Performance of the plum dwarfing rootstock WUR S766 in the Netherlands

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WAGENINGEN UNIVERSITY & RESEARCH

100years 1918 — 2018

HORIZON 2020 THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

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Wageningen Research BU ‘Open Crops’ Location Randwijk

- Selection of WUR S766
- Production 2017 2018
- Pseudomonas s. sensitivity
- Sensory

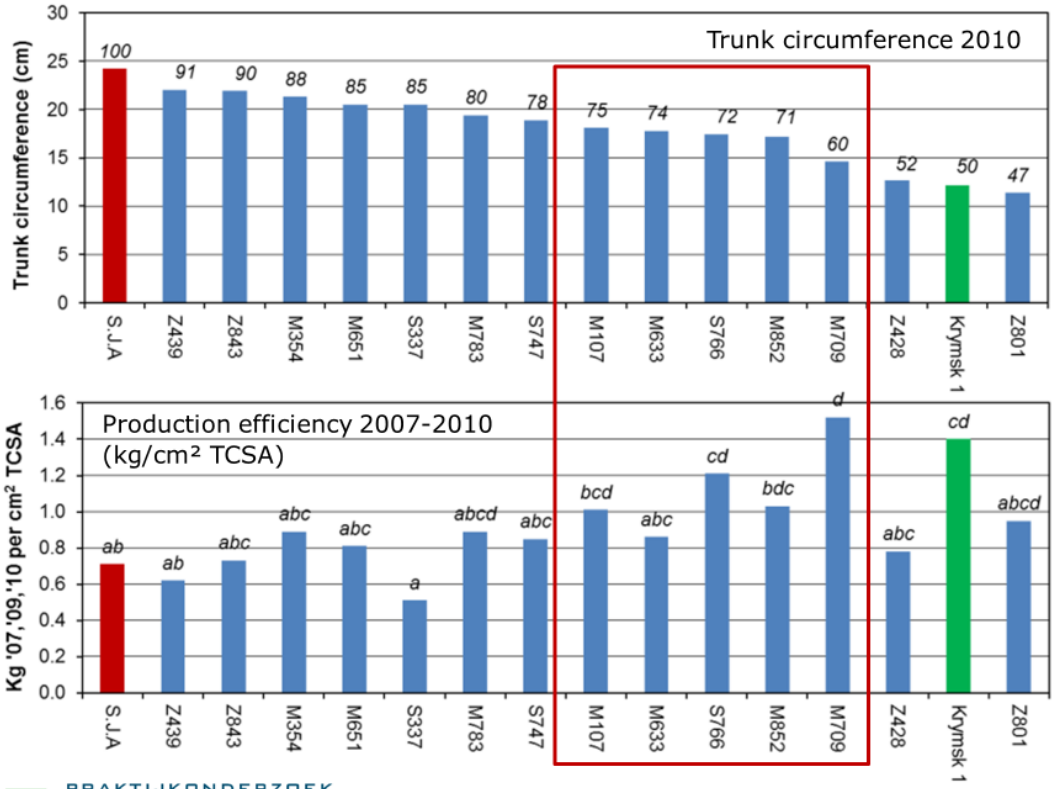
Bob Wertheim

- 1987 Fruit research station Wilheminadorp 1.000 seedlings (Bob Wertheim)
- 1990 Budding of ‘Opal’ on 583 P. spinosa seedlings
- 1991 Selection of the 113 best looking trees
- 1992 – 1999 Evaluation tree growth and fruit production
- 2000 Move research station to Randwijk.
- 17 selections transported to the new location Randwijk

Some background about WUR S766

- Rootstock for plum giving a tree vigour weaker than St. Julien A
- Precocious yields of high-quality fruits
- Resistant rootstock (frost, Pseudomonas)
- Good propagation and grafting properties
- Applicable for plum as well as for other stone fruit species (peach, nectarine, apricot)

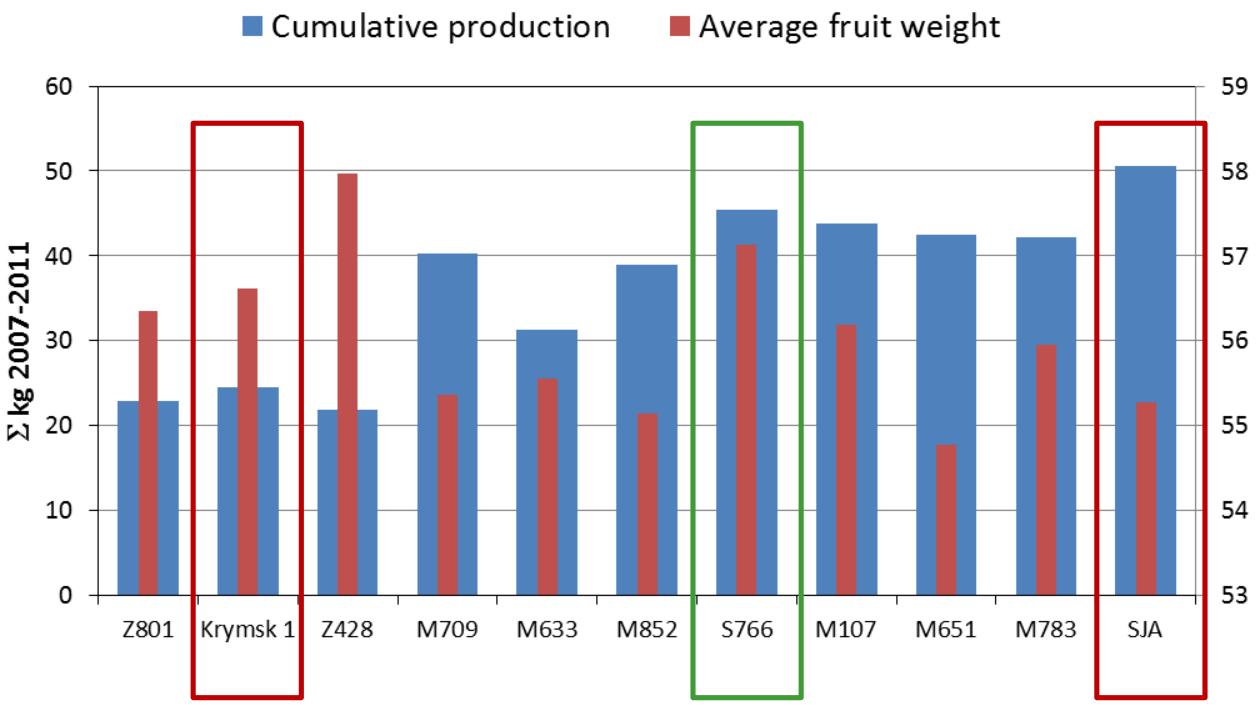
Effect rootstocks on tree vigour and production efficiency



PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

Trial with plum 'Victoria' planted in 2006

Effect rootstock on yield and fruit weight ‘Victoria’



Rootstock	Growth reduction[1]	Production efficiency[1]	Fruit size[1]	Root suckers[2]	Spines[2]
Z843	5%	+-	+	3-4	3-5
Z439	10 %	-	+	1	9
M354	5-20%	+	+	6	3-5
S337	10-25%	+ / -	-	1-5	3-5
S747	15-20%	+	+	2	7
M651	20%	+(-)	+-	8	6
M783	20-25%	+(-)	+(-)	2	3-5
M107	25-30%	+	+	8	3-5
Z562	30%	+	+-	3	9
M633	25-35%	+(-)	+(-)	2-6	3
S766	35%	++	++	4	6
M852	35-40%	+	+-	3-5	8
Z428	15-50%	+	++	3-5	6
M709	45%	++	+-	7	9
Z801	60%	+	+	3	9

Dutch pilots

In May 2015, pilots were started at 10 locations in the Netherlands

with 3 rootstocks involved: St Julien A, VVA-1 and WUR S766

Involved plum varieties: Opal and Reine Victoria

Opal 2017

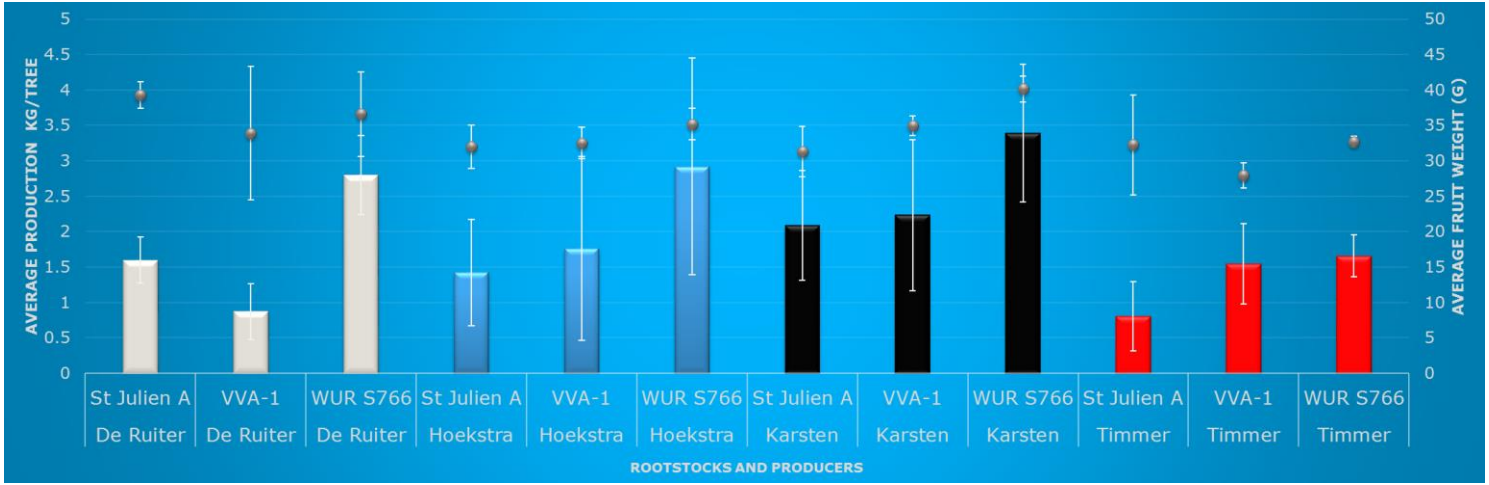


Figure 1. The average production (kg/tree) and average fruit weight (g) of the plum variety Opal (#trees=4/5 for every location) of 4 stonefruit growers in the Netherlands.

Opal 2017

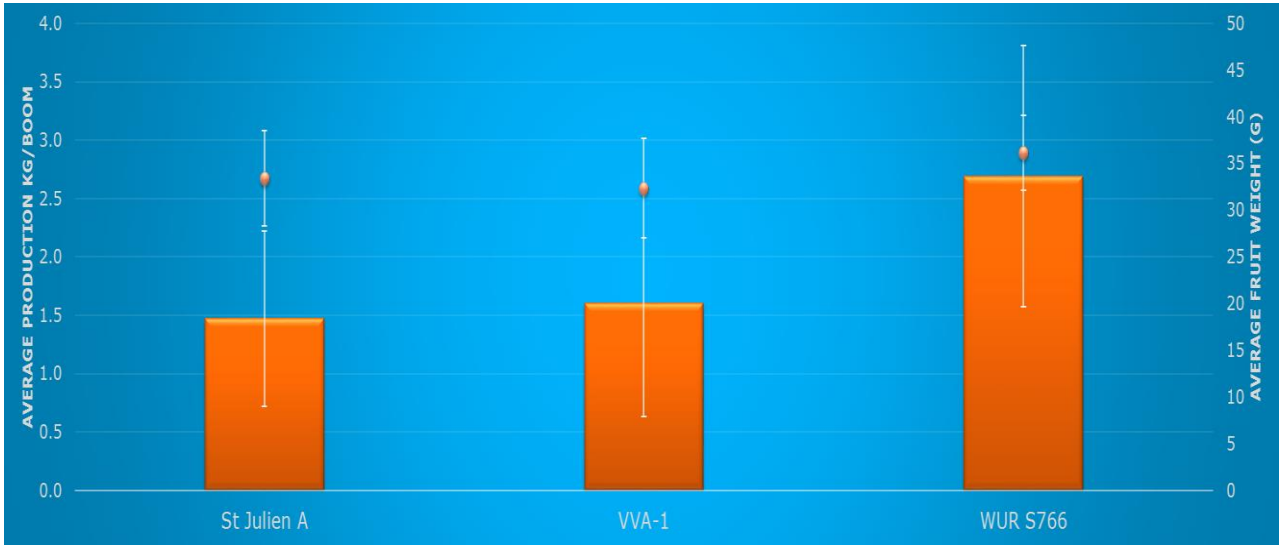


Figure 2. The mean average of 4 locations (De Ruiter, Hoekstra, Karsten, Timmer). Shown in the graph the average production (orange rods in kg/tree) and average fruitweight (dot in g).

Opal 2017

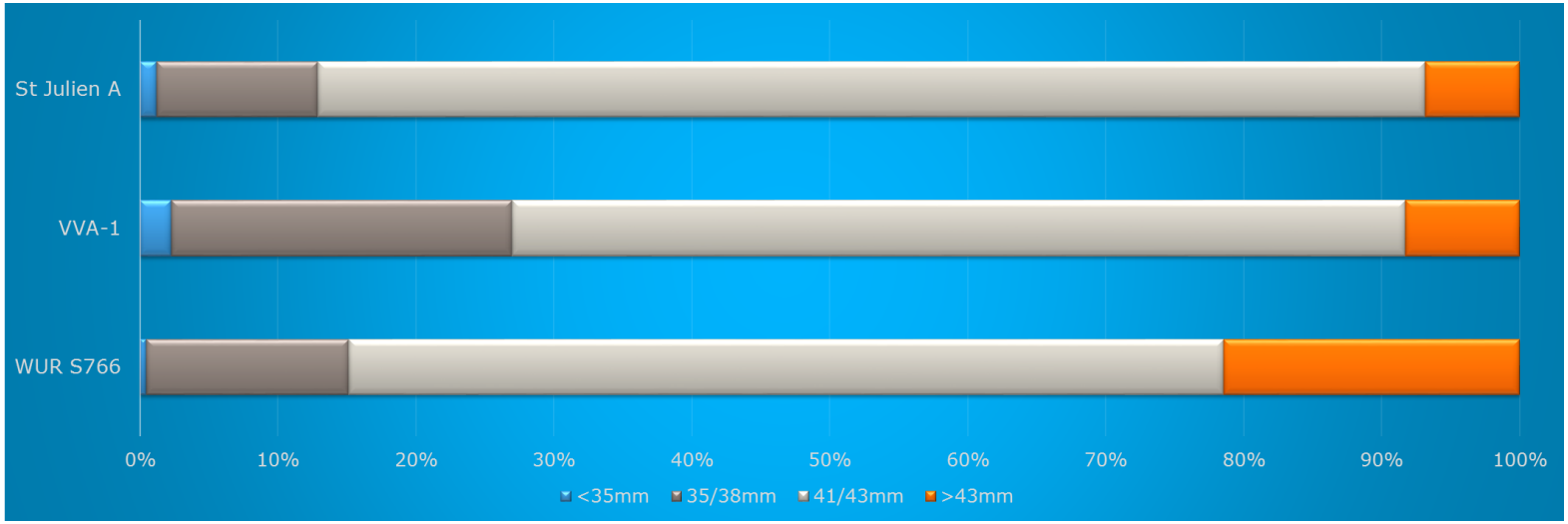


Figure 3. Sorting classes (%) of Opal grafted on St Julien A, VVA-1 and WUR S766.

Production Reine Victoria 2017

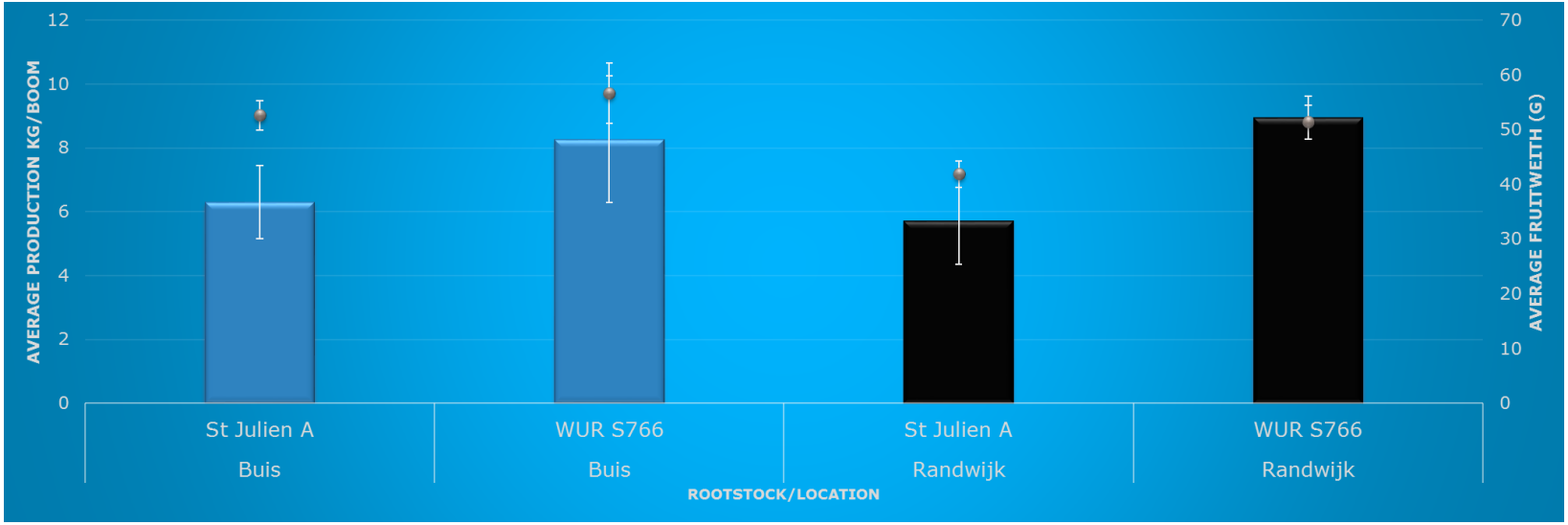


Figure 4. The average production (kg/tree) and average fruit weight (g) plum variety Victoria (#trees=4/6 for every location) of 2 stonefruit growers in the Netherlands.

Production Reine Victoria 2017

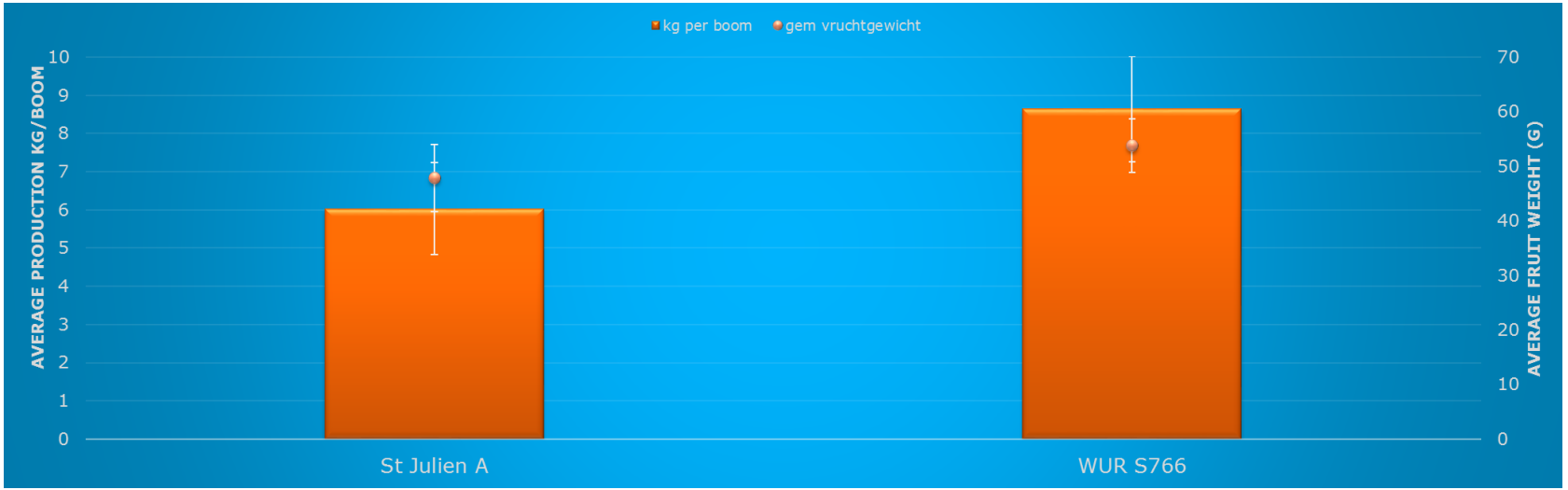


Figure 5. The mean average of 2 locations (Buis/Randwijk). Shown in the graph the average production (orange rods in kg/tree) and average fruit weight (dot in g).

Sorting Reine Victoria 2017

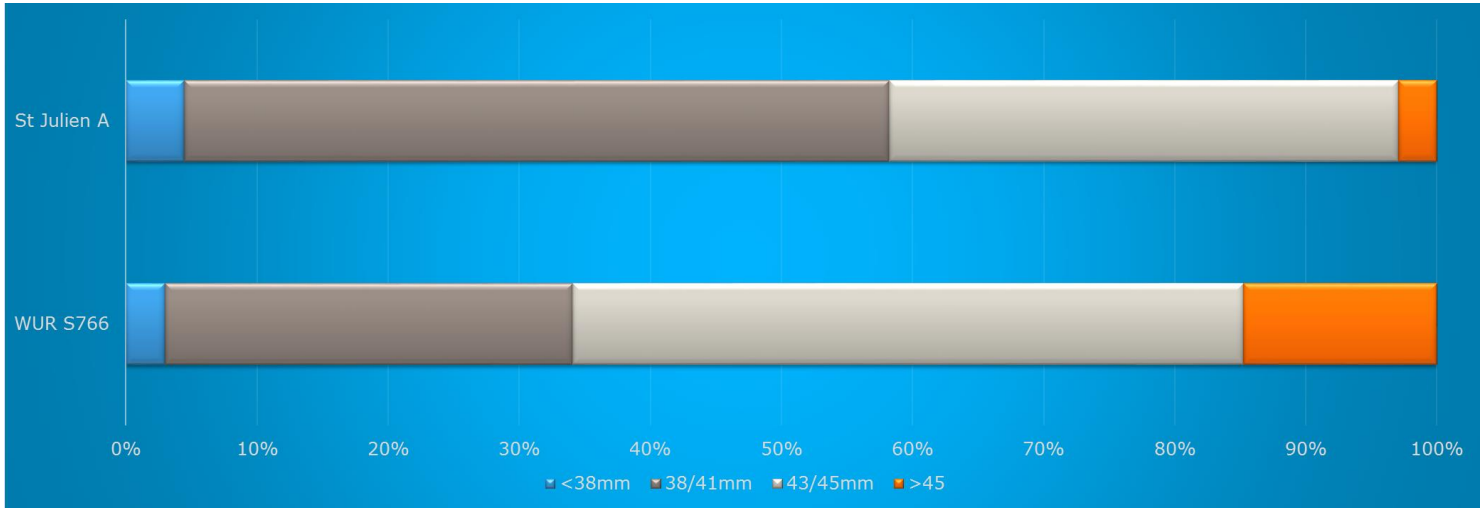


Figure 6. Sorting classes (%) of Victoria grafted on St Julien A or WUR S766.

Season 2018

March 3th

April 16th

'Opal' April 27th

July 16th

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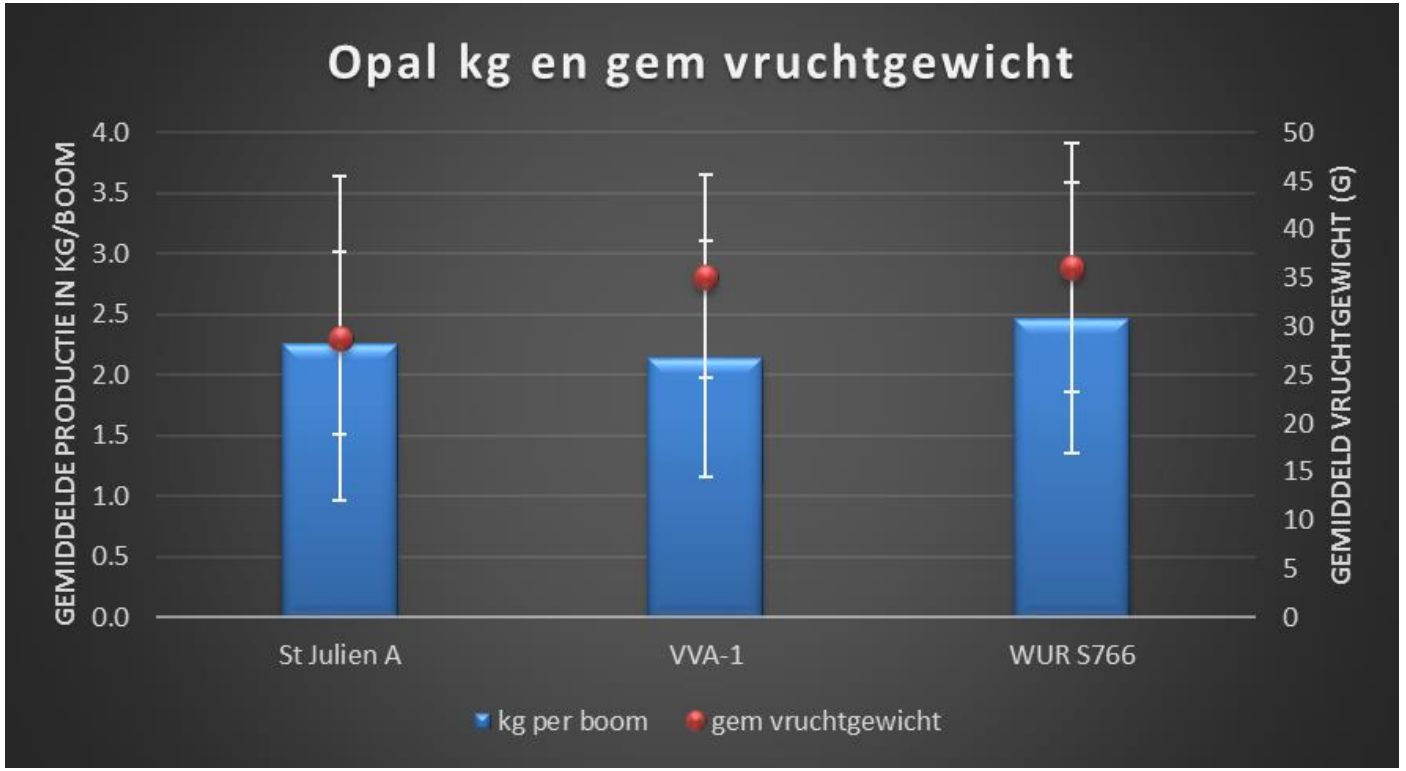
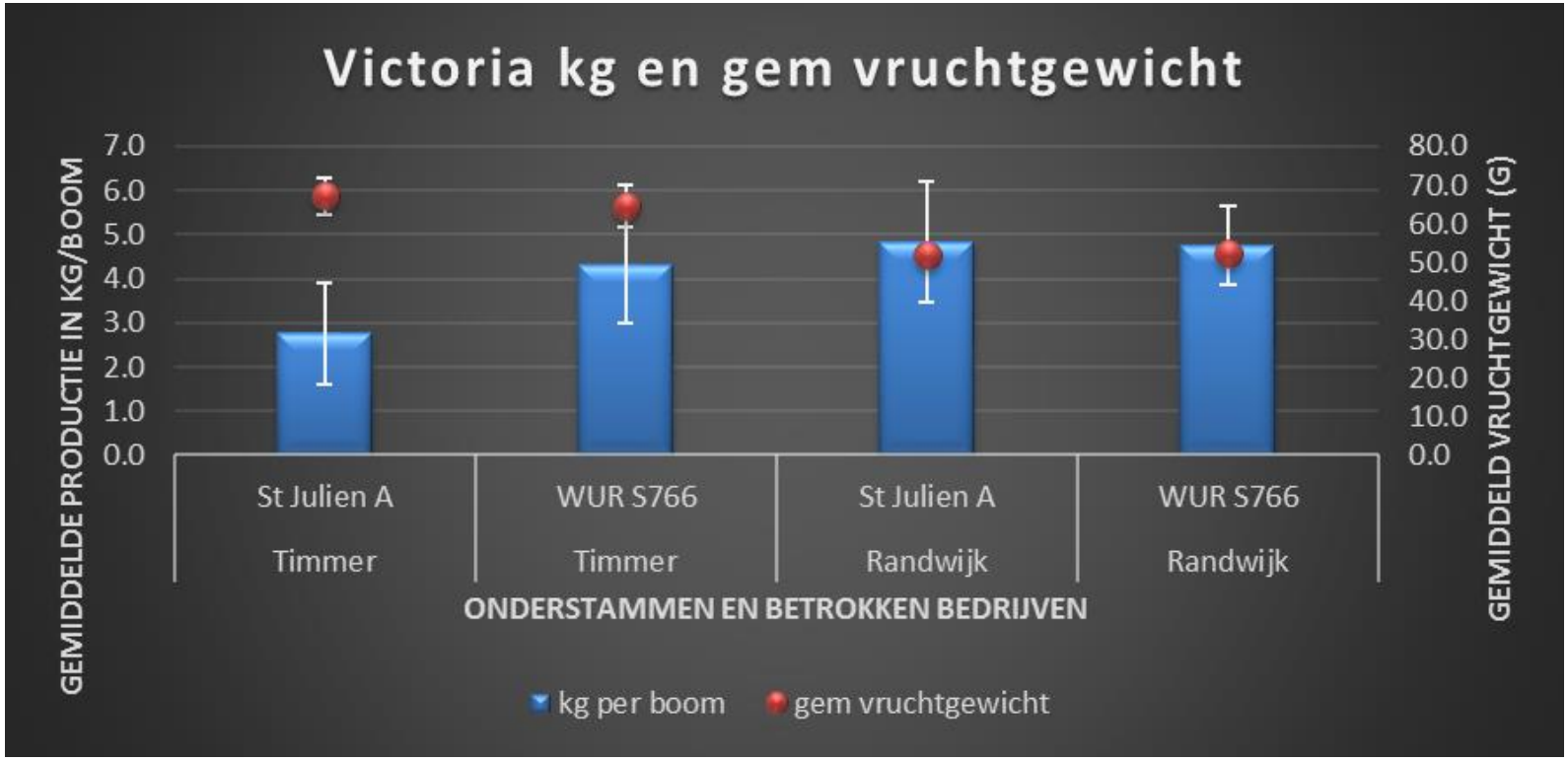
Opal 2018


Opal kg en gem vruchtgewicht
GEMIDDELDE PRODUCTIE IN KG/BOOM
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
50
45
40
35
30
25
20
15
10
5
0
GEMIDDELD VRUCHTGEWICHT (G)
St Julien A
VVA-1
WUR S766
kg per boom
gem vruchtgewicht

Reine Victoria 2018



Dying trees due to Pseudomonas s.

Method used

Evaluation of rootstock/scion combinations for canker resistance

Rootstock*	Head Cut 07	Score Cut 08	Dead 09 (%)
Gisela 6	15c	9a	77b
Mazzard	12b	17c	30a
Maxma 14	9a	11b	45a

*All cultivars combined for each rootstock

Discussion

- Mazzard better choice than G6 in sensitive locations

Evaluation on *Pseudomonas s.*

- Determine the sensitivity of Opal and Reine Victoria when using different rootstocks for Pseudomonas s.
- Bacterial strain (LMG 5075)

Test schedule

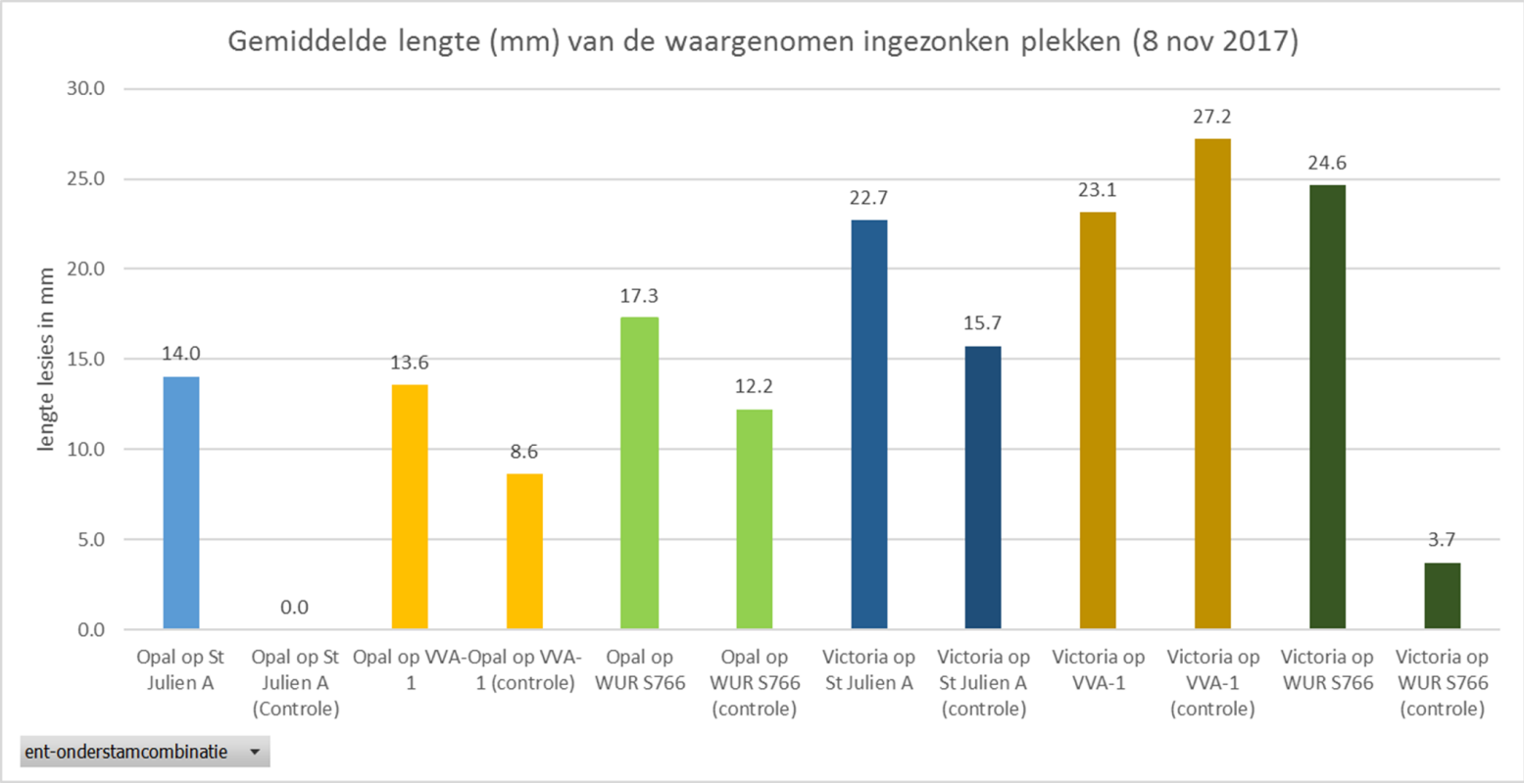
Onderstam	Opal	Reine Victoria
St Julien A	20	20
WUR S766	20	20
VVA-1	20	20

Inoculation

- The tissue was covered by medi-tape shortly after inoculation
- Inoculation date: August 18th 2017
- *Prunus domestica* stam
- Negative control with buffer fluid
- Bacterial suspension:
    - 20µl van $10^{6/7}$ cfu/ml

Stion relationship and bacterial cancer

- Length of the sunken tissue (mm) is a parameter for the sensitivity


Gemiddelde lengte (mm) van de waargenomen ingezonken plekken (8 nov 2017)
lengte lesies in mm
30.0
25.0
20.0
15.0
10.0
5.0
0.0
14.0
0.0
13.6
8.6
17.3
12.2
22.7
15.7
23.1
27.2
24.6
3.7
Opal op St Julien A
Opal op St Julien A (Controle)
Opal op VVA-1
Opal op VVA-1 (controle)
Opal op WUR S766
Opal op WUR S766 (controle)
Victoria op St Julien A
Victoria op St Julien A (controle)
Victoria op VVA-1
Victoria op VVA-1 (controle)
Victoria op WUR S766
Victoria op WUR S766 (controle)
ent-onderstamcombinatie

Containerfield August 29th, no simptoms

Natural infection by *Pseudomonas syringae*.

Re-inplant

May 23th 2018

Pictures of variety

Reine Victoria

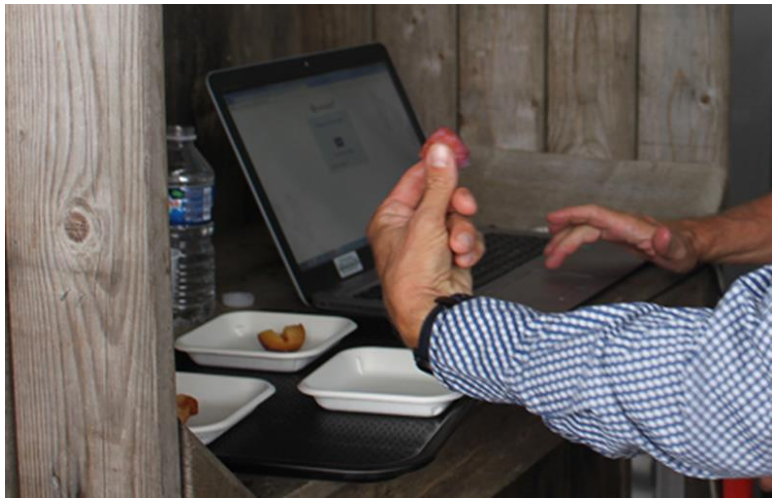
on WUR S766

Susceptibility for *Pseudomonas syringae*

- *Pseudomonas syringae pv. syringae* was found positive in the sample of 3 young branches.
- We will no longer be able to report that an attack was never observed, this is the first time since the selection work started.
- The infection did not continue on branches or even stems.
- It remains a fact that when using WUS S766, under field conditions, Opal and Reine Victoria are not or very little susceptible to the disease Pseudomonas syringae pv. syringae in Dutch practice.

Sensory test

- Are consumers able to taste a difference between ‘Reine Victoria’ grown on different rootstocks?



Method (1)

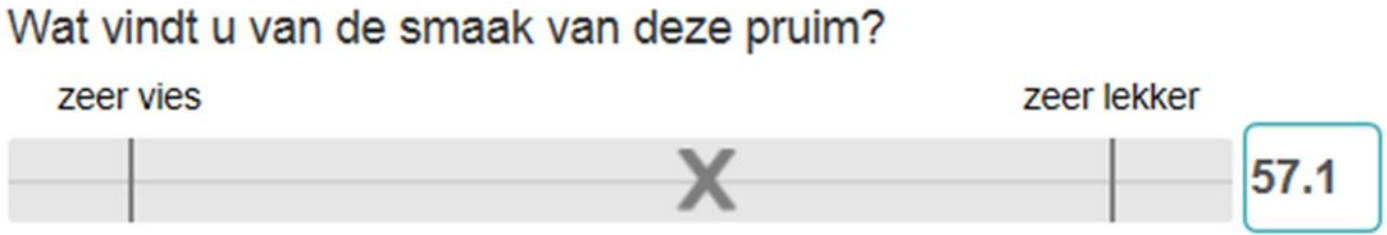
- Visitors were given three pieces of plum to taste
- These were all of the Reine Victoria variety, grown on VVA-1, WUR S766 or St Julien A
- The respondent was asked to indicate how the taste was experienced on a scale from 0 (very dirty) to 100 (very tasty)
- No information was provided to the respondents in advance about the background of this taste test
- All offered pieces were of an optimal and equal maturity: ready to eat

Method (2)

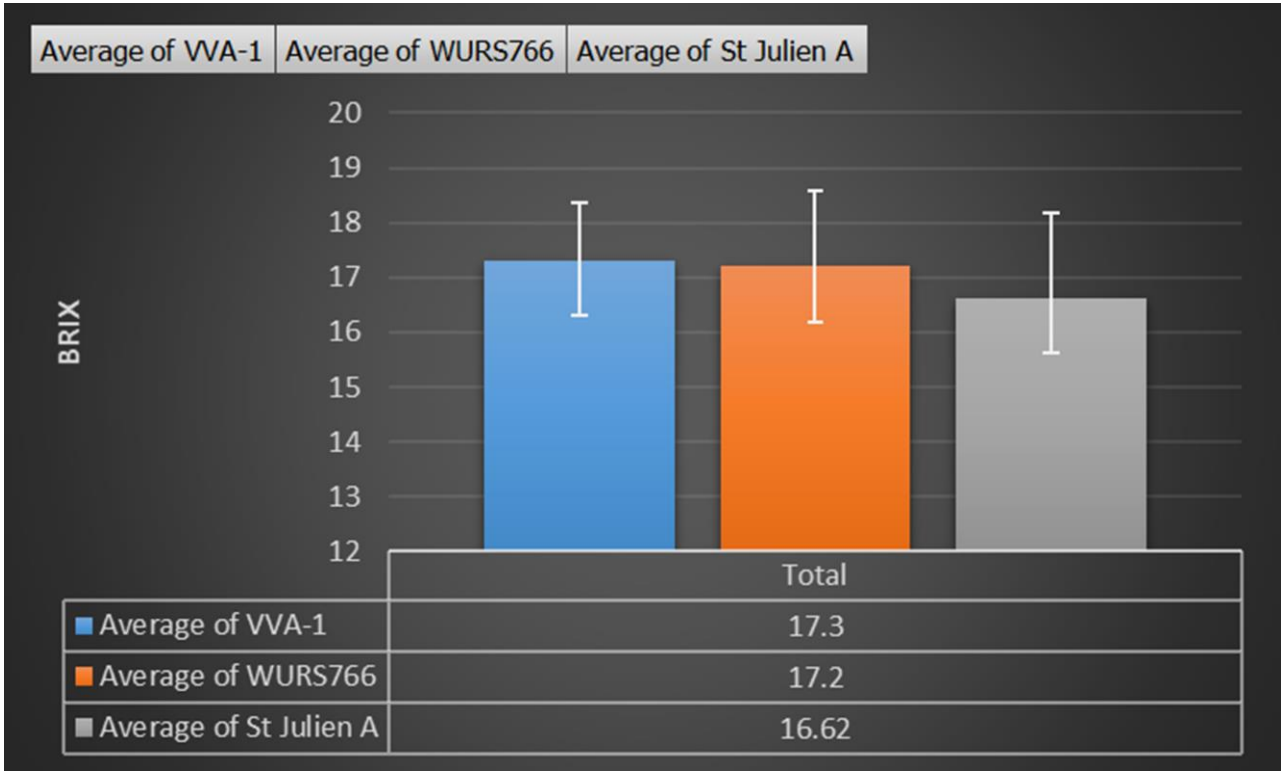
- Of the three combinations, a sample was taken afterwards to also determine the sugar content
- The three products were offered simultaneously
- After tasting a product, it was neutralized with crackers and water
- Sequence effects were countered by coding and randomization of the products (which piece to taste first, etc.)
- An analysis of variance was performed on the data obtained and tested for 95% reliability

Question

- What do you think of the taste of this plum?
  - Not tasty at all-------Very tasty



Internal batch variation: parameter Brix



Results of the taste appreciation

VVA-1	61.84	a
WUR S766	60.52	a
St Julien A	61.25	a

Table: Appreciation of the taste on a line scale of 0-100
0 = very dirty, 100 = very tasty
P 0.05, F test 0.977, no significant differences

Summarizing

- In this taste test an untrained panel was asked to evaluate the taste of three unknown pieces of plum, grown on different rootstocks
- In this test on differences, the participants were unable to taste a difference
- If they had tasted a difference, then we only had an indication for further research, because there might also be differences in aroma content, balance.....

Last question for the working group

- Are there researchers among you who are interested in cooperation on sensory research on new varieties?

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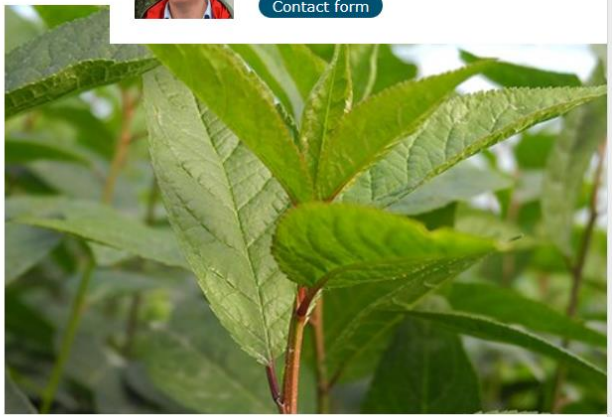
WUR S766 for intensive stone fruit production

Contact
drs. MBM (Marc) Ravesloot

Contact form



Production site for the Prunus spinosa consortium.

This group of rootstock and fruit tree growers started the market introduction of the WUR S766 rootstock in 2014. This site contains various subpages with background information and the order procedure for rootstocks and trees.

Characteristics

Prunus spinosa WUR S766 is a weak-growing rootstock for the intensive production of plums and other stone fruits. The plant grows more vigorously than VVA-1 and slightly less vigorously than St. Juliën A. Considering the climate conditions in the Netherlands, this rootstock is suitable for the Opal, Victoria and other varieties produced under the Lazoet concept.

The variety is characterised by a high productivity rate combined with large fruit size and the possibility to put new plots into production more quickly.

› Nederlandse home pagina

› Página principal en español

› Deutsche startseite

Thank you for your attention

Marc Ravesloot

Alma van der Heiden