

## Express – PRA for Physostegia chlorotic mottle virus – Occurrence –

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**Initiation:** Occurrence on *Solanum lycopersicum* in Hesse

Express-Risk Analysis (PRA)	Physostegia chlorotic mottle virus		
Phytosanitary risk for Germany	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Phytosanitary risk for EU-MS	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Certainty of assessment	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
<b>Conclusion</b>	<p>For the first time Physostegia chlorotic mottle virus was detected in Austria in 2016 and short time later it was found in Hesse. Apart from that it was not found in Germany and the EU. Up to now it is neither listed in the Annexes of the Directive 2000/29/EC nor by the EPPO.</p> <p>Up to now Physostegia chlorotic mottle virus could only be detected on <i>Physostegia virginiana</i> and <i>Solanum lycopersicum</i>.</p> <p>Based on a subsequent detection on a tomato sample from the year 2003 it can be assumed that Physostegia chlorotic mottle virus already occurs in Germany for quite some time, f. e. in protected tomato cultivation. An establishment in other Member States seems possible.</p> <p>Up to now damage caused by the virus is hardly known; thus according to present knowledge Physostegia chlorotic mottle virus presumably does not bear any phytosanitary risk for Germany and other EU-Member States. Due to a lack of information a concrete assessment of the risk is not yet possible. Particularly with regard to the possible vectors of the virus no information is available at the moment.</p> <p>Thus Physostegia chlorotic mottle virus actually is not classified as a quarantine pest and § 4a of the plant inspection order does not apply. Nevertheless it is recommended to destroy infested plant material as a precautionary measure to hinder a further spread of the virus.</p>		
<b>Taxonomy</b>	<i>Rhabdoviridae; nucleorhabdovirus</i>		
<b>Trivial name</b>	-		
<b>Synonyms</b>	-		
<b>Does a relevant earlier PRA exist?</b>	No		
<b>Biology</b>	Globular virus particles with a membrane and negative ssRNA-genome		
<b>Is the pest a vector?</b>	Unknown		
<b>Is a vector needed?</b>	Unknown, however, many plant infesting rhabdoviruses are transmitted via vectors. Normally these are aphids, grasshoppers or cicada (Jackson et al. 2005).		

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<b>Host plants</b>	Up to now the occurrence was only described on <i>Physostegia virginiana</i> and <i>Solanum lycopersicum</i> (Menzel et.al 2016, Gaafar et al. 2016). In tests the mechanical transmission to <i>Nicotiana benthamiana</i> , <i>N. clevelandii</i> and <i>Chenopodium quinoa</i> was possible.
<b>Symptoms</b>	Chlorosis, leaf mottle and leaf deformations on <i>Physostegia virginiana</i> , marbling and colouring of tomato fruits were described as symptoms.
<b>Presence of the host plants- in Germany</b>	In total, the genus <i>Physostegia</i> comprises 12 shrubby species. However, <i>Physostegia virginiana</i> is the single species that is cultivated as a garden shrub and thus is widespread (The Royal Horticultural Society 2015). Tomatoes belong to the crop plants. In 2016 they were cultivated commercially in Germany on app. 340 ha under glass. In addition, there are tomatoes as outdoor crop in private gardens (AMI Markt Bilanz Gemüse 2017).
<b>Presence of the host plants in the MS</b>	No specific information on the use of <i>Physostegia virginiana</i> is available. It can be assumed that <i>Physostegia virginiana</i> mainly is present in gardens as it is not endemic in Europe. In 2016, tomatoes were cultivated in the EU on an area of app. 260,000 ha. The main production countries are Italy, Spain, Portugal and Greece (AMI Markt Bilanz Gemüse 2017).
<b>Known infested areas</b>	The first occurrence on <i>Physostegia virginiana</i> was described in Austria. The first occurrence on tomato in protected cultivation was described in Hesse in three different cultivation locations.
<b>Pathways</b>	Unknown
<b>Natural spread</b>	Unknown. In general, the transmission via seeds happens rarely in the case of rhabdoviruses. A mechanical transmission only was possible under special conditions and in some instances to specific plants (Jackson et al. 2005).
<b>Expected establishment and spread in Germany</b>	Subsequently, the virus could be detected in a tomato sample from 2003. Thus it can be assumed that it is already present in Germany for some time.
<b>Expected establishment and spread in the MS</b>	Unknown.
<b>Known damage in infested areas</b>	Up to now only sporadic occurrence on single plants is known.
<b>Limitation of the endangered area in Germany</b>	Possibly tomato cultivation under glass.
<b>Expected damage in endangered area in Germany</b>	Due to lack of information an assessment is not possible. However, infested tomato fruits cannot be marketed so that economic damage might be caused..
<b>Expected damage in endangered area in MS</b>	See above.
<b>Control feasibility and measures</b>	At the moment no further measure than the destruction of infested plants is known.

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<b>Detection and diagnosis</b>	Electron microscopic examinations (Menzel et al. 2016) and serological detection are feasible at Julius Kühn-Institute (verbal information Ziebell 2017).
<b>Remarks</b>	At the moment hardly any information is available on the virus since the first description was in 2016.
<b>Literature</b>	<p>AMI Markt Bilanz Gemüse 2017. Daten   Fakten   Entwicklungen Germany   EU   Welt. Hrsg. Agrarmarkt Informations-Gesellschaft mbH, Dreizehnmorgenweg 10, 53175 Bonn. ISSN 1869-8905. 200 pages</p> <p>Gaafar, Y.Z.A., Abdelgalil, M.A.M., Knierim, D., Richert-Pöggeler, K., Menzel, W., Winter, S., Ziebell, H. First report of physostegia chlorotic mottle virus on tomato (<i>Solanum lycopersicum</i>) in Germany. Plant Disease. Published online on 10 August 2017 <a href="http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-05-17-0737-PDN">http://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-05-17-0737-PDN</a></p> <p>Jackson, A.O., Dietzgen, R.G., Goodin, M.M., Bragg, J.N., Min Deng 2005. Biology of Plant Rhabdoviruses. Annual Review of Phytopathology 43, 623 – 660.</p> <p>Menzel, W., Knierim, D., Richert-Pöggeler, K., Winter, S. 2016. Charakterisierung eines Nucleorhabdovirus aus Physostegia. Tagungsband Deutsche Pflanzenschutztagung, 20. – 23.09.2016 in Halle. Julius-Kühn-Archiv 454, 283 – 284</p> <p>The Royal Horticultural Society 2015. Stauden – Die große Enzyklopädie. Hrsg. Graham Rice, Dorling Kindersley Verlag GmbH München, 2015.</p>