



National Plant Protection Organization, the Netherlands

Quick scan number: MYC201605

Quick scan date: 12 December 2016		
1	What is the scientific name (if possible up to species level + author, also include (sub)family and order) and English/common name of the organism? <i>Add picture of organism/damage if available and publication allowed.</i>	<b><i>Phytophthora chrysanthemi</i></b> Naher M. Watanabe,H., Chikuo,Y. & Kageyama K. Family: Peronosporaceae; Orde: Peronosporales.
2	What prompted this quick scan? <i>Organism detected in produce for import, export, in cultivation, nature, mentioned in publications, e.g. EPPO alert list, etc.</i>	<i>Phytophthora chrysanthemi</i> was found in a production greenhouse of <i>Chrysanthemum</i> cut flowers in Hesse, Germany. Official phytosanitary measures have been taken to eradicate the pest (pest report from Julius Kühn Institut, Braunschweig, Germany, 2016).
3	What is the current area of distribution?	<i>Phytophthora chrysanthemi</i> was first described in Japan in 2010 (Naher, 2011) but already in 1998 and again in 2003 a <i>Phytophthora</i> species on <i>Chrysanthemum</i> was reported from Japan (Watanabe, 2007; Chikuo, 2007; Rahman, 2014). There are records of the species from Croatia in 2015 (Tomic & Ivic, 2015) and recently from Germany (see above).
4	What are the host plants?	<i>Chrysanthemum</i> spp. (Asteraceae) are the only known host plants (Naher, 2011).
5	Does the organism cause any kind of plant damage in the current area of distribution and/or does the consignment demonstrate damage suspected to have been caused by this organism? <i>Yes/no + plant species on which damage has been reported + short description of symptoms. Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).</i>	The following symptoms were observed on infected <i>Chrysanthemum</i> plants: few roots, wilting, root rot and discolouration at the stem base (Naher, 2011, USDA 2016).

6	<p>Assess the probability of establishment in the Netherlands (NL) (i.e. the suitability of the environment for establishment).</p> <ul style="list-style-type: none"> <li>a. In greenhouses (low, medium, high)</li> <li>b. Outdoors (low, medium, high)</li> <li>c. Otherwise (e.g. storage facilities, human environment)</li> </ul>	<p>a : conditions in Dutch greenhouses where <i>Chrysanthemum</i> spp. are cultivated do not differ from those in Germany, the probability of establishment is assessed to be high.</p> <p>b : <i>P. chrysanthemi</i> has a relatively high optimum temperature of 30°C, but will grow at temperatures ranging from 5°C to 35°C (Naher, 2011, Xiao Yang 2014). This species produces oospores and chlamydospores (Naher, 2011) and both these structures are able to overcome adverse conditions like low temperatures and drought. Therefore, the species can probably also establish outdoors.</p> <p>c : not relevant.</p>
7	<p>Assess the probability of establishment in the EU (i.e. the suitability of the environment for establishment).</p>	<p><i>P. chrysanthemi</i> can probably establish wherever <i>Chrysanthemum</i> species are grown.</p>
8	<p>What are the possible pathways that can contribute to spread of the organism after introduction? How rapid is the organism expected to spread (by natural dispersal and human activity)?</p>	<p>Short distance spread can occur through rain or overhead irrigation (splash dispersal). Spread over shorter and longer distances can occur by movement of infested soil (e.g. attached to plants, machinery, shoes etc.). Infected planting material is considered the main pathway for spread over longer distances.</p>
9	<p>Provide an assessment of the type and amount of direct and indirect damage (e.g. lower quality, lower production, export restrictions, threat to biodiversity, etc.) likely to occur if the organism would become established in NL and the EU, respectively?</p>	<p>Infection with <i>P. chrysanthemi</i> will lead to lower yields. <i>P. chrysanthemi</i> can survive unfavourable circumstances by oospores and chlamydospores in soil for several years.</p>
10	<p>Has the organism been detected on/in a product other than plants for planting (e.g. cut flowers, fruit, vegetables)? If "no", go to question 12</p>	<p>not relevant (not an interception)</p>
11	<p>If the organism has been found on/in a product other than plants for planting (e.g. cut flowers, fruit, vegetables), what is the probability of introduction (entry + establishment)? Only to be answered in case of an interception or a find.</p>	
12	<p>Additional remarks</p>	

13	References	<p>Chikuo, Y., Morikawa, T. Kageyama (2007) Addition of the pathogen of <i>Phytophthora</i> root rot of Chrysanthemum (<i>Chrysanthemum morifolium</i>) Annu. Phytopathol. Soc. Japan 73: 180.</p> <p>Naher, M. Motohash, K. Watanabe, H. Chikuo, Y. Senda , M. Suga, C. Brasier, Kogayama K (2011) <i>Phytophthora chrysanthemi</i> sp. nov., a new species causing root rot of chrysanthemum in Japan. Mycol. Progr. 10: 21-31.</p> <p>NPAG Report (2016) <i>Phytophthora chrysanthemi</i> Naher, Hi. Watan., Chikuo &amp; Kageyama: Crown and root rot of chrysanthemum, USDA, 2016.</p> <p>Rahman, M.Z., Uematsu, S., Coffey, M.D., Uzuhashi, S., Kageyama, K. (2014) Re-evaluation of Japanese <i>Phytophthora</i> isolates based on molecular phylogenetic analyses. Mycoscience 55: 314-327.</p> <p>Tomic, Z., and D. Ivic. (2015) <i>Phytophthora chrysanthemi</i> Naher, Motohash, Watanabe, Chikuo, Senda, Suga, Brasier &amp; Kageyama - new cause of chrysanthemum disease in Croatia. Glasilo biljne zaštite 15(4):291-300.</p> <p>(2007) Occurrence of <i>Phytophthora</i> root rot of Chrysanthemum caused by <i>Phytophthora</i> sp. Annu. Phytopathol. Soc. Japan 73: 60.</p> <p>Xiao Yang, M.E. Gallegly, Chuanxue Hong (2014) A high-temperature tolerant species in clade 9 of the genus <i>Phytophthora</i>: <i>P. hydrangea</i> sp. nov. Mycologia 106 (1): 57-65.</p>
14	<b>Conclusions</b>	<p><i>Phytophthora chrysanthemi</i> is a recently described pathogen on <i>Chrysanthemum</i>. It has been reported fromn Japan, Croatia and Germany but it may have wider distribution than currently known. Infected planting material is considered the main pathway of spread over longer distances.</p>
15	<b>Follow-up measures</b>	Communication