Express PRA[1] for *Myzus hemerocallis* – Occurrence –

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Initiation: Occurrence on *Hemerocallis* sp. in the Federal State Baden-Württemberg

Express PRA	***Myzus hemerocallis* Takahashi, 1921**		
Phytosanitary risk for Germany	**high** ☐	**medium** ☒	**low** ☒
Phytosanitary risk for EU Member States	**high** ☐	**medium** ☒	**low** ☐
Certainty of the assessment	**high** ☐	**medium** ☐	**low** ☒
Conclusion	The aphid *Myzus hemerocallis* is endemic to East Asia and was detected in Europe for the first time in France in 1990. The first detection in Germany was in 2020. So far, the aphid is not listed in the Annexes of Regulation (EU) 2019/2072 or by EPPO. *Myzus hemerocallis* infests *Hemerocallis* sp., *Agapanthus* sp. and *Scilla madeirensis,* which is endemic to Madeira. It is assumed that *M. hemerocallis* can establish in Germany, at least in warmer areas. Establishment in further EU-Member States has already taken place. Due to its damage potential for host plants which is comparable to a common aphid infestation and because it obviously does not transmit viruses, *M. hemerocallis* poses a low, in single cases medium phytosanitary risk for Germany. In southern EU Member States, it poses a medium phytosanitary risk because of the presumably more favourable climatic suitability. Based on this risk assessment, it is assumed that *Myzus hemerocallis* can establish in other Member States outdoors or in glasshouses. Severe damage might occur frequently and locally. The aphid can spread effectively by anemochory. Therefore, natural extension of the distribution area is likely. *Myzus hemerocallis* is not classified as a potential quarantine pest and Article 29 of Regulation (EU) 2016/2031 does not apply. It is recommended to carry out control measures in order to prevent further distribution.		

Express PRA	*Myzus hemerocallis* Takahashi, 1921
Taxonomy[2]	Class: Insecta; Order: Hemiptera; Suborder: Sternorrhyncha; Family: Aphididae; Genus: *Myzus* Passerini, 1860; Species: *Myzus hemerocallis* Takahashi, 1921 Remark: molecular biological investigations indicate that the species does not belong to the species *Myzus* (NIETO NAFRÍA et al. 2013).
Common name	--
EPPO Code	MYZUHE
Synonyms	*Myzus hemerocallidis* Takahashi, 1937
Does an earlier relevant PRA exist?	No
Biology	The life cycle is not known (CHOI et al. 2019). Symbiosis with ants because of the production of honeydew.
Is the pest a vector?[3]	So far, there is no evidence of virus transmission by *M. hemerocallis* to its host plants.
Is a vector needed?[4]	No
Host plants	The genera *Hemerocallis* sp. (day lily; Liliaceae) and *Agapanthus* sp. (African lily; Amaryllidaceae), amongst them *Agapanthus umbellatus*, and on Madeira as new host plant the species *Scilla madeirensis* that belongs to the family Asparagaceae (AGUIAR & ILHARCO, 1997). It is not known whether other species of *Scilla* sp. can be infested.
Symptoms[5]	The aphid infests the young covered leaves of their host plants. Exuviae of the aphids (visible as small white scales) can be found on the leaves. The leaves get sticky because of the honeydew. The presence of ants generally indicates an infestation with aphids. Warty dents and unshaped, strongly discoloured flowers caused by the sucking of the aphid. Another symptom is the absence of light green colour in the new leaves (ERHARDT, 1988, RAPP und MERZ, 1989).
Presence of the host plants in Germany[6]	Day lily, African lily and *Scilla* are widespread as ornamentals in gardens and parks in Germany. Furthermore, endemic *Scilla* species under nature protection are present in natural habitats.
Presence of the host plants in the Member States[7]	Day lily, African lily and *Scilla* are widespread in the Member States as ornamentals. Furthermore, endemic *Scilla* species are present in natural habitats.

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Known infested areas[8]	*Myzus hemerocallis* is native to East Asia. According to BLACKMAN and EASTOP (2021), the species is present in China, Taiwan, Japan, Korea, Indonesia, India, Pakistan, Australia, New Zealand, North, South and Central America, Kenia and South Africa. DELFINO and BUFFA (2008) found the species in Córdoba (Argentina). Further infestation areas are Brazil, Panama and Mexico. In 1990, it was found in France (REMAUDIERE and MUNÓS-VIVEROS, 1992) and on Madeira end of the 1990's (AGUIAR & ILHARCO, 1997), in 2000, for the first time in England (SMITH *et al.* 2007), and in 2020 in Germany (near Strasbourg, FR).
Pathways[9]	Eggs, nymphs and adults of *M. hemerocallis* can be moved with their host plants.
Natural spread[10]	On small scale: actively through flight or crawling, on large scale: passively by anemochory.
Expected establishment and spread in Germany[11]	Obviously, establishment in Germany did already happen in Baden-Württemberg in the southern Upper Rhine-region (Schutterwald). Further spread and establishment has to be expected, at least in warmer regions in the open landscape, because host plants are widespread in gardens and parks. Establishment in greenhouses like in Great Britain is possible, too.
Expected establishment and spread in the Member States[12]	(Further) establishment and spread (in warmer regions in the open landscape and in greenhouses) has to be expected because host plants are widespread.
Known damage in infested areas[13]	Sucking damage, partly considerable damage to leaves, buds and flowers. Coloured and unshapely flowers, occasionally, destruction of the complete flower head. Sticking of the plants with honeydew, possibly secondary infection with dark mildew. Quality loss and weakening of infected plants (RAPP und MERZ, 1989; BLACKMAN and EA STOP, 2021; A. KIECHLE, pers. Mitt.).
Delimitation of the endangered area in Germany	Gardens and parks in Germany where host plants are present, glasshouses with host plants. If plants of *Scilla* can be infested, their habitats are also part of the endangered area.
Expected damage in Germany[14]	Comparable to damage known from infested areas.
Expected damage in endangered area in Member States[15]	Comparable to damage known from infested areas.

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Control feasibility and measures[16]	Biological control with beneficial species like e.g. larvae of syrphids and cochenellids is only successful in case of timely use. If this is no longer possible, insecticide treatment should be carried out in case of heavy infestation. According to RAPP and MERZ (1989), e.g. the systemically acting Pirimor-granulate can be applied (0.05 %, not in water protection areas). Further agents that are listed there are no longer licensed. The aphids can mainly be found in hidden locations (leafing, basal sites on young leaves, huge colonies in the flower heads), therefore sprays are suitable – if at all –in case of low infestation.
Detection and diagnosis[17]	An identification key is available online (BLACKMAN und EASTOP, 2021). On the website INFLUENTIALPOINTS.COM (2021) nymphs and freshly emerged adults are described as pale yellow-green while the ripe, wingless adults anterior and posterior show an orange-brown colour. In contrary to many other *Myzus*-species the winged individuals of *M. hemerocallis* have no small black spot dorsally and abdominally. A comprehensive photo gallery can be found on the website. FOOTTIT et al. (2008) tested the efficiency of DNA-Barcodes for the identification of more than 300 aphid species out of more than 130 genera, of which 96% were easy to identify. They concluded that despite the complex life cycle of aphids and their parthenogenetic reproduction, the use of DNA-Barcodes is an effective tool for their identification.
Remarks	Only little information is available in respect to this species so that the certainty of the assessment of the phytosanitary risk caused by *M. hemerocallis* can only be classified as „low“. In case of new evidence on the function of the aphid as a vector, the risk analysis should be revised.
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Erläuterungen

Remarks

[1] Compilation of the most important and directly available information that renders possible a first preliminary evaluation of the phytosanitary risk. This short evaluation is necessary for the decision on a notification to EU and EPPO as well as the preparation of a complete risk analysis, to inform the countries and as the basis for the possible initiation of eradication measures. In the case of phytosanitary risk especially the possibility of the introduction and spread in Germany and in the Member States as well as possible damage are taken into account

[2] Taxonomic classification - also subspecies - as the case may be; in the case that the taxonomic classification is uncertain the JKI-scientist initiates the taxonomic classification as far as possible..

[3] If so, which organism (organisms) is (are) transmitted and does it (do they) occur in Germany / the Member States?

[4] If so, which organism serves as a vector and does it occur in Germany/ the MS?

[5] Description of the pattern of damage and the strength of the symptoms/damage on the different host plants.

[6] Presence of the host plants in protected cultivation, open field, public gardens, forest,....;
Where, in which regions are the host plants present and to which extent?
How important are the host plants (economic, ecological, ...)?

[7] Presence of the host plants in protected cultivation, open field, public gardens, forest,....;
Where, in which regions are the host plants present and to which extent?
How important are the host plants (economic, ecological, ...)?, possible origin.

[8] E.g. according to CABI, EPPO, PQR, EPPO Datasheets.

[9] Which pathways are known for the pest and how important are they for the probability of introduction. Primarily the transport of the pest over long distances is meant, normally with infested traded plants, plants products or other contaminated articles. This does not comprise the natural spread resulting from introduction.

[10] Which pathways are known for the pest and of which relevance are they in respect of the probability of the spread? In this case, the natural spread resulting from introduction is meant..

[11] Under the given/prevalent environmental conditions

[12] Under the given/prevalent environmental conditions (domestic areas and areas of introduction).

[13] Description of the economic, ecological /environmental relevant and social damage in the area of origin resp. areas of previous occurrence

[14] Description of the economic, ecological /environmental relevant and social damage to be expected in Germany, as far as possible and required, differentiated between regions..

[15] Description of economic, ecological/ environmental relevant and social damage to be expected in the EU / other Member States, as far as possible and required, differentiated between regions.

[16] Can the pest be controlled? Which possibilities of control are given? Are plant health measures conducted in respect to this pest (in the areas of previous occurrence resp. by third countries)?

[17] Description of possibilities and methods of detection. Detection by visual inspections? Latency? Uneven distribution in the plant (sampling)?