



National Plant Protection Organization, the Netherlands

Quick scan number: QS-ENT-2018-003

Quick scan date: 21 January 2019		
1	<p>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>	<p><i>Aleuroclava jasmini</i> (Takahashi, 1932) (Hemiptera: Aleyrodidae). English: Jasmine whitefly. Synonym: <i>Aleurotuberculatus jasmini</i> Takahashi, 1932. In a number of publications it has been erroneously referred to as <i>Aleuroclava jasmine</i>.</p>  <p>Fig. 1: Left to right - puparia of <i>Aleuroclava jasmini</i> (Takahashi) on the underside of a leaf of <i>Gardenia</i>. Right: microscopic view of a puparium of <i>Aleuroclava jasmini</i> (© NVWA)</p>
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>Until recently, the species was intercepted only during import control from consignments originating from China, Malaya, Singapore, Taiwan and Thailand (Jansen 1998, 2011). Since 2015, <i>Aleuroclava jasmini</i> has been found in greenhouses on potted plants of <i>Gardenia jasminoides</i> originating from Ivory Coast in two different glasshouses in the Netherlands.</p>

3	What is the current area of distribution?	<p><i>Aleuroclava jasmini</i> is native to South and East Asia: oriental China (e.g. Guangxi, Guangdong: Wang & Du, 2016), Hong Kong, Japan, India, Indonesia, Philippines, Singapore, Sri Lanka, Taiwan and Thailand (Evans, 2007; Malumphy & Anderson, 2011), Pakistan (Khan et al., 1991) and Iran (Abd-Rabou et al., 2013; Rasekh et al., 2010). The pest has, however, been introduced in many other countries around the world. It has been reported from:</p> <ul style="list-style-type: none"> - the Middle East: in Iraq in 2001 (Khalaf et al., 2010), in Egypt (Abd-Rabou, 2011; Amin et al., 1997) and in Qatar (personal communication French NPPO, 2015); - the Mediterranean area: Malta (Malumphy & Mifsud, 2012); - North and South America: Jamaica, Trinidad (Nguyen et al., 1993), French Guyana, Guadeloupe, Mexico, Paraguay (Malumphy & Anderson, 2011), Peru (Evans, 2007), Martinique (Streito et al., 2007), Guam and Hawaii (Evans, 2007) and continental USA (California: Gill, 1997; Watson 2008; Florida: Hodges & Evans, 2005). It may also be present in the Dominican Republic because the species has been intercepted on plant import from that country by the French NPPO and by the Dutch NPPO in 2013, 2015 and 2017. <p>The findings on plants originating from the Ivory coast also indicate that the species has been introduced on the African continent. Specimens are also present in collections of the British Museum of Natural History from Kenya and Nigeria (Nguyen et al., 1993). It has also been intercepted on imports of curry (<i>Murraya</i> sp.) plant foliage from Ghana in the UK (Malumphy & Anderson, 2011).</p> <p>The pest has also been reported from a few other European countries (other than Malta and the Netherlands) but these reports refer most likely to interceptions or incidental findings rather than to established populations:</p> <ul style="list-style-type: none"> - Malumphy & Anderson (2011) reported the presence of adult <i>A. jasmini</i> at two plant nurseries in Hampshire, England in 2010; - records from Croatia of observations in 2007 (Šimala, 2008) refer to two interceptions on <i>Gardenia jasminoides</i> potted plants originating from the Netherlands: one in a glasshouse and the other on plants in the open (personal communication Mladen Šimala, March 2018). The pest has also been intercepted in the Netherlands on cuttings from France, but these cuttings might also have originated from a non-European country.
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4	<p>What are the host plants?</p>	<p><i>Aleuroclava jasmini</i> is polyphagous. It feeds on plants belonging to at least fifteen plant families: Acanthaceae: Adoxaceae: <i>Sambucus javanica</i>, <i>Viburnum luzonicum</i>, <i>Viburnum taiwanianum</i> (Ke, 2016); Combretiaceae: <i>Quisqualis indica</i> (Mound & Halsey, 1978); Euphorbiaceae: <i>Bischofia javanica</i> (Mound & Halsey, 1978); Fabaceae: <i>Desmodium</i> (Jansen, 2011); Fagaceae: <i>Quercus virginiana</i> (Malumphy & Anderson, 2011); Hydrangeaceae: <i>Deutzia taiwanensis</i> (Ke, 2016); Lamiaceae: <i>Clerodendrum trichotomum</i> (Ke, 2016); <i>Tectona grandis</i> (Nguyen et al., 1993); Malvaceae: <i>Cola</i> sp. (Nguyen et al., 1993); Myrsinaceae: <i>Ardisia</i> sp., <i>Maesa</i> sp. (Mound & Halsey, 1978); <i>Maesa japonica</i> (Evans, 2007); Oleaceae: <i>Jasminum</i> sp. <i>J. sambac</i>, <i>Ligustrum</i> sp., <i>Osmanthus asiaticus</i> (Mound & Halsey, 1978); Nyctaginaceae: <i>Bougainvillea</i> (Malumphy & Mifsud, 2012); Rhamnaceae: <i>Ziziphus jujuba</i> (Evans, 2007); Rosaceae: <i>Spiraea prunifolia</i> (Ke, 2016); Rubiaceae: <i>Gardenia</i> (Dutch NPPO import), <i>G. augusta</i> (Malumphy & Anderson, 2011), <i>G. florida</i> (Mound & Halsey, 1978), <i>G. jasminoides</i> (Šimala, 2008), <i>Ixora</i> sp. (Jansen, 2011), <i>Ixora coccinea</i> (Malumphy & Anderson 2011), <i>Jasminum sambac</i> (Evans 2007); <i>Mitragyna</i> (Dubey & Sundararaj 2005); <i>Vangueria volkensisii</i> (Nguyen et al., 1993); <i>Mussaenda parviflora</i>, <i>Wendlandia formosana</i> (Ke, 2016), Rutaceae: <i>Aegle correa</i> (Rasekh & Polaszek, 2010), <i>Citrus aurantifolia</i>, <i>C. limettioides</i> (Rasekh et al., 2010), <i>C. sinensis</i>, <i>C. reticulata</i>, <i>C. aurantium</i>, <i>C. hystrix</i> (Malumphy & Anderson, 2011), <i>C. limon</i> (Khalaf et al., 2017), <i>Murraya koenigii</i> and <i>M. paniculata</i> (Evans, 2007); Verbenaceae: <i>Petrea volubilis</i> (Nguyen et al., 1993).</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?</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>	<p>In the two Dutch glasshouses where the species has been found, <i>A. jasmini</i> does not seem to cause much damage: it is not present in very large numbers and thus the production of honeydew is low and infested leaves don't have a spotty appearance with discolorations caused by sap sucking. There are also no indication that the species has spread on its own to other glasshouses. Malumphy & Mifsud (2012), however, reported abundant puparia and counted more than 30 puparia per leaf outdoors on <i>Bougainvillea</i> on Malta (2013) and Al-Tememi (2013) and Khalaf et al. (2009, 2010) even counted up to 341 eggs and 284 nymphs per cm² and 66 adults per leaf on <i>Citrus reticulata</i>. They observed infested citrus leaves with yellow discolourations, leaf dropping and excreted honeydew which was colonized by sooty mold fungi. In Iraq <i>A. jasmini</i> was introduced in the 1990s and cannot be controlled by insecticides and biological agents (Khalaf et al., 2017). In recent years <i>A. jasmini</i> has caused severe damage to the citrus orchards of e.g. Khuzestan province (Iran) (Far et al., 2015) although the maximum of mean density of eggs and pupae in each citrus orchard was much lower: 34.9/cm² and 49.13/cm² on each leaf, respectively (Bagheri et al., 2014).</p>

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"> a. In greenhouses (low, medium, high) b. Outdoors (low, medium, high) c. Otherwise (e.g. storage facilities, human environment) 	<p>In the Netherlands, the species seems to be regularly introduced with plants of <i>Gardenia jasmionoides</i> imported from Ivory Coast. It is very doubtful whether it may be able to hibernate outdoors during the wintertime.</p>
7	<p>Assess the probability of establishment in the EU (i.e. the suitability of the environment for establishment).</p>	<p>The species has already established in Malta where puparia were found outdoors on <i>Bougainvillea</i> in 2012 (Malumphy & Mifsud, 2012). This was a new host and it may be found on additional plant species not yet known to be a host plant in the future.</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>Trade of plants for planting of host plants. More locally, the species may spread naturally especially in the warmer parts of the EU.</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>NL - The presence of <i>A. jasmini</i> will probably result in limited damage, both outdoors and in greenhouses. EU - Contrary to the North European situation, the damage is expected to be more severe in southern Europe. In e.g. Iraq very high numbers of eggs, nymphs and adults per leaf occur in citrus orchards (Abdul Razak et al., 2009b; Khalaf et al., 2010). This may cause plant weakening and reduction of yields. The introduction of <i>A. jasmini</i> in Mediterranean member states may also increase crop protection costs.</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>No.</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)?</p> <p><i>Only to be answered in case of an interception or a find.</i></p>	
12	Additional remarks	Plant names according to the Plant List (2013) available at http://www.theplantlist.org/tpl1.1/record/tro-6000894
13	References	<p>Abd-Rabou S (2011). Distribution and key of genus <i>Bemisia</i> Quiantanc & Baker in Egypt with an updated list of whiteflies in Egypt. <i>Egypt Journal of Agricultural Research</i> 89: 1303-1312.</p> <p>Abd-Rabou S, Ghahari H, Myartseva SN & Ruiz-Cancino E (2013) Iranian Aphelinidae (Hymenoptera: Chalcidoidea) <i>Journal of Entomology and Zoology Studies</i> 1: 116-140.</p> <p>Abdul-Razak AS, Fadhel I, Rahim HA, Jaber N, Nagi T & Fares S (2009a) Susceptibility of citrus trees to infestation with the Jasmine whitefly, I Takahashi with reference to distribution of natural enemies. In: Kumari et al (eds). Abstracts book 10th Arab Congress of Plant Protection. <i>Arab Journal of Plant Protection</i> 27 (Supplement): 158.</p> <p>Abdul-Razak AS, Afy AA, Wahab ASA & Adel L (2009b) Release of the local predator <i>Clitostethus arcuatus</i> Rossi for the control of Jasmin whitefly <i>Aleuroclava jasmini</i> in Citrus orchards in Iraq. In: Kumari et al (eds). Abstracts book 10th Arab Congress of Plant Protection. <i>Arab Journal of Plant Protection</i> 27 (Supplement): 164-165.</p> <p>Al-Tememi NKK (2013) Efficacy of water and alcoholic leaf extracts of <i>Ibicella lutea</i> (Stepf.) against different stages of Citrus whitefly <i>Aleuroclava jasmini</i> Takahashi in Iraq. <i>Pakistan Entomologist</i> 35: 23-26.</p> <p>Amin, A.H., Emam AK & Helmi A (1997) A new record on a whitefly species of the genus <i>Aleurotuberculatus</i> (Homoptera: Aleyrodidae) on citrus trees in Egypt. <i>Mededelingen Faculteit Landbouwkundige en Toegepaste Biologische Wetenschappen Universiteit Gent</i> 62 (2a): 349-354.</p> <p>Dubey AK & Sundararaj R (2005) A review of the genus <i>Aleuroclava</i> Singh (Hemiptera: Aleyrodidae) with descriptions of eight new species from India <i>Oriental Insects</i> 39: 241-272.</p> <p>EPPO (1999) EPPO Reporting Service 1999, 4. Available at http://archives.eppo.int/EPPOreporting/1999/Rse-9904.pdf [accessed 6 March 2018]</p> <p>Evans 2007 The whiteflies (Hemiptera: Aleyrodidae) of the world and their host plants and natural enemies 1-708. Available at http://keys.lucidcentral.org/keys/v3/whitefly/PDF_PwP%20ETC/world-whitefly-catalog-Evans.pdf [accessed 13 February 2018]</p> <p>Far MB, Hatami B, Bagheri S (2015) Effect of intercropping of certain winter crop plants on the population levels of Jasmine</p>

	<p>whitefly <i>Aleuroclava jasmini</i> (Hemiptera: Aleyrodidae) in dezful's citrus orchards. Plant Protection Journal 7: 15-27</p> <p>Gerson U (2017) Plant pests of the Middle East. Available at http://www.agri.huji.ac.il/mepests/pest/Aleuroclava_jasmini/ [Accessed 13 February 2018]</p> <p>Gill RJ (1997) Jasmine whitefly, <i>Aleurotuberculatus jasmini</i>. The California Plant Pest and Disease Report 15(5-6): 156-157. Available at https://www.cdфа.ca.gov/plant/ppd/PDF/CPDR_1996_15_5-6.pdf [accessed 6 March 2018].</p> <p>Hodges G & Evans G (2005) An identification guide to the whiteflies (Hemiptera: Aleyrodidae) of the southeastern United States. Florida Entomologist 88(4):518-534</p> <p>Ke JC (2016) <i>Aleuroclava jasmini</i> Takahashi, 1932 Encyclopedia of Life Taiwan. Available at http://taeol.tw/pages/92354 [accessed 6 March 2018]</p> <p>Khalaf MZ, Hamd BS, Hassan BH, Salman AH & Naher FH (2009) Host preference of Jasmine whitefly <i>Aleuroclava jasmini</i> (Homoptera: Aleyrodidae) on Citrus on South Baghdad orchards in Iraq. In: Kumari et al (eds). Abstracts book 10th Arab Congress of Plant Protection. Arab Journal of Plant Protection 27 (Supplement): 39.</p> <p>Khalaf MZ, Hamd BS, Hassan BH, Salman AH, Naher FH & Obaid RH (2010) Host preference of jasmine whitefly <i>Aleuroclava jasmini</i> (Homoptera: Aleyrodidae) on citrus in south Baghdad orchards. Agriculture and biology Journal of North America 1: 647-653.</p> <p>Khalaf MZ, Alrubeai HF, Sultan AA & Khalaf HS (2017) Field Efficacy of some insecticides for controlling jasmine whitefly, <i>Aleuroclava jasmini</i> on Citrus. European Academic Research 4: 9125-9133.</p> <p>Khan AG, Mohyuddin AI & Goraya AA (1991) Studies on Citrus whiteflies and their natural enemies in Pakistan. Pakistan Journal of Zoology 23: 127-132</p> <p>Jansen MGM (1998) Hemiptera, Sternorrhyncha, Aleyrodidae. In: Verslagen en Mededelingen Plantenziektenkundige Dienst Wageningen 193 (Annual Report Diagnostic Centre 1997): 59-61.</p> <p>Jansen MGM (2011) The whiteflies of the Netherlands, including two species new for the Dutch fauna (Hemiptera: Aleyrodidae). Nederlandse faunistische mededelingen 36: 69-98.</p> <p>Malumphy C & Anderson H (2011) Rapid Assessment of the need for a detailed Pest Risk Analysis for <i>Aleuroclava jasmini</i> (Takahashi). 21 September 2011. https://secure.fera.defra.gov.uk/phiw/riskRegister/downloadExternalPra.cfm?id=3813 [Accessed 22 February 2018].</p> <p>Malumphy C & Mifsud D (2012) Faunal review of the whiteflies of the Maltese Archipelago (Hemiptera, Aleyrodidae). Bulletin of the entomological society of Malta 5: 35-47.</p> <p>Mohammed AH, Khlawi S, Hammod J & Khadir M (2013) Field Efficacy of <i>Beauveria bassiana</i> and <i>Lecanicillium lecanii</i> isolates against jasmine whitefly, <i>Aleuroclava jasmini</i> on citrus in Iraq. IN: Roditakis et al (eds.) First International Whitefly Symposium 20-24 May 2013 Kolymbari, Crete, Greece, Orthodox Academy of Crete: 212.</p>
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14	Conclusions	<p>This Quicksan was made after the finding of the white fly species <i>Aleuroclava jasmini</i> in two Dutch glasshouses. The species is polyphagous and has most likely been introduced with imports of plants for planting. In the Netherlands, the species is not expected to cause much damage but it may cause more damage in southern EU member states. The species is already present in the EU. It is known to be present in Malta but might have a wider distribution in the EU because of its history of interceptions and introductions in many countries around the world.</p>
15	Follow-up measures	None