Potato – NPP products and foliar fertilisers

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INTRODUCTION

This trial was commissioned by Holland Fyto BV. The purpose of the trial is to establish the impact of new NPP products and foliar fertiliser on the resilience of potatoes against diseases, yield and the crop safety.

MATERIAL AND METHOD

Treatments

Table 1: Treatments with products and doses.

Obj.	Treatment	Dose	Water (L/ha)	Time	Comment
1	Untreated				
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
2	Rhizovital FZB42	0.5 l/ha	300	A	NPP
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
3	Rhizocell GC	1 kg/ha	300	A	NPP
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
4	Rhizocell GC	1 kg/ha	150	B	NPP extra
	KAS	150 kg/ha		EG	fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
5	Aloë Soil	10 l/ha	300	A	NPP
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
6	Aloë Soil	10 l/ha	150	B	NPP
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
7	Aloë Soil	5 l/ha	150	B	NPP
	Aloë Leaf	5 l/ha	300	CD	NPP
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
8	Vercal Extra	5 l/ha	300	DEFG	leaf fertiliser
	KAS	150 kg/ha		EG	extra fertilisation
	Potassium sulphate	200 kg/ha		E	extra fertilisation
9	Peloton 'new'	5 l/ha	300	D	leaf fertiliser
	N+	20 l/ha	300	EFGH	leaf fertiliser
	Potassium sulphate	200 kg/ha		E	extra fertilisation
10	Kalizwavel	6 l/ha	300	EFGH	leaf fertiliser
	KAS	150 kg/ha		EG	extra fertilisation
11	Peloton 'new'	5 l/ha	300	D	leaf fertiliser
	N+	20 l/ha	300	EFGH	leaf fertiliser
10	Kalizwavel	6 l/ha	300	EFGH	leaf fertiliser

Time of treatment		NPP + leaf fertiliser	extra fertilisation
A	During planting	bed treatment	
B	Immediately before ridging	full field treatment	
C	100% development	crop spraying	
D	Start of tuber setting	crop spraying	
E	Start of tuber filling (= ca. 14DAD)	crop spraying	wide scattering
F	14DAE	crop spraying	
G	14DAF	crop spraying	wide scattering
H	14DAG	crop spraying	

Time C: preferably in the evening or on an overcast day!!

Location

Grower	Th. Ketels, De Hoeven 33A, 5254 JW, Haarsteeg, the Netherlands
Location trial	crossroads Nieuwkuijkseweg-Vaartweg, Nieuwkuijk, the Netherlands
Coordinates	51,6857 N, 5,1788 E

Trial set-up

Replications	4
Field size	3 x 8 = 24 m^2
Plots	Randomised block design

Soil

Texture sand
For soil sample see Annex 4.

Crop

Crop	potato
Variety	Innovator
Planting date	02-05-2014
Planting distance	75 x 30 cm
Harvest date	06-10-2014
Previous crop	leek

Spraying

Table 2: Time and conditions for spraying.

	A	B	C	D	E	F	G	H
date	02-05-2014	13-05-2014	10-06-2014	20-06-2014	26-06-2014	10-07-2014	24-07-2014	07-08-2014
start time	19:15	15:15	14:00	12:15	09:15	14:00	09:30	09:15
stop time	20:00	15:45	14:10	13:00	10:00	14:30	10:00	10:00
treatment time	during planting	immediately prior to ridging/ harrowing	100% development	start of tuber setting	start of tuber filling	interval 14 days	interval 14 days	interval 14 days
treatment type	bedding	full field	crop	crop	crop	crop	crop	crop
applier	WM	WM	AE	WM	WM	AE	AE	WM
air temperature (oC)	10	13	26	18	16	26	24	17
humidity (%)	71	78	64	69	75	71	60	92
wind speed (mps)	4	3	3	3	4	0	3	2
wind direction	N	NW	ZW	W	W	-	E	ZW
soil temperature (oC)	11	12	28	-	-	-	-	-
soil humidity	moist	moist	moist	-	-	-	-	-
clouds (%)	100	80	70	95	50	90	0	100
water (l/ha)	300	150	300	300	300	300	300	300
sprayer type	WM1	WM2	AE2	WM2	WM2	AE2	AE2	WM2
cap type	80-02	110-02	110-02	110-02	110-02	110-02	110-02	110-02
crop wet/dry	-	-	dry	dry	dry	dry	dry	dry
crop stage	germinated	germinated	development - 3 shoots	field closed – start of tuber forming	start of tuber filling	flowering	end of flowering	green berries
crop diameter (cm)	-	-	-	70	75	75	75	100
crop height (cm)	-	-	-	50	55	55	55	55-65
crop cover (%)	0	0	60	95	95	100	100	100

Crop protection

Maintenance spraying
16/5 Linuron 1 l/ha + Boxer 4 l/ha
12/6 Valbon 2 kg/ha
17/6 Valbon 2 kg/ha + Ranman Top 0.5 l/ha
20/6 Valbon 2 kg/ha + Ranman Top 0.5 l/ha
26/6 Valbon 2 kg/ha
02/7 Valbon 2 kg/ha
10/7 Valbon 1.5 kg/ha + Ranman Top 0.5 l/ha + Signum 0.2 kg/ha
13/7 Valbon 2 kg/ha
18/7 Valbon 2 kg/ha
24/7 Valbon 2 kg/ha
30/7 Ranman Top 0.5 l/ha + 0.2 kg. Signum/ha.
08/8 Ranman Top 0.5 l/ha
15/8 Ranman Top 0.5 l/ha
23/8 Canvas 0.3 l/ha + Mancozeb 2 kg/ha
30/8 Canvas 0.3 l/ha + Mancozeb 2 kg/ha
13/9 Canvas 0.3 l/ha. + Mancozeb 2 kg/ha + Reglone 2 l/ha

Organic fertiliser

Prior to the trail the plot was sprayed with 30 m^3/ha of cattle slurry. The N content was 5.02 kg/m^3 and the P_2O_5 content was 1.72 kg/m^3. This means that 150.6 kg N and 51.6 kg P_2O_5 was applied per ha.

Observations

Crop status
Estimate 1-10: 1 = very poor crop status; 10 = excellent crop status
Time: 24DAB (days after spraying B), 10DAC, 6DAD, 14DAE, 14DAF, 14DAG

Phytotoxicity
Estimate: 0% = no phytotoxicity; 100% = very serious phytotoxicity infestation on all plants
Time: 24DAB, 10DAC, 6DAD, 14DAE, 14DAF, 14DAG

Leaf yellowing
Estimate: % leaf yellowing.
Time: 14DAG, 33DAH

Diseases
Phytophthora infestans: % infestation of leaves
Time: 10DAC, 6DAD
Sclerotinia sclerotiorum: total number of stems, number of infested stems of 3 plants per plot.
Conversion to percentage of infested stems.
Time: 33DAH
Rhizoctonia solani: tubers (50-70 mm) sorted into classes: no, light, medium, heavy infestation.
Conversion to index (0-1).

Yield
Weight (kg) of 2 rows of 6 m (= 9 m2) per field. Conversion to t/ha.
Sorting: weight (kg) and percentage per sorting <35, 35-50, 50-70, >70mm.
Time: 84DAH
Underwater weight (g)
Time: 97DAH

Statistical analysis

The data was statistically analysed using ANOVA (P=0.10), followed by the Student-Newman-Keuls test. Results with the same letter do not differ significantly.
Transformations (log, square root, arc sine) might have been applied to some observations. This was not done since the results did not improve.

Weather

May 2014: Normal temperature and hours of sunlight, wet. Temperature 13.2 °C (normal 13.1 °C).
Precipitation: 98 mm of rain (normal 61). Hours of sun 209 (normal 213).
June 2014: Fairly hot, sunny and fairly dry. Temperature 16.2 °C (normal 15.6 °C).
Precipitation: 47 mm of rain (normal 68). Hours of sun 227 (normal 201).
July 2014: Very hot, quite wet, normal hours of sun. Temperature 19.8 °C (normal 17.9 °C).
Precipitation: 94 mm of rain (normal 78). Hours of sun 222 (normal 212).
August 2014: Very cool, very wet and normal hours of sun. Temperature 16.1 °C (normal 17.5 °C).
Precipitation: 131 mm (normal 78). Hours of sun 203 (normal 195).
September 2014: Warm, very dry and very sunny. Temperature 15.9 °C (normal 14.5 °C).
Precipitation: 20 mm (normal 78). Hours of sun 178 (normal 143).
October 2014: Very mild, quite dry and normal hours of sun. Temperature 13.4 °C (normal 10.7 °C).
Precipitation: 72 mm (normal 83). Hours of sun 109 (normal 113).

See Annex 5 for detailed weather data.

RESULTS AND DISCUSSION

During planting, the propagating material had already starting sprouting, which made planting more difficult. Development was uneven, possibly due to poor propagating material. Many plants failed to develop. Later, the crop was infested with Phytophthora infestans. The infestation was suppressed by means of a strict spraying regime. The crop recovered well.

Selectivity

Table 3: Crop status (1-10).

Assessment Timing					A1	A2	A3	A4	A5	A6
Assessment Date					6-6-2014	20-6-2014	26-6-2014	10-7-2014	24-7-2014	7-8-2014
Trt-Eval Interval					24 DA-B	10 DA-C	6 DA-D	14 DA-E	14 DA-F	14 DA-G
Plant-Eval Interval					35 DP-1	49 DP-1	55 DP-1	69 DP-1	83 DP-1	97 DP-1
Crop Stage Majority					29	40	41	65	69	81
Assessment Type					CROPST	CROPST	CROPST	CROPST	CROPST	CROPST
Assessment Unit					1-10	1-10	1-10	1-10	1-10	1-10
Sample Size, Unit					1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	3	6	9	11	13
1	Untreated Check				6.0 -	5.3 -	5.3 -	6.5 -	6.8 -	6.8 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
2	Rhizovital FZB42	0.5	l/ha	A	5.8 -	5.5 -	5.5 -	6.3 -	6.5 -	6.5 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
3	Rhizocell GC	1	kg/ha	A	6.3 -	5.3 -	5.3 -	7.0 -	7.3 -	7.3 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
4	Rhizocell GC	1	kg/ha	B	6.3 -	6.3 -	6.3 -	6.5 -	7.0 -	7.0 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
5	Aloë Soil	10	l/ha	A	6.5 -	6.5 -	6.5 -	6.3 -	6.5 -	6.8 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
6	Aloë Soil	10	l/ha	B	6.0 -	5.3 -	5.3 -	6.0 -	6.3 -	6.5 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
7	Aloë Soil	5	l/ha	B	6.0 -	5.3 -	5.3 -	6.3 -	7.3 -	7.3 -
	Aloë Leaf	5	l/ha	CD						
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
8	Vercal Extra	5	l/ha	DEFG	6.3 -	5.8 -	5.8 -	7.0 -	7.0 -	7.3 -
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
9	Peloton 'new'	5	l/ha	D	6.5 -	6.5 -	6.5 -	6.5 -	6.0 -	6.3 -
	N+	20	l/ha	EFGH						
	Potassium sulphate	200	kg/ha	E						
10	Kalizwavel	6	l/ha	EFGH	6.0 -	5.5 -	5.5 -	7.0 -	6.8 -	6.8 -
	KAS	150	kg/ha	EG						
11	Peloton 'new'	5	l/ha	D	7.0 -	6.0 -	6.0 -	6.5 -	6.5 -	6.8 -
	N+	20	l/ha	EFGH						
	Kalizwavel	6	l/ha	EFGH						
LSD (P=.10)					0.93	1.37	1.37	1.01	1.01	0.97
Treatment Prob(F)					0.6471	0.6421	0.6421	0.7503	0.5401	0.7160

In this trial, no significant differences in crop stage were found. Also, phytotoxicity was not found with a single object.

Table 4: Yellowing of foliage

Assessment Timing					A6	A7
Assessment Date					7-8-2014	9-9-2014
Trt-Eval Interval					14 DA-G	33 DA-H
Plant-Eval Interval					97 DP-1	130 DP-1
Crop Stage Majority					81	91
Assessment Type					YELLOW	YELLOW
Assessment Unit					%	%
Sample Size, Unit					1 PLOT	1 PLOT
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	15	16
1	Untreated Check				5.0 -	25.0 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
2	Rhizovital FZB42	0.5	l/ha	A	3.8 -	23.8 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
3	Rhizocell GC	1	kg/ha	A	3.8 -	26.3 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
4	Rhizocell GC	1	kg/ha	B	1.3 -	21.3 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
5	Aloë Soil	10	l/ha	A	6.3 -	25.0 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
6	Aloë Soil	10	l/ha	B	1.3 -	21.3 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
7	Aloë Soil	5	l/ha	B	3.8 -	17.5 -
	Aloë Leaf	5	l/ha	CD		
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
8	Vercal Extra	5	l/ha	DEFG	1.3 -	25.0 -
	KAS	150	kg/ha	EG		
	Potassium sulphate	200	kg/ha	E		
9	Peloton 'new'	5	l/ha	D	7.5 -	41.3 -
	N+	20	l/ha	EFGH		
	Potassium sulphate	200	kg/ha	E		
10	Kalizwavel	6	l/ha	EFGH	3.8 -	20.0 -
	KAS	150	kg/ha	EG		
11	Peloton 'new'	5	l/ha	D	6.3 -	31.3 -
	N+	20	l/ha	EFGH		
	Kalizwavel	6	l/ha	EFGH		
LSD (P=.10)					8.89	13.27
Treatment Prob(F)					0.9633	0.2465

There were no significant differences in yellowing percentages between objects. However, object 7 (Aloë Soil and Aloë Leaf) seem to show slightly less yellowing than average, while object 9 (Peloton 'new') shows slightly more yellowing than average.

Table 5: Infestation with Phytophthora infestans (PHYTIN, % infestation), Sclerotinia sclerotiorum (SCLSC, % infested stems), Rhizoctinia solani (RHIZSO, index 0-1)

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	A2	A3	A7	A10
Assessment Timing					A2	A3	A7	A10
Assessment Date					20-6-2014	26-6-2014	9-9-2014	5-11-2014
Trt-Eval Interval					10 DA-C	6 DA-D	33 DA-H	90 DA-H
Plant-Eval Interval					49 DP-1	55 DP-1	130 DP-1	187 DP-1
Crop Stage Majority					40	41	91	99
Assessment Type					INFEST	INFEST	COPLPA	PESSEV
Assessment Unit					%	%	% STEMS	INDEX 0-1
Sample Size, Unit					1 PLOT	1 PLOT	1 PLOT	30 TUBER
Pest Code					PHYTIN	PHYTIN	SCLESC	RHIZSO
ARM Action Codes					APC	APC	APC	APC
					5	8	19	33
1	Untreated Check				1.8 - (0%)	1.8 - (0%)	16.4 - (0%)	0.00 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
2	Rhizovital FZB42	0.5	l/ha	A	1.8 - (0%)	1.8 - (0%)	16.4 - (0%)	0.00 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
3	Rhizocell GC	1	kg/ha	A	1.5 - (14%)	1.5 - (14%)	19.0 - (-16%)	0.00 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
4	Rhizocell GC	1	kg/ha	B	1.3 - (29%)	1.3 - (29%)	5.6 - (66%)	0.02 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
5	Aloë Soil	10	l/ha	A	2.5 - (-43%)	2.5 - (-43%)	18.4 - (-13%)	0.01 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
6	Aloë Soil	10	l/ha	B	5.0 - (-186%)	5.0 - (-186%)	16.4 - (0%)	0.01 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
7	Aloë Soil	5	l/ha	B	3.0 - (-71%)	3.0 - (-71%)	20.0 - (-22%)	0.01 -
	Aloë Leaf	5	l/ha	CD				
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
8	Vercal Extra	5	l/ha	DEFG	4.8 - (-171%)	4.8 - (-171%)	17.4 - (-6%)	0.01 -
	KAS	150	kg/ha	EG				
	Potassium sulphate	200	kg/ha	E				
9	Peloton 'new'	5	l/ha	D	2.5 - (-43%)	2.5 - (-43%)	19.7 - (-20%)	0.01 -
	N+	20	l/ha	EFGH				
	Potassium sulphate	200	kg/ha	E				
10	Kalizwavel	6	l/ha	EFGH	0.5 - (71%)	0.5 - (71%)	11.2 - (32%)	0.00 -
	KAS	150	kg/ha	EG				
11	Peloton 'new'	5	l/ha	D	3.8 - (-114%)	3.8 - (-114%)	7.3 - (56%)	0.05 -
	N+	20	l/ha	EFGH				
	Kalizwavel	6	l/ha	EFGH				
LSD (P=.10)					5.03	5.03	14.69	0.027
Treatment Prob(F)					0.8945	0.8945	0.7521	0.2269

In this trial, no significant differences were found in infestation with Phytophthora infestans, Sclerotinia sclerotiorum and Rhizoctonia solani.
Despite of the high Phytophthora risk in June, infestation remained low. The level of infestation with Sclerotinia was low. Rhizoctonia infestation on the tubers was very low.

Table 6: Number of harvested plants and talks, number of stalk per plant.

Assessment Timing					A8		A8		A8	
Assessment Date					6-10-2014		6-10-2014		6-10-2014	
Trt-Eval Interval					60 DA-H		60 DA-H		60 DA-H	
Plant-Eval Interval					157 DP-1		157 DP-1		157 DP-1	
Crop Stage Majority					99		99		99	
Description					# pl harvested		# st harvested		# st/pl	
Part Assessed					PLANT C		STEM C		STEM C	
Assessment Type					COUPLA		COPLPA		COPLPA	
Assessment Unit					NUMBER		NUMBER		%	
Sample Size, Unit					9	m2	9	m2	1	PLOT
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	20		21		22	
1	Untreated Check				32.8	-	95.0	ab	2.9	abc
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
2	Rhizovital FZB42	0.5	l/ha	A	32.8	-	91.5	b	2.8	abc
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
3	Rhizocell GC	1	kg/ha	A	31.0	-	100.3	ab	3.3	a
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
4	Rhizocell GC	1	kg/ha	B	32.8	-	98.8	ab	3.0	ab
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
5	Aloë Soil	10	l/ha	A	33.0	-	97.5	ab	3.0	abc
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
6	Aloë Soil	10	l/ha	B	31.8	-	92.5	ab	2.9	abc
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
7	Aloë Soil	5	l/ha	B	33.0	-	89.8	b	2.7	bc
	Aloë Leaf	5	l/ha	CD						
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
8	Vercal Extra	5	l/ha	DEFG	35.0	-	89.8	b	2.6	c
	KAS	150	kg/ha	EG						
	Potassium sulphate	200	kg/ha	E						
9	Peloton 'new'	5	l/ha	D	33.0	-	107.3	a	3.2	a
	N+	20	l/ha	EFGH						
	Potassium sulphate	200	kg/ha	E						
10	Kalizwavel	6	l/ha	EFGH	33.8	-	100.5	ab	3.0	abc
	KAS	150	kg/ha	EG						
11	Peloton 'new'	5	l/ha	D	32.3	-	99.0	ab	3.1	ab
	N+	20	l/ha	EFGH						
	Kalizwavel	6	l/ha	EFGH						
LSD (P=.10)					2.52		8.68		0.26	
Treatment Prob(F)					0.4996		0.0434		0.0027	

The number of harvested stems for object 9 (Peloton 'new') was significantly higher than for object 2 (Rhizovital), object 7 (Aloë Soil and Leaf) and object 8 (Vercal Extra). The number of stems per plant for object 3 (Rhizocell) and object 9 (Peloton 'new') was significantly higher than for object 2 (Rhizovital) and object 7 (Aloë Soil and Leaf).

Yield

Table 7: Yield (t/ha), sorting in <35, 35-50, 50-70, >70 mm (%).

Assessment Timing					A9	A9	A9	A9	A9
Assessment Date					30-10-2014	30-10-2014	30-10-2014	30-10-2014	30-10-2014
Trt-Eval Interval					84 DA-H	84 DA-H	84 DA-H	84 DA-H	84 DA-H
Plant-Eval Interval					181 DP-1	181 DP-1	181 DP-1	181 DP-1	181 DP-1
Crop Stage Majority					99	99	99	99	99
Description					Yields t/ha	<35	35-50	50-70	70>
Part Assessed					TUBHAR C	TUBHAR C	TUBHAR C	TUBHAR C	TUBHAR C
Assessment Type					YIELD	PERCEN	PERCEN	PERCEN	PERCEN
Assessment Unit					T-MET	%	%	%	%
Sample Size, Unit					1 ha	1 PLOT	1 PLOT	1 PLOT	1 PLOT
ARM Action Codes					APoC				
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	24	29	30	31	32
1	Untreated Check				58.3 -	0.6 ab	7.6 -	46.1 -	45.8 -
	KAS	150	kg/ha	EG	(100%)				
	Potassium sulphate	200	kg/ha	E					
2	Rhizovital FZB42	0.5	l/ha	A	56.4 -	0.3 b	7.2 -	50.4 -	42.2 -
	KAS	150	kg/ha	EG	(97%)				
	Potassium sulphate	200	kg/ha	E					
3	Rhizocell GC	1	kg/ha	A	59.8 -	0.8 a	7.8 -	45.7 -	45.7 -
	KAS	150	kg/ha	EG	(103%)				
	Potassium sulphate	200	kg/ha	E					
4	Rhizocell GC	1	kg/ha	B	63.6 -	0.4 b	5.1 -	44.0 -	50.6 -
	KAS	150	kg/ha	EG	(109%)				
	Potassium sulphate	200	kg/ha	E					
5	Aloë Soil	10	l/ha	A	64.8 -	0.4 b	6.6 -	43.3 -	49.7 -
	KAS	150	kg/ha	EG	(111%)				
	Potassium sulphate	200	kg/ha	E					
6	Aloë Soil	10	l/ha	B	56.3 -	0.3 b	6.0 -	48.4 -	45.4 -
	KAS	150	kg/ha	EG	(97%)				
	Potassium sulphate	200	kg/ha	E					
7	Aloë Soil	5	l/ha	B	61.9 -	0.5 b	6.2 -	41.7 -	51.7 -
	Aloë Leaf	5	l/ha	CD	(106%)				
	KAS	150	kg/ha	EG					
	Potassium sulphate	200	kg/ha	E					
8	Vercal Extra	5	l/ha	DEFG	60.0 -	0.3 b	6.6 -	46.6 -	46.5 -
	KAS	150	kg/ha	EG	(103%)				
	Potassium sulphate	200	kg/ha	E					
9	Peloton 'new'	5	l/ha	D	62.2 -	0.6 ab	7.3 -	51.6 -	40.6 -
	N+	20	l/ha	EFGH	(107%)				
	Potassium sulphate	200	kg/ha	E					
10	Kalizwavel	6	l/ha	EFGH	61.1 -	0.5 b	6.1 -	48.6 -	44.9 -
	KAS	150	kg/ha	EG	(105%)				
11	Peloton 'new'	5	l/ha	D	61.1 -	0.5 ab	8.0 -	54.0 -	37.5 -
	N+	20	l/ha	EFGH	(105%)				
	Kalizwavel	6	l/ha	EFGH					
LSD (P=.10)					9.27	0.23	2.95	7.79	10.26
Treatment Prob(F)					0.8800	0.0131	0.8667	0.2694	0.4686

There were no significant differences in yield and sorting between the objects. The highest yield was achieved by object 5 (Aloë Soil) and object 4 (Rhizocell). The yield was lowest with object 2 (Rhizovital) and object 6 (Aloë Soil).
The time of application of Aloë Soil appears to impact the development of the crop and the yield.

Table 8: Underwater weight (g/5.05 kg)

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	A11 36
	Assessment Timing				A11
	Assessment Date				12-11-2014
	Trt-Eval Interval				97 DA-H
	Plant-Eval Interval				194 DP-1
	Crop Stage Majority				99
	Description				OWG5050
	Part Assessed				TUBER C
	Assessment Type				WESTMO
	Assessment Unit				g
	Sample Size, Unit				5 kg
	ARM Action Codes				APoC
1	Untreated Check				348.5 -
	KAS	150	kg/ha	EG	(100%)
	Potassium sulphate	200	kg/ha	E	
2	Rhizovital FZB42	0.5	l/ha	A	350.8 -
	KAS	150	kg/ha	EG	(101%)
	Potassium sulphate	200	kg/ha	E	
3	Rhizocell GC	1	kg/ha	A	349.0 -
	KAS	150	kg/ha	EG	(100%)
	Potassium sulphate	200	kg/ha	E	
4	Rhizocell GC	1	kg/ha	B	348.0 -
	KAS	150	kg/ha	EG	(100%)
	Potassium sulphate	200	kg/ha	E	
5	Aloë Soil	10	l/ha	A	350.0 -
	KAS	150	kg/ha	EG	(100%)
	Potassium sulphate	200	kg/ha	E	
6	Aloë Soil	10	l/ha	B	341.0 -
	KAS	150	kg/ha	EG	(98%)
	Potassium sulphate	200	kg/ha	E	
7	Aloë Soil	5	l/ha	B	343.0 -
	Aloë Leaf	5	l/ha	CD	(98%)
	KAS	150	kg/ha	EG	
	Potassium sulphate	200	kg/ha	E	
8	Vercal Extra	5	l/ha	DEFG	339.3 -
	KAS	150	kg/ha	EG	(97%)
	Potassium sulphate	200	kg/ha	E	
9	Peloton 'new'	5	l/ha	D	343.0 -
	N+	20	l/ha	EFGH	(98%)
	Potassium sulphate	200	kg/ha	E	
10	Kalizwavel	6	l/ha	EFGH	347.0 -
	KAS	150	kg/ha	EG	(100%)
11	Peloton 'new'	5	l/ha	D	347.3 -
	N+	20	l/ha	EFGH	(100%)
	Kalizwavel	6	l/ha	EFGH	
LSD (P=.10)					9.88
Treatment Prob(F)					0.5623

The underwater weights of the different objects were very close to each other. There were no significant differences.

RESULTS

Rhizovital FZB42

The application of Rhizovital FZB42 in this test has not resulted in a significant difference in size sorting and yield. Nor have any significant changes been found in skin quality, occurrence of rhizoctonia and sclerotinia or in the underwater weight.

Rhizocell GC

Both objects showed a positive (though not significant) impact on yield. Noteworthy is that application 'immediately prior to ridging' (sprayed over the ridge) resulted in clearly bigger sorting and the highest yield (+ 9%).
With respect to skin quality, occurrence of rhizoctonia and the underwater weight, no significant differences could be found. The objects treated with Rhizocell GC had more stems per tuber. Infestation with Sclerotinia was lowest for the object 'applied prior to ridging'.

Aloë Soil

Yield in kg/ha was highest when sprayed over the tuber during planting (+11%). Application prior to ridging resulted in the lowest yield. The split-up application in combination with Aloë Leaf did result in an increased yield (+6%).
With respect to skin quality, occurrence of rhizoctonia and sclerotinia, the underwater weight and stems/tuber, no significant differences were found.

Vercal Extra

The application with Vercal Extra has not resulted in significant differences in size sorting and yield in this trial. No significant changes were found with respect to skin quality, occurrence of rhizoctonia and sclerotinia and the underwater weight.

Kalizwavel

Replacement of 200 kg potassium sulphate (100 kg K2O) by 24 ltr Kalizwavel (9 kg K2O) did not result in significant changes in yield or quality. A higher yield was achieved with Kalizwavel.
No significant changes were found with respect to skin quality, occurrence of rhizoctonia and sclerotinia and the underwater weight.

Peleton 'new'

The one-time application of Peleton resulted in (not significantly) more stems and more tubers. This seems not to have resulted in a lower yield per ha.
No significant changes were found with respect to skin quality, occurrence of rhizoctonia and sclerotinia and the underwater weight.

N+

Replacing 300 KAS with 4 sprayings of 20 ltr N+ has resulted in a not significant yield increase of 5 – 7%.
No significant changes were found with respect to skin quality, occurrence of rhizoctonia and sclerotinia, and the underwater weight.

ANNEX 1: Photographs

Figure 1: Propagating material Innovator

Figure 2: Hassia propagating machine

Figure 3: View of trial immediately after planting

Figure 4: Detail propagating material in bed

Figure 5: View of trial, 10-06-2014

Figure 6: Uneven development, 10-06-2014

Figure 7: Uneven development, 10-06-2014

Figure 8: Stem with Sclerotinia infestation

Annex 2: raw data

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	1	2	3	4	5
	Pest Type									D Disease
	Pest Code									PHYTIN
	Pest Scientific Name									Phytophthora i>
	Pest Name									Late blight of>
	Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
	BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
	Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
	Crop Name					Potato	Potato	Potato	Potato	Potato
	Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
	Description									
	Part Assessed					PLANT C	PLANT C	PLANT C	PLANT C	PLANT P
	Assessment Date					6-6-2014	6-6-2014	20-6-2014	20-6-2014	20-6-2014
	Assessment Type					CROPST	PHYGEN	CROPST	PHYGEN	INFEST
	Assessment Unit					1-10	%	1-10	%	%
	Sample Size, Unit					1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
	Collection Basis, Unit									
	Number of Subsamples					1	1	1	1	1
	Crop Stage Majority					29	29	40	40	40
	Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
	Assessed By					W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
	Assessment Timing					A1	A1	A2	A2	A2
	Days After First/Last Applic.					35 24	35 24	49 10	49 10	49 10
	Trt-Eval Interval					24 DA-B	24 DA-B	10 DA-C	10 DA-C	10 DA-C
	Plant-Eval Interval					35 DP-1	35 DP-1	49 DP-1	49 DP-1	49 DP-1
	Days After Emergence									
	ARM Action Codes									APC
	Number of Decimals					1	1	1	1	1
1	Untreated Check				104	6.0	0.0	4.0	0.0	5.0
	KAS	150	kg/ha	EG	210	5.0	0.0	5.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	308	7.0	0.0	7.0	0.0	2.0
					402	6.0	0.0	5.0	0.0	0.0
					Mean =	6.0	0.0	5.3	0.0	1.8
2	Rhizovital FZB42	0.5	l/ha	A	111	6.0	0.0	6.0	0.0	5.0
	KAS	150	kg/ha	EG	208	6.0	0.0	6.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	303	5.0	0.0	4.0	0.0	2.0
					405	6.0	0.0	6.0	0.0	0.0
					Mean =	5.8	0.0	5.5	0.0	1.8
3	Rhizocell GC	1	kg/ha	A	102	6.0	0.0	5.0	0.0	0.0
	KAS	150	kg/ha	EG	204	6.0	0.0	4.0	0.0	3.0
	Potassium sulphate	200	kg/ha	E	307	6.0	0.0	5.0	0.0	3.0
					410	7.0	0.0	7.0	0.0	0.0
					Mean =	6.3	0.0	5.3	0.0	1.5
4	Rhizocell GC	1	kg/ha	B	101	7.0	0.0	7.0	0.0	0.0
	KAS	150	kg/ha	EG	209	6.0	0.0	6.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	304	6.0	0.0	6.0	0.0	0.0
					407	6.0	0.0	6.0	0.0	0.0
					Mean =	6.3	0.0	6.3	0.0	1.3
5	Aloë Soil	10	l/ha	A	106	6.0	0.0	7.0	0.0	0.0
	KAS	150	kg/ha	EG	211	6.0	0.0	5.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	309	8.0	0.0	8.0	0.0	5.0
					403	6.0	0.0	6.0	0.0	0.0
					Mean =	6.5	0.0	6.5	0.0	2.5
6	Aloë Soil	10	l/ha	B	109	6.0	0.0	4.0	0.0	20.0
	KAS	150	kg/ha	EG	202	7.0	0.0	5.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	305	5.0	0.0	5.0	0.0	0.0
					411	6.0	0.0	7.0	0.0	0.0
					Mean =	6.0	0.0	5.3	0.0	5.0
7	Aloë Soil	5	l/ha	B	103	6.0	0.0	4.0	0.0	0.0
	Aloë Leaf	5	l/ha	CD	201	7.0	0.0	6.0	0.0	10.0
	KAS	150	kg/ha	EG	306	5.0	0.0	5.0	0.0	2.0
	Potassium sulphate	200	kg/ha	E	408	6.0	0.0	6.0	0.0	0.0
					Mean =	6.0	0.0	5.3	0.0	3.0
8	Vercal Extra	5	l/ha	DEFG	108	6.0	0.0	6.0	0.0	2.0
	KAS	150	kg/ha	EG	206	8.0	0.0	7.0	0.0	2.0
	Potassium sulphate	200	kg/ha	E	302	5.0	0.0	4.0	0.0	5.0
					409	6.0	0.0	6.0	0.0	10.0
					Mean =	6.3	0.0	5.8	0.0	4.8
9	Peloton 'new'	5	l/ha	D	105	6.0	0.0	5.0	0.0	3.0
	N+	20	l/ha	EFGH	207	7.0	0.0	7.0	0.0	2.0
	Potassium sulphate	200	kg/ha	E	311	7.0	0.0	8.0	0.0	5.0
					404	6.0	0.0	6.0	0.0	0.0
					Mean =	6.5	0.0	6.5	0.0	2.5
10	Kalizwavel	6	l/ha	EFGH	110	6.0	0.0	5.0	0.0	0.0
	KAS	150	kg/ha	EG	203	6.0	0.0	5.0	0.0	2.0
					301	6.0	0.0	6.0	0.0	0.0
					406	6.0	0.0	6.0	0.0	0.0
					Mean =	6.0	0.0	5.5	0.0	0.5
11	Peloton 'new'	5	l/ha	D	107	7.0	0.0	6.0	0.0	3.0
	N+	20	l/ha	EFGH	205	7.0	0.0	5.0	0.0	2.0
	Kalizwavel	6	l/ha	EFGH	310	8.0	0.0	8.0	0.0	10.0
					401	6.0	0.0	5.0	0.0	0.0
					Mean =	7.0	0.0	6.0	0.0	3.8

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	6	7	8	9	10
	Pest Type							D Disease		
	Pest Code							PHYTIN		
	Pest Scientific Name							Phytophthora i>		
	Pest Name							Late blight of>		
	Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
	BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
	Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
	Crop Name					Potato	Potato	Potato	Potato	Potato
	Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
	Description									
	Part Assessed					PLANT C	PLANT C	PLANT P	PLANT C	PLANT C
	Assessment Date					26-6-2014	26-6-2014	26-6-2014	10-7-2014	10-7-2014
	Assessment Type					CROPST	PHYGEN	INFEST	CROPST	PHYGEN
	Assessment Unit					1-10	%	%	1-10	%
	Sample Size, Unit					1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
	Collection Basis, Unit									
	Number of Subsamples					1	1	1	1	1
	Crop Stage Majority					41	41	41	65	65
	Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
	Assessed By					W. Moes	W. Moes	W. Moes	A Embrechts	A Embrechts
	Assessment Timing					A3	A3	A3	A4	A4
	Days After First/Last Applic.					55 6	55 6	55 6	69 14	69 14
	Trt-Eval Interval					6 DA-D	6 DA-D	6 DA-D	14 DA-E	14 DA-E
	Plant-Eval Interval					55 DP-1	55 DP-1	55 DP-1	69 DP-1	69 DP-1
	Days After Emergence									
	ARM Action Codes							APC		
	Number of Decimals					1	1	1	1	1
1	Untreated Check				104	4.0	0.0	5.0	6.0	0.0
	KAS	150	kg/ha	EG	210	5.0	0.0	0.0	7.0	0.0
	Potassium sulphate	200	kg/ha	E	308	7.0	0.0	2.0	7.0	0.0
					402	5.0	0.0	0.0	6.0	0.0
					Mean =	5.3	0.0	1.8	6.5	0.0
2	Rhizovital FZB42	0.5	l/ha	A	111	6.0	0.0	5.0	5.0	0.0
	KAS	150	kg/ha	EG	208	6.0	0.0	0.0	8.0	0.0
	Potassium sulphate	200	kg/ha	E	303	4.0	0.0	2.0	7.0	0.0
					405	6.0	0.0	0.0	5.0	0.0
					Mean =	5.5	0.0	1.8	6.3	0.0
3	Rhizocell GC	1	kg/ha	A	102	5.0	0.0	0.0	7.0	0.0
	KAS	150	kg/ha	EG	204	4.0	0.0	3.0	7.0	0.0
	Potassium sulphate	200	kg/ha	E	307	5.0	0.0	3.0	7.0	0.0
					410	7.0	0.0	0.0	7.0	0.0
					Mean =	5.3	0.0	1.5	7.0	0.0
4	Rhizocell GC	1	kg/ha	B	101	7.0	0.0	0.0	7.0	0.0
	KAS	150	kg/ha	EG	209	6.0	0.0	5.0	6.0	0.0
	Potassium sulphate	200	kg/ha	E	304	6.0	0.0	0.0	7.0	0.0
					407	6.0	0.0	0.0	6.0	0.0
					Mean =	6.3	0.0	1.3	6.5	0.0
5	Aloë Soil	10	l/ha	A	106	7.0	0.0	0.0	7.0	0.0
	KAS	150	kg/ha	EG	211	5.0	0.0	5.0	5.0	0.0
	Potassium sulphate	200	kg/ha	E	309	8.0	0.0	5.0	6.0	0.0
					403	6.0	0.0	0.0	7.0	0.0
					Mean =	6.5	0.0	2.5	6.3	0.0
6	Aloë Soil	10	l/ha	B	109	4.0	0.0	20.0	5.0	0.0
	KAS	150	kg/ha	EG	202	5.0	0.0	0.0	6.0	0.0
	Potassium sulphate	200	kg/ha	E	305	5.0	0.0	0.0	7.0	0.0
					411	7.0	0.0	0.0	6.0	0.0
					Mean =	5.3	0.0	5.0	6.0	0.0
7	Aloë Soil	5	l/ha	B	103	4.0	0.0	0.0	7.0	0.0
	Aloë Leaf	5	l/ha	CD	201	6.0	0.0	10.0	5.0	0.0
	KAS	150	kg/ha	EG	306	5.0	0.0	2.0	7.0	0.0
	Potassium sulphate	200	kg/ha	E	408	6.0	0.0	0.0	6.0	0.0
					Mean =	5.3	0.0	3.0	6.3	0.0
8	Vercal Extra	5	l/ha	DEFG	108	6.0	0.0	2.0	8.0	0.0
	KAS	150	kg/ha	EG	206	7.0	0.0	2.0	7.0	0.0
	Potassium sulphate	200	kg/ha	E	302	4.0	0.0	5.0	7.0	0.0
					409	6.0	0.0	10.0	6.0	0.0
					Mean =	5.8	0.0	4.8	7.0	0.0
9	Peloton 'new'	5	l/ha	D	105	5.0	0.0	3.0	6.0	0.0
	N+	20	l/ha	EFGH	207	7.0	0.0	2.0	8.0	0.0
	Potassium sulphate	200	kg/ha	E	311	8.0	0.0	5.0	6.0	0.0
					404	6.0	0.0	0.0	6.0	0.0
					Mean =	6.5	0.0	2.5	6.5	0.0
10	Kalizwavel	6	l/ha	EFGH	110	5.0	0.0	0.0	8.0	0.0
	KAS	150	kg/ha	EG	203	5.0	0.0	2.0	7.0	0.0
					301	6.0	0.0	0.0	7.0	0.0
					406	6.0	0.0	0.0	6.0	0.0
					Mean =	5.5	0.0	0.5	7.0	0.0
11	Peloton 'new'	5	l/ha	D	107	6.0	0.0	3.0	7.0	0.0
	N+	20	l/ha	EFGH	205	5.0	0.0	2.0	7.0	0.0
	Kalizwavel	6	l/ha	EFGH	310	8.0	0.0	10.0	6.0	0.0
					401	5.0	0.0	0.0	6.0	0.0
					Mean =	6.0	0.0	3.8	6.5	0.0

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	11	12	13	14	15
Pest Type										
Pest Code										
Pest Scientific Name										
Pest Name										
Crop Code						SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
BBCH Scale						BPOT	BPOT	BPOT	BPOT	BPOT
Crop Scientific Name						Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
Crop Name						Potato	Potato	Potato	Potato	Potato
Crop Variety						Innovator	Innovator	Innovator	Innovator	Innovator
Description										
Part Assessed						PLANT C	PLANT C	PLANT C	PLANT C	PLANT C
Assessment Date						24-7-2014	24-7-2014	7-8-2014	7-8-2014	7-8-2014
Assessment Type						CROPST	PHYGEN	CROPST	PHYGEN	YELLOW
Assessment Unit						1-10	%	1-10	%	%
Sample Size, Unit						1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis, Unit										
Number of Subsamples						1	1	1	1	1
Crop Stage Majority						69	69	81	81	81
Crop Stage Scale						BBCH	BBCH	BBCH	BBCH	BBCH
Assessed By						W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
Assessment Timing						A5	A5	A6	A6	A6
Days After First/Last Applic.						83 14	83 14	97 14	97 14	97 14
Trt-Eval Interval						14 DA-F	14 DA-F	14 DA-G	14 DA-G	14 DA-G
Plant-Eval Interval						83 DP-1	83 DP-1	97 DP-1	97 DP-1	97 DP-1
Days After Emergence										
ARM Action Codes										
Number of Decimals						1	1	1	1	1
1	Untreated Check				104	6.0	0.0	7.0	0.0	0.0
	KAS	150	kg/ha	EG	210	7.0	0.0	6.0	0.0	20.0
	Potassium sulphate	200	kg/ha	E	308	7.0	0.0	7.0	0.0	0.0
					402	7.0	0.0	7.0	0.0	0.0
					Mean =	6.8	0.0	6.8	0.0	5.0
2	Rhizovital FZB42	0.5	l/ha	A	111	5.0	0.0	5.0	0.0	15.0
	KAS	150	kg/ha	EG	208	7.0	0.0	7.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	303	8.0	0.0	8.0	0.0	0.0
					405	6.0	0.0	6.0	0.0	0.0
					Mean =	6.5	0.0	6.5	0.0	3.8
3	Rhizocell GC	1	kg/ha	A	102	7.0	0.0	7.0	0.0	0.0
	KAS	150	kg/ha	EG	204	7.0	0.0	7.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	307	8.0	0.0	8.0	0.0	0.0
					410	7.0	0.0	7.0	0.0	10.0
					Mean =	7.3	0.0	7.3	0.0	3.8
4	Rhizocell GC	1	kg/ha	B	101	7.0	0.0	7.0	0.0	0.0
	KAS	150	kg/ha	EG	209	7.0	0.0	7.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	304	7.0	0.0	7.0	0.0	0.0
					407	7.0	0.0	7.0	0.0	0.0
					Mean =	7.0	0.0	7.0	0.0	1.3
5	Aloë Soil	10	l/ha	A	106	7.0	0.0	8.0	0.0	0.0
	KAS	150	kg/ha	EG	211	5.0	0.0	5.0	0.0	25.0
	Potassium sulphate	200	kg/ha	E	309	7.0	0.0	7.0	0.0	0.0
					403	7.0	0.0	7.0	0.0	0.0
					Mean =	6.5	0.0	6.8	0.0	6.3
6	Aloë Soil	10	l/ha	B	109	5.0	0.0	6.0	0.0	0.0
	KAS	150	kg/ha	EG	202	6.0	0.0	6.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	305	8.0	0.0	8.0	0.0	0.0
					411	6.0	0.0	6.0	0.0	0.0
					Mean =	6.3	0.0	6.5	0.0	1.3
7	Aloë Soil	5	l/ha	B	103	8.0	0.0	8.0	0.0	0.0
	Aloë Leaf	5	l/ha	CD	201	6.0	0.0	6.0	0.0	15.0
	KAS	150	kg/ha	EG	306	8.0	0.0	8.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	408	7.0	0.0	7.0	0.0	0.0
					Mean =	7.3	0.0	7.3	0.0	3.8
8	Vercal Extra	5	l/ha	DEFG	108	8.0	0.0	8.0	0.0	0.0
	KAS	150	kg/ha	EG	206	7.0	0.0	7.0	0.0	5.0
	Potassium sulphate	200	kg/ha	E	302	7.0	0.0	7.0	0.0	0.0
					409	6.0	0.0	7.0	0.0	0.0
					Mean =	7.0	0.0	7.3	0.0	1.3
9	Peloton 'new'	5	l/ha	D	105	6.0	0.0	7.0	0.0	0.0
	N+	20	l/ha	EFGH	207	7.0	0.0	7.0	0.0	0.0
	Potassium sulphate	200	kg/ha	E	311	5.0	0.0	5.0	0.0	30.0
					404	6.0	0.0	6.0	0.0	0.0
					Mean =	6.0	0.0	6.3	0.0	7.5
10	Kalizwavel	6	l/ha	EFGH	110	8.0	0.0	8.0	0.0	5.0
	KAS	150	kg/ha	EG	203	6.0	0.0	6.0	0.0	10.0
					301	7.0	0.0	7.0	0.0	0.0
					406	6.0	0.0	6.0	0.0	0.0
					Mean =	6.8	0.0	6.8	0.0	3.8
11	Peloton 'new'	5	l/ha	D	107	6.0	0.0	7.0	0.0	0.0
	N+	20	l/ha	EFGH	205	7.0	0.0	7.0	0.0	15.0
	Kalizwavel	6	l/ha	EFGH	310	7.0	0.0	7.0	0.0	10.0
					401	6.0	0.0	6.0	0.0	0.0
					Mean =	6.5	0.0	6.8	0.0	6.3

Pest Type						D Disease	D Disease	D Disease	
Pest Code						SCLESC	SCLESC	SCLESC	
Pest Scientific Name						Sclerotinia sc>	Sclerotinia sc>	Sclerotinia sc>	
Pest Name						Cottony rot	Cottony rot	Cottony rot	
Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
Crop Name					Potato	Potato	Potato	Potato	Potato
Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
Description						TOTAL	INFECT	INFECT	# pl harvested
Part Assessed					PLANT C	STEM P	STEM P	STEM P	PLANT C
Assessment Date					9-9-2014	9-9-2014	9-9-2014	9-9-2014	6-10-2014
Assessment Type					YELLOW	COPLPA	COPLPA	COPLPA	COUPLA
Assessment Unit					%	NUMBER	NUMBER	%	NUMBER
Sample Size, Unit					1 PLOT	3 PLANT	3 PLANT	1 PLOT	9 m2
Collection Basis, Unit						1 PLOT	1 PLOT		1 PLOT
Number of Subsamples					1	1	1	1	1
Crop Stage Majority					91	91	91	91	99
Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
Assessed By					W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
Assessment Timing					A7	A7	A7	A7	A8
Days After First/Last Applic.					130 33	130 33	130 33	130 33	157 60
Trt-Eval Interval					33 DA-H	33 DA-H	33 DA-H	33 DA-H	60 DA-H
Plant-Eval Interval					130 DP-1	130 DP-1	130 DP-1	130 DP-1	157 DP-1
Days After Emergence									
ARM Action Codes								APC	
Number of Decimals					1	1	1	1	1
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	16	17	18	19	20
1	Untreated Check				104	10.0	7.0	2.0	28.6	31.0
	KAS	150	kg/ha	EG	210	30.0	11.0	1.0	9.1	32.0
	Potassium sulphate	200	kg/ha	E	308	20.0	10.0	2.0	20.0	32.0
					402	40.0	13.0	1.0	7.7	36.0
					Mean =	25.0	10.3	1.5	16.4	32.8
2	Rhizovital FZB42	0.5	l/ha	A	111	20.0	7.0	0.0	0.0	25.0
	KAS	150	kg/ha	EG	208	30.0	10.0	1.0	10.0	34.0
	Potassium sulphate	200	kg/ha	E	303	5.0	9.0	4.0	44.4	34.0
					405	40.0	9.0	1.0	11.1	38.0
					Mean =	23.8	8.8	1.5	16.4	32.8
3	Rhizocell GC	1	kg/ha	A	102	15.0	7.0	2.0	28.6	24.0
	KAS	150	kg/ha	EG	204	25.0	11.0	1.0	9.1	33.0
	Potassium sulphate	200	kg/ha	E	307	15.0	10.0	3.0	30.0	33.0
					410	50.0	12.0	1.0	8.3	34.0
					Mean =	26.3	10.0	1.8	19.0	31.0
4	Rhizocell GC	1	kg/ha	B	101	10.0	10.0	1.0	10.0	30.0
	KAS	150	kg/ha	EG	209	25.0	8.0	1.0	12.5	32.0
	Potassium sulphate	200	kg/ha	E	304	10.0	10.0	0.0	0.0	29.0
					407	40.0	10.0	0.0	0.0	40.0
					Mean =	21.3	9.5	0.5	5.6	32.8
5	Aloë Soil	10	l/ha	A	106	15.0	12.0	4.0	33.3	29.0
	KAS	150	kg/ha	EG	211	35.0	8.0	0.0	0.0	34.0
	Potassium sulphate	200	kg/ha	E	309	10.0	8.0	2.0	25.0	34.0
					403	40.0	13.0	2.0	15.4	35.0
					Mean =	25.0	10.3	2.0	18.4	33.0
6	Aloë Soil	10	l/ha	B	109	10.0	10.0	1.0	10.0	28.0
	KAS	150	kg/ha	EG	202	20.0	8.0	2.0	25.0	31.0
	Potassium sulphate	200	kg/ha	E	305	15.0	9.0	2.0	22.2	32.0
					411	40.0	12.0	1.0	8.3	36.0
					Mean =	21.3	9.8	1.5	16.4	31.8
7	Aloë Soil	5	l/ha	B	103	10.0	8.0	1.0	12.5	29.0
	Aloë Leaf	5	l/ha	CD	201	15.0	8.0	4.0	50.0	33.0
	KAS	150	kg/ha	EG	306	5.0	12.0	1.0	8.3	34.0
	Potassium sulphate	200	kg/ha	E	408	40.0	11.0	1.0	9.1	36.0
					Mean =	17.5	9.8	1.8	20.0	33.0
8	Vercal Extra	5	l/ha	DEFG	108	15.0	12.0	3.0	25.0	32.0
	KAS	150	kg/ha	EG	206	15.0	12.0	4.0	33.3	36.0
	Potassium sulphate	200	kg/ha	E	302	25.0	9.0	1.0	11.1	34.0
					409	45.0	10.0	0.0	0.0	38.0
					Mean =	25.0	10.8	2.0	17.4	35.0
9	Peloton 'new'	5	l/ha	D	105	20.0	8.0	2.0	25.0	32.0
	N+	20	l/ha	EFGH	207	25.0	9.0	2.0	22.2	28.0
	Potassium sulphate	200	kg/ha	E	311	75.0	12.0	1.0	8.3	35.0
					404	45.0	13.0	3.0	23.1	37.0
					Mean =	41.3	10.5	2.0	19.7	33.0
10	Kalizwavel	6	l/ha	EFGH	110	20.0	9.0	2.0	22.2	32.0
	KAS	150	kg/ha	EG	203	25.0	10.0	1.0	10.0	34.0
					301	20.0	9.0	0.0	0.0	32.0
					406	15.0	8.0	1.0	12.5	37.0
					Mean =	20.0	9.0	1.0	11.2	33.8
11	Peloton 'new'	5	l/ha	D	107	20.0	10.0	1.0	10.0	27.0
	N+	20	l/ha	EFGH	205	25.0	10.0	1.0	10.0	33.0
	Kalizwavel	6	l/ha	EFGH	310	35.0	11.0	1.0	9.1	32.0
					401	45.0	12.0	0.0	0.0	37.0
					Mean =	31.3	10.8	0.8	7.3	32.3

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	21	22	23	24	25
	Pest Type									
	Pest Code									
	Pest Scientific Name									
	Pest Name									
	Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
	BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
	Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
	Crop Name					Potato	Potato	Potato	Potato	Potato
	Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
	Description					# st harvested	# st/pl	Yields kg/plot	Yields t/ha	<35
	Part Assessed					STEM C	STEM C	TUBHAR -	TUBHAR C	TUBHAR C
	Assessment Date					6-10-2014	6-10-2014	30-10-2014	30-10-2014	30-10-2014
	Assessment Type					COPLPA	COPLPA	YIELD	YIELD	WEIGHT
	Assessment Unit					NUMBER	%	kg/plot	T-MET	kg
	Sample Size, Unit					9 m2	1 PLOT	1 PLOT	1 ha	1 PLOT
	Collection Basis, Unit					1 PLOT		9 m2		9 m2
	Number of Subsamples					1	1	1	1	1
	Crop Stage Majority					99	99	99	99	99
	Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
	Assessed By					W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
	Assessment Timing					A8	A8	A9	A9	A9
	Days After First/Last Applic.					157 60	157 60	181 84	181 84	181 84
	Trt-Eval Interval					60 DA-H	60 DA-H	84 DA-H	84 DA-H	84 DA-H
	Plant-Eval Interval					157 DP-1	157 DP-1	181 DP-1	181 DP-1	181 DP-1
	Days After Emergence									
	ARM Action Codes							APoC	APoC	
	Number of Decimals					1	1	1	1	1
1	Untreated Check				104	84.0	2.7	62.1	68.9	0.5
	KAS	150	kg/ha	EG	210	92.0	2.9	51.0	56.7	0.1
	Potassium sulphate	200	kg/ha	E	308	98.0	3.1	58.4	64.9	0.3
					402	106.0	2.9	38.4	42.7	0.3
					Mean =	95.0	2.9	52.5	58.3	0.3
2	Rhizovital FZB42	0.5	l/ha	A	111	74.0	3.0	54.5	60.5	0.2
	KAS	150	kg/ha	EG	208	96.0	2.8	61.4	68.2	0.2
	Potassium sulphate	200	kg/ha	E	303	84.0	2.5	47.9	53.2	0.1
					405	112.0	2.9	39.2	43.5	0.1
					Mean =	91.5	2.8	50.8	56.4	0.1
3	Rhizocell GC	1	kg/ha	A	102	80.0	3.3	60.1	66.7	0.4
	KAS	150	kg/ha	EG	204	98.0	3.0	55.5	61.6	0.4
	Potassium sulphate	200	kg/ha	E	307	105.0	3.2	55.1	61.2	0.4
					410	118.0	3.5	44.8	49.8	0.6
					Mean =	100.3	3.3	53.9	59.8	0.4
4	Rhizocell GC	1	kg/ha	B	101	81.0	2.7	56.3	62.6	0.2
	KAS	150	kg/ha	EG	209	100.0	3.1	62.4	69.3	0.1
	Potassium sulphate	200	kg/ha	E	304	86.0	3.0	57.6	63.9	0.2
					407	128.0	3.2	52.8	58.7	0.4
					Mean =	98.8	3.0	57.3	63.6	0.2
5	Aloë Soil	10	l/ha	A	106	84.0	2.9	76.9	85.4	0.1
	KAS	150	kg/ha	EG	211	86.0	2.5	44.8	49.8	0.2
	Potassium sulphate	200	kg/ha	E	309	104.0	3.1	63.8	70.8	0.2
					403	116.0	3.3	47.9	53.2	0.4
					Mean =	97.5	3.0	58.4	64.8	0.2
6	Aloë Soil	10	l/ha	B	109	74.0	2.6	48.7	54.1	0.2
	KAS	150	kg/ha	EG	202	96.0	3.1	55.6	61.8	0.1
	Potassium sulphate	200	kg/ha	E	305	90.0	2.8	56.3	62.5	0.2
					411	110.0	3.1	42.3	46.9	0.1
					Mean =	92.5	2.9	50.7	56.3	0.1
7	Aloë Soil	5	l/ha	B	103	69.0	2.4	64.6	71.8	0.4
	Aloë Leaf	5	l/ha	CD	201	91.0	2.8	50.3	55.9	0.2
	KAS	150	kg/ha	EG	306	96.0	2.8	57.8	64.2	0.1
	Potassium sulphate	200	kg/ha	E	408	103.0	2.9	50.0	55.6	0.4
					Mean =	89.8	2.7	55.7	61.9	0.3
8	Vercal Extra	5	l/ha	DEFG	108	73.0	2.3	61.4	68.2	0.1
	KAS	150	kg/ha	EG	206	97.0	2.7	62.1	69.0	0.2
	Potassium sulphate	200	kg/ha	E	302	85.0	2.5	46.1	51.2	0.2
					409	104.0	2.7	46.4	51.6	0.3
					Mean =	89.8	2.6	54.0	60.0	0.2
9	Peloton 'new'	5	l/ha	D	105	91.0	2.8	68.2	75.8	0.3
	N+	20	l/ha	EFGH	207	96.0	3.4	63.7	70.8	0.2
	Potassium sulphate	200	kg/ha	E	311	122.0	3.5	48.1	53.4	0.5
					404	120.0	3.2	43.7	48.6	0.3
					Mean =	107.3	3.2	55.9	62.2	0.3
10	Kalizwavel	6	l/ha	EFGH	110	90.0	2.8	69.3	77.0	0.2
	KAS	150	kg/ha	EG	203	102.0	3.0	54.7	60.7	0.1
					301	97.0	3.0	51.9	57.6	0.2
					406	113.0	3.1	44.2	49.1	0.5
					Mean =	100.5	3.0	55.0	61.1	0.2
11	Peloton 'new'	5	l/ha	D	107	86.0	3.2	76.3	84.8	0.4
	N+	20	l/ha	EFGH	205	100.0	3.0	58.4	64.8	0.2
	Kalizwavel	6	l/ha	EFGH	310	108.0	3.4	46.2	51.3	0.3
					401	102.0	2.8	39.1	43.4	0.3
					Mean =	99.0	3.1	55.0	61.1	0.3

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	26	27	28	29	30
	Pest Type									
	Pest Code									
	Pest Scientific Name									
	Pest Name									
	Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
	BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
	Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
	Crop Name					Potato	Potato	Potato	Potato	Potato
	Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
	Description					35-50	50-70	70>	<35	35-50
	Part Assessed					TUBHAR C	TUBHAR C	TUBHAR C	TUBHAR C	TUBHAR C
	Assessment Date					30-10-2014	30-10-2014	30-10-2014	30-10-2014	30-10-2014
	Assessment Type					WEIGHT	WEIGHT	WEIGHT	PERCEN	PERCEN
	Assessment Unit					kg	kg	kg	%	%
	Sample Size, Unit					1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
	Collection Basis, Unit					9 m2	9 m2	9 m2		
	Number of Subsamples					1	1	1	1	1
	Crop Stage Majority					99	99	99	99	99
	Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
	Assessed By					W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
	Assessment Timing					A9	A9	A9	A9	A9
	Days After First/Last Applic.					181 84	181 84	181 84	181 84	181 84
	Trt-Eval Interval					84 DA-H	84 DA-H	84 DA-H	84 DA-H	84 DA-H
	Plant-Eval Interval					181 DP-1	181 DP-1	181 DP-1	181 DP-1	181 DP-1
	Days After Emergence									
	ARM Action Codes									
	Number of Decimals					1	1	1	1	1
1	Untreated Check			A	104	3.9	20.3	37.5	0.8	6.2
	KAS	150	kg/ha	EG	210	3.7	25.7	21.6	0.2	7.2
	Potassium sulphate	200	kg/ha	E	308	2.9	28.1	27.1	0.5	5.0
					402	4.6	20.6	13.0	0.8	11.8
					Mean =	3.7	23.6	24.8	0.6	7.6
2	Rhizovital FZB42	0.5	l/ha	A	111	4.2	25.2	24.9	0.4	7.6
	KAS	150	kg/ha	EG	208	2.9	27.8	30.7	0.2	4.6
	Potassium sulphate	200	kg/ha	E	303	2.8	22.5	22.5	0.2	5.8
					405	4.2	24.7	10.2	0.3	10.7
					Mean =	3.5	25.0	22.1	0.3	7.2
3	Rhizocell GC	1	kg/ha	A	102	3.0	20.8	35.9	0.6	5.0
	KAS	150	kg/ha	EG	204	3.6	26.7	24.8	0.7	6.5
	Potassium sulphate	200	kg/ha	E	307	3.0	21.8	29.9	0.7	5.4
					410	6.4	27.1	10.7	1.3	14.3
					Mean =	4.0	24.1	25.3	0.8	7.8
4	Rhizocell GC	1	kg/ha	B	101	1.9	22.7	31.6	0.3	3.4
	KAS	150	kg/ha	EG	209	2.9	29.2	30.2	0.2	4.6
	Potassium sulphate	200	kg/ha	E	304	2.5	24.7	30.2	0.3	4.3
					407	4.4	24.2	23.9	0.7	8.2
					Mean =	2.9	25.2	29.0	0.4	5.1
5	Aloë Soil	10	l/ha	A	106	3.3	25.0	48.6	0.1	4.2
	KAS	150	kg/ha	EG	211	4.9	24.2	15.5	0.4	10.9
	Potassium sulphate	200	kg/ha	E	309	2.4	26.6	34.6	0.3	3.7
					403	3.6	21.6	22.4	0.8	7.4
					Mean =	3.5	24.3	30.3	0.4	6.6
6	Aloë Soil	10	l/ha	B	109	2.3	23.3	22.9	0.4	4.6
	KAS	150	kg/ha	EG	202	2.5	23.7	29.4	0.2	4.4
	Potassium sulphate	200	kg/ha	E	305	2.1	25.8	28.3	0.3	3.6
					411	4.8	24.1	13.3	0.2	11.4
					Mean =	2.9	24.2	23.4	0.3	6.0
7	Aloë Soil	5	l/ha	B	103	2.4	21.0	40.8	0.6	3.7
	Aloë Leaf	5	l/ha	CD	201	3.4	24.8	21.9	0.4	6.8
	KAS	150	kg/ha	EG	306	2.4	20.2	35.2	0.2	4.1
	Potassium sulphate	200	kg/ha	E	408	5.0	25.1	19.6	0.7	10.0
					Mean =	3.3	22.8	29.4	0.5	6.2
8	Vercal Extra	5	l/ha	DEFG	108	2.9	19.3	39.2	0.1	4.6
	KAS	150	kg/ha	EG	206	4.3	33.8	23.9	0.3	6.8
	Potassium sulphate	200	kg/ha	E	302	2.4	18.9	24.8	0.3	5.1
					409	4.6	27.7	13.9	0.5	9.8
					Mean =	3.5	24.9	25.4	0.3	6.6
9	Peloton 'new'	5	l/ha	D	105	2.8	28.2	37.0	0.4	4.1
	N+	20	l/ha	EFGH	207	2.7	32.2	28.7	0.3	4.2
	Potassium sulphate	200	kg/ha	E	311	6.0	27.9	13.7	0.9	12.5
					404	3.7	24.7	15.1	0.6	8.5
					Mean =	3.8	28.2	23.6	0.6	7.3
10	Kalizwavel	6	l/ha	EFGH	110	2.5	29.9	36.7	0.3	3.6
	KAS	150	kg/ha	EG	203	2.9	27.7	24.1	0.1	5.3
					301	3.8	25.9	22.1	0.4	7.2
					406	3.7	22.4	17.7	1.0	8.3
					Mean =	3.2	26.5	25.1	0.5	6.1
11	Peloton 'new'	5	l/ha	D	107	3.0	25.7	47.3	0.5	3.9
	N+	20	l/ha	EFGH	205	3.3	32.8	22.1	0.3	5.6
	Kalizwavel	6	l/ha	EFGH	310	6.3	32.2	7.5	0.6	13.5
					401	3.5	22.1	13.3	0.6	8.8
					Mean =	4.0	28.2	22.5	0.5	8.0

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	31	32	33	34	35
	Pest Type							D Disease		
	Pest Code							RHIZSO		
	Pest Scientific Name							Thanatephorus >		
	Pest Name							Black scurf of>		
	Crop Code					SOLTU	SOLTU	SOLTU	SOLTU	SOLTU
	BBCH Scale					BPOT	BPOT	BPOT	BPOT	BPOT
	Crop Scientific Name					Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>	Solanum tubero>
	Crop Name					Potato	Potato	Potato	Potato	Potato
	Crop Variety					Innovator	Innovator	Innovator	Innovator	Innovator
	Description					50-70	70>	rhiz index 0-1	BWG	OWG
	Part Assessed					TUBHAR C	TUBHAR C	TUBER P	TUBER C	TUBER C
	Assessment Date					30-10-2014	30-10-2014	5-11-2014	12-11-2014	12-11-2014
	Assessment Type					PERCEN	PERCEN	PESSEV	WEIFRE	WESTMO
	Assessment Unit					%	%	INDEX	g	g
	Sample Size, Unit					1 PLOT	1 PLOT	30 TUBER	5 kg	5 kg
	Collection Basis, Unit									
	Number of Subsamples					1	1	1	1	1
	Crop Stage Majority					99	99	99	99	99
	Crop Stage Scale					BBCH	BBCH	BBCH	BBCH	BBCH
	Assessed By					W. Moes	W. Moes	W. Moes	W. Moes	W. Moes
	Assessment Timing					A9	A9	A10	A11	A11
	Days After First/Last Applic.					181 84	181 84	187 90	196 196	196 196
	Trt-Eval Interval					84 DA-H	84 DA-H	90 DA-H	97 DA-H	97 DA-H
	Plant-Eval Interval					181 DP-1	181 DP-1	187 DP-1	194 DP-1	194 DP-1
	Days After Emergence								186 DE-1	186 DE-1
	ARM Action Codes							APC		
	Number of Decimals					1	1	2	1	1
1	Untreated Check			A	104	32.6	60.4	0.00	5257.0	360.0
	KAS	150	kg/ha	EG	210	50.3	42.4	0.00	5040.0	359.0
	Potassium sulphate	200	kg/ha	E	308	48.1	46.4	0.00	5146.0	360.0
					402	53.5	33.9	0.00	5054.0	335.0
				Mean =		46.1	45.8	0.00	5124.3	353.5
2	Rhizovital FZB42	0.5	l/ha	A	111	46.3	45.7	0.00	5069.0	348.0
	KAS	150	kg/ha	EG	208	45.2	49.9	0.00	5188.0	371.0
	Potassium sulphate	200	kg/ha	E	303	47.0	47.0	0.00	5086.0	351.0
					405	63.0	26.1	0.00	5120.0	351.0
				Mean =		50.4	42.2	0.00	5115.8	355.3
3	Rhizocell GC	1	kg/ha	A	102	34.6	59.8	0.00	5116.0	368.0
	KAS	150	kg/ha	EG	204	48.1	44.7	0.00	5086.0	347.0
	Potassium sulphate	200	kg/ha	E	307	39.6	54.3	0.00	5110.0	348.0
					410	60.5	23.9	0.00	5159.0	351.0
				Mean =		45.7	45.7	0.00	5117.8	353.5
4	Rhizocell GC	1	kg/ha	B	101	40.3	56.0	0.00	5176.0	358.0
	KAS	150	kg/ha	EG	209	46.8	48.4	0.07	5150.0	347.0
	Potassium sulphate	200	kg/ha	E	304	42.9	52.5	0.00	5103.0	359.0
					407	45.8	45.3	0.00	5047.0	348.0
				Mean =		44.0	50.6	0.02	5119.0	353.0
5	Aloë Soil	10	l/ha	A	106	32.5	63.2	0.01	5100.0	362.0
	KAS	150	kg/ha	EG	211	54.0	34.6	0.02	5042.0	348.0
	Potassium sulphate	200	kg/ha	E	309	41.7	54.3	0.00	5076.0	361.0
					403	45.0	46.7	0.00	5157.0	341.0
				Mean =		43.3	49.7	0.01	5093.8	353.0
6	Aloë Soil	10	l/ha	B	109	47.9	47.1	0.01	5114.0	360.0
	KAS	150	kg/ha	EG	202	42.6	52.8	0.00	4940.0	342.0
	Potassium sulphate	200	kg/ha	E	305	45.9	50.2	0.01	5107.0	334.0
					411	57.0	31.4	0.00	5113.0	333.0
				Mean =		48.4	45.4	0.01	5068.5	342.3
7	Aloë Soil	5	l/ha	B	103	32.5	63.2	0.00	5142.0	354.0
	Aloë Leaf	5	l/ha	CD	201	49.3	43.5	0.04	5264.0	360.0
	KAS	150	kg/ha	EG	306	34.9	60.9	0.01	5088.0	346.0
	Potassium sulphate	200	kg/ha	E	408	50.2	39.1	0.00	5099.0	339.0
				Mean =		41.7	51.7	0.01	5148.3	349.8
8	Vercal Extra	5	l/ha	DEFG	108	31.4	63.9	0.00	5115.0	360.0
	KAS	150	kg/ha	EG	206	54.3	38.5	0.04	5204.0	347.0
	Potassium sulphate	200	kg/ha	E	302	40.9	53.7	0.00	5074.0	331.0
					409	59.7	30.0	0.00	5071.0	337.0
				Mean =		46.6	46.5	0.01	5116.0	343.8
9	Peloton 'new'	5	l/ha	D	105	41.3	54.3	0.00	5006.0	350.0
	N+	20	l/ha	EFGH	207	50.5	45.1	0.00	5056.0	358.0
	Potassium sulphate	200	kg/ha	E	311	58.1	28.5	0.01	5126.0	334.0
					404	56.5	34.4	0.01	5107.0	336.0
				Mean =		51.6	40.6	0.01	5073.8	344.5
10	Kalizwavel	6	l/ha	EFGH	110	43.1	53.0	0.00	5243.0	377.0
	KAS	150	kg/ha	EG	203	50.6	44.0	0.00	5104.0	351.0
					301	49.9	42.5	0.00	5187.0	345.0
					406	50.7	40.0	0.00	5109.0	346.0
				Mean =		48.6	44.9	0.00	5160.8	354.8
11	Peloton 'new'	5	l/ha	D	107	33.6	61.9	0.06	5098.0	351.0
	N+	20	l/ha	EFGH	205	56.2	37.9	0.00	5072.0	362.0
	Kalizwavel	6	l/ha	EFGH	310	69.6	16.2	0.12	5128.0	351.0
					401	56.5	34.0	0.00	5147.0	341.0
				Mean =		54.0	37.5	0.05	5111.3	351.3

Pest Type	
Pest Code	
Pest Scientific Name	
Pest Name	
Crop Code	SOLTU
BBCH Scale	BPOT
Crop Scientific Name	Solanum tubero>
Crop Name	Potato
Crop Variety	Innovator
Description	OWG5050
Part Assessed	TUBER C
Assessment Date	12-11-2014
Assessment Type	WESTMO
Assessment Unit	g
Sample Size, Unit	5 kg
Collection Basis, Unit	
Number of Subsamples	1
Crop Stage Majority	99
Crop Stage Scale	BBCH
Assessed By	W. Moes
Assessment Timing	A11
Days After First/Last Applic.	196 196
Trt-Eval Interval	97 DA-H
Plant-Eval Interval	194 DP-1
Days After Emergence	186 DE-1
ARM Action Codes	APoC
Number of Decimals	1

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	36
1	Untreated Check				104	346.0
	KAS	150	kg/ha	EG	210	360.0
	Potassium sulphate	200	kg/ha	E	308	353.0
					402	335.0
					Mean =	348.5
2	Rhizovital FZB42	0.5	l/ha	A	111	347.0
	KAS	150	kg/ha	EG	208	361.0
	Potassium sulphate	200	kg/ha	E	303	349.0
					405	346.0
					Mean =	350.8
3	Rhizocell GC	1	kg/ha	A	102	363.0
	KAS	150	kg/ha	EG	204	345.0
	Potassium sulphate	200	kg/ha	E	307	344.0
					410	344.0
					Mean =	349.0
4	Rhizocell GC	1	kg/ha	B	101	349.0
	KAS	150	kg/ha	EG	209	340.0
	Potassium sulphate	200	kg/ha	E	304	355.0
					407	348.0
					Mean =	348.0
5	Aloë Soil	10	l/ha	A	106	358.0
	KAS	150	kg/ha	EG	211	349.0
	Potassium sulphate	200	kg/ha	E	309	359.0
					403	334.0
					Mean =	350.0
6	Aloë Soil	10	l/ha	B	109	355.0
	KAS	150	kg/ha	EG	202	350.0
	Potassium sulphate	200	kg/ha	E	305	330.0
					411	329.0
					Mean =	341.0
7	Aloë Soil	5	l/ha	B	103	348.0
	Aloë Leaf	5	l/ha	CD	201	345.0
	KAS	150	kg/ha	EG	306	343.0
	Potassium sulphate	200	kg/ha	E	408	336.0
					Mean =	343.0
8	Vercal Extra	5	l/ha	DEFG	108	355.0
	KAS	150	kg/ha	EG	206	337.0
	Potassium sulphate	200	kg/ha	E	302	329.0
					409	336.0
					Mean =	339.3
9	Peloton 'new'	5	l/ha	D	105	353.0
	N+	20	l/ha	EFGH	207	358.0
	Potassium sulphate	200	kg/ha	E	311	329.0
					404	332.0
					Mean =	343.0
10	Kalizwavel	6	l/ha	EFGH	110	363.0
	KAS	150	kg/ha	EG	203	347.0
					301	336.0
					406	342.0
					Mean =	347.0
11	Peloton 'new'	5	l/ha	D	107	348.0
	N+	20	l/ha	EFGH	205	360.0
	Kalizwavel	6	l/ha	EFGH	310	346.0
					401	335.0
					Mean =	347.3

Pest Type
D, Disease, G-BYRD7, G-DisStg = Disease, such as a fungus, bacteria, or virus
Pest Code
PHYTIN, Phytophthora infestans, = IE
SCLESC, Sclerotinia sclerotiorum, = IE
RHIZSO, Thanatephorus cucumeris, = IE
Crop Code
SOLTU, BPOT, Solanum tuberosum, = IE
Part Assessed
PLANT = plant
STEM = stem
TUBHAR = tuber - harvestable
TUBER = tuber
C = Crop is Part Rated
P = Pest is Part Rated
Assessment Type
CROPST = crop status
PHYGEN = phytotoxicity - general / injury
INFEST = infestation
YELLOW = yellowing
COPLPA = count - plant part
COUPLA = count - plant / emergence - objective
YIELD = yield
WEIGHT = weight
PERCEN = percent
PESSEV = pest severity
WEIFRE = weight - fresh
WESTMO = weight standard moisture
Assessment Unit
1-10 = 1-10 index/scale
% = percent
NUMBER = number
kg/plot = kilograms per plot
T-MET = ton (metric=1000 kg)
kg = kilogram
INDEX = index
g = gram
PLOT = total plot
PLANT = plant/plant biomass/shrub
m2 = square meter
ha = hectare
TUBER = tuber kg
= kilogram PLOT
= total plot
m2 = square meter
Crop Stage Majority
29 = 9 or more basal side shoots visible (>5 cm)
40 = Tuber initiation: swelling of first stolon tips 2X diameter of subtending stolon
41 = 10% of total final tuber mass reached
65 = Full flowering: 50% of flowers in the first inflorescence open
69 = End of flowering in the first inflorescence
81 = Berries in the first fructification still green, seed light-coloured (main stem)
91 = Beginning of leaf yellowing
99 = Harvested product
Crop Stage Scale
BBCH = BBCH uniform plant stages
Assessment Timing
A1 = 1st Assessment According to Trial Schedule
A2 = 2nd Assessment According to Trial Schedule
A3 = 3rd Assessment According to Trial Schedule
A4 = 4th Assessment According to Trial Schedule
A5 = 5th Assessment According to Trial Schedule
A6 = 6th Assessment according to Trial Schedule
A7 = 7th Assessment According to Trial Schedule
A8 = 8th Assessment According to Trial Schedule
A9 = 9th Assessment According to Trial Schedule
Plant-Eval Interval
35 DP-1 = 1 SOLTU 2-5-2014
49 DP-1 = 1 SOLTU 2-5-2014
55 DP-1 = 1 SOLTU 2-5-2014
69 DP-1 = 1 SOLTU 2-5-2014
83 DP-1 = 1 SOLTU 2-5-2014
97 DP-1 = 1 SOLTU 2-5-2014
130 DP-1 = 1 SOLTU 2-5-2014
157 DP-1 = 1 SOLTU 2-5-2014
181 DP-1 = 1 SOLTU 2-5-2014
187 DP-1 = 1 SOLTU 2-5-2014
194 DP-1 = 1 SOLTU 2-5-2014
ARM Action Codes
APC = Automatic percent control (Control forced to 0% on AOV Means Table)
APoC = Automatic percent control (Control forced to 100% on AOV Means Table)

ANNEX 3: Map


1112
2115
3119
4116
11010
2101
31011
4103
1096
2094
3095
4098
1088
2082
3081
4087
10711
2079
3073
4074
1065
2068
3067
40610
1059
20511
3056
4052
1041
2043
3044
4049
1037
20310
3032
4035
1023
2026
3028
4021
1014
2017
30110
40111

ANNEX 4: soil sample analysis

BLGG AGROXPERTUS
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The Netherlands
T sample taking: Toon Kleindop: +31 (0)652002136
T customer service: +31 (0)88 876 1010
E klantenservice@blgg.agroxpertus.n1
I blgg.agroxpertus.nl

FERTILISING INDEX
Farming/Horticulture
vaartw nieuwkuyk
Customer number: 8448795
Exploras Agro Development BV
Ad Embrechts
Willem Elschotstr 4
5103 PM DONGEN
The Netherlands

Research project
Research/order no.: 715265/003330970
Date sample taking: 25-04-2014
Report date: 06-05-2014

Result main element		Unit	Result	Av*.	Recommended	low	quite low	good	quite high	high
	N-total soil resources	mg N/kg	3680							
	C/N-ratio		13	16	13 - 17					
	N- providing capacity	kg N/ha	163	54	93 - 147					
	S- total soil resources	mg S/kg	600							
	C/N-ratio		79		50 - 75					
	S-providing capacity	kg S/ha	22	11	20 - 30					
	P plant available	mg P/kg	1.2	6.4	1.3 - 2.6					
	P-soil resources (P-A1)	mg P_2O_5/100g	35	72	30 - 46					
	P-buffering		29		17 - 27					
	Pw	mg P_2O_5/l	32							
	K plant available	mg K/kg	85		70 – 110					
	K-number		14	18						
	K-soil resources	mmol+/kg	3.4		2.3 – 3.5					
	Ca plant available	kg Ca/ha	93		209 - 489					
	Ca- soil resources	kg Ca/ha	2815		3575 - 5365					
	Mg plant available	mg Mg/kg	81	76	50-85					
	Na plant available	mg Na/kg	11	7	35-50					
trace elements	Si plant available	µg Si/kg	7150		6000 - 32000					
	Fe plant available	µg Fe/kg	< 3040		2500 - 4500					
	Zn plant available	µg Zn/kg	2380		500 - 750					
	Mn plant available	µg Mn/kg	4010	2920	5800 - 8000					
	Cu plant available	µg Cu/kg	48		40 - 65					
	Co plant available	µg Co/kg	46		25 - 50					
	B plant available	µg B/kg	< 76	139	129 - 175					
	Mo plant available	µg Mo/kg	< 4		100 - 5000					
	Se plant available	µg Se/kg	5.5		3.5 – 4.5					
physical	Acidity (pH)		4.9	5.3	5.3-5.9					
	Organic matter	%	8.2	3.0						
	C-inorganic	%	0.05							
	Carbonated lime	%	< 0.2		2.0-3.0					
	Clay	%	2							
	Silt	%	9							
	Sand	%	81							
	Clay-humus (CEC)	mmoll+/kg	88	74	>85					
	CEC level	%	81	69	>95					
Organic	Soil organisms	Mg N/kg	139		60-80					

* these are regional averages. More information can be found in the section Average.

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Advice		Frequency	Crop	Recommended addition	Removal
in kg per ha per year	N-correction	per year	-20 This addition can be used as a correction to the basic quantity. See the Commentary for further information.		
	Sulphate (SO_3)	per year	Food potatoes Cut maize	0 14	60 73
	Phosphate (P_2O_5)	per year	Food potatoes Cut maize	100 100	55 80
	Potassium (K_2O)	per year	Food potatoes Cut maize	255 3000	255 300
	Calcium (CaO)	per year	Food potatoes Cut maize	80 65	
	Magnesium (MgO)	per year	 Food potatoes Cut maize	2014 2015 2016 2017 0 0 60 60 0 0 60 60	
	Zinc (Zn)	per year	No shortage is to be expected.	0	
	Manganese (Mn)		Shortage of Mn is to be expected. You are advised to add leaf fertiliser in the period in which the crop growth is strongest. This applies to potatoes, beets, wheat, peas, onions, beans, cabbage, carrots, lettuce and rapeseed. Other crops need less manganese.		
	Copper (Cu)	per year	Food potatoes Cut maize	0 0	
	Boron (B)	per year	Food potatoes Cut maize	1.0 1.5	
	Lime (nw)	One time	1675 The lime addition is based on an optimum pH of 5.3. For each .1 increase in pH a lime (nw) quantity of 420 is required. Spread the lime addition over the years or add the lime prior to the crop that needs most lime.		

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Commentary

The results and/or the recommendations in this fertilisation study may be used up to and including 2017. After that, a new sample must be taken for reliable fertilisation recommendations based on the current soil condition.

Use standard
The recommendations in this report are based on getting optimum agricultural yield at plot level, in legal terms as well as in terms of use standards. Use standards apply at company level. If the total of the recommended agricultural additions is higher than the use standard, lower the addition for the crops with the lowest requirements. Consult with your adviser. The recommended additions for phosphate and potassium are composed as follows:
- if the situation found is below the desired level: recommended addition = repair addition + economic addition or removal if higher.
- if the situation found matches the desired level: recommended addition = economic addition or removal if higher.
- if the situation found is higher than the desired level: recommended addition = economic addition.

The indicated removal is based on the average harvested yield (see below). If the actual yield is, for example, 10% higher or lower, the removal is also 10% higher or lower. If no removal is mentioned for a crop, the average removal values are not available.

Crop	Yield (ton/ha)	Removal of crop residue
Food potatoes	50.0	No
Cut maize	50.0	No

Nitrogen:
For this soil type, the N delivery is higher than average. Therefore, we recommend reducing the basic addition for the crop, indicated as the N-correction. The N-correction is based on a growing season of approx. 5 months. If the growing season is shorter, e.g. 4 months, use 4/5 of the stated N-correction for reduction of the N delivery. An N-mineral sample must be taken for a specific nitrogen recommendation!

Sulphur:
The recommended addition of sulphur takes into account the capillary ascent, deposition, S-provided capacity, and extraction by the crop.

Phosphate:
The calculated Pw is stated on page 1 of this report. This value can be used when applying for flexible phosphate use standards. The recommendation is based on directly available phosphate (P-PAE) and on the phosphate stock (P-AI).

Potassium:
Potassium is a mobile element. The potassium recommendation, therefore, applies for only 2 years.

Calcium:
The calcium recommendation is based on the calcium quantity in the clay-humus complex (CEC), calcium available

to the plant in the soil (Ca available), and on the crop properties (including crop type and vulnerability to lack of Ca). In order to maintain the soil condition and/or because some crops are highly vulnerable to Ca, a Ca recommendation may be given despite high availability of Ca. The recommended quantity needs to be corrected for the calcium content in fertilisers such as KAS, (triple) super phosphate and lime fertilisers.

Silicon:
Silicon results in robust plants that are more resistant to drought and diseases. Fertilisation with silicon can increase the availability of P in the soil. Crops with high Si needs are grasses and wheat. Si fertilisation may also have a positive impact on other crops.

Iron:
Iron is essential to all plants and is a component of some key enzymes. Additionally, Fe is also needed for protein synthesis and creation of chlorophyll. Low pH or lack of air in the soil increases the Fe content and availability. Too much Fe reduces availability of phosphate in the soil.

Boron:
Sufficient boron delivery reduces the risk of beet-heart rot to a minimum. Boron is also important for the prevention of glassy potatoes and ensuring healthy corn cobs.

Molybdenum:
Molybdenum plays a role in the development of a number of enzymes and is necessary for the binding of nitrogen by leguminous plants. Leguminous plants and vegetables need a lot of Mo. Grasses and wheat require little Mo. Acidic soil and the presence of iron and aluminium oxides reduces the availability of Mo. In some cases, adding lime to the soil can remedy a shortage of Mo.

715265, 06-05-2014

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GIS info

River area

RD projection

Corners of plot

Organic matter balance

The colour bar contains information on organic matter (kg/ha) needed to make sure the organic matter content does not drop.

8.2% organic matter

Annual decomposition percentage of the overall organic matter stock: 1.5

Stock of organic matter present in sampled layer after 1 year if no (effective) organic matter is supplied. Total supply of effective organic matter required to keep the organic matter percentage at the required level. Supply of crop residue (average within specified crop plan or crops). To be supplemented by e.g. manure, plant fertilisers and/or compost.	Crop (residue) Food potatoes Cut maize Average supply/year	Supply of effective organic matter 875 660 770

In order to increase the organic matter content by 0.1% an additional quantity of effective organic matter must be supplied of 2905 kg per ha.

Page: 4

Total number of pages: 7

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Physical

Assessment of the structure is based on the measured ratio between calcium, magnesium and potassium in the clay-humus complex. Of course, the actual structure also depends on weather conditions and soil humidity during working of the soil and the weight of vehicles and machinery used. The assessment is the basis for achieving good structural conditions.

Presentation of the ratio of the CEC content.

Optimum structure
good structure
poor structure
very poor structure
bad structure
very bad structure

current situation for this plot

	Unit	Result	Recommended	Low	Quite low	Good	Quite high	High
Clay-humus (CEC)	mmol+/kg	88	> 85					
Ca content	%	55	75 - 85					
Mg content	%	21	6.0 - 10					
K content	%	3.9	2.0 - 5.0					
Na content	%	1.3	2.0 - 4.0					
H content	%	0.1						
Al content	%	0.2						

Presentation of texture triangle.

CLAY SILT SAND

In addition to clay (lutum), silt and sand fractions are shown. Clay particles are smaller than 2 micrometre (µm), silt particles are 2-50 µm and sand particles are larger than 50 µm. The division of soil particles is used, among other things, for estimating the compaction risk of the soil. Compaction means that the soil is sealed by small particles (clay and silt). This risk is lowest when the soil mainly consists of either clay or sand particles. The risk is highest when 10-20% is clay.

Indication lutum % = % clay plus 0.3 * % silt.

	Unit	Valuation	Recommended	Low	Quite low	Good	Quite high	High
Compaction	score	8.6	6.0 – 8.0					

In view of the results, the risk of compaction is low.

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Phosphate

Plant-available stock: low

Buffering: good

Soil stock: good

The first page of this report contains the results for phosphate, presented in the usual manner: a number and a bar. The numbers have also been incorporated in a 'soil profile' (see figure). This presents the phosphate stock and the available P quantity in colour. The arrow indicates supply from the stock. The thickness of the arrow indicates how much phosphate is possible per growing season.

Average

The first page of this report shows the averages for the region. You can compare your results to the results for similar plots in your region. If there are not sufficient data – due to insufficient analysed soil samples – national averages have been calculated.

The average was calculated for the situation:

Region:	Southern cattle area
Soil type:	Sand
Crop segment:	Agriculture/horticulture

The most striking deviations (max. 5) compared to the averages and the recommended value are shown in the table below:

	Result	Average	Recommended
N-providing capacity	163	54	93 - 147
P plant available	1.2	6.4	1.3 – 2.6
Na plant available	11	7	35 - 50
Mn plant available	4010	2920	5800 - 8000
Acidity (pH)	4.9	5.3	5.3 – 5.9

Contact & info

Sampled layer:	0 - 25 cm
Soil type:	Sand
Sample taken by:	Gerard Muskens
Contact for sample-taking:	Toon Kleindop: +31 (0)652002136
Sample method:	W-pattern, min. 40 spades; in accordance with BLGG AgroXpertus standard MIN 1000 Q
Surface specification:	Precision sample, <1 ha

If the nature and research method of the sample allows this, the sample will be retained for you by BLGG AgroXpertus for two weeks after sending of this report. Within this time you can make claims and/or request additional research.

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Method

N total soil stock	Q	Em: NIRS (TSC®)	Co plant available	Q	Em: CCL3(PAE®)
C/N-ratio		Derived value	B plant available	Q	Em: CCL3(PAE®)
N-providing capacity		Derived value	Mo plant available		Em: CCL3(PAE®)
S total soil stock	Q	Em: NIRS (TSCO)	Se plant available		Em: CCL3(PAE®)
C/S-ratio		Derived value	Acidity (pH)		Em: NIRS (TSC®)
S-providing capacity		Derived value	Organic matter	Q	Em: NIRS (TSC®)
P plant available	Q	Em: CCL3(PAE®)	C inorganic		Em: NIRS (TSC®)
P soil stock (P-Al)	Q	PAL1: Gw NEN 5793	Carbonated lime		Derived value
Pw		Derived value	Clay		Em: NIRS (TSC®)
K value		Derived value	Silt		Em: NIRS (TSC®)
K plant available	Q	Em: CCL3(PAE®)	Sand		Em: NIRS (TSC®)
K soil stock		Em: NIRS (TSC®)	Clay-humus (CEC)		Em: NIRS (TSC®)
Ca plant available		Derived value	Ca content		Em: NIRS (TSC®)
Ca soil stock		Derived value	Mg content		Em: NIRS (TSC®)
Mg plant available	Q	Em: CCL3(PAE®)	K content		Em: NIRS (TSC®)
Na plant available	Q	Em: CCL3(PAE®)	Na content		Em: NIRS (TSC®)
Si plant available		Em: CCL3(PAE®)	H content		Derived value
Fe plant available		Em: CCL3(PAE®)	Al content		Derived value
Zn plant available		Em: CCL3(PAE®)	CEC content		Derived value
Mn plant available	Q	Em: CCL3(PAE®)	soil organisms		Em: NIRS (TSC®)
Cu plant available	Q	Em: CCL3(PAE®)			

Method recognised by RvA
Em: Own method
Gw: Equivalent to
Cf: Conform
P plant available This analysis was performed twice.
P soil stock (P-Al) This analysis was performed twice.

The results shown are for dry soil. All activities have been executed within the defined shelf life between sample taking and analysis.

This report was issued under the responsibility of Mr J.P. Dekker, Operations Director. All our services are subject to our General Terms and Conditions. These conditions and/or the specifications of our methods of analysis will be sent to you upon request. BLGG AgroXpertus does not accept liability for any damages resulting from use of research results and/or advice provided by or in name of BLGG AgroXpertus.
BLGG AgroXpertus is registered in the RvA-register for test laboratories as detailed in the acknowledgement under number L122 exclusively for sample taking and/or the analysis methods.

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Total number of pages: 7

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ANNEX 5: Weather data

Weather station Herwijnen
Precipitation station Giersbergen

Source: KNMI

date	av. temp (oC)	min. temp (oC)	max. temp (oC)	wind direction (degrees)	wind speed (m/s)	precipitation (mm)	clouds (octants, 9=sky invisible)	relative air humidity (%)
01-05-2014	13.4	9.3	18.6	289	1.9	0	6	77
02-05-2014	10.1	5.2	12.8	14	4.3	0	7	73
03-05-2014	8.4	0.8	14.3	7	2.8	0	1	68
04-05-2014	7.9	-1.1	13.6	22	1.2	0	4	70
05-05-2014	12.4	3.4	19.3	119	2.7	0	3	60
06-05-2014	14.1	9.9	18.6	221	3.8	0	7	75
07-05-2014	12.5	9.6	15.7	237	6.6	2.1	7	77
08-05-2014	12	10.6	13.6	225	6.7	1.8	8	89
09-05-2014	12.5	8.2	16.4	252	8	15.7	6	83
10-05-2014	11.3	8.1	15.6	218	6.5	34.1	7	86
11-05-2014	10.5	9	12.2	235	9.2	4.6	8	83
12-05-2014	10	6.7	14	246	4.5	4.8	8	90
13-05-2014	10.2	3.6	14.6	325	2.5	6.8	5	78
14-05-2014	8.8	3	14.1	321	3	4.1	3	80
15-05-2014	9.6	1.5	15.4	2	2	3.4	4	72
16-05-2014	12.3	3.8	18.5	13	2	0	0	67
17-5-2014	13.9	5.3	20.7	27	1.7	0	1	74
18-05-2014	16.1	6.6	22.8	82	1.9	0	2	67
19-05-2014	18.9	11	25.6	98	2.8	0	0	62
20-05-2014	20.1	13.2	26.9	183	3.8	0	5	63
21-05-2014	18.1	12.1	21.5	135	2.8	8.2	6	77
22-05-2014	18.1	14.6	23.4	185	4.6	3.1	6	68
23-05-2014	16.4	12.8	21	164	2.6	0	4	70
24-05-2014	15.3	9.9	20	175	3.7	0	5	69
25-05-2014	15.6	9.5	21.1	190	2.3	0	2	70
26-05-2014	15.7	12	22.1	41	2.8	0	7	82
27-05-2014	15.3	13.6	16.8	324	1.3	7.1	8	96
28-05-2014	13.9	12.5	15.6	243	2.1	27.4	8	94
29-05-2014	10.9	10.1	12.5	74	2.8	12.4	8	92
30-05-2014	12.2	6	16.8	82	2.7	0.5	4	74
31-05-2014	13.4	5.8	20.5	335	1.5	0	3	72
01-06-2014	13.3	6.7	19.1	327	2	0	3	74
02-06-2014	14	6	20.8	297	1.6	0	3	73
03-06-2014	15.3	7.2	21.2	254	1.5	0	6	77
04-06-2014	14.4	11.4	18.3	192	3.7	0	8	89
05-06-2014	12.5	8.5	17.7	230	5.7	11.7	4	78
06-06-2014	16.8	7.7	22.6	119	2	6.4	0	61
07-06-2014	20.6	12.9	28.2	45	2.8	0	3	71
08-06-2014	19.8	13.8	25.3	2	2.1	0	4	79
09-06-2014	21.1	16.2	26.9	64	2.7	24.9	5	83

date	av. temp (oC)	min. temp (oC)	max. temp (oC)	wind direction (degrees)	wind speed (m/s)	precipitation (mm)	clouds (octants, 9=sky invisible)	relative air humidity (%)
10-06-2014	19.9	15.6	25.3	255	3.3	8.7	6	83
11-06-2014	17.1	10.3	22.2	299	3	1.9	3	71
12-06-2014	17	8.2	23.3	6	1.6	0	1	70
13-06-2014	17.1	9.5	22.3	325	3.2	0	2	73
14-06-2014	15.8	10.7	19.1	354	3.4	0	5	70
15-06-2014	15.4	9.8	20.4	338	3.3	0	4	71
16-06-2014	14.2	8.9	17.4	334	2.9	0	8	79
17-06-2014	15.3	10.8	20.2	346	3.5	0	5	77
18-06-2014	14	6.3	20.5	326	2.1	0	5	84
19-06-2014	14.1	9.6	16	300	3.6	0	8	82
20-06-2014	13.7	8.3	18.5	311	3.7	0.7	7	79
21-06-2014	15.2	6.9	20.9	285	3.3	0	4	78
22-06-2014	15.1	8	21	324	2.7	0	2	73
23-06-2014	15.7	7.2	21.4	358	1.4	0	3	73
24-06-2014	16.6	11.5	22.9	8	2.5	0	6	72
25-06-2014	14.6	9.8	19.4	348	2.5	0	5	71
26-06-2014	17	10.4	22.8	5	1.4	0	5	65
27-06-2014	17.2	13.1	22.2	219	3.1	0	6	76
28-06-2014	16.7	13	20.4	238	3.2	0.7	7	77
29-06-2014	15.6	11.9	20.1	288	3.5	4.4	5	77
30-06-2014	13.5	6.7	18.7	305	3.4	3.4	4	78
01-07-2014	14.3	7	20.2	322	2.3	0	3	71
02-07-2014	15.1	5.8	22.1	318	1.7	0	2	70
03-07-2014	18.8	8.9	26.7	237	2.9	0	1	65
04-07-2014	21.7	10.7	29.7	180	2.8	0	5	62
05-07-2014	19.7	17	23.1	205	4.3	0	7	83
06-07-2014	19	13.7	24.8	199	4.9	7.9	7	83
07-07-2014	17.9	12.2	23.6	221	2.5	10.8	5	73
08-07-2014	15.1	13	17.2	317	4.4	9.2	8	91
09-07-2014	15.5	13	17.8	319	5.6	12.7	8	94
10-07-2014	21.3	16.3	27.4	284	2.5	17.7	6	85
11-07-2014	19	17.2	22.6	250	2.9	0	7	88
12-07-2014	18.8	13.8	22.9	258	2.5	0	6	87
13-07-2014	18	14.1	22.4	230	2.5	0	7	89
14-07-2014	18	12.2	23.2	252	4.1	32.4	4	81
15-07-2014	17.3	12.4	22.7	230	3.2	0	6	85
16-07-2014	19.8	12.4	25.7	232	1.8	0	2	78
17-07-2014	22.4	14.9	28.4	31	1.5	0	3	73
18-07-2014	25.2	17.9	31.2	87	3	0	1	64
19-07-2014	26.2	18.7	33.7	123	3	0	4	64
20-07-2014	21.8	18	26.6	297	2.2	2.6	6	81
21-07-2014	19.6	16.8	22.2	322	3.5	0.4	7	93
22-07-2014	22.4	18.9	27.2	24	2.9	17.9	3	75
23-07-2014	22.8	17.8	28.5	48	3.3	0	2	65
24-07-2014	21.5	16.3	26.9	53	3.5	0	2	64

date	av. temp (oC)	min. temp (oC)	max. temp (oC)	wind direction (degrees)	wind speed (m/s)	precipitation (mm)	clouds (octants, 9=sky invisible)	relative air humidity (%)
25-07-2014	18.1	14.4	22.1	38	2.5	0	7	81
26-07-2014	19.5	14.2	25.6	253	2.3	0.6	5	89
27-07-2014	20.8	16	26.4	289	2.1	0	6	83
28-07-2014	19.6	16.9	24	24	2.8	15.4	6	90
29-07-2014	20.9	16.9	26.5	353	3.4	0.4	4	85
30-07-2014	17.6	11.4	23.5	302	3.4	0	2	81
31-07-2014	18.7	11.1	25.2	217	2.2	0	1	77
01-08-2014	20.2	12.2	26.9	203	1.5	0	3	78
02-08-2014	21.1	16	27.7	142	2.7	0	3	77
03-08-2014	19.5	14.3	25.8	258	2.1	0	3	77
04-08-2014	17.8	11.4	24	273	2.6	5.2	3	77
05-08-2014	17.8	9.7	24.3	251	1.4	0	2	72
06-08-2014	17.5	12.8	21.7	160	3	0	6	85
07-08-2014	18.6	15.7	23	191	2	4.2	5	86
08-08-2014	18.7	15.5	21.8	109	3	0	7	91
09-08-2014	18.9	14.8	23.3	237	4.9	18.7	6	80
10-08-2014	18.2	14.4	23.3	187	4.8	0	6	84
11-08-2014	16.9	13.9	20.8	220	6.4	6.2	2	73
12-08-2014	15.7	13.2	20.1	215	5.4	2.3	3	80
13-08-2014	16.4	12	21.6	229	4.3	6.8	2	77
14-08-2014	16.1	10.9	21	240	3.6	0.2	7	84
15-08-2014	15.1	11	19.7	290	2.5	7.5	5	84
16-08-2014	15.8	11.4	19.7	257	4.6	2.6	6	78
17-08-2014	14.9	13	16.9	223	6.3	0	7	86
18-08-2014	13.5	8.9	17.8	250	5.5	3.2	5	88
19-08-2014	12.3	8.6	16.9	254	4.5	11.2	7	86
20-08-2014	12.2	6.8	18.1	253	2.5	0.7	4	84
21-08-2014	13.2	6.1	18.8	236	3	1.2	6	80
22-08-2014	12.9	9.2	16.8	218	4.4	0	6	85
23-08-2014	12.4	7.7	18.1	265	3.5	0.3	5	83
24-08-2014	12.1	7.4	17.8	251	3	3.6	3	83
25-08-2014	12.8	6	16.6	117	2.3	8.3	7	89
26-08-2014	13.7	10.3	15.8	64	3	21.2	6	92
27-08-2014	15	7.5	20.6	88	2.3	6.7	1	76
28-08-2014	16.9	10.6	22.4	186	3.1	0	5	87
29-08-2014	16.6	12.3	21.2	230	4.1	1.7	4	82
30-08-2014	15.7	12.3	18.8	229	4.5	1.3	7	89
31-08-2014	14.3	9	20	289	3.6	5.3	4	88
01-09-2014	14.8	8.2	20.5	279	1.4	0	6	85
02-09-2014	17.2	13.3	21.8	47	1.6	0.3	5	82
03-09-2014	16.5	12.9	20.7	67	3.1	0	1	81
04-09-2014	17.9	13.4	22.5	74	2.4	0	3	81
05-09-2014	17.9	12.8	22.7	65	1.2	0	5	88
06-09-2014	16.4	11.9	20.7	301	1.6	0	7	93
07-09-2014	16.2	10.2	21.5	283	2	0	3	86

date	av. temp (oC)	min. temp (oC)	max. temp (oC)	wind direction (degrees)	wind speed (m/s)	precipitation (mm)	clouds (octants, 9=sky invisible)	relative air humidity (%)
08-09-2014	13.8	8.1	20.5	314	1.7	0	3	81
09-09-2014	13.9	8.9	17.8	324	1.8	0	8	85
10-09-2014	14	8.6	17.6	7	1.9	0	5	81
11-09-2014	14.9	7.2	21	6	2.5	0	3	84
12-09-2014	15.3	9.3	21.2	20	2.8	0	1	84
13-09-2014	16.6	12.2	21.5	22	3	0	4	84
14-09-2014	15.7	11.6	20.4	40	2.2	0	4	87
15-09-2014	16.9	10.2	22.8	62	2.2	0	3	84
16-09-2014	17.5	11.4	24.6	77	1.2	0	3	89
17-09-2014	18.8	13.4	25	86	2.8	0	0	80
18-09-2014	19.4	13.2	25.5	98	2.6	0	2	82
19-09-2014	17.7	12.9	23.1	96	1	0	6	93
20-09-2014	17.5	12.5	23.1	312	1.8	0	7	92
21-09-2014	15.3	9.5	18.9	331	3.7	0	5	80
22-09-2014	12.6	6.1	17.1	315	4.1	0	4	73
23-09-2014	12.7	5.3	18.2	204	1.7	0.7	4	80
24-09-2014	12.5	8.8	15.9	229	3.3	0	7	89
25-09-2014	13.5	8.1	17.8	251	4.3	15.2	6	81
26-09-2014	15.3	12.2	18.6	235	3.8	0	8	92
27-09-2014	14.7	9.6	20.4	141	1.6	2.3	3	87
28-09-2014	15.2	9.8	21.2	101	1.9	0	2	88
29-09-2014	16	12.2	19	194	2.1	0	7	94
30-09-2014	16	11.5	20	228	2.7	4.2	5	91
01-10-2014	16.3	10.4	21	219	2.1	0	6	89
02-10-2014	16.2	12.6	19	341	1.5	0	8	91
03-10-2014	15.4	9.6	22.2	121	1.4	0	2	87
04-10-2014	15.5	10.5	21.3	138	3.2	0	3	84
05-10-2014	13	11.8	14.8	4	1.9	3.1	8	83
06-10-2014	13.9	11.9	16.6	146	3.3	0	8	86
07-10-2014	11.8	9	15.8	203	5.6	4.8	5	86
08-10-2014	13.4	8.3	16.6	174	4.9	6.1	7	89
09-10-2014	14.8	12.4	17.9	198	4.8	20.6	4	82
10-10-2014	13.5	8.3	17.8	195	3.3	0	3	85