



Quick scan National Plant Protection Organization, the Netherlands

Quick scan number: QS-2020-ENT-008

Quick scan date: 19 October 2020

No.	Question	Quick scan answer for <i>Stigmaeopsis longus</i>
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>Stigmaeopsis longus</i> (Saito, 1990) Formerly: <i>Schizotetranychus longus</i> Saito, 1990 Acari: Prostigmata: Tetranychidae - spider mites</p>  <p>Underside leaf nests and leaf feeding damage; female and male in microscopic slide Identification based on biological and morphological characteristics and PCR COI-sequence (NCBI: 78%-93% overlap, similarity 98.99-99,66%)</p>
2.	What prompted this quick scan?	First findings of <i>Stigmaeopsis longus</i> in Europe: inspection results during official inspections of a consignment of <i>Phyllostachys aurea</i> and <i>Sasa</i> garden plants. One infested containerized plant was detected at a nursery in Boskoop on August 26, 2020 and

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	<i>Organism detected in produce for import, export, in cultivation, nature, mentioned in publications, e.g. EPPO alert list, etc.</i>	infested field-grown plants (about 25 m ²) in a private garden in Wassenaar on September 30, 2020, respectively.
3.	What is the current area of distribution?	<p>Japan (Hokkaido, Honshu, Shikoku and Kyushu) (Saito & al., 2004). From elsewhere no confirmed records have been found.</p> <p>In the Northwest of the United States of America (USA) bamboo mites are considered to be <i>S. longus</i>, which is probably based on a single record from Oregon (Pratt & Croft, 1999; Landgren & Porter, 2020). However, from the text in Pratt & Croft (1999) it is not clear if the identification has been actually confirmed by a specialist and if microscopic slides are deposited in a collection. A sister species, <i>S. celarius</i>, has been reported repeatedly from the USA (Baker & Tuttle, 1994; Pellizzaro & Duso, 2009; Vacante 2016) and this species might be present in Northwest USA instead of <i>S. longus</i>. For these reasons, we regard the record of <i>S. longus</i> in the USA as doubtful.</p>
4.	What are the hostplants?	A few broad leaved <i>Sasa</i> species (Poaceae: Bambuseae) are known as host: <i>Sasa kurilensis</i> , <i>S. senanensis</i> and <i>S. veitchii</i> (Migeon & Dorkeld, 2020). The find on <i>Phyllostachys aurea</i> , a bamboo species originally from South-East China, indicates the host plant range is not restricted to the genus <i>Sasa</i> , but is wider within the tribus Bambuseae.
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?</p> <p><i>Yes/no + plant species on which damage has been reported + short description of symptoms.</i></p> <p><i>Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).</i></p>	<i>Stigmaeopsis</i> spider mite species live on leaves of Poaceae (grasses), including representatives of the Bambuseae (bamboos). On their hosts <i>Stigmaeopsis longus</i> creates nests, which are protected by dense webbing. Usually these nests are found at the underside of leaves. In these nests mites feed actively by sucking cell sap and thereby emptying leaf cells. As a result of this activity large yellow spots appear, which turn brown after some time.
6.	<p>Assess the probability of establishment in the Netherlands (NL) (i.e. the suitability of the environment for establishment).</p> <p>a. In greenhouses b. Outdoors c. Otherwise (e.g. storage facilities, human environment)</p>	<p>a. Unknown. Cultivating bamboo in heated greenhouses is unusual: medium. In unheated greenhouse: high.</p> <p>b. High</p> <p>c. None</p>
7.	Assess the probability of establishment in the EU (i.e. the suitability of the environment for establishment).	Most of the EU territory is likely suitable for establishment, given the distribution of the species in Japan from north to south. The known hosts <i>Sasa kurilensis</i> and <i>S. senanensis</i> are occurring far to the north in the Northern Hemisphere (up to Sakhalin – Russia,

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		Ohrnberger, 1999). The most northern find in Japan is on <i>Sasa kurilensis</i> on Central Hokkaido (Higashikawa, 43°44'N 142°30'E, Mori & Saito, 2005).
8.	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)?	Trade of plants is the major pathway for spread of <i>Stigmaeopsis</i> spider mites. Natural spread can occur over short distances (Vierbergen, 1999; as <i>Schizotetranychus celarius</i>).
9.	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>In Europe, bamboos are cultivated only for ornamental purposes. <i>Stigmaeopsis</i> damaged leaves persist on plants and are detrimental for their aesthetic value. Wherever these spider mites appear, growers have to take measures to control further spread (Vierbergen, 1999; Pellizzari & Duso, 2007; Blok & Kuijk, 2010; Vacante, 2016, Landgren & Porter, 2020). Leaf damage caused by these mites may decrease the popularity of bamboo plants among gardeners (Blok & Kuijk, 2010).</p> <p>In Europe, currently two introduced <i>Stigmaeopsis</i> species (<i>S. celarius</i> Banks and <i>S. nanjingensis</i> (Ma et Yuan) are already widespread (Pellizzari & Duso, 2009, Acari collection NVWA). <i>S. longus</i> causes one of the largest bamboo spider mite nests known (Mori & Saito, 2005), but will not differ otherwise in its symptoms from <i>Stigmaeopsis</i> species already present in Europe. However, infestations of currently known bamboo spider mites are absent from the northern UK, the northern half of the Netherlands (above the line The Hague-Utrecht-Apeldoorn), Northern Germany, Poland, the Baltic States and Scandinavia. Thus, especially in the cooler areas in the EU, <i>S. longus</i> will be a new mite pest for bamboo. Its presence may lead to more pesticide applications in nurseries and loss of aesthetic value of bamboo in gardens.</p>
10.	Has the organism been detected on/in a product other than plants for planting (e.g. cut flowers, fruit, vegetables)? <i>If "no", go to question 12</i>	No
11.	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)? <i>Only to be answered in case of an interception or a find.</i>	
12.	Additional remarks	Morphological identification of <i>Stigmaeopsis</i> is troublesome due to the lack of specific male character states, which are commonly found in other spider mite genera. It took 33 years before <i>S. longus</i> was discovered in Japan as a valid species, near the widely distributed <i>S. cerealius</i> . However, excellent studies on morphology and molecular identification facilitate now fast and accurate detection of the species (Saito et al., 2004; Saito 2018; Hironori et al., 2017).

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13.	References	<p>Baker EW & Tuttle DM 1994. A guide to the spider mites (Tetranychidae) of the United States. Indira Publishing House, West Bloomfield, USA, 347 pp.</p> <p>Blok J & Kuijk F van 2010. Bestrijding Bamboemijt. Een onderzoek naar de chemische en biologische bestrijdingsmogelijkheden van de bamboemijt. https://edepot.wur.nl/294977 [accessed September 23, 2020]</p> <p>Hironori S, Matsuda T, Suzuki R, Saito Y, Lin JZ, Zhang YX, Sato Y & Gotoh T 2017. Molecular identification of seven species of the genus <i>Stigmaeopsis</i> (Acari: Tetranychidae) and preliminary attempts to establish their phylogenetic relationship. Systematic & applied acarology 22(1): 91-101.</p> <p>Kayama M & Koike T 2008. Growth Characteristics of Dwarf Bamboo Distributed in the Northern Part of Japan. In: Bamboo - Current and Future Prospects (ed. Khalil A), Imtech Open, London, UK, Chapter 11: 185-199. https://cdn.intechopen.com/pdfs/54884.pdf [accessed September 25, 2020]</p> <p>Landgren C & Porter F 2020. Pacific Northwest Insect Management Handbook. Horticultural, Landscape, and Ornamental Crops. https://pnwhandbooks.org/sites/pnwhandbooks/files/insect/chapterpdf/insect20-f-hort.pdf [accessed September 23, 2020]</p> <p>Migeon A & Dorkeld F 2020. Spider Mites Web: a comprehensive database for the Tetranychidae. https://www1.montpellier.inra.fr/CBGP/spmweb/index.php [accessed September 23, 2020]</p> <p>Mori K & Saito Y 2005. Variation in social behavior within a spider mite genus, <i>Stigmaeopsis</i> (Acari: Tetranychidae). Behavioral Ecology 16(1):232-238.</p> <p>Ohrnberger D 1999. The Bamboos of the World. Elsevier Science, Amsterdam, Netherlands, 596 pp.</p> <p>Pellizzari G & Duso C 2007. Occurrence of <i>Stigmaeopsis nanjingensis</i> in Europe. Bulletin of Insectology 62 (2): 149-151.</p> <p>Saito Y. 1990. Two new spider mite species of the <i>Schizotetranychus celarius</i> complex (Acari: Tetranychidae). Applied entomology and Zoology 25(3): 389-396.</p> <p>Saito Y, Mori K, Sakagami T & Lin J 2004. Reinstatement of the genus <i>Stigmaeopsis</i> Banks, with descriptions of two new species (Acari, Tetranychidae). Annals of the Entomological Society of America, 97 (4): 635-646.</p> <p>Vacante V 2016. The handbook of mites of economic plants. Wallingford: CABI Publishing. 872 pp.</p> <p>Vierbergen G 1999. Entomology. Species account. Acari. Tetranychidae: spider mites. Modified usage of bamboo leading to damage caused by <i>Schizotetranychus celarius</i>. Annual Report Diagnostic Centre. Plant Protection Centre, Wageningen The Netherlands. Verslagen en Mededelingen 193: 53-54.</p>

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14.	Conclusions	<p>This Quicksan was prompted by the finding of the spider mite <i>Stigmaeopsis longus</i>. Thus far, the organism was only known to be present in Japan. The species causes damage to leaves of bamboo which can make plants unmarketable and less popular as garden plants. Damage is comparable to damage caused by the bamboo mites, <i>S. celarius</i> and <i>S. nanjingensis</i> that have been introduced into the EU before. These species are absent from northern parts of the EU. <i>S. longus</i> is more adapted to cooler areas and is expected to establish in more northern areas than <i>S. celarius</i> and <i>S. nanjingensis</i>. Its introduction is, therefore, expected to increase the impact by bamboo mites especially in the north of the EU.</p>
15.	Follow-up measures	No official measures