Express PRA[1] for *Hishimonus hamatus* – Occurrence –

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Initiation: Occurrence in a private garden in Rhineland Palatinate

Express PRA	***Hishimonus hamatus*** Kuoh, 1976		
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 cicada *Hishimonus hamatus* is native to Asia. The first detection in the EU was in Slovenia in 2012. In the EU, the presence is also known from Corsica and Italy. The first detection in Germany was in 2020. So far, the cicada is listed neither in the Annexes of Regulation (EU) 2019/2072 nor by EPPO. The host plants of *H. hamatus* mainly are ornamentals whose original distribution area is Asia. Currently, no direct damage caused by *H. hamatus* is known. There is no evidence up to now that *H. hamatus* is a vector of a pathogen on plants. The European populations of *H. hamatus* seem to have adapted well to the south European and continental climate. It is assumed that the species can establish widely in the open field in Germany and the EU. The risk analysis gives rise to the assumption that *H. hamatus* can establish in Germany and the EU. Partly, this establishment has happened already. According to current knowledge, relevant damage caused by *H. hamatus* is not expected. Thus, *Hishimonus hamatus* is not classified as a potential quarantine pest and Article 29 of Regulation (EU) 2016/2031 does not apply.		
Taxonomy[2]	Class: Insecta; Order: Hemiptera; Sub-order: Auchenorrhyncha; Family: Cicadellidae; Genus: *Hishimonus*; Species: *Hishimonus hamatus* Kuoh 1976		

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Common name	-
Synonyms	*Hishimonus araii* Okada 1978
Does a relevant earlier PRA exist?	No.
Biology	Very little specific literature on the biology of *H. hamatus* is available. The cicadas have piercing-sucking mouthparts for sucking on plant tissue. *H. hamatus* has at least 5 nymph stages (SELJAK, 2013). OKADA (1978) assumes that the adults hibernate.
Is the pest a vector?[3]	So far, there is no evidence of a vector function of *H. hamatus*. The closely related species *H. phycitis* and *H. sellatus* transmit plant-damaging phytoplasms (SELJAK, 2013). It cannot be totally ruled out that *H. hamatus* can transmit phytoplasms.
Is a vector needed?[4]	No.
Host plants	*Euonymus japonicus* (Japanese euonymus), *Ilex crenata* (Japanese holly), *Sambucus chinensis*, *Serissa japonica* (Snowbush) (OKADA, 1978), *Ligustrum lucidumaiton* (Glossy privet), *L. japonicum* (Japanese privet), *Lagerstroemia indica* (Crape myrtle), *Chamaecyparis lawsoniana* (Lawson Cypress), *Cupressus sempervirens* (Mediterranean Cypress), *Thuja occidentalis* (Common arbor vitae) (SELJAK, 2013). *H. hamatus* also accepts vine leaves as feed (WINTERHAGEN, 2020). So far, a proper host plant status cannot be derived from this. A significantly larger host plant range than shown here cannot be ruled out.
Symptoms[5]	So far, no direct damage caused by *H. hamatus* is known. At least the adults and the nymphs are visible to the naked eye.
Presence of the host plants in Germany[6]	In Germany, the known host plants are popular ornamentals and can mainly be found in gardens, cemeteries and parks.
Presence of the host plants in the Member States[7]	In the EU, the known host plants mainly are used as ornamentals.
Known infested areas[8]	The natural distribution area of *H. hamatus* is located in Asia where the cicada is present in China, Japan and on the Korean

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	peninsula (DU & WAI, 2019). The natural distribution area mainly is located in the predominantly warm, temperate east side climate or in the east side climate with monsoon influences (Köppen-Geiger-classification system of climates Cfa resp. Cwa). The first detection outside the natural distribution area and in the EU was in Slovenia in 2012 (SELJAK, 2013). In 2013 and 2014, the cicada was detected in vineyards in Northern Italy (QUAGLINO et al., 2019). In 2017 or 2018, one specimen was caught in Corsica (ALBRE & GIBERNAU, 2019). In 2020, adult specimens as well as nymphs were detected in Germany (Rhineland-Palatinate). This speaks for a successful propagation of *H. hamatus* in Germany (WINTERHAGEN, 2020). In 2011, one specimen was found in Switzerland for the first time. There were several detections in the subsequent years (TRIVELLONE *et al.*, 2015). The establishment in northern Italy and the Switzerland indicate a successful establishment in cooler climates. Apparently, the cicadas adapted to the warm continental climate in summer (Köppen-Geiger-classification of climates Dfb) that prevails in large parts of Germany and the eastern parts of the EU. TRIVELLONE *et al.* (2015) additionally quote Australia, Ethiopia, Fiji, India and Indonesia as distribution area. It is assumed that this information only refers to the genus *Hishimonus*. Findings of *H. hamatus* in these countries could not be confirmed in the literature search.
Pathways[9]	It is possible to move adults, nymphs or eggs with host plants for planting.
Natural spread[10]	Independent flight capacity. No specific data on the distribution capacity of *H. hamatus* were found.
Establishment to be expected in Germany[11]	It is assumed that *H. hamatus* can establish in great parts of Germany.
Establishment to be expected in the EU-Member States[12]	The establishment in Slovenia, Italy and Corse did already happen. The species successfully adapted to the new climate conditions. It is assumed that *H. hamatus* can spread by natural

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	means in the southern Member States, and in Central Europe. In case that the infestation in Rhineland-Palatinate derived from natural distribution, it is assumed that the species already established successfully in the neighbouring countries, at least partly successful.
Known damage in infested areas[13]	So far, no reports on damage caused by *H. hamatus* are available.
Limitation of the endangered area in Germany	Mainly nurseries, gardens, cemeteries and parks with ornamentals. The colonisation of grape or fruit crops cannot be ruled out.
Damage to be expected in the endangered area in Germany[14]	According to current knowledge, no relevant damage is expected. Should *H. hamatus* turn out as the vector of dangerous phytoplasms or bacteria the risk potential increases according to the associated pathogen.
Damage to be expected in endangered area in EU Member States[15]	According to current knowledge, no relevant damage is expected. Should *H. hamatus* turn out as the vector of dangerous phytoplasms or bacteria the risk potential increases according to the associated pathogen.
Control feasibility and measures[16]	In case of economically relevant damage, the same procedure as against the related species, *Hishimonus phycitis* is recommended. This includes common insecticide treatments against sucking insects and the management of potential host plants in grape and fruits crops or in nurseries (EFSA PLH, 2017).
Detection and diagnosis[17]	The morphological identification of the species can be done by means of the identification key of DU & WAI (2019). Furthermore, the gene sequence for the molecular identification of Cytochrome Oxidase Subunit 1 is stored in GenBank (ALBRE & GIBERNAU, 2019).
Remarks	The medium certainty of the risk assessment for plant health for *H. hamatus* results from the unclear function of the cicada as a possible vector. If *H. hamatus* is a vector for plant damaging phytoplasmas or bacteria, the risk has to be considered according to the associated pathogen.

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Literature	ALBRE, J., M. GIBERNAU (2019): Diversity and temporal variations of the Hemiptera Auchenorrhyncha fauna in the Ajaccio region (France, Corsica). Annales de la Société entomologique de France **55** (6), 497-508. DOI: 10.1080/00379271.2019.1688189. DU, L., D. WAI (2019): High Species Diversity of the Leafhopper Genus *Hishimonus* Ishihara (Hemiptera: Cicadellidae: Deltocephalinae) from China, with Description of Ten New Species. Insects **10**, 120. doi:10.3390/insects10050120 EFSA PLH PANEL (EFSA PANEL ON PLANT HEALTH), M. JEGER, C. BRAGARD, D. CAFFIER, T. CANDRESSE, E. CHATZIVASSILIOU, K. DEHNEN-SCHMUTZ, G. GILIOLI, J.-C. GREGOIRE, J. A. JAQUES MIRET, M. N. NAVARRO, B. NIERE, S. PARNELL, R. POTTING, T. RAFOSS, V. ROSSI, G. UREK, A. VAN BRUGGEN, W. VAN DER WERF, J. WEST, S. WINTER, C. GARDI, M. AUKHOJEE, F. BERGERETTI, A. MACLEOD (2017): Scientific opinion on the pest categorisation of *Hishimonus phycitis*. EFSA Journal 2017;15(10):5030, 26 pp.https://doi.org/10.2903/j.efsa.2017.5037 OKADA, T. (1978): A new species, *Hishimonus araii*, from Japan and Korea (Homoptera: Cicadellidae; Deltocephalinae, Opsiini). Appl. Ent. Zool. **13** (4), 308-311. QUAGLINO, F., F. SANNA, A. MOUSSA, M. FACCINCANI, A. PASSERA, P. CASATI, P.A. BIANCO, N. MORI (2019): Identification and ecology of alternative insect vectors of '*Candidatus* Phytoplasma solani' to grapevine. Scientific Reports 9 (1), 19522, DOI: 10.1038/s41598-019-56076-9. SELJAK, G. (2013): *Hishimonus hamatus* Kuoh (Hemiptera: Cicadellidae): a new alien leafhopper in Europe. Acta Entomologica Slovenica **21** (2), 123–130. TRIVELLONE, V., E. KNOP, T. TURRINI, A. ANDREY, J.-H. HUMBERT, G. KUNZ (2015): New and remarkable leafhoppers (Hemiptera: Auchenorrhyncha) from Switzerland. Mitteilungen der schweizerischen entomologischen Gesellschaft 88, 273-284. doi:10.5281/zenodo.33990 WINTERHAGEN, P. (2020): First record of the leafhopper *Hishimonus hamatus* Kuoh, 1976 (Hemiptera: Cicadellidae) in

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	Germany. Journal für Kulturpflanzen, 72 (12). S. 586–589. ISSN 1867-0911, DOI: 10.5073/JfK.2020.12.04

Explanations

[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)?