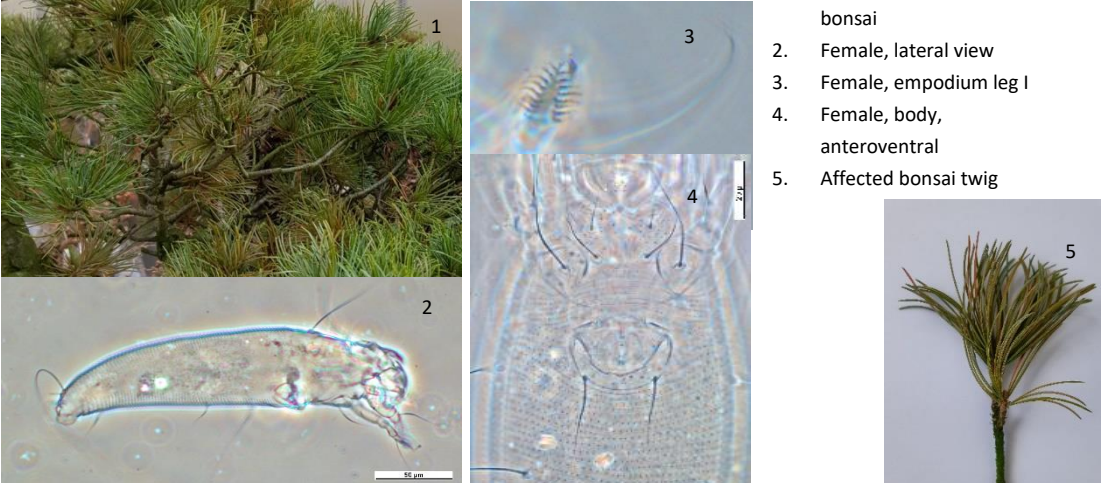




Quick scan National Plant Protection Organization, the Netherlands

Quick scan number: QS.ENT/2020/007

Quick scan date: 16 March 2020

No.	Question	Quick scan answer for <i>Setoptus</i> sp. on <i>Pinus parviflora</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>Setoptus</i> sp. found on <i>Pinus parviflora</i> bonsai tree. Acari (mites): Eriophyoidea (gall mites): Phytoptidae: Nalepellinae</p>  <ol style="list-style-type: none">Affected <i>Pinus parviflora</i> bonsaiFemale, lateral viewFemale, empodium leg IFemale, body, anteroventralAffected bonsai twig

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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>First detection in the Netherlands on three <i>Pinus parviflora</i> bonsais in a greenhouse. The three bonsais showed yellowing of needles. It may be the same <i>Setoptus</i> species (described as <i>S. semiornatum</i> sp. nov.) found on <i>P. parviflora</i> bonsais imported into the UK from Japan (Pye, 2011). In the current case the three plants originated from Japan, but were not recently imported. The plant that was most severely infested had been present at the location for many years already, while the other two plants were present for at least 6 months (according to information from the owner).</p>
3.	<p>What is the current area of distribution?</p>	<p>Highly uncertain because the species could not be identified. <i>Setoptus</i> species are closely linked to one or a small number of <i>Pinus</i> or <i>Tsuga</i> species. The species may originate from China and/or Japan because <i>Setoptus</i> species have been reported from <i>P. parviflora</i> in China and on plants originating from Japan:</p> <ul style="list-style-type: none"> • <i>S. parviflorae</i> Kuang: in China from <i>Pinus parviflora</i> (Kuang, 1998), • <i>S. semiornatum</i> Pye: probably Japan, from <i>Pinus parviflora</i> plants (Pye, 2011; see also Q2).
4.	<p>What are the hostplants?</p>	<p><i>Setoptus</i> species are closely linked to one or a small number of <i>Pinus</i> or <i>Tsuga</i> species. On <i>Pinus parviflora</i> Siebold et Zuccarini 1842 (Japanese white pine) two species have been reported: <i>S. parviflorae</i> and <i>S. semiornatum</i>. The species detected in the Netherlands may be either one of these species (providing the species are considered valid, see also Q12) and may only affect <i>P. parviflora</i>, but this is uncertain.</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 + plant species on which damage has been reported + short description of symptoms.</i> <i>Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).</i></p>	<p><i>Setoptus</i> is not known as a pest of <i>P. parviflora</i> in Japan nor are there any known reports of economic damage on <i>P. parviflora</i> except from <i>P. parviflora</i> bonsais imported into the UK from Japan. Pye (2011) wrote about these plants "In this instance 200 large pot-grown plants were affected, valued at approximately £400 each. Because of their high value, successful action was taken by the commercial plant nursery to eradicate the mites using a professional plant protection product containing bifenthrin. <i>Setoptus semiornatum</i> was found in very high numbers and clearly caused severe damage to the host plants. This could have resulted from the plants being held under glass in conditions that may have artificially favored the development of unusually large and damaging mite populations, something that may not occur naturally outdoors."</p> <p>The plants in the Netherlands showed damage (bleaching) of the needles as well. It is, however, uncertain whether these symptoms were caused by the <i>Setoptus</i> species. For example, the needles did not show stunting which has been described for other <i>Setoptus</i> spp. (Vacante, 2016). Stunting has not been reported by Pye (2011) either.</p>
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</p>	<p>a. High, see under 5 b. Uncertain. No information is available about the distribution of <i>Setoptus</i> on <i>P. parviflora</i> in China and Japan. <i>P. parviflora</i> is a pine species characteristic to subalpine areas of Japan and hardy to zone 5. This means cold hardiness limits between -</p>

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	b. Outdoors c. Otherwise (e.g. storage facilities, human environment)	28.8°C and -23.3°C (Bannister and Neuner 2001 in Earle, 2020). However, <i>Setoptus</i> has not been recorded on this tree species in a natural environment. In China, <i>S. parviflorae</i> has been found on the exotic <i>Pinus parviflora</i> in a 'plant garden' (Kuang, 1998), but it is not described whether this concerns greenhouse conditions or not. So, it is unknown which climatic conditions will allow for establishment of this mite species in natural vegetation. c. Not relevant
7.	Assess the probability of establishment in the EU (i.e. the suitability of the environment for establishment).	The organism can likely establish in the EU in greenhouses where host plants are present and probably outdoors, but the potential area of establishment is uncertain (see Q6).
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)?	Gall mites usually occur in high numbers, and because they are extremely small (<i>Setoptus</i> female length is about 0,25-0,35 mm and width less than 0,1 mm), they may be dispersed by wind in high numbers over long distances (Jeppson et al., 1975). Additionally, the pest can be spread by trade and movement of infested plants, and by pruning and contact.
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>The organism is not known as a pest in China and Japan (or has not been described as such). Observations in the UK (Pye, 2011) and the Netherlands indicate that the species (assuming that the organisms found in the UK and the Netherlands concerned the same species) may cause serious needle damage making plants unmarketable (see Q5). The host plant is native to Japan where it is a common species, but no reports are known about damage of the gall mite in natural environments. It might be that the species causes more damage under protected conditions than outdoors. In commercial nurseries, damage may be reduced by application of pesticides. In the UK it was possible to eradicate the mite with a pesticide (Pye, 2011).</p> <p>In conclusion, the potential impact of the organism is highly uncertain. <i>P. parviflora</i> is an exotic tree that is locally present in houses, gardens, parcs and nurseries in the EU. The <i>Setoptus</i> species found may locally cause impact for example in bonsai trees of <i>P. parviflora</i> in greenhouses.</p>
10.	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	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)?	

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	<i>Only to be answered in case of an interception or a find.</i>	
12.	Additional remarks	<ol style="list-style-type: none"> 1. The origin of the finding is uncertain. Import of plants of <i>Pinus</i> spp. (other than fruit and seeds) is prohibited from most third countries including China and Japan (Commission Implementing Regulation 2019/2072, Annex VI, point 1). A derogation is in force (Commission decision 2002/887/EC) that allows import of naturally or artificially dwarfed plants of <i>Pinus parviflora</i> from Japan under certain conditions. One of the conditions (requirements) is a post-entry quarantine period of three months. According to the owner of the plants, symptoms occurred only recently and the pest may have been introduced by natural dispersal or carried by people from other <i>Pinus</i> plants. 2. At present it is impossible to identify <i>Setoptus</i> species from Eastern Asia to the species level. The accepted 15 <i>Setoptes</i> species are described scattered over the world: Europe, Asia, Africa, North and South America (Chetverikov et al 2019). Identification of most of these species relies on their original descriptions and they can often be separated based on minor morphological characters only. Chetverikov et al. stated: "S. pini and all <i>Setoptus</i> spp. described from China need to be redescribed because the original descriptions are very poor, with inadequate drawings and morphometrics. Often type material is lost or not available for study by deterioration of specimens. Clearly a full revision of the genus <i>Setoptus</i> is needed (Pye, 2011).
13.	References	<p>Bannister P & Neuner G 2001. Frost resistance and the distribution of conifers. Pp 3-22 in Bigras FJ and Colombo SJ (eds.), <i>Conifer cold hardiness</i>. Tree Physiology, vol 1. Springer Dordrecht.</p> <p>Chetverikov PE, Desnitskaya EA, Efimov PG, Bolton SJ., Cvrković, T, Petanović RU, Zukoff S, Amrine JW jr,10 & Klimov P 2019. The description and molecular phylogenetic position of a new conifer-associated mite, <i>Setoptus tsugivagus</i> n. sp. (Eriophyoidea, Phytoptidae, Nalepellinae). <i>Systematic and Applied Acarology</i> 24: 683-700.</p> <p>Earle CJ 2020. The Gymnosperm Database. https://www.conifers.org/pi/Pinus_parviflora.php</p> <p>Jeppson LR, Keifer HH & Baker EW 1975. <i>Mites injurious to economic plants</i>. London: University of California Press; p. 614.</p> <p>Kuang, H.-Y. 1998. Four new eriophyid mites from forest plants in China (Acari: Eriophyoidea). <i>Acta Entomologica Sinica</i> 41: 300-305.</p> <p>Pye DRL 2011. A new species of eriophyoid mite (Acari: Eriophyoidea: Phytoptidae) from Japan, causing damage to <i>Pinus parviflora</i> var. <i>pentaphylla</i>. <i>International Journal of Acarology</i> 37:122-130.</p> <p>Vacante V 2016. <i>The handbook of mites of economic plants. Identification, bio-ecology and control</i>. Boston, MA, USA: CAB International; p. 872.</p>

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14.	Conclusions	<p>This Quicksan was prompted by the finding of a <i>Setoptus</i> species on <i>Pinus parviflora</i> bonsai trees. Identification at species level is difficult, but <i>Setoptus</i> species have a very narrow host range. <i>Setoptus</i> spp. are not known to be present on <i>P. parviflora</i> in the EU and the species is most likely of exotic origin. The exact origin of the infestation is unknown and the pest status of the organism in the EU is uncertain. The organism can likely establish in greenhouses where <i>P. parviflora</i> is grown. It can probably establish outdoors, but the potential area of establishment in the EU is uncertain. <i>Pinus parviflora</i> is indigenous to Japan and not common in natural forest stands in Europe. The potential economic impact is highly uncertain. It may cause damage to plants grown under protected conditions. <i>Setoptus</i> spp. have not been reported as a pest of <i>P. parviflora</i> in natural environments.</p>
15.	Follow-up measures	<ul style="list-style-type: none"> • The owner of the plants will be advised to take measures aiming at eradication of the organism from the greenhouse. • Special attention will be paid to <i>Setoptus</i> during inspections in nurseries that import plants for planting of <i>Pinus parviflora</i>.