

**CONFIDENTIAL REPORT**

**Project number** [REDACTED] **I-12-6701**  
**Trial numbers included:** **I-12-6701-1**  
**I-12-6701-2**

**CONTROL OF *PEPINO MOSAIC VIRUS* IN TOMATO**

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Objective: Evaluation of attenuated isolates of *Pepino mosaic virus* for cross-protection.

Period: March – July 2012

Performer: [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Date: January 2013

Project coordinator: [REDACTED]

Project manager: [REDACTED]

[REDACTED]

Signature:

Date: 01 February 2013

## SUMMARY

In 2012 a project was carried out in The Netherlands to test the efficacy of attenuated isolates of *Pepino mosaic virus* for cross-protection in protected tomato. The project consisted of two trials with six treatments:

Treatment	A1	A2
1	-	agEU + agCH
2	-	-
3	V10 (VX1 + VC)	agEU + agCH
4	V10 (VX1 + VC)	-
5	VC	agCH
6	VX1	agEU

-.: untreated

The first foliar spray application with mild virus isolates of PepMV was carried out when plants were 10-30 cm high. The following application with virulent PepMV isolates was conducted with a 21 days interval. Assessments on virus symptoms and phytotoxicity were conducted weekly till harvest. At harvest fruit symptoms were assessed and yield was measured.

PepMV related symptoms on leaves and fruits were strongly reduced in plants infected with attenuated virus isolates before treating the plants with aggressive viral isolates. The isolates with aggressive symptoms were found to reduce flowering, setting of trusses and finally yield. On the other hand hardly no yield loss occurred in plants that were treated with one of the attenuated isolates. The yield of the cross-protected plants were comparable with the yield of the untreated control plants. Quality of the harvested fruits was not effected when plants were cross-protected by mild virus isolates.

Crop damage (caused by the carborundum which was added to the spray solution) was observed at the beginning of the trial only on the leaves that were present during the applications. Some stunting of the plants was observed in all viral objects with the most severe symptoms in the virulent virus control agEU + agCH.

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## 1 INTRODUCTION

*Pepino mosaic virus* (PepMV) is a member of genus Potexvirus which infects mainly solanaceous plants, including tomato, potato and tobacco. Pepino mosaic virus was first found in Peru in 1974 on pepino. Since then, the virus was first reported on greenhouse tomato (*Lycopersicon esculentum*) in the Netherlands and United Kingdom in 1999. Based on the PepMV genomic RNA analysis, the North American strains (US genotypes), PepMV-US1 and PepMV-US2, are closely related to each other but they differ from the European (EU tomato genotype), Chilean (CH2 genotype) and Peruvian (LP genotype) strains. PepMV is considered as a highly infectious and readily transmittable and it systemically infects tomato.

### Symptoms

PepMV can cause various symptoms in tomato. Reports on the disease severity of infected plants vary from minor to severe depending on the type of PepMV strain, age, vigour and cultivar of tomato plant and climatic/growing conditions. Symptoms are often expressed during fall and winter months when temperatures and light levels (daylight) are minimal. Initial symptoms usually appear 2-3 weeks after infection. Early symptoms are noticeable on the growing terminals (heads) of infected plants with light-green, thin or needle-like leaves and stunted growth. On leaves symptoms appear as yellow angular spots and bubbly areas, mild interveinal chlorosis (yellowing) and leaf distortions such as spindly leaves. Streaks of browning may appear on stems and flowering clusters that may affect the development of flowers and fruits. Fruits sometimes show discoloration of yellow-red mosaic patterns, called marbling and may lead to uneven fruit ripening. Severely affected plants become stunted and distorted.

PepMV is transmitted mechanically, particularly by contact. PepMV is readily transmitted by contaminated tools, workers' hands and clothing. Direct plant-to-plant contact and propagation by grafting can also spread the virus.

In 2012 a project was carried out in The Netherlands in protected tomato to examine whether tomato plants can be protected against PepMV (agEU + agCH) by a preceding infection with an attenuated isolate of this virus (V10). The project was conducted conform GEP (Good Experimental Practice) standards.

The purposes of the project were:

- evaluation of mild virus isolates VX1, VC and V10 in tomato for the control of virulent isolates
- determine crop safety

In chapter 2 the materials and methods used in this project will be explained. The results obtained from the trials will be discussed in chapter 3 and the conclusions drawn are given in chapter 4.

Appendix 1 contains the GEP certificate for recognition of efficacy testing and the BBCH growth stage scale is given in appendix 2. Appendix 3 contains the climatic data. Appendix 4 contains the raw data of the assessments.

## 2 MATERIALS AND METHODS

### 2.1 Trial site

Two trials were laid out in this project, consisting of six treatments (see Table 1). The virulent isolate agEU + agCH was used as virulent virus control.

The plots were laid out in a randomised block design with 4 replicates. Each replicate consisted of another tomato cultivar; Briosio (cocktail tomato), Endeavour, Komeett and Levanzo (all truss tomato), which are all common commercial cultivars in the Netherlands. Each plot consisted of 20 plants. Each block of plants was surrounded by sweet pepper plants (non-host for PepMV). The trial located in [REDACTED] was divided over two greenhouse compartments and the trial in [REDACTED] over three greenhouse compartments. The layout of the trials is given in chapter 3.

### 2.2 Treatments

The first application with mild viruses was conducted when the crop was 10-30 cm high. The following application with the virulent virus was conducted with a 21 days interval. In Table 1 the different virus isolates are given.

Table 1: Treatments, virus isolates and application timings

Treatment	A1	A2
1	-	agEU + agCH
2	-	-
3	V10 (VX1 + VC)	agEU + agCH
4	V10 (VX1 + VC)	-
5	VC	agCH
6	VX1	agEU

-: untreated

Virus isolate	
VX1	mild Peruvian strain
VC	mild Chile-2 strain
agEU	agressive European strain
agCH	agressive Chile strain

### 2.3 Application details

The equipment used to carry out the first application with mild viruses was a high-pressure spraying arm carrying spraying nozzles of type XRTEEJET 11003VK. The amount of spray liquid used was 1.1-1.6 L/m<sup>2</sup>. Carborundum was added to the spray solution to provide enough abrasion to introduce virus into the plant cells. The first application for both locations was carried out at [REDACTED] hereafter half of the number of plants were brought to the [REDACTED]. During the applications the plots were separated by plastic screens to avoid spray drift. The second application with the virulent isolates was carried out by dipping fingers (with latex gloves) in the virus suspension (sap from the upper leaves of tomato plants

infected with virus) and rubbing two leaves on each plant.

Two-three weeks after the first and second application leaf samples (one sample per plant) were taken for ELISA to ensure the absence of virus in the control treatment and to check whether the plants were for 100% infected with the mild and the virulent viruses. To confirm the identity of the mild and virulent viruses in the infected plants real-time PCR was performed on mixtures of leaf samples of each plot of 20 plants.

## 2.4 Assessment details

Assessments on virus symptoms in the apical leaves and foliage were carried out weekly. Per plot the percentage nettle head, mosaic, yellow spots, leaf necrosis, stem necrosis, leaf distortion and chlorosis was recorded. Furthermore, flowering and setting of trusses was assessed and fruits were evaluated on viral symptoms. Occurrence of phytotoxic symptoms and crop condition was assessed according to the following scale:

### Crop safety (10-1):

- 10 no phytotoxic symptoms compared to the untreated control
- 9 symptoms hardly visible
- 8 a small trace of symptoms
- 7 light, but clearly visible symptoms
- 6 light till moderate symptoms
- 5 moderate symptoms
- 4 severe symptoms
- 3 very severe symptoms
- 2 crop almost dead
- 1 crop dead

### Crop condition (10-1)

- 10 excellent crop condition,
- 9 very good crop condition,
- 8 good crop condition,
- 7 reasonable crop condition,
- 6 moderate crop condition,
- 5 unsatisfied crop condition,
- 4 bad crop condition,
- 3 very bad crop condition,
- 2 crop nearly dead,
- 1 crop dead

Tomato fruits (four trusses per plant) were harvested once a week from the beginning of June till the beginning of July. On the day of harvest, fruits were rated for the presence of marbling, fruit discolourations, damage and deformations.

A very strictly hygiene protocol was implemented to avoid contaminating infections between treatments. All personnel followed a specific working order to reduce the consequences of accidental contamination between treatments. The uninfected treatment was always visited prior to the other treatments.

## **2.5 Guidelines**

The project was carried out according to the following EPPO guidelines:

- PP 1/135(3)      Phytotoxicity assessment.
- PP 1/152(3)      Design and analysis of efficacy evaluation trials.
- PP 1/181(3)      Conduct and reporting of efficacy evaluation trials.

## **2.6 Statistical analysis**

Data were analyzed statistically by regression analysis (GENSTAT). Values followed by the same letter did not differ significantly ( $p=0.05$ ).



3 TRIAL SITE DETAILS AND RESULTS

In this chapter the following abbreviations are used:

PESINC                      Pest incidence  
PESSEV                     Pest severity

For the presentation of the results the following descriptions were discussed:

- treatment 1: virulent virus control
- treatment 2: negative control
- treatment 3: efficacy V10
- treatment 4: phytotoxicity control
- treatment 5: efficacy VC
- treatment 6: efficacy VX1

3.1 Trial site details I-12-6701-1

Trial location

Location:		GPS north latitude:	51.593
		GPS east longitude:	4.240
Street:			
Province:			
Country:			

Trial lay-out

section 1			section 2		section 2		section 2		section 3		sec 3
PEPPER	1 E	3 B	PEPPER	PEPPER	5 E	7 B	PEPPER	PEPPER	9 E	11 B	PEPPER
PEPPER	1 E	3 B	4 K	PEPPER	5 E	7 B	8 K	PEPPER	9 E	11 B	12 K
PEPPER	2 L	2 L	4 K	PEPPER	6 L	6 L	8 K	PEPPER	10 L	10 L	12 K
untreated			V10/untreated						untreated/agEU+agCH		

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Section	Question	Yes (%)	No (%)
Business	Has your business experienced a decrease in sales?	85	15
	Has your business experienced a decrease in profit?	80	20
	Has your business experienced a decrease in cash flow?	75	25
	Has your business experienced a decrease in revenue?	70	30
Employees	Has your business experienced a decrease in productivity?	85	15
	Has your business experienced a decrease in employee morale?	80	20
	Has your business experienced a decrease in employee retention?	75	25
	Has your business experienced a decrease in employee engagement?	70	30
Customers	Has your business experienced a decrease in customer loyalty?	85	15
	Has your business experienced a decrease in customer satisfaction?	80	20
	Has your business experienced a decrease in customer retention?	75	25
	Has your business experienced a decrease in customer engagement?	70	30

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A1 (22/03): mild virus, A2 (12/04): aggressive virus

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A1 (22/03): mild virus, A2 (12/04): aggressive virus

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A1 (22/03): mild virus, A2 (12/04): aggressive virus

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A1 (22/03): mild virus, A2 (12/04): aggressive virus


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Region		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
North America	USA	100	120	110	130	100	120	110	130	100	120
	Canada	80	90	85	95	80	90	85	95	80	90
	Mexico	60	70	65	75	60	70	65	75	60	70
	Central America	40	50	45	55	40	50	45	55	40	50
South America	Brazil	90	100	95	110	90	100	95	110	90	100
	Argentina	70	80	75	85	70	80	75	85	70	80
	Colombia	50	60	55	65	50	60	55	65	50	60
	Venezuela	30	40	35	45	30	40	35	45	30	40
Europe	Germany	110	120	115	125	110	120	115	125	110	120
	France	100	110	105	115	100	110	105	115	100	110
	UK	90	100	95	105	90	100	95	105	90	100
	Italy	80	90	85	95	80	90	85	95	80	90
Africa	Egypt	60	70	65	75	60	70	65	75	60	70
	Nigeria	50	60	55	65	50	60	55	65	50	60
	South Africa	40	50	45	55	40	50	45	55	40	50
	Kenya	30	40	35	45	30	40	35	45	30	40
Asia	India	120	130	125	135	120	130	125	135	120	130
	China	110	120	115	125	110	120	115	125	110	120
	Japan	100	110	105	115	100	110	105	115	100	110
	Australia	90	100	95	105	90	100	95	105	90	100

A1 (22/03): mild virus, A2 (12/04): aggressive virus



A1 (22/03): mild virus, A2 (12/04): aggressive virus


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A1 (22/03): mild virus, A2 (12/04): aggressive virus

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Overall Performance Summary			
Category	Sub-Category	Value	Unit
Section A	Item 1	120	kg
	Item 2	85	kg
	Item 3	95	kg
Section B	Item 4	150	kg
	Item 5	110	kg
	Item 6	130	kg
Section C	Item 7	100	kg
	Item 8	140	kg
	Item 9	120	kg
Section D	Item 10	160	kg
	Item 11	130	kg
	Item 12	170	kg
Section E	Item 13	110	kg
	Item 14	140	kg
	Item 15	120	kg
Section F	Item 16	130	kg
	Item 17	150	kg
	Item 18	140	kg

A1 (22/03): mild virus, A2 (12/04): aggressive virus



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Overall Performance Summary						
Category	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
Section A	Item A1	Item A2	Item A3	Item A4	Item A5	Item A6
Section B	Item B1	Item B2	Item B3	Item B4	Item B5	Item B6
Section C	Item C1	Item C2	Item C3	Item C4	Item C5	Item C6
Section D	Item D1	Item D2	Item D3	Item D4	Item D5	Item D6
Section E	Item E1	Item E2	Item E3	Item E4	Item E5	Item E6
Section F	Item F1	Item F2	Item F3	Item F4	Item F5	Item F6
Section G	Item G1	Item G2	Item G3	Item G4	Item G5	Item G6
Section H	Item H1	Item H2	Item H3	Item H4	Item H5	Item H6
Section I	Item I1	Item I2	Item I3	Item I4	Item I5	Item I6
Section J	Item J1	Item J2	Item J3	Item J4	Item J5	Item J6

Category	Item 1	Item 2	Item 3	Item 4
Item 1	Item 1.1	Item 1.2	Item 1.3	Item 1.4
Item 2	Item 2.1	Item 2.2	Item 2.3	Item 2.4
Item 3	Item 3.1	Item 3.2	Item 3.3	Item 3.4
Item 4	Item 4.1	Item 4.2	Item 4.3	Item 4.4
Item 5	Item 5.1	Item 5.2	Item 5.3	Item 5.4
Item 6	Item 6.1	Item 6.2	Item 6.3	Item 6.4
Item 7	Item 7.1	Item 7.2	Item 7.3	Item 7.4
Item 8	Item 8.1	Item 8.2	Item 8.3	Item 8.4
Item 9	Item 9.1	Item 9.2	Item 9.3	Item 9.4
Item 10	Item 10.1	Item 10.2	Item 10.3	Item 10.4

of damaged stem trusses in cultivar Komeett was somewhat lower than in the other varieties.

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**3.3 Trial site details I-12-6701-2**

## Trial location

Location:		GPS north latitude:	52.015
		GPS east longitude:	4.315
Street:			
Province:			
Country:			

## Trial lay-out

section 1: untreated						section 2: V10/untreated					
PEPPER	1 K	2 E	3 L	4 B	PEPPER	PEPPER	1 K	2 E	3 L	4 B	PEPPER
section 3: untreated/agEU+agCH						section 5: VX/agEU					
PEPPER	1 K	2 E	3 L	4 B	PEPPER	PEPPER	1 K	2 E	3 L	4 B	PEPPER
section 4: V10/agEU+agCH						section 6: VC/agCH					
PEPPER	1 K	2 E	3 L	4 B	PEPPER	PEPPER	1 K	2 E	3 L	4 B	PEPPER

K: Komeett

E: Endeavour

L: Levanzo

B: Briosio

## Cultural conditions of the trial site

Soil type:	Rockwool		
Crop:		Target temperature:	Day: 20°C
Cultivar:			Night: 18°C
Plot size:		Lit:	No

Country		
Algeria	100	100
Angola	100	100
Argentina	100	100
Australia	100	100
Austria	100	100
Bahrain	100	100
Bangladesh	100	100
Barbados	100	100
Belgium	100	100
Belize	100	100
Bermuda	100	100
Bhutan	100	100
Bolivia	100	100
Bosnia and Herzegovina	100	100
Brazil	100	100
Bulgaria	100	100
Burkina Faso	100	100
Burundi	100	100
Cambodia	100	100
Cameroon	100	100
Canada	100	100
Cape Verde	100	100
Cayman Islands	100	100
Central Europe and the Baltics	100	100
Chad	100	100
Chile	100	100
China	100	100
Colombia	100	100
Costa Rica	100	100
Cote d'Ivoire	100	100
Croatia	100	100
Cuba	100	100
Cyprus	100	100
Czechia	100	100
Dominican Republic	100	100
Dominica	100	100
DRC	100	100
Ecuador	100	100
Egypt	100	100
El Salvador	100	100
Equatorial Guinea	100	100
Estonia	100	100
Ethiopia	100	100
Fiji	100	100
Finland	100	100
France	100	100
Ghana	100	100
Germany	100	100
Ghana	100	100
Greece	100	100
Guatemala	100	100
Guinea	100	100
Guinea-Bissau	100	100
Haiti	100	100
Honduras	100	100
Hong Kong	100	100
Hungary	100	100
India	100	100
Indonesia	100	100
Israel	100	100
Italy	100	100
Jamaica	100	100
Japan	100	100
Jordan	100	100
Kazakhstan	100	100
Kenya	100	100
Korea	100	100
Korea, Dem. Rep.	100	100
Korea, Rep.	100	100
Kuwait	100	100
Kyrgyzstan	100	100
Latvia	100	100
Lebanon	100	100
Lesotho	100	100
Lithuania	100	100
Luxembourg	100	100
Macao	100	100
Macedonia	100	100
Madagascar	100	100
Mali	100	100
Maldives	100	100
Malaysia	100	100
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Malta	100	100
Mexico	100	100
Moldova	100	100
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Morocco	100	100
Mozambique	100	100
Myanmar	100	100
Nicaragua	100	100
Niger	100	100
Nigeria	100	100
Norway	100	100
Oman	100	100
Pakistan	100	100
Panama	100	100

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A1 (22/03): mild virus, A2 (12/04): aggressive virus  
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A1 (22/03): mild virus, A2 (12/04): aggressive virus

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A1 (22/03): mild virus, A2 (12/04): aggressive virus





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A1 (22/03): mild virus, A2 (12/04): aggressive virus


Project Information		Task Details		Resource Allocation		Timeline & Status	
Project ID	Project Name	Task ID	Task Name	Resource ID	Resource Name	Start Date	End Date
P001	Project Alpha	T001	Task Alpha-1	R001	Resource A	2023-01-01	2023-01-15
		T002	Task Alpha-2	R002	Resource B	2023-01-16	2023-02-01
		T003	Task Alpha-3	R003	Resource C	2023-02-02	2023-02-15
		T004	Task Alpha-4	R004	Resource D	2023-02-16	2023-03-01
P002	Project Beta	T005	Task Beta-1	R001	Resource A	2023-03-02	2023-03-15
		T006	Task Beta-2	R002	Resource B	2023-03-16	2023-04-01
		T007	Task Beta-3	R003	Resource C	2023-04-02	2023-04-15
		T008	Task Beta-4	R004	Resource D	2023-04-16	2023-05-01
P003	Project Gamma	T009	Task Gamma-1	R001	Resource A	2023-05-02	2023-05-15
		T010	Task Gamma-2	R002	Resource B	2023-05-16	2023-06-01
		T011	Task Gamma-3	R003	Resource C	2023-06-02	2023-06-15
		T012	Task Gamma-4	R004	Resource D	2023-06-16	2023-07-01
P004	Project Delta	T013	Task Delta-1	R001	Resource A	2023-07-02	2023-07-15
		T014	Task Delta-2	R002	Resource B	2023-07-16	2023-08-01
		T015	Task Delta-3	R003	Resource C	2023-08-02	2023-08-15
		T016	Task Delta-4	R004	Resource D	2023-08-16	2023-09-01
P005	Project Epsilon	T017	Task Epsilon-1	R001	Resource A	2023-09-02	2023-09-15
		T018	Task Epsilon-2	R002	Resource B	2023-09-16	2023-10-01
		T019	Task Epsilon-3	R003	Resource C	2023-10-02	2023-10-15
		T020	Task Epsilon-4	R004	Resource D	2023-10-16	2023-11-01

A1 (22/03): mild virus, A2 (12/04): aggressive virus

Project Overview										
Project Details		Task Progress								
ID	Name	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9
P001	Project Alpha	Task 1.1	Task 1.2	Task 1.3	Task 1.4	Task 1.5	Task 1.6	Task 1.7	Task 1.8	Task 1.9
		Task 2.1	Task 2.2	Task 2.3	Task 2.4	Task 2.5	Task 2.6	Task 2.7	Task 2.8	Task 2.9
		Task 3.1	Task 3.2	Task 3.3	Task 3.4	Task 3.5	Task 3.6	Task 3.7	Task 3.8	Task 3.9
		Task 4.1	Task 4.2	Task 4.3	Task 4.4	Task 4.5	Task 4.6	Task 4.7	Task 4.8	Task 4.9
P002	Project Beta	Task 1.1	Task 1.2	Task 1.3	Task 1.4	Task 1.5	Task 1.6	Task 1.7	Task 1.8	Task 1.9
		Task 2.1	Task 2.2	Task 2.3	Task 2.4	Task 2.5	Task 2.6	Task 2.7	Task 2.8	Task 2.9
		Task 3.1	Task 3.2	Task 3.3	Task 3.4	Task 3.5	Task 3.6	Task 3.7	Task 3.8	Task 3.9
		Task 4.1	Task 4.2	Task 4.3	Task 4.4	Task 4.5	Task 4.6	Task 4.7	Task 4.8	Task 4.9
P003	Project Gamma	Task 1.1	Task 1.2	Task 1.3	Task 1.4	Task 1.5	Task 1.6	Task 1.7	Task 1.8	Task 1.9
		Task 2.1	Task 2.2	Task 2.3	Task 2.4	Task 2.5	Task 2.6	Task 2.7	Task 2.8	Task 2.9
		Task 3.1	Task 3.2	Task 3.3	Task 3.4	Task 3.5	Task 3.6	Task 3.7	Task 3.8	Task 3.9
		Task 4.1	Task 4.2	Task 4.3	Task 4.4	Task 4.5	Task 4.6	Task 4.7	Task 4.8	Task 4.9
P004	Project Delta	Task 1.1	Task 1.2	Task 1.3	Task 1.4	Task 1.5	Task 1.6	Task 1.7	Task 1.8	Task 1.9
		Task 2.1	Task 2.2	Task 2.3	Task 2.4	Task 2.5	Task 2.6	Task 2.7	Task 2.8	Task 2.9
		Task 3.1	Task 3.2	Task 3.3	Task 3.4	Task 3.5	Task 3.6	Task 3.7	Task 3.8	Task 3.9
		Task 4.1	Task 4.2	Task 4.3	Task 4.4	Task 4.5	Task 4.6	Task 4.7	Task 4.8	Task 4.9
P005	Project Epsilon	Task 1.1	Task 1.2	Task 1.3	Task 1.4	Task 1.5	Task 1.6	Task 1.7	Task 1.8	Task 1.9
		Task 2.1	Task 2.2	Task 2.3	Task 2.4	Task 2.5	Task 2.6	Task 2.7	Task 2.8	Task 2.9
		Task 3.1	Task 3.2	Task 3.3	Task 3.4	Task 3.5	Task 3.6	Task 3.7	Task 3.8	Task 3.9
		Task 4.1	Task 4.2	Task 4.3	Task 4.4	Task 4.5	Task 4.6	Task 4.7	Task 4.8	Task 4.9

A1 (22/03): mild virus, A2 (12/04): aggressive virus




[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
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			[REDACTED]													
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A1 (22/03): mild virus, A2 (12/04): aggressive virus



Table 1: Summary of the 2019-2020 Season										
Team		Games Played	Wins	Losses	Draws	Goals Scored	Goals Conceded	Points	Rank	Notes
Team A	Home	10	6	2	2	18	10	20	1	Strong performance at home
	Away	10	4	4	2	12	15	16	3	Consistent away form
	Total	20	10	6	4	30	25	36	2	Overall strong season
	Average	20	10	6	4	30	25	36	2	
Team B	Home	10	5	3	2	15	12	17	2	Good home record
	Away	10	3	5	2	10	18	11	4	Struggled away from home
	Total	20	8	8	4	25	30	28	3	Mid-table finish
	Average	20	8	8	4	25	30	28	3	
Team C	Home	10	4	4	2	14	14	16	3	Stable performance
	Away	10	3	5	2	11	16	11	4	Struggled away from home
	Total	20	7	9	4	25	30	27	3.5	Mid-table finish
	Average	20	7	9	4	25	30	27	3.5	
Team D	Home	10	3	5	2	12	18	11	4	Struggled away from home
	Away	10	2	6	2	8	20	8	5	Poor away form
	Total	20	5	11	4	20	38	19	4.5	Lowly finish
	Average	20	5	11	4	20	38	19	4.5	

A1 (22/03): mild virus, A2 (12/04): aggressive virus



[REDACTED]

Table 1: Summary of Data					
Category A		Category B		Category C	
Item 1	Value 1.1	Item 2	Value 2.1	Item 3	Value 3.1
Item 2	Value 1.2	Item 3	Value 2.2	Item 4	Value 3.2
Item 3	Value 1.3	Item 4	Value 2.3	Item 5	Value 3.3
Item 4	Value 1.4	Item 5	Value 2.4	Item 6	Value 3.4
Item 5	Value 1.5	Item 6	Value 2.5	Item 7	Value 3.5
Item 6	Value 1.6	Item 7	Value 2.6	Item 8	Value 3.6
Item 7	Value 1.7	Item 8	Value 2.7	Item 9	Value 3.7
Item 8	Value 1.8	Item 9	Value 2.8	Item 10	Value 3.8
Item 9	Value 1.9	Item 10	Value 2.9	Item 11	Value 3.9
Item 10	Value 1.10	Item 11	Value 2.10	Item 12	Value 3.10
Item 11	Value 1.11	Item 12	Value 2.11	Item 13	Value 3.11
Item 12	Value 1.12	Item 13	Value 2.12	Item 14	Value 3.12
Item 13	Value 1.13	Item 14	Value 2.13	Item 15	Value 3.13
Item 14	Value 1.14	Item 15	Value 2.14	Item 16	Value 3.14
Item 15	Value 1.15	Item 16	Value 2.15	Item 17	Value 3.15
Item 16	Value 1.16	Item 17	Value 2.16	Item 18	Value 3.16
Item 17	Value 1.17	Item 18	Value 2.17	Item 19	Value 3.17
Item 18	Value 1.18	Item 19	Value 2.18	Item 20	Value 3.18
Item 19	Value 1.19	Item 20	Value 2.19	Item 21	Value 3.19
Item 20	Value 1.20	Item 21	Value 2.20	Item 22	Value 3.20
Item 21	Value 1.21	Item 22	Value 2.21	Item 23	Value 3.21
Item 22	Value 1.22	Item 23	Value 2.22	Item 24	Value 3.22
Item 23	Value 1.23	Item 24	Value 2.23	Item 25	Value 3.23
Item 24	Value 1.24	Item 25	Value 2.24	Item 26	Value 3.24
Item 25	Value 1.25	Item 26	Value 2.25	Item 27	Value 3.25
Item 26	Value 1.26	Item 27	Value 2.26	Item 28	Value 3.26
Item 27	Value 1.27	Item 28	Value 2.27	Item 29	Value 3.27
Item 28	Value 1.28	Item 29	Value 2.28	Item 30	Value 3.28
Item 29	Value 1.29	Item 30	Value 2.29	Item 31	Value 3.29
Item 30	Value 1.30	Item 31	Value 2.30	Item 32	Value 3.30
Item 31	Value 1.31	Item 32	Value 2.31	Item 33	Value 3.31
Item 32	Value 1.32	Item 33	Value 2.32	Item 34	Value 3.32
Item 33	Value 1.33	Item 34	Value 2.33	Item 35	Value 3.33
Item 34	Value 1.34	Item 35	Value 2.34	Item 36	Value 3.34
Item 35	Value 1.35	Item 36	Value 2.35	Item 37	Value 3.35
Item 36	Value 1.36	Item 37	Value 2.36	Item 38	Value 3.36
Item 37	Value 1.37	Item 38	Value 2.37	Item 39	Value 3.37
Item 38	Value 1.38	Item 39	Value 2.38	Item 40	Value 3.38
Item 39	Value 1.39	Item 40	Value 2.39	Item 41	Value 3.39
Item 40	Value 1.40	Item 41	Value 2.40	Item 42	Value 3.40
Item 41	Value 1.41	Item 42	Value 2.41	Item 43	Value 3.41
Item 42	Value 1.42	Item 43	Value 2.42	Item 44	Value 3.42
Item 43	Value 1.43	Item 44	Value 2.43	Item 45	Value 3.43
Item 44	Value 1.44	Item 45	Value 2.44	Item 46	Value 3.44
Item 45	Value 1.45	Item 46	Value 2.45	Item 47	Value 3.45
Item 46	Value 1.46	Item 47	Value 2.46	Item 48	Value 3.46
Item 47	Value 1.47	Item 48	Value 2.47	Item 49	Value 3.47
Item 48	Value 1.48	Item 49	Value 2.48	Item 50	Value 3.48
Item 49	Value 1.49	Item 50	Value 2.49	Item 51	Value 3.49
Item 50	Value 1.50	Item 51	Value 2.50	Item 52	Value 3.50
Item 51	Value 1.51	Item 52	Value 2.51	Item 53	Value 3.51
Item 52	Value 1.52	Item 53	Value 2.52	Item 54	Value 3.52
Item 53	Value 1.53	Item 54	Value 2.53	Item 55	Value 3.53
Item 54	Value 1.54	Item 55	Value 2.54	Item 56	Value 3.54
Item 55	Value 1.55	Item 56	Value 2.55	Item 57	Value 3.55
Item 56	Value 1.56	Item 57	Value 2.56	Item 58	

trusses was in cultivar Briosò the highest (cocktail tomato) and in cultivar Levanzo the lowest (see table 13b).

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Table 1: Summary of the 2019-2020 Season												
Region A			Region B		Region C		Region D		Region E		Region F	
Sub-Region	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9	Area 10	Area 11	Area 12
Sub-Region A1	10	20	30	40	50	60	70	80	90	100	110	120
Sub-Region A2	15	25	35	45	55	65	75	85	95	105	115	125
Sub-Region A3	20	30	40	50	60	70	80	90	100	110	120	130
Sub-Region A4	25	35	45	55	65	75	85	95	105	115	125	135
Sub-Region A5	30	40	50	60	70	80	90	100	110	120	130	140
Sub-Region A6	35	45	55	65	75	85	95	105	115	125	135	145
Sub-Region A7	40	50	60	70	80	90	100	110	120	130	140	150
Sub-Region A8	45	55	65	75	85	95	105	115	125	135	145	155
Sub-Region A9	50	60	70	80	90	100	110	120	130	140	150	160
Sub-Region A10	55	65	75	85	95	105	115	125	135	145	155	165
Sub-Region A11	60	70	80	90	100	110	120	130	140	150	160	170
Sub-Region A12	65	75	85	95	105	115	125	135	145	155	165	175
Sub-Region A13	70	80	90	100	110	120	130	140	150	160	170	180
Sub-Region A14	75	85	95	105	115	125	135	145	155	165	175	185
Sub-Region A15	80	90	100	110	120	130	140	150	160	170	180	190
Sub-Region A16	85	95	105	115	125	135	145	155	165	175	185	195
Sub-Region A17	90	100	110	120	130	140	150	160	170	180	190	200
Sub-Region A18	95	105	115	125	135	145	155	165	175	185	195	205
Sub-Region A19	100	110	120	130	140	150	160	170	180	190	200	210
Sub-Region A20	105	115	125	135	145	155	165	175	185	195	205	215
Sub-Region A21	110	120	130	140	150	160	170	180	190	200	210	220
Sub-Region A22	115	125	135	145	155	165	175	185	195	205	215	225
Sub-Region A23	120	130	140	150	160	170	180	190	200	210	220	230
Sub-Region A24	125	135	145	155	165	175	185	195	205	215	225	235
Sub-Region A25	130	140	150	160	170	180	190	200	210	220	230	240
Sub-Region A26	135	145	155	165	175	185	195	205	215	225	235	245
Sub-Region A27	140	150	160	170	180	190	200	210	220	230	240	250
Sub-Region A28	145	155	165	175	185	195	205	215	225	235	245	255
Sub-Region A29	150	160	170	180	190	200	210	220	230	240	250	260
Sub-Region A30	155	165	175	185	195	205	215	225	235	245	255	265
Sub-Region A31	160	170	180	190	200	210	220	230	240	250	260	270
Sub-												

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Overall Performance Summary									
Region A		Region B		Region C		Region D		Region E	
Q1 Sales	120	150	180	200	220	250	280	300	320
Q2 Sales	130	160	190	210	230	260	290	310	330
Q3 Sales	140	170	200	220	240	270	300	320	340
Q4 Sales	150	180	210	230	250	280	310	330	350
Q1 Profit	80	100	120	140	160	180	200	220	240
Q2 Profit	85	105	125	145	165	185	205	225	245
Q3 Profit	90	110	130	150	170	190	210	230	250
Q4 Profit	95	115	135	155	175	195	215	235	255

Overall Summary									
Category		Sub-category		Item		Value		Status	
Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18	Item 19	Item 20
Item 21	Item 22	Item 23	Item 24	Item 25	Item 26	Item 27	Item 28	Item 29	Item 30
Item 31	Item 32	Item 33	Item 34	Item 35	Item 36	Item 37	Item 38	Item 39	Item 40
Item 41	Item 42	Item 43	Item 44	Item 45	Item 46	Item 47	Item 48	Item 49	Item 50
Item 51	Item 52	Item 53	Item 54	Item 55	Item 56	Item 57	Item 58	Item 59	Item 60
Item 61	Item 62	Item 63	Item 64	Item 65	Item 66	Item 67	Item 68	Item 69	Item 70
Item 71	Item 72	Item 73	Item 74	Item 75	Item 76	Item 77	Item 78	Item 79	Item 80
Item 81	Item 82	Item 83	Item 84	Item 85	Item 86	Item 87	Item 88	Item 89	Item 90
Item 91	Item 92	Item 93	Item 94	Item 95	Item 96	Item 97	Item 98	Item 99	Item 100

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Overall Summary									
Category A			Category B		Category C		Category D		
Item 1	Value 1.1	Value 1.2	Item 2	Value 2.1	Item 3	Value 3.1	Item 4	Value 4.1	Item 5
Item 6	Value 6.1	Value 6.2	Item 7	Value 7.1	Item 8	Value 8.1	Item 9	Value 9.1	Item 10
Item 11	Value 11.1	Value 11.2	Item 12	Value 12.1	Item 13	Value 13.1	Item 14	Value 14.1	Item 15
Item 16	Value 16.1	Value 16.2	Item 17	Value 17.1	Item 18	Value 18.1	Item 19	Value 19.1	Item 20
Item 21	Value 21.1	Value 21.2	Item 22	Value 22.1	Item 23	Value 23.1	Item 24	Value 24.1	Item 25
Item 26	Value 26.1	Value 26.2	Item 27	Value 27.1	Item 28	Value 28.1	Item 29	Value 29.1	Item 30
Item 31	Value 31.1	Value 31.2	Item 32	Value 32.1	Item 33	Value 33.1	Item 34	Value 34.1	Item 35
Item 36	Value 36.1	Value 36.2	Item 37	Value 37.1	Item 38	Value 38.1	Item 39	Value 39.1	Item 40
Item 41	Value 41.1	Value 41.2	Item 42	Value 42.1	Item 43	Value 43.1	Item 44	Value 44.1	Item 45
Item 46	Value 46.1	Value 46.2	Item 47	Value 47.1	Item 48	Value 48.1	Item 49	Value 49.1	Item 50
Item 51	Value 51.1	Value 51.2	Item 52	Value 52.1	Item 53	Value 53.1	Item 54	Value 54.1	Item 55
Item 56	Value 56.1	Value 56.2	Item 57	Value 57.1	Item 58	Value 58.1	Item 59	Value 59.1	Item 60
Item 61	Value 61.1	Value 61.2	Item 62	Value 62.1	Item 63	Value 63.1	Item 64	Value 64.1	Item 65
Item 66	Value 66.1	Value 66.2	Item 67	Value 67.1	Item 68	Value 68.1	Item 69	Value 69.1	Item 70
Item 71	Value 71.1	Value 71.2	Item 72	Value 72.1	Item 73	Value 73.1	Item 74	Value 74.1	Item 75
Item 76	Value 76.1	Value 76.2	Item 77	Value 77.1	Item 78	Value 78.1	Item 79	Value 79.1	Item 80
Item 81	Value 81.1	Value 81.2	Item 82	Value 82.1	Item 83	Value 83.1	Item 84	Value 84.1	Item 85
Item 86	Value 86.1	Value 86.2	Item 87	Value 87.1	Item 88	Value 88.1	Item 89	Value 89.1	Item 90
Item 91	Value 91.1	Value 91.2	Item 92	Value 92.1	Item 93	Value 93.1	Item 94	Value 94.1	Item 95
Item 96	Value 96.1	Value 96.2	Item 97	Value 97.1	Item 98	Value 98.1	Item 99	Value 99.1	Item 100
Item 101	Value 101.1	Value 101.2	Item 102	Value 102.1	Item 103	Value 103.1	Item 104	Value 104.1	Item 105
Item 106	Value 106.1	Value 106.2	Item 107	Value 107.1	Item 108	Value 108.1	Item 109	Value 109.1	Item 110
Item 111	Value 111.1	Value 111.2	Item 112	Value 112.1	Item 113	Value 113.1	Item 114	Value 114.1	Item 115
Item 116	Value 116.1	Value 116.2	Item 117	Value 117.1	Item 118	Value 118.1	Item 119	Value 119.1	Item 120
Item 121	Value 121.1	Value 121.2	Item 122	Value 122.1	Item 123	Value 123.1	Item 124	Value 124.1	Item 125
Item 126	Value 126.1	Value 126.2	Item 127	Value 127.1	Item 128	Value 128.1	Item 129	Value 129.1	Item 130
Item 131	Value 131.1	Value 131.2	Item 132	Value 132.1	Item 133	Value 133.1	Item 134	Value 134.1	Item 135
Item 136	Value 136.1	Value 136.2	Item 137	Value 137.1	Item 138	Value 138.1	Item 139	Value 139.1	Item 140
Item 141	Value 141.1	Value 141.2	Item 142	Value 142.1	Item 143	Value 143.1	Item 144	Value 144.1	Item 145
Item 146	Value 146.1	Value 146.2	Item 147	Value 147.1	Item 148	Value 148.1	Item 149	Value 149.1	Item 150
Item 151	Value 151.1	Value 151.2	Item 152	Value 152.1	Item 153	Value 153.1	Item 154	Value 154.1	Item 155
Item 156	Value 156.1	Value 156.2	Item 157	Value 157.1	Item 158	Value 158.1	Item 159	Value 159.1	Item 160
Item 161	Value 161.1	Value 161.2	Item 162	Value 162.1	Item 163	Value 163.1	Item 164	Value 164.1	Item 165
Item 166	Value 166.1	Value 166.2</							

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Overall Performance Summary				
Category	Sub-category	Value 1	Value 2	Value 3
Section A	Item 1	15	25	35
	Item 2	20	30	40
	Item 3	25	35	45
Section B	Item 4	10	20	30
	Item 5	12	22	32
	Item 6	14	24	34
	Item 7	16	26	36

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#### 4 CONCLUSIONS

In 2012 a project was carried out in The Netherlands to test the efficacy of attenuated isolates of *Pepino mosaic virus* for cross-protection in protected tomato.

Two trials were carried out, from the results obtained the following conclusions can be drawn:

PepMV related symptoms on leaves and fruits were strongly reduced in plants infected with attenuated virus isolates before treating the plants with aggressive viral isolates. The isolates with aggressive symptoms were found to reduce flowering, setting of trusses and finally yield. On the other hand hardly no yield loss occurred in plants that were treated with one of the attenuated isolates. The yield of the cross-protected plants were comparable with the yield of the untreated control plants. Quality of the harvested fruits was not effected when plants were cross-protected by mild virus isolates.

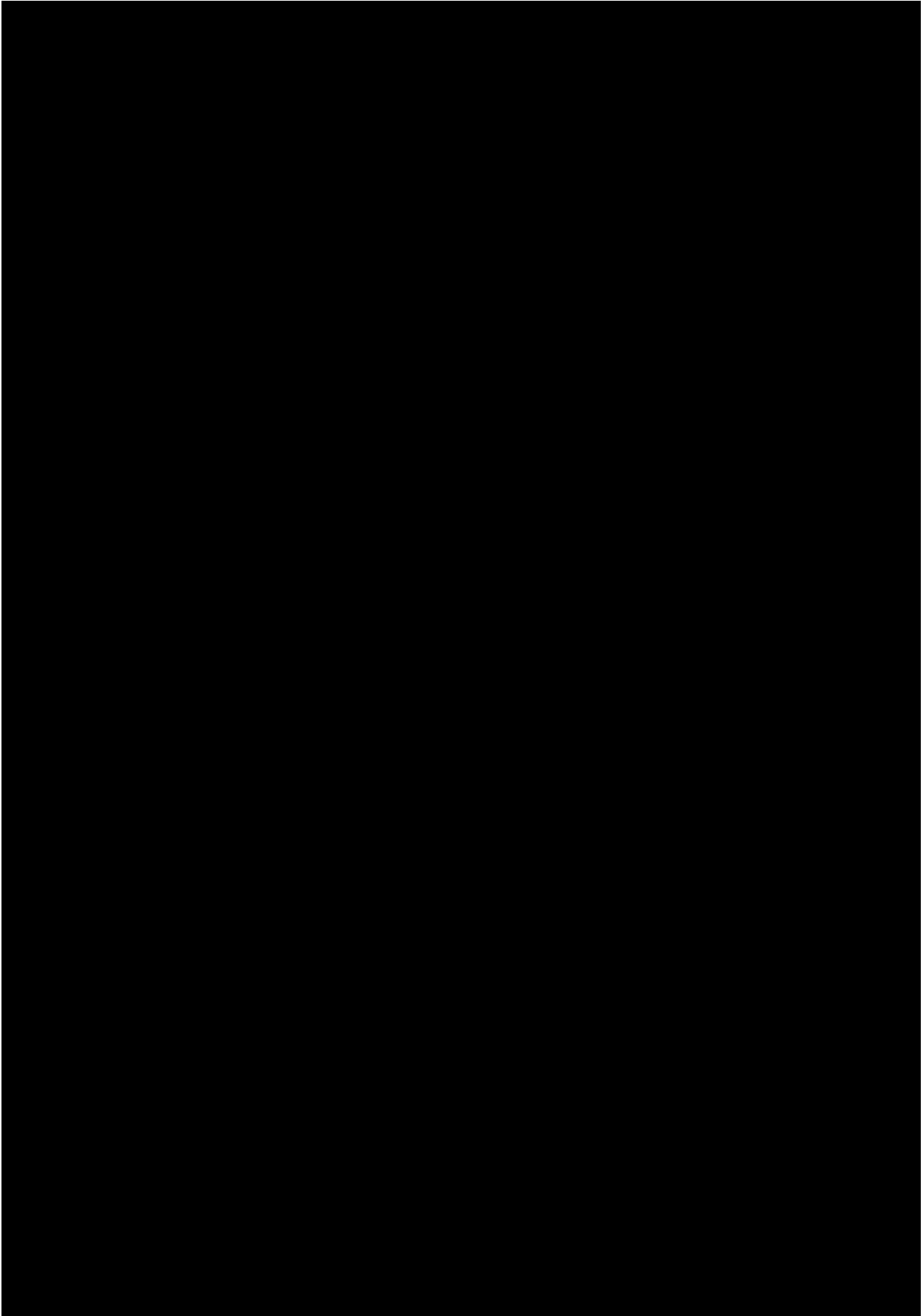
Crop damage (caused by the carborundum which was added to the spray solution) was observed at the beginning of the trial only on the leaves that were present during the applications. Some stunting of the plants was observed in all viral objects with the most severe symptoms in the virulent virus control agEU + agCH.

## 5 TEST FACILITY [REDACTED]

[REDACTED] is officially recognised as an organisation for efficacy testing (see appendix 3) as has been laid down in the “Regulation Crop Protection Products and Biocides” of September 26, 2007.

All raw data of this project will be stored at [REDACTED]. The archived data and documents will be retained for a period of 10 years. Thereafter the sponsor will be contacted. No archived material will be disposed of without the permission of the sponsor.







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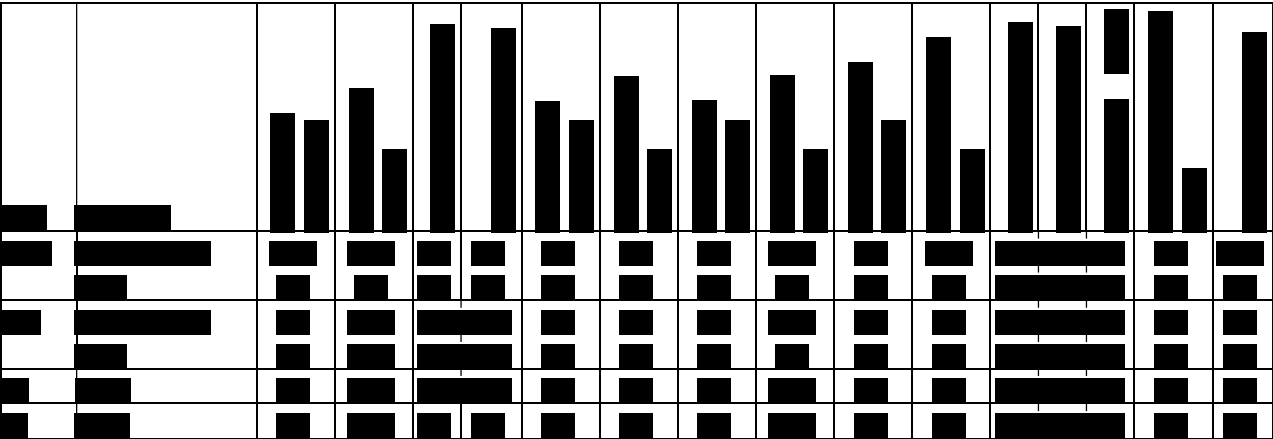
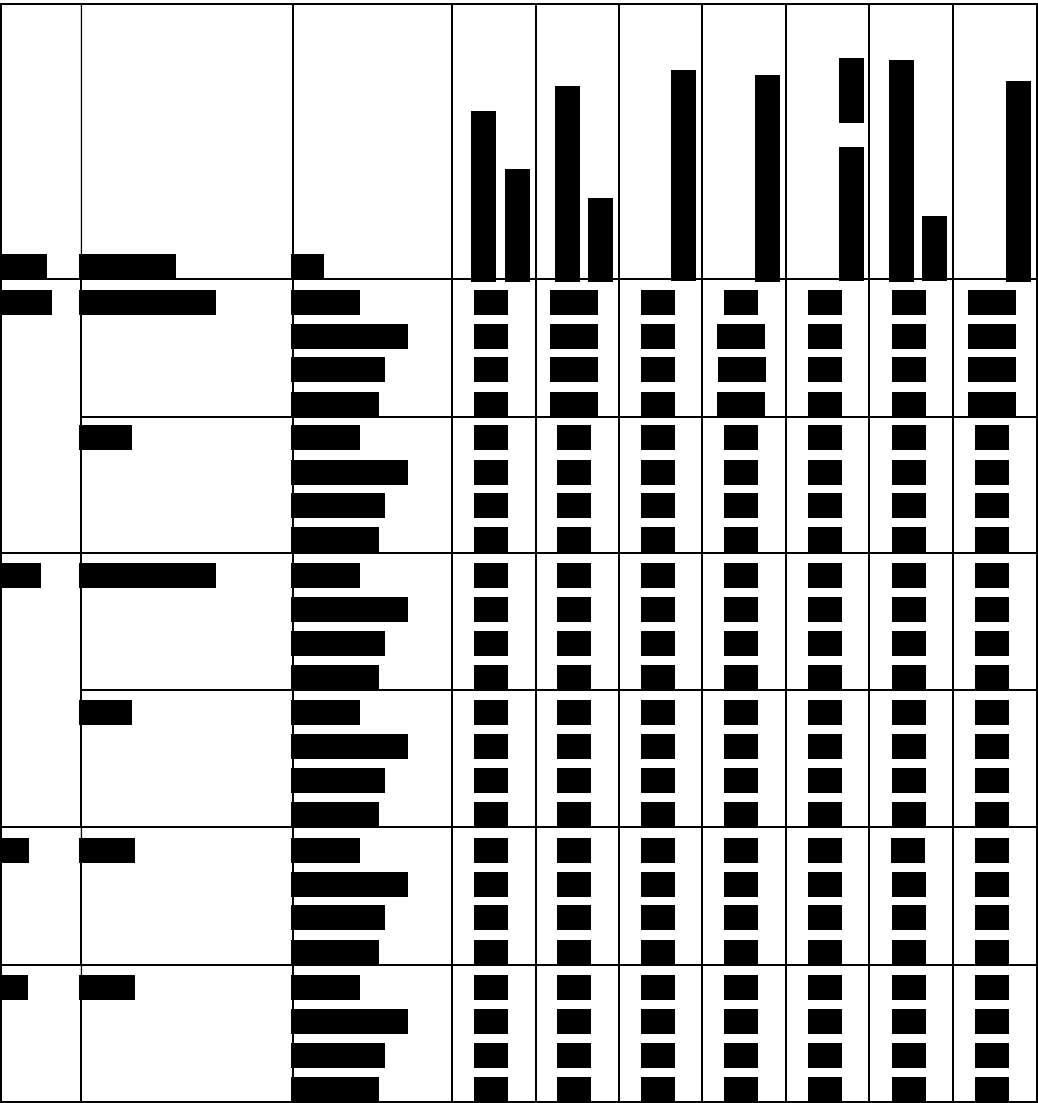
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	2019		2020		2021	
	Revenue	Profit	Revenue	Profit	Revenue	Profit
Q1	100	20	110	22	120	24
Q2	110	22	120	24	130	26
Q3	120	24	130	26	140	28
Q4	130	26	140	28	150	30
Q5	140	28	150	30	160	32
Q6	150	30	160	32	170	34
Q7	160	32	170	34	180	36
Q8	170	34	180	36	190	38
Q9	180	36	190	38	200	40
Q10	190	38	200	40	210	42
Q11	200	40	210	42	220	44
Q12	210	42	220	44	230	46







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Project Overview				Key Milestones		Resource Allocation	
Task ID	Task Name	Start Date	End Date	Assigned To	Status	Progress (%)	Notes
1	Project Initiation	2023-01-01	2023-01-15	John Doe	Completed	100	Initial meeting held.
2	Requirement Gathering	2023-01-16	2023-02-15	Jane Smith	In Progress	75	Meeting with stakeholders.
3	System Design	2023-02-16	2023-03-15	Mike Johnson	On Hold	20	Awaiting client feedback.
4	Development	2023-03-16	2023-04-15	Alice Brown	Not Started	0	Waiting for design.
5	Testing	2023-04-16	2023-05-15	Bob White	Not Started	0	Waiting for development.
6	Deployment	2023-05-16	2023-05-31	John Doe	Not Started	0	Waiting for testing.
7	Post-Launch	2023-06-01	2023-06-30	Jane Smith	Not Started	0	Waiting for deployment.
8	Project Closure	2023-07-01	2023-07-15	Mike Johnson	Not Started	0	Waiting for post-launch.



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

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Leaf symptoms								
			brandnetel %bladopvl	gele stippen % planten	gele stippen %bladopvl	bladnecrose % planten	bladnecrose %bladopvl	stengel necrose % planten
mild	agressief	ras						
geen	AgEU + agCH		71.9	0.6	0.0	100.0	59.4	100.0
			71.9	2.2	0.0	100.0	60.6	100.0
			71.9	1.7	0.0	100.0	59.4	100.0
			0.0	0.0	0.0	0.0	0.0	0.0
	geen		0.0	0.0	0.0	0.0	0.0	0.0
			0.0	0.0	0.0	0.0	0.0	0.0
			0.0	0.0	0.0	0.0	0.0	0.0
			7.5	50.6	0.1	20.0	4.8	2.2
	V10		8.8	43.3	0.1	27.2	5.1	4.4
			7.5	33.3	0.1	20.6	3.8	0.6
			7.5	53.9	0.1	12.2	4.0	1.1
			2.5	49.4	0.1	0.0	0.0	0.0
	geen		2.5	43.9	0.1	0.0	0.0	0.0
			2.5	47.8	0.1	0.0	0.0	0.0
			2.5	58.3	0.1	0.0	0.0	0.0
			5.6	72.8	0.1	5.6	15.1	3.9
VC	agCH		5.0	71.1	0.1	2.8	3.4	0.0
			5.0	65.0	0.1	2.2	12.8	0.6
			5.0	73.9	0.1	1.7	0.3	0.0
			7.5	13.9	0.1	44.4	5.6	5.6
VX	agEU		6.3	11.7	0.1	46.7	8.3	6.7
			6.3	13.9	0.1	44.4	6.1	0.0
			6.3	13.3	0.1	46.1	6.7	4.4
			87.8	0.0	100.0	58.3	88.9	9.4





			stengel necrose %stengelopvl	chlorose % planten	chlorose %bladopvl	bladmisvorming perc planten	Bladmisvorming gem score	groei remming (%)	gewas stand (10-1)
mild	agressief	ras							
geen	agEU + agCH	Brioso	12.8	13.9	1.7	100.0	2.6	72	4
		Endeavour	15.0	17.2	2.7	100.0	2.8	72	4
		Komeett	12.8	13.9	1.2	88.9	2.2	72	4
		Levanzo	0.0	0.0	0.0	0.0	0.0	72	4
	geen	Brioso	0.0	0.0	0.0	0.0	0.0	0	9
		Endeavour	0.0	0.0	0.0	0.0	0.0	0	9
		Komeett	0.0	0.0	0.0	0.0	0.0	0	9
		Levanzo	1.1	0.0	0.0	3.9	0.7	0	9
V10	agEU + agCH	Brioso	3.2	1.7	1.4	5.6	0.7	8	7
		Endeavour	1.1	12.2	2.9	2.8	0.4	9	7
		Komeett	0.8	0.0	0.0	1.1	0.1	8	7
		Levanzo	0.0	0.0	0.0	0.0	0.0	8	7
	geen	Brioso	0.0	0.0	0.0	0.0	0.0	3	8
		Endeavour	0.0	4.4	2.2	0.0	0.0	3	8
		Komeett	0.0	0.0	0.0	0.0	0.0	3	8
		Levanzo	3.3	0.0	0.0	4.4	0.9	3	8
VC	agCH	Brioso	0.0	0.0	0.0	0.0	0.0	6	8
		Endeavour	0.6	5.6	3.0	2.2	0.8	5	8
		Komeett	0.0	0.0	0.0	2.2	0.4	5	8
		Levanzo	0.6	0.0	0.0	37.8	0.4	5	8
VX	agEU	Brioso	0.4	0.0	0.0	4.4	0.2	8	7
		Endeavour	0.0	1.7	1.4	0.6	0.1	6	7
		Komeett	0.4	0.0	0.0	1.1	0.1	6	7
		Levanzo	17.8	2.4	100.0	2.6	0.0	6	7








		brandnetel %bladopl	gele stippen % planten	gele stippen %bladopl	bladnecrose % planten	bladnecrose %bladopl	stengel necrose % planten	stengel necrose %stengelopl	chlorose % planten	chlorose %bladopl	bladmisvorming perc planten	Bladmisvorming gem score	groei remming (%)	gewas stand (10-1)
mild	agressief													
geen	agEU + agCH geen	72 0	2 0	0.03 0.00	100 0	59 0	97 0	13 0	16 0	2.7 0.0	97 0	2.6 0.0	4 9	72 0
V10	agEU + agCH geen	8 3	43 50	0.10 0.11	20 0	4 0	2 0	3 0	3 1	3.8 2.2	3 0	0.6 0.0	7 8	8 3
VC	agCH	5	69	0.10	3	10	1	3	1	3.0	2	0.7	8	5
VX	agEU	7	15	0.09	45	7	4	0	0	1.4	11	0.4	7	7









Fruit symptoms						
		Gegevens				
vak	ras	schade				
		# trossen	#vruchten	gewicht	kroon	wankleur
1	Brioso	114	901	41.3		
	Endeavour	84	465	74.5		6
	Komeett	80	401	65.5		6
	Levanzo	80	385	53.2		5
2	Brioso	99	742	37.1		6
	Endeavour	85	395	64.8		27
	Komeett	81	408	62.4		16
	Levanzo	80	396	50.7		29
3	Brioso	109	628	24.6	547	348
	Endeavour	84	364	42.2	249	133
	Komeett	80	374	47.4	261	168
	Levanzo	80	349	39.2	203	110
4	Brioso	116	790	37.5		7
	Endeavour	80	397	61.9		28
	Komeett	80	396	60.4		49
	Levanzo	80	410	53.8		32
5	Brioso	105	821	37.4		9
	Endeavour	80	393	57.2		16
	Komeett	80	399	59.9		20
	Levanzo	80	397	54.6		21
6	Brioso	113	774.14	40.3		
	Endeavour	80	352.76	59.7		37
	Komeett	80	346.58	61.8		21
	Levanzo	80	367.53	49.2		51
Eindtot		2110	11652.01	1236.39	1260	1145

		marmering	misvorming	beschadiging	open vrucht	neusrot
1					9	
					23	2
				1	9	6
				6	11	1
2					26	2
		1	12		40	2
			4		24	2
			17		27	3
3				88	45	
				93	38	2
		14	125		56	
			104		51	1
4				11	58	1
		10	31		33	
			34		40	
			23		38	
5					12	4
		2	11		34	6
		1	6		29	
			10		22	4
6				3	21	
			25		51	1
			23		31	
			20		38	
Eindtot		28	647		766	37
						279

		# trossen	ras				
		vak					Eindtotaal
mild	agressief						
geen	geen	1	114	84	80	80	358
V10	geen	2	99	85	81	80	345
geen	agEU + agCH	3	109	84	80	80	353
VX	agEU	4	116	80	80	80	356
V10	agEU + agCH	5	105	80	80	80	345
VC	agCH	6	113	80	80	80	353
Eindtotaal			656	493	481	480	2110

		gewicht	ras				
		vak					Eindtotaal
mild	agressief						
geen	geen	1	41.3	74.5	65.5	53.2	234.3
V10	geen	2	37.1	64.8	62.4	50.7	215.0
geen	agEU + agCH	3	24.6	42.2	47.4	39.2	153.4
VX	agEU	4	37.5	61.9	60.4	53.8	213.6
V10	agEU + agCH	5	37.4	57.2	59.9	54.6	209.2
VC	agCH	6	40.3	59.7	61.8	49.2	211.0
Eindtotaal			218.13	360.31	357.33	300.62	1236.39

Gemiddelde van gezette tros		vak					
datum	ras	1	2	3	4	5	6
5/10/2012		2.7	2.4	2.6	2.4	2.5	2.4
		3.5	3.1	3.2	3.6	3.5	3.4
		3.2	2.4	2.5	2.5	2.7	2.4
		3.4	2.5	2.7	2.6	2.6	2.6
Totaal 10-05-12		3.2	2.6	2.8	2.8	2.8	2.7
5/24/2012		5.2	4.7	4.9	4.9	4.7	4.9
		7.3	6.1	6.4	6.8	6.9	6.6
		5.7	5.1	5.4	5.2	5.6	5.1
		5.9	5.3	5.6	5.6	5.0	5.5
Totaal 24-05-12		6.0	5.3	5.6	5.6	5.6	5.5

Gemiddelde van bloeiende tros		vak					
datum	ras	1	2	3	4	5	6
5/10/2012		4.3	3.6	4.5	4.0	3.8	3.9
		5.5	4.8	6.1	5.0	5.6	5.6
		4.5	4.0	4.6	4.2	4.4	4.0
		4.8	4.2	4.6	4.3	4.0	4.4
Totaal 10-05-12		4.8	4.1	4.9	4.4	4.5	4.5
5/24/2012		5.7	5.4	5.4	5.3	5.4	5.5
		8.3	7.4	6.9	7.7	7.8	7.8
		6.4	5.7	6.3	5.7	6.4	5.9
		6.7	5.9	6.4	6.5	5.9	6.2
Totaal 24-05-12		6.8	6.1	6.3	6.3	6.4	6.3