

Quick scan number: QS. Bac.2012.01

Quick scan date: 20-12-2012

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>	<p><i>Xanthomonas campestris</i> "pathogenic on <i>Pelargonium</i>". It does <u>not</u> concern <i>Xanthomonas hortorum</i> pv. <i>pelargonii</i> (<i>X. h. pelargonii</i>). Based on the data available at the moment, there is no further taxonomic specification possible.</p>  <p>foto Naktuinbouw</p> <p>Leaf spots on <i>Pelargonium</i>, caused by <i>Xanthomonas campestris</i>. Source: Jan Westerhof, Naktuinbouw, 2012.</p>
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2	<p>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></p>	<p>Non-listed pathogenic organism. Reason for this Quick scan was the uncommon combination of plant species and pathogenic organism. No other reports are known of <i>Xanthomonas campestris</i> on <i>Pelargonium</i>. The bacterial organism was found by a Dutch inspection body (Naktuinbouw) after being consulted by plant producers from Belgium and Italy.</p>
3	<p>What is the (most likely) area of distribution?</p>	<p>The organism has never been recorded in the Netherlands. Naktuinbouw isolated the organism from diseased <i>Pelargonium</i> plants originating from one glasshouse in Belgium (BE) and one glasshouse in Italy (IT). The primary source of infection (originating country) is unknown. Import of <i>Pelargonium</i> cuttings from Israel and African countries is common but it is unknown if the organism originated from these countries.</p>
4	<p>Has the organism been detected, sighted and/or has it established itself in nearby countries (DE, BE, LU, FR, UK) <i>Yes/no. If 'yes', provide details. No interceptions</i></p>	<p>Yes. The bacterium was detected (by isolation and identity verification tests) in one Belgian and one Italian glasshouse. The concerned plant growers from the respective countries consulted "Naktuinbouw" for diagnosis of the observed symptoms on <i>Pelargonium</i>. The growers were advised to apply hygiene procedures to prevent establishment in the glasshouses and to prevent spread to the natural environment.</p>
5	<p>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 + host plants + short explanation of symptoms. Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).</i></p>	<p>Yes. Damage in <i>Pelargonium</i>. Foliar damage (leaf spots and foliar blight) was directly related to infection by this bacterium. A trend was observed towards a dependency of combined long foliar wetness, high relative humidity and mild temperatures. Pathogenicity of the bacterial isolates was confirmed in a glasshouse inoculation experiment on <i>Pelargonium</i> by Naktuinbouw. A second pathogenicity test, during a warm summer period, (also by Naktuinbouw) with the same pathogen, required much effort in climate control to establish the same symptoms. In the glasshouse experiments performed on <i>Pelargonium</i>, with leaf inoculation (artificial infection), no systemic infection was observed as known to occur with <i>X. h. pv. pelargonii</i>. [information from Mr. J. Westerhof, Naktuinbouw, June 25th 2012.]</p>
6	<p>Indicate the (provisional) probability of establishment of the organism in the Netherlands regarding climate and ecology.</p> <ol style="list-style-type: none"> No risk In greenhouses (low, medium, high risk) Outdoors (low, medium, high risk) Otherwise (e.g. storage facilities, human environment) <p><i>Please illustrate with information/references</i></p>	<p>Outdoors, considering <i>Pelargonium</i> as the only host (based on the limited information available) for this <i>Xanthomonas campestris</i> bacterium, there is low risk of establishment. However, little is known about this bacterium. The risk of establishment may increase if the bacterium can also affect plant species other than <i>Pelargonium</i>. In <i>Pelargonium</i> production glasshouses (especially nurseries, where high moisture and mild temperatures are maintained and the host plant is almost continuously present) the physical and biological circumstances are probably conducive for disease development and establishment (rating: medium to high). Survival on surfaces and in watering systems (including epiphytic survival) might also pose a risk for establishment and spread of the disease. Establishment may be avoided by preventive measures, including early action upon possible detected entry (see also box 14).</p>
7	<p>If the organism would become established in the Netherlands, what kind of damage would it likely cause? <i>Indicate whether damage is expected to be comparable or different to that in area of present distribution : see question 5.</i></p>	<p>It is unknown where this organism originates from. The organism has never been recorded in the Netherlands. Potentially, the organism can cause an undesirable appearance and damage to the plant (considering the symptoms associated with the organism; see description in box 5 and the picture in box 1) but there is a lack of information to estimate the extent of damage upon establishment of the organism. In the Netherlands, the same kind of damage can be expected upon introduction and establishment as observed in Italy and Belgium.</p>

8	Which commercially grown host plants are present and which host plants are present in the natural environment in the Netherlands? <i>If establishment is restricted to greenhouse climate, list only host plants in greenhouses.</i>	At least <i>Pelargonium</i> can be affected.
9	Provide a provisional estimation of type and probable amount of direct and indirect economic damage (e.g. lower quality, lower production, export restrictions, threat to biodiversity, etc.) likely to occur if the organism would become established?	There is not enough data available to assess the possible economic damage after establishment. Economic damage may largely be avoided by hygienic procedures and prompt control measures to eradicate the pathogen from the glasshouse (see also box 14).
10	What are the possibilities of spreading, either by natural dispersal or human activity?	The possibilities for natural spread of the organism are (based on experiences with related organisms) expected to be limited. Spread of this bacterium within glasshouse production systems is highly dependent of human activities (husbandry and trade). The bacterium may be locally spread with splash water (e.g. during overhead irrigation), irrigation water (e.g. in ebb-and-flow systems), or by contaminated surfaces (e.g. equipment, plant containers, tables, floors, clothing, and human skin). Spread over larger distance may occur through trade of infected planting material and/or spread by contaminated surfaces (e.g. equipment, packing material and transport facilities).
11	In what manner could the organism enter the Netherlands? <i>Mention pathways.</i>	Import and trade of nursery stock is considered the most important pathway. Other potential (medium to short distance) pathways might be related to contact with contaminated surfaces (including humans entering multiple nurseries at a day) and irrigation water.
12	Has the organism been detected on/in a product (cut flowers, fruit...) destined for the consumer market? <i>If "no", please go to question 14</i>	No, only in production glasshouses (BE and IT).
13	If the organism has been found on/in a consumer product, are there any risks of introduction and establishment in crop areas and/or natural environment in the Netherlands?	Not relevant
14	Additional remarks	Spatial separation and monitoring of nursery stock introductions (also avoiding mutual water contact, e.g. via a recirculating irrigation system) is an effective measure to prevent spread of newly introduced pathogens. Establishment of this <i>Xanthomonas campestris</i> pathogen in <i>Pelargonium</i> glasshouse production places may be avoided by prompt control measures. Sanitation of infected nursery stock, irrigation water, plant table and floor surfaces, equipment (including hands), and

		<p>clothing, together with avoidance of long periods of leaf wetness, and avoidance of contact with (splash) water, might be crucial factors to prevent establishment in glasshouse cultivation systems. This is based on the observations from the pathogenicity confirmation glasshouse experiments by Naktuinbouw, knowledge of disease control features of other closely related <i>Xanthomonas</i> diseases, and because infected nursery stock seems the most plausible pathway for introduction of this <i>Xanthomonas campestris</i> pathogen. Additionally, to avoid possible spread of the pathogen to the natural environment, hygienic waste (and waste water) disposal facilities and procedures are recommended. Avoidance of introduction of the pathogen by detection of latent infections is not feasible (at the moment) because the pathogen is not fully identified, and therefore there are no available specific tests for rapid detection of this pathogen. However, awareness (of growers) for abnormal plant appearance and suspect symptoms may be helpful to reduce the risk of introduction.</p>
15	References:	<p>1. Naktuinbouw (2012). <i>Xanthomonas campestris</i> in <i>Pelargonium</i> een nieuwe ziekte. May 24th 2012. Available at http://www.naktuinbouw.nl/nieuws/xanthomonas-campestris-pelargonium-een-nieuwe-ziekte (last access 3rd July 2012)</p>
16	Conclusions	<p>This quick scan concerns a bacterial pathogen on <i>Pelargonium</i> which was recently discovered by the Dutch inspection body Naktuinbouw. The pathogen <i>Xanthomonas campestris</i> “pathogenic on <i>Pelargonium</i>” causes leaf spots. Little is known about this pathogen but available information indicates that the pathogen can be well controlled by hygienic measures. Thus far, the organism has never been recorded in the Netherlands.</p>
17	Follow-up measures	<p>None (a short note in English and Dutch about this new pathogen has already been published by Naktuinbouw on the internet).</p>