



### PPS-jaarrapportage 2017

De PPS-en die van start zijn gegaan onder aansturing van de topsectoren dienen jaarlijks te rapporteren over de inhoudelijke en financiële voortgang. Voor de inhoudelijke voortgang dient dit format gebruikt te worden. Voor PPS-en die in 2017 zijn afgerond is een apart format "PPS-eindrapportage" beschikbaar.

**De jaarrapportages worden integraal gepubliceerd op de websites van de TKI's/topsector. Zorg er svp voor dat er geen vertrouwelijke zaken in de rapportage staat.**

Algemene gegevens	
PPS-nummer	KV 1409-029
Titel	Genetics and mechanism of Aphid resistance in <i>Capsicum</i>
Thema	Topsector Tuinbouw & Uitgangsmaterialen, Meer met Minder
Uitvoerende kennisinstelling(en)	Plant Breeding Wageningen University and Research
Projectleider onderzoek (naam + emailadres)	Dr. Ben Vosman
Penvoerder (namens private partijen)	Dhr. R. Linders
Contactpersoon overheid	Jan van Vliet
Werkelijke startdatum	June 1, 2015
Werkelijke einddatum	December, 31 2019

### Highlights: geef een korte beschrijving van de belangrijkste resultaten tot nu toe

Several aphids can cause problems in pepper cultivation, and produce all kinds of damage, such as chlorosis, necrosis, wilting, defoliation and fruit loss. Also they produce honeydew, but the most important damage is caused indirectly by the viruses that are transmitted by the aphids. During the last years we (Plant Breeding Wageningen University and Research (WUR-PB)) together with leading Dutch pepper breeding companies have evaluated wild relatives of the cultivated pepper for resistance against the aphid *Myzus persicae*. This has resulted in the identification of a resistance source on which *M. persicae* shows a strongly reduced reproduction rate. In this project we analyze the genetics of the resistance and study the resistance mechanism to facilitate its use in breeding aphid resistant pepper varieties.

In 2017 the major QTL identified was validated using F3 lines. A start was made with fine mapping of the major QTL using approx. 1100 plants, of which 230 had a recombination between the 2-LOD interval markers. This resulted in a region of about 92 kb containing 4 candidate genes. The performance of the 3 *M. persicae* populations (W,S, and B), originating from different geographical origins, on the parental lines of the population was analysed with respect to the production of reactive oxygen species (ROS), callose deposition and electrical penetration graph (EPG) analysis. It was shown that the W population induced the strongest ROS and callose signal in the phloem vessels on the resistant line, followed by the B population and the S population. There was no callose deposited or ROS induced in the susceptible line. EPG analysis showed that aphids of the W population encountered resistance components in the phloem, especially affecting the sustained uptake of phloem sap, which were not seen with the B and S population.

### Aantal opgeleverde producten in 2017 (geef in een bijlage de titels en/of omschrijving van de producten of een link naar de producten op openbare websites)

Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops
1	-	-	

**Bijlage: Titels van producten en links naar informatie op openbare websites (w.o. Kennisonline)**

Page KennisOnline:

<https://www.wur.nl/nl/project/Genetica-en-het-mechanisme-van-luisresistentie-in-Capsicum.htm>

Lectures:

Vosman, B. (2017) Host plant resistance against insect pests in pepper and tomato. Asian Solanaceous Round Table 2017(ASRT-2). February 23-25, 2017, Bangkok, Thailand

Vosman, B. (2017) Insectenresistentie onderzoek. Vakopleiding voor plantenveredeling, Wageningen 10 maart 2017.

Vosman, B. (2017) Breeding for Host Plant Resistance against insects in the post genomics era. International Symposium on Marine and Agricultural Genomics (ISMAG)". April 19-21, 2017, organized by the Marine Genome 100+ Korea and National Agricultural Genome Program (NAGP) of South Korea. Seoul, South Korea.

Draft publication:

Sun, Mengjing, Roeland E. Voorrips, Greet Steenhuis-Broers, Wendy van 't Westende & Ben Vosman. Reduced phloem uptake of *Myzus persicae* on an aphid resistant pepper accession, submitted

Newsletter 2017:

Bladluisresistentie in Paprika, [https://www.groeneveredeling.nl/upload\\_mm/1/f/1/110a39ec-e8cc-44af-a480-6e4f669e65dd\\_2017%20Nieuwsbrief%20Paprika.pdf](https://www.groeneveredeling.nl/upload_mm/1/f/1/110a39ec-e8cc-44af-a480-6e4f669e65dd_2017%20Nieuwsbrief%20Paprika.pdf)

Posters:

18 & 19 januari, Resistentie tegen bladluizen in paprika, Ben Vosman, Mengjing Sun, Wendy van 't Westende, Roeland Voorrips, poster Biobeurs, Zwolle.

Mengjing Sun, Roeland E. Voorrips, Wendy van 't Westende and Ben Vosman (2017) Reduced phloem uptake of *Myzus persicae* on an aphid resistant pepper accession. CEPLAS summer school 2017. June 5-9, 2017, Cologne, Germany.