized maize sowing machine (compressed air),
- one mechanical maize sowing machine (no air assistance) and
- five different modifications of vacuum-based pneumatic maize sowing machines

were tested. All modified vacuum-based pneumatic maize sowing machines follow new principles of exhaust air management. Instead of releasing the air-stream out of one single outlet directly from the fan approximately 1-2 m above the ground, the single exhaust air-stream is divided via several tubes into sub-streams, which are released either within drilling disks close to the ground or otherwise at ground level.

Effect of machinery on ground deposition / atmospheric drift:

In order to scrutinize the effect of the different principles of seed separation – with and without modification – individual tests have been conducted with an identical seed coating quality only (= "moderate quality"). The moderate quality has been intentionally selected for this particular investigation in order not to compromise the results by generating deposition values below the Limit Of Quantification (LOQ) at distances close to the maize sowing area.

Effect of seed treatment technology on ground deposition / atmospheric drift:

In order to scrutinize the effect of the seed coating quality, the effect of two different seed coating qualities ("top quality" vs. "moderate quality") were investigated on the identical reference machine (i.e. on the un-modified, vacuum-based, realistic worst-case pneumatic maize drilling machine).

Machinery Overview					
Machine ID-No.	**Producer**	**Type**	**Comment**	**Exhaust Air Management Principle (Deflection System)**	**Tested with the following seed quality**
1	Monosem	PNU	Reference machine	The total exhaust-air is ejected from one single outlet in an angle of approximately +45° upwards directly from the fan (= un-modified exhaust air management, no particular deflection system)	KWS seeds - "top quality"
2					STAC seeds - "moderate quality"
3	Gaspardo	MTE 300 BB-XL	-	The total exhaust-air is diverted into 4 fertilizing disks for fertilizer transportation purposes	STAC seeds - "moderate quality"
4	Amazone	ED 602 K	Ground Cushion Variant	The total exhaust-air is diverted into 2 ground cushions, confined by rubber skirts; the cushions slide over the ground during movement; the air stream is broken by perforated metal plates on the top of the cushions	STAC seeds - "moderate quality"
5	Danagri (Becker)	Aeromat M 8-HKP DTE	-	Maize seed separation via positive pressure (compressed air); the surplus air is released, *inter alia*, into drilling disks (= un-modified exhaust air management, no particular deflection system)	STAC seeds - "moderate quality"
6	Kverneland	Optima HD e-drive DS-CT	-	The total exhaust-air is diverted into 5 fertilizing disks for fertilizer transportation purposes	STAC seeds - "moderate quality"
7	Horsch	Maistro 8 CC	-	Mechanical seed separation without any air assistance (= no particular deflection system)	STAC seeds - "moderate quality"
8	Amazone	ED 602 K	Expansion Chamber Variant	The total exhaust-air stream is diverted into 2 sub-streams, which are then introduced from opposite sites into a big tube; the over - pressurized air within this "expansion chamber" is then released via 20 diffusors	STAC seeds - "moderate quality"
9	Monosem	NG 3 Plus	-	Exhaust-air is diverted into 6 fertilizing disks for fertilizer transportation purposes	STAC seeds - "moderate quality"

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3 RESPONSIBILITIES

Sponsor:	Bayer CropScience AG Portfolio Management – Seed Treatment Alfred-Nobel-Str. 50 D-40789 Monheim, Germany
Test Facility:	Bayer CropScience AG Development-Ecotoxicology (BCS-D-ETX) Building 6620 Alfred-Nobel-Str. 50, D-40789 Monheim, Germany
Test Site Analytical Part	Bayer CropScience AG Development-Residues, Operator and Consumer Safety (BCS-D-ROCS) Building 6610 Alfred-Nobel-Str. 50, D-40789 Monheim, Germany
Study Director:	[redacted] Bayer CropScience AG, Development-Ecotoxicology (BCS-D-ETX) Building 6620, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany [redacted] [redacted]ropscience.com
Responsible persons Field Part & Drilling equipment (Non - GLP):	[redacted] Bayer CropScience AG Development - Agronomic Development (BCS-D-AD-AT) Building 9200, Field Technology Centre Hoelchem D-51399 Burscheid, Germany [redacted] [redacted]cropscience.com
Principal Investigator Residue Analysis (GLP):	[redacted] Bayer CropScience AG, Development-Residues, Operator & Consumer Safety (BCS-D-ROCS) Building 6610, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany [redacted] [redacted]ience.com
Responsible person Seed Material and Seed Treatment Quality Testing (Non - GLP):	Bayer CropScience AG, Seed Treatment Application Centre (BCS-PM-ST) Building 5912, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany [redacted] [redacted]2bayercropscience.com
External Consultant Field Drift Measurements (Non - GLP):	[redacted] Geisenheim Research Center Van Lade Str. 1 D-65366 Geisenheim, Germany [redacted]

MATERIAL AND METHOD NON-GLP FIELD PART

3.1 Test Items

Trade name:	Poncho® / Poncho® PRO
Active substance (a.s.):	Clothianidin
Chemical code:	TI-435
Formulation:	FS 600
Empirical formula:	$C_6H_8ClN_5O_2S$
CAS-Name:	Guanidine, (E)-N-[(2-chloro-5-thaizolyl)methyl]-N'-methyl-N''-nitro-
CAS-No.:	210880-92-5
Indication:	Insecticide
Physical appearance of the FS 600:	Red suspension

Trade name:	Mesurol®
Active substance (a.s.):	Methiocarb
Chemical code:	H 321
Formulation:	FS 500
Empirical formula:	$C_{11}H_{15}NO_2S$
CAS-Name:	3,5-dimethyl-4-(methylthio)phenyl methylcarbamate
CAS-No.:	2032-65-7
Indication:	Insecticide
Physical appearance of the FS 500:	Red suspension

Trade name:	Flowsan 533 FS
Active substance (a.s.):	Thiram
Chemical code:	TMTD
Formulation:	FS 533
Empirical formula:	$C_6H_{12}N_2S_4$
CAS-Name:	Tetramethylthioperoxydicarbonic diamide
CAS-No.:	137-26-8
Indication:	Fungicide
Physical appearance of the FS 533:	Red suspension

3.2 Dressed Maize Seeds

Dressed maize seeds were analysed in the laboratory of Werner Zitzmann, Bayer CropScience AG, Institute for Formulation Technology (BCS-D-FT, non-GLP; see Appendix 1).

"Top Quality"

Origin of commercial seeds:	KWS SAAT AG, Grimsehlstr. 31, P.O. Box 1463 D-37555 Einbeck
Authentication number:	D/KA 7.9316.388
Species:	*Zea Mays*
Cultivar:	Marcello
Corresponding Thousand Kernel Weight (TKW):	305 g
Appearance:	Bright red maize seeds
Date of seed-bag sealing (1 bag = 1 Unit = 50,000 seeds)	March 2008
Seed dressing constituents:	Poncho 600 FS (nominal 1.25 mg a.s./maize seeds) Mesurol 500 FS (nominal 0.75 mg a.s./maize seeds) Flowsan 533 FS (TMTD = thiram) (200 g a.s./100 kg)
Target content of clothianidin per individual maize seed:	1.25 mg a.s./maize seed
Analytically verified content of clothianidin per individual maize seed:	1.68 mg a.s./maize seed
Degree of loading (analysed/target):	134.9%

"Moderate Quality" (the routine use of a film coating was omitted on purpose)

Origin of seeds:	Seed Treatment Application Centre (STAC), Bayer CropScience AG, Building 5912, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany
Species:	*Zea Mays*
Cultivar:	Amadeo
Corresponding Thousand Kernel Weight (TKW):	293 g
Appearance:	Bright red maize seeds
Date of seed-bag sealing (1 bag = 1 Unit = 50,000 seeds):	August 2008
Seed dressing constituents:	Poncho 600 FS (nominal 1.25 mg a.s./maize seeds) Mesurol 500 FS (nominal 0.75 mg a.s./maize seeds) Flowsan 533 FS (TMTD = thiram) (200 g a.s./100 kg)
Target content of clothianidin per individual maize seed:	1.25 mg a.s./maize seed
Analytically verified content of clothianidin per individual maize seed:	1.14 mg a.s./maize seed
Degree of loading (analysed/target):	90.8%

Abrasion Resistance of "Top Quality" vs. "Moderate Quality" seeds

In order to characterize the seed treatment quality in terms of the abrasion resistance of the maize seed coating, both seed qualities were subject to the "Heubach Test". This particular test imposes a defined amount of mechanical stress to the treated seeds: A quantity of treated seeds is turned around for a particular period of time inside an uneven rotating drum. During the rotation process, an air-stream is directed through the drum which leaves the apparatus after passing a glass fibre filter. This glass fibre filter is weighed before and after the test program has been completed and the difference between both measurements is the amount of dust abraded during the specific experimental conditions.

The obtained data demonstrate that the "Top Quality" seed coating had a significantly higher abrasion resistance than the "Moderate Quality" seed coating. Details of measurements as well as other dust parameters are displayed in Appendix 8.

For a rotation speed of 30 rpm in combination with an air flow of 20 L/minute and a rotation time of 2 minutes, the following dust abrasion data have been obtained:

Heubach Test [g abraded dust/100,000 maize seeds]	
Top Quality Seeds (KWS-seeds)	Moderate Quality Seeds (STAC-seeds)
0.12	1.15

3.3 Sowing Machine Parameters, Drilling Parameters During Dust Drift Measurement and Soil/Field Identification

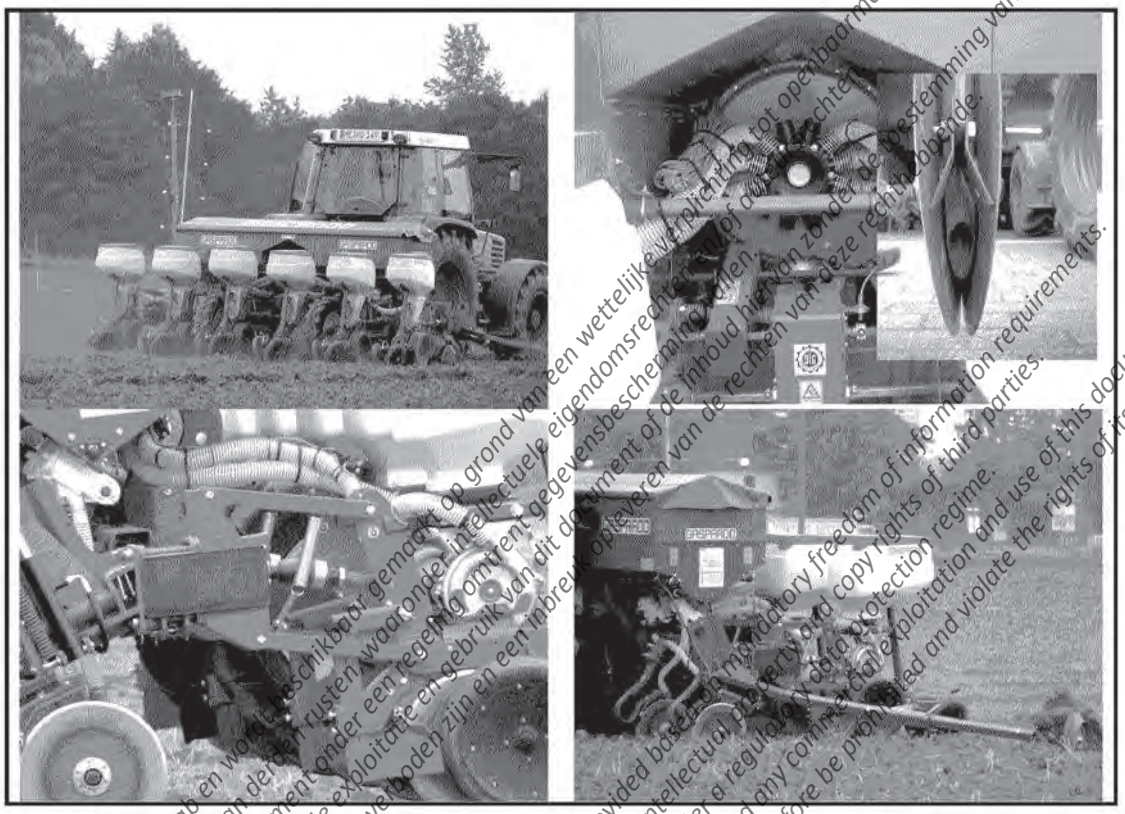
Machine ID-No.	1	2	3	4	5	6	7	8	9
Producer/Type:	Monosem PNU		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)		Moderate (STAC-seeds)						
Maize sowing rate	80,000 seeds/ha								
Drilling date [dd/mm/yyyy]	21/08/2008	27/08/2008	29/08/2008	27/08/2008	27/08/2008	28/08/2008	26/08/2008	28/08/2008	18/09/2008
Number of drilling rows	4		6	8	8	8	8	8	6
Completed paths	17		12	9	9	9	9	9	12
Row distance	0.75 m								
Total No. of rows drilled during drift measurement	4 × 17 = 68		6 × 12 = 72	9 × 8 = 72					6 × 12 = 72
Working width:	3 m		4.5 m	6 m					4.5 m
Width of drilled area (Length of drilled area)	68 × 0.75 m= 51 m (200 m)		72 × 0.75 m= 54 m (200 m)						
Total plot size area drilled	10,200 m²		10,800 m²						
Time to drill total area	51 min.	44 min.	23 min.	22 min.	36 min.	22 min.	19 min.	18 min.	22 min.
Tractor speed at drilling	5.5 km/h		6.4 km/h	6.4 km/h	5.8 km/h	6.7 km/h	6.3 km/h	6.0 km/h	6.2 km/h
Filling of each individual hopper with:	1 Unit = 50,000 maize seeds (after all seeds per individual bag were poured into the hopper, the empty seed-bag was shaken and tapped with its opening directed to the inside of the hopper to assure that all dust particles inside the seed bags were quantitatively transferred into the hoppers)								
Soil codes of the study plot used for sowing	OE 3524 [1] OE 3525 [2]	OE 3530 [1] OE 3531 [2]	OE 3540 [1] OE 3541 [2]	OE 3532 [1] OE 3533 [2]	OE 3534 [1] OE 3535 [2]	OE 3536 [1] OE 3537 [2]	OE 3528 [1] OE 3529 [2]	OE 3538 [1] OE 3539 [2]	OE 3560 [1] OE 3559 [2]
Tested on field No.	7	5	4	1	1	5	3	2	6

[1] **This soil codes refer to a composite soil sample of the upper 10 cm of the study plot (soil texture, organic carbon, inorganic carbon, max. water holding capacity, CEC)**

[2] **This soil codes refer to a composite sample of the upper 5 cm of the study plot (water content of the soil immediately before drilling)**

Reference = Machine 1 = Machine 2 = Monosem PNU (un-modified)

Machine 3 = Gaspardo MTE 300 BB-XL (modified)



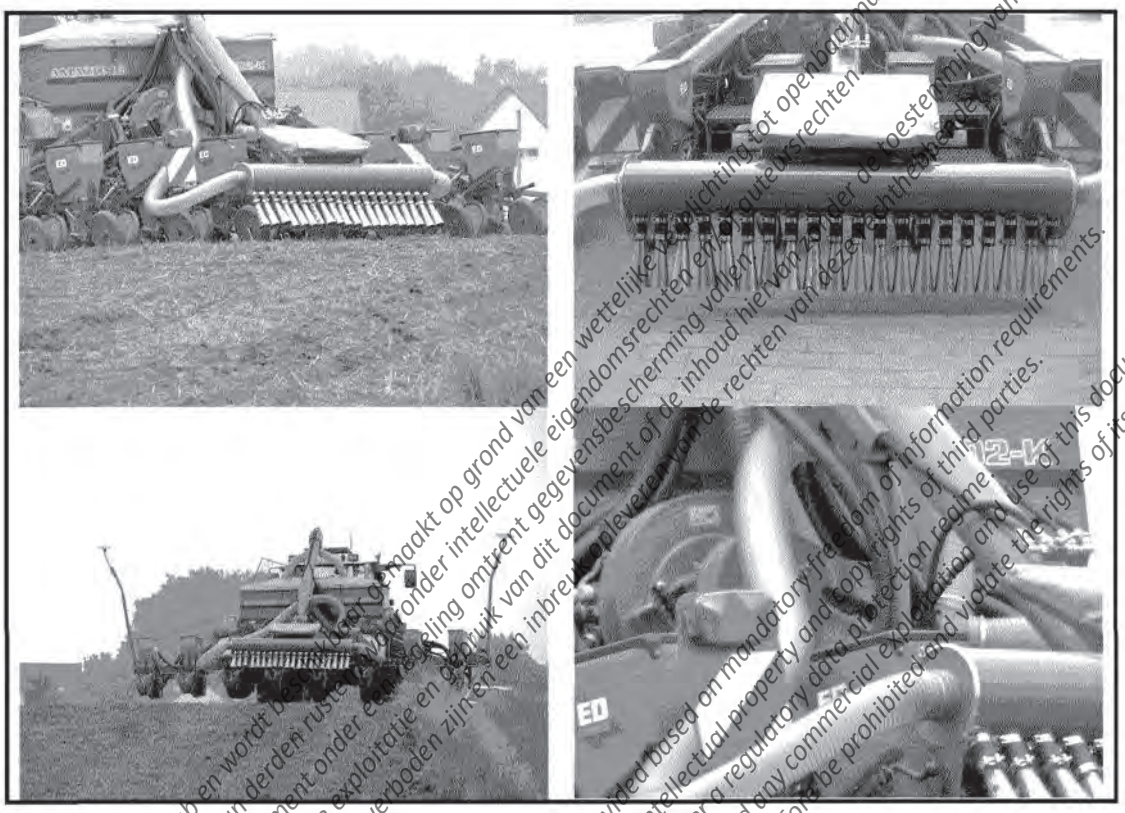
Machine 4 = Amazone ED 602 K (modification variant: "Ground Cushion")

Machine 5 = Danagri (Becker) Aeromat M 8-HKP DTE (un-modified)

Machine 6 = Kverneland Optima HD e-drive DS-LT (modified)

Machine 7 = Horsch Maistro 8 CC (un-modified)

Machine 8 = Amazone ED 602 K (modification variant: "Expansion Chamber")



Machine 9 = Monosem NG 3 Plus (modified)

3.4 Test Organism

None, the study was focused on the determination of residue levels and not on direct effects on test organisms.

3.5 Schedule

Start and end of field activities: August 21, 2008 - September 20, 2008
Start and end of analytical activities: August 22, 2008 - September 24, 2008

3.6 Test Location

The study was conducted in Leverkusen - Hitdorf, North Rhine-Westphalia, Germany on study plots typical for maize growing. In total, seven different fields were used for the entire study program. The fields were located in close proximity to the Bayer CropScience headquarter (Alfred-Nobel-Str. 50, D-40789 Monheim am Rhein, Germany). Per individual drift experiment (i.e. Machine 1 - 9 = in total 9 drift experiments), dressed maize seeds have been sown on about 1 ha, while the deposition measurement took place on an adjacent area of a similar size in downwind direction. Depending on the actual size of each field, either only one or max two study plots were segregated per field (minimum distance: ≈100 m upwind to the prevailing wind direction) to exclude cross-contamination. One study plot was used for one drift experiment, in total, nine drift experiments were conducted during the course of the study (i.e. "Machine 1 - 9", for further details see below). The previous crop on each field and therefore also for each study plot was winter wheat. The entire area is characterized by sandy silt soils (for details of the soil characterisation see chapter 4.7)

Field No.	Study Plot Location for Testing Machine No.	Field Size	Field Name	Owner
1	4, 5	18.0 ha	"Steffens Hecke"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
2	8	8.5 ha	"Langenfelder Strasse"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen
3	7	4.9 ha	"Diepesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
4	3	7.6 ha	"Töngesfeld"	Mr. Peter Süß, Altenhof 1, D-51371 Leverkusen
5	2, 6	8.9 ha	"A XXVI"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
6	9	5.6 ha	"Herbizidfeld VIII"	Bayer Real Estate GmbH, Schleider Weg 52, D-40789 Monheim
7	1	3.8 ha	"Lohrkreuz"	Mr. Peter Küpper, Langenfelderstr. 101, D-51371 Leverkusen

In preparation of maize drilling, the study plots received a flat stubble processing, followed by either a deep power-harrowing or by ploughing. The final and sufficiently fine seed bed which allows maize drilling according to typical European use conditions was prepared by either additionally harrowing the field (in case the previous step was ploughing) or by using tines or rolls as the last step of soil processing in a combination with the deep power-harrowing. On the downwind site adjacent to the drilling plot, the soil received in some cases a reduced soil processing (stubble processing and flat harrowing) and served as sampling area on which the Petri-dishes and the tripod-pylons for measuring atmospheric drift were placed. The Petri-dishes were placed in metal-placeholders (for details see chapter 4.8).

The study plots were set up shortly before drilling with a perpendicular orientation to the prevalent wind direction (i.e. 180° ± 30° relative to movement of the tractor/maize drilling machine (see Appendix 3 for details). Each sampling and drilling plot was exactly calibrated by means of metering bands (100 & 50 m in length) and by marking relevant points by means of plastic sticks of approximately 1 m length, which were placed vertically upright into the soil.

3.7 Soil Characterization of the Study Plots and Clothianidin Soil Residue Analysis

Immediately before the start of the maize sowing operation, a composite soil sample from the upper 5 cm was taken (by means of a soil piercer) from at least 20 locations randomly selected on the drilling area and filled in a plastic bag. This composite sample was tightly sealed and analysed for its water content (Laboratory for Soil Organisms, Thorsten Leicher, BCS-D-ETX, non-GLP).

In addition, a further composite soil sample from the upper 10 cm was taken (by means of a soil piercer) from at least 20 locations randomly selected on the drilling area and filled in a plastic bag. This composite soil sample was sieved in the Bayer CropScience Laboratory for Soil Organisms (BCS-D-ETX) to < 2 mm. From this sieved fraction, approximately 250 g were isolated to be analyzed for the content of clothianidin; the soil analysis has been conducted in the laboratory of Thomas Freitag (BCS-D-ROCS, according to the method 00540/M001, non-GLP). An appropriate fraction of the sieved soil had been further sent to the LUFA in Speyer (Landwirtschaftliche Untersuchungs- und Forschungs - Anstalt, Obere Langgasse 40, D-67346 Speyer, Germany) for the determination of the particle size distribution of the soil (soil texture), the content of organic and inorganic carbon as well the max. water holding capacity (non-GLP analysis).

The analyses of the topsoil immediately before drilling revealed a water content in the upper 5 cm in the range of ≈9-10 % in case modified vacuum-pneumatic sowing machines (with an air-stream release close to the ground) together with positive-pressurized or mechanical sowing machines were tested. These data verify the dusty physical appearance of the soil surface in all of the above described cases. In the two cases where the un-modified vacuum-pneumatic reference machine was tested ("Machine 1" = "Machine 2"; air-stream release from one single outlet directly from the fan ≈ 2 m above the ground), the water content in the upper 5 cm was at max. ≈ 12 %. Details of the water content analysis of the topsoil are provided in Table 8 as well as in Appendix 7.

The soil characterisation revealed that the upper 10 cm of each study plot had a very similar soil texture, as intended during plot selection. In addition, also the content of organic and inorganic carbon as well as the maximum water holding capacity was very similar, as to be expected for agricultural soils of a similar cropping cycle and a similar particle size distribution. Details of the soil characterization are provided in Table 8 as well as in Appendix 5.

The soil residue analysis, conducted according to the analytical method 00540/M001, revealed no clothianidin residues above the LOQ or LOD (LOD = limit of detection = 2 µg clothianidin/kg soil; LOQ = limit of quantification = 5 µg clothianidin/kg soil). Details of the soil residue analyses are provided in Table 8 as well as in Appendix 6).

3.8 Study Layout

In total, 8 different maize sowing machines were tested. One un-modified vacuum-pneumatic sowing machine with an air-release directly from the fan (one single air-release outlet, ≈ 2 m above the ground, air-stream directed in an angle of approx. +45° upwards) served as a reference maize sowing machine. This particular machine was tested with two different seed coating qualities ("top quality" seeds [= "Machine 1"] vs. "moderate quality" seeds ["Machine 2"]).

The other seven machines investigated (Machine 3 - Machine 9) were either modified vacuum-pneumatic sowing machines or followed a compressed air or mechanical seed separation principle.

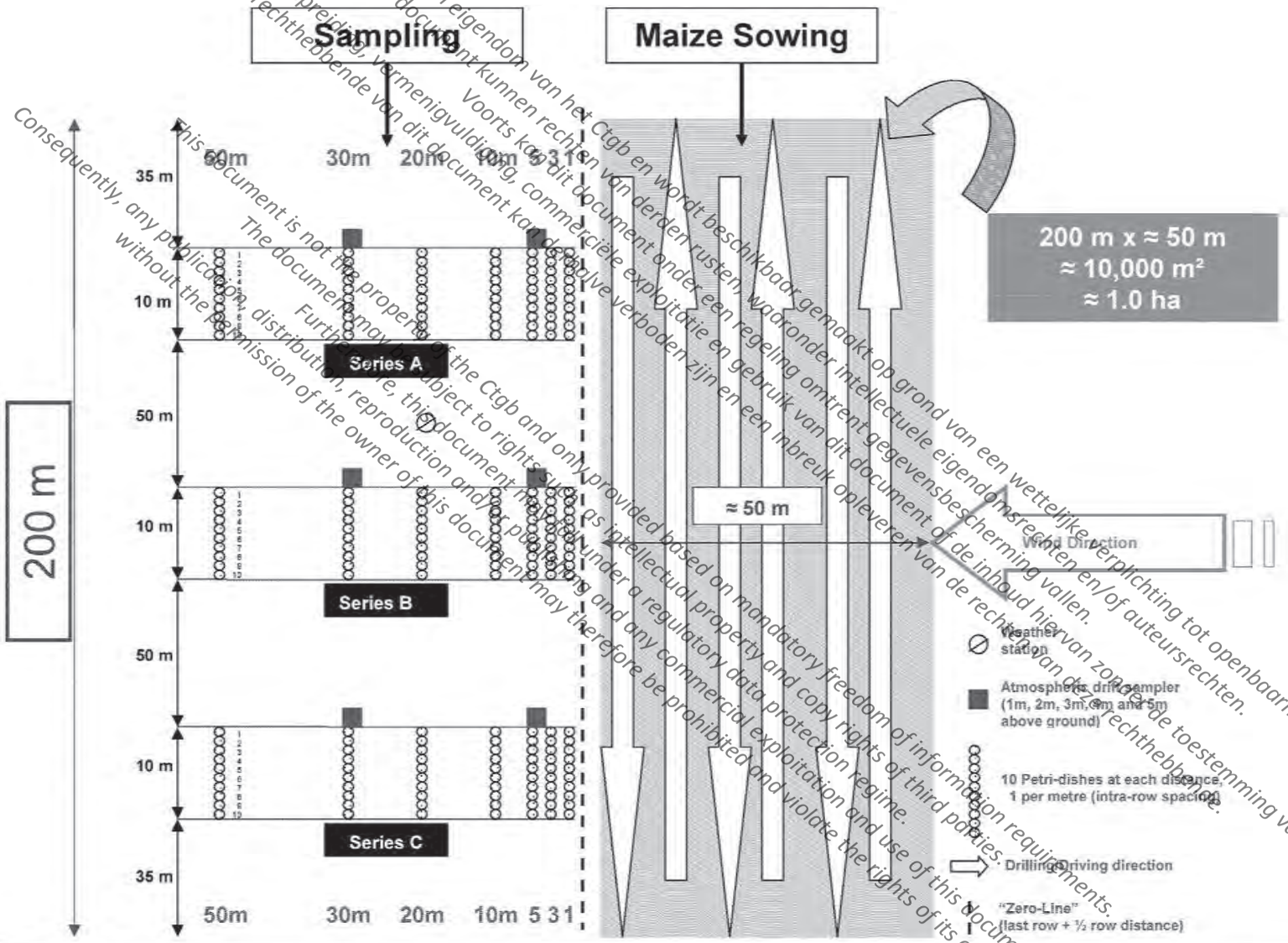
The "top quality" seeds (variety "Marcello") were commercial seeds, produced and packed by KWS Saat AG, Grimsehlstr. 31, P.O. Box 1463, D-37555 Einbeck, Germany. The commercial seeds, produced and packed by KWS for the upcoming sowing season 2008, were delivered to the headquarter premises of Bayer CropScience, packed on Euro-pallets, by means of a lorry. The seeds were treated with the insecticides clothianidin and methiocarb together with the fungicide thiram (TMTD) and were delivered in originally sealed seed-bags, each containing one German Maize Unit (=50,000 seeds).

The "moderate quality" seeds (variety "Amadeo") were especially prepared by Bayer CropScience AG's Seed Treatment Application Centre (STAC), Building 5912, Alfred-Nobel-Str. 50, D-40789 Monheim, Germany. The maize seeds were treated with the insecticides clothianidin and methiocarb together with the fungicide thiram (TMTD), but intentionally without the addition of any adhesive/film-coating to ensure measurable detects. Seed treatment was performed with a Rotogard batch treater.
In order to generate a certain level of dustiness, simulating handling comparable to commercial seeds (e.g. palletizing of seed bags, transport etc.), the treated seeds were bagged in units of 50,000 kernels (equivalent to one German Maize Unit). Thereafter, the seed bags were palletized on Euro-pallets. After storage of the pallets at ambient conditions for 10 days, in order to let the seed coat dry-up, the packed Euro-pallets were loaded onto a truck-trailer, pulled by a tractor, to be driven on normal roads and field paths for a distance of 16 km in order to simulate mechanical stress of treated seeds during transport.
After transport, the Euro-pallets were dismantled and each seed bag was turned-over on solid ground by letting it fall for 5 times in sequence from a vertical to horizontal position. This procedure aimed to distribute the dust and any transport-related seed treatment abrasion homogenously within the bag before the seed hoppers of the sowing machines were filled.

Before drilling, each hopper of each machine was filled with one German Maize Unit (which is equivalent to one complete seed-bag), respectively. The filling of the hoppers was performed on the yard of the machine-hall of Bayer CropScience's Application Technology Unit, Building 5912, D-40789 Monheim, approximately 2-3 km away from the study plots (access of the trial site via paved roads and field paths). Particular care was taken to quantitatively transfer the entire content of each seed-bag into the hopper, including any contained dust and transport-related seed treatment abrasion.
In case of the vacuum-pneumatic reference drilling machine (= Monosem PNU), the single hoppers were too small to quantitatively capture one complete seed bag. Thus, in case the "top quality" seeds were used for the reference drilling machine (= "Machine 1"), the hoppers of the Monosem PNU were filled until their maximum capacity was reached; approximately 1-2 L of seeds remained in each seed bag. For each hopper, one individual seed bag was used. Apart of the left-over maize seeds, no visible dust particles or transport-related seed treatment abrasion remained in the seed bags due to their excellent seed-coating quality.
In case "moderate quality" seeds were used for the reference drilling machine (= "Machine 2"), each individual seed bag was opened and ≈2L of seeds were removed by means of a graduated plastic beaker in advance to pouring all the remaining seeds, including transport-related seed treatment abrasion, into each hopper, respectively. This procedure has been selected to assure that in case the bulk of the transport-related seed treatment abrasion is located on the bottom of each seed bag (despite of the seed-bag turning procedure, see above), the bulk of the transport-related seed treatment abrasion was actually transferred into the hopper.

The size of each drilling plot per machine was about 1.0 ha. In case of the 4-row vacuum-pneumatic reference machine (= Monosem PNU) was tested, the actual drilling-plot size was slightly smaller (i.e. 1.02 ha or 10,200 m^2) compared to the modified vacuum-pneumatic, positive-pressurized or mechanical sowing machine (i.e. 1.08 ha or 10,800 m^2). At the time of drilling, the orientation of the sampling devices (Petri-dishes, passive dust drift collectors; see below) was 180° (perpendicular) ± 30° to the prevailing wind direction. Sowing was performed as typical for commercial agricultural practice (alternate directions); in case the air-stream outlet of the maize sowing machine had a defined direction to one particular site (as for the reference machine Monosem PNU), the first drilling path (i.e. the drilling path closest to the "zero line") was always orientated in a way that the air-outlet was directed towards the sampling area.

All clothianidin-containing dust and abrasion particles which deposited at 1, 3, 5, 10, 20, 30 and 50 metres distance from the drilling area were sampled in polystyrene Petri-dishes (Ø 13.7 cm, 147.41 cm^2), filled with an acetonitrile-water mixture (2/8, v/v). For each sampling distance 3 arrays of 10 Petri-dishes each were installed with a distance of 1 metre between the dishes. Accordingly, a total of 30 samples were yielded for each sampling distance. After drilling was completed (i.e. after approximately 20 - 50 minutes, depending on the actual sowing machine and the actual wind conditions), always an additional waiting period of 15 minutes was employed before the start of sampling, in order to allow those dust particles which had not yet been deposited to settle on the sampling area.



3.9 Weather Data

Meteorological data such as relative humidity, temperature, wind direction and wind speed were measured on-site with a portable electronic weather station including wind gauge, which was placed inside the sampling area during drilling (always at 20 m distance from the "zero line"). An average wind speed of 2 - 5 m/s and a derivation of wind direction of maximum ± 30° to the perpendicular wind direction (i.e. 180° to the sampling devices) were the target conditions during drilling. In case the wind direction did not meet the pre-defined criteria during maize drilling or in case it became windless, the current drilling path in operation has been completed and the machine stopped at the end of the path; when the wind met the specifications again, drilling was continued. In addition to the on-site meteorological measurements, general climate recordings were obtained from Bayer CropScience AG's meteorological station, positioned on the premises of the Bayer CropScience headquarter in D-40789 Monheim, Alfred-Nobel-Str. 50 (41 m above sea level), in close vicinity to the study site (≈ 2 - 3 km distance). The general climatic condition during August and September 2008 are displayed in Table 7 (see below); the aggregated on-site climatic measurements per individual drilling path are displayed in Appendix 3.

3.10 Dust Sampling - Ground Deposition ("primary drift")

Before drilling, ten polystyrene Petri-dishes (Ø 13.7 cm, height 1.7 cm, 147.41 cm² surface) per sampling row (1-10) and series (A, B, C) at seven different distances to the "zero line" were placed in metal placeholders on the field ground of the sampling area. In total, there was a sample surface of 147.41 cm² per individual Petri-dish and of 30 × 0.014741 m² = 0.442 m² per sampling distance. The Petri-dishes were filled with about 80 mL of an acetonitrile/water mixture (2/8, v/v) before drilling. This mixture reflects the extraction solution used in plant and animal metabolism studies. Sowing always started at the "zero line". In case the air-stream outlet of the maize sowing machine had a defined direction to one particular site (as for the reference machine Monosem, PNU), the first drilling path (i.e. the drilling path closest to the "zero line") was always orientated in a way that the air-outlet was directed towards the sampling area. After the additional waiting period of 15 minutes elapsed, the content of each Petri-dish was quantitatively transferred into 250 mL polyethylene flasks by means of a polyethylene funnel. To take up quantitatively all possible clothianidin deposits inside the Petri-dish, each Petri-dish and its corresponding funnel were additionally rinsed with fresh acetonitrile/water (2/8, v/v) mixture (≈ 20 mL) and the rinse was combined with the content of the respective Petri-dish within the corresponding 250 mL polyethylene flask. After rinsing, each polyethylene flask was tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 metre distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with the ID-code of the maize drilling machine ("Machine 1 - 9"), the solvent mixture actually used (acetonitrile/water), the No. of the respective series (A, B or C), the distance from the "zero line" (1, 3, 5, 10, 20, 30 or 50 m) and the No. of the respective Petri-dish per distance (1-10), giving in total 210 polyethylene flasks per individual dust drift trial (overall, 9 dust drift trials have been conducted = "Machine 1 - 9").

3.11 In-flight Dust Sampling ("atmospheric drift")

Passive dust-drift collectors have been installed at 1 m, 2 m, 3 m, 4 m and 5 m above the soil surface. The dust collectors were made of a polypropylene fabric mesh, build up of filaments with a 0.80 × 0.18 mm cross-section. This type of collector has a slightly oval shape with a length of ≈ 85mm and a diameter of ≈ 65mm, at its poles, the diameter is ≈ 50 mm (see Appendix 4 for pictures). The polypropylene fabric mesh collectors were pinned on each end of a horizontal metal stick, which in turn were mounted in the respective height on a vertical tripod pylon (height ≈ 6 m), giving in total 10 collectors per pylon (2 at each height). In all series (A, B and C), one pylon was installed at 5 and 30 m distance from the "zero line", respectively, resulting in 6 collectors per height per distance per individual dust drift trial (overall, 9 dust drift trials have been conducted = "Machine 1 - 9").

In all dust drift trials, all the passive dust drift collectors made of polypropylene-mesh, were additionally wetted with a glycerol/(Millipore-)water mixture (1/1, v/v). After each polypropylene-mesh collector was pinned on its horizontal metal stick, it was sprayed with the glycerol/water mixture by means of a hand-held sprayer beyond its point of run-off.

In one dust drift trial ("Machine 9") in addition to the wetted polypropylene-mesh collectors, also one un-wetted pipe-cleaner was hung directly beside each polypropylene-mesh collector, in order to obtain comparative atmospheric dust drift measurements with two different sampling equipments. The pipe-cleaners were made of cotton, length ≈ 30 cm, diameter ≈ 4 mm, with a fine, fury surface (see Appendix 4 for picture). Thus, for "Machine 9", two sets of passive dust drift collectors were obtained. In total, 60 wetted polypropylene-mesh collectors and 60 un-wetted pipe-cleaners.

Once the 30 m - line and later on, the 5 m - line had been reached during the sampling process of the Petri-dishes ("primary drift"; see above), the passive collectors were sampled and placed into polypropylene containers which were immediately sealed and labelled in the field.

Each plastic container was unequivocally labelled with the ID-code of the maize drilling machine ("Machine 1 - 9"), the number of the respective series (A, B or C), the distance from the "zero line" (5 or 30 m), the height above ground (1, 2, 3, 4 or 5 m) and the number per height (1 or 2), giving in total 60 polypropylene-mesh collectors per individual dust drift trial (overall, 9 dust drift trials have been conducted = "Machine 1 - 9"; for "Machine 9", in addition 60 pipe-cleaners were exposed and sampled; after sampling, the pipe-cleaners were placed in the field in unequivocally labelled 250 mL polyethylene flasks).

In the laboratory, each individual passive collector (both, polypropylene-mesh and pipe-cleaner) has been extracted with an appropriate volume of acetonitrile/water (2/8, v/v) within an ultrasonic bath to enhance the extraction process.

3.12 Aerial Dislocation of Ground Deposits ("secondary drift")

After the Petri-dishes filled with acetonitrile/water (2/8, v/v) and the passive dust-drift collectors have been sampled (see above), ten new polystyrene Petri-dishes (Ø 13.7 cm, height 1.7 cm, 147.41 cm² surface) were installed on the field ground of the sampling area in all series (A, B, C) at three distances from the "zero line" (1, 5 and 50 m), respectively. Again, the total sampling surface was 30 x 0.014741 m² = 0.442 m² per sampling distance (see also 4.10, above). The Petri-dishes were filled with about 100 mL of an glycerol/(Millipore-)water mixture (1/1 v/v) and were exposed for a period of 24 h after the last Petri-dish has been filled with glycerol/water, in order to quantify the amount of clothianidin which may be dislocated from the ground via secondary drift processes. After 24 h, the content of each Petri-dish was quantitatively transferred into 250 mL polyethylene flasks by means of a polyethylene funnel. To take up quantitatively all possible clothianidin deposits inside the Petri-dish, each Petri-dish and its corresponding funnel were additionally rinsed with Millipore Water (= 20 mL) and the rinse was combined with the content of the respective Petri-dish within the corresponding 250 mL polyethylene flask. After rinsing, each polyethylene flask was tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 metre distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with the ID-code of the maize drilling machine ("Machine 1 - 9"), the solvent mixture actually used (glycerol/water), the number of the respective series (A, B or C), the distance from the "zero line" (1, 5, or 50 m) and the number of the respective Petri-dish per distance (1-10), giving in total 90 polyethylene flasks per individual dust drift trial. Overall, 9 dust drift trials have been conducted (= "Machine 1 - 9").

At each day of drilling/sampling, all polyethylene flasks filled with acetonitrile/water ("primary drift") together with all passive polypropylene-mesh dust-drift collectors (+ pipe cleaners for "Machine 9") ("atmospheric drift"), were transported by car to the laboratory of Ralf Schoening at Bayer CropScience AG's Institute for Residues, Operator and Consumer Safety (BCS-D-ROCS, D-40789 Monheim, Germany). The following day, the polyethylene flasks filled with glycerol/water ("secondary drift") were also transported by car to the laboratory of R. Schoening (BCS-D-ROCS). The samples were stored at ambient temperature in the laboratories of R. Schoening until analysis. Within the following two weeks after arrival, all samples were analysed for their clothianidin content according to method 00554/M001. The detailed analytical phase report of the residue analysis part (MR-08/173) is attached to this study report (see Appendix 9).

4 GLP ANALYSES PART

The GLP residue-analysis part is outlined and reported in the analytical phase report MR-08/173, which is attached to this final study report (see Appendix 9).

5 ENDPOINTS OF THE STUDY

Determination of the clothianidin deposition rate in g a.s./ha, which deposits at various distances from the treated area during drilling ("primary drift") of Clothianidin FS 600 treated maize seeds with unmodified vacuum-pneumatic-, modified vacuum-pneumatic-, positive-pressurized- and mechanical maize sowing machines. In addition, also the in-flight clothianidin content ("atmospheric drift") is determined in µg a.s./passive dust collector as well as the clothianidin deposition rate in g a.s./ha, which deposits at various distances from the treated area via secondary drift processes within 24 hours after sowing (aerial dislocation of ground deposits, "secondary drift").

6 FILING

All raw data pertaining to this study and the original final report are stored in the central GLP archive of Bayer CropScience AG, Alfred-Nobel-Str. 50, D-40789 Monheim for as long as required by GLP principles.

Reserve samples of the reference items are stored in the archives of Bayer CropScience GmbH, Product Technology-Analytics Frankfurt, Industriepark Hoechst (D-65926 Frankfurt). The test and reference items are stored as long as their quality still guarantees an evaluation.

7 RESULTS

7.1 Ground Deposition

A detailed compilation of all ground deposition results ("primary drift") are presented in Tables 9 - 17 below.

Table 1 90th%ile ground deposition ("primary drift")

	90th %ile Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAC-seeds)							
Distance from 0-line									
1 m	**0.662**	**6.455**	**0.271**	**0.183**	**0.287**	**0.195**	**0.265**	**0.161**	**0.121**
3 m	**0.564**	**2.953**	**0.246**	**0.181**	**0.175**	**0.117**	**0.196**	**0.146**	**0.073**
5 m	**0.421**	**2.552**	**0.196**	**0.148**	**0.168**	**0.094**	**0.204**	**0.116**	**0.068**
10 m	**0.311**	**1.911**	**0.157**	**0.111**	**0.198**	**0.083**	**0.179**	**0.115**	**0.050**
20 m	**0.167**	**1.184**	**0.141**	**0.110**	**0.078**	**0.061**	**0.105**	**0.079**	**0.028**
30 m	**0.115**	**0.839**	**0.073**	**0.086**	**0.071**	**0.042**	**0.069**	**0.070**	**0.029**
50 m	**0.081**	**0.546**	**0.055**	**0.058**	**0.041**	**0.039**	**0.054**	**0.060**	**0.026**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

Table 2 Average ground deposition ("primary drift")

	Average Ground Deposition ("Primary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)		Moderate (STAC-seeds)						
Distance from 0-line									
1 m	0.347	4.036	0.187	0.144	0.155	0.126	0.202	0.117	0.073
3 m	0.322	2.157	0.158	0.121	0.121	0.090	0.141	0.110	0.044
5 m	0.239	2.011	0.139	0.113	0.120	0.074	0.133	0.092	0.055
10 m	0.160	1.480	0.104	0.083	0.106	0.061	0.099	0.076	0.033
20 m	0.101	0.906	0.075	0.074	0.050	0.042	0.069	0.056	0.017
30 m	0.064	0.638	0.050	0.061	0.039	0.030	0.049	0.045	0.017
50 m	0.040	0.416	0.037	0.039	0.018	0.024	0.031	0.035	0.011
Limit of quantification (LOQ) = 0.014 g a.s./ha									

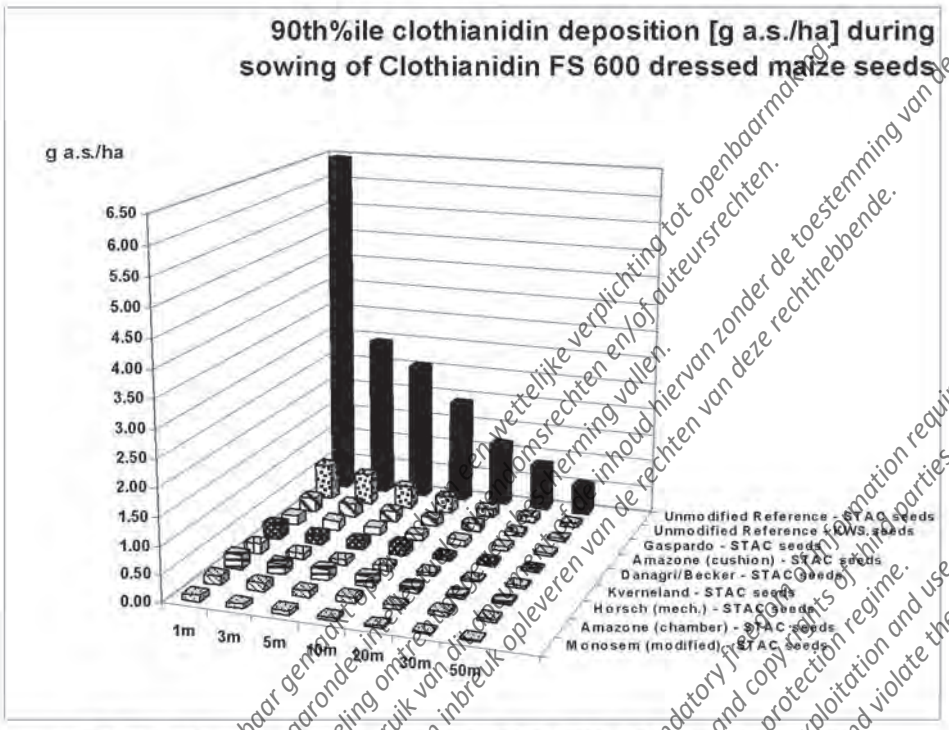


Figure 1 90th%ile ground deposition ("primary drift")

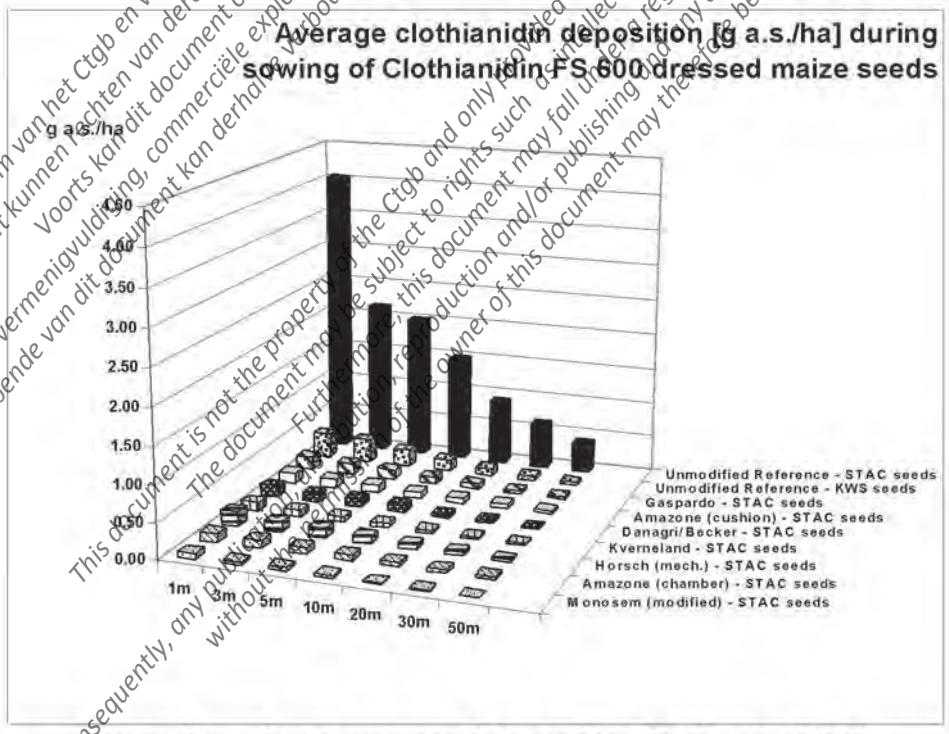


Figure 2 Average ground deposition ("primary drift")

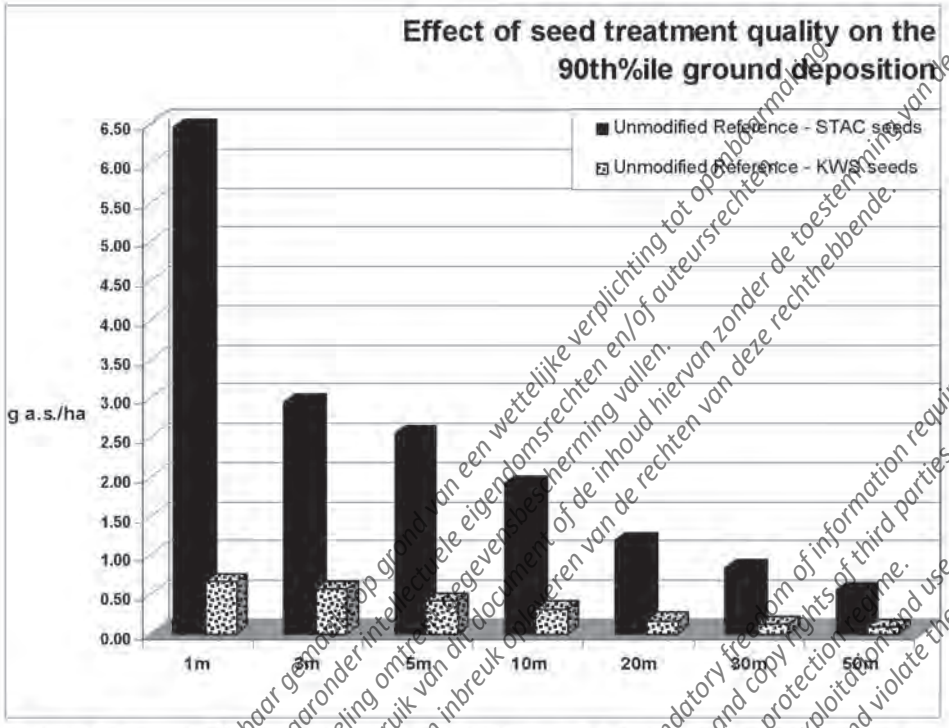


Figure 3 90th%ile ground deposition – effect of seed-treatment

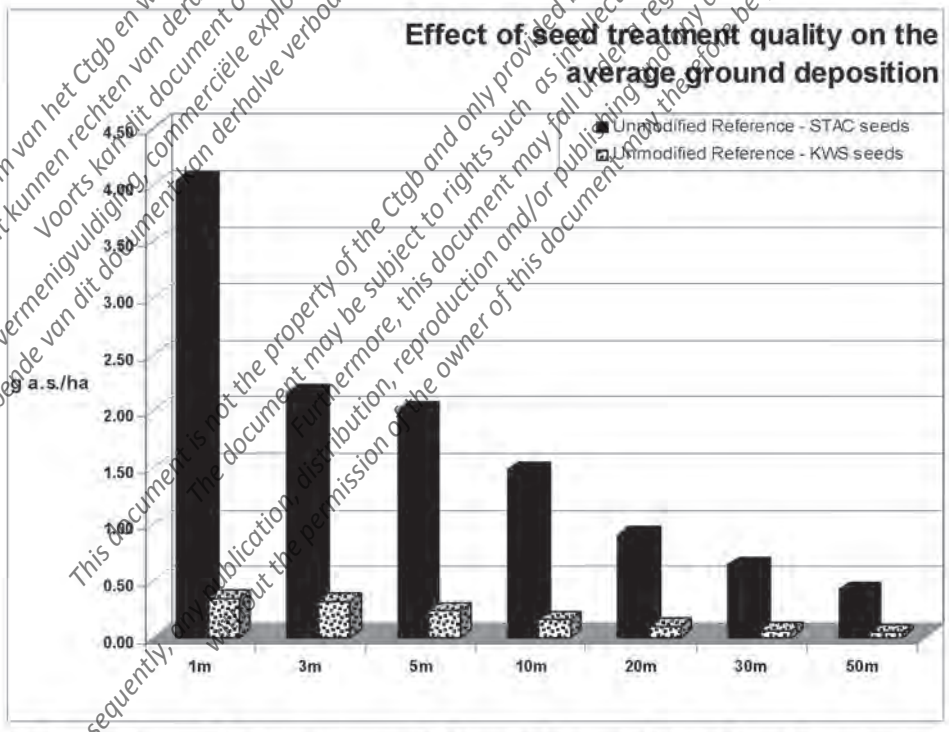


Figure 4 Average ground deposition – effect of seed-coating

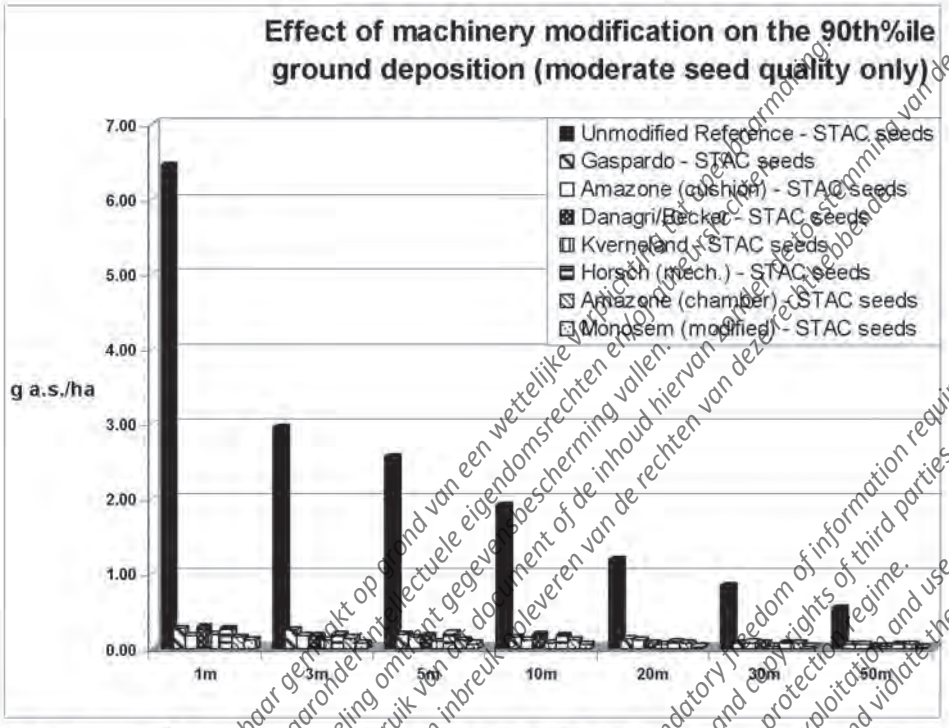


Figure 5 90th%ile ground deposition – effect of machinery modification

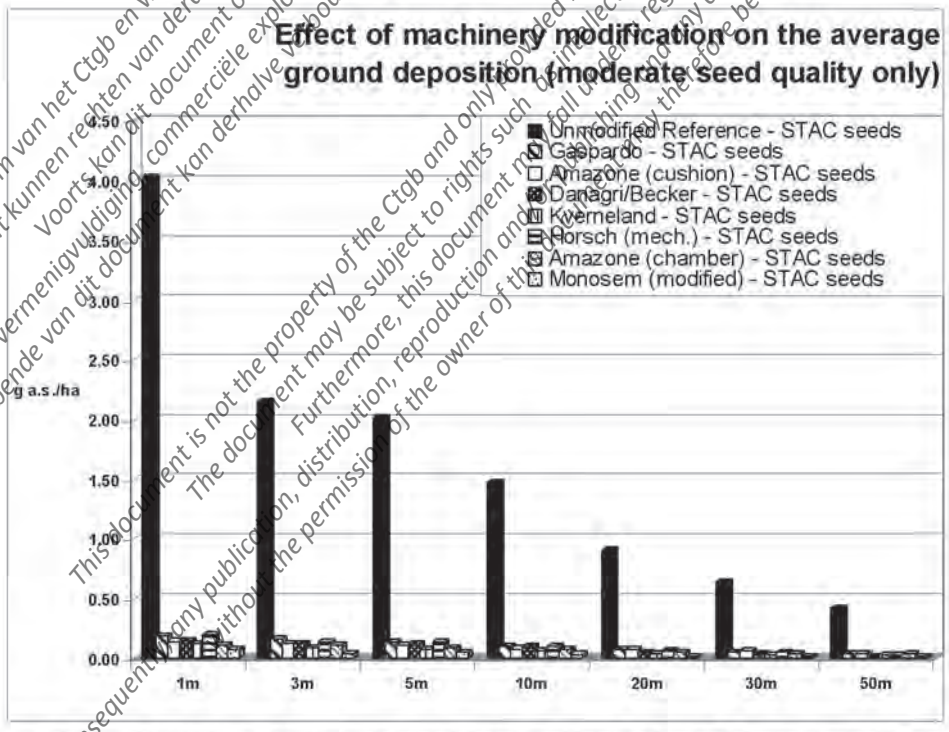


Figure 6 Average ground deposition – effect of machinery modification

7.2 Aerial Dislocation of Ground Deposits

A detailed compilation of all ground deposition results ("secondary drift") are presented in Tables 18 - 26 below.

Table 3 90th%ile aerial dislocation of ground deposits ("secondary drift")

	90th%ile Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HRP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAV-seeds)							
Distance from 0-line									
1 m	**0.030**	**0.036**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
5 m	**0.045**	**0.019**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
50 m	**<LOQ**	**LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

Table 4 Average aerial dislocation of ground deposits ("secondary drift")

	Average Aerial Dislocation of Ground Deposits ("Secondary Drift") [g a.s./ha]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)		Moderate (STAC-seeds)						
Distance from 0-line									
1 m	**0.010**	**0.016**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**0.022**
5 m	**0.018**	**0.013**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
50 m	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**	**<LOQ**
Limit of quantification (LOQ) = 0.014 g a.s./ha									

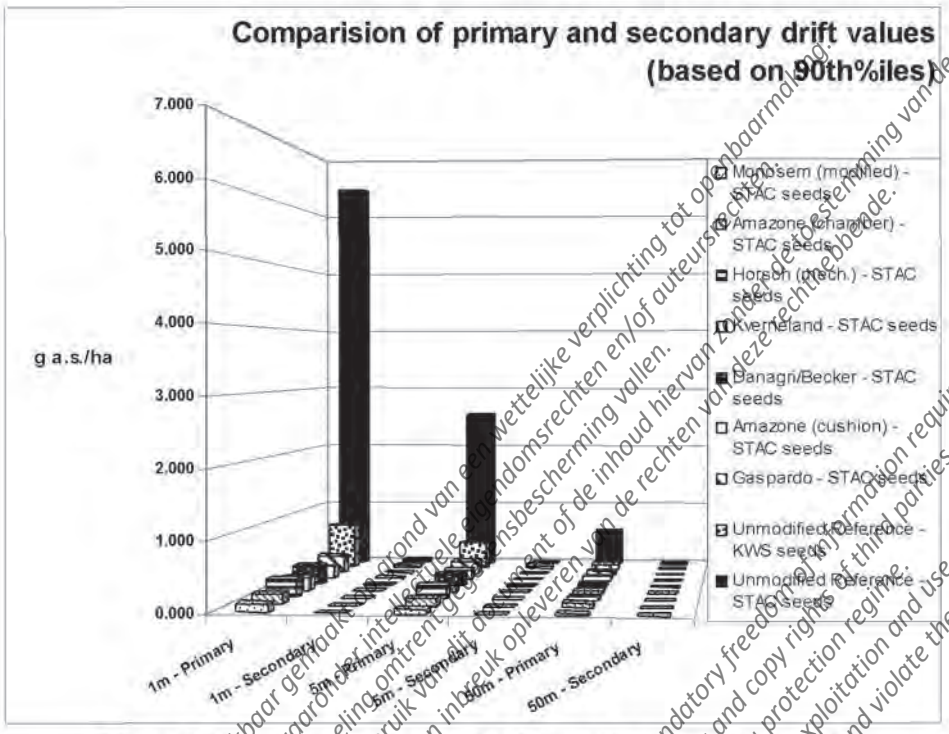


Figure 7 Comparison of primary & secondary drift

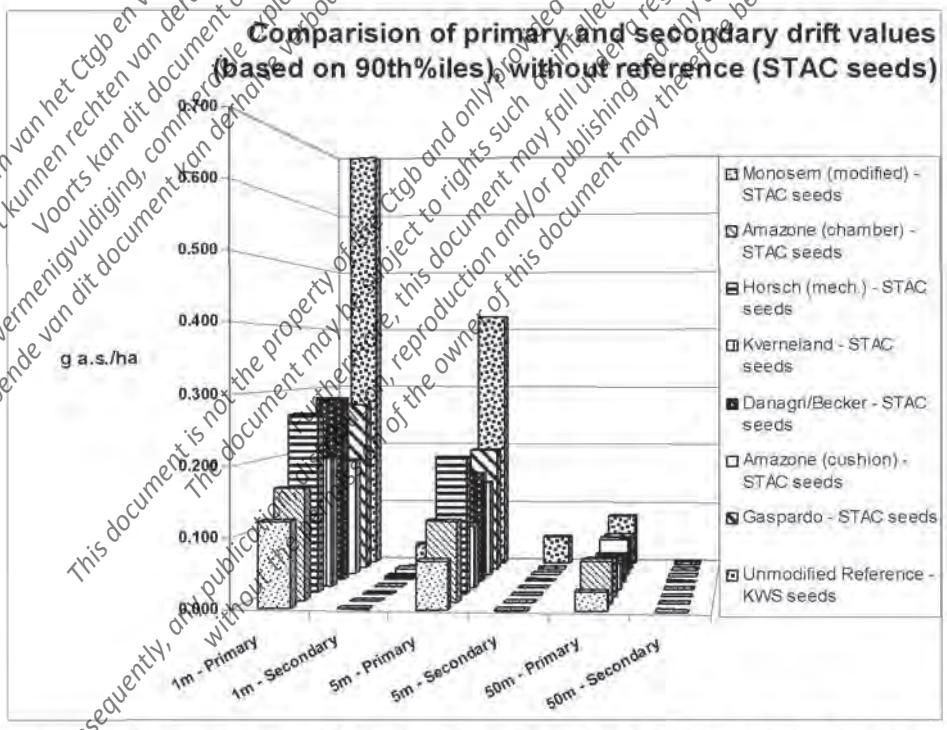


Figure 8 Comparison of primary & secondary drift (no STAC- reference)

7.3 Atmospheric Drift

A detailed compilation of all ground deposition results ("atmospheric drift") are presented in Tables 27 - 36 below.

Table 5 90th%ile measurements of in-flight dust ("atmospheric drift")

	90th%ile Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)	Moderate (STAU-seeds)							
Height above ground	*5 m distance from the "zero-line"*								
1 m	**1.465**	**7.398**	**0.941**	**0.892**	**1.146**	**0.823**	**0.841**	**1.072**	**0.743**
2 m	**1.678**	**6.636**	**1.072**	**0.822**	**0.884**	**0.791**	**0.848**	**0.606**	**0.522**
3 m	**1.143**	**4.108**	**0.978**	**0.650**	**0.960**	**0.722**	**0.610**	**0.401**	**0.406**
4 m	**0.804**	**2.346**	**0.489**	**0.432**	**0.772**	**0.419**	**0.479**	**0.347**	**0.327**
5 m	**0.457**	**1.383**	**0.390**	**0.224**	**0.593**	**0.288**	**0.336**	**0.271**	**0.212**
	30 m distance from the "zero-line"								
1 m	**0.796**	**4.604**	**0.538**	**0.681**	**0.559**	**0.817**	**0.446**	**0.555**	**0.590**
2 m	**0.708**	**3.895**	**0.626**	**0.665**	**0.860**	**0.543**	**0.447**	**0.519**	**0.523**
3 m	**0.553**	**3.977**	**0.623**	**0.471**	**0.617**	**0.621**	**0.503**	**0.486**	**0.407**
4 m	**0.554**	**3.066**	**0.458**	**0.457**	**0.572**	**0.463**	**0.345**	**0.470**	**0.300**
5 m	**0.674**	**1.903**	**0.371**	**0.287**	**0.484**	**0.372**	**0.426**	**0.264**	**0.268**
Limit of quantification (LOQ) = 0.020 µg a.s./collector									

Table 6 Average measurements of in-flight dust ("atmospheric drift")

	Average Atmospheric Drift (Polypropylene-Mesh-Collectors) [µg a.s./collector]								
Machine ID-No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Seed separation principle	Vacuum-pneumatic		Vacuum-pneumatic	Vacuum-pneumatic	Pneumatic, compressed air	Vacuum-pneumatic	Mechanical, no air assistance	Vacuum-pneumatic	Vacuum-pneumatic
Modified/un-modified exhaust air management	Un-modified		Modified	Modified	Un-modified	Modified	Un-modified (not applicable)	Modified	Modified
Seed quality tested	Top (KWS-seeds)				Moderate (STAC-seeds)				
Height above ground	***5 m distance from the "zero-line"***								
1 m	**1.113**	**6.034**	**0.830**	**0.848**	**0.997**	**0.761**	**0.705**	**0.754**	**0.612**
2 m	**1.144**	**5.344**	**0.861**	**0.696**	**0.791**	**0.621**	**0.728**	**0.513**	**0.442**
3 m	**0.855**	**3.352**	**0.695**	**0.499**	**0.830**	**0.503**	**0.502**	**0.327**	**0.370**
4 m	**0.557**	**2.120**	**0.377**	**0.334**	**0.682**	**0.290**	**0.415**	**0.269**	**0.275**
5 m	**0.360**	**1.193**	**0.282**	**0.191**	**0.463**	**0.214**	**0.283**	**0.188**	**0.186**
	30 m distance from the "zero-line"								
1 m	**0.623**	**3.732**	**0.400**	**0.562**	**0.461**	**0.638**	**0.387**	**0.414**	**0.428**
2 m	**0.512**	**3.433**	**0.443**	**0.398**	**0.540**	**0.452**	**0.366**	**0.377**	**0.359**
3 m	**0.411**	**3.074**	**0.422**	**0.410**	**0.446**	**0.480**	**0.351**	**0.326**	**0.347**
4 m	**0.398**	**2.352**	**0.335**	**0.340**	**0.421**	**0.377**	**0.254**	**0.308**	**0.232**
5 m	**0.431**	**1.675**	**0.279**	**0.257**	**0.375**	**0.261**	**0.316**	**0.190**	**0.194**
Limit of quantification (LOQ) = 0.020 µg a.s./collector									

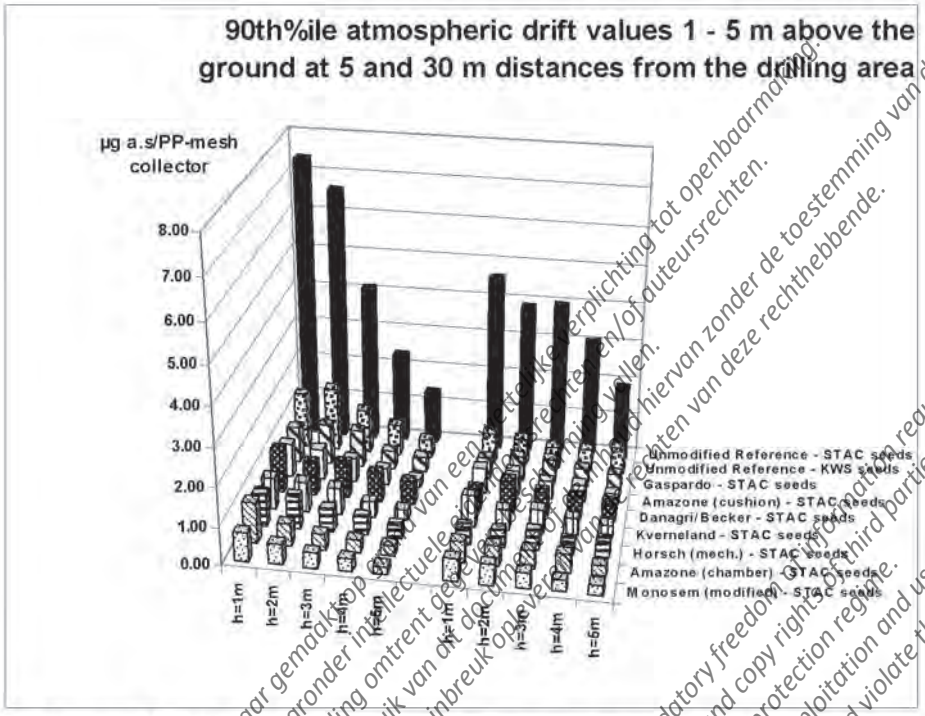


Figure 9 90th%ile of in-flight dust measurements ("atmospheric drift")

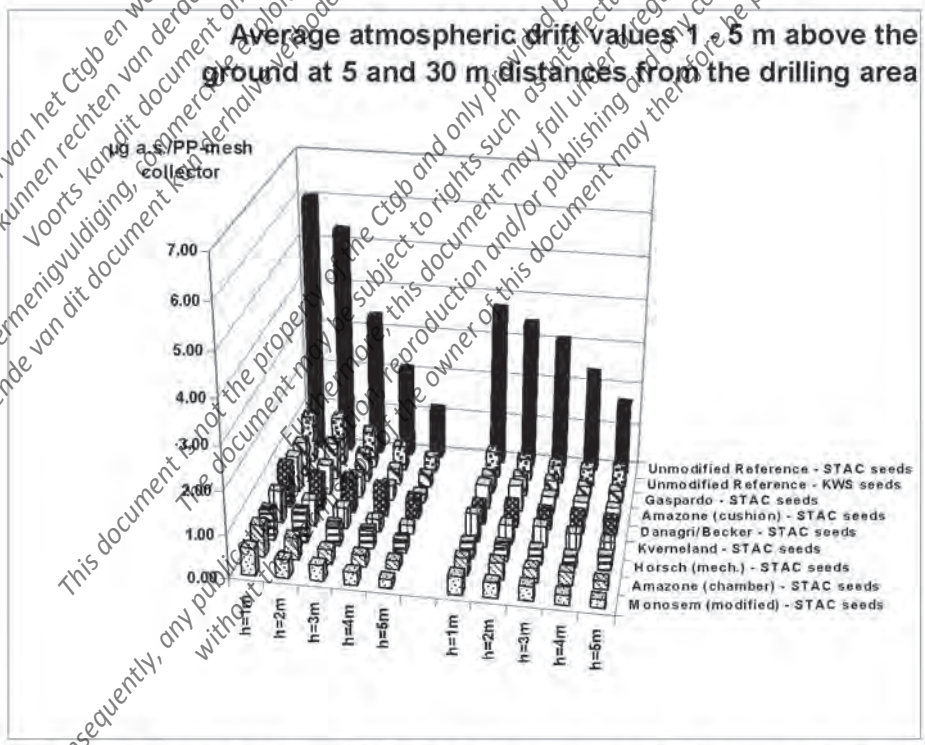


Figure 10 Average of in-flight dust measurements ("atmospheric drift")

Table 7 Climate Data

Climate data for the study area were obtained from Bayer CropScience AG's meteorological station located on the premises of the Bayer CropScience-headquarter (Alfred-Nobel-Str. 50, D-40789 Monheim am Rhein, Germany), in close vicinity to the study sites (≈ 2 - 3 km distance).

Day	Air Temperature (2 m above ground) [°C]			Rain [mm]	Rel. Humidity [%]	Air Pressure [hPa]	Wind Speed [m/s]	
[dd/mm/yyyy]	mean	min.	max.	total	min.	mean	mean	max.
01/08/2008	23.5	16.4	28.6	0.0	60	1009.7	9.6	2.6
02/08/2008	19.8	15.5	25.2	1.3	65	1011.4	8.4	2.2
03/08/2008	20.4	15.3	25.2	4.6	70	1008.2	9.8	3.1
04/08/2008	18.7	15.5	23.5	13.6	70	1004.6	13.3	3.7
05/08/2008	18.4	13.9	25.4	0.0	67	1011.2	10.0	2.1
06/08/2008	24.2	15.7	34.7	0.0	56	1008.9	5.7	1.4
07/08/2008	21.9	16.0	30.0	1.5	68	1001.8	16.1	2.4
08/08/2008	17.6	14.7	21.3	1.5	80	1002.7	11.4	2.8
09/08/2008	18.4	12.1	25.7	0.0	63	1009.7	9.3	2.2
10/08/2008	18.6	16.4	22.0	4.0	74	1003.4	9.4	2.4
11/08/2008	19.2	14.7	24.9	0.0	63	1000.9	6.4	2.0
12/08/2008	19.2	15.1	25.7	2.1	71	992.6	12.0	2.9
13/08/2008	17.6	13.8	22.6	1.4	63	1001.9	19.3	3.9
14/08/2008	17.2	11.9	23.5	0.0	61	1009.6	7.7	2.1
15/08/2008	17.2	9.2	24.3	0.1	63	1009.4	6.5	1.5
16/08/2008	18.5	9.2	27.5	0.0	54	1007.8	4.8	1.1
17/08/2008	19.3	12.7	26.2	0.0	54	1004.8	7.5	2.0
18/08/2008	19.6	14.5	24.8	0.1	66	1004.9	10.5	2.3
19/08/2008	19.7	16.2	24.1	0.0	65	1004.0	10.4	3.1
20/08/2008	17.2	13.5	20.4	7.8	71	1008.2	10.9	3.5
21/08/2008	18.6	12.7	24.2	0.5	66	1011.7	10.7	2.6
22/08/2008	16.3	13.1	21.8	11.2	84	1008.1	7.9	1.1
23/08/2008	14.5	10.6	18.2	1.5	80	1007.4	10.9	2.8
24/08/2008	16.6	11.4	22.2	0.6	70	1008.9	6.1	1.8
25/08/2008	16.7	13.3	22.5	1.1	78	1011.4	6.9	2.1
26/08/2008	18.2	15.9	21.8	0.0	73	1017.1	6.6	2.1
27/08/2008	17.9	16.6	21.3	0.0	74	1017.2	7.7	2.2
28/08/2008	17.8	15.7	20.6	0.0	78	1015.4	6.5	1.8
29/08/2008	18.7	14.0	24.6	0.0	75	1015.1	6.3	1.6
30/08/2008	20.6	11.6	30.4	0.0	65	1013.7	5.8	1.2
31/08/2008	22.2	13.8	31.6	3.9	59	1008.1	15.1	2.0

Table 7 (continued)

Day	Air Temperature (2 m above ground) [°C]			Rain [mm]	Rel. Humidity [%]	Air Pressure [hPa]	Wind Speed [m/s]	
[dd/mm/yyyy]	mean	min.	max.	total	min.	mean	mean	max.
01/09/2008	18.8	14.5	22.8	0.0	70	1010.6	2.7	11.6
02/09/2008	17.8	12.8	23.3	5.2	74	1004.8	2.9	11.3
03/09/2008	13.3	10.3	16.9	2.6	84	1001.9	2.6	8.0
04/09/2008	14.7	9.4	20.2	0.0	70	1001.6	2.9	10.3
05/09/2008	16.3	12.0	20.6	8.3	86	999.0	2.3	9.3
06/09/2008	17.8	15.1	20.4	0.3	74	998.9	3.1	11.2
07/09/2008	16.6	13.4	20.7	1.3	74	1003.6	3.8	11.7
08/09/2008	16.9	12.2	23.3	0.3	67	1010.5	2.4	9.1
09/09/2008	19.5	10.6	28.9	0.0	51	1010.8	1.9	9.0
10/09/2008	20.7	15.6	28.4	0.0	69	1010.2	1.3	6.7
11/09/2008	20.9	14.4	30.1	3.0	74	1006.7	1.6	7.6
12/09/2008	15.6	14.1	18.6	5.3	93	1006.0	1.5	8.5
13/09/2008	13.9	8.9	18.3	1.6	81	1012.1	1.7	6.5
14/09/2008	12.5	5.5	18.8	0.0	62	1018.2	2.1	10.0
15/09/2008	11.4	7.9	14.5	0.0	74	1019.1	2.0	6.5
16/09/2008	11.8	6.5	17.3	0.0	76	1018.5	1.2	5.7
17/09/2008	12.0	8.0	17.2	0.0	72	1018.2	0.8	3.1
18/09/2008	10.9	5.2	18.5	0.0	60	1018.6	2.0	8.8
19/09/2008	11.4	2.3	21.5	0.0	63	1020.6	1.1	6.6
20/09/2008	12.4	3.6	22.0	0.0	65	1025.2	1.1	6.4
21/09/2008	10.8	6.7	15.3	0.0	81	1020.8	0.7	4.7
22/09/2008	11.4	8.1	16.4	0.1	82	1016.0	1.3	7.2
23/09/2008	12.1	9.7	15.8	4.8	88	1013.5	1.3	5.9
24/09/2008	13.6	10.3	18.0	0.0	83	1017.2	1.5	6.9
25/09/2008	13.3	7.5	18.8	0.0	54	1024.8	2.1	9.3
26/09/2008	13.1	4.7	21.6	0.0	55	1029.2	1.5	7.1
27/09/2008	12.6	3.9	24.7	0.0	65	1026.0	0.8	4.1
28/09/2008	12.5	5.7	21.6	0.0	55	1019.5	1.0	5.8
29/09/2008	10.6	7.4	14.8	0.0	86	1012.2	1.7	7.5
30/09/2008	10.3	6.2	12.2	6.5	92	1002.3	3.4	12.3

Table 8 Soil characteristics and results of the soil clothianidin analysis (before maize drilling)

Machine ID-No.	1	2	3	4	5	6	7	8	9
Producer/Type:	Monosem PNU (Reference)		Gaspardo MTE 300 BB-XL	Amazone ED 602 K ("ground cushion")	Danagri (Becker) Aeromat M 8-HKP DTE	Kverneland Optima HD e-drive DS-LT	Horsch Maistro 8 CC	Amazone ED 602 K ("expansion chamber")	Monosem NG 3 Plus
Soil codes of the study plot used for sowing	OE 3524 [1] OE 3525 [2]	OE 3530 [1] OE 3531 [2]	OE 3540 [1] OE 3541 [2]	OE 3532 [1] OE 3533 [2]	OE 3534 [1] OE 3535 [2]	OE 3536 [1] OE 3537 [2]	OE 3528 [1] OE 3529 [2]	OE 3538 [1] OE 3539 [2]	OE 3560 [1] OE 3559 [2]
Sand [%]	56.0	50.7	51.8	62.9	53.0	51.0	54.3	61.0	47.0
Silt [%]	32.5	34.3	33.2	26.5	32.4	32.8	30.6	26.9	36.4
Clay [%]	11.5	15.0	15.0	10.6	14.6	16.2	15.1	12.1	16.6
Soil type	medium loamy sand	heavy loamy sand	heavy loamy sand	medium loamy sand	heavy loamy sand	heavy loamy sand	heavy loamy sand	heavy loamy sand	heavy loamy sand
Total carbon [%]	1.22	0.95	0.98	1.30	1.10	0.95	0.92	0.82	1.12
Organic carbon [%]	1.22	0.95	0.98	1.30	1.10	0.95	0.87	0.82	1.12
Inorganic carbon [%]	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.05	n.d.	n.d.
Maximum water holding capacity [%]	32.1	33.3	36.3	31.7	34.3	32.8	33.8	34.3	42.1
Cation Exchange Capacity (CEC) [meq/100 g]	9.0	8.5	9.0	8.8	8.0	8.0	10.8	7.5	11.4
Water content of the soil directly before drilling [%]	12.4	10.3	8.6	10.1	10.2	10.1	10.5	9.4	9.0
Clothianidin soil concentration before maize drilling	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOD

[1] This soil codes refer to a composite soil sample of the upper 10 cm of the study plot (soil texture, organic carbon, inorganic carbon, max. water holding capacity, CEC)

[2] This soil codes refer to a composite sample of the upper 5 cm of the study plot (water content of the soil immediately before drilling)

Limit Of Quantification - LOQ (clothianidin, soil) = 5 µg/kg; Limit Of Detection - LOD (clothianidin, soil) = 2 µg/kg; n.d. = not detectable

Table 9 Clothianidin residues – ground deposition (Machine 1, Monosem PNU, KWS Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.284*	0.193	*0.319*	0.217	*1.205*	0.818
1 meter-2	*0.673*	0.457	*0.437*	0.296	*0.317*	0.215
1 meter-3	*0.415*	0.281	*0.299*	0.203	*0.260*	0.176
1 meter-4	*0.516*	0.350	*0.272*	0.185	*0.368*	0.250
1 meter-5	*0.235*	0.159	*0.965*	0.655	*0.389*	0.264
1 meter-6	*0.627*	0.426	*0.403*	0.273	*0.176*	0.119
1 meter-7	*0.423*	0.287	*0.578*	0.392	*0.346*	0.235
1 meter-8	*1.040*	0.705	*0.827*	0.561	*0.344*	0.234
1 meter-9	*0.559*	0.379	*0.742*	0.504	*1.022*	0.693
1 meter-10	*0.534*	0.362	*	*	*0.270*	0.183
3 meter-1	*0.132*	0.090	*0.339*	0.230	*0.261*	0.177
3 meter-2	*0.406*	0.275	*0.343*	0.233	*0.273*	0.185
3 meter-3	*0.291*	0.197	*0.262*	0.177	*0.303*	0.205
3 meter-4	*0.286*	0.194	*0.563*	0.382	*0.167*	0.113
3 meter-5	*0.642*	0.435	*1.799*	1.220	*0.175*	0.119
3 meter-6	*0.228*	0.150	*0.221*	0.150	*0.853*	0.579
3 meter-7	*0.839*	0.569	*0.461*	0.313	*0.831*	0.564
3 meter-8	*0.553*	0.375	*0.506*	0.343	*0.491*	0.333
3 meter-9	*0.692*	0.470	*0.520*	0.353	*0.220*	0.150
3 meter-10	*0.805*	0.546	*0.548*	0.372	*0.230*	0.156
5 meter-1	*0.456*	0.309	*0.344*	0.233	*0.258*	0.175
5 meter-2	*0.319*	0.217	*0.286*	0.194	*0.097*	0.065
5 meter-3	*0.466*	0.316	*0.718*	0.487	*0.230*	0.156
5 meter-4	*0.811*	0.550	*0.172*	0.116	*0.267*	0.181
5 meter-5	*0.065*	0.044	*0.210*	0.143	*0.564*	0.382
5 meter-6	*0.371*	0.252	*0.149*	0.101	*0.385*	0.261
5 meter-7	*0.408*	0.277	*0.360*	0.244	*0.250*	0.169
5 meter-8	*0.642*	0.436	*0.316*	0.215	*0.359*	0.243
5 meter-9	*0.617*	0.419	*0.164*	0.111	*0.492*	0.334
5 meter-10	*0.178*	0.121	*0.328*	0.222	*0.295*	0.200

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

* = Due to the fact that red maize fragments were found in the solution of the sample there will be no value to report.

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 9 Clothianidin residues – ground deposition (Machine 1, Monosem PNU, KWS Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.199*	0.135	*0.475*	0.322	*0.107*	0.073
10 meter-2	*0.331*	0.225	*0.115*	0.078	*0.062*	0.042
10 meter-3	*0.185*	0.126	*0.183*	0.124	*0.109*	0.074
10 meter-4	*0.080*	0.054	*0.190*	0.129	*0.163*	0.110
10 meter-5	*0.058*	0.039	*0.236*	0.160	*0.149*	0.101
10 meter-6	*0.511*	0.347	*0.135*	0.092	*0.450*	0.305
10 meter-7	*0.584*	0.396	*0.385*	0.261	*0.155*	0.105
10 meter-8	*0.134*	0.091	*0.241*	0.164	*0.191*	0.130
10 meter-9	*0.453*	0.307	*0.296*	0.201	*0.128*	0.087
10 meter-10	*0.456*	0.310	*0.213*	0.144	*0.114*	0.077
20 meter-1	*0.179*	0.122	*0.048*	0.032	*0.237*	0.161
20 meter-2	*0.225*	0.152	*0.058*	0.039	*0.238*	0.161
20 meter-3	*0.107*	0.072	*0.120*	0.081	*0.223*	0.152
20 meter-4	*0.098*	0.066	*0.097*	0.066	*0.033*	0.023
20 meter-5	*0.320*	0.217	*0.406*	0.276	*0.036*	0.024
20 meter-6	*0.197*	0.134	*0.124*	0.084	*0.054*	0.037
20 meter-7	*0.246*	0.167	*0.120*	0.082	*0.097*	0.066
20 meter-8	*0.251*	0.170	*0.033*	0.022	*0.111*	0.076
20 meter-9	*0.074*	0.050	*0.086*	0.058	*0.218*	0.148
20 meter-10	*0.120*	0.082	*0.152*	0.103	*0.164*	0.111
30 meter-1	*0.066*	0.045	*0.071*	0.048	*0.300*	0.204
30 meter-2	*0.134*	0.091	*0.042*	0.028	*0.159*	0.108
30 meter-3	*0.043*	0.029	*0.076*	0.051	*0.046*	0.031
30 meter-4	*0.098*	0.066	*0.057*	0.039	*0.170*	0.115
30 meter-5	*0.060*	0.041	*0.270*	0.183	*0.085*	0.058
30 meter-6	*0.147*	0.100	*0.176*	0.119	*0.155*	0.105
30 meter-7	*0.028*	0.019	*0.028*	0.019	*0.053*	0.036
30 meter-8	<LOQ	<LOQ	*0.053*	0.036	*0.069*	0.047
30 meter-9	*0.073*	0.049	*0.062*	0.042	*0.041*	0.028
30 meter-10	*0.052*	0.036	*0.146*	0.099	*0.058*	0.039

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

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Table 9 Clothianidin residues – ground deposition (Machine 1, Monosem PNU, KWS Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.033*	0.022	*0.173*	0.117	*<LOQ*	<LOQ
50 meter-2	*0.030*	0.020	*0.043*	0.029	*0.033*	0.022
50 meter-3	*0.094*	0.064	*0.042*	0.028	*0.083*	0.056
50 meter-4	*<LOQ*	<LOQ	*0.252*	0.171	*0.054*	0.037
50 meter-5	*0.027*	0.019	*0.026*	0.018	*0.031*	0.021
50 meter-6	*0.059*	0.040	*0.062*	0.042	*0.084*	0.057
50 meter-7	*<LOQ*	<LOQ	*0.058*	0.039	*0.033*	0.023
50 meter-8	*<LOQ*	<LOQ	*0.097*	0.066	*<LOQ*	<LOQ
50 meter-9	*0.098*	0.066	*0.035*	0.024	*0.124*	0.084
50 meter-10	*<LOQ*	<LOQ	*0.119*	0.080	*<LOQ*	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 10 Clothianidin residues – ground deposition (Machine 2, Monosem PNU, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*1.956*	1.327	*4.053*	2.749	*2.957*	2.006
1 meter-2	*4.047*	2.745	*4.141*	2.809	*6.896*	4.678
1 meter-3	*2.273*	1.542	*6.224*	4.222	*3.980*	2.700
1 meter-4	*1.478*	1.003	*5.051*	3.427	*2.841*	1.928
1 meter-5	*2.054*	1.393	*6.916*	4.692	*4.019*	2.726
1 meter-6	*2.539*	1.722	*30.476*	20.674	*4.078*	2.767
1 meter-7	*9.387*	6.368	*10.668*	7.237	*5.224*	3.544
1 meter-8	*2.964*	2.011	*7.362*	4.994	*2.659*	1.804
1 meter-9	*4.068*	2.759	*12.137*	8.234	*7.607*	5.161
1 meter-10	*9.387*	6.368	*5.753*	3.903	*5.266*	3.573
3 meter-1	*2.243*	1.521	*4.208*	2.854	*2.775*	1.883
3 meter-2	*3.314*	2.248	*4.007*	2.718	*3.094*	2.099
3 meter-3	*1.405*	0.953	*4.591*	3.114	*3.027*	2.053
3 meter-4	*2.621*	1.778	*5.078*	3.445	*2.895*	1.964
3 meter-5	*2.343*	1.590	*4.327*	2.936	*2.741*	1.860
3 meter-6	*2.787*	1.890	*4.650*	3.155	*2.131*	1.445
3 meter-7	*4.192*	2.844	*3.259*	2.211	*3.855*	2.615
3 meter-8	*2.549*	1.729	*3.103*	2.103	*2.723*	1.848
3 meter-9	*2.552*	1.732	*3.967*	2.617	*2.820*	1.913
3 meter-10	*2.341*	1.588	*3.066*	2.080	*2.821*	1.914
5 meter-1	*2.461*	1.670	*3.323*	2.254	*3.734*	2.533
5 meter-2	*1.668*	1.132	*2.581*	1.751	*3.420*	2.320
5 meter-3	*2.314*	1.570	*3.193*	2.166	*3.473*	2.356
5 meter-4	*2.603*	1.766	*3.287*	2.230	*3.552*	2.409
5 meter-5	*2.989*	2.027	*4.397*	2.983	*1.433*	0.972
5 meter-6	*2.491*	1.690	*3.152*	2.139	*1.796*	1.218
5 meter-7	*2.020*	1.370	*3.311*	2.246	*3.296*	2.236
5 meter-8	*2.515*	1.706	*4.248*	2.882	*3.583*	2.431
5 meter-9	*3.238*	2.197	*3.030*	2.056	*2.910*	1.974
5 meter-10	*4.017*	2.725	*2.650*	1.798	*2.260*	1.533

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 10 Clothianidin residues – ground deposition (Machine 2, Monosem PNU, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*1.686*	1.144	*2.171*	1.473	*2.718*	1.844
10 meter-2	*1.906*	1.293	*2.614*	1.773	*1.719*	1.166
10 meter-3	*1.707*	1.158	*2.226*	1.510	*2.597*	1.761
10 meter-4	*1.249*	0.847	*2.380*	1.614	*1.988*	1.349
10 meter-5	*2.102*	1.426	*2.669*	1.811	*2.878*	1.953
10 meter-6	*1.843*	1.250	*2.316*	1.570	*3.285*	2.229
10 meter-7	*1.007*	0.683	*1.977*	1.341	*4.133*	2.804
10 meter-8	*1.333*	0.905	*2.239*	1.519	*2.605*	1.767
10 meter-9	*1.045*	0.709	*2.813*	1.907	*2.709*	1.838
10 meter-10	*1.043*	0.707	*2.369*	1.607	*2.104*	1.427
20 meter-1	*0.759*	0.515	*1.503*	1.019	*1.647*	1.117
20 meter-2	*0.792*	0.537	*1.763*	1.196	*1.534*	1.040
20 meter-3	*0.702*	0.476	*1.596*	1.082	*1.851*	1.256
20 meter-4	*0.725*	0.492	*1.721*	1.168	*1.288*	0.874
20 meter-5	*0.849*	0.576	*1.515*	1.028	*1.123*	0.762
20 meter-6	*0.871*	0.591	*2.448*	1.661	*1.192*	0.809
20 meter-7	*1.039*	0.705	*1.378*	0.935	*1.236*	0.838
20 meter-8	*1.121*	0.760	*1.744*	1.183	*1.511*	1.025
20 meter-9	*1.050*	0.712	*1.726*	1.171	*1.651*	1.120
20 meter-10	*0.829*	0.562	*1.588*	1.077	*1.300*	0.882
30 meter-1	*0.688*	0.467	*0.799*	0.542	*1.232*	0.836
30 meter-2	*0.670*	0.454	*1.144*	0.776	*0.966*	0.655
30 meter-3	*0.725*	0.492	*1.388*	0.941	*0.783*	0.531
30 meter-4	*0.843*	0.572	*1.174*	0.797	*1.100*	0.746
30 meter-5	*0.641*	0.435	*1.122*	0.761	*1.018*	0.690
30 meter-6	*0.445*	0.302	*0.810*	0.550	*0.950*	0.645
30 meter-7	*0.804*	0.545	*0.807*	0.547	*1.059*	0.718
30 meter-8	*0.662*	0.449	*0.808*	0.548	*0.891*	0.604
30 meter-9	*0.971*	0.659	*1.171*	0.794	*1.472*	0.999
30 meter-10	*1.002*	0.680	*0.767*	0.520	*1.284*	0.871

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 10 Clothianidin residues – ground deposition (Machine 2, Monosem PNU, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.404*	0.274	*0.629*	0.427	*0.692*	0.469
50 meter-2	*0.420*	0.285	*0.591*	0.401	*0.736*	0.499
50 meter-3	*0.430*	0.291	*0.704*	0.477	*1.587*	1.077
50 meter-4	*0.459*	0.312	*0.539*	0.366	*0.835*	0.567
50 meter-5	*0.292*	0.198	*0.532*	0.361	*0.686*	0.466
50 meter-6	*0.525*	0.356	*0.508*	0.344	*0.449*	0.305
50 meter-7	*0.650*	0.441	*0.694*	0.470	*0.497*	0.337
50 meter-8	*0.884*	0.600	*0.680*	0.461	*0.741*	0.503
50 meter-9	*0.502*	0.341	*0.803*	0.544	*0.539*	0.365
50 meter-10	*0.353*	0.240	*0.531*	0.360	*0.510*	0.346

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 11 Clothianidin residues – ground deposition (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.305*	0.207	*0.178*	0.121	*0.260*	0.176
1 meter-2	*0.349*	0.236	*0.369*	0.250	*0.198*	0.134
1 meter-3	*0.323*	0.219	*0.180*	0.122	*0.149*	0.101
1 meter-4	*0.331*	0.225	*0.239*	0.162	*0.220*	0.149
1 meter-5	*0.339*	0.230	*0.467*	0.317	*0.278*	0.189
1 meter-6	*0.214*	0.145	*0.181*	0.123	*0.265*	0.180
1 meter-7	*0.381*	0.258	*0.297*	0.201	*0.198*	0.135
1 meter-8	*0.463*	0.314	*0.128*	0.087	*0.188*	0.128
1 meter-9	*0.232*	0.158	*0.183*	0.124	*0.440*	0.299
1 meter-10	*0.268*	0.182	*0.250*	0.169	*0.394*	0.267
3 meter-1	*0.194*	0.132	*0.370*	0.251	*0.152*	0.103
3 meter-2	*0.297*	0.202	*0.223*	0.151	*0.124*	0.084
3 meter-3	*0.299*	0.203	*0.305*	0.207	*0.178*	0.121
3 meter-4	*0.428*	0.290	*0.216*	0.147	*0.227*	0.154
3 meter-5	*0.222*	0.151	*0.134*	0.091	*0.281*	0.191
3 meter-6	*0.345*	0.234	*0.089*	0.060	*0.125*	0.085
3 meter-7	*0.274*	0.186	*0.184*	0.125	*0.165*	0.112
3 meter-8	*0.164*	0.111	*0.185*	0.125	*0.184*	0.125
3 meter-9	*0.220*	0.149	*0.503*	0.341	*0.218*	0.148
3 meter-10	*0.363*	0.246	*0.171*	0.116	*0.153*	0.103
5 meter-1	*0.184*	0.125	*0.187*	0.127	*0.131*	0.089
5 meter-2	*0.420*	0.285	*0.125*	0.085	*0.197*	0.134
5 meter-3	*0.264*	0.179	*0.141*	0.096	*0.237*	0.161
5 meter-4	*0.254*	0.172	*0.072*	0.049	*0.207*	0.140
5 meter-5	*0.376*	0.255	*0.117*	0.080	*0.130*	0.088
5 meter-6	*0.278*	0.189	*0.159*	0.108	*0.133*	0.090
5 meter-7	*0.152*	0.103	*0.160*	0.108	*0.280*	0.190
5 meter-8	*0.188*	0.128	*0.145*	0.099	*0.172*	0.116
5 meter-9	*0.473*	0.321	*0.224*	0.152	*0.174*	0.118
5 meter-10	*0.177*	0.120	*0.192*	0.130	*0.202*	0.137

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 11 Clothianidin residues – ground deposition (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.156*	0.106	*0.258*	0.175	*0.106*	0.072
10 meter-2	*0.133*	0.090	*0.123*	0.083	*0.121*	0.082
10 meter-3	*0.189*	0.129	*0.128*	0.087	*0.092*	0.063
10 meter-4	*0.212*	0.144	*0.129*	0.088	*0.154*	0.104
10 meter-5	*0.148*	0.101	*0.064*	0.043	*0.109*	0.074
10 meter-6	*0.173*	0.118	*0.187*	0.123	*0.160*	0.109
10 meter-7	*0.192*	0.130	*0.309*	0.209	*0.098*	0.067
10 meter-8	*0.236*	0.160	*0.094*	0.064	*0.062*	0.042
10 meter-9	*0.204*	0.139	*0.153*	0.104	*0.067*	0.045
10 meter-10	*0.230*	0.156	*0.163*	0.110	*0.160*	0.108
20 meter-1	*0.154*	0.105	*0.053*	0.036	*0.107*	0.073
20 meter-2	*0.214*	0.145	*0.056*	0.038	*0.064*	0.044
20 meter-3	*0.114*	0.077	*0.096*	0.065	*0.032*	0.022
20 meter-4	*0.131*	0.089	*0.242*	0.164	*0.081*	0.055
20 meter-5	*0.153*	0.104	*0.097*	0.066	*0.102*	0.069
20 meter-6	*0.086*	0.059	*0.055*	0.037	*0.091*	0.062
20 meter-7	*0.104*	0.070	*0.207*	0.141	*0.047*	0.032
20 meter-8	*0.131*	0.089	*0.099*	0.067	*0.105*	0.071
20 meter-9	*0.235*	0.159	*0.077*	0.052	*0.081*	0.055
20 meter-10	*0.077*	0.052	*0.089*	0.061	*0.120*	0.082
30 meter-1	*0.092*	0.062	*0.072*	0.049	*0.041*	0.028
30 meter-2	*0.061*	0.041	*0.091*	0.061	*0.030*	0.020
30 meter-3	*0.075*	0.051	*0.108*	0.073	*0.035*	0.024
30 meter-4	*0.107*	0.073	*0.051*	0.035	*0.108*	0.073
30 meter-5	*0.066*	0.045	*0.044*	0.030	*0.061*	0.042
30 meter-6	*0.154*	0.105	*0.048*	0.032	*0.097*	0.066
30 meter-7	*0.057*	0.039	*0.075*	0.051	*0.091*	0.062
30 meter-8	*0.089*	0.060	*0.045*	0.030	*0.106*	0.072
30 meter-9	*0.057*	0.039	*<LOQ*	<LOQ	*0.068*	0.046
30 meter-10	*0.062*	0.042	*0.143*	0.097	*0.061*	0.041

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 11 Clothianidin residues – ground deposition (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.056*	0.038	*0.061*	0.042	*0.023*	0.016
50 meter-2	*0.048*	0.032	*0.081*	0.055	*0.039*	0.026
50 meter-3	*0.021*	0.014	*0.066*	0.045	*0.079*	0.053
50 meter-4	*0.026*	0.018	*0.084*	0.057	*0.053*	0.036
50 meter-5	*0.036*	0.024	*0.053*	0.036	*0.029*	0.019
50 meter-6	*0.033*	0.022	*0.133*	0.090	*0.035*	0.024
50 meter-7	*0.044*	0.030	*0.034*	0.023	*0.056*	0.038
50 meter-8	*0.051*	0.035	*0.034*	0.023	*0.056*	0.038
50 meter-9	*0.076*	0.052	*0.050*	0.034	*0.080*	0.054
50 meter-10	*0.115*	0.078	*0.064*	0.044	*<LOQ*	*<LOQ*

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 12 Clothianidin residues – ground deposition (Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.219*	0.148	*0.266*	0.181	*0.140*	0.095
1 meter-2	*0.214*	0.145	*0.177*	0.120	*0.127*	0.086
1 meter-3	*0.182*	0.123	*0.197*	0.133	*0.109*	0.074
1 meter-4	*0.259*	0.175	*0.210*	0.143	*0.177*	0.120
1 meter-5	*0.268*	0.182	*0.221*	0.150	*0.212*	0.144
1 meter-6	*0.265*	0.180	*0.206*	0.140	*0.137*	0.093
1 meter-7	*0.284*	0.193	*0.224*	0.152	*0.194*	0.132
1 meter-8	*0.332*	0.225	*0.251*	0.170	*0.152*	0.103
1 meter-9	*0.261*	0.177	*0.315*	0.215	*0.167*	0.114
1 meter-10	*0.260*	0.176	*0.181*	0.123	*0.177*	0.120
3 meter-1	*0.137*	0.093	*0.181*	0.123	*0.089*	0.061
3 meter-2	*0.097*	0.066	*0.290*	0.196	*0.177*	0.120
3 meter-3	*0.115*	0.078	*0.133*	0.091	*0.083*	0.056
3 meter-4	*0.220*	0.149	*0.132*	0.090	*0.129*	0.088
3 meter-5	*0.182*	0.123	*0.147*	0.100	*0.090*	0.061
3 meter-6	*0.169*	0.115	*0.165*	0.112	*0.123*	0.083
3 meter-7	*0.239*	0.162	*0.223*	0.151	*0.144*	0.097
3 meter-8	*0.215*	0.146	*0.337*	0.229	*0.167*	0.113
3 meter-9	*0.265*	0.180	*0.321*	0.217	*0.184*	0.125
3 meter-10	*0.257*	0.174	*0.128*	0.086	*0.213*	0.145
5 meter-1	*0.225*	0.153	*0.131*	0.089	*0.116*	0.078
5 meter-2	*0.108*	0.073	*0.150*	0.102	*0.115*	0.078
5 meter-3	*0.159*	0.108	*0.143*	0.097	*0.139*	0.094
5 meter-4	*0.165*	0.112	*0.163*	0.110	*0.134*	0.091
5 meter-5	*0.190*	0.129	*0.175*	0.119	*0.126*	0.085
5 meter-6	*0.232*	0.158	*0.165*	0.112	*0.148*	0.101
5 meter-7	*0.216*	0.147	*0.190*	0.129	*0.151*	0.102
5 meter-8	*0.198*	0.134	*0.217*	0.147	*0.212*	0.144
5 meter-9	*0.196*	0.133	*0.169*	0.115	*0.132*	0.090
5 meter-10	*0.224*	0.152	*0.124*	0.084	*0.168*	0.114

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 12 Clothianidin residues – ground deposition (Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.164*	0.111	*0.119*	0.081	*0.085*	0.058
10 meter-2	*0.103*	0.070	*0.118*	0.080	*0.111*	0.075
10 meter-3	*0.128*	0.087	*0.105*	0.071	*0.104*	0.071
10 meter-4	*0.124*	0.084	*0.089*	0.061	*0.102*	0.069
10 meter-5	*0.148*	0.101	*0.109*	0.074	*0.089*	0.060
10 meter-6	*0.210*	0.143	*0.076*	0.052	*0.118*	0.080
10 meter-7	*0.192*	0.130	*0.152*	0.103	*0.114*	0.077
10 meter-8	*0.103*	0.070	*0.164*	0.111	*0.110*	0.075
10 meter-9	*0.157*	0.107	*0.093*	0.063	*0.101*	0.068
10 meter-10	*0.161*	0.109	*0.119*	0.081	*0.109*	0.074
20 meter-1	*0.080*	0.054	*0.042*	0.029	*0.075*	0.051
20 meter-2	*0.113*	0.077	*0.063*	0.043	*0.054*	0.037
20 meter-3	*0.114*	0.077	*0.067*	0.046	*0.167*	0.113
20 meter-4	*0.135*	0.092	*0.087*	0.059	*0.078*	0.053
20 meter-5	*0.072*	0.049	*0.071*	0.048	*0.082*	0.055
20 meter-6	*0.115*	0.078	*0.088*	0.059	*0.094*	0.064
20 meter-7	*0.113*	0.076	*0.122*	0.083	*0.093*	0.063
20 meter-8	*0.089*	0.061	*0.106*	0.072	*0.302*	0.205
20 meter-9	*0.119*	0.080	*0.135*	0.092	*0.203*	0.138
20 meter-10	*0.099*	0.067	*0.125*	0.085	*0.161*	0.109
30 meter-1	*0.084*	0.057	*0.023*	0.016	*0.085*	0.058
30 meter-2	*0.091*	0.061	*0.029*	0.020	*0.073*	0.049
30 meter-3	*0.072*	0.049	*0.055*	0.037	*0.217*	0.147
30 meter-4	*0.094*	0.064	*0.085*	0.057	*0.104*	0.070
30 meter-5	*0.095*	0.065	*0.063*	0.043	*0.097*	0.066
30 meter-6	*0.084*	0.057	*0.192*	0.131	*0.071*	0.048
30 meter-7	*0.064*	0.044	*0.058*	0.040	*0.105*	0.071
30 meter-8	*0.049*	0.033	*0.071*	0.048	*0.150*	0.102
30 meter-9	*0.068*	0.046	*0.081*	0.055	*0.106*	0.072
30 meter-10	*0.096*	0.065	*0.117*	0.079	*0.124*	0.084

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 12 Clothianidin residues – ground deposition (Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.051*	0.034	*0.062*	0.042	*0.042*	0.029
50 meter-2	*0.048*	0.032	*0.095*	0.065	*0.037*	0.025
50 meter-3	*0.062*	0.042	*0.063*	0.042	*0.084*	0.057
50 meter-4	*0.080*	0.054	*0.062*	0.042	*0.063*	0.043
50 meter-5	*0.029*	0.019	*0.059*	0.040	*0.068*	0.046
50 meter-6	*0.047*	0.032	*0.058*	0.039	*0.055*	0.038
50 meter-7	*0.061*	0.042	*0.064*	0.043	*0.053*	0.036
50 meter-8	*<LOQ*	<LOQ	*0.103*	0.070	*0.098*	0.067
50 meter-9	*0.044*	0.030	*0.034*	0.023	*0.052*	0.035
50 meter-10	*0.031*	0.021	*0.044*	0.030	*0.058*	0.039

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 13 Clothianidin residues – ground deposition (Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.255*	0.173	*0.153*	0.104	*0.211*	0.143
1 meter-2	*0.195*	0.133	*0.163*	0.111	*0.287*	0.195
1 meter-3	*0.191*	0.129	*0.211*	0.143	*0.521*	0.353
1 meter-4	*0.121*	0.082	*0.160*	0.108	*0.416*	0.282
1 meter-5	*0.168*	0.114	*0.196*	0.133	*0.064*	0.043
1 meter-6	*0.159*	0.108	*0.217*	0.147	*0.193*	0.131
1 meter-7	*0.116*	0.078	*0.509*	0.345	*0.127*	0.086
1 meter-8	*0.279*	0.189	*0.492*	0.334	*0.156*	0.106
1 meter-9	*0.191*	0.130	*0.091*	0.062	*0.134*	0.091
1 meter-10	*0.375*	0.254	*0.325*	0.220	*0.168*	0.114
3 meter-1	*0.117*	0.080	*0.148*	0.100	*0.112*	0.076
3 meter-2	*0.085*	0.057	*0.600*	0.407	*0.210*	0.143
3 meter-3	*0.156*	0.106	*0.256*	0.173	*0.096*	0.065
3 meter-4	*0.081*	0.055	*0.154*	0.104	*0.254*	0.172
3 meter-5	*0.273*	0.185	*0.293*	0.199	*0.095*	0.064
3 meter-6	*0.136*	0.092	*0.169*	0.115	*0.207*	0.141
3 meter-7	*0.047*	0.032	*0.169*	0.115	*0.147*	0.100
3 meter-8	*0.162*	0.110	*0.145*	0.098	*0.160*	0.109
3 meter-9	*0.186*	0.126	*0.230*	0.156	*0.119*	0.081
3 meter-10	*0.185*	0.126	*0.246*	0.167	*0.089*	0.061
5 meter-1	*0.080*	0.054	*0.360*	0.244	*0.204*	0.139
5 meter-2	*0.153*	0.104	*0.120*	0.082	*0.137*	0.093
5 meter-3	*0.204*	0.139	*0.220*	0.149	*0.167*	0.114
5 meter-4	*0.114*	0.077	*0.308*	0.209	*0.143*	0.097
5 meter-5	*0.102*	0.069	*0.151*	0.103	*0.196*	0.133
5 meter-6	*0.205*	0.139	*0.202*	0.137	*0.236*	0.160
5 meter-7	*0.184*	0.125	*0.242*	0.164	*0.139*	0.094
5 meter-8	*0.114*	0.077	*0.147*	0.100	*0.116*	0.079
5 meter-9	*0.058*	0.039	*0.291*	0.198	*0.163*	0.111
5 meter-10	*0.185*	0.125	*0.231*	0.157	*0.145*	0.099

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 13 Clothianidin residues – ground deposition (Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.080*	0.054	*0.167*	0.113	*0.116*	0.079
10 meter-2	*0.103*	0.070	*0.129*	0.087	*0.117*	0.079
1 meter-3	*0.115*	0.078	*0.096*	0.065	*0.303*	0.205
10 meter-4	*0.078*	0.053	*0.092*	0.062	*0.186*	0.126
10 meter-5	*0.225*	0.153	*0.052*	0.036	*0.199*	0.135
10 meter-6	*0.499*	0.338	*0.090*	0.061	*0.164*	0.111
10 meter-7	*0.089*	0.060	*0.323*	0.219	*0.107*	0.073
10 meter-8	*0.236*	0.160	*0.291*	0.198	*0.121*	0.082
10 meter-9	*0.121*	0.082	*0.222*	0.150	*0.087*	0.059
10 meter-10	*0.094*	0.064	*0.087*	0.059	*0.082*	0.056
20 meter-1	*0.080*	0.054	*0.083*	0.056	*0.084*	0.057
20 meter-2	*0.081*	0.055	*0.053*	0.036	*0.025*	0.017
20 meter-3	*0.086*	0.058	*0.143*	0.097	*0.032*	0.022
20 meter-4	*0.058*	0.039	*0.116*	0.079	*0.055*	0.037
20 meter-5	*0.051*	0.035	*0.111*	0.076	*0.083*	0.057
20 meter-6	*0.064*	0.043	*0.057*	0.038	*0.054*	0.036
20 meter-7	*0.077*	0.052	*0.083*	0.056	*0.034*	0.023
20 meter-8	*0.082*	0.056	*0.080*	0.054	*0.038*	0.026
20 meter-9	*0.069*	0.047	*0.050*	0.034	*0.149*	0.101
20 meter-10	*0.114*	0.078	*0.092*	0.062	*0.026*	0.017
30 meter-1	*0.038*	0.026	*0.059*	0.040	*0.103*	0.070
30 meter-2	*0.092*	0.063	*0.094*	0.064	*0.021*	0.014
30 meter-3	*0.056*	0.038	*0.059*	0.040	*0.153*	0.104
30 meter-4	*0.045*	0.031	*<LOQ*	<LOQ	*0.075*	0.051
30 meter-5	*0.032*	0.022	*0.031*	0.021	*0.038*	0.026
30 meter-6	*0.114*	0.077	*0.039*	0.027	*0.050*	0.034
30 meter-7	*0.022*	0.015	*0.048*	0.033	*0.030*	0.021
30 meter-8	*0.042*	0.029	*<LOQ*	<LOQ	*0.067*	0.045
30 meter-9	*0.059*	0.040	*0.049*	0.033	*0.082*	0.056
30 meter-10	*0.042*	0.029	*0.127*	0.086	*0.035*	0.024

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 13 Clothianidin residues – ground deposition (Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.030*	0.020	*0.026*	0.018	*0.044*	0.030
50 meter-2	*0.064*	0.044	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-3	*0.061*	0.041	*0.067*	0.046	*0.020*	<LOQ
50 meter-4	*0.023*	0.015	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-5	*0.054*	0.036	*0.020*	0.014	*0.029*	0.020
50 meter-6	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*0.044*	0.030
50 meter-7	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOD*	<LOD
50 meter-8	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*0.020*	<LOQ
50 meter-9	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-10	*0.053*	0.036	*0.068*	0.046	*<LOQ*	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 14 Clothianidin residues – ground deposition (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.306*	0.208	*0.243*	0.165	*0.200*	0.136
1 meter-2	*0.208*	0.141	*0.237*	0.161	*0.110*	0.074
1 meter-3	*0.166*	0.113	*0.233*	0.158	*0.165*	0.112
1 meter-4	*0.161*	0.109	*0.134*	0.091	*0.149*	0.101
1 meter-5	*0.090*	0.061	*0.334*	0.226	*0.164*	0.112
1 meter-6	*0.125*	0.085	*0.195*	0.132	*0.203*	0.138
1 meter-7	*0.091*	0.062	*0.298*	0.202	*0.286*	0.194
1 meter-8	*0.112*	0.076	*0.241*	0.163	*0.161*	0.110
1 meter-9	*0.213*	0.144	*0.223*	0.151	*0.108*	0.073
1 meter-10	*0.159*	0.108	*0.087*	0.059	*0.180*	0.122
3 meter-1	*0.078*	0.053	*0.157*	0.107	*0.369*	0.250
3 meter-2	*0.204*	0.138	*0.124*	0.084	*0.144*	0.098
3 meter-3	*0.111*	0.075	*0.145*	0.098	*0.157*	0.107
3 meter-4	*0.160*	0.109	*0.083*	0.056	*0.118*	0.080
3 meter-5	*0.110*	0.075	*0.144*	0.098	*0.125*	0.085
3 meter-6	*0.098*	0.067	*0.125*	0.085	*0.118*	0.080
3 meter-7	*0.138*	0.094	*0.196*	0.133	*0.098*	0.066
3 meter-8	*0.129*	0.088	*0.095*	0.064	*0.072*	0.049
3 meter-9	*0.117*	0.079	*0.103*	0.070	*0.169*	0.115
3 meter-10	*0.125*	0.085	*0.081*	0.055	*0.094*	0.064
5 meter-1	*0.105*	0.071	*0.124*	0.084	*0.131*	0.089
5 meter-2	*0.151*	0.102	*0.123*	0.084	*0.090*	0.061
5 meter-3	*0.118*	0.080	*0.128*	0.087	*0.115*	0.078
5 meter-4	*0.081*	0.055	*0.094*	0.064	*0.070*	0.048
5 meter-5	*0.136*	0.092	*0.138*	0.094	*0.127*	0.086
5 meter-6	*0.086*	0.058	*0.140*	0.095	*0.099*	0.067
5 meter-7	*0.080*	0.080	*0.116*	0.079	*0.135*	0.091
5 meter-8	*0.080*	0.054	*0.137*	0.093	*0.047*	0.032
5 meter-9	*0.077*	0.052	*0.130*	0.088	*0.072*	0.049
5 meter-10	*0.103*	0.070	*0.170*	0.116	*0.070*	0.047

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 14 Clothianidin residues – ground deposition (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.069*	0.047	*0.117*	0.079	*0.058*	0.039
10 meter-2	*0.089*	0.060	*0.133*	0.090	*0.066*	0.045
10 meter-3	*0.106*	0.072	*0.110*	0.074	*0.045*	0.031
10 meter-4	*0.071*	0.048	*0.109*	0.074	*0.113*	0.077
10 meter-5	*0.122*	0.083	*0.115*	0.078	*0.083*	0.056
10 meter-6	*0.088*	0.059	*0.128*	0.087	*0.061*	0.041
10 meter-7	*0.063*	0.043	*0.138*	0.093	*0.080*	0.055
10 meter-8	*0.094*	0.064	*0.096*	0.065	*0.068*	0.046
10 meter-9	*0.067*	0.045	*0.118*	0.080	*0.086*	0.058
10 meter-10	*0.051*	0.034	*0.093*	0.063	*0.081*	0.055
20 meter-1	*0.045*	0.031	*0.080*	0.054	*0.039*	0.026
20 meter-2	*0.069*	0.047	*0.065*	0.044	*0.028*	0.019
20 meter-3	*0.062*	0.042	*0.036*	0.025	*0.037*	0.025
20 meter-4	*0.072*	0.049	*0.038*	0.026	*0.069*	0.047
20 meter-5	*0.075*	0.051	*0.078*	0.053	*0.061*	0.041
20 meter-6	*0.105*	0.071	*0.084*	0.057	*0.038*	0.026
20 meter-7	*0.076*	0.051	*0.064*	0.044	*0.032*	0.022
20 meter-8	*0.062*	0.042	*0.115*	0.078	*0.068*	0.046
20 meter-9	*0.047*	0.032	*0.066*	0.045	*0.041*	0.028
20 meter-10	*0.036*	0.024	*0.091*	0.062	*0.091*	0.061
30 meter-1	*0.099*	0.067	*0.043*	0.029	*0.041*	0.028
30 meter-2	*0.031*	0.021	*0.047*	0.032	*<LOQ*	<LOQ
30 meter-3	*0.027*	0.018	*0.047*	0.032	*<LOQ*	<LOQ
30 meter-4	*0.058*	0.039	*0.078*	0.053	*0.024*	0.016
30 meter-5	*0.041*	0.027	*<LOQ*	<LOQ	*0.029*	0.020
30 meter-6	*0.061*	0.041	*0.051*	0.034	*0.030*	0.021
30 meter-7	*0.033*	0.022	*0.034*	0.023	*0.035*	0.024
30 meter-8	*0.056*	0.038	*0.036*	0.024	*0.059*	0.040
30 meter-9	*0.033*	0.023	*0.054*	0.037	*0.029*	0.020
30 meter-10	*0.054*	0.037	*0.060*	0.041	*0.073*	0.050

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 14 Clothianidin residues – ground deposition (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.031*	0.021	*0.041*	0.028	*0.048*	0.032
50 meter-2	*0.028*	0.019	*0.063*	0.043	*0.077*	0.052
50 meter-3	*0.025*	0.017	*0.024*	0.016	<LOQ	<LOQ
50 meter-4	*0.032*	0.022	*0.048*	0.033	*0.020*	0.014
50 meter-5	*0.057*	0.039	*0.057*	0.039	*0.033*	0.022
50 meter-6	*0.041*	0.028	*0.026*	0.017	*0.036*	0.025
50 meter-7	*0.035*	0.024	*0.023*	0.015	*0.036*	0.024
50 meter-8	*0.034*	0.023	*0.023*	0.015	*0.050*	0.034
50 meter-9	*0.024*	0.017	*0.024*	0.016	*0.041*	0.028
50 meter-10	*0.036*	0.024	*0.020*	<LOQ	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 15 Clothianidin residues – ground deposition (Machine 7, Horsch Maistro 8 CC, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.400*	0.271	*0.182*	0.124	*0.332*	0.225
1 meter-2	*0.628*	0.426	*0.237*	0.161	*0.292*	0.198
1 meter-3	*0.258*	0.175	*0.298*	0.202	*0.263*	0.179
1 meter-4	*0.302*	0.205	*0.343*	0.233	*0.230*	0.156
1 meter-5	*0.171*	0.116	*0.175*	0.119	*0.164*	0.111
1 meter-6	*0.150*	0.102	*0.349*	0.237	*0.250*	0.169
1 meter-7	*0.150*	0.101	*0.722*	0.490	*0.309*	0.210
1 meter-8	*0.166*	0.112	*0.328*	0.222	*0.292*	0.198
1 meter-9	*0.190*	0.129	*0.390*	0.265	*0.325*	0.220
1 meter-10	*0.274*	0.186	*0.382*	0.259	*0.363*	0.246
3 meter-1	*0.105*	0.071	*0.233*	0.158	*0.174*	0.118
3 meter-2	*0.233*	0.158	*0.221*	0.150	*0.069*	0.047
3 meter-3	*0.207*	0.140	*0.260*	0.176	*0.138*	0.094
3 meter-4	*0.172*	0.117	*0.202*	0.137	*0.169*	0.114
3 meter-5	*0.144*	0.098	*0.266*	0.180	*0.334*	0.226
3 meter-6	*0.261*	0.177	*0.277*	0.188	*0.183*	0.124
3 meter-7	*0.151*	0.102	*0.117*	0.079	*0.121*	0.082
3 meter-8	*0.150*	0.102	*0.158*	0.107	*0.131*	0.089
3 meter-9	*0.201*	0.136	*0.410*	0.278	*0.283*	0.192
3 meter-10	*0.162*	0.110	*0.552*	0.375	*0.158*	0.107
5 meter-1	*0.198*	0.134	*0.169*	0.114	*0.134*	0.091
5 meter-2	*0.144*	0.098	*0.291*	0.198	*0.081*	0.055
5 meter-3	*0.158*	0.107	*0.115*	0.078	*0.112*	0.076
5 meter-4	*0.110*	0.075	*0.135*	0.092	*0.123*	0.083
5 meter-5	*0.211*	0.143	*0.309*	0.209	*0.242*	0.164
5 meter-6	*0.194*	0.131	*0.299*	0.203	*0.183*	0.124
5 meter-7	*0.295*	0.200	*0.271*	0.184	*0.186*	0.126
5 meter-8	*0.128*	0.087	*0.487*	0.330	*0.077*	0.053
5 meter-9	*0.093*	0.063	*0.212*	0.144	*0.241*	0.163
5 meter-10	*0.103*	0.070	*0.239*	0.162	*0.342*	0.232

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 15 Clothianidin residues – ground deposition (Machine 7, Horsch Maistro 8 CC, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.251*	0.170	*0.100*	0.068	*0.084*	0.057
10 meter-2	*0.328*	0.222	*0.055*	0.037	*0.144*	0.098
10 meter-3	*0.224*	0.152	*0.093*	0.063	*0.101*	0.068
10 meter-4	*0.240*	0.163	*0.274*	0.186	*0.139*	0.095
10 meter-5	*0.089*	0.060	*0.137*	0.093	*0.137*	0.093
10 meter-6	*0.265*	0.180	*0.195*	0.132	*0.102*	0.069
10 meter-7	*0.082*	0.056	*0.264*	0.179	*0.093*	0.063
10 meter-8	*0.177*	0.120	*0.128*	0.087	*0.092*	0.062
10 meter-9	*0.060*	0.040	*0.128*	0.087	*0.068*	0.046
10 meter-10	*0.055*	0.037	*0.174*	0.118	*0.119*	0.081
20 meter-1	*0.201*	0.136	*0.098*	0.067	*0.052*	0.035
20 meter-2	*0.127*	0.086	*0.087*	0.059	*0.061*	0.041
20 meter-3	*0.087*	0.059	*0.108*	0.074	*0.093*	0.063
20 meter-4	*0.114*	0.077	*0.239*	0.162	*0.053*	0.036
20 meter-5	*0.106*	0.072	*0.065*	0.044	*0.040*	0.027
20 meter-6	*0.042*	0.028	*0.110*	0.075	*0.033*	0.022
20 meter-7	*0.032*	0.022	*0.328*	0.223	*0.149*	0.101
20 meter-8	*0.067*	0.045	*0.104*	0.070	*0.084*	0.057
20 meter-9	*0.066*	0.045	*0.087*	0.059	*0.065*	0.044
20 meter-10	*0.108*	0.073	*0.084*	0.057	*0.140*	0.095
30 meter-1	*0.029*	0.020	*0.070*	0.047	*0.080*	0.054
30 meter-2	*0.064*	0.043	*0.071*	0.048	*0.036*	0.025
30 meter-3	*0.113*	0.076	*0.101*	0.068	*0.080*	0.054
30 meter-4	*0.110*	0.075	*0.045*	0.031	*0.089*	0.060
30 meter-5	*0.086*	0.058	*0.085*	0.058	*0.099*	0.067
30 meter-6	*0.082*	0.056	*0.047*	0.032	*0.058*	0.040
30 meter-7	*0.052*	0.035	*0.098*	0.067	*0.047*	0.032
30 meter-8	*0.060*	0.041	*0.088*	0.060	*0.109*	0.074
30 meter-9	*0.029*	0.020	*0.081*	0.055	*0.053*	0.036
30 meter-10	*0.070*	0.047	*0.072*	0.049	*0.055*	0.037

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 15 Clothianidin residues – ground deposition (Machine 7, Horsch Maistro 8 CC, STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.071*	0.048	*0.040*	0.027	*<LOQ*	<LOQ
50 meter-2	*0.144*	0.098	*0.056*	0.038	*0.087*	0.059
50 meter-3	*0.066*	0.045	*0.040*	0.027	*<LOD*	<LOQ
50 meter-4	*0.079*	0.053	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-5	*0.021*	LOQ	*0.023*	0.015	*0.057*	0.039
50 meter-6	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*0.065*	0.044
50 meter-7	*0.024*	0.016	*0.030*	0.020	*0.058*	0.039
50 meter-8	*<LOQ*	<LOQ	*0.058*	0.039	*0.025*	0.017
50 meter-9	*0.039*	0.026	*<LOQ*	<LOQ	*0.054*	0.036
50 meter-10	*0.034*	0.023	*0.036*	0.025	*0.140*	0.095

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 16 Clothianidin residues – ground deposition (Machine 8, Amazone ED 602 K, "expansion chamber variant", STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.167*	0.113	*0.208*	0.141	*0.127*	0.086
1 meter-2	*0.141*	0.096	*0.135*	0.092	*0.202*	0.137
1 meter-3	*0.117*	0.079	*0.237*	0.161	*0.076*	0.052
1 meter-4	*0.132*	0.089	*0.176*	0.120	*0.150*	0.102
1 meter-5	*0.134*	0.091	*0.203*	0.137	*0.236*	0.160
1 meter-6	*0.135*	0.091	*0.289*	0.196	*0.198*	0.134
1 meter-7	*0.181*	0.123	*0.184*	0.125	*0.240*	0.163
1 meter-8	*0.107*	0.072	*0.163*	0.110	*0.227*	0.154
1 meter-9	*0.138*	0.093	*0.161*	0.109	*0.269*	0.183
1 meter-10	*0.137*	0.093	*0.160*	0.109	*0.162*	0.110
3 meter-1	*0.147*	0.100	*0.119*	0.081	*0.111*	0.076
3 meter-2	*0.173*	0.117	*0.162*	0.110	*0.161*	0.109
3 meter-3	*0.160*	0.108	*0.193*	0.131	*0.123*	0.083
3 meter-4	*0.101*	0.069	*0.211*	0.143	*0.146*	0.099
3 meter-5	*0.113*	0.077	*0.148*	0.100	*0.118*	0.080
3 meter-6	*0.176*	0.120	*0.185*	0.126	*0.095*	0.065
3 meter-7	*0.132*	0.090	*0.282*	0.191	*0.133*	0.090
3 meter-8	*0.101*	0.069	*0.167*	0.113	*0.388*	0.263
3 meter-9	*0.147*	0.100	*0.163*	0.110	*0.159*	0.108
3 meter-10	*0.132*	0.090	*0.154*	0.105	*0.250*	0.169
5 meter-1	*0.130*	0.088	*0.112*	0.076	*0.147*	0.100
5 meter-2	*0.137*	0.093	*0.123*	0.083	*0.137*	0.093
5 meter-3	*0.108*	0.073	*0.165*	0.112	*0.062*	0.042
5 meter-4	*0.081*	0.055	*0.196*	0.133	*0.103*	0.070
5 meter-5	*0.085*	0.058	*0.140*	0.095	*0.141*	0.096
5 meter-6	*0.133*	0.091	*0.217*	0.147	*0.125*	0.085
5 meter-7	*0.104*	0.070	*0.167*	0.113	*0.161*	0.109
5 meter-8	*0.118*	0.080	*0.145*	0.098	*0.120*	0.081
5 meter-9	*0.069*	0.047	*0.131*	0.089	*0.168*	0.114
5 meter-10	*0.116*	0.078	*0.161*	0.109	*0.254*	0.172

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 16 Clothianidin residues – ground deposition (Machine 8, Amazone ED 602 K, "expansion chamber variant", STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.092*	0.062	*0.137*	0.093	*0.060*	0.041
10 meter-2	*0.169*	0.114	*0.136*	0.092	*0.174*	0.118
10 meter-3	*0.086*	0.058	*0.084*	0.057	*0.088*	0.059
10 meter-4	*0.065*	0.044	*0.106*	0.072	*0.104*	0.071
10 meter-5	*0.058*	0.039	*0.194*	0.132	*0.095*	0.064
10 meter-6	*0.083*	0.056	*0.162*	0.110	*0.110*	0.075
10 meter-7	*0.057*	0.039	*0.138*	0.093	*0.148*	0.100
10 meter-8	*0.102*	0.069	*0.129*	0.088	*0.117*	0.079
10 meter-9	*0.088*	0.060	*0.158*	0.107	*0.098*	0.066
10 meter-10	*0.061*	0.041	*0.222*	0.151	*0.062*	0.042
20 meter-1	*0.088*	0.060	*0.101*	0.069	*0.059*	0.040
20 meter-2	*0.047*	0.032	*0.047*	0.032	*0.059*	0.040
20 meter-3	*0.068*	0.046	*0.063*	0.042	*0.073*	0.050
20 meter-4	*0.039*	0.027	*0.111*	0.075	*0.090*	0.061
20 meter-5	*0.077*	0.052	*0.098*	0.066	*0.100*	0.068
20 meter-6	*0.134*	0.091	*0.102*	0.069	*0.080*	0.054
20 meter-7	*0.049*	0.033	*0.115*	0.078	*0.146*	0.099
20 meter-8	*0.090*	0.061	*0.087*	0.059	*0.057*	0.039
20 meter-9	*0.045*	0.031	*0.125*	0.085	*0.062*	0.042
20 meter-10	*0.059*	0.040	*0.099*	0.067	*0.093*	0.063
30 meter-1	*0.092*	0.063	*0.078*	0.053	*0.040*	0.027
30 meter-2	*0.103*	0.070	*0.069*	0.047	*0.059*	0.040
30 meter-3	*0.039*	0.027	*0.059*	0.040	*0.031*	0.021
30 meter-4	*0.052*	0.035	*0.073*	0.049	*0.041*	0.028
30 meter-5	*0.054*	0.037	*0.109*	0.074	*0.082*	0.056
30 meter-6	*0.112*	0.076	*0.084*	0.057	*0.054*	0.037
30 meter-7	*0.051*	0.035	*0.096*	0.065	*0.066*	0.045
30 meter-8	*0.039*	0.027	*0.080*	0.054	*0.053*	0.036
30 meter-9	*0.042*	0.029	*0.063*	0.043	*0.040*	0.027
30 meter-10	*0.050*	0.034	*0.142*	0.096	*0.028*	0.019

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 16 Clothianidin residues – ground deposition (Machine 8, Amazone ED 602 K, "expansion chamber variant", STAC Seed), continued

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*0.071*	0.048	*0.093*	0.063	*0.048*	0.032
50 meter-2	*0.112*	0.076	*0.043*	0.029	*0.032*	0.022
50 meter-3	*0.034*	0.023	*0.038*	0.026	*0.039*	0.027
50 meter-4	*0.035*	0.024	*0.076*	0.052	*0.066*	0.045
50 meter-5	*0.033*	0.023	*0.058*	0.040	*0.037*	0.025
50 meter-6	*0.031*	0.021	*0.088*	0.060	*0.042*	0.029
50 meter-7	*0.036*	0.024	*0.048*	0.032	*0.048*	0.032
50 meter-8	*0.044*	0.030	*0.063*	0.043	*0.026*	0.018
50 meter-9	*0.029*	0.019	*0.099*	0.067	*0.081*	0.055
50 meter-10	*0.025*	0.017	*0.065*	0.044	*0.027*	0.018

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 17 Clothianidin residues – ground deposition (Machine 9, Monosem NG 3 Plus, STAC Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*0.119*	0.081	*0.104*	0.071	*0.226*	0.153
1 meter-2	*0.173*	0.117	*0.053*	0.036	*0.130*	0.088
1 meter-3	*0.052*	0.035	*0.055*	0.038	*0.078*	0.053
1 meter-4	*0.143*	0.097	*0.090*	0.061	*0.096*	0.065
1 meter-5	*0.062*	0.042	*0.103*	0.070	*0.256*	0.174
1 meter-6	*0.097*	0.066	*0.056*	0.038	*0.077*	0.052
1 meter-7	*0.083*	0.056	*0.094*	0.064	*0.039*	0.027
1 meter-8	*0.084*	0.057	*0.060*	0.041	*0.070*	0.047
1 meter-9	*0.052*	0.035	*0.090*	0.061	*0.097*	0.066
1 meter-10	*0.097*	0.065	*0.087*	0.059	*0.413*	0.280
3 meter-1	*0.045*	0.030	*0.051*	0.034	*0.066*	0.045
3 meter-2	*0.059*	0.040	*0.041*	0.028	*0.138*	0.094
3 meter-3	*0.031*	0.021	*0.063*	0.043	*0.065*	0.044
3 meter-4	*0.078*	0.053	*0.069*	0.047	*0.056*	0.038
3 meter-5	*0.078*	0.053	*0.074*	0.050	*0.036*	0.025
3 meter-6	*0.065*	0.044	*0.022*	0.015	*0.084*	0.057
3 meter-7	*0.078*	0.053	*0.035*	0.024	*0.130*	0.088
3 meter-8	*0.035*	0.023	*0.033*	0.023	*0.047*	0.032
3 meter-9	*0.056*	0.038	*0.106*	0.072	*0.044*	0.030
3 meter-10	*0.058*	0.040	*0.122*	0.083	*0.091*	0.061
5 meter-1	*0.055*	0.038	*0.506*	0.343	*0.065*	0.044
5 meter-2	*0.177*	0.120	*0.036*	0.025	*0.039*	0.026
5 meter-3	*0.071*	0.048	*0.048*	0.033	*0.076*	0.052
5 meter-4	*0.052*	0.035	*0.090*	0.061	*0.051*	0.035
5 meter-5	*0.067*	0.046	*0.056*	0.038	*0.069*	0.047
5 meter-6	*0.045*	0.031	*0.058*	0.040	*0.072*	0.049
5 meter-7	*0.057*	0.038	*0.060*	0.041	*0.083*	0.056
5 meter-8	*0.028*	0.019	*0.062*	0.042	*0.088*	0.060
5 meter-9	*0.029*	0.020	*0.098*	0.066	*0.061*	0.041
5 meter-10	*0.057*	0.039	*0.049*	0.033	*0.117*	0.080

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 17 Clothianidin residues – ground deposition (Machine 9, Monosem NG 3 Plus, STAC Seed), continued

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
10 meter-1	*0.054*	0.037	*0.036*	0.024	*0.031*	0.021
10 meter-2	*0.030*	0.020	*0.027*	0.018	*0.041*	0.027
10 meter-3	*0.039*	0.026	*<LOQ*	*<LOQ*	*0.038*	0.026
10 meter-4	*0.037*	0.025	*0.148*	0.101	*0.021*	0.014
10 meter-5	*0.031*	0.021	*0.087*	0.059	*0.072*	0.049
10 meter-6	*<LOQ*	<LOQ	*0.043*	0.029	*0.027*	0.018
10 meter-7	*0.033*	0.023	*0.046*	0.031	*0.051*	0.034
10 meter-8	*0.134*	0.091	*0.065*	0.044	*0.044*	0.030
10 meter-9	*0.031*	0.021	*0.051*	0.035	*0.055*	0.037
10 meter-10	*0.065*	0.044	*0.058*	0.040	*0.050*	0.034
20 meter-1	*<LOQ*	<LOQ	*0.020*	<LOQ	*<LOQ*	<LOQ
20 meter-2	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
20 meter-3	*<LOQ*	<LOQ	*0.064*	0.043	*<LOQ*	<LOQ
20 meter-4	*<LOQ*	<LOQ	*0.026*	0.017	*<LOQ*	<LOQ
20 meter-5	*0.020*	0.014	*0.025*	0.017	*0.024*	0.016
20 meter-6	*0.029*	0.020	*<LOQ*	<LOQ	*0.028*	0.019
20 meter-7	*0.049*	0.033	*0.063*	0.043	*<LOQ*	<LOQ
20 meter-8	*0.031*	0.021	*<LOQ*	<LOQ	*<LOQ*	<LOQ
20 meter-9	*0.024*	0.016	*0.041*	0.028	*<LOQ*	<LOQ
20 meter-10	*0.025*	0.017	*0.033*	0.023	*0.023*	0.015
30 meter-1	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*0.043*	0.029
30 meter-2	*<LOQ*	<LOQ	*0.031*	0.021	*<LOQ*	<LOQ
30 meter-3	*0.073*	0.050	*0.032*	0.022	*<LOQ*	<LOQ
30 meter-4	*0.027*	0.018	*<LOQ*	<LOQ	*<LOQ*	<LOQ
30 meter-5	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*0.092*	0.063
30 meter-6	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
30 meter-7	*0.032*	0.022	*<LOQ*	<LOQ	*0.029*	0.020
30 meter-8	*<LOQ*	<LOQ	*0.020*	0.014	*0.028*	0.019
30 meter-9	*0.031*	0.021	*0.044*	0.030	*<LOQ*	<LOQ
30 meter-10	*0.027*	0.018	*<LOQ*	<LOQ	*<LOQ*	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 17 Clothianidin residues – ground deposition (Machine 9, Monosem NG 3 Plus, STAC Seed), continued

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
50 meter-1	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-2	*0.023*	0.016	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-3	*0.022*	0.015	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-4	*<LOQ*	<LOQ	*0.038*	0.026	*<LOQ*	<LOQ
50 meter-5	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-6	*<LOQ*	<LOQ	*0.047*	0.032	*<LOQ*	<LOQ
50 meter-7	*0.050*	0.034	*0.021*	0.014	*<LOQ*	<LOQ
50 meter-8	*0.021*	0.014	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-9	*0.024*	0.017	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-10	*<LOQ*	<LOQ	*0.043*	0.029	*<LOQ*	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 18 Clothianidin residues – secondary drift (Machine 1, Monosem PNU, KWS Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOQ
1 meter-2	*0.085*	0.058	*<LOD*	<LOD	*0.145*	0.099
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*0.035*	0.024	*<LOQ*	<LOQ
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*0.048*	0.033	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOQ*	<LOQ	*0.044*	0.030
1 meter-8	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOQ*	<LOQ
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOQ
5 meter-1	*<LOQ*	<LOQ	*0.047*	0.032	*<LOQ*	<LOQ
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*0.021*	0.014	*<LOD*	<LOD	*<LOQ*	<LOQ
5 meter-5	*<LOD*	<LOD	*0.376*	0.255	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOQ*	<LOQ	*0.069*	0.047
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*0.024*	0.017
5 meter-9	*0.079*	0.053	*0.065*	0.044	*<LOQ*	<LOQ
5 meter-10	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOQ*	<LOQ
50 meter-1	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*0.034*	0.023
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOQ
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 19 Clothianidin residues – secondary drift (Machine 2, Monosem PNU, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOQ*	<LOQ	*<LOD*	<LOD	*0.026*	0.017
1 meter-2	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOD
1 meter-3	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOQ*	<LOQ
1 meter-4	*<LOQ*	<LOQ	*0.022*	0.015	*<LOQ*	<LOQ
1 meter-5	*0.090*	0.061	*0.068*	0.046	*<LOQ*	<LOQ
1 meter-6	*<LOQ*	<LOQ	*0.023*	0.015	*<LOQ*	<LOQ
1 meter-7	*<LOD*	<LOD	*<LOQ*	<LOQ	*0.028*	0.019
1 meter-8	*0.034*	0.023	*0.029*	0.019	*0.050*	0.034
1 meter-9	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOQ*	<LOQ
1 meter-10	*0.052*	0.035	*0.091*	0.061	*<LOQ*	<LOQ
5 meter-1	*<LOQ*	<LOQ	*No Data*	No Data	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOQ*	<LOQ	*0.028*	0.019
5 meter-3	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOQ*	<LOQ
5 meter-6	*0.268*	0.182	*<LOQ*	<LOQ	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOQ*	<LOQ
5 meter-8	*<LOQ*	<LOQ	*<LOQ*	<LOQ	*<LOD*	<LOD
5 meter-9	*<LOQ*	<LOQ	*0.027*	0.018	*<LOQ*	<LOQ
5 meter-10	*0.022*	0.015	*0.039*	0.014	*0.047*	0.032
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*0.020*	0.014
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*0.021*	0.014
50 meter-3	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOQ
50 meter-5	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOD*	<LOD
50 meter-6	*<LOQ*	<LOQ	*0.022*	0.015	*0.026*	0.018
50 meter-7	*<LOD*	<LOD	*0.060*	0.041	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOQ
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 20 Clothianidin residues – secondary drift (Machine 3, Gaspardo MTE 300 BB-XL, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 21 Clothianidin residues – secondary drift (Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOD
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOQ*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*0.028*	0.019
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*0.031*	0.021	*<LOQ*	<LOQ
5 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*0.022*	0.015	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 22 Clothianidin residues – secondary drift (Machine 5, Danagri (Becker) Aeromat M 8-HPK DTE, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*0.021*	0.014	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*0.037*	0.025	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

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Table 23 Clothianidin residues – secondary drift (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	Samples mixed up between 1 and 5 m, no measurement possible		*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-3	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD			*<LOQ*	<LOQ
1 meter-8	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD			*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	Samples mixed up between 1 and 5 m, no measurement possible		*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD			*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD			*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 24 Clothianidin residues – secondary drift (Machine 7, Horsch Maistro 8 CC, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	*No Data*	No Data	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 25 Clothianidin residues – secondary drift (Machine 8, Amazone ED 602 K "expansion chamber variant", STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-3	*<LOQ*	<LOQ	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOQ*	<LOQ	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOQ	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOQ*	>LOQ
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 26 Clothianidin residues – secondary drift (Machine 9, Monosem NG 3 Plus, STAC Seed)

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]	*[µg a.s. / Petri-dish]*	[g a.s./ha]
1 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
1 meter-9	*<LOD*	<LOD	0.966	0.651	*<LOD*	<LOD
1 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	0.004	<LOD
5 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
5 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-1	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-2	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-3	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-4	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-5	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-6	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-7	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-8	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-9	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD
50 meter-10	*<LOD*	<LOD	*<LOD*	<LOD	*<LOD*	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Table 27 Clothianidin residues – atmospheric drift (Machine 1, Monosem PNU, KWS Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	1.766	1.091	0.890	1.164	0.754	1.012
2	2.145	1.123	1.069	0.564	0.754	1.212
3	1.285	0.761	0.654	0.570	0.853	1.001
4	0.921	0.580	0.365	0.280	0.686	0.508
5	0.408	0.479	0.175	0.263	0.434	0.402

30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.467	0.465	0.628	0.586	0.674	0.919
2	0.628	0.623	0.190	0.442	0.399	0.788
3	0.419	0.477	0.225	0.629	0.351	0.370
4	0.633	0.476	0.217	0.363	0.422	0.276
5	0.278	0.720	0.380	0.627	0.304	0.338

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 28 Clothianidin residues – atmospheric drift (Machine 2, Monosem PNU, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	7.292	5.590	5.529	5.231	5.054	7.503
2	4.500	4.797	4.271	5.227	5.352	7.919
3	3.608	3.992	2.551	2.829	3.510	4.224
4	1.547	2.249	2.026	2.208	2.436	2.256
5	1.155	1.266	1.500	1.061	0.936	1.239
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	4.595	3.269	3.247	2.452	4.213	4.613
2	3.633	3.977	2.694	3.369	3.914	3.813
3	2.660	2.285	2.410	4.096	3.132	3.858
4	1.713	2.769	2.046	3.008	2.449	3.124
5	1.863	1.495	1.330	1.559	1.906	1.900

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 29 Clothianidin residues – atmospheric drift (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.848	0.849	0.925	0.956	0.852	0.548
2	0.770	0.937	0.885	1.207	0.768	0.598
3	0.585	1.160	0.660	0.791	0.334	0.636
4	0.344	0.542	0.418	0.437	0.241	0.278
5	0.241	0.264	0.446	0.365	0.274	0.135
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.314	0.393	0.663	0.419	0.348	0.267
2	0.478	0.542	0.710	0.290	0.352	0.287
3	0.295	0.453	0.726	0.521	0.271	0.264
4	0.465	0.450	0.318	0.296	0.298	0.185
5	0.314	0.413	0.310	0.329	0.165	0.143

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 30 Clothianidin residues – atmospheric drift (Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.707	0.877	0.862	0.878	0.858	0.905
2	0.692	0.842	0.535	0.626	0.678	0.803
3	0.446	0.590	0.428	0.418	0.402	0.709
4	0.335	0.268	0.341	0.198	0.409	0.455
5	0.207	0.174	0.201	0.116	0.225	0.223
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.471	0.437	0.762	0.552	0.600	0.550
2	0.540	0.487	0.630	0.671	0.600	0.658
3	0.276	0.484	0.402	0.414	0.458	0.424
4	0.253	0.275	0.298	0.296	0.388	0.526
5	0.274	0.215	0.211	0.296	0.268	0.279

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 31 Clothianidin residues – atmospheric drift (Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.823	0.945	1.270	0.947	1.021	0.977
2	0.912	0.672	0.855	0.656	0.822	0.831
3	0.843	1.041	0.764	0.710	0.879	0.741
4	0.696	0.706	0.729	0.418	0.758	0.786
5	0.336	0.610	0.325	0.368	0.576	0.565
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.531	0.586	0.503	0.407	0.404	0.336
2	0.948	0.773	0.615	0.359	0.332	0.213
3	0.731	0.369	0.495	0.503	0.322	0.258
4	0.562	0.582	0.518	0.295	0.205	0.363
5	0.485	0.416	0.330	0.482	0.306	0.228

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 32 Clothianidin residues – atmospheric drift (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.690	0.760	0.744	0.761	0.834	0.813
2	0.562	0.419	0.900	0.642	0.520	0.683
3	0.164	0.300	0.747	0.662	0.449	0.697
4	0.162	0.246	0.364	0.474	0.299	0.198
5	0.218	0.162	0.315	0.261	0.150	0.178
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.549	0.604	0.444	0.598	0.814	0.821
2	0.378	0.400	0.536	0.413	0.443	0.549
3	0.287	0.373	0.596	0.645	0.514	0.466
4	0.279	0.336	0.344	0.436	0.460	0.466
5	0.126	0.196	0.256	0.396	0.348	0.244

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 33 Clothianidin residues – atmospheric drift (Machine 7, Horsch Maistro 8 CC, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.673	0.620	0.667	0.810	0.586	0.872
2	0.861	0.836	0.778	0.674	0.589	0.629
3	0.410	0.627	0.585	0.593	0.578	0.219
4	0.482	0.477	0.393	0.447	0.292	0.399
5	0.279	0.357	0.315	0.278	0.302	0.169
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.281	0.261	0.520	0.349	0.371	0.370
2	0.461	0.214	0.433	0.393	0.318	0.378
3	0.244	0.294	0.531	0.475	0.237	0.325
4	0.188	0.181	0.230	0.237	0.326	0.364
5	0.221	0.446	0.241	0.381	0.202	0.405

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0,006 µg a.s./passive PP-mesh dust collector

Table 34 Clothianidin residues – atmospheric drift (Machine 8, Amazone ED 602 K "expansion chamber variant", STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.871	0.492	0.768	1.273	0.479	0.643
2	0.419	0.398	0.617	0.479	0.569	0.596
3	0.398	0.404	0.366	0.350	0.276	0.165
4	0.255	0.310	0.354	0.340	0.174	0.178
5	0.326	0.215	0.200	0.194	0.078	0.117
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.443	0.285	0.489	0.622	0.375	0.269
2	0.485	0.278	0.430	0.553	0.222	0.295
3	0.340	0.257	0.491	0.481	0.212	0.174
4	0.240	0.341	0.476	0.469	0.163	0.164
5	0.215	0.163	0.264	0.243	0.086	0.148

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0,006 µg a.s./passive PP-mesh dust collector

Table 35 Clothianidin residues – atmospheric drift (Machine 9, Monosem NG 3 Plus, STAC Seed); passive polypropylene-mesh dust collectors

5 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.533	0.562	0.587	0.505	0.735	0.751
2	0.350	0.515	0.500	0.473	0.286	0.529
3	0.431	0.381	0.343	0.377	0.381	0.313
4	0.239	0.210	0.306	0.241	0.346	0.307
5	0.162	0.140	0.202	0.201	0.190	0.221
30 m distance to the "zero-line"						
	[µg a.s./PP-mesh collector]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.421	0.553	0.627	0.279	0.345	0.350
2	0.459	0.340	0.239	0.241	0.287	0.588
3	0.281	0.280	0.432	0.376	0.331	0.383
4	0.238	0.241	0.290	0.309	0.148	0.166
5	0.241	0.191	0.295	0.239	0.091	0.106

LOQ = 0.020 µg a.s./passive PP-mesh dust collector; LOD = 0.006 µg a.s./passive PP-mesh dust collector

Table 36 Clothianidin residues – atmospheric drift (Machine 9, Monosem NG 3 Plus, STAC Seed); passive pipe-cleaner dust collectors

5 m distance to the "zero-line"						
	[µg a.s./pipe cleaner]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.033	0.034	0.063	0.053	0.038	0.049
2	0.022	0.038	0.040	0.049	0.026	0.055
3	0.029	0.030	0.045	0.070	0.019	0.023
4	0.031	0.022	0.032	0.031	0.021	0.019
5	0.014	0.026	0.020	0.019	0.011	0.011

30 m distance to the "zero-line"						
	[µg a.s./pipe cleaner]					
Height above ground [m]	Single values, Series A		Single values, Series B		Single values, Series C	
	I	II	I	II	I	II
1	0.037	0.062	0.053	0.053	0.054	0.066
2	0.027	0.037	0.022	0.047	0.051	0.033
3	0.020	0.024	0.025	0.025	0.077	0.030
4	0.016	0.019	0.030	0.016	0.025	0.037
5	0.008	0.012	0.020	0.018	0.018	0.058

LOQ = 0.002 µg a.s./ pipe cleaner; LOD = 0.0006 µg a.s./ pipe cleaner

Appendix 1 Analysis of Treated Seeds

Bayer CropScience

STUDY TITLE

Analysis of the content of clothianidin and methiocarb in treated corn seeds used in study E 308 3537-9

TEST ITEM

Treated corn seeds

AUTHOR

[redacted]

STUDY COMPLETION DATE

2008-10-16

PERFORMING LABORATORY

Bayer CropScience AG
Development
Formulation Technology
D-40789 Monheim
Germany

Appendix 1 (continued)

Signature

BAYER CROPSCIENCE AG
DEVELOPMENT
FORMULATION TECHNOLOGY
D-40789 MONHEIM
GERMANY

Laboratory Responsible Scientist :

[redacted]

Date: 2008-10-16

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Appendix 1 (continued)

Analysis of the content of clothianidin and methiocarb in treated corn seeds used in study E3083537-9

1. Test material

Samples of corn seed were analyzed for their content of clothianidin and of methiocarb, respectively. The following seeds were used in study E 308 3537-9 ("Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines") :

KWS-Seeds

Variety: Marcello, purchased from KWS SAAT AG, D-37555 Einbeck, Germany; Authentication number: D/KA 7.9316.388

STAC-Seeds

Variety: Amadeo, specifically prepared by the Bayer CropScience Seed Treatment Application Centre for the purpose of the dust drift study E 308 3537-9

The seeds had an expected target content of 62.5g of clothianidin and of 37.5g of methiocarb per unit (1 unit = 50,000 seeds)

2. Description of the analytical methods

Clothianidin and methiocarb were extracted from corn seeds using the conditions described here and quantified by HPLC using UV detection.

2.1. Reagents

All reagents were of AR- quality or HPLC-grade quality.

2.2. Reference compounds

Bayer CropScience certified lots of the reference compounds clothianidin and methiocarb were used in this study.

2.3. Instrumentation

An Agilent type 1100 HPLC instrument was used. The detector was an Agilent 1100 diode array detector. Integration of the chromatograms was performed using the Agilent Cerity chromatography software.

2.4. Analysis of the treated seeds

2.4.1. Analysis of KWS seeds (method KM641)

2 aliquots consisting of 50 treated seeds each were extracted with 100 mL each of a mixture (8:2) of methanol and water + 1mL acetic acid/L using an ultrasonic bath for 30 minutes. The extracts were centrifuged and the clear supernatants were analyzed by isocratic HPLC for their content of clothianidin and methiocarb.

The HPLC column was a Merck LiChrospher RP8 C18 column (250 mm x 4 mm) with a particle diameter of the stationary phase of 5 µm. Injection volume was 3 µL. Elution was performed using a mixture of component A (1L water + 1mL acetic acid) and component B (methanol) at 40°C. For details see table 1. Run time was ca. 10 min.

Clothianidin and methiocarb were determined using UV absorption at 235 nm.

Appendix 1 (continued)

Table 1

Time (min)	% A (water)	% B (methanol)	Flow rate (ml/min)
0	34	66	1.5
5.0	34	66	1.5
5.1	10	90	1.5
7.0	10	90	1.5
7.1	34	66	1.5

2.4.2. Analysis of STAC seeds

2.4.2.1. Analysis of clothianidin (BCS method 2001-0049702-06)

2 aliquots consisting of 50 treated seeds each were extracted with 100 mL of an acetonitrile/water mixture (1:1) using an ultrasonic bath for 30 minutes. The extracts were centrifuged and the clear supernatants were analyzed by isocratic HPLC for their content of clothianidin.
The HPLC column was an Alltech Altima C18 column (50 mmx4.6 mm) with a particle diameter of the stationary phase of 3 µm. Injection volume was 3 µl. Elution was performed using a mixture of component A (1 L water + 1mL acetic acid) and component B (acetonitrile) at 50°C. For details see table 2. Run time was ca. 2.8 min.
Clothianidin was determined using UV absorption at 280 nm.

Table 2

Time (min)	% A (water + 1mL acetic acid /L)	% B (acetonitrile)	Flow rate (ml/min)
0	82	18	2
1.6	82	18	2
1.61	5	95	3
2.2	5	95	3
2.21	82	18	3
2.4	82	18	3

2.4.2.2. Analysis of methiocarb (method KM024s)

2 aliquots consisting of 50 treated seeds each were extracted with 100 mL of a mixture (8:2) of methanol and water + 1mL acetic acid/L using an ultrasonic bath for 30 minutes. The extracts were centrifuged and the clear supernatants were analyzed by isocratic HPLC for their content of methiocarb.
The HPLC column was an Alltech Altima C18 column (50 mm x 4.6 mm) with a particle diameter of the stationary phase of 3 µm. Elution was performed using a mixture of component A (1 L water + 1mL acetic acid) and component B (acetonitrile) at 50°C. For details see table 3. Run time was ca. 3 min.
Methiocarb was determined using UV absorption at 265 nm.

Appendix 1 (continued)

Table 3

Time (min)	% A (water + 1ml acetic acid/L)	% B (acetonitrile)	Flow rate (ml/min)
0	50	50	2
1.6	50	50	2
1.61	5	95	3
2.40	5	95	3
2.41	50	50	3
2.80	50	50	2

3. Results

Table 4

Test material	Content clothianidin (mg/seed)	Loading clothianidin (% of target)	Content methiocarb (mg/seed)	Loading methiocarb (% of target)
KWS seeds (Variety Marcello)	1.68	134.9	1.06	142.0
STAC seeds (Variety Amadeo)	0.14	90.8	0.78	103.6

4. Summary of results

The loading of the analyzed corn seeds from KWS SAAT AG was 134.9 % for clothianidin and 142.0 % for methiocarb, respectively.
In the case of the corn seeds treated at STAC (Bayer CropScience Seed Treatment Apllication Centre), the loading was 90.8 % for clothianidin and 103.6 % for methiocarb.

Appendix 1 (continued)

Bayer CropScience

Declaration of Quality Standards

GLP Test Facility: Bayer CropScience AG
Development
Formulation Technology - Analysis and Services
Gebäude 6820
Alfred-Nobel-Straße 50
40789 Monheim
Germany

The study performed with regard to the here submitted report has been performed in a certified and regularly inspected GLP-test facility.

Sponsor, Head of GLP -Testing Facility: [redacted] 2007-06-22
Date (YYYY-MM-DD)

Representative of the Study Managers: [redacted] W. Güldner 2007-06-22
Date (YYYY-MM-DD)

The GLP-test facility has been inspected and certified as working in compliance with the OECD *Principles of Good Laboratory Practice* by the competent authorities (Statement of GLP Compliance from June 11, 2007). Monika Hoppe, Wilfried Güldner, Friedhelm Schulz and Werner Zitzmann act as a study manager.

The GLP-test facility is inspected by the competent Quality Assurance Unit of Bayer CropScience on a regular basis. The staff is trained according GLP rules, regularly. The GLP-instrumentation is monitored to be in compliance with GLP guidelines.

Head of Quality Assurance Unit Bayer CropScience: [redacted] 2007-06-25
Date (YYYY-MM-DD)

M-275882-02-1

DART-No.: M-275882-02-1

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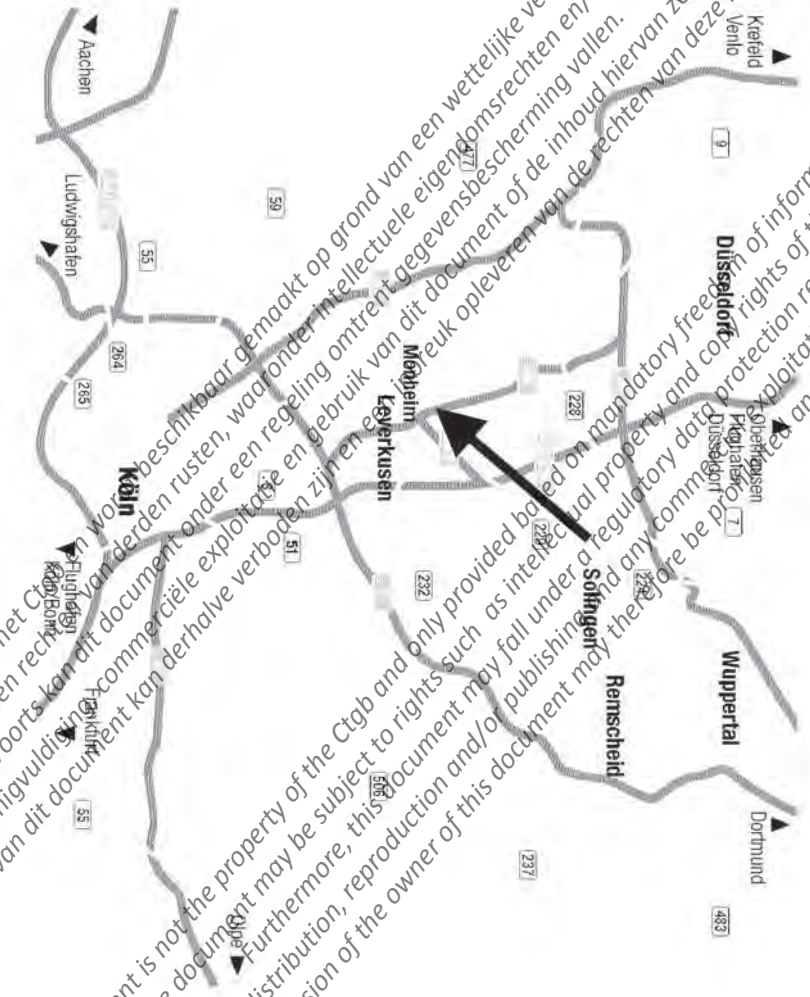
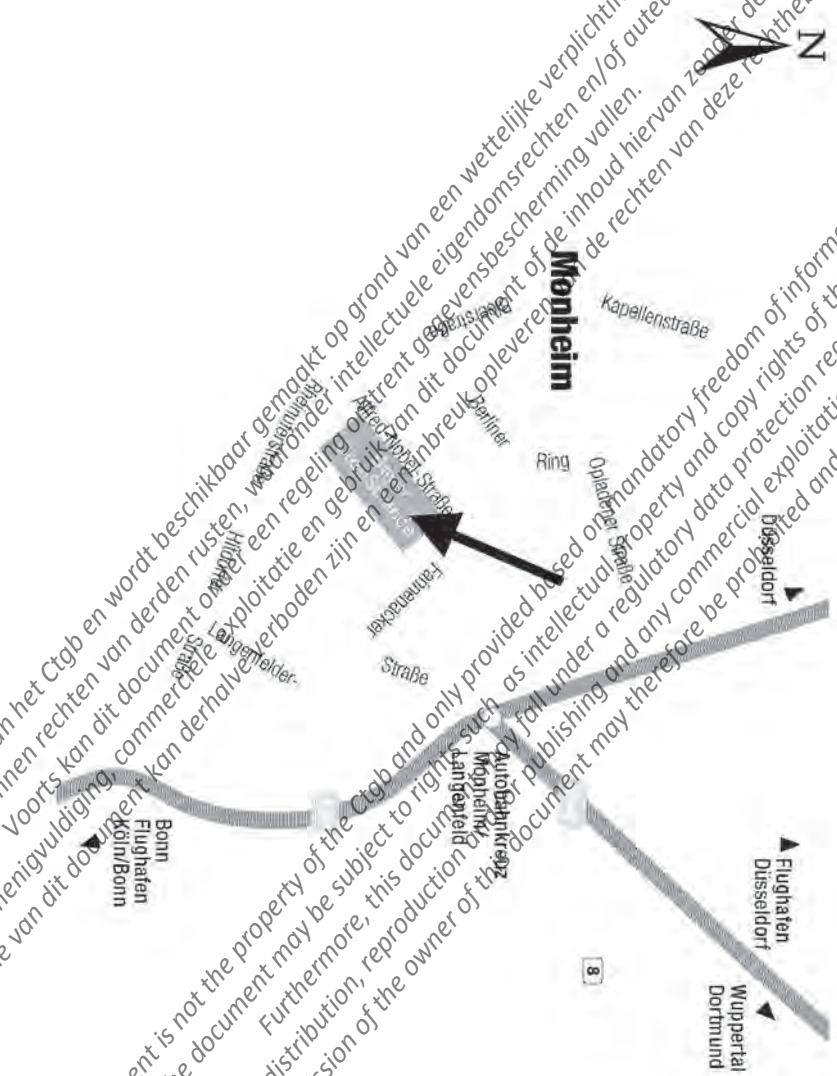
Appendix 2 Study Region and Study Plot Area

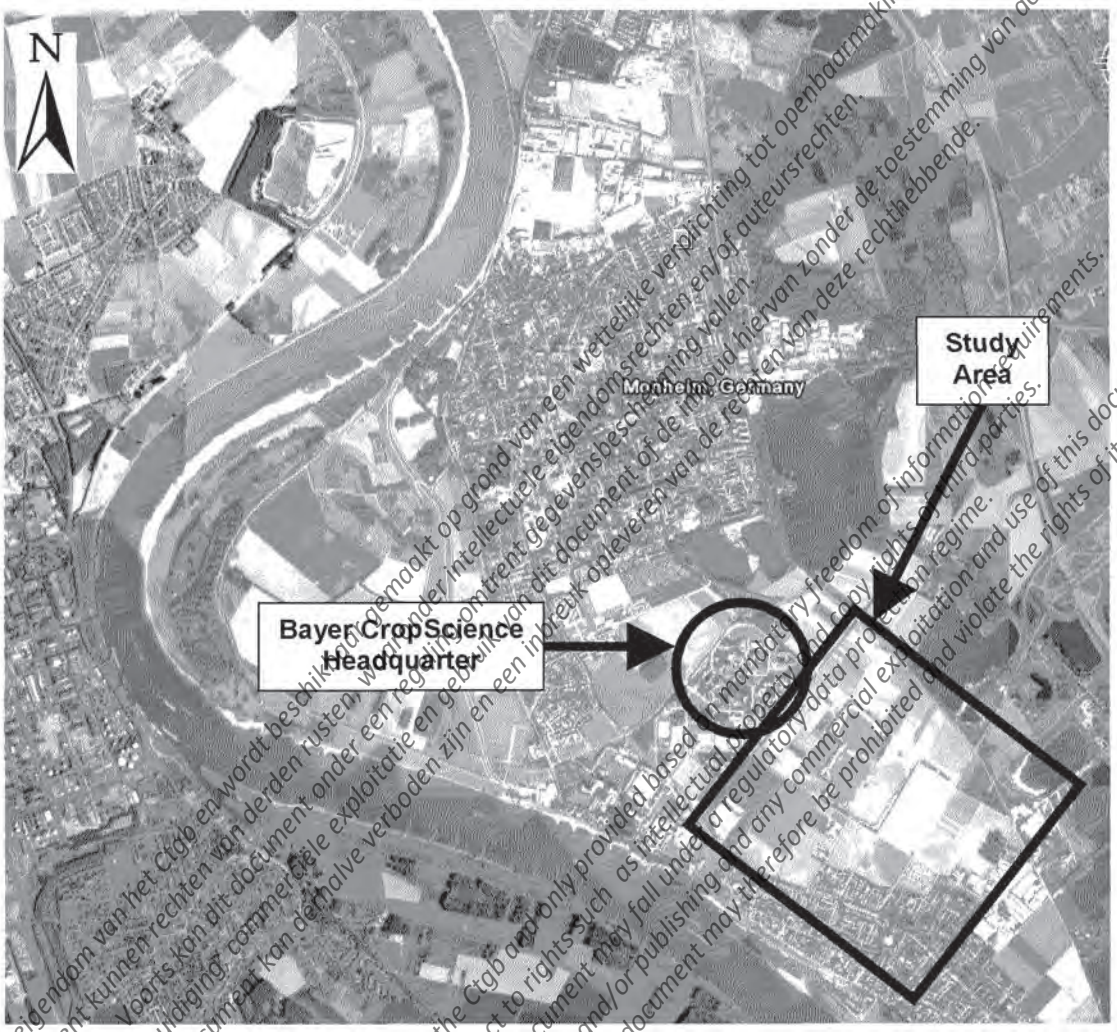
Appendix 2 (continued)



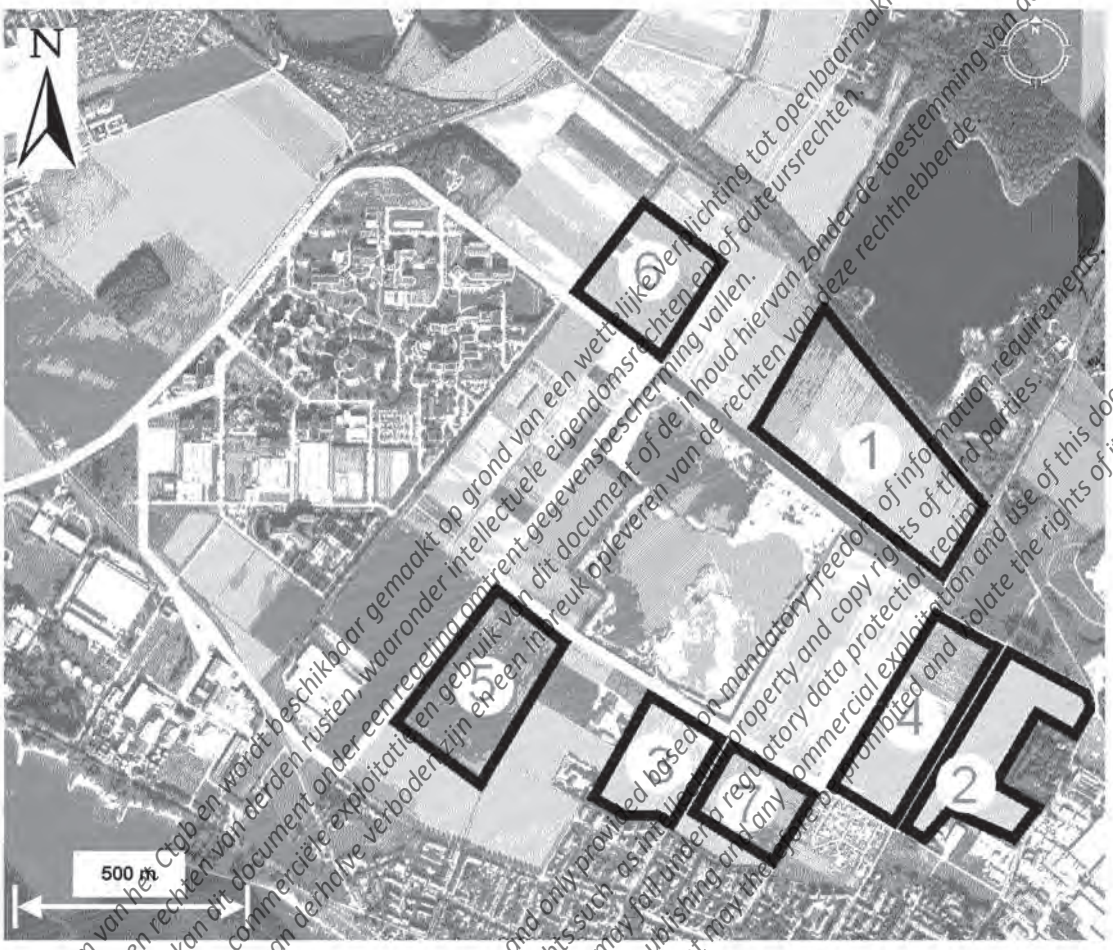
Appendix 2 (continued)



Appendix 2 (continued)



Appendix 2 (continued)



	Public road, good quality
	Farm track, moderate quality
	Farm track, poor quality

Field No. 1	18.0 ha	Study plot location for testing Machine No. 4, 5
Field No. 2	8.5 ha	Study plot location for testing Machine No.: 8
Field No. 3	4.9 ha	Study plot location for testing Machine No.: 7
Field No. 4	7.6 ha	Study plot location for testing Machine No.: 3
Field No. 5	8.9 ha	Study plot location for testing Machine No.: 2, 6
Field No. 6	5.6 ha	Study plot location for testing Machine No.: 9
Field No. 7	3.8 ha	Study plot location for testing Machine No.: 1

Appendix 3 On-site Meteorological Measurements During Maize Sowing Machine 1, Monosem PNU, KWS Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	19.1	61.1	3.1	3.2	187.2	7.2
Geometric mean	19.1	61.1	3.1	3.0	n.a.	n.a.
10th%ile	18.9	59.1	2.3	2.2	168.7	-11.3
90th%ile	19.3	63.4	4.0	4.7	205.9	25.9
Drilling path No. 2						
Arithmetic mean	19.2	58.5	3.1	2.9	200.5	20.5
Geometric mean	19.2	58.4	3.1	2.9	n.a.	n.a.
10th%ile	19.0	56.6	2.6	2.3	186.2	6.2
90th%ile	19.3	60.6	3.7	3.4	215.1	35.1
Drilling path No. 3						
Arithmetic mean	19.3	59.7	2.6	2.7	179.4	-0.6
Geometric mean	19.3	59.7	2.6	2.6	n.a.	n.a.
10th%ile	19.1	57.8	2.0	2.0	155.9	-24.1
90th%ile	19.4	61.7	3.5	3.6	196.0	16.0
Drilling path No. 4						
Arithmetic mean	19.4	59.5	3.0	2.8	203.2	23.2
Geometric mean	19.4	59.5	2.9	2.8	n.a.	n.a.
10th%ile	19.2	57.9	2.1	1.9	189.2	9.2
90th%ile	19.5	61.5	3.5	3.6	214.6	34.6
Drilling path No. 5						
Arithmetic mean	19.6	60.4	3.0	3.1	204.2	24.2
Geometric mean	19.6	60.3	2.9	3.0	n.a.	n.a.
10th%ile	19.4	57.9	2.1	2.3	180.5	0.5
90th%ile	19.8	62.5	3.8	4.2	221.5	41.5
Drilling path No. 6						
Arithmetic mean	19.5	57.7	2.9	3.0	180.3	0.3
Geometric mean	19.5	57.7	2.9	2.9	n.a.	n.a.
10th%ile	19.3	55.9	2.3	2.4	164.9	-15.1
90th%ile	19.7	60.1	3.5	3.6	193.2	13.2
Drilling path No. 7						
Arithmetic mean	19.7	59.6	3.1	2.9	195.8	15.8
Geometric mean	19.7	59.6	3.0	2.8	n.a.	n.a.
10th%ile	19.5	57.5	2.4	2.0	178.9	-1.1
90th%ile	19.8	62.3	3.8	3.7	218.6	38.6

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices

[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)

n.a. = not applicable

Appendix 3 (continued)

Machine 1, Monosem PNU, KWS Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	19.6	57.7	3.4	3.5	177.9	-2.1
Geometric mean	19.6	57.6	3.4	3.4	n.a.	n.a.
10th%ile	19.5	55.5	2.5	2.6	163.5	-16.5
90th%ile	19.7	60.1	4.5	4.8	191.9	11.9
Drilling path No. 9						
Arithmetic mean	19.8	58.8	3.3	3.7	175.5	-4.5
Geometric mean	19.8	58.8	3.2	3.6	n.a.	n.a.
10th%ile	19.6	57.1	2.6	3.0	163.4	-16.6
90th%ile	20.0	61.1	4.1	4.9	189.1	9.1
Drilling path No. 10						
Arithmetic mean	19.9	56.3	2.7	2.6	188.7	8.7
Geometric mean	19.9	56.2	2.7	2.5	n.a.	n.a.
10th%ile	19.7	54.1	2.3	1.9	173.4	-6.6
90th%ile	20.0	58.7	3.4	3.4	203.3	23.3
Drilling path No. 11						
Arithmetic mean	20.1	56.5	3.1	2.9	200.0	20.0
Geometric mean	20.1	56.4	3.0	2.8	n.a.	n.a.
10th%ile	19.9	54.0	2.1	2.0	183.3	3.3
90th%ile	20.3	58.9	3.8	3.7	220.1	40.1
Drilling path No. 12						
Arithmetic mean	20.3	56.9	3.3	3.5	187.5	7.5
Geometric mean	20.3	56.8	3.2	3.3	n.a.	n.a.
10th%ile	20.1	54.9	2.1	2.2	170.5	-9.5
90th%ile	20.4	59.2	5.1	5.4	203.2	23.2
Drilling path No. 13						
Arithmetic mean	20.3	55.9	2.9	2.8	202.7	22.7
Geometric mean	20.3	55.9	2.8	2.8	n.a.	n.a.
10th%ile	20.0	53.9	2.3	2.3	183.6	3.6
90th%ile	20.6	58.1	3.5	3.3	218.7	38.7
Drilling path No. 14						
Arithmetic mean	20.4	54.6	4.3	4.3	196.7	16.7
Geometric mean	20.4	54.6	4.2	4.2	n.a.	n.a.
10th%ile	20.2	52.9	3.5	3.3	170.8	-9.2
90th%ile	20.5	56.5	5.1	5.3	221.5	41.5

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 1, Monosem PNU, KWS Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 15						
Arithmetic mean	20.3	55.3	3.1	3.1	188.1	8.1
Geometric mean	20.3	55.2	3.1	3.0	n.a.	n.a.
10th%ile	20.1	53.4	2.4	2.0	173.6	-6.4
90th%ile	20.5	57.5	3.8	3.9	199.9	19.9
Drilling path No. 16						
Arithmetic mean	20.4	54.5	2.8	2.7	208.6	28.6
Geometric mean	20.4	54.5	2.7	2.6	n.a.	n.a.
10th%ile	20.2	52.5	2.0	2.0	191.8	11.8
90th%ile	20.6	56.8	3.8	3.4	228.5	48.5
Drilling path No. 17						
Arithmetic mean	20.7	54.8	3.2	3.3	176.7	-3.3
Geometric mean	20.7	54.8	3.1	3.2	n.a.	n.a.
10th%ile	20.5	53.1	2.4	2.2	160.7	-19.3
90th%ile	20.9	56.7	3.9	4.4	198.0	18.0

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 2, Monosem PNU, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	18.0	64.8	3.6	3.8	201.1	21.1
Geometric mean	18.0	64.8	3.5	3.8	n.a.	n.a.
10th%ile	17.8	62.0	2.9	3.3	191.9	11.9
90th%ile	18.1	67.6	4.2	4.5	211.6	31.6
Drilling path No. 2						
Arithmetic mean	17.9	64.2	4.3	4.5	200.8	20.8
Geometric mean	17.9	64.1	4.2	4.4	n.a.	n.a.
10th%ile	17.7	62.2	3.4	3.4	193.1	13.1
90th%ile	18.0	66.7	5.6	5.7	209.0	29.0
Drilling path No. 3						
Arithmetic mean	17.8	64.5	4.4	4.6	205.4	25.4
Geometric mean	17.8	64.5	4.4	4.5	n.a.	n.a.
10th%ile	17.7	62.0	3.8	3.8	189.3	9.3
90th%ile	18.0	67.1	5.4	5.3	218.7	38.7
Drilling path No. 4						
Arithmetic mean	17.9	66.1	3.2	3.3	203.4	23.4
Geometric mean	17.9	65.1	3.2	3.3	n.a.	n.a.
10th%ile	17.7	62.8	2.5	2.8	189.1	9.1
90th%ile	18.0	67.5	4.0	4.4	215.8	35.8
Drilling path No. 5						
Arithmetic mean	17.9	65.2	2.8	3.0	192.8	12.8
Geometric mean	17.9	65.2	2.8	3.0	n.a.	n.a.
10th%ile	17.7	63.0	2.3	2.5	180.6	0.6
90th%ile	18.1	67.7	3.4	3.6	201.8	21.8
Drilling path No. 6						
Arithmetic mean	18.1	66.8	3.2	3.5	193.7	13.7
Geometric mean	18.1	66.8	3.1	3.4	n.a.	n.a.
10th%ile	17.9	64.9	2.6	3.0	183.4	3.4
90th%ile	18.2	69.0	3.7	3.9	203.1	23.1
Drilling path No. 7						
Arithmetic mean	18.0	65.4	3.2	3.5	198.6	18.6
Geometric mean	18.0	65.4	3.1	3.4	n.a.	n.a.
10th%ile	17.9	62.6	2.5	2.6	187.4	7.4
90th%ile	18.1	67.9	4.0	4.4	211.4	31.4

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 2, Monosem PNU, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	18.0	64.5	3.6	3.8	183.0	3.0
Geometric mean	18.0	64.5	3.5	3.7	n.a.	n.a.
10th%ile	17.8	62.4	2.9	3.0	173.5	-6.6
90th%ile	18.1	67.0	4.3	4.5	193.2	13.2
Drilling path No. 9						
Arithmetic mean	18.0	65.1	3.8	4.0	182.1	2.1
Geometric mean	18.0	65.0	3.8	3.9	n.a.	n.a.
10th%ile	17.8	62.9	3.4	3.6	176.2	-3.8
90th%ile	18.1	67.5	4.2	4.4	191.8	11.8
Drilling path No. 10						
Arithmetic mean	18.0	65.3	2.8	2.9	187.7	7.7
Geometric mean	18.0	65.3	2.8	2.9	n.a.	n.a.
10th%ile	17.8	62.8	2.3	2.5	173.2	-6.8
90th%ile	18.2	68.0	3.2	3.6	201.8	21.8
Drilling path No. 11						
Arithmetic mean	18.1	64.4	3.6	3.8	174.2	-5.8
Geometric mean	18.1	64.4	3.6	3.8	n.a.	n.a.
10th%ile	18.0	62.6	2.9	3.4	153.8	-26.2
90th%ile	18.3	67.0	4.3	4.4	189.1	9.1
Drilling path No. 12						
Arithmetic mean	18.2	64.5	3.1	3.1	196.5	16.5
Geometric mean	18.2	64.5	3.0	3.1	n.a.	n.a.
10th%ile	17.9	62.0	2.5	2.8	183.8	3.8
90th%ile	18.4	67.8	3.6	3.4	208.8	28.8
Drilling path No. 13						
Arithmetic mean	18.2	63.9	3.5	3.7	193.9	13.9
Geometric mean	18.2	63.9	3.4	3.6	n.a.	n.a.
10th%ile	18.0	61.7	2.5	2.6	176.3	-3.7
90th%ile	18.4	66.0	4.6	4.8	214.7	34.7
Drilling path No. 14						
Arithmetic mean	18.2	63.1	4.3	4.5	187.8	7.8
Geometric mean	18.2	63.0	4.3	4.5	n.a.	n.a.
10th%ile	18.1	60.7	3.8	3.9	179.0	-1.0
90th%ile	18.4	65.9	4.9	5.0	198.9	18.9

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 2, Monosem PNU, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 15						
Arithmetic mean	18.4	64.4	3.4	3.5	180.7	0.7
Geometric mean	18.4	64.3	3.4	3.5	n.a.	n.a.
10th%ile	18.2	62.3	2.8	2.8	169.2	-10.8
90th%ile	18.6	66.3	4.4	4.2	192.0	12.0
Drilling path No. 16						
Arithmetic mean	18.5	63.9	3.0	3.2	179.5	-0.5
Geometric mean	18.5	63.9	2.9	3.2	n.a.	n.a.
10th%ile	18.3	61.4	2.5	2.7	163.7	-16.3
90th%ile	18.6	66.3	3.7	3.7	195.8	15.8
Drilling path No. 17						
Arithmetic mean	18.4	63.4	4.3	4.5	180.1	0.1
Geometric mean	18.4	63.4	4.3	4.5	n.a.	n.a.
10th%ile	18.3	61.4	3.7	3.9	173.3	-6.7
90th%ile	18.6	65.6	5.1	5.2	186.0	5.9

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	19.4	79.8	3.1	Not determined	168.3	-11.7
Geometric mean	19.4	79.8	3.1		n.a.	n.a.
10th%ile	19.2	79.8	2.7		158.0	-22.0
90th%ile	19.4	79.8	3.5		178.7	-1.3
Drilling path No. 2						
Arithmetic mean	19.2	79.8	3.0	Not determined	172.2	-7.8
Geometric mean	19.2	79.8	3.0		n.a.	n.a.
10th%ile	19.1	79.8	2.5		166.3	-13.7
90th%ile	19.2	79.8	3.7		179.3	-0.7
Drilling path No. 3						
Arithmetic mean	19.1	80.1	3.0	Not determined	173.4	-6.6
Geometric mean	19.1	80.1	3.0		n.a.	n.a.
10th%ile	19.1	79.8	2.5		165.3	-14.7
90th%ile	19.2	80.2	3.4		182.3	2.3
Drilling path No. 4						
Arithmetic mean	19.2	80.7	2.6	Not determined	162.4	-17.6
Geometric mean	19.2	80.7	2.6		n.a.	n.a.
10th%ile	19.1	80.3	2.2		144.2	-35.8
90th%ile	19.3	81.0	2.9		180.4	0.4
Drilling path No. 5						
Arithmetic mean	19.2	80.5	2.6	Not determined	177.2	-2.8
Geometric mean	19.2	80.5	2.6		n.a.	n.a.
10th%ile	19.2	80.2	2.0		165.9	-14.1
90th%ile	19.2	80.7	3.2		187.4	7.4
Drilling path No. 6						
Arithmetic mean	19.1	79.9	3.1	Not determined	161.3	-18.7
Geometric mean	19.1	79.9	3.1		n.a.	n.a.
10th%ile	19.0	79.8	2.5		151.6	-28.4
90th%ile	19.2	80.2	3.7		178.9	-1.1
Drilling path No. 7						
Arithmetic mean	19.0	80.4	3.0	Not determined	171.3	-8.7
Geometric mean	19.0	80.4	3.0		n.a.	n.a.
10th%ile	19.0	80.3	2.6		156.2	-23.8
90th%ile	19.1	80.5	3.5		192.4	12.4

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	19.0	80.6	2.8	Not determined	191.1	11.1
Geometric mean	19.0	80.6	2.7		n.a.	n.a.
10th%ile	19.0	80.5	2.1		181.4	1.4
90th%ile	19.1	80.7	3.2		202.0	22.0
Drilling path No. 9						
Arithmetic mean	19.0	80.4	2.6	Not determined	182.7	2.7
Geometric mean	19.0	80.4	2.5		n.a.	n.a.
10th%ile	19.0	80.3	1.8		170.8	-9.2
90th%ile	19.0	80.5	3.6		188.7	8.7
Drilling path No. 10						
Arithmetic mean	19.0	80.5	2.8	Not determined	170.4	-9.6
Geometric mean	19.0	80.4	2.8		n.a.	n.a.
10th%ile	18.9	80.4	2.5		165.5	-14.5
90th%ile	19.0	80.5	3.2		175.9	-4.1
Drilling path No. 11						
Arithmetic mean	19.1	81.0	3.1	Not determined	189.2	9.2
Geometric mean	19.1	81.0	3.1		n.a.	n.a.
10th%ile	19.1	80.7	2.5		186.0	6.0
90th%ile	19.2	81.2	3.7		194.9	14.9
Drilling path No. 12						
Arithmetic mean	19.1	80.9	2.9	Not determined	201.8	21.8
Geometric mean	19.1	80.9	2.9		n.a.	n.a.
10th%ile	19.0	80.7	2.6		192.4	12.4
90th%ile	19.2	81.0	3.3		211.8	31.8

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	18.1	69.5	2.7	2.9	176.3	-3.7
Geometric mean	18.1	69.4	2.6	2.8	n.a.	n.a.
10th%ile	17.9	67.1	1.9	2.2	160.8	-19.2
90th%ile	18.2	71.9	3.4	3.4	196.5	16.5
Drilling path No. 2						
Arithmetic mean	18.2	68.7	2.8	2.9	171.2	-8.8
Geometric mean	18.2	68.7	2.8	2.9	n.a.	n.a.
10th%ile	18.0	66.4	2.5	2.6	159.4	-20.6
90th%ile	18.3	72.1	3.2	3.4	181.8	1.8
Drilling path No. 3						
Arithmetic mean	18.1	69.7	3.2	3.3	167.4	-12.6
Geometric mean	18.1	69.7	3.1	3.2	n.a.	n.a.
10th%ile	17.9	67.4	2.6	2.5	153.8	-26.2
90th%ile	18.2	72.2	3.9	4.0	176.4	-3.6
Drilling path No. 4						
Arithmetic mean	18.1	70.2	3.8	4.0	158.4	-21.6
Geometric mean	18.1	70.2	3.8	3.9	n.a.	n.a.
10th%ile	17.9	67.8	2.8	3.3	149.2	-30.8
90th%ile	18.3	72.5	4.8	4.8	169.2	-10.8
Drilling path No. 5						
Arithmetic mean	18.0	69.9	3.6	3.6	175.2	-4.8
Geometric mean	18.0	69.8	3.5	3.6	n.a.	n.a.
10th%ile	17.9	67.7	2.9	3.0	166.5	-13.5
90th%ile	18.1	72.5	4.3	4.2	183.4	3.4
Drilling path No. 6						
Arithmetic mean	18.1	70.4	3.5	3.5	175.8	-4.2
Geometric mean	18.1	70.4	3.5	3.5	n.a.	n.a.
10th%ile	17.9	68.5	2.9	2.8	160.7	-19.3
90th%ile	18.2	72.8	4.3	4.1	191.8	11.8
Drilling path No. 7						
Arithmetic mean	18.0	71.4	3.4	3.6	172.1	-7.9
Geometric mean	18.0	71.4	3.3	3.6	n.a.	n.a.
10th%ile	17.9	69.5	2.6	3.1	159.3	-20.7
90th%ile	18.2	73.4	4.2	4.2	187.2	7.2

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 4, Amazone ED 602 K, "ground cushion variant", STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	17.9	71.7	3.6	3.9	169.6	-10.4
Geometric mean	17.9	71.7	3.6	3.9	n.a.	n.a.
10^{th}%ile	17.8	69.2	2.9	3.4	159.3	-20.7
90^{th}%ile	18.1	74.0	4.2	4.5	179.4	-0.6
Drilling path No. 9						
Arithmetic mean	18.0	72.5	3.4	3.5	199.4	19.4
Geometric mean	18.0	72.5	3.4	3.5	n.a.	n.a.
10^{th}%ile	17.8	69.9	2.4	2.6	173.5	-6.5
90^{th}%ile	18.2	74.9	4.3	4.2	221.5	41.5

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	20.2	58.8	5.2	5.3	204.2	24.2
Geometric mean	20.2	58.8	5.1	5.2	n.a.	n.a.
10th%ile	19.8	57.0	3.9	4.2	190.3	10.3
90th%ile	20.6	61.0	6.3	6.5	218.6	38.6
Drilling path No. 2						
Arithmetic mean	19.7	61.9	4.3	4.6	212.3	32.3
Geometric mean	19.7	61.9	4.3	4.6	n.a.	n.a.
10th%ile	19.4	59.9	3.6	4.0	203.1	23.1
90th%ile	19.9	64.2	4.9	5.2	221.5	41.5
Drilling path No. 3						
Arithmetic mean	19.5	61.8	4.2	4.6	211.3	31.3
Geometric mean	19.5	61.8	4.2	4.5	n.a.	n.a.
10th%ile	19.3	59.9	3.4	3.6	203.1	23.1
90th%ile	19.7	64.0	5.2	5.8	218.7	38.7
Drilling path No. 4						
Arithmetic mean	19.5	62.2	3.8	4.1	202.2	22.2
Geometric mean	19.5	62.1	3.7	4.1	n.a.	n.a.
10th%ile	19.3	60.3	3.1	3.4	191.8	11.8
90th%ile	19.7	63.9	4.8	4.7	211.7	31.7
Drilling path No. 5						
Arithmetic mean	19.2	64.1	4.1	4.4	214.3	34.3
Geometric mean	19.2	64.1	4.0	4.4	n.a.	n.a.
10th%ile	19.0	62.0	3.2	3.6	203.0	23.0
90th%ile	19.5	66.6	5.1	5.2	226.2	46.2
Drilling path No. 6						
Arithmetic mean	19.1	64.2	4.5	4.7	214.9	34.9
Geometric mean	19.1	64.2	4.5	4.7	n.a.	n.a.
10th%ile	18.9	62.4	3.8	3.7	206.0	26.0
90th%ile	19.3	66.1	5.2	5.6	223.2	43.2
Drilling path No. 7						
Arithmetic mean	19.0	65.2	4.1	4.3	207.8	27.8
Geometric mean	19.0	65.2	4.1	4.2	n.a.	n.a.
10th%ile	18.8	62.9	3.5	3.6	199.0	19.0
90th%ile	19.2	67.6	5.1	5.3	218.6	38.6

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 5, Danagri (Becker) Aeromat M 8-HKP DTE, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	19.0	64.4	4.5	4.7	198.7	18.7
Geometric mean	19.0	64.3	4.4	4.7	n.a.	n.a.
10^{th}%ile	18.8	61.7	3.6	3.9	183.4	3.4
90^{th}%ile	19.2	66.9	5.4	5.8	212.8	32.8
Drilling path No. 9						
Arithmetic mean	19.0	62.8	4.8	5.2	203.1	23.1
Geometric mean	19.0	62.7	4.7	5.1	n.a.	n.a.
10^{th}%ile	18.8	60.7	3.7	3.9	193.2	13.2
90^{th}%ile	19.2	65.2	5.8	6.1	214.5	34.5

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	20.1	66.2	3.4	3.5	176.4	-3.6
Geometric mean	20.1	66.2	3.4	3.5	n.a.	n.a.
10th%ile	19.9	63.7	2.8	2.8	166.3	-13.7
90th%ile	20.3	68.5	4.2	4.4	186.2	6.2
Drilling path No. 2						
Arithmetic mean	20.1	64.4	4.2	4.4	175.8	-4.2
Geometric mean	20.1	64.3	4.1	4.4	n.a.	n.a.
10th%ile	19.9	62.1	3.5	3.7	166.4	-13.6
90th%ile	20.3	67.1	4.8	5.2	187.2	7.2
Drilling path No. 3						
Arithmetic mean	20.3	65.2	3.3	3.6	179.4	-0.6
Geometric mean	20.3	65.2	3.3	3.6	n.a.	n.a.
10th%ile	20.1	63.1	2.9	3.1	169.2	-10.8
90th%ile	20.5	67.8	3.8	4.2	191.9	11.9
Drilling path No. 4						
Arithmetic mean	20.3	64.3	3.3	3.7	191.9	11.9
Geometric mean	20.3	64.3	3.3	3.6	n.a.	n.a.
10th%ile	20.1	62.4	2.8	3.3	180.4	0.4
90th%ile	20.5	66.2	3.7	4.1	201.6	21.6
Drilling path No. 5						
Arithmetic mean	20.5	63.8	3.4	3.3	180.3	0.3
Geometric mean	20.5	63.8	3.3	3.2	n.a.	n.a.
10th%ile	20.3	62.1	2.8	2.6	169.2	-10.8
90th%ile	20.7	65.7	3.9	4.2	193.3	13.3
Drilling path No. 6						
Arithmetic mean	20.5	63.3	3.9	4.0	173.4	-6.6
Geometric mean	20.5	63.2	3.8	4.0	n.a.	n.a.
10th%ile	20.3	61.4	3.3	3.4	160.7	-19.3
90th%ile	20.7	66.2	4.5	4.5	183.4	3.4
Drilling path No. 7						
Arithmetic mean	20.2	63.2	3.5	3.7	180.7	0.7
Geometric mean	20.2	63.1	3.4	3.7	n.a.	n.a.
10th%ile	20.0	61.3	2.9	3.3	169.2	-10.8
90th%ile	20.4	66.2	4.2	4.4	191.8	11.8

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	20.6	62.8	3.9	4.2	188.4	8.4
Geometric mean	20.6	62.8	3.9	4.2	n.a.	n.a.
10^{th}%ile	20.3	60.6	3.4	3.6	179.2	-0.8
90^{th}%ile	20.8	64.7	4.6	4.8	198.9	18.9
Drilling path No. 9						
Arithmetic mean	20.3	62.8	3.7	4.1	179.2	8.4
Geometric mean	20.3	62.8	3.6	4.1	n.a.	n.a.
10^{th}%ile	20.1	60.5	2.9	3.6	169.2	-0.8
90^{th}%ile	20.5	65.2	4.3	4.8	191.9	18.9

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°).
n.a. = not applicable

Appendix 3 (continued)

Machine 7, Horsch Maistro 8 CC, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	20.5	62.4	2.2	2.2	216.8	36.8
Geometric mean	20.5	62.4	2.1	2.1	n.a.	n.a.
10th%ile	20.4	61.4	1.7	1.7	206.3	26.3
90th%ile	20.6	63.7	2.9	2.7	228.9	48.9
Drilling path No. 2						
Arithmetic mean	20.4	61.8	1.7	1.7	196.8	16.8
Geometric mean	20.4	61.8	1.7	1.7	n.a.	n.a.
10th%ile	20.3	60.4	1.3	1.2	159.2	-20.8
90th%ile	20.6	63.1	2.0	2.0	218.9	38.9
Drilling path No. 3						
Arithmetic mean	20.6	61.6	2.4	2.7	201.0	21.0
Geometric mean	20.6	61.6	2.4	2.7	n.a.	n.a.
10th%ile	20.4	60.3	2.0	2.2	179.1	-0.9
90th%ile	20.7	63.0	2.9	3.4	224.2	44.2
Drilling path No. 4						
Arithmetic mean	20.4	61.2	1.7	1.9	209.0	29.0
Geometric mean	20.4	61.2	1.7	1.9	n.a.	n.a.
10th%ile	20.2	59.7	1.4	1.5	191.8	11.8
90th%ile	20.6	62.6	2.1	2.3	228.4	48.4
Drilling path No. 5						
Arithmetic mean	20.6	61.9	2.0	2.2	173.6	-6.4
Geometric mean	20.6	61.9	2.0	2.2	n.a.	n.a.
10th%ile	20.4	60.7	1.7	1.7	156.5	-23.5
90th%ile	20.7	63.1	2.3	2.6	189.0	9.0
Drilling path No. 6						
Arithmetic mean	20.6	61.3	2.7	2.9	175.7	-4.3
Geometric mean	20.6	61.3	2.7	2.9	n.a.	n.a.
10th%ile	20.5	60.3	2.0	2.5	160.7	-19.4
90th%ile	20.8	62.6	3.1	3.3	191.9	11.9
Drilling path No. 7						
Arithmetic mean	20.5	61.3	2.3	2.5	184.4	4.4
Geometric mean	20.5	61.3	2.3	2.5	n.a.	n.a.
10th%ile	20.4	59.8	1.8	2.0	170.6	-9.4
90th%ile	20.7	62.9	3.1	3.1	201.7	21.7

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 7, Horsch Maistro 8 CC, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	20.5	60.9	1.9	2.0	184.8	4.8
Geometric mean	20.5	60.9	1.8	2.0	n.a.	n.a.
10th%ile	20.4	59.6	1.5	1.6	166.7	-13.3
90th%ile	20.6	62.3	2.6	2.6	198.9	18.9
Drilling path No. 9						
Arithmetic mean	20.6	61.4	2.3	2.5	178.5	-1.5
Geometric mean	20.6	61.4	2.2	2.4	n.a.	n.a.
10th%ile	20.5	60.0	2.0	2.1	167.8	-12.2
90th%ile	20.8	62.7	2.6	2.8	189.2	9.2

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 8, Amazone ED 602 K "expansion chamber variant", STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	17.3	80.4	1.7	1.8	179.9	-0.1
Geometric mean	17.3	80.4	1.7	1.8	n.a.	n.a.
10th%ile	17.1	78.3	1.4	1.7	159.4	-20.6
90th%ile	17.5	82.6	2.0	2.2	196.3	16.3
Drilling path No. 2						
Arithmetic mean	17.3	80.4	2.5	2.6	163.6	-16.4
Geometric mean	17.3	80.4	2.5	2.6	n.a.	n.a.
10th%ile	17.1	78.4	2.1	2.2	157.2	-22.8
90th%ile	17.4	82.4	2.8	2.9	170.6	-9.4
Drilling path No. 3						
Arithmetic mean	17.2	80.2	1.9	2.1	173.7	-6.3
Geometric mean	17.2	80.2	1.9	2.0	n.a.	n.a.
10th%ile	17.1	77.6	1.7	1.9	166.4	-13.6
90th%ile	17.4	83.1	2.3	2.5	180.7	0.7
Drilling path No. 4						
Arithmetic mean	17.4	80.3	1.7	1.9	169.7	-10.3
Geometric mean	17.4	80.2	1.7	1.8	n.a.	n.a.
10th%ile	17.2	78.0	1.5	1.7	156.7	-23.3
90th%ile	17.6	82.8	2.0	2.0	183.5	3.5
Drilling path No. 5						
Arithmetic mean	17.3	81.1	2.0	2.0	171.6	-8.4
Geometric mean	17.3	81.1	1.9	2.0	n.a.	n.a.
10th%ile	17.2	78.7	1.8	1.8	163.6	-16.4
90th%ile	17.5	84.9	2.1	2.3	179.1	-0.9
Drilling path No. 6						
Arithmetic mean	17.4	80.7	1.9	2.0	166.1	-13.9
Geometric mean	17.4	80.7	1.8	2.0	n.a.	n.a.
10th%ile	17.3	78.2	1.7	1.8	156.7	-23.3
90th%ile	17.6	82.9	2.1	2.3	179.3	-0.7
Drilling path No. 7						
Arithmetic mean	17.4	80.4	2.2	2.3	169.3	-10.7
Geometric mean	17.4	80.4	2.1	2.3	n.a.	n.a.
10th%ile	17.2	78.2	1.8	2.0	160.9	-19.1
90th%ile	17.6	83.4	2.5	2.5	180.6	0.6

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 8, Amazone ED 602 K "expansion chamber variant", STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	17.4	80.7	2.1	2.2	174.8	-5.2
Geometric mean	17.4	80.6	2.1	2.1	n.a.	n.a.
10th%ile	17.3	78.4	1.8	1.9	163.7	-16.3
90th%ile	17.5	83.4	2.3	2.5	186.3	6.3
Drilling path No. 9						
Arithmetic mean	17.4	80.9	1.8	1.9	194.5	14.5
Geometric mean	17.4	80.8	1.8	1.9	n.a.	n.a.
10th%ile	17.2	78.7	1.7	1.7	186.3	6.3
90th%ile	17.5	83.0	2.0	2.0	203.2	23.2

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 3 (continued)

Machine 9, Monosem NG 3 Plus, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 1						
Arithmetic mean	12.5	56.2	6.2	Not determined	200.4	20.4
Geometric mean	12.5	56.2	6.1		n.a.	n.a.
10th%ile	12.4	56.0	5.0		184.9	4.9
90th%ile	12.6	56.5	7.3		219.9	39.9
Drilling path No. 2						
Arithmetic mean	12.4	56.0	6.8	Not determined	195.9	15.9
Geometric mean	12.4	56.0	6.8		n.a.	n.a.
10th%ile	12.4	55.8	6.1		186.6	6.6
90th%ile	12.5	56.2	7.6		206.3	26.3
Drilling path No. 3						
Arithmetic mean	12.3	56.0	6.2	Not determined	191.1	11.1
Geometric mean	12.3	56.0	6.1		n.a.	n.a.
10th%ile	12.2	55.8	5.1		181.9	1.1
90th%ile	12.4	56.2	7.3		201.4	21.4
Drilling path No. 4						
Arithmetic mean	12.2	56.4	5.9	Not determined	212.1	32.1
Geometric mean	12.2	56.4	5.8		n.a.	n.a.
10th%ile	12.1	56.0	5.0		203.5	23.5
90th%ile	12.4	56.6	6.8		222.0	42.0
Drilling path No. 5						
Arithmetic mean	12.6	56.2	6.5	Not determined	215.4	35.4
Geometric mean	12.6	56.2	6.5		n.a.	n.a.
10th%ile	12.5	55.7	5.6		206.1	26.1
90th%ile	12.9	56.5	7.4		223.1	43.1
Drilling path No. 6						
Arithmetic mean	12.6	55.9	6.5	Not determined	222.8	42.8
Geometric mean	12.6	55.9	6.5		n.a.	n.a.
10th%ile	12.5	55.7	5.6		213.7	33.7
90th%ile	12.6	56.1	7.3		232.3	52.3
Drilling path No. 7						
Arithmetic mean	12.7	56.0	6.3	Not determined	219.8	39.8
Geometric mean	12.7	56.0	6.3		n.a.	n.a.
10th%ile	12.6	55.6	5.6		205.9	25.9
90th%ile	12.8	56.1	7.3		231.3	51.3

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

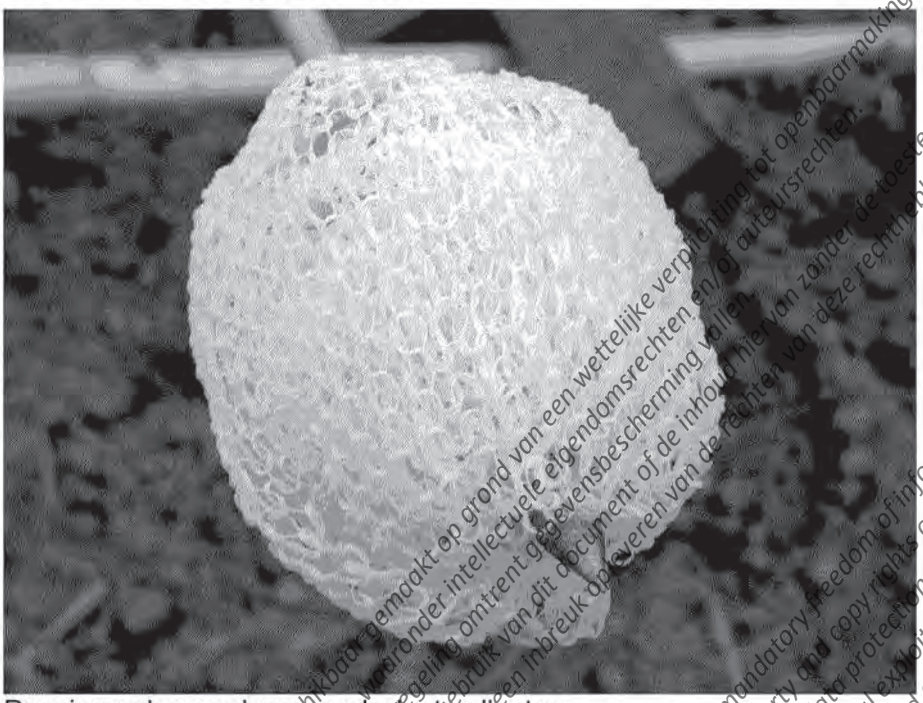
Appendix 3 (continued)

Machine 9, Monosem NG 3 Plus, STAC Seeds

Statistical parameters	Temperature	Relative humidity	Wind speed 2 m above ground	Wind speed 4 m above ground	Wind [1] Direction	Δ^2 Wind Direction
[-]	[°C]	[%]	[m/s]	[m/s]	[Degree]	[Degree]
Drilling path No. 8						
Arithmetic mean	12.8	56.0	6.1	Not determined	210.0	30.0
Geometric mean	12.8	56.0	6.0		n.a.	n.a.
10th%ile	12.7	55.6	5.1		199.5	19.5
90th%ile	13.0	56.2	7.4		217.7	37.7
Drilling path No. 9						
Arithmetic mean	12.4	55.9	5.9	Not determined	199.7	19.7
Geometric mean	12.4	55.9	5.9		n.a.	n.a.
10th%ile	12.4	55.6	4.9		185.6	5.6
90th%ile	12.5	56.1	7.5		209.8	29.8
Drilling path No. 10						
Arithmetic mean	12.6	56.1	6.1	Not determined	216.5	36.5
Geometric mean	12.6	56.1	6.0		n.a.	n.a.
10th%ile	12.5	55.9	5.2		207.4	27.4
90th%ile	12.7	56.3	7.0		229.5	49.5
Drilling path No. 11						
Arithmetic mean	12.6	56.1	6.8	Not determined	219.8	39.8
Geometric mean	12.6	56.1	6.7		n.a.	n.a.
10th%ile	12.5	55.9	6.5		210.7	30.7
90th%ile	12.9	56.3	7.5		227.3	47.3
Drilling path No. 12						
Arithmetic mean	12.7	56.0	6.4	Not determined	211.4	31.4
Geometric mean	12.7	56.0	6.2		n.a.	n.a.
10th%ile	12.6	55.8	4.7		181.1	1.1
90th%ile	12.9	56.3	7.6		227.0	47.0

[1] A wind direction of 180° means that the wind is blowing exactly perpendicularly to the sampling devices
[2] The delta (Δ) indicates the difference to the exactly perpendicular wind direction (i.e. 180°)
n.a. = not applicable

Appendix 4 Additional Photos



Passive polypropylene-mesh dust collector

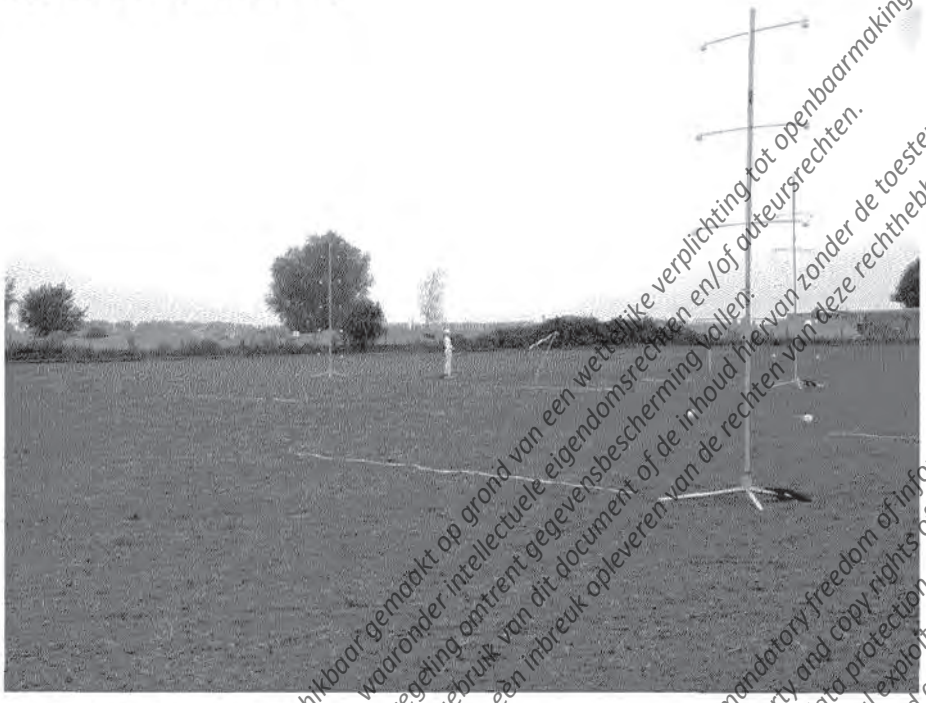
Wetting of the polypropylene-mesh collector (glycerol/H_2O) beyond the point of run-off

Appendix 4 (continued)

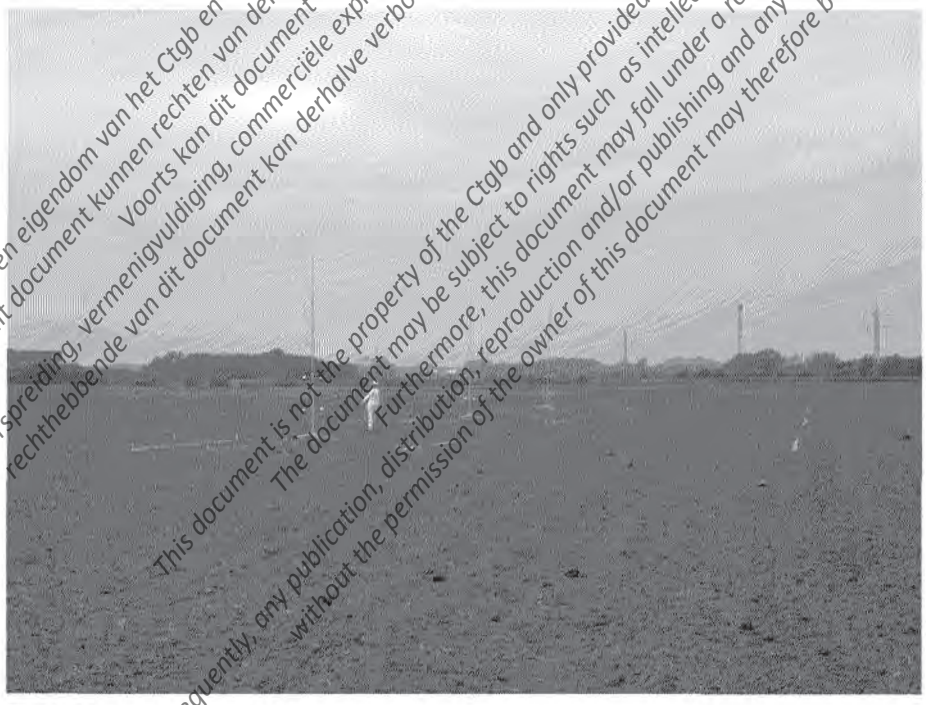
Tripod-pylons with mounted passive polypropylene-mesh dust collectors

Filling of the Petri-dishes

Appendix 4 (continued)

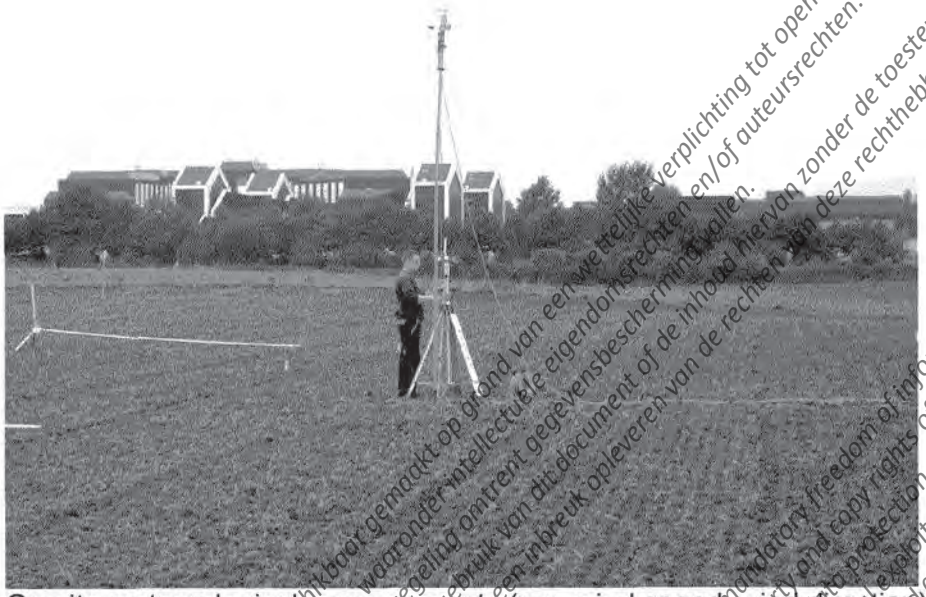


Typical study set-up (1)

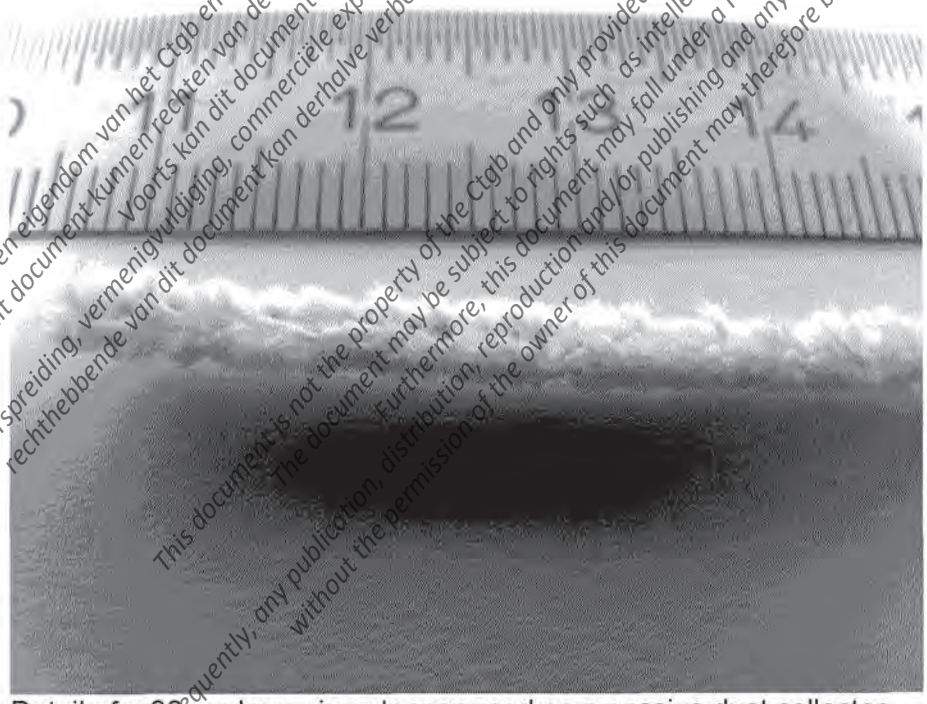


Typical study set-up (2)

Appendix 4 (continued)

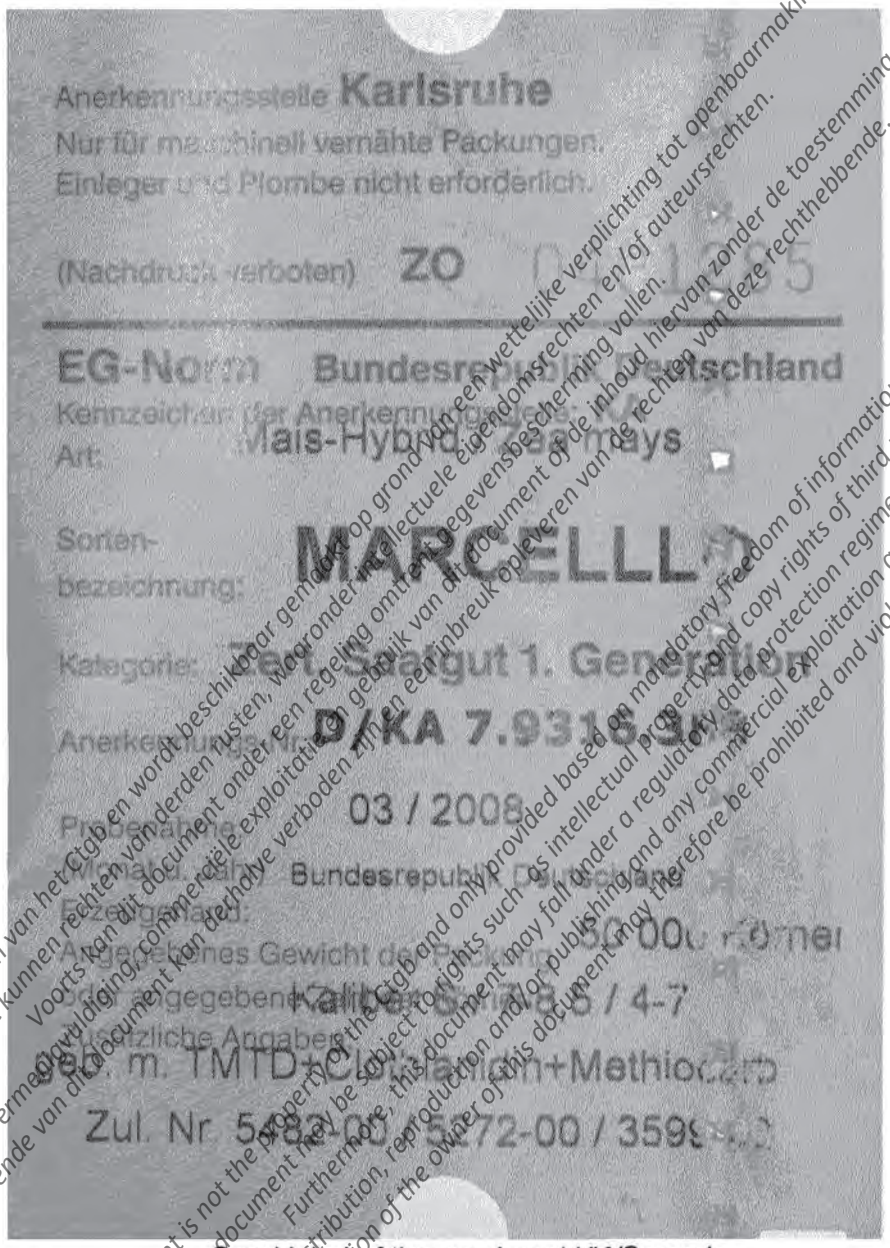


On-site meteorological measurements (e.g. wind speed, wind direction)



Detail of a 30 cm long pipe-cleaner used as a passive dust collector

Appendix 4 (continued)



Seed label of the employed KWS seeds

Appendix 5 Soil Characterization of The Study Plot

LUFA Speyer

BEZIRKS VERBAND PFALZ

LANDWIRTSCHAFTLICHE UNTERSUCHUNGS- UND FORSCHUNGSANSTALT SPEYER

Landwirtschaftliche Untersuchungs- und Forschungsanstalt • Postfach 1629 • 67326 Speyer

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E-Mail: poststelle@lufa-speyer.de
Internet: www.lufa-speyer.de

Ihr Zeichen:
Unser Zeichen:
Durchwahl: 136-139
Kontakt: Herr Emmerling
Datum: 20.12.2008/me

Untersuchungsbericht
zu Studie E 308 3537-9

Proben-Nr.	Ihre Nr.	Cges. (%)	Corg (%)	Canorg (%)	Kationenaustausch-Kapazität in meq/100g
B42712/08	OE 3524	1,215	1,215	n.n.	10
B42713/08	OE 3528	0,924	0,872	0,052	10,25
B42714/08	OE 3530	0,950	0,950	n.n.	8,50
B42715/08	OE 3532	1,296	1,296	n.n.	8,75
B42716/08	OE 3534	1,101	1,101	n.n.	8
B42717/08	OE 3536	0,946	0,946	n.n.	8
B42718/08	OE 3538	0,824	0,824	n.n.	7,5
B42719/08	OE 3540	0,984	0,984	n.n.	9
B42971/08	OE 3560	1,123	1,123	n.n.	11,38

n.n = nicht nachweisbar

Kornarößenverteilung:

Fraktion:	B42713/08 OE 3524	B24713/08 OE 3528	B42714/08 OE 3530	B42715/08 OE 3532
Bodenart	mittel lehmiger Sand	stark lehmiger Sand	stark lehmiger Sand	mittel lehmiger Sand
Ton < 0,002 mm (%)	11,5	15,1	15,0	10,6
Feinschluff 0,002-0,006 mm (%)	5,2	4,0	5,2	3,7
Mittelschluff 0,006-0,020 mm (%)	10,2	10,0	10,0	6,5
Grobschluff 0,020-0,063 mm (%)	17,1	16,6	19,1	16,3
Feinsand 0,063-0,200 mm (%)	19,9	29,1	29,3	25,4
Mittelsand 0,200-0,630 mm (%)	33,8	23,8	19,7	32,2
Grobsand 0,630-2,000 mm (%)	2,3	1,4	1,7	5,3
WK max	32,1	33,8	33,3	31,7

USt-ID-Nr. DE149892971

Seite 1 von 2

Kreis- und Stadtsparkasse Speyer
BLZ 547 500 10
Kto. 62 471

Sprechzeiten:
Montag bis Freitag
8.30 - 12.00 Uhr
14.00 - 16.00 Uhr

Deutscher Akkreditierungs Rat
DAP-PL-2910.00

Appendix 5 (continued)

Fraktion:	B42716/08 OE 3534	B42717/08 OE 3536	B42718/08 OE 3538	B42719/08 OE 3540
Bodenart	stark lehmiger Sand	stark lehmiger Sand	stark lehmiger Sand	stark lehmiger Sand
Ton < 0,002 mm (%)	14,6	18,2	12,0	15,0
Feinschluff 0,002-0,006 mm (%)	7,1	5,5	4,8	4,7
Mittelschluff 0,006-0,020 mm (%)	8,4	10,3	7,2	7,9
Grobschluff 0,020-0,063 mm (%)	16,9	17,0	14,9	20,9
Feinsand 0,063-0,200 mm (%)	29,3	22,6	38,4	35,9
Mittelsand 0,200-0,630 mm (%)	22,1	26,4	21,9	14,9
Grobsand 0,630-2,000 mm (%)	1,6	2,0	0,7	1,0
WK max	34,3	32,8	34,8	35,3

Fraktion:	B42271/08 OE 3560
Bodenart	stark lehmiger Sand
Ton < 0,002 mm (%)	16,6
Feinschluff 0,002-0,006 mm (%)	5,9
Mittelschluff 0,006-0,020 mm (%)	10,7
Grobschluff 0,020-0,063 mm (%)	19,8
Feinsand 0,063-0,200 mm (%)	23,3
Mittelsand 0,200-0,630 mm (%)	21,6
Grobsand 0,630-2,000 mm (%)	2,1
WK max	42,1

LUFA Speyer

i.A.

Dr. Seibert

Appendix 6 Clothianidin Soil Residue Analysis

Bayer CropScience AG
BCS-D-ROCS

Result Report
E 308 3537-9

Determination of clothianidin in nine soil samples according analytical method 00540/M001

Author

[redacted]

Completion Date

2008-10-04
(yyyy-mm-dd)

Sponsor

Bayer CropScience AG
Ecotoxicology
Alfred-Nobel-Str. 50
D-40789 Monheim am Rhein
Germany

Test Facility

Bayer CropScience AG
Development - Residues, Operator and Consumer Safety
Agricultural Centre Monheim
Alfred-Nobel-Str. 50
D-40789 Monheim am Rhein
Germany

Appendix 6 (continued)

Bayer CropScience AG **Result Report**
BCS-D-ROCS **E 308 3537-9**

Analytical method

This method describes the determination of the active ingredient TI-435. Soil samples of 20 g are extracted in a microwave extractor with 50 mL of a mixture of water / acetonitrile. After extraction, parts of the samples are centrifuged to remove fine particles of the soil or sediment. Identification and quantitation of the active substance is done by high performance liquid chromatography using MS/MS detection in the Multiple Reaction Monitoring mode. Isotopically labelled internal standard (*d4-TI-435*) is used to compensate for possible matrix effects in the MS/MS-detector.
The limit of quantification (LOQ) is 5 µg/kg for TI-435 and the limit of detection (LOD) is 2 µg/kg for TI-435.

Results

Sample ID	Sample Weight fresh [g]	Result dry weight [µg/kg]
OE 3524	20	< LOD
OE 3528	20	< LOD
OE 3530	20	< LOD
OE 3532	20	< LOD
OE 3534	20	< LOD
OE 3536	20	< LOD
OE 3538	20	< LOQ [4.6]
OE 3540	20	< LOD
OE 3660	20	< LOD

Residues above the LOD of 2 µg/kg for clothianidin could be detected only in one sample at 4.6 µg/kg which is below the LOQ of 5 µg/kg.

Head of Laboratory
Bayer CropScience AG [redacted] 2013-10-14
Date: yyyy-mm-dd

Inquiries should be directed to:
[redacted]
Bayer CropScience AG
Residues, Operator and Consumer Safety
BCS-D-ROCS, Building 6610
Agricultural Centre Monheim
Alfred-Nobel-Str. 50
D-40789 Monheim am Rhein
Phone: [redacted]
Fax :
Email: [redacted]science.com

Appendix 7 Water Content Analysis of the Top Soil of Each Drilling Plot

Bayer CropScience AG Report LRT-SV-BKD 01/08
Internal Test No.: 3568 – Result Report to E308353749

Determination of the water content of different soil samples according to method SOP 3009, version 6, Bayer CropScience AG, BCS-D-EFX

Author

[redacted]

Completion Date

2008-10-15
(yyyy-mm-dd)

TESTING FACILITY

Bayer CropScience AG
Ecotoxicology
Alfred-Nobel-Str. 50
D-40789 Monheim

Appendix 7 (continued)

Materials & Method

The soil was sampled from the 0-5 cm toplayer of different fields directly before maize seed drilling. Approximately 2.5 kg soil per sample were received in sealed plastic bags, labeled and stored at room temperature in the dark. The samples were processed within one week after arrival.
To determine the water content of the soil, the soil samples were sieved down to a size of 2 mm. The water content was measured in three replicates, each consisting of 10 g sieved soil (+/- 0.02 g), which was weighed into a ceramic cup, whose tare weight was determined before the addition of soil. After a drying period of 20 minutes at the highest power level of a micro wave, the ceramic cup, including the soil, was weighed. Subsequently the sample was dried a second time for 5 minutes at the highest power level and weighed again. In case the difference between the first and the second weighing was higher than 0.05 g, this procedure was repeated until the mass loss between the drying periods was below 0.05 g (Weight $_{t}$ - Weight $_{t+5\,minutes}$ < 0.05g). If the mass loss of the sample was below 0.05 g the initial water content was calculated for each sample as follows:

Mass loss [g] / Initial soil weight * 100

The results for the water content of the soil samples are reported as single values of the replicates as well as calculated mean in %.

Appendix 7 (continued)

Results

ID No. (OE No.)	Cup No.	Moist wt. of 10 g Soil + Cup [g] (*)	1st weight after drying [g]	2nd weight after drying [g]	Water Content [%]	Water Content: Mean Value [%]
OE 3525	a	56.56	55.32	55.33	12.4	12.40
	b	56.42	55.18	55.23	12.4	
	c	55.44	54.20	54.22	12.4	
OE 3529	a	56.96	55.90	55.91	10.6	10.53
	b	55.44	54.39	54.41	10.5	
	c	56.72	55.67	55.68	10.5	
OE 3531	a	59.54	58.51	58.53	10.3	10.27
	b	56.06	55.04	55.06	10.2	
	c	60.80	59.77	59.79	10.3	
OE 3533	a	57.08	56.36	56.39	10.2	10.10
	b	60.41	59.40	59.42	10.1	
	c	56.78	55.78	55.79	10.0	
OE 3535	a	57.12	56.10	56.12	10.2	10.17
	b	59.38	58.36	58.38	10.2	
	c	57.35	56.34	56.36	10.1	
OE 3537	a	62.10	61.08	61.09	10.1	10.13
	b	56.11	55.10	55.10	10.1	
	c	57.31	56.30	56.30	10.2	
OE 3539	a	59.42	58.48	58.49	9.4	9.43
	b	58.90	57.96	57.97	9.4	
	c	57.97	57.06	57.03	9.5	
OE 3541	a	60.11	59.25	59.26	8.6	8.57
	b	62.84	61.98	61.98	8.6	
	c	60.18	59.33	59.33	8.5	
OE 3559	a	56.85	55.94	55.95	9.1	9.03
	b	57.37	56.47	56.48	9.0	
	c	58.06	57.16	57.12	9.0	

(*) The originally weighted-in quantity of the soil samples took place with an accuracy of ± 0.02 g

[redacted]

Date: 2008-10-15

Head of Laboratory for Soil Organisms
BCS-D-Ecotoxicology
BayerCropScience AG

Appendix 8 Dust Abrasion of Treated Seeds and Loose Dust in Seed Bags

Bayer CropScience

STUDY TITLE

Laboratory study to investigate the dust abrasion, volatile dust and loose dust in bags of Poncho Pro & Mesurol treated corn seed used for a field dust drift study

TEST ITEMS

Poncho 600 FS
Spec. No.: 102000007886
Mat. No.: 05669669

Mesurol 500 FS
Spec. No.: 102000007167
Mat. No.: 04411935

STUDY DIRECTOR

[redacted]

STUDY COMPLETION DATE

2008-10-16

TESTING FACILITY

Bayer CropScience AG
Portfolio Management
Seed Treatment
D-40789 Monheim
Germany

STUDY NUMBER

Bayer CropScience Study No. HSF2008PonchoPro&Mesurol004

Appendix 8 (continued)

This page is intentionally left blank for the purpose of submitting administrative information that is required by regulations promulgated by various countries.

Appendix 8 (continued)

Bayer CropScience AG Study No. HSF2008PonchoPro&Mesurol004

Certification of Authenticity

Study Director [redacted] Date: 16.10.2008

Ownership Statement

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Appendix 8 (continued)

Laboratory study to investigate the dust abrasion, volatile dust and loose dust in bags of Poncho Pro & Mesurol treated corn seed used for a field dust drift study

1. Introduction

Various laboratory experiments were conducted in August 2008 to investigate dust abrasion and volatile dust of Poncho Pro & Mesurol treated corn seed used in a drift study. In addition, the quantity of loose dust present in seed bags was determined.

2. Conclusion

The results show a significantly different seed treatment quality between the two seed lots used in a dust drift study (E 308 3537-9). The average amount of abraded dust (Heubach dust abrasion test) varied between 0.12 g/100,000 kernel for the KWS seeds and 1.15 g/100,000 kernel for the STAC seeds. Similarly, the average quantities of volatile dust (Ceres dust test) were 0.44 g/100 kg for the KWS seeds and 1.00 g/100 kg for the STAC seeds. Analysis of the different particle size fractions of loose dust in seed bags (1 seed bag = 1 Unit = 50,000 kernel) showed that the quantities of loose dust in the > 0.5 and > 2.5 mm fractions were similar in both seed lots while the amount of fine dust (< 0.5 mm) was significantly higher for the STAC seeds (0.79 g/Unit) as compared to the KWS seeds (0.38 g/Unit)

3. Test Materials

Test Items:	Poncho FS 600 (a.i. clothianidin)
Spec. No.:	102000007886
Mat. No.:	05669669
Test Items:	Mesurol FS 500 (a.i. methiocarb)
Spec. No.:	102000007167
Mat. No.:	04411935

Seed materials: "KWS seed", variety Marcello, TKG 305 g, commercial seeds purchased from KWS Saat AG, Grimsehlstr. 31, D-37555 Einbeck, Germany, Reg.No.: D/KA 7.9316.388

"STAC seed", variety Amadeo, TKG 293 g, specifically prepared by the Bayer CropScience Seed Treatment Application Centre for the purpose of the dust drift study (no filmcoating was used in order to generate a "moderate" seed treatment quality).

Appendix 8 (continued)

4. Experimental

The laboratory tests were conducted in August 2008 to investigate the dust abrasion (Heubach dust abrasion test), volatile dust (Ceres dust test) and loose dust fractions in seed bags of two different seed lots used for a field dust drift study. The Marcello corn variety was commercially treated by KWS and delivered to the Bayer CropScience Seed Treatment Application Centre via road transport (lorry), packed on Euro-pallets.

4.1. Seed treatment of "STAC seed" ("moderate seed treatment quality")

Corn seed (Amadeo variety) was treated with Poncho® Pro (nominally 1.25 mg clothianidin a.i./kernel) & Mesurol (nominally 0.75 mg methiocarb a.i./kernel) without addition of any adhesive/film coating. The treatment included an application of the fungicide TMTD (thiram) at a rate of 300 g a.i./100 kg. Seed treatment was performed with a Rotogard batch treater.

4.2 Preparation of "STAC seed" for drift study and dust-analytical purposes

In order to generate a certain level of dustiness in the STAC seed lot, simulating handling comparable to commercial seed, e.g. palletizing of seed bags, transport etc. the treated seed was bagged in units of 50,000 kernels. Afterwards seed bags were palletized. After storage of the Euro-pallets at ambient conditions for 10 days in order to let the seed coat to dry-up, the Euro-pallets with the STC seed bags were loaded onto a truck-trailer and driven around behind a tractor for 16 km on normal roads and field paths to simulate mechanical stress of treated seed during transport. After transport, the Euro-pallets were dismantled and each seed bag was turned-over on solid ground by letting it fall for 5 times in sequence from a vertical to a horizontal position. This procedure, aimed to distribute the dust and any transport-related seed treatment abrasion homogeneously within the bag before the seed hoppers of the sowing machines used in the dust drift study E 308 3537-9 were filled. The STAC seed used for the investigation of dust abrasion, volatile dust and loose dust received the identical mechanical stress/treatment than those STAC seed used in the dust drift study.

4.3 Seed conditioning

Prior to laboratory analyses (Heubach dust abrasion test and Ceres dust test) a sub-sample of the treated seed was conditioned for a minimum of 48 hours in a constant climate chamber at 20 °C and 50% RH.

4.4 Laboratory test (Heubach dust abrasion test)

Samples of 100 grams of pre-conditioned seed (20 °C, 50% RH) were weighed (±1/100 g) and filled into the drum of the Heubach dustmeter equipment. For each treatment 3 replications were performed. After a glass fiber filter disc (Whatman GF92) was placed into the filter holding unit the same was weighed (± 0.1 mg). After fitting the filter unit the rotation cycle was started. The following settings were used:

Rotation speed: 30 rpm;

Appendix 8 (continued)

Air flow: 20 ltr./min.

Rotation time: 2 min.

After finishing the cycle the filter unit was disconnected and weighed (± 0.1 mg). The difference in weight constitutes the amount of fine dust collected on the filter. The dust values were calculated in g/100,000 kernel. After each measurement (replication) all parts of the instrument were cleaned.

Note: The above described method can be only used for relative comparison between treatments as the absolute quantities of dust will depend on method parameters, i.e. rotation time, rotation speed and air-flow.

4.5. Laboratory test (CERES volatile dust test)

Samples of 2 x 250 grams of pre-conditioned seed (20 °C, 50% RH) per treatment were weighed (±1/100 g) and filled into a beaker. A filter disc (AAWP 03700) is placed into the filter holding unit (Millipore, Filt-Air Q50). The unit with the filter disc was precisely weighed (± 0.1 mg). After fitting the filter unit to the dustmeter equipment (see appendix) the vacuum pump (15 l/min. airflow) was started and the pre-weighed seed poured into the tube of the equipment. After 5 min. of air suction the filter holding unit was disconnected and weighed again (± 0.1 mg). The difference in weight constitutes the amount of fine dust collected on the filter. The dust values were calculated in g/100 kg seed. After each measurement (replication) all parts of the instrument were cleaned. For each treatment 2 replications were performed.

4.6. Laboratory test (Determination of loose dust in seed bags)

For each sowing equipment tested during the dust drift study E 308 3537-9 one seed bag of the STAC seed was removed from the STAC seed lot for dust-analytical purposes. Thus, regarding STAC seed, a total of 9 bags (replications) were analyzed. Since only the reference machine in the dust drift study E 308 3537-9 was tested with KWS seed, deliberately 5 bags (replications) in total were randomly selected to be used for dust-analytical purposes.

Each bag was opened at the top and the seed was carefully poured in small quantities at a time onto a square sized (50x50 cm) metal screen (square openings of 5x5 mm), placed on top of plastic tray. The screen with the seed was shaken once in order for the loose dust particles to fall through the screen. This procedure was repeated until the whole seed bag had been emptied and all loose dust particles removed from the bag and collected in the plastic tray. The collected dust was quantitatively transferred from the plastic tray into a PE-bottle and the total amount of dust was weighed.

Afterwards the dust was transferred onto a sieving cascade consisting of a 2.5 mm and 0.5 mm sieve placed on a closed metal pan. After the sieve assembly was vibrated for 20 seconds the weight of the different size fractions was determined.

Appendix 8 (continued)

5. Results

Figure 1 and table 1 show the amounts of abraded dust (Heubach dust abrasion test). The average amounts were 0.12 and 1.15 g/100,000 kernel seed for the KWS and STAC seed, respectively.

The average amounts of volatile dust (Ceres dust test) were 0.44 for the KWS seed and 1.00 g/100 kg for the STAC seed (Fig. 2 and table 1).

Analysis of the different particle size fractions of loose dust in seed bags showed that the quantities of dust in the > 0.5 and > 2.5 mm fractions were similar in both seed lots while the average amount of fine dust (< 0.5 mm) was significantly higher in the STAC seed (0.79 g/50,000 kernel) as compared to the KWS seed (0.38 g/50,000 kernel) (Fig. 3 and table 1).

Figures 4 and 5 depict the amounts of the different particle size fraction of the individual replications, showing a relatively homogenous distribution of the fine dust fraction (< 0.5 mm) among the replications while considerable larger variations of dust quantities in the larger fractions (> 0.5 and > 2.5 mm) were observed. Thus, for the STAC seed the standard deviations (9 replications) were 15, 39 and 43% for the fractions < 0.5, > 0.5 and > 2.5 mm, respectively. For the KWS seed the standard deviations (5 replications) were 34, 39 and 51% for the fractions < 0.5, > 0.5 and > 2.5 mm respectively.

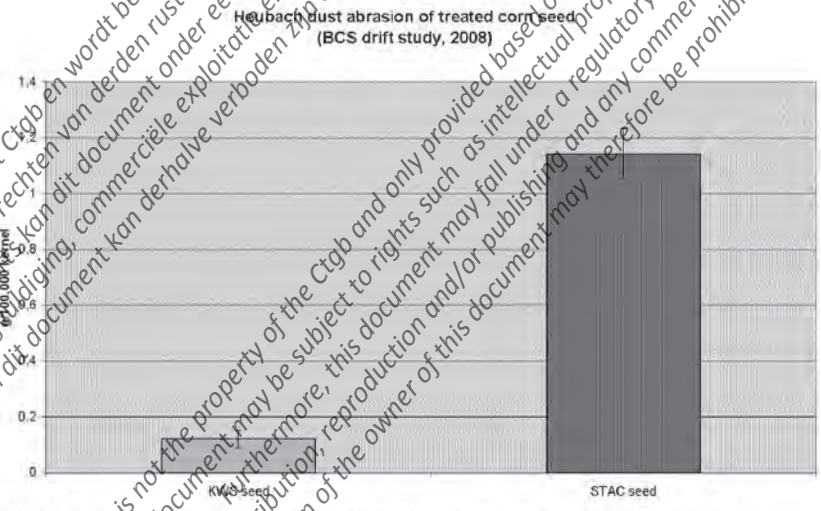

Fig. 1: Dust abrasion (Heubach filter dust) of treated corn seed, August 2008

Appendix 8 (continued)

Bayer CropScience AG Study No. HSF2008PonchoPro&Mesurol004

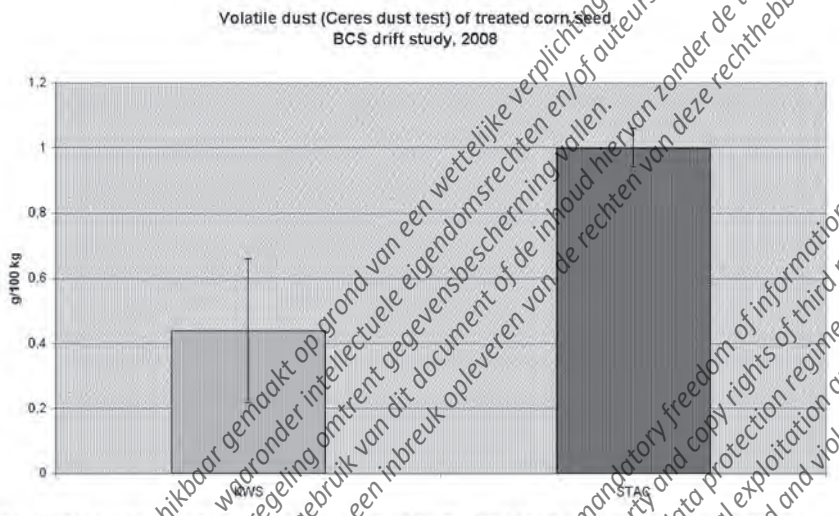

Fig. 2: Amounts of volatile dust (Ceres dust test) of treated corn seed, August 2008.

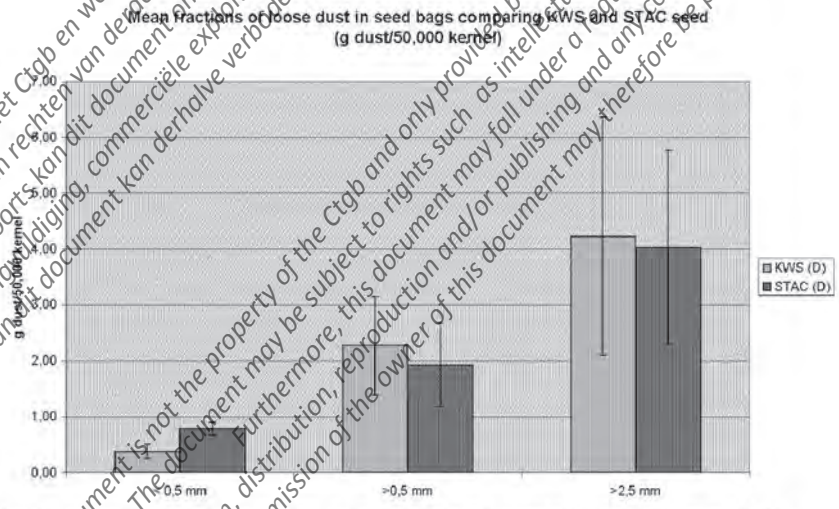

Fig. 3: Amounts of loose dust fractions in seed bags of treated corn, August 2008.

Appendix 8 (continued)

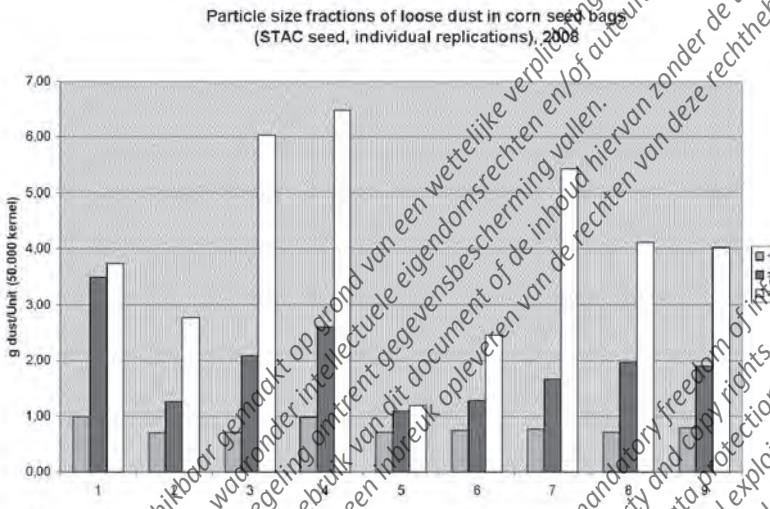

Fig. 4: Particle size fractions of loose dust in seed bags of STAC seed, August 2008

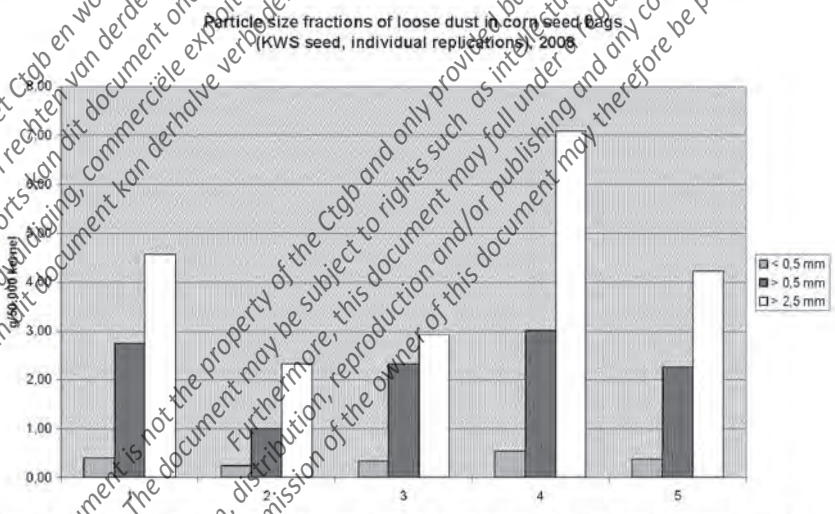

Fig. 5: Particle size fractions of loose dust in seed bags of KWS seed, August 2008.

Appendix 8 (continued)

Table 1: Average quantities of abraded dust (Heubach dust), volatile dust (Ceres dust test) and different particle size fractions of loose dust in seed bag, August 2008.

	KWS seed	STAC seed
Heubach abraded dust, g/100,000 kernel	0.12	1.15
Ceres volatile dust, g/100 kg	0.44	1.00
Loose dust in seed bag (g/50,000 kernel)		
< 0.5 mm	0.38	0.79
> 0.5 mm	2.27	1.93
> 2.5 mm	4.23	4.03
Total*	6.90	6.78

* Total dust amount was determined (weighed) prior to particle size fractionation.

Appendix 8 (continued)

6. Attachment

Bayer CropScience

Declaration of Quality Standards

GLP Test Facility: Bayer CropScience AG
Development
Formulation Technology - Analysis and Services
Gebäude 6820
Alfred-Nobel-Straße 50
40789 Monheim
Germany

The study performed with regard to the here submitted report has been performed in a certified and regularly inspected GLP-test facility.

Sponsor, Head of GLP-Testing Facility: [redacted] 2007-06-22
Date (YYYY-MM-DD)

Representative of the Study Manager(s): [redacted] 2007-06-22
Date (YYYY-MM-DD)

The GLP-test facility has been inspected and certified as working in compliance with the OECD Principles of Good Laboratory Practice by the competent authorities (Statement of GLP Compliance from June 11, 2007). Monika Hoppe, Wilfried Güldner, Friedhelm Schulz and Werner Zitzmann act as a study manager.

The GLP-test facility is inspected by the competent Quality Assurance Unit of Bayer CropScience on a regular basis. The staff is trained according GLP rules, regularly. The GLP-instrumentation is monitored to be in compliance with GLP guidelines.

Head of Quality Assurance Unit Bayer CropScience: [redacted] 2007-06-25
Date (YYYY-MM-DD)

M-275882-02-1 DART-No.: M-275882-02-1

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Appendix 9 Full Analytical Phase Report

Bayer CropScience AG
BCS-D-ROCS
D-40789 Monheim am Rhein

Study No.: E 308 3537-9
Report No.: MR-08/173

Study Title

Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines

Purpose

The purpose of the study is to quantify the ground deposition of clothianidin residues (g a.s./ha) at various distances downwind from the drilled area during and after sowing of Clothianidin FS 600 dressed maize seeds (nominally 1.25 mg a.s./per individual maize seed) out of Petri-dishes and from passive dust collectors.

Data Requirement

EU-Ref: Council Directive 91/414/EEC of July 15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8
Residues in or on Treated Products, Food and Feed
Re-Registration: SANCO/3029/99 Rev. 4, 2000-07-11

Author

[redacted]

Report Completion Date

2008-09-26
Date: yyyy-mm-dd

Analytical Test Facility

Bayer CropScience AG
Development - Residues, Operator and Consumer Safety
BCS-D-ROCS
Alfred-Nobel-Str. 50
D-40789 Monheim am Rhein

Laboratory Project ID

P672084720

Lynx ID: EBTIL040

Appendix 9 (continued)

Data Confidentiality Statement

This page is intentionally left blank for the purpose of submitting administrative information that is required by regulations promulgated by various countries.

Appendix 9 (continued)

Good Laboratory Practice

Study Number	E 308 3537-9
Test Item	Clothianidin
Study Director	[redacted]
PI Analysis	
Test Facility	Bayer CropScience AG, BCS-D-ROCS
Study Title	Drift deposition pattern of seed treatment particles abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines

This analytical study was conducted in compliance with the Principles of Good Laboratory Practice (Chemikaliengesetz, dated 2002-06-20, current version of Annex 1: OECD Principles of Good Laboratory Practice (GLP), dated 1997-11-26; ENV/MC(97) 186/Final]).
The test facility was inspected and certified as working in compliance with the principles of Good Laboratory Practice by the competent authority "Aktenzeichen II A5-31.11.91.02" dated August 31, 2007", see Appendix 2).

PI Analysis Bayer CropScience AG	[redacted]	2008-09-26 Date: yyyy-mm-dd
Head of Analytical Test Facility	[redacted]	2008-09-29 Date: yyyy-mm-dd

If not otherwise stated, in this report the **date format yyyy-mm-dd** is used.

Appendix 9 (continued)

Bayer CropScience AG
BCS-D-ROCS

Study No. E 308 3537-9
Report.: MR-08/73

Certification of Authenticity

PI Analysis and Head of Laboratory, Bayer CropScience AG [redacted]
Date: yyyy-mm-dd

Head of Analytical Test Facility [redacted]
2008-09-29
Date: yyyy-mm-dd

Inquiries should be directed to:

[redacted]
Bayer CropScience AG
Alfred-Nobel-Str. 50
BCS-D-ROCS
Building 6610
D-40789 Monheim am Rhein
Phone: [redacted]
Fax:
E-mail: [redacted]science.com

Appendix 9 (continued)

Report No E-308-3537-9
Page
Print Date: 26 SEP 2008

Quality Assurance (GLP)

Quality Assurance Statement

Title: **Drift deposition pattern of seed treatment particels abraded from Clothianidin FS 600 dressed maize seeds and emitted by different modified and un-modified pneumatic and mechanical sowing machines**

Study: E-308-3537-9

This study was inspected and the final report audited by the Quality Assurance Unit. Records of these inspections/audits were submitted to the study director and test facility management as shown below.
As far as can be ascertained following our SOPs, the reported results accurately reflect the original raw data of the study.

Phase of Study	Inspection	Report
Study plan	22 AUG 2008	
Analytics / Determination	03 SEP 2008	03 SEP 2008
Draft report	25 SEP 2008	25 SEP 2008
Final report	26 SEP 2008	

[redacted]
GLP Quality Assurance

Appendix 9 (continued)

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Appendix 9 (continued)

1 Summary

The purpose of the study was to quantify the ground deposition of clothianidin residues [g a.s./ha] at various distances downwind from the drilled area during and after sowing of Clothianidin FS 600 dressed maize seeds (nominally 1.25 mg a.s./per individual maize seed) in acetonitrile/water and glycerol/water solutions out of Petri-dishes and from passive dust collectors and pipe cleaners.

The field part of this study (collecting of the solvent of the Petri-dishes, and the passive dust collectors and pipe cleaners) as well as the transport of the samples to the laboratory of R. Schoening was not conducted under GLP. Therefore nothing will be documented in the RAW data of this GLP part. This will be part of the final report.

All clothianidin-containing dust and abrasion particles which deposited at 1, 3, 5, 10, 20, 30 and 50 meters distance from the drilling area were sampled in polystyrene Petri-dishes (Ø 13.7 cm, 147.41 cm²) filled with an acetonitrile/water mixture (2/8, v/v). For each sampling distance 3 arrays of 10 Petri-dishes each were installed with a distance of 1 meter between the dishes. Accordingly, a total of 30 samples were yielded for each sampling distance.

After the drilling was completed, an additional waiting period of 15 minutes was employed to allow those dust particles which had not yet been deposited to settle on the sampling area. Thereafter, the acetonitrile/water mixture of each Petri-dish was quantitatively transferred into a 250 mL polyethylene flask by means of a polyethylene funnel. Both, the Petri-dish and the funnel were rinsed with acetonitrile/water (2/8, v/v) and the rinse was combined with the content of the respective Petri-dish inside the 250 mL polyethylene flask before being tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 meter distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with machine ID-code ("Machine 1 to 9", see table "Pneumatic and mechanical drilling equipment used for maize drilling"), the number of the respective series (A, B or C), the distance from the drilling area (1, 3, 5, 10, 20, 30 or 50 m) and the number of the respective Petri-dish per distance (1-10), giving in total 210 flasks.

Appendix 9 (continued)

1 Summary (contd)

Pneumatic and mechanical drilling equipment used for maize drilling

Machine No.	Producer	Type (Number of rows)	Exhaust Air Management Principle	Tested with following seed quality
1	Monosem	PNU (4)	Exhaust-air is ejected from one single outlet in an angel of = 45° upwards directly from the fan (= no modified exhaust air management)	'WS seeds – 'top quality'
2	Monosem	PNU (4)	Exhaust-air is ejected from one single outlet, in an angel of = 45° upwards directly from the fan (= no modified exhaust air management)	STAC seeds – 'moderate quality'
3	Gaspardo	MTE 300 BB-XL (6)	Exhaust-air is converted into 6 fertilizing disks for fertilizer transportation purposes	STAC seeds – 'moderate quality'
4	Amazone	ED 602 K (8)	Exhaust-air is introduced into a ground cushion	STAC seeds – 'moderate quality'
5	Danagri (Becker)	Aeromat M 8-HKP DTE (8)	Maize seed separation via positive pressure, resulting exhaust air released into drilling disks	STAC seeds – 'moderate quality'
6	Kverneland	Optima HD e-drive DS-L-T (8)	Exhaust-air is diverted into 5 fertilizing disks for fertilizer transportation purposes	STAC seeds – 'moderate quality'
7	Horsch	Maestro 8 CC (8)	Mechanical seed separation without any air assistance	STAC seeds – 'moderate quality'
8	Amazone	ED 602 K (8)	Exhaust-air is introduced into an expansion chamber close to ground	STAC seeds – 'moderate quality'
9	Monosem	NG Plus (8)	Exhaust-air is diverted into 6 fertilizing disks for fertilizer transportation purposes	STAC seeds – 'moderate quality'

In all series (A, B and C) at 5 and 30 m distance from the zero-line, respectively, passive dust-drift collectors made of polypropylene have been installed at 1 m, 2 m, 3 m, 4 m and 5 m above the soil surface. At each end of a horizontal pole in the respective height, one passive collector has been installed, giving in total 6 passive collectors per height per distance. Once the 30 m - line and later on the 5 m - line has been reached during the sampling process of the Petri-dishes (filled with acetonitrile/water. 2/8. v/v; see above), the passive dust collectors were sampled and placed into plastic containers which were immediately sealed and labelled in the field. Additionally to the passive dust collectors from machine 9, pipe cleaners were installed directly next to each of the passive dust collectors. In the laboratory, each individual passive dust collector or pipe cleaner has been extracted with an appropriate volume of acetonitrile/water (2/8. v/v) within an ultrasonic bath to enhance the extraction process.

After sampling of all 210 Petri-dishes (filled with acetonitrile/water. 2/8. v/v), all 60 passive dust collectors per machine and the additional 60 pipe cleaners for machine 9 was completed, new Petri-dishes were disposed in all three series (A, B. C) at the 1 m, 5 m and 50 m distance from the 'zero-line' giving per machine another 90 Petri-dishes. This second installation of Petri-dishes was filled with about 100 mL of a glycerol/water mixture (1/1. v/v) and was exposed (lids open) for a period of 24 h in order to quantify the amount of clothianidin which may enter the Petri-dishes via secondary drift processes.

Appendix 9 (continued)

1 Summary (contd)

After 24 h. the content of each Petri-dish was quantitatively transferred into 250 mL polyethylene flask by means of a polyethylene funnel. Both the Petri-dish and the funnel were rinsed with water and the rinse was combined with the content of the respective Petri-dish inside the 250 mL polyethylene flask before being tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 meter distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with machine ID-code ("Machine 1 to 9"), the number of the respective series (A, B or C), the distance from the drilling area (1, 5 or 50 m) and the number of the respective Petri-dish per distance (1-10), giving in total 90 flasks.

At each day of drilling/sampling all 210 polyethylene flasks (acetonitrile/water, 2/8, v/v) together with all 60 passive dust collectors (plus 60 pipe cleaners for machine 9) were transported by car to the laboratory of Ralf Schoening at Bayer CropScience AG's Institute for Residues, Operator and Consumer Safety (BCS-D-ROCS). The following day, the 90 polyethylene flasks (glycerol/water, 1/1, v/v) were also transported by car to the laboratory of Ralf Schoening (BCS-D-ROCS). The samples were stored at room temperature in the laboratories of R. Schoening until analysis. During the following two weeks after arrival all samples were analysed for their clothianidin content as described below according to method 00554/M08.

To the content of the 250 mL polyethylene bottles 20 µL of a 5.0 mg/L Ti 435-d3 internal standard solution was added to each of the samples and shaked well. 1 mL of the content of the well mixed 250 mL polyethylene bottles were transferred into a HPLC vial and subjected to the LC-MS/MS procedure. For the analysis of the passive dust collectors 100 mL of acetonitrile/water (2/8, v/v) and 20 µL of a 5.0 mg/L Ti 435-d3 internal standard solution was added to each plastic container. The samples were placed in an ultrasonic bath and an aliquot of 1 mL was transferred into a HPLC vial and subjected to the LC-MS/MS procedure. For the analysis of the pipe cleaners 20 mL of acetonitrile/water (2/8, v/v) and 20 µL of a 5.0 mg/L Ti 435-d3 internal standard solution was added to each of the 250 mL polyethylene bottles and shaked well. 1 mL of the content of the well mixed 250 mL polyethylene bottles were transferred into a HPLC vial and subjected to the LC-MS/MS procedure.

The Limit of Quantitation (LOQ) for clothianidin, defined as the lowest validated fortification level, was 0.020 µg a.s./Petri-dish or 0.014 g a.s./ha and 0.020 µg a.s./passive dust collector and 0.002 µg/pipe cleaner. The LOD was estimated from the linearity data and from the control samples and was 0.006 µg a.s./Petri-dish or 0.004 g a.s./ha and 0.006 µg a.s./passive dust collector and 0.0006 µg/pipe cleaner.

The individual recovery values for clothianidin ranged from 67 to 110% with mean recoveries of 99% (dust abrasion samples), from 101% (passive dust collectors) and from 99% (pipe cleaners) and relative standard deviations (RSD's) of 3.2% (dust abrasion samples, n = 36) and 3.9% (passive dust collectors, n = 36) and 6.8% (pipe cleaners, n = 4). All results of the method validation were in accordance with the general requirements for residue analytical methods, therefore the method was validated successfully.

Appendix 9 (continued)

1 Summary (contd)

Overview about the residue concentration of clothianidin in the analysed acetonitrile/water solutions from the Petri-dishes, the analysed glycerol/water solutions from the Petri-dishes, 24 h secondary drift and the analysed acetonitrile/water solutions from the passive dust collectors and pipe cleaners.

Machine No.		Acetonitrile/water solutions Petri-dishes [g a.s./ha] 1 to 50 m	Glycerol/water solutions Petri-dishes 24 h secondary drift [g a.s./ha] 2.5 and 50 m	Acetonitrile/water solutions Passive dust collectors [µg a.s./Pas. Sampler] 5 and 30 m	Acetonitrile/water solutions Pipe cleaner [µg a.s./Pipe Cleaner] 5 and 30 m
1	min:	<LOQ	<LOD	<LOD	-
	max:	1.220	0.255	2.145	-
2	min:	0.198	<LOD	<LOD	-
	max:	20.674	0.182	7.919	-
3	min:	<LOQ	<LOD	<LOD	-
	max:	0.341	<LOD	1.207	-
4	min:	<LOQ	<LOD	<LOD	-
	max:	0.229	0.021	0.905	-
5	min:	<LOQ	<LOD	<LOD	-
	max:	0.907	0.025	1.207	-
6	min:	<LOQ	<LOD	<LOD	-
	max:	0.350	<LOQ	0.960	-
7	min:	<LOQ	<LOD	<LOD	-
	max:	0.480	<LOD	0.673	-
8	min:	0.017	<LOD	<LOD	-
	max:	0.263	<LOQ	0.273	-
	min:	<LOQ	<LOD	<LOD	0.008
	max:	0.343	0.851	0.751	0.077

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish 147.91 cm²
LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector
LOQ = 0.002 µg a.s./Pipe Cleaner; LOD = 0.0006 µg a.s./Pipe Cleaner

For detail information see Table 6 to Table 33.

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Appendix 9 (continued)

2 Organisation and Staff

2.1 Organisation of Project

Study Director	[redacted] Bayer CropScience AG BCS-D-ETX Alfred-Nobel-Str. 50 D-40789 Monheim am Rhein
PI Analysis and Head of Laboratory	[redacted] Bayer CropScience AG BCS-D-ROCS Alfred-Nobel-Str. 50 D-40789 Monheim am Rhein
Analytical Test Facility	Bayer CropScience AG BCS-D-ROCS Alfred-Nobel-Str. 50 D-40789 Monheim am Rhein
Head of Analytical Test Facility	[redacted] Bayer CropScience AG BCS-D-ROCS Alfred-Nobel-Str. 50 D-40789 Monheim am Rhein

2.2 Responsible Personnel for Residue Analysis

PI Analysis and Head of Laboratory	[redacted] Bayer CropScience AG BCS-D-ROCS D-40789 Monheim am Rhein
Technicians	[redacted] Bayer CropScience AG BCS-D-ROCS D-40789 Monheim am Rhein

Appendix 9 (continued)

2.3 Archiving

All raw data pertaining to this study and the original final report are stored in the central GLP archive of Bayer CropScience AG, Alfred-Nobel-Str. 50, D-40789 Monheim am Rhein for as long as required by GLP principles.

Retain samples of the reference items are stored in the archives of Bayer CropScience AG, Product Technology-Analytics Frankfurt, Industriepark Höchst, D-65926 Frankfurt. The reference items are stored as long as their quality still guarantees an evaluation.

2.4 Quality Assurance Unit

Bayer CropScience AG
BCS-D-GLP/QA
Agricultural Centre Monheim
Alfred-Nobel-Str. 50
D-40789 Monheim am Rhein

2.5 Schedule

Start of Experimental Phase (First sample preparation)	2008-08-22
End of Experimental Phase (Last printout of a chromatogram)	2008-09-24 Date: yyyy-mm-dd

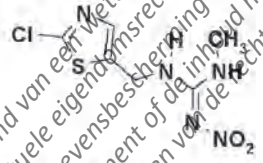
3 Introduction and Purpose of the Study

The purpose of the study was to quantify the ground deposition of clothianidin residues [g a.s./ha] at various distances downwind from the drilled area during and after sowing of Clothianidin FS 600 dressed maize seeds (nominally 1.25 mg a.s./per individual maize seed) in acetonitrile/water and glycerol/water solutions out of Petri-dishes and from passive dust collectors and pipe cleaners.

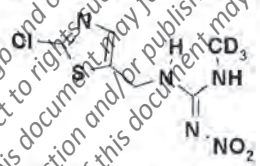
Appendix 9 (continued)

4 Compounds

4.1 Reference Item

- Name of the Compound	**Clothianidin (TI 435)**
- Certificate of Analysis	AZ13320, dated 2005-04-18
- Mol-ID	114
- Structure	
- Chemical Name of the Compound	(E)-1-(2-chloro-1,3-thiazol-5-ylmethyl)-3-methyl-2-nitroguanidine
- Product Code	AE1283742 00 1B99 0001
- Empirical Formula	$C_6H_8ClN_5O_2S$
- Molar Mass	249.68 g/mol
- Purity	99.4%
- Expiry Date	2009-04-10
- Batch No.	KTS10061-1-1

4.2 Internal standard

- Name of the Compound	**d_3-Clothianidin (d_3-TI 435)**
- Certificate of Analysis	M28418, dated 2002-12-02
- Structure	
- Empirical Formula	$C_6H_5ClD_3N_5O_2S$
- Molar Mass	252.7 g/mol
- Purity	99.9%

Appendix 9 (continued)

5 Sample Material and Sample Preparation

At each day of drilling/sampling, all 210 polyethylene flasks (acetonitrile/water, 2/8, v/v) together with all 60 passive dust collectors (plus 60 pipe cleaners for machine 9) were transported by car to the laboratory of Ralf Schoening at Bayer CropScience AG's Institute for Residues, Operator and Consumer Safety (BCS-D-ROCS). The following day, the 90 polyethylene flasks (glycerol/water, 1/1, v/v) were also transported by car to the laboratory of Ralf Schoening (BCS-D-ROCS). The samples were stored at room temperature in the laboratories of R. Schoening until analysis. During the following two weeks after arrival all samples were analysed for their clothianidin content as described below according to method 00554/M001.

6 Residue Analyses

6.1 Analytical Method

Note: The field part of this study (collecting of the solvent of the Petri-dishes, and the passive dust collectors) as well as the transport of the samples to the laboratory of R. Schoening was not conducted under GLP. Therefore nothing will be documented in the RAW data of this GLP part. This will be part of the final report.

6.1.1 Petri-dishes or Contend of the Polyethylene Flasks

1. Add 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard solution to each of the samples and shake the samples well.
2. Transfer 1 mL of the content of the well mixed 250 mL polyethylene flasks into a HPLC vial and subjected to the LC-MS/MS procedure.

6.1.2 Passive Dust Collectors

1. Add 100 mL of acetonitrile/water (2/8, v/v) and 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard to each of the passive dust collectors placed in a plastic container and put the containers for approx 5 min. into an ultra sonic bath.
2. Transfer 1 mL of the content of the well mixed plastic container into a HPLC vial and subjected to the LC-MS/MS procedure.

6.1.3 Pipe Cleaners

1. Add 20 mL of acetonitrile/water (2/8, v/v) and 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard to each of the pipe cleaners placed in 250 mL polyethylene flasks and put the flasks for approx 5 min. into an ultra sonic bath and shake well.
2. Transfer 1 mL of the content of the well mixed polyethylene flasks into a HPLC vial and subjected to the LC-MS/MS procedure.

Appendix 9 (continued)

6.1.4 Liquid chromatography and MS/MS-Determination

An aliquot of the solution from step 2 is injected into the high performance liquid chromatograph, chromatographed under gradient reversed phase conditions and detected by Tandem Mass Spectrometry with electrospray ionization.

6.1.5 HPLC Conditions

Example for HPLC conditions for the determination of clothianidin.

Instrument:	Agilent 1100
Injector:	HTS PAL, CTC Analytics
Column:	Phenomenex, Luna C18 (2), 150 x 4.6 mm, 5 µm
Injection Volume:	25 µL
Oven temperature:	50° C

Solvent Bin Pump A: Water/Acetonitrile (90/10, v/v) + 0.1 mL acetic acid

Solvent Bin Pump B: Acetonitrile + 0.1 mL acetic acid

Solvent Isocratic Pump: Water/Acetonitrile (50/50, v/v) + 0.1 mL acetic acid

Time Table:

Time [min]	A [%, v/v]	B [%, v/v]
0.00	50	50
3.00	50	50

Stoptime:	3.00 min
Flow (Column):	1.25 mL/min
Flow (into MS):	1.25 mL/min
Retention times:	Clothianidin, d_3-TI 435: approx. 1.6 min

Note: Different HPLC conditions were used for the determination of clothianidin. This is only one example for the determination. All other conditions are similar and were documented in the raw data.

Appendix 9 (continued)

6.1.6 Detection

The detection by MS/MS was performed on a triple-quadrupole tandem mass spectrometer, equipped with a Turbo Ion Spray (ESI) interface operated in the positive ion mode under MRM conditions. Unit mass resolution was established and maintained in each mass resolving quad by maintaining a full width at half-maximum of approx. 0.7 DA.

Table 1: General Mass Spectrometer Operating Key Parameters*

Triple Quadrupol LC-MS/MS, e.g. API 4000 (AB MDS Sciex)			
Ionization:	Electrospray (Turbo Ion Spray) Potential: 4500 V Temperature: 650°C (Source)		
Polarity:	Positive		
Scan Type:	MRM-Mode (Multiple Reaction Monitoring Mode)		
Resolution:	Q1: Unit, Q3: Low (Unit denotes 0.6 - 0.8 amu full width at half maximum FWHM)		
Software:	Analyst 1.4.1 application software in under Windows XP		
Gas Settings*:	Nebulization Gas (Gas 1):	70	Nitrogen 5.0
	Turbo Gas (Gas 2):	90	Nitrogen 5.0
	Curtain Gas (CUR):	20	Nitrogen 5.0
	Collision Gas (CAD):	6	Nitrogen 5.0

Table 2: Test Item Depending Mass Spectrometer Operating Key Parameters*

Test item	Precursor Ion	Precursor Ion Q1 Mass (amu)	Product Ion Q3 Mass (amu)	Dwell Time (msec)	Collision Energy (eV)
Clothianidin 1st MRM	[M+H]+	250	169	200	19
Clothianidin 2nd MRM		250	132	200	23
D_3-TI 435		253	172	100	19

The Limit of Quantitation (LOQ) for clothianidin, defined as the lowest validated fortification level, was 0.020 µg a.s./Petri-dish or 0.014 g a.s./ha and 0.020 µg a.s./passive dust collector and 0.002 µg/pipe cleaner. The LOD was estimated from the linearity data and from the control samples and was 0.006 µg a.s./Petri-dish or 0.004 g a.s./ha and 0.006 µg a.s./passive dust collector and 0.0006 µg/pipe cleaner.

Data on method validation are given in Chapter 6.2.

Note: Different MS/MS conditions were used for the determination of clothianidin. This is only one example for the determination. All other conditions are similar and were documented in the raw data.

Appendix 9 (continued)

6.2 Method Validation

The analytical method was validated by running concurrent recoveries at the LOQ and 10-fold LOQ. Recovery experiments were done by spiking control samples with a defined amount of clothianidin. Fortification levels and recovery data are given in Table 3, Table 4 and Table 5. In deviation to SOP 1550 only one recovery set (control, 2 x LOQ and 2 x 10 x LOQ) was prepared for each sample set of the Petri dishes and one recovery set for each passive dust collectors. This has no impact of the quality of the study.

Table 3: Recovery Data for **Clothianidin** Solutions from Dust Abrasion Samples

Sample Material	FL [µg-absolute]	Single Values [%]	Mean Value [%]	RSD [%]	LOQ [µg-absolute]
Dust Abrasion Samples (Petri Dishes)	0.020	99, 101, 103, 103, 95, 105, 97, 99, 105, 101, 96, 101, 94, 96, 99, 102, 96, 103	100	3.7	0.020
	0.2	100, 88, 96, 96, 98, 97, 98, 97, 97, 99, 99, 99, 95, 91, 97, 98, 101, 99	98	2.7	
	50	81, 82, 86	83	3.1	
	Overall Recovery (n = 39)		98	3.8	

FL = Fortification Level, RSD = Relative Standard Deviation, LOQ = Practical Limit of Quantification

Table 4: Recovery Data for **Clothianidin** Solutions from Passive Dust Collectors

Sample Material	FL [µg-absolute]	Single Values [%]	Mean Value [%]	RSD [%]	LOQ [µg-absolute]
Passive Dust Collectors	0.020	98, 102, 104, 104, 101, 103, 102, 104, 102, 103, 101, 101, 103, 103, 104, 102, 91, 97	99	9.7	0.020
	0.2	109, 104, 110, 109, 108, 109, 99, 98, 105, 107, 95, 94, 105, 103, 98, 98, 100, 92	102	5.6	
	25	89, 91, 92	91	1.7	
	Overall Recovery (n = 39)		100	8.1	

FL = Fortification Level, RSD = Relative Standard Deviation, LOQ = Practical Limit of Quantification

Appendix 9 (continued)

6.2 Method Validation (contd)

Table 5: Recovery Data for **Clothianidin** Solutions from Pipe Cleaners

Sample Material	FL [µg-absolute]	Single Values [%]	Mean Value [%]	RSD [%]	LOQ [µg-absolute]
Pipe Cleaner	0.002	107, 101	104	-	0.002
	0.02	97, 91	94	-	
	Overall Recovery (n = 4)		**99**	**6.8**	

FL = Fortification Level, RSD = Relative Standard Deviation, LOQ = Practical Limit of Quantification

The individual recovery values for clothianidin ranged from 67 to 110% with mean recoveries of 99% (dust abrasion samples), from 101% (passive dust collectors), and from 99% (pipe cleaners) and relative standard deviations (RSD's) of 3.2% (dust abrasion samples, n = 36) and 2.9% (passive dust collectors, n = 36) and 6.8% (pipe cleaners, n = 4). All results of the method validation were in accordance with the general requirements for residue analytical methods, therefore the method was validated successfully.

Representative chromatograms are included in Appendix 1.

Appendix 9 (continued)

6.3 Analytical Results

Table 6 to Table 14 gave an overview about the residue concentration of clothianidin in the analysed acetonitrile/water solutions from the Petri-dishes.

Table 6: Clothianidin residue (Machine 1, Monosem PNU, KWS Seed)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	0.284	0.193	0.319	0.217	0.205	0.818
1 meter-2	0.673	0.457	0.437	0.296	0.317	0.215
1 meter-3	0.415	0.281	0.298	0.203	0.260	0.176
1 meter-4	0.516	0.350	0.272	0.185	0.368	0.250
1 meter-5	0.235	0.159	0.966	0.656	0.389	0.264
1 meter-6	0.627	0.426	0.403	0.273	0.176	0.119
1 meter-7	0.423	0.287	0.578	0.392	0.346	0.235
1 meter-8	1.040	0.706	0.827	0.561	0.344	0.234
1 meter-9	0.559	0.379	0.743	0.504	1.022	0.693
1 meter-10	0.534	0.362	*	*	0.270	0.183
3 meter-1	0.132	0.090	0.339	0.230	0.261	0.177
3 meter-2	0.406	0.275	0.343	0.233	0.273	0.185
3 meter-3	0.391	0.191	0.262	0.177	0.302	0.205
3 meter-4	0.280	0.194	0.563	0.382	0.167	0.113
3 meter-5	0.642	0.435	1.799	1.220	0.175	0.119
3 meter-6	0.223	0.150	0.221	0.150	0.853	0.579
3 meter-7	0.839	0.569	0.461	0.313	0.831	0.564
3 meter-8	0.563	0.375	0.506	0.343	0.491	0.333
3 meter-9	0.692	0.470	0.320	0.353	0.220	0.150
3 meter-10	0.805	0.546	0.548	0.372	0.230	0.156
5 meter-1	0.456	0.309	0.344	0.233	0.258	0.175
5 meter-2	0.319	0.217	0.288	0.194	0.097	0.065
5 meter-3	0.466	0.316	0.718	0.487	0.230	0.156
5 meter-4	0.811	0.550	0.171	0.116	0.267	0.181
5 meter-5	0.065	0.044	0.210	0.143	0.564	0.382
5 meter-6	0.371	0.252	0.149	0.101	0.385	0.261
5 meter-7	0.409	0.277	0.360	0.244	0.250	0.169
5 meter-8	0.642	0.436	0.316	0.215	0.359	0.243
5 meter-9	0.617	0.419	0.164	0.111	0.492	0.334
5 meter-10	0.178	0.121	0.328	0.222	0.295	0.200

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

* = Due to the fact that red maize fragments were found in the solution of the sample there will be no value to report.

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

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Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 6: Clothianidin residue (Machine 1, Monosem PNU, KWS Seed). (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
10 meter-1	0.199	0.135	0.475	0.322	0.107	0.073
10 meter-2	0.331	0.225	0.115	0.078	0.062	0.042
10 meter-3	0.185	0.126	0.180	0.124	0.109	0.074
10 meter-4	0.080	0.054	0.190	0.129	0.163	0.110
10 meter-5	0.058	0.039	0.235	0.160	0.149	0.101
10 meter-6	0.511	0.347	0.135	0.092	0.450	0.305
10 meter-7	0.584	0.396	0.383	0.261	0.155	0.105
10 meter-8	0.134	0.091	0.241	0.164	0.191	0.130
10 meter-9	0.453	0.307	0.296	0.201	0.128	0.087
10 meter-10	0.456	0.310	0.213	0.144	0.114	0.077
20 meter-1	0.170	0.122	0.048	0.032	0.237	0.161
20 meter-2	0.225	0.153	0.058	0.039	0.238	0.161
20 meter-3	0.107	0.072	0.120	0.081	0.223	0.152
20 meter-4	0.098	0.066	0.097	0.066	0.033	0.023
20 meter-5	0.331	0.217	0.406	0.276	0.036	0.024
20 meter-6	0.197	0.134	0.124	0.084	0.054	0.037
20 meter-7	0.245	0.167	0.120	0.082	0.097	0.066
20 meter-8	0.251	0.170	0.033	0.022	0.101	0.076
20 meter-9	0.074	0.050	0.086	0.058	0.218	0.148
20 meter-10	0.120	0.082	0.152	0.103	0.164	0.111
30 meter-1	0.066	0.045	0.071	0.048	0.300	0.204
30 meter-2	0.134	0.091	0.043	0.029	0.159	0.108
30 meter-3	0.043	0.029	0.076	0.051	0.046	0.031
30 meter-4	0.098	0.066	0.057	0.039	0.170	0.115
30 meter-5	0.060	0.041	0.270	0.183	0.085	0.058
30 meter-6	0.147	0.100	0.176	0.119	0.155	0.105
30 meter-7	0.022	0.015	0.028	0.019	0.053	0.036
30 meter-8	<LOQ	<LOQ	0.053	0.036	0.069	0.047
30 meter-9	0.073	0.049	0.062	0.042	0.041	0.028
30 meter-10	0.053	0.036	0.146	0.099	0.058	0.039

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 6: Clothianidin (Machine 1, Monosem PNU, KWS Seed) (contd)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
50 meter-1	0.033	0.022	0.173	0.117	<LOQ	<LOQ
50 meter-2	0.030	0.020	0.043	0.029	0.033	0.022
50 meter-3	0.094	0.064	0.042	0.028	0.083	0.056
50 meter-4	<LOQ	<LOQ	0.252	0.171	0.054	0.037
50 meter-5	0.027	0.019	0.026	0.018	0.031	0.021
50 meter-6	0.059	0.040	0.061	0.041	0.084	0.057
50 meter-7	<LOQ	<LOQ	0.058	0.039	0.033	0.023
50 meter-8	<LOQ	<LOQ	0.097	0.066	<LOQ	<LOQ
50 meter-9	0.098	0.066	0.036	0.024	0.124	0.084
50 meter-10	<LOQ	<LOQ	0.119	0.080	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 7: Clothianidin residue (Machine 2, Monosem PNU, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	1.956	1.327	4.053	2.749	2.957	2.006
1 meter-2	4.047	2.745	4.141	2.809	6.896	4.678
1 meter-3	2.273	1.542	6.254	4.242	3.980	2.700
1 meter-4	1.478	1.003	5.551	3.765	2.841	1.928
1 meter-5	2.054	1.393	6.305	4.392	4.019	2.726
1 meter-6	2.539	1.722	30.476	20.674	4.078	2.767
1 meter-7	9.387	6.368	10.858	7.367	5.224	3.544
1 meter-8	2.964	2.011	7.362	4.994	2.659	1.804
1 meter-9	4.068	2.759	12.137	8.234	7.607	5.161
1 meter-10	9.387	6.368	5.753	3.903	5.268	3.573
3 meter-1	2.240	1.521	4.208	2.854	3.775	1.862
3 meter-2	3.314	2.248	4.007	2.718	3.064	2.079
3 meter-3	1.405	0.953	4.591	3.114	3.027	2.053
3 meter-4	2.521	1.776	5.078	3.445	2.805	1.904
3 meter-5	2.341	1.590	4.327	2.936	2.741	1.860
3 meter-6	2.787	1.890	4.650	3.155	2.130	1.445
3 meter-7	4.192	2.844	3.259	2.211	3.855	2.615
3 meter-8	2.549	1.729	3.101	2.103	2.723	1.848
3 meter-9	2.552	1.732	3.857	2.617	2.820	1.913
3 meter-10	2.341	1.588	3.066	2.080	2.821	1.914
5 meter-1	2.461	1.670	3.723	2.254	3.734	2.533
5 meter-2	1.668	1.132	2.881	1.752	3.420	2.320
5 meter-3	2.314	1.570	3.193	2.166	3.473	2.356
5 meter-4	2.603	1.766	3.287	2.230	3.552	2.409
5 meter-5	2.989	2.028	4.397	2.983	1.433	0.972
5 meter-6	2.491	1.690	3.152	2.139	1.796	1.218
5 meter-7	2.020	1.370	3.301	2.246	3.296	2.236
5 meter-8	2.515	1.706	4.248	2.882	3.583	2.431
5 meter-9	3.238	2.197	3.030	2.056	2.910	1.974
5 meter-10	4.017	2.725	2.650	1.798	2.260	1.533

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 7: Clothianidin residue (Machine 2, Monosem PNU, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
10 meter-1	1.686	1.144	2.171	1.473	2.710	1.844
10 meter-2	1.906	1.293	2.614	1.774	1.719	1.166
10 meter-3	1.707	1.158	2.228	1.510	2.597	1.761
10 meter-4	1.249	0.847	1.380	0.614	1.988	1.349
10 meter-5	2.102	1.426	2.569	1.911	2.878	1.953
10 meter-6	1.843	1.250	2.315	1.570	3.285	2.229
10 meter-7	1.007	0.683	1.307	0.841	4.133	1.804
10 meter-8	1.333	0.905	2.239	1.519	2.605	1.767
10 meter-9	1.045	0.709	2.810	1.907	2.709	0.838
10 meter-10	1.043	0.707	0.569	1.607	2.104	1.427
20 meter-1	0.750	0.975	1.503	1.019	0.847	1.110
20 meter-2	0.792	0.537	1.763	1.196	1.564	1.040
20 meter-3	0.703	0.476	1.596	1.082	1.851	1.255
20 meter-4	0.725	0.492	1.721	1.168	1.268	0.874
20 meter-5	0.849	0.576	1.515	1.028	1.123	0.762
20 meter-6	0.871	0.591	2.448	1.661	1.192	0.809
20 meter-7	1.039	0.705	1.378	0.935	1.236	0.838
20 meter-8	1.121	0.760	1.744	1.183	1.501	1.025
20 meter-9	1.050	0.712	1.726	1.171	1.651	1.120
20 meter-10	0.829	0.562	1.588	1.077	1.300	0.882
30 meter-1	0.688	0.467	0.739	0.842	1.232	0.836
30 meter-2	0.670	0.454	1.144	0.776	0.966	0.655
30 meter-3	0.725	0.492	1.388	0.941	0.783	0.531
30 meter-4	0.843	0.572	1.174	0.797	1.100	0.746
30 meter-5	0.641	0.435	1.122	0.761	1.018	0.690
30 meter-6	0.445	0.302	0.810	0.550	0.950	0.645
30 meter-7	0.804	0.545	0.807	0.547	1.059	0.718
30 meter-8	0.662	0.449	0.808	0.548	0.891	0.604
30 meter-9	0.971	0.659	1.171	0.794	1.472	0.999
30 meter-10	1.002	0.680	0.767	0.520	1.284	0.871

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 7: Clothianidin (Machine 2, Monosem PNU, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
50 meter-1	0.404	0.274	0.629	0.427	0.690	0.469
50 meter-2	0.420	0.285	0.591	0.401	0.736	0.499
50 meter-3	0.430	0.291	0.704	0.477	1.587	1.077
50 meter-4	0.459	0.312	0.539	0.366	0.835	0.567
50 meter-5	0.292	0.198	0.532	0.361	0.686	0.466
50 meter-6	0.525	0.356	0.508	0.345	0.449	0.305
50 meter-7	0.650	0.441	0.684	0.470	0.497	0.337
50 meter-8	0.884	0.600	0.680	0.461	0.741	0.503
50 meter-9	0.502	0.341	0.801	0.544	0.539	0.365
50 meter-10	0.353	0.240	0.531	0.360	0.510	0.346

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 8: Clothianidin residue (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	0.305	0.207	0.178	0.121	0.260	0.176
1 meter-2	0.349	0.236	0.369	0.250	0.198	0.134
1 meter-3	0.323	0.219	0.180	0.122	0.149	0.101
1 meter-4	0.331	0.225	0.239	0.162	0.220	0.149
1 meter-5	0.339	0.230	0.469	0.317	0.278	0.189
1 meter-6	0.214	0.145	0.181	0.123	0.265	0.180
1 meter-7	0.381	0.258	0.292	0.201	0.198	0.135
1 meter-8	0.463	0.314	0.128	0.087	0.188	0.128
1 meter-9	0.232	0.158	0.183	0.124	0.440	0.299
1 meter-10	0.268	0.182	0.250	0.169	0.394	0.267
3 meter-1	0.194	0.132	0.371	0.251	0.152	0.103
3 meter-2	0.297	0.202	0.223	0.151	0.124	0.084
3 meter-3	0.298	0.203	0.305	0.207	0.178	0.121
3 meter-4	0.428	0.296	0.216	0.147	0.223	0.154
3 meter-5	0.228	0.161	0.134	0.091	0.281	0.191
3 meter-6	0.345	0.234	0.089	0.060	0.125	0.085
3 meter-7	0.274	0.186	0.184	0.125	0.165	0.112
3 meter-8	0.164	0.111	0.185	0.125	0.184	0.125
3 meter-9	0.220	0.149	0.503	0.341	0.218	0.148
3 meter-10	0.363	0.246	0.171	0.116	0.153	0.103
5 meter-1	0.184	0.125	0.192	0.127	0.131	0.089
5 meter-2	0.420	0.285	0.125	0.085	0.197	0.134
5 meter-3	0.264	0.179	0.140	0.096	0.237	0.161
5 meter-4	0.254	0.172	0.072	0.049	0.207	0.140
5 meter-5	0.376	0.255	0.117	0.080	0.130	0.088
5 meter-6	0.278	0.189	0.159	0.108	0.133	0.090
5 meter-7	0.152	0.103	0.160	0.108	0.280	0.190
5 meter-8	0.188	0.128	0.145	0.099	0.172	0.116
5 meter-9	0.173	0.324	0.224	0.152	0.174	0.118
5 meter-10	0.177	0.120	0.192	0.130	0.202	0.137

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 8: Clothianidin residue (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed) (contd)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.156	0.106	0.258	0.075	0.186	0.072
10 meter-2	0.133	0.090	0.123	0.083	0.121	0.082
10 meter-3	0.189	0.129	0.128	0.087	0.092	0.063
10 meter-4	0.212	0.144	0.129	0.088	0.154	0.104
10 meter-5	0.148	0.101	0.064	0.043	0.109	0.074
10 meter-6	0.173	0.118	0.181	0.123	0.160	0.109
10 meter-7	0.192	0.130	0.309	0.209	0.098	0.067
10 meter-8	0.236	0.160	0.094	0.064	0.062	0.042
10 meter-9	0.204	0.138	0.153	0.104	0.067	0.045
10 meter-10	0.230	0.156	0.163	0.110	0.160	0.108
20 meter-1	0.154	0.105	0.053	0.036	0.107	0.073
20 meter-2	0.214	0.145	0.056	0.038	0.064	0.044
20 meter-3	0.114	0.077	0.096	0.065	0.032	0.022
20 meter-4	0.131	0.089	0.242	0.164	0.081	0.055
20 meter-5	0.153	0.104	0.097	0.066	0.102	0.069
20 meter-6	0.086	0.059	0.055	0.037	0.091	0.062
20 meter-7	0.104	0.070	0.207	0.141	0.047	0.032
20 meter-8	0.131	0.089	0.099	0.067	0.105	0.071
20 meter-9	0.235	0.159	0.077	0.052	0.081	0.055
20 meter-10	0.077	0.052	0.069	0.061	0.120	0.082
30 meter-1	0.092	0.062	0.072	0.049	0.041	0.028
30 meter-2	0.061	0.041	0.091	0.061	0.030	0.020
30 meter-3	0.075	0.051	0.108	0.073	0.035	0.024
30 meter-4	0.107	0.073	0.051	0.035	0.108	0.073
30 meter-5	0.066	0.045	0.044	0.030	0.061	0.042
30 meter-6	0.154	0.105	0.048	0.032	0.097	0.066
30 meter-7	0.057	0.039	0.075	0.051	0.091	0.062
30 meter-8	0.089	0.060	0.045	0.030	0.106	0.072
30 meter-9	0.057	0.039	<LOQ	<LOQ	0.068	0.046
30 meter-10	0.062	0.042	0.143	0.097	0.061	0.041

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 8: Clothianidin (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	0.056	0.038	0.061	0.042	0.023	0.016
50 meter-2	0.048	0.032	0.081	0.056	0.039	0.026
50 meter-3	0.021	0.014	0.066	0.045	0.079	0.053
50 meter-4	0.026	0.018	0.084	0.057	0.053	0.036
50 meter-5	0.036	0.024	0.053	0.036	0.029	0.019
50 meter-6	0.033	0.022	0.133	0.090	0.035	0.024
50 meter-7	0.044	0.030	0.064	0.023	0.056	0.038
50 meter-8	0.051	0.035	0.034	0.023	0.056	0.038
50 meter-9	0.076	0.052	0.050	0.034	0.080	0.054
50 meter-10	0.115	0.078	0.064	0.044	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./ Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 9: Clothianidin residue (Machine 4, Amazone ED 602 K, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
1 meter-1	0.219	0.148	0.266	0.181	0.140	0.095
1 meter-2	0.214	0.145	0.177	0.120	0.127	0.086
1 meter-3	0.182	0.123	0.197	0.133	0.109	0.074
1 meter-4	0.259	0.175	0.210	0.142	0.177	0.120
1 meter-5	0.268	0.182	0.222	0.150	0.212	0.144
1 meter-6	0.265	0.180	0.206	0.140	0.137	0.093
1 meter-7	0.284	0.193	0.224	0.152	0.194	0.132
1 meter-8	0.332	0.225	0.251	0.170	0.152	0.103
1 meter-9	0.261	0.177	0.319	0.215	0.167	0.114
1 meter-10	0.260	0.176	0.181	0.123	0.177	0.120
3 meter-1	0.137	0.093	0.181	0.123	0.089	0.061
3 meter-2	0.097	0.066	0.290	0.196	0.177	0.120
3 meter-3	0.116	0.078	0.133	0.091	0.082	0.056
3 meter-4	0.220	0.149	0.132	0.090	0.129	0.088
3 meter-5	0.182	0.123	0.147	0.100	0.090	0.061
3 meter-6	0.169	0.115	0.165	0.112	0.123	0.083
3 meter-7	0.239	0.162	0.223	0.151	0.144	0.097
3 meter-8	0.215	0.146	0.337	0.229	0.166	0.113
3 meter-9	0.268	0.180	0.321	0.217	0.184	0.125
3 meter-10	0.257	0.174	0.127	0.086	0.213	0.145
5 meter-1	0.225	0.153	0.131	0.089	0.116	0.078
5 meter-2	0.108	0.073	0.150	0.102	0.115	0.078
5 meter-3	0.159	0.108	0.143	0.097	0.139	0.094
5 meter-4	0.165	0.112	0.163	0.110	0.134	0.091
5 meter-5	0.190	0.129	0.176	0.119	0.126	0.085
5 meter-6	0.232	0.158	0.165	0.112	0.148	0.101
5 meter-7	0.216	0.146	0.190	0.129	0.151	0.102
5 meter-8	0.198	0.134	0.217	0.147	0.212	0.144
5 meter-9	0.196	0.133	0.169	0.115	0.132	0.090
5 meter-10	0.224	0.152	0.124	0.084	0.168	0.114

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 9: Clothianidin residue (Machine 4, Amazone ED 602 K, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.164	0.111	0.119	0.081	0.085	0.058
10 meter-2	0.103	0.070	0.118	0.080	0.111	0.075
10 meter-3	0.128	0.087	0.105	0.071	0.104	0.071
10 meter-4	0.124	0.084	0.089	0.060	0.102	0.069
10 meter-5	0.148	0.101	0.109	0.074	0.089	0.060
10 meter-6	0.210	0.143	0.076	0.052	0.118	0.080
10 meter-7	0.192	0.130	0.152	0.103	0.114	0.077
10 meter-8	0.103	0.070	0.164	0.111	0.110	0.075
10 meter-9	0.157	0.107	0.093	0.063	0.101	0.068
10 meter-10	0.161	0.109	0.119	0.081	0.109	0.074
20 meter-1	0.080	0.054	0.042	0.029	0.075	0.051
20 meter-2	0.113	0.077	0.063	0.043	0.054	0.037
20 meter-3	0.114	0.077	0.067	0.046	0.167	0.113
20 meter-4	0.135	0.092	0.087	0.059	0.078	0.053
20 meter-5	0.072	0.049	0.071	0.048	0.082	0.055
20 meter-6	0.115	0.078	0.088	0.059	0.094	0.064
20 meter-7	0.113	0.076	0.122	0.083	0.093	0.063
20 meter-8	0.089	0.061	0.106	0.072	0.302	0.205
20 meter-9	0.119	0.080	0.135	0.092	0.203	0.138
20 meter-10	0.099	0.067	0.125	0.085	0.161	0.109
30 meter-1	0.084	0.057	0.023	0.016	0.085	0.058
30 meter-2	0.091	0.061	0.029	0.020	0.073	0.049
30 meter-3	0.072	0.049	0.056	0.037	0.217	0.147
30 meter-4	0.094	0.064	0.085	0.057	0.104	0.070
30 meter-5	0.095	0.065	0.063	0.043	0.097	0.066
30 meter-6	0.084	0.057	0.192	0.131	0.071	0.048
30 meter-7	0.064	0.044	0.059	0.040	0.105	0.071
30 meter-8	0.049	0.033	0.071	0.048	0.150	0.102
30 meter-9	0.068	0.046	0.081	0.055	0.106	0.072
30 meter-10	0.096	0.065	0.117	0.079	0.124	0.084

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 9: Clothianidin (Machine 4, Amazone ED 602 K, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	0.051	0.034	0.062	0.042	0.041	0.029
50 meter-2	0.048	0.032	0.095	0.065	0.037	0.025
50 meter-3	0.062	0.042	0.062	0.042	0.084	0.057
50 meter-4	0.080	0.054	0.062	0.042	0.063	0.043
50 meter-5	0.029	0.019	0.068	0.040	0.068	0.046
50 meter-6	0.047	0.032	0.058	0.039	0.055	0.038
50 meter-7	0.061	0.041	0.064	0.043	0.053	0.036
50 meter-8	<LOQ	<LOQ	0.103	0.070	0.098	0.067
50 meter-9	0.044	0.030	0.034	0.023	0.052	0.035
50 meter-10	0.031	0.021	0.044	0.030	0.058	0.039

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./ Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 10: Clothianidin residue (Machine 5, Danagri Aeromat M 8-HKP DTE, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
1 meter-1	0.255	0.173	0.153	0.004	0.211	0.143
1 meter-2	0.195	0.133	0.163	0.111	0.287	0.195
1 meter-3	0.191	0.129	0.221	0.143	0.521	0.353
1 meter-4	0.121	0.082	0.160	0.108	0.416	0.282
1 meter-5	0.168	0.114	0.196	0.133	0.064	0.043
1 meter-6	0.159	0.108	0.217	0.147	0.193	0.130
1 meter-7	0.116	0.078	0.509	0.345	0.127	0.086
1 meter-8	0.279	0.189	0.492	0.334	0.156	0.106
1 meter-9	0.191	0.130	0.091	0.062	0.134	0.091
1 meter-10	0.375	0.254	0.325	0.220	0.168	0.114
3 meter-1	0.111	0.080	0.148	0.100	0.112	0.076
3 meter-2	0.085	0.058	0.600	0.407	0.210	0.143
3 meter-3	0.150	0.096	0.256	0.173	0.096	0.065
3 meter-4	0.081	0.056	0.154	0.104	0.254	0.172
3 meter-5	0.278	0.185	0.293	0.199	0.095	0.064
3 meter-6	0.136	0.092	0.169	0.115	0.208	0.141
3 meter-7	0.042	0.032	0.169	0.114	0.147	0.100
3 meter-8	0.162	0.110	0.145	0.098	0.160	0.109
3 meter-9	0.189	0.126	0.230	0.156	0.119	0.081
3 meter-10	0.185	0.126	0.246	0.167	0.089	0.061
5 meter-1	0.080	0.054	0.360	0.244	0.204	0.139
5 meter-2	0.153	0.104	0.120	0.082	0.137	0.093
5 meter-3	0.204	0.138	0.220	0.149	0.167	0.114
5 meter-4	0.114	0.077	0.306	0.209	0.143	0.097
5 meter-5	0.102	0.069	0.150	0.103	0.196	0.133
5 meter-6	0.205	0.139	0.202	0.137	0.236	0.160
5 meter-7	0.184	0.126	0.242	0.164	0.139	0.094
5 meter-8	0.114	0.077	0.147	0.100	0.116	0.079
5 meter-9	0.058	0.039	0.291	0.198	0.163	0.111
5 meter-10	0.186	0.125	0.231	0.157	0.145	0.099

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 10: Clothianidin residue (Machine 5, Danagri Aeromat M 8-HKP DTE, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.080	0.054	0.167	0.113	0.116	0.079
10 meter-2	0.103	0.070	0.129	0.087	0.117	0.079
10 meter-3	0.115	0.078	0.096	0.065	0.303	0.205
10 meter-4	0.078	0.053	0.092	0.062	0.186	0.126
10 meter-5	0.225	0.153	0.052	0.036	0.199	0.135
10 meter-6	0.499	0.338	0.090	0.061	0.164	0.111
10 meter-7	0.089	0.060	0.323	0.219	0.107	0.073
10 meter-8	0.236	0.160	0.291	0.198	0.121	0.082
10 meter-9	0.121	0.082	0.222	0.150	0.087	0.059
10 meter-10	0.094	0.064	0.087	0.059	0.083	0.056
20 meter-1	0.080	0.054	0.083	0.056	0.084	0.057
20 meter-2	0.081	0.055	0.053	0.036	0.025	0.017
20 meter-3	0.086	0.058	0.143	0.097	0.032	0.022
20 meter-4	0.058	0.039	0.116	0.079	0.055	0.037
20 meter-5	0.052	0.035	0.111	0.075	0.083	0.057
20 meter-6	0.064	0.043	0.057	0.038	0.054	0.036
20 meter-7	0.078	0.052	0.083	0.056	0.034	0.023
20 meter-8	0.082	0.056	0.080	0.054	0.038	0.026
20 meter-9	0.069	0.047	0.050	0.034	0.149	0.101
20 meter-10	0.114	0.078	0.062	0.042	0.026	0.017
30 meter-1	0.038	0.026	0.059	0.040	0.103	0.070
30 meter-2	0.092	0.063	0.094	0.064	0.021	0.014
30 meter-3	0.056	0.038	0.059	0.040	0.153	0.104
30 meter-4	0.045	0.031	<LOQ	<LOQ	0.075	0.051
30 meter-5	0.032	0.022	0.031	0.021	0.038	0.026
30 meter-6	0.114	0.077	0.039	0.027	0.050	0.034
30 meter-7	0.022	0.015	0.048	0.033	0.030	0.021
30 meter-8	0.042	0.029	<LOQ	<LOQ	0.067	0.045
30 meter-9	0.059	0.040	0.049	0.033	0.082	0.056
30 meter-10	0.042	0.029	0.127	0.086	0.035	0.024

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 10: Clothianidin (Machine 5, Danagri Aeromat M 8-HKP DTE, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	0.030	0.020	0.026	0.018	0.041	0.030
50 meter-2	0.064	0.044	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-3	0.061	0.041	0.067	0.046	0.020	<LOQ
50 meter-4	0.023	0.015	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-5	0.054	0.036	0.020	0.014	0.029	0.020
50 meter-6	<LOQ	<LOQ	<LOQ	<LOQ	0.044	0.030
50 meter-7	<LOQ	<LOQ	<LOQ	<LOQ	<LOD	<LOD
50 meter-8	<LOQ	<LOQ	<LOQ	<LOQ	0.020	<LOQ
50 meter-9	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-10	0.053	0.036	0.068	0.046	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 11: Clothianidin residue (Machine 6, Kverneland Optima HD eDrive DS-LT, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	0.306	0.208	0.243	0.165	0.200	0.136
1 meter-2	0.208	0.141	0.237	0.161	0.110	0.074
1 meter-3	0.166	0.113	0.233	0.158	0.165	0.112
1 meter-4	0.161	0.109	0.134	0.091	0.149	0.101
1 meter-5	0.090	0.061	0.332	0.226	0.164	0.112
1 meter-6	0.125	0.085	0.195	0.132	0.203	0.138
1 meter-7	0.091	0.062	0.298	0.202	0.286	0.194
1 meter-8	0.112	0.076	0.241	0.163	0.161	0.110
1 meter-9	0.213	0.145	0.223	0.151	0.108	0.073
1 meter-10	0.159	0.108	0.087	0.059	0.180	0.122
3 meter-1	0.078	0.053	0.157	0.107	0.368	0.250
3 meter-2	0.204	0.138	0.124	0.084	0.144	0.098
3 meter-3	0.111	0.075	0.145	0.098	0.157	0.107
3 meter-4	0.150	0.102	0.083	0.056	0.118	0.080
3 meter-5	0.110	0.075	0.144	0.098	0.125	0.085
3 meter-6	0.098	0.067	0.125	0.085	0.118	0.080
3 meter-7	0.138	0.094	0.196	0.133	0.098	0.066
3 meter-8	0.129	0.088	0.095	0.064	0.072	0.049
3 meter-9	0.117	0.079	0.103	0.070	0.169	0.115
3 meter-10	0.125	0.085	0.081	0.055	0.094	0.064
5 meter-1	0.105	0.071	0.124	0.084	0.131	0.089
5 meter-2	0.151	0.102	0.123	0.084	0.090	0.061
5 meter-3	0.118	0.080	0.128	0.087	0.115	0.078
5 meter-4	0.081	0.055	0.094	0.064	0.070	0.048
5 meter-5	0.136	0.092	0.138	0.094	0.127	0.086
5 meter-6	0.086	0.058	0.140	0.095	0.099	0.067
5 meter-7	0.088	0.060	0.116	0.079	0.135	0.091
5 meter-8	0.080	0.054	0.137	0.093	0.047	0.032
5 meter-9	0.077	0.052	0.130	0.088	0.072	0.049
5 meter-10	0.103	0.070	0.170	0.116	0.070	0.047

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 11: Clothianidin residue (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
10 meter-1	0.069	0.047	0.117	0.079	0.058	0.039
10 meter-2	0.089	0.060	0.133	0.090	0.066	0.045
10 meter-3	0.106	0.072	0.110	0.074	0.045	0.031
10 meter-4	0.071	0.048	0.109	0.074	0.113	0.077
10 meter-5	0.122	0.083	0.115	0.078	0.083	0.056
10 meter-6	0.088	0.059	0.128	0.087	0.061	0.041
10 meter-7	0.063	0.043	0.138	0.093	0.080	0.054
10 meter-8	0.094	0.064	0.096	0.065	0.068	0.046
10 meter-9	0.067	0.045	0.118	0.080	0.086	0.058
10 meter-10	0.051	0.034	0.093	0.063	0.081	0.055
20 meter-1	0.045	0.031	0.080	0.054	0.039	0.026
20 meter-2	0.069	0.047	0.065	0.044	0.028	0.019
20 meter-3	0.052	0.042	0.036	0.025	0.037	0.025
20 meter-4	0.073	0.049	0.038	0.026	0.069	0.047
20 meter-5	0.075	0.051	0.078	0.053	0.061	0.041
20 meter-6	0.105	0.071	0.084	0.057	0.038	0.026
20 meter-7	0.076	0.051	0.064	0.044	0.032	0.022
20 meter-8	0.062	0.042	0.115	0.078	0.068	0.046
20 meter-9	0.047	0.032	0.064	0.045	0.041	0.028
20 meter-10	0.036	0.024	0.091	0.062	0.091	0.061
30 meter-1	0.099	0.067	0.043	0.029	0.041	0.028
30 meter-2	0.031	0.021	0.047	0.032	<LOQ	<LOQ
30 meter-3	0.027	0.018	0.047	0.032	<LOQ	<LOQ
30 meter-4	0.058	0.039	0.078	0.053	0.024	0.016
30 meter-5	0.041	0.027	<LOQ	<LOQ	0.029	0.020
30 meter-6	0.061	0.040	0.051	0.034	0.030	0.021
30 meter-7	0.039	0.022	0.034	0.023	0.035	0.024
30 meter-8	0.056	0.038	0.036	0.024	0.059	0.040
30 meter-9	0.038	0.023	0.054	0.037	0.029	0.020
30 meter-10	0.054	0.037	0.060	0.041	0.073	0.050

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 11: Clothianidin residue (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
50 meter-1	0.031	0.021	0.041	0.028	0.048	0.032
50 meter-2	0.028	0.019	0.063	0.043	0.077	0.052
50 meter-3	0.025	0.017	0.024	0.016	<LOQ	<LOQ
50 meter-4	0.032	0.022	0.048	0.033	0.020	0.014
50 meter-5	0.057	0.039	0.052	0.035	0.033	0.022
50 meter-6	0.041	0.028	0.026	0.017	0.036	0.025
50 meter-7	0.035	0.024	0.029	0.019	0.036	0.024
50 meter-8	0.034	0.023	0.023	0.015	0.050	0.034
50 meter-9	0.024	0.017	0.024	0.016	0.041	0.028
50 meter-10	0.036	0.024	0.020	<LOQ	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 12: Clothianidin residue (Machine 7, Horsch Maestro 8CC, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
1 meter-1	0.400	0.271	0.182	0.124	0.332	0.225
1 meter-2	0.628	0.426	0.237	0.161	0.292	0.198
1 meter-3	0.258	0.175	0.298	0.202	0.263	0.179
1 meter-4	0.302	0.205	0.343	0.233	0.230	0.156
1 meter-5	0.171	0.116	0.175	0.119	0.164	0.111
1 meter-6	0.150	0.102	0.349	0.237	0.250	0.169
1 meter-7	0.150	0.101	0.722	0.490	0.309	0.210
1 meter-8	0.166	0.112	0.328	0.222	0.292	0.198
1 meter-9	0.190	0.129	0.390	0.265	0.325	0.220
1 meter-10	0.274	0.186	0.382	0.259	0.363	0.246
3 meter-1	0.105	0.071	0.233	0.158	0.174	0.118
3 meter-2	0.233	0.158	0.221	0.150	0.069	0.047
3 meter-3	0.207	0.140	0.260	0.176	0.138	0.094
3 meter-4	0.172	0.117	0.202	0.137	0.186	0.014
3 meter-5	0.144	0.098	0.266	0.180	0.334	0.226
3 meter-6	0.261	0.177	0.277	0.188	0.183	0.124
3 meter-7	0.154	0.102	0.117	0.079	0.121	0.082
3 meter-8	0.150	0.102	0.158	0.107	0.132	0.089
3 meter-9	0.201	0.136	0.410	0.278	0.283	0.192
3 meter-10	0.162	0.110	0.562	0.375	0.158	0.107
5 meter-1	0.198	0.134	0.169	0.114	0.134	0.091
5 meter-2	0.144	0.098	0.291	0.198	0.081	0.055
5 meter-3	0.158	0.107	0.176	0.078	0.112	0.076
5 meter-4	0.110	0.075	0.135	0.092	0.123	0.083
5 meter-5	0.211	0.143	0.309	0.209	0.242	0.164
5 meter-6	0.194	0.131	0.299	0.203	0.183	0.124
5 meter-7	0.295	0.200	0.271	0.184	0.186	0.126
5 meter-8	0.128	0.087	0.487	0.330	0.077	0.053
5 meter-9	0.093	0.063	0.212	0.144	0.241	0.163
5 meter-10	0.100	0.070	0.239	0.162	0.342	0.232

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 12: Clothianidin residue (Machine 7, Horsch Maestro 8CC, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.251	0.170	0.100	0.068	0.084	0.057
10 meter-2	0.328	0.222	0.055	0.037	0.144	0.098
10 meter-3	0.224	0.152	0.093	0.063	0.101	0.068
10 meter-4	0.240	0.163	0.274	0.186	0.139	0.095
10 meter-5	0.089	0.060	0.138	0.093	0.137	0.093
10 meter-6	0.265	0.180	0.195	0.132	0.102	0.069
10 meter-7	0.082	0.056	0.364	0.079	0.093	0.063
10 meter-8	0.177	0.120	0.128	0.087	0.092	0.062
10 meter-9	0.060	0.041	0.129	0.087	0.068	0.046
10 meter-10	0.055	0.037	0.174	0.118	0.119	0.081
20 meter-1	0.201	0.136	0.098	0.067	0.052	0.035
20 meter-2	0.127	0.086	0.087	0.059	0.061	0.041
20 meter-3	0.087	0.059	0.108	0.074	0.093	0.063
20 meter-4	0.514	0.070	0.239	0.162	0.053	0.036
20 meter-5	0.106	0.072	0.065	0.044	0.040	0.027
20 meter-6	0.042	0.028	0.110	0.075	0.033	0.022
20 meter-7	0.032	0.022	0.328	0.223	0.149	0.101
20 meter-8	0.067	0.045	0.104	0.070	0.084	0.057
20 meter-9	0.066	0.045	0.087	0.059	0.065	0.044
20 meter-10	0.108	0.073	0.064	0.057	0.140	0.095
30 meter-1	0.029	0.020	0.070	0.047	0.080	0.054
30 meter-2	0.064	0.043	0.071	0.048	0.036	0.025
30 meter-3	0.113	0.076	0.101	0.068	0.080	0.054
30 meter-4	0.110	0.075	0.046	0.031	0.089	0.060
30 meter-5	0.086	0.058	0.086	0.058	0.099	0.067
30 meter-6	0.082	0.056	0.047	0.032	0.058	0.040
30 meter-7	0.052	0.035	0.098	0.067	0.047	0.032
30 meter-8	0.060	0.041	0.088	0.060	0.109	0.074
30 meter-9	0.029	0.020	0.081	0.055	0.053	0.036
30 meter-10	0.070	0.047	0.072	0.049	0.055	0.037

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 12: Clothianidin (Machine 7, Horsch Maestro 8CC, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	0.071	0.048	0.040	0.027	<LOQ	<LOQ
50 meter-2	0.144	0.098	0.056	0.038	0.087	0.059
50 meter-3	0.066	0.045	0.040	0.027	<LOD	<LOQ
50 meter-4	0.079	0.053	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-5	0.021	LOQ	0.015	0.015	0.057	0.039
50 meter-6	<LOQ	<LOQ	<LOQ	<LOQ	0.065	0.044
50 meter-7	0.024	0.016	0.030	0.020	0.058	0.039
50 meter-8	<LOQ	<LOQ	0.058	0.039	0.025	0.017
50 meter-9	0.039	0.026	<LOQ	<LOQ	0.054	0.036
50 meter-10	0.034	0.023	0.036	0.025	0.140	0.095

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 13: Clothianidin residue (Machine 8, Amazone ED 602 K, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
1 meter-1	0.167	0.113	0.208	0.141	0.127	0.086
1 meter-2	0.141	0.096	0.135	0.092	0.202	0.137
1 meter-3	0.117	0.079	0.237	0.161	0.076	0.052
1 meter-4	0.132	0.089	0.176	0.120	0.150	0.102
1 meter-5	0.134	0.091	0.202	0.137	0.236	0.160
1 meter-6	0.135	0.091	0.289	0.196	0.198	0.134
1 meter-7	0.181	0.123	0.184	0.025	0.240	0.163
1 meter-8	0.107	0.072	0.163	0.110	0.227	0.154
1 meter-9	0.138	0.093	0.159	0.109	0.269	0.183
1 meter-10	0.137	0.093	0.160	0.109	0.162	0.110
3 meter-1	0.147	0.100	0.119	0.081	0.111	0.075
3 meter-2	0.173	0.117	0.162	0.110	0.161	0.109
3 meter-3	0.160	0.108	0.193	0.131	0.122	0.082
3 meter-4	0.101	0.069	0.211	0.143	0.146	0.099
3 meter-5	0.113	0.077	0.148	0.100	0.118	0.080
3 meter-6	0.176	0.120	0.165	0.026	0.096	0.065
3 meter-7	0.132	0.090	0.282	0.191	0.133	0.090
3 meter-8	0.101	0.069	0.167	0.113	0.388	0.263
3 meter-9	0.147	0.100	0.163	0.110	0.159	0.108
3 meter-10	0.132	0.090	0.164	0.105	0.250	0.169
5 meter-1	0.130	0.088	0.112	0.076	0.147	0.100
5 meter-2	0.137	0.093	0.123	0.083	0.137	0.093
5 meter-3	0.108	0.073	0.166	0.112	0.062	0.042
5 meter-4	0.081	0.055	0.196	0.133	0.103	0.070
5 meter-5	0.085	0.058	0.140	0.095	0.141	0.096
5 meter-6	0.133	0.091	0.217	0.147	0.125	0.085
5 meter-7	0.104	0.070	0.167	0.113	0.161	0.109
5 meter-8	0.118	0.080	0.145	0.098	0.120	0.081
5 meter-9	0.069	0.047	0.131	0.089	0.168	0.114
5 meter-10	0.116	0.078	0.161	0.109	0.254	0.172

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 13: Clothianidin residue (Machine 8, Amazone ED 602 K, STAC Seed) (contd)

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.092	0.062	0.137	0.093	0.060	0.041
10 meter-2	0.169	0.114	0.136	0.093	0.174	0.118
10 meter-3	0.086	0.058	0.084	0.057	0.088	0.059
10 meter-4	0.065	0.044	0.106	0.072	0.104	0.071
10 meter-5	0.058	0.039	0.194	0.132	0.095	0.064
10 meter-6	0.083	0.056	0.162	0.110	0.110	0.075
10 meter-7	0.057	0.039	0.138	0.093	0.148	0.100
10 meter-8	0.102	0.069	0.129	0.088	0.117	0.079
10 meter-9	0.088	0.060	0.158	0.107	0.098	0.066
10 meter-10	0.061	0.041	0.222	0.151	0.062	0.042
20 meter-1	0.088	0.060	0.101	0.069	0.059	0.040
20 meter-2	0.047	0.032	0.047	0.032	0.059	0.040
20 meter-3	0.068	0.046	0.063	0.042	0.073	0.050
20 meter-4	0.039	0.026	0.111	0.075	0.080	0.054
20 meter-5	0.072	0.062	0.098	0.066	0.100	0.068
20 meter-6	0.134	0.091	0.102	0.069	0.080	0.054
20 meter-7	0.049	0.033	0.115	0.078	0.146	0.099
20 meter-8	0.090	0.061	0.087	0.059	0.060	0.039
20 meter-9	0.046	0.031	0.125	0.085	0.062	0.042
20 meter-10	0.059	0.040	0.099	0.067	0.093	0.063
30 meter-1	0.092	0.063	0.078	0.053	0.040	0.027
30 meter-2	0.103	0.070	0.069	0.047	0.059	0.040
30 meter-3	0.039	0.027	0.060	0.040	0.031	0.021
30 meter-4	0.052	0.035	0.073	0.049	0.041	0.028
30 meter-5	0.054	0.037	0.109	0.074	0.082	0.056
30 meter-6	0.112	0.076	0.084	0.057	0.054	0.037
30 meter-7	0.051	0.035	0.096	0.065	0.066	0.045
30 meter-8	0.039	0.027	0.080	0.054	0.053	0.036
30 meter-9	0.042	0.029	0.063	0.043	0.040	0.027
30 meter-10	0.050	0.034	0.142	0.096	0.028	0.019

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 13: Clothianidin (Machine 8, Amazone ED 602 K, STAC Seed) (contd).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	0.071	0.048	0.093	0.063	0.048	0.032
50 meter-2	0.112	0.076	0.043	0.029	0.032	0.022
50 meter-3	0.034	0.023	0.038	0.026	0.039	0.027
50 meter-4	0.035	0.024	0.076	0.052	0.066	0.045
50 meter-5	0.033	0.023	0.055	0.040	0.037	0.025
50 meter-6	0.031	0.021	0.088	0.060	0.042	0.029
50 meter-7	0.036	0.024	0.048	0.032	0.048	0.032
50 meter-8	0.044	0.030	0.063	0.043	0.026	0.018
50 meter-9	0.029	0.019	0.099	0.067	0.081	0.055
50 meter-10	0.025	0.017	0.065	0.044	0.027	0.018

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 14: Clothianidin residue (Machine 9, Monosem NG 3 Plus, Modified, STAC Seed).

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
1 meter-1	0.119	0.081	0.104	0.071	0.226	0.153
1 meter-2	0.173	0.117	0.053	0.036	0.130	0.088
1 meter-3	0.052	0.035	0.056	0.038	0.078	0.053
1 meter-4	0.143	0.097	0.090	0.061	0.096	0.065
1 meter-5	0.062	0.042	0.103	0.070	0.256	0.174
1 meter-6	0.097	0.066	0.056	0.038	0.077	0.052
1 meter-7	0.083	0.056	0.094	0.064	0.039	0.027
1 meter-8	0.084	0.057	0.060	0.041	0.070	0.047
1 meter-9	0.052	0.035	0.090	0.061	0.097	0.066
1 meter-10	0.097	0.065	0.087	0.059	0.413	0.280
3 meter-1	0.045	0.030	0.051	0.034	0.066	0.045
3 meter-2	0.059	0.040	0.041	0.028	0.138	0.094
3 meter-3	0.031	0.021	0.063	0.043	0.065	0.044
3 meter-4	0.078	0.053	0.069	0.047	0.056	0.038
3 meter-5	0.038	0.053	0.074	0.050	0.036	0.025
3 meter-6	0.065	0.044	0.022	0.015	0.084	0.057
3 meter-7	0.078	0.053	0.035	0.024	0.130	0.088
3 meter-8	0.035	0.023	0.033	0.023	0.048	0.032
3 meter-9	0.056	0.038	0.106	0.072	0.044	0.030
3 meter-10	0.058	0.040	0.122	0.083	0.091	0.061
5 meter-1	0.055	0.038	0.508	0.343	0.065	0.044
5 meter-2	0.177	0.120	0.036	0.025	0.039	0.026
5 meter-3	0.071	0.048	0.048	0.033	0.076	0.052
5 meter-4	0.052	0.035	0.090	0.061	0.051	0.035
5 meter-5	0.067	0.045	0.056	0.038	0.069	0.047
5 meter-6	0.045	0.031	0.058	0.040	0.072	0.049
5 meter-7	0.057	0.038	0.060	0.041	0.083	0.056
5 meter-8	0.028	0.019	0.062	0.042	0.088	0.060
5 meter-9	0.029	0.020	0.098	0.066	0.061	0.041
5 meter-10	0.057	0.039	0.049	0.033	0.117	0.080

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 14: Clothianidin residue (Machine 9, Monosem NG 3 Plus, Modified, STAC Seed) (contd).

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
10 meter-1	0.054	0.037	0.036	0.024	0.031	0.021
10 meter-2	0.030	0.020	0.027	0.018	0.041	0.027
10 meter-3	0.039	0.026	<LOQ	<LOQ	0.038	0.026
10 meter-4	0.037	0.025	0.148	0.100	0.021	0.014
10 meter-5	0.031	0.021	0.087	0.059	0.072	0.049
10 meter-6	<LOQ	<LOQ	0.043	0.029	0.027	0.018
10 meter-7	0.033	0.023	0.049	0.031	0.051	0.034
10 meter-8	0.134	0.091	0.065	0.044	0.044	0.030
10 meter-9	0.031	0.021	0.051	0.035	0.055	0.037
10 meter-10	0.065	0.044	0.058	0.040	0.050	0.034
20 meter-1	<LOQ	<LOQ	0.020	<LOQ	<LOQ	<LOQ
20 meter-2	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
20 meter-3	<LOQ	<LOQ	0.064	0.043	<LOQ	<LOQ
20 meter-4	<LOQ	<LOQ	0.026	0.017	<LOQ	<LOQ
20 meter-5	0.020	0.014	0.025	0.017	0.024	0.016
20 meter-6	0.029	0.020	<LOQ	<LOQ	0.028	0.019
20 meter-7	0.049	0.033	0.063	0.043	<LOQ	<LOQ
20 meter-8	0.031	0.021	<LOQ	<LOQ	<LOQ	<LOQ
20 meter-9	0.024	0.016	0.041	0.028	<LOQ	<LOQ
20 meter-10	0.025	0.017	0.033	0.023	0.023	0.015
30 meter-1	<LOQ	<LOQ	<LOQ	<LOQ	0.043	0.029
30 meter-2	<LOQ	<LOQ	0.031	0.021	<LOQ	<LOQ
30 meter-3	0.073	0.050	0.032	0.022	<LOQ	<LOQ
30 meter-4	0.027	0.018	<LOQ	<LOQ	<LOQ	<LOQ
30 meter-5	<LOQ	<LOQ	<LOQ	<LOQ	0.092	0.063
30 meter-6	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
30 meter-7	0.032	0.022	<LOQ	<LOQ	0.029	0.020
30 meter-8	<LOQ	<LOQ	0.020	0.014	0.028	0.019
30 meter-9	0.031	0.021	0.044	0.030	<LOQ	<LOQ
30 meter-10	0.027	0.018	<LOQ	<LOQ	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 14: Clothianidin residue (Machine 9, Monosem NG 3 Plus, Modified, STAC Seed) (contd).

	Single values. Series A		Single values. Series B		Single values. Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s./ Petri-dish]	[g a.s./ha]
50 meter-1	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-2	0.023	0.016	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-3	0.022	0.015	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-4	<LOQ	<LOQ	0.038	0.026	<LOQ	<LOQ
50 meter-5	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-6	<LOQ	<LOQ	0.047	0.032	<LOQ	<LOQ
50 meter-7	0.050	0.034	0.020	0.014	<LOQ	<LOQ
50 meter-8	0.021	0.014	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-9	0.024	0.017	<LOQ	<LOQ	<LOQ	<LOQ
50 meter-10	<LOQ	<LOQ	0.043	0.029	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./ Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 15 to Table 23 gave an overview about the residue concentration of clothianidin in the analysed glycerol/water solutions from the Petri-dishes, 24 h secondary drift.

Table 15: Clothianidin (Machine 1, Monosem PNU, KWS Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ
1 meter-2	0.085	0.058	<LOD	<LOD	0.145	0.099
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	0.085	0.024	<LOQ	<LOQ
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	0.093	0.033	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOQ	0.044	0.030
1 meter-8	<LOQ	<LOQ	<LOD	<LOD	<LOQ	<LOQ
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOQ
5 meter-1	<LOQ	<LOQ	0.047	0.032	<LOQ	<LOQ
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	0.031	0.014	<LOD	<LOD	<LOQ	<LOQ
5 meter-5	<LOD	<LOD	0.376	0.255	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOQ	<LOQ	0.069	0.047
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	0.024	0.017
5 meter-9	0.079	0.053	0.065	0.044	<LOQ	<LOQ
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	0.034	0.023
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 16: Clothianidin (Machine 2, Monosem PNU, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOQ	<LOQ	<LOD	<LOD	0.026	0.017
1 meter-2	<LOQ	<LOQ	<LOQ	<LOQ	<LOD	<LOD
1 meter-3	<LOQ	<LOQ	<LOD	<LOD	<LOQ	<LOQ
1 meter-4	<LOQ	<LOQ	0.022	0.015	<LOQ	<LOQ
1 meter-5	0.090	0.061	0.068	0.046	<LOQ	<LOQ
1 meter-6	<LOQ	<LOQ	0.023	0.015	<LOQ	<LOQ
1 meter-7	<LOD	<LOD	<LOQ	<LOQ	0.028	0.019
1 meter-8	0.034	0.023	0.029	0.019	0.050	0.034
1 meter-9	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
1 meter-10	0.052	0.035	0.091	0.061	<LOQ	<LOQ
5 meter-1	<LOQ	<LOQ	No Data	No Data	<LOD	<LOD
5 meter-2	<LOQ	<LOD	<LOQ	<LOQ	0.028	0.019
5 meter-3	<LOQ	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOQ	<LOQ	<LOQ	<LOQ	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOQ
5 meter-6	0.268	0.182	<LOQ	<LOQ	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOQ
5 meter-8	<LOQ	<LOQ	<LOQ	<LOQ	<LOD	<LOD
5 meter-9	<LOQ	<LOQ	0.027	0.018	<LOD	<LOQ
5 meter-10	0.033	0.015	0.020	0.014	0.047	0.032
50 meter-1	<LOD	<LOD	<LOD	<LOD	0.020	0.014
50 meter-2	<LOD	<LOD	<LOD	<LOD	0.021	0.014
50 meter-3	<LOQ	<LOQ	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ
50 meter-5	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOD
50 meter-6	<LOQ	<LOQ	0.022	0.015	0.026	0.018
50 meter-7	<LOD	<LOD	0.060	0.041	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOQ
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 17: Clothianidin residue (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 18: Clothianidin residue (Machine 4, Amazone ED 602 K, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOQ	<LOQ
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOD	0.028	0.019
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOD	<LOD	0.031	0.021	<LOQ	<LOQ
5 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	0.022	0.015	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 19: Clothianidin (Machine 5, Danagri Aeromat M 8-HKP DTE, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	0.021	0.014	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOQ	<LOQ	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOQ	<LOQ	<LOD	<LOD	<LOD	<LOD
5 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	0.037	0.025	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 20: Clothianidin (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	Samples mixed up between 1 and 5 m, no measurement possible		<LOD	<LOD
1 meter-2	<LOD	<LOD			<LOD	<LOD
1 meter-3	<LOD	<LOD			<LOD	<LOD
1 meter-4	<LOD	<LOD			<LOD	<LOD
1 meter-5	<LOD	<LOD			<LOD	<LOD
1 meter-6	<LOD	<LOD			<LOD	<LOD
1 meter-7	<LOD	<LOD			<LOQ	LOQ
1 meter-8	<LOD	<LOD			<LOD	<LOD
1 meter-9	<LOD	<LOD			<LOD	<LOD
1 meter-10	<LOD	<LOD			<LOD	<LOD
5 meter-1	<LOD	<LOD	Samples mixed up between 1 and 5 m, no measurement possible		<LOD	<LOD
5 meter-2	<LOD	<LOD			<LOD	<LOD
5 meter-3	<LOD	<LOD			<LOD	<LOD
5 meter-4	<LOD	<LOD			<LOD	<LOD
5 meter-5	<LOD	<LOD			<LOD	<LOD
5 meter-6	<LOD	<LOD			<LOD	<LOD
5 meter-7	<LOD	<LOD			<LOD	<LOD
5 meter-8	<LOD	<LOD			<LOD	<LOD
5 meter-9	<LOD	<LOD			<LOD	<LOD
5 meter-10	<LOD	<LOD			<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish

LOQ = 0.014 g a.s./ha, LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 21: Clothianidin (Machine 7, Horsch Maestro 8CC, STAC Seed), 24 h Secondary Drift

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-1	<LOD	<LOD	No Data	No Data	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 22: Clothianidin (Machine 8, Amazone ED 602 K, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOQ	<LOQ	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOQ	>LOQ
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 23: Clothianidin residue (Machine 9, Monosem, NG 3 Plus, Modified, STAC Seed), 24 h Secondary Drift.

	Single values, Series A		Single values, Series B		Single values, Series C	
	[µg a.s. / Petri-dish]	[g a.s. / ha]	[µg a.s. / Petri-dish]	[g a.s./ha]	[µg a.s. / Petri-dish]	[g a.s./ha]
1 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-7	<LOD	<LOD	<LOQ	<LOQ	<LOD	<LOD
1 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
1 meter-9	<LOD	<LOD	0.030	0.651	<LOD	<LOD
1 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-4	<LOD	<LOD	<LOD	<LOD	0.004	0.094
5 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
5 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-2	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-5	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-7	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
50 meter-10	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

LOQ = 0.020 µg a.s./Petri-dish; LOD = 0.006 µg a.s./ /Petri-dish
LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²

Note: for the calculation of the values in [g/ha] non-rounded values in [µg a.s./Petri-dish] were used.

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 24 to Table 33 gave an overview about the residue concentration of clothianidin in the analysed acetonitrile/water solutions from the passive dust collectors.

Table 24: Clothianidin (Machine 1, Monosem PNU, KWS Seed). Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.408	0.175	0.434
5 m distance 4 m above ground-1	0.927	0.385	0.686
5 m distance 3 m above ground-1	1.285	0.659	0.853
5 m distance 2 m above ground-1	2.145	1.069	0.754
5 m distance 1 m above ground-1	1.780	0.890	0.764
5 m distance 5 m above ground-2	0.478	0.263	0.402
5 m distance 4 m above ground-2	0.580	0.280	0.508
5 m distance 3 m above ground-2	0.761	0.570	1.001
5 m distance 2 m above ground-2	1.123	0.564	1.242
5 m distance 1 m above ground-2	1.091	1.064	1.012
30 m distance 5 m above ground-1	0.218	0.380	0.304
30 m distance 4 m above ground-1	0.633	0.417	0.422
30 m distance 3 m above ground-1	0.413	0.218	0.351
30 m distance 2 m above ground-1	0.628	0.192	0.399
30 m distance 1 m above ground-1	0.467	0.628	0.674
30 m distance 5 m above ground-2	0.720	0.627	0.338
30 m distance 4 m above ground-2	0.476	0.363	0.276
30 m distance 3 m above ground-2	0.677	0.629	0.370
30 m distance 2 m above ground-2	0.628	0.442	0.788
30 m distance 1 m above ground-2	0.465	0.586	0.919

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 25: Clothianidin (Machine 2, Monosem PNU, STAC Seed). Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	1.155	1.500	0.936
5 m distance 4 m above ground-1	1.547	1.028	2.436
5 m distance 3 m above ground-1	3.606	3.351	3.510
5 m distance 2 m above ground-1	4.500	4.281	5.352
5 m distance 1 m above ground-1	7.092	5.529	5.054
5 m distance 5 m above ground-2	1.258	1.061	1.239
5 m distance 4 m above ground-2	2.248	2.208	2.258
5 m distance 3 m above ground-2	3.992	2.229	4.224
5 m distance 2 m above ground-2	4.497	5.227	3.918
5 m distance 1 m above ground-2	5.590	5.233	7.603
30 m distance 5 m above ground-1	1.863	1.320	0.906
30 m distance 4 m above ground-1	1.713	2.048	2.449
30 m distance 3 m above ground-1	2.660	1.410	3.132
30 m distance 2 m above ground-1	3.632	2.694	3.114
30 m distance 1 m above ground-1	4.395	3.247	4.213
30 m distance 5 m above ground-2	1.495	1.559	1.900
30 m distance 4 m above ground-2	1.785	3.008	3.124
30 m distance 3 m above ground-2	2.285	4.096	3.858
30 m distance 2 m above ground-2	2.877	3.369	3.813
30 m distance 1 m above ground-2	3.359	2.452	4.613

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 26: Clothianidin (Machine 3, Gaspardo, MTE 300 BB-XL, STAC Seed), Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.241	0.416	0.274
5 m distance 4 m above ground-1	0.344	0.418	0.241
5 m distance 3 m above ground-1	0.363	0.660	0.334
5 m distance 2 m above ground-1	0.770	0.885	0.768
5 m distance 1 m above ground-1	0.848	0.925	0.850
5 m distance 5 m above ground-2	0.264	0.365	0.135
5 m distance 4 m above ground-2	0.542	0.437	0.278
5 m distance 3 m above ground-2	1.160	0.797	0.636
5 m distance 2 m above ground-2	0.937	1.207	0.566
5 m distance 1 m above ground-2	0.849	0.866	0.548
30 m distance 5 m above ground-1	0.314	0.310	0.165
30 m distance 4 m above ground-1	0.465	0.378	0.298
30 m distance 3 m above ground-1	0.295	0.726	0.271
30 m distance 2 m above ground-1	0.478	0.716	0.352
30 m distance 1 m above ground-1	0.314	0.663	0.348
30 m distance 5 m above ground-2	0.413	0.329	0.143
30 m distance 4 m above ground-2	0.450	0.296	0.185
30 m distance 3 m above ground-2	0.493	0.521	0.264
30 m distance 2 m above ground-2	0.542	0.290	0.287
30 m distance 1 m above ground-2	0.393	0.413	0.267

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 27: Clothianidin residue (Machine 4, Amazone ED 602 K, STAG Seed), Passive Dust Collectors

	Single values. Series A	Single values. Series B	Single values. Series C
	[µg a.s. / Pas. Sampler]	[µg a.s. / Pas. Sampler]	[µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.207	0.201	0.225
5 m distance 4 m above ground-1	0.335	0.341	0.409
5 m distance 3 m above ground-1	0.446	0.426	0.402
5 m distance 2 m above ground-1	0.692	0.635	0.678
5 m distance 1 m above ground-1	0.707	0.862	0.859
5 m distance 5 m above ground-2	0.174	0.116	0.223
5 m distance 4 m above ground-2	0.268	0.198	0.455
5 m distance 3 m above ground-2	0.580	0.418	0.709
5 m distance 2 m above ground-2	0.842	0.626	0.803
5 m distance 1 m above ground-2	0.877	0.828	0.905
30 m distance 5 m above ground-1	0.274	0.211	0.268
30 m distance 4 m above ground-1	0.253	0.398	0.388
30 m distance 3 m above ground-1	0.276	0.400	0.458
30 m distance 2 m above ground-1	0.540	0.630	0.600
30 m distance 1 m above ground-1	0.470	0.762	0.600
30 m distance 5 m above ground-2	0.215	0.296	0.279
30 m distance 4 m above ground-2	0.275	0.298	0.526
30 m distance 3 m above ground-2	0.464	0.414	0.424
30 m distance 2 m above ground-2	0.487	0.671	0.658
30 m distance 1 m above ground-2	0.437	0.552	0.550

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 28: Clothianidin residue (Machine 5, Danagri Aeromat M 8-HKR DTE STAC Seed), Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.336	0.325	0.576
5 m distance 4 m above ground-1	0.696	0.728	0.758
5 m distance 3 m above ground-1	0.893	0.764	0.879
5 m distance 2 m above ground-1	0.918	0.855	0.822
5 m distance 1 m above ground-1	0.823	1.270	1.030
5 m distance 5 m above ground-2	0.410	0.368	0.565
5 m distance 4 m above ground-2	0.706	0.416	0.786
5 m distance 3 m above ground-2	1.060	0.710	0.741
5 m distance 2 m above ground-2	0.672	0.656	0.830
5 m distance 1 m above ground-2	0.945	0.847	0.977
30 m distance 5 m above ground-1	0.485	0.230	0.306
30 m distance 4 m above ground-1	0.562	0.318	0.205
30 m distance 3 m above ground-1	0.731	0.496	0.322
30 m distance 2 m above ground-1	0.948	0.615	0.332
30 m distance 1 m above ground-1	0.530	0.503	0.404
30 m distance 5 m above ground-2	0.416	0.482	0.228
30 m distance 4 m above ground-2	0.562	0.295	0.363
30 m distance 3 m above ground-2	0.369	0.503	0.258
30 m distance 2 m above ground-2	0.773	0.359	0.213
30 m distance 1 m above ground-2	0.586	0.407	0.336

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 29: Clothianidin residue (Machine 6, Kverneland Optima HD e-drive DS-LT, STAC Seed). Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.218	0.315	0.150
5 m distance 4 m above ground-1	0.162	0.364	0.299
5 m distance 3 m above ground-1	0.164	0.747	0.449
5 m distance 2 m above ground-1	0.561	0.900	0.520
5 m distance 1 m above ground-1	0.690	0.744	0.830
5 m distance 5 m above ground-2	0.062	0.261	0.178
5 m distance 4 m above ground-2	0.246	0.474	0.198
5 m distance 3 m above ground-2	0.360	0.662	0.697
5 m distance 2 m above ground-2	0.419	0.642	0.683
5 m distance 1 m above ground-2	0.760	0.761	0.813
30 m distance 5 m above ground-1	0.126	0.256	0.348
30 m distance 4 m above ground-1	0.219	0.344	0.460
30 m distance 3 m above ground-1	0.287	0.536	0.514
30 m distance 2 m above ground-1	0.372	0.536	0.443
30 m distance 1 m above ground-1	0.546	0.444	0.814
30 m distance 5 m above ground-2	0.196	0.396	0.244
30 m distance 4 m above ground-2	0.336	0.436	0.466
30 m distance 3 m above ground-2	0.379	0.645	0.466
30 m distance 2 m above ground-2	0.490	0.413	0.549
30 m distance 1 m above ground-2	0.604	0.598	0.821

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 30: Clothianidin residue (Machine 7, Horsch Maestro 8CC, STAC Seed). Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.279	0.315	0.302
5 m distance 4 m above ground-1	0.482	0.393	0.292
5 m distance 3 m above ground-1	0.410	0.585	0.578
5 m distance 2 m above ground-1	0.861	0.778	0.589
5 m distance 1 m above ground-1	0.673	0.667	0.580
5 m distance 5 m above ground-2	0.257	0.278	0.169
5 m distance 4 m above ground-2	0.497	0.447	0.399
5 m distance 3 m above ground-2	0.629	0.593	0.519
5 m distance 2 m above ground-2	0.836	0.674	0.629
5 m distance 1 m above ground-2	0.620	0.840	0.872
30 m distance 5 m above ground-1	0.221	0.241	0.202
30 m distance 4 m above ground-1	0.188	0.330	0.326
30 m distance 3 m above ground-1	0.244	0.536	0.237
30 m distance 2 m above ground-1	0.450	0.433	0.318
30 m distance 1 m above ground-1	0.281	0.520	0.371
30 m distance 5 m above ground-2	0.446	0.381	0.405
30 m distance 4 m above ground-2	0.181	0.237	0.364
30 m distance 3 m above ground-2	0.364	0.475	0.325
30 m distance 2 m above ground-2	0.214	0.393	0.378
30 m distance 1 m above ground-2	0.261	0.341	0.370

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 31: Clothianidin residue (Machine 8, Amazone ED 602 K, STAG Seed), Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.326	0.300	0.078
5 m distance 4 m above ground-1	0.255	0.354	0.174
5 m distance 3 m above ground-1	0.338	0.366	0.276
5 m distance 2 m above ground-1	0.410	0.617	0.569
5 m distance 1 m above ground-1	0.871	0.768	0.479
5 m distance 5 m above ground-2	0.215	0.194	0.117
5 m distance 4 m above ground-2	0.310	0.340	0.178
5 m distance 3 m above ground-2	0.402	0.350	0.165
5 m distance 2 m above ground-2	0.398	0.479	0.586
5 m distance 1 m above ground-2	0.492	1.223	0.643
30 m distance 5 m above ground-1	0.215	0.284	0.086
30 m distance 4 m above ground-1	0.240	0.470	0.163
30 m distance 3 m above ground-1	0.340	0.480	0.212
30 m distance 2 m above ground-1	0.485	0.430	0.222
30 m distance 1 m above ground-1	0.445	0.489	0.375
30 m distance 5 m above ground-2	0.163	0.243	0.148
30 m distance 4 m above ground-2	0.341	0.469	0.164
30 m distance 3 m above ground-2	0.367	0.481	0.174
30 m distance 2 m above ground-2	0.276	0.553	0.295
30 m distance 1 m above ground-2	0.285	0.622	0.269

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 32: Clothianidin residue (Machine 9, Monosem NG 3 Plus, , STAC Seed). Passive Dust Collectors

	Single values. Series A [µg a.s. / Pas. Sampler]	Single values. Series B [µg a.s. / Pas. Sampler]	Single values. Series C [µg a.s. / Pas. Sampler]
5 m distance 5 m above ground-1	0.162	0.202	0.190
5 m distance 4 m above ground-1	0.239	0.308	0.346
5 m distance 3 m above ground-1	0.437	0.343	0.381
5 m distance 2 m above ground-1	0.350	0.500	0.286
5 m distance 1 m above ground-1	0.533	0.587	0.736
5 m distance 5 m above ground-2	0.140	0.201	0.221
5 m distance 4 m above ground-2	0.210	0.241	0.307
5 m distance 3 m above ground-2	0.389	0.371	0.313
5 m distance 2 m above ground-2	0.515	0.473	0.529
5 m distance 1 m above ground-2	0.562	0.505	0.751
30 m distance 5 m above ground-1	0.241	0.295	0.091
30 m distance 4 m above ground-1	0.238	0.330	0.148
30 m distance 3 m above ground-1	0.281	0.430	0.331
30 m distance 2 m above ground-1	0.458	0.238	0.287
30 m distance 1 m above ground-1	0.420	0.627	0.345
30 m distance 5 m above ground-2	0.191	0.239	0.106
30 m distance 4 m above ground-2	0.241	0.309	0.166
30 m distance 3 m above ground-2	0.380	0.376	0.383
30 m distance 2 m above ground-2	0.340	0.241	0.588
30 m distance 1 m above ground-2	0.553	0.271	0.350

LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector

Appendix 9 (continued)

6.3 Analytical Results (contd)

Table 33: Clothianidin residue (Machine 9, Monosem NG 3 Plus, , STAC Seed). Pipe Cleaners

	Single values. Series A [µg a.s. / Pipe Cleaner]	Single values. Series B [µg a.s. / Pipe Cleaner]	Single values. Series C [µg a.s. / Pipe Cleaner]
5 m distance 5 m above ground-1	0.014	0.020	0.011
5 m distance 4 m above ground-1	0.031	0.032	0.021
5 m distance 3 m above ground-1	0.029	0.045	0.019
5 m distance 2 m above ground-1	0.022	0.040	0.026
5 m distance 1 m above ground-1	0.033	0.063	0.038
5 m distance 5 m above ground-2	0.008	0.010	0.011
5 m distance 4 m above ground-2	0.023	0.031	0.019
5 m distance 3 m above ground-2	0.030	0.070	0.023
5 m distance 2 m above ground-2	0.038	0.049	0.055
5 m distance 1 m above ground-2	0.034	0.058	0.049
30 m distance 5 m above ground-1	0.008	0.020	0.018
30 m distance 4 m above ground-1	0.016	0.032	0.025
30 m distance 3 m above ground-1	0.020	0.025	0.077
30 m distance 2 m above ground-1	0.027	0.022	0.061
30 m distance 1 m above ground-1	0.037	0.063	0.054
30 m distance 5 m above ground-2	0.012	0.018	0.058
30 m distance 4 m above ground-2	0.015	0.016	0.037
30 m distance 3 m above ground-2	0.024	0.025	0.030
30 m distance 2 m above ground-2	0.037	0.047	0.033
30 m distance 1 m above ground-2	0.052	0.053	0.066

LOQ = 0.002 µg a.s./ Pipe Cleaner; LOD = 0.0006 µg a.s./ Pipe Cleaner

Appendix 9 (continued)

7 Evaluation and Discussion

The purpose of the study was to quantify the ground deposition of clothianidin residues [g a.s./ha] at various distances downwind from the drilled area during and after sowing of Clothianidin FS 600 dressed maize seeds (nominally 1.25 mg a.s./per individual maize seed) in acetonitrile/water and glycerol/water solutions out of Petri-dishes and from passive dust collectors and pipe cleaners.

The field part of this study (collecting of the solvent of the Petri-dishes, and the passive dust collectors and pipe cleaners) as well as the transport of the samples to the laboratory of R. Schoening was not conducted under GLP. Therefore nothing will be documented in the RAW data of this GLP part. This will be part of the final report.

All clothianidin-containing dust and abrasion particles which deposited at 1, 3, 5, 10, 20, 30 and 50 meters distance from the drilling area were sampled in polystyrene Petri-dishes (Ø 13.7 cm, 147.41 cm²), filled with an acetonitrile/water mixture (2/8 v/v). For each sampling distance 3 arrays of 10 Petri-dishes each were installed with a distance of 1 meter between the dishes. Accordingly, a total of 30 samples were yielded for each sampling distance.

After the drilling was completed, an additional waiting period of 15 minutes was employed to allow those dust particles which had not yet been deposited to settle on the sampling area. Thereafter, the acetonitrile/water mixture of each Petri-dish was quantitatively transferred into a 250 mL polyethylene flask by means of a polyethylene funnel. Both, the Petri-dish and the funnel were rinsed with acetonitrile/water (2/8, v/v) and the rinse was combined with the content of the respective Petri-dish inside the 250 mL polyethylene flask before being tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 meter distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with machine ID-code ("Machine 1 to 9", see table "Pneumatic and mechanical drilling equipment used for maize drilling"), the number of the respective series (A, B or C), the distance from the drilling area (1, 3, 5, 10, 20, 30 or 50 m) and the number of the respective Petri-dish per distance (1-10), giving in total 210 flasks.

Appendix 9 (continued)

7 Evaluation and Discussion (contd)

Pneumatic drilling equipment used for maize drilling

Machine No.	Producer	Type /Number of rows)	Exhaust Air Management Principle	Tested with following seed quality
1	Monosem	PNU (4)	Exhaust-air is ejected from one single outlet in an angel of ≈ 45° upwards directly from the fan (= no modified exhaust air management)	KWS seeds – "recommended quality"
2	Monosem	PNU (4)	Exhaust-air is ejected from one single outlet in an angel of = 45° upwards directly from the fan (= no modified exhaust air management)	STAC seeds – "low quality"
3	Gaspardo	MTE 300 BB-XL (6)	Exhaust-air is diverted into 4 fertilizing disks for fertilizer transportation purposes	STAC seeds – "low quality"
4	Amazone	ED 602 K (8)	Exhaust-air is introduced into a ground cushion	STAC seeds – "low quality"
5	Danagri (Becker)	Aeromat M 8-HKP DTE (8)	Maize seed separation via positive pressure, resulting air/seed stream released into drilling disks	STAC seeds – "low quality"
6	Kverneland	Optima HD e-drive DS-LT (8)	Exhaust-air is diverted into 5 fertilizing disks for fertilizer transportation purposes	STAC seeds – "low quality"
7	Horsch	Maestro 8 DC (8)	Mechanical seed separation without any air assistance	STAC seeds – "low quality"
8	Amazone	ED 602 K (8)	Exhaust-air is introduced into an expansion chamber close to ground	STAC seeds – "low quality"
9	Monosem	NG 3 Plus (6)	Exhaust-air is diverted into 6 fertilizing disks for fertilizer transportation purposes	STAC seeds – "low quality"

In all series (A, B and C) at 5 and 30 m distance from the 'zero-line', respectively, passive dust-drift collectors made of polypropylene have been installed at 1 m, 2 m, 3 m, 4 m and 5 m above the soil surface. At each end of a horizontal pole in the respective height, one passive collector has been installed, giving in total 6 passive collectors per height per distance. Once the 30 m - line and later on, the 5 m - line has been reached during the sampling process of the Petri-dishes (filled with acetonitrile/water, 2/8, v/v; see above), the passive dust collectors were sampled and placed into plastic containers which were immediately sealed and labelled in the field. Additionally to the passive dust collectors from machine 9, pipe cleaners were installed directly next to each of the passive dust collectors. In the laboratory, each individual passive dust collector or pipe cleaner has been extracted with an appropriate volume of acetonitrile/water (2/8. v/v) within an ultrasonic bath to enhance the extraction process.

After sampling of all 210 Petri-dishes (filled with acetonitrile/water. 2/8. v/v), all 60 passive dust collectors per machine and the additional 60 pipe cleaners for machine 9 was completed, new Petri-dishes were disposed in all three series (A, B. C) at the 1 m, 5 m and 50 m distance from the 'zero-line', giving per machine another 90 Petri-dishes. This second installation of Petri-dishes was filled with about 100 mL of a glycerol/water mixture (1/1. v/v) and was exposed (lids open) for a period of 24 h in order to quantify the amount of clothianidin which may enter the Petri-dishes via secondary drift processes.

Appendix 9 (continued)

7 Evaluation and Discussion (contd)

After 24 h. the content of each Petri-dish was quantitatively transferred into 250 mL polyethylene flask by means of a polyethylene funnel. Both the Petri-dish and the funnel were rinsed with water and the rinse was combined with the content of the respective Petri-dish inside the 250 mL polyethylene flask before being tightly closed with its corresponding polypropylene screw cap. Each Petri-dish and each funnel was only used once before being ultimately discarded. Sampling always started at the 50 meter distance and proceeded towards the drilling area in order to avoid cross-contamination. Each polyethylene flask was unequivocally labelled with machine ID-code ("Machine 1 to 9"), the number of the respective series (A, B or C), the distance from the drilling area (1, 5 or 50 m) and the number of the respective Petri-dish per distance (1-10), giving in total 90 flasks.

At each day of drilling/sampling all 210 polyethylene flasks (acetonitrile/water, 2/8, v/v) together with all 60 passive dust collectors (plus 60 pipe cleaners for machine 9) were transported by car to the laboratory of Ralf Schoening at Bayer CropScience AG's Institute for Residues, Operator and Consumer Safety (BCS-D-ROCS). The following day, the 90 polyethylene flasks (glycerol/water, 1/1, v/v) were also transported by car to the laboratory of Ralf Schoening (BCS-D-ROCS). The samples were stored at room temperature in the laboratories of R. Schoening until analysis. During the following two weeks after arrival all samples were analysed for their clothianidin content as described below according to method 00554/M001.

To the content of the 250 mL polyethylene bottles 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard solution was added to each of the samples and shaked well. 1 mL of the content of the well mixed 250 mL polyethylene bottles were transferred into a HPLC vial and subjected to the LC-MS/MS procedure. For the analysis of the passive dust collectors 100 mL of acetonitrile/water (2/8. v/v) and 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard solution was added to each plastic container. The samples were placed in an ultrasonic bath and an aliquot of 1 mL was transferred into a HPLC vial and subjected to the LC-MS/MS procedure. For the analysis of the pipe cleaners 20 mL of acetonitrile/water (2/8. v/v) and 20 µL of a 5.0 mg/L Ti 435-d_3 internal standard solution was added to each of the 250 mL polyethylene bottles and shaked well. 1 mL of the content of the well mixed 250 mL polyethylene bottles were transferred into a HPLC vial and subjected to the LC-MS/MS procedure.

The Limit of Quantitation (LOQ) for clothianidin, defined as the lowest validated fortification level, was 0.020 µg a.s./Petri-dish or 0.014 g a.s./ha and 0.020 µg a.s./passive dust collector and 0.002 µg/pipe cleaner. The LOD was estimated from the linearity data and from the control samples and was 0.006 µg a.s./Petri-dish or 0.004 g a.s./ha and 0.006 µg a.s./passive dust collector and 0.0006 µg/pipe cleaner.

The individual recovery values for clothianidin ranged from 67 to 110% with mean recoveries of 99% (dust abrasion samples), from 101% (passive dust collectors) and from 99% (pipe cleaners) and relative standard deviations (RSD's) of 3.2% (dust abrasion samples, n = 36) and 7.9% (passive dust collectors, n = 36) and 6.8% (pipe cleaners, n = 4). All results of the method validation were in accordance with the general requirements for residue analytical methods, therefore the method was validated successfully.

Appendix 9 (continued)

8 Evaluation and Discussion (contd)

Overview about the residue concentration of clothianidin in the analysed acetonitrile/water solutions from the Petri-dishes, the analysed glycerol/water solutions from the Petri-dishes, 24 h secondary drift and the analysed acetonitrile/water solutions from the passive dust collectors and pipe cleaners.

Machine No.		Acetonitrile/water solutions Petri-dishes **[g a.s./ha]** 1 to 50 m	Glycerol/water solutions Petri-dishes, 24 h secondary drift **[g a.s./ha]** 1, 5 and 50 m	Acetonitrile/water solutions passive dust collectors **[µg a.s./Pas. Sampler]** 5 and 30 m	Acetonitrile/water solutions Pipe cleaner **[µg a.s./Pipe Cleaner]** 5 and 30 m
1	min:	<LOQ	<LOD	<LOD	-
	max:	1.220	0.255	2.145	-
2	min:	0.198	<LOD	<LOD	-
	max:	20.674	0.152	7.919	-
3	min:	<LOQ	<LOD	<LOD	-
	max:	0.341	<LOD	1.207	-
4	min:	<LOQ	<LOD	<LOD	-
	max:	0.229	0.021	0.905	-
5	min:	<LOQ	<LOD	<LOD	-
	max:	0.407	0.025	1.200	-
6	min:	<LOQ	<LOD	<LOD	-
	max:	0.290	<LOQ	0.988	-
7	min:	<LOQ	<LOD	<LOD	-
	max:	0.490	<LOD	0.874	-
8	min:	0.017	<LOD	<LOD	-
	max:	0.263	<LOQ	0.273	-
9	min:	<LOQ	<LOD	<LOD	0.008
	max:	0.343	0.031	0.751	0.077

LOQ = 0.014 g a.s./ha; LOD = 0.004 g a.s./ha; surface area of Petri-dish: 147.41 cm²
LOQ = 0.020 µg a.s./Passive Dust Collector; LOD = 0.006 µg a.s./Passive Dust Collector
LOQ = 0.002 µg a.s./Pipe Cleaner; LOD = 0.0006 µg a.s./Pipe Cleaner

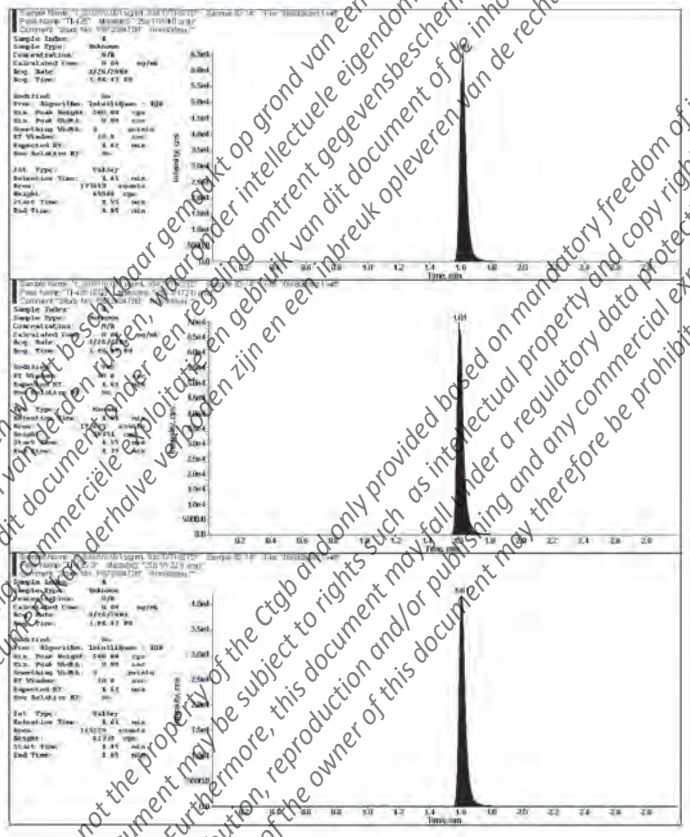
For detail information see Table 6 to Table 33.

Appendix 9 (continued)

Appendix 1:
Representative Chromatograms

Clothianidin

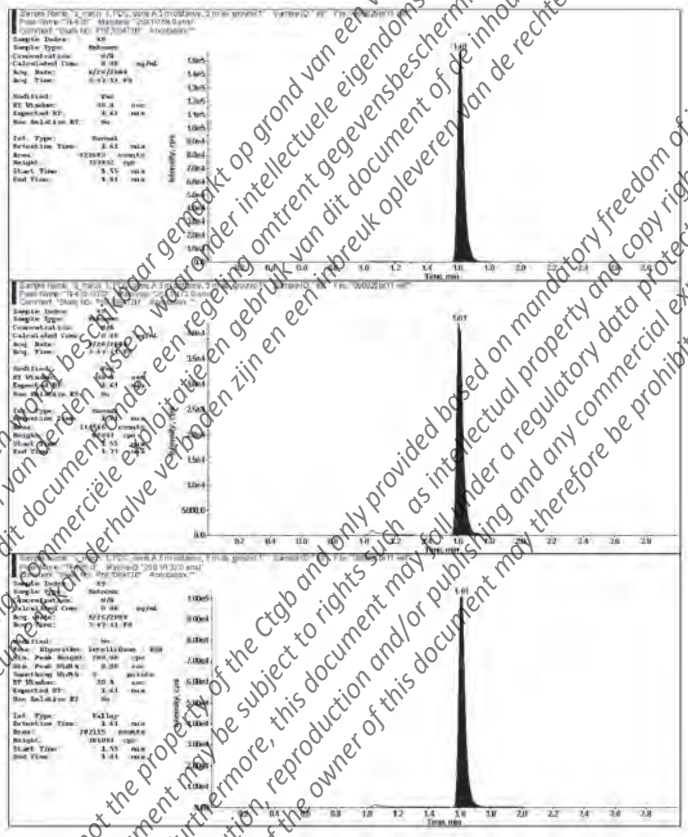
Figure 1 : Standard Solution
From top to bottom :
1.0 µg/L Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
1.0 µg/L Clothianidin 2nd MRM



Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)
Clothianidin

Figure 2 : Machine 1. Passive Dust Collector Series A, 5 m Distance, 5m Above the Ground
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin; Bottom
Clothianidin 2nd MRM

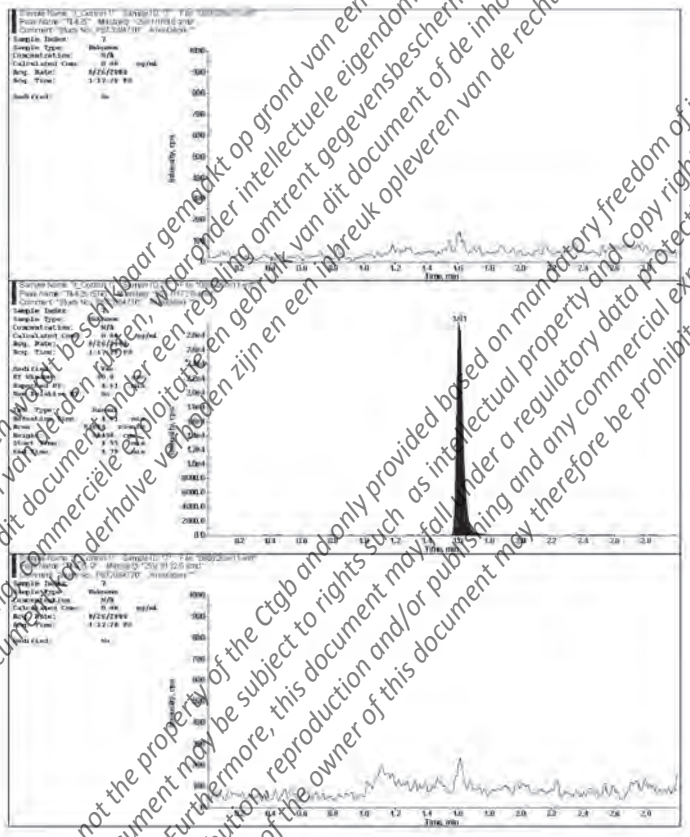


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 3 : Control Passive Dust Collector for Recovery Sample
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

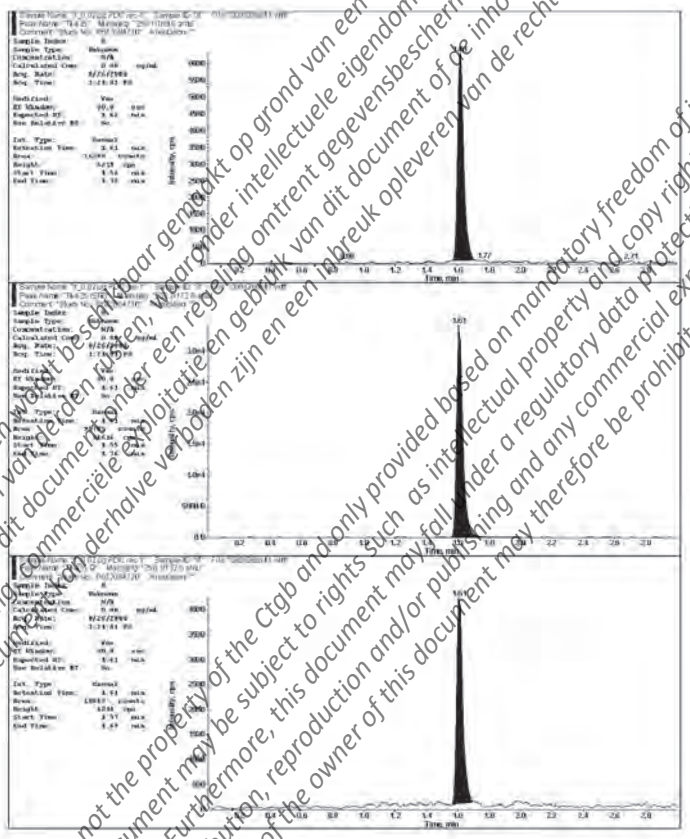


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 4 : Recovery Sample 0.020 µg/Passive Dust Collector
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

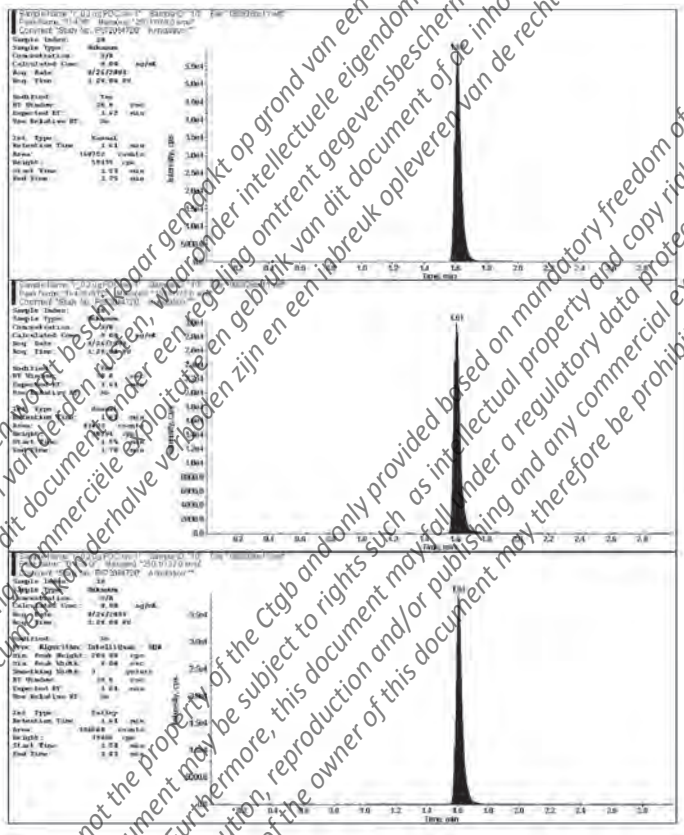


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 5 : Recovery Sample 0.2 µg/Passive Dust Collector
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

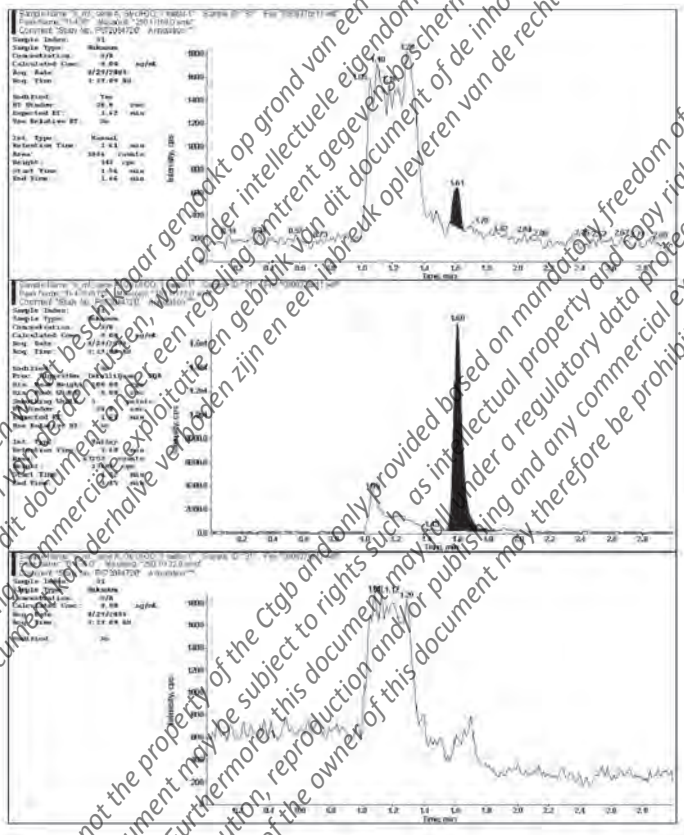


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 6 : Machine 1, Petri-dish 24 h Series A, 1 m Distance, Petri-dish 1
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

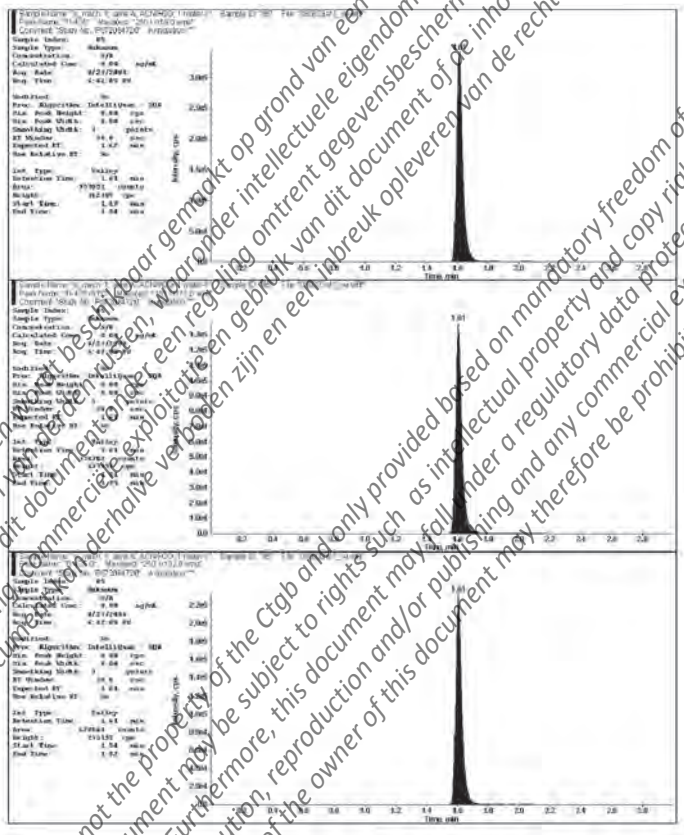


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 7 : Machine 1, Petri-dish, Series A, 1 m Distance, Petri-dish 1
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

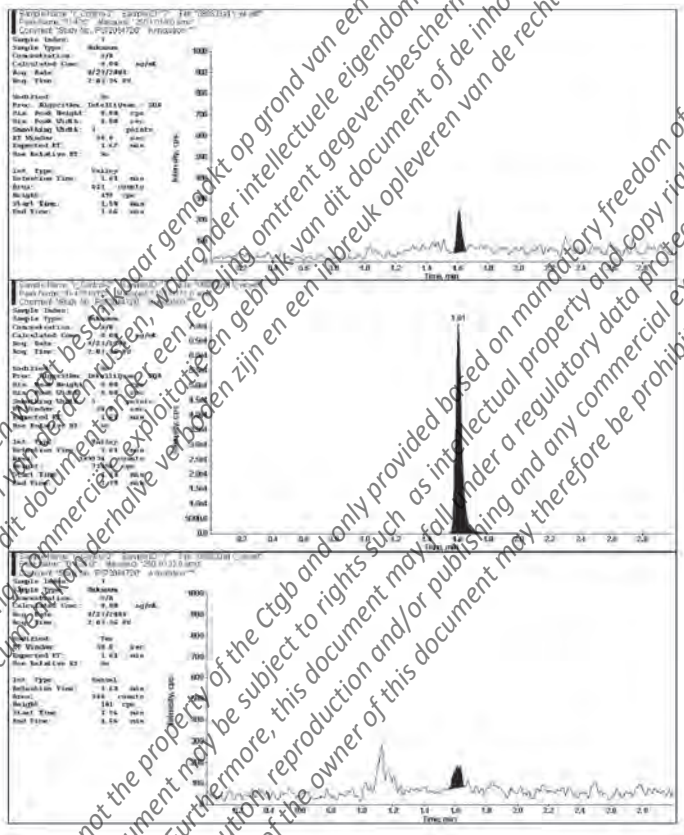


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 8 : Control Petri-dish for Recovery Sample
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM



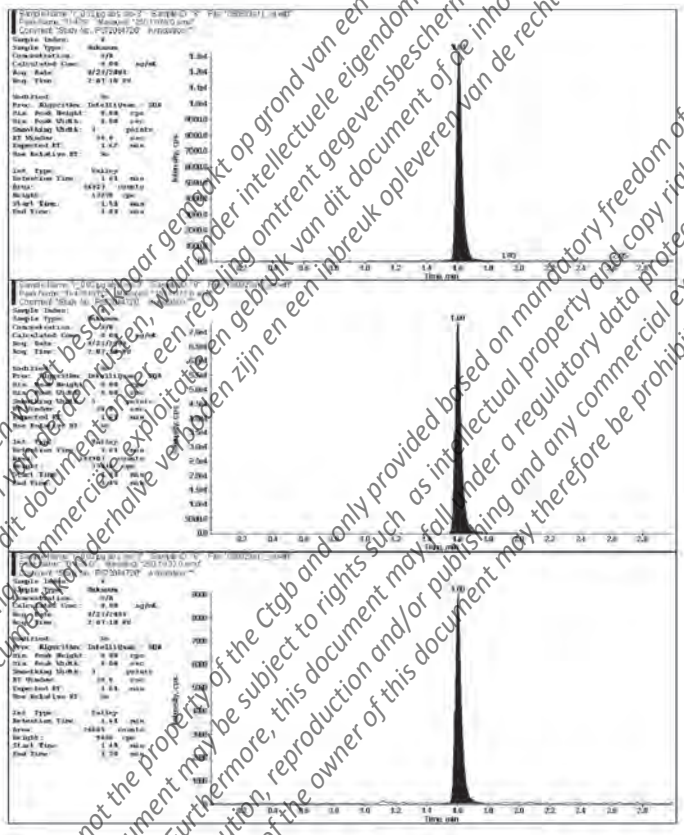
Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (contd)

Clothianidin

Figure 9 : Recovery Sample 0.020 µg/Petri-dish

From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM

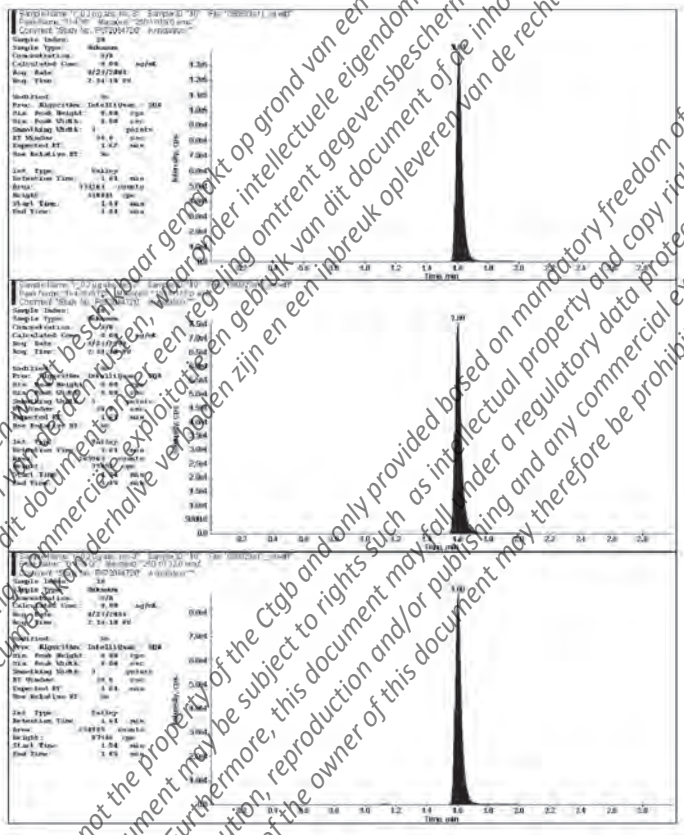


Appendix 9 (continued)

Appendix 1:
Representative Chromatograms (Contd)

Clothianidin

Figure 10 : Recovery Sample 0.2 µg/Petri-dish
From top to bottom :
Clothianidin 1st MRM
1.0 µg/L d_3-Clothianidin
Clothianidin 2nd MRM



Appendix 9 (continued)

Appendix 2:
GLP Certificate

Ministerium für Arbeit, Gesundheit und Soziales
Des Landes Nordrhein-Westfalen

Postfach 10 03 43, 40219 Düsseldorf

Aktenzeichen II A 5 – 31.11.91.02

Gute Laborpraxis/Good Laboratory Practice
GLP-Bescheinigung/Statement of GLP Compliance
(gemäß/according to § 19b Abs. 3 Chemikaliengesetz)

Eine GLP-Inspektion zur Überwachung des Einhaltens der GLP-Grundsätze gemäß Chemikaliengesetz bzw. Richtlinie 88/320/EG wurde durchgeführt in:

Assessment of conformity with GLP according to Chemikaliengesetz and Directive 88/320/EEC at:

☒ Prüfeinrichtung/Test facility ☐ Prüfstandort/Test site

Bayer CropScience Development
Residues, Operator and Consumer Safety
BCS-D-ROCS
Building 6610
D-40789 Monheim

Prüfungen nach Kategorien (Maßstab ChemVwV-GLP Nr. 5.3/OECD guidance)	Areas of Expertise (according ChemVwV-GLP Nr. 5.3/OECD guidance)
Kategorie 1	category 1
Prüfungen zur Bestimmung der physikalisch-chemischen Eigenschaften und Gehaltsbestimmungen	physical-chemical testing
Kategorie 4	category 4
Ökotoxikologische Prüfungen zur Bestimmung der Auswirkungen auf aquatische und terrestrische Organismen	environmental toxicity studies on aquatic and terrestrial organisms
Kategorie 5	category 5
Prüfungen zum Verhalten im Boden, im Wasser und in der Luft; Prüfungen zur Bioakkumulation und zur Metabolisierung	studies on behaviour in water, soil and air; bioaccumulation

Appendix 9 (continued)

Appendix 2
GLP Certificate (contd)

Kategorie 6	category 6
Prüfungen zur Bestimmung von Rückständen	residue studies
Kategorie 8	category 8
Analytische Prüfungen an biologischen Materialien	analytical and clinical chemistry testing
Datum der Inspektion	Date of Inspection
06. bis 08 März 2007	on 06 until 08 March 2007
Die genannte Prüfeinrichtung befindet sich im nationalen GLP-Überwachungsverfahren und wird regelmäßig auf Einhaltung der GLP-Grundsätze überwacht.	The above mentioned test facility is included in the national GLP Compliance Programme and is inspected on a regular basis.
Auf der Grundlage des Inspektionsberichtes wird hiermit bestätigt, dass in dieser Prüfeinrichtung die oben genannten Prüfungen unter Einhaltung der GLP-Grundsätze durchgeführt werden können.	Based on the inspection report it can be confirmed, that this test facility is able to conduct the aforementioned studies in compliance with the principles of GLP.

Düsseldorf, den 31. August 2007
Im Auftrag

(Dr. Bedenk)

Dienstsiegel/official seal