

Express – PRA¹⁾ for *Sinoxylon anale*

Prepared by: Julius Kühn-Institute, Institute for Plant Health on: 27-05-2013.

Dr. Thomas Schröder, Dr. Gritta Schrader, with the collaboration of Dr. Uwe Noldt, Thünen-Institute Hamburg. (translated by Elke Vogt-Arndt)

Initiation: Numerous interceptions of wooden packaging from India

Express - PRA	<i>Sinoxylon anale</i> Lesne		
Phytosanitary Risk for Germany	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Phytosanitary Risk for EU-MS	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Certainty of Assessment	high <input type="checkbox"/>	medium <input type="checkbox"/>	low <input checked="" type="checkbox"/>
Conclusion	<p><i>Sinoxylon anale</i> is native in India and a polyphagous wood-boring beetle which is classified as a quarantine pest in Hawaii, Brazil, Argentina, Uruguay and Paraguay. Up to now, it did not establish in Europe. However, in Israel it was able to establish despite immediate burning of infested trunks.</p> <p>Up to now the pest is neither listed in the Annexes of Directive 2000/29/EG nor at EPPO.</p> <p>The beetle infests at least 70 tropical deciduous trees and various wooden products like sawn wood, tree trunks, storage-wood.</p> <p>Particularly wooden packaging could be an intercontinental pathway for the beetle.</p> <p>The beetle can occur abundantly in infested areas and is able to destroy wood to a great extent. For Europe, there are no studies on the potential threat for native tree species and the hibernation ability up to now. The relevant tree species in India do not occur outdoors in Europe and it is not clear if native tree species might be infested. It can also be presumed that the beetle would not be able to establish due to unsuitable climate conditions in Germany and the EU. These conclusions are not secure, though.</p> <p>Based on this risk analysis – and until further notice - there is no reason to presume that <i>Sinoxylon anale</i> would be able to establish in Germany or other Member States and to cause damage.</p> <p>However, the certainty of this risk assessment is low and in either case it must be considered that the presence of <i>S. anale</i> possibly could be traced back to an inadequate treatment according to ISPM 15.</p>		
Taxonomy²⁾	Coleoptera, Bostrichidae, <i>Sinoxylon</i>		
Trivial Name	--		
Synonyms	<i>Sinoxylon geminatum</i> Schielsky 1899 <i>Apatodes macleayi</i> Blackburn 1889		
Does a relevant earlier PRA exist?	No		
Biology	The life cycle of <i>S. anale</i> takes at least 3 months. In Dehra Dun (India) a maximum of more than 4 years was found. The emergence can happen throughout the whole year and neither a regular sequence of generations nor a correlation between the		

Express - PRA	<i>Sinoxylon anale</i> Lesne
	<p>period of the life cycle and the season was found (Beeson & Bhatia, 1937, cited in Liu et al., 2008).</p> <p>Normally, no larval galleries are found in the core wood. Occasionally, the adults bore into living shoots for feeding or hibernating. They are capable to cause damage on young plants but they do not propagate therein (Sittichaya <i>et al.</i>, 2009).</p>
Is the pest a vector? ³⁾	No
Is a vector needed? ⁴⁾	No
Host plants	<p>Wood, lignified plants (EPPO PQR). In India more than 60 different plant species in forests, wood storage places, sawing mills, furniture and packaging crates were stated for <i>S. anale</i> (Beeson & Bhatia, 1987 and Fisher, 1950, both cited in Gumovsky, 2010). Amongst others <i>Dalbergia latifolia</i>, <i>Shorea robusta</i>, <i>Terminalia belerica</i>, <i>Mallotus roxburghianus</i>, <i>Macrotyloma uniflorum</i>, <i>Lablab purpureus</i>, <i>Delonix regia</i>, <i>Hevea brasiliensis</i>, <i>Anacardium occidentale</i>, <i>Acacia tortilis</i>, <i>A. mangium</i>, <i>A. auriculiformis</i>, <i>Koompassia melaccensis</i>, <i>Leucaena diversifolia</i>, <i>L. leucocephala</i> are listed as host plants (Gumovsky 2010).</p> <p>The beetle infests at least 70 species of tropical deciduous trees and a diversity of wooden products like sawn wood, trunks, and storage-wood (Lesne, 1906, Beeson and Bhatia 1937, both cited in Price et al. 2011, Argaman 1987). According to Sittichaya et al. (2009) the beetle infests nearly every lignified plant in an appropriate condition. In 1984, in Israel there was an outbreak of this beetle which threatened a stand of <i>Delonix regia</i> (Flame tree – one of the most important ornamental trees in Israel). Despite of the immediate burning of the infested trunks the beetle was able to establish.</p>
Symptoms⁵⁾	Bore holes, powdery sawdust
Presence of host plants in Germany⁶⁾	No (only occasionally as ornamentals e.g. in tropical greenhouses). It cannot be stated confidentially whether further plants that are present in Germany or Europe could be infested. Nevertheless, a limiting factor seems to be the climate.
Presence of host plants in the MS⁷⁾	At the moment unknown, see above.
Known infested areas⁸⁾	India (origin), Sri Lanka, Iraq, Saudi Arabia, South East Asia, Southern China, Malaysian Archipelago, Philippines, Australia, Indonesia, New Zealand, Israel (Teixeira et al., 2002, Argaman, 1987)
Pathways⁹⁾	Wooden packaging from India (and other infested areas)
Natural spread¹⁰⁾	Presumably, in Germany and Europe only a local transition to other stored wood was possible. No transition to living trees is expected.
Expected establishment and spread in Germany¹¹⁾	Based on the climatic conditions an establishment seems very unlikely, presumably also because of the lack of host plants. Nevertheless, in infested areas a wide range of species is infested (Sliwa, 1971; Skalski, 1971 both cited in Gumovsky, 2010). Despite the considerable introduction of living beetles/larvae with

Express - PRA	<i>Sinoxylon anale</i> Lesne
	wooden packaging material from India there was no establishment up to now.
Expected establishment and spread in the MS¹²⁾	See expected establishment in Germany.
Known damage in infested areas¹³⁾	According to Fisher (1950, cited in Gumovsky, 2010) <i>Sinoxylon anale</i> is one of the most destructive wood-boring beetles in India and other Asian countries. According to Krehan (2007) the beetle is much feared because of its mass occurrence and the destructive impact on infested wood.
Limitation of the endangered area in Germany	--
Expected damage in endangered area in Germany¹⁴⁾	For Germany and Europe, there are no studies on the potential risk for native tree species and the hibernation ability available at the moment. Nevertheless, it is expected that the climate is not suitable for an establishment and spread. Thus, no damage has to be expected. Damage must only be suspected in the case of combined storage of infested wood with non-infested wood and if the non-infested wood contained sufficient residual moisture and in the case of a transition of the beetles, whereby wood moistures <20% definitely could be colonized.
Expected damage in endangered area in MS¹⁵⁾	Similar assumption as for Germany. Eventually the risk potential for stored wood in Mediterranean MS might be higher than in Germany because the development might be faster due to the climate conditions.
Control feasibility and measures¹⁶⁾	Destruction of the infested wood.
Detection and diagnosis¹⁷⁾	The genus <i>Sinoxylon</i> Duftschmid is often found in wooden packaging. The infestation can be noticed because of the powdery sawdust which is shoved out of the wood by beetles and larvae (Gumovsky, 2010).
Remarks	<i>Sinoxylon anale</i> is classified as a quarantine pest in Hawaii, Brazil, Argentina, Uruguay and Paraguay (Price <i>et al.</i> 2011).
Literature	<p>Argaman, Q. (1987): <i>Sinoxylon anale</i>— a new destructive wood borer in Israel. <i>Phytoparasitica</i>, 15, 257.</p> <p>Gumovsky, A. V. (2010): A record of <i>Sinoxylon anale</i> Lesne in Ukraine with notes on false powder-post beetles (Coleoptera: Bostrichidae) and their chalcidoid parasitoids (Hymenoptera). <i>Ukrainska Entomofaunistyka</i> 1: 1 – 8.</p> <p>Krehan, H. (2007): Verpackungsholz-Kontrollen in Österreich notwendiger denn je. <i>Forstaktuell</i> 41, 2 – 4.</p> <p>Liu L.-Y., Schönitzer K., Yang J.-T. (2008): A review of the literature on the life history of Bostrichidae. (Coleoptera). <i>Mitteilungen Münchner Entomologische Gesellschaft</i>, 98, 91–97.</p> <p>Price, T., Brownell, K. A., Raines, M., Smith, C. L., Gandhi, K. J. K. (2011): Multiple detections of two exotic auger beetles of the Genus <i>Sinoxylon</i> (Coleoptera: Bostrichidae) in Georgia, USA. <i>Florida Entomologist</i> 94 (2), 354 – 355.</p> <p>Sittichaya, W. B., Beaver, R. A., Liu, L.-Y., Ngampongsai, A. 2009</p>

Express - PRA	<i>Sinoxylon anale</i> Lesne
	<p>An illustrated key to powder post beetles (Coleoptera, Bostrychidae) associated with rubberwood in Thailand, with new records and a checklist of species found in southern Thailand. Zookeys 26: 33 – 51.</p> <p>Teixeira É. P., Novo J. P. S. & Berti Filho E. 2002. First record of <i>Sinoxylon anale</i> Lesne and <i>Sinoxylon senegalensis</i> (Karsch) (Coleoptera: Bostrychidae) in Brazil. Neotropical Entomology, 31(4), 651 – 652.</p>



Fig. 2

Fig. 1: *Sinoxylon anale* (Foto: www.pestnet.org)

Explanation

- 1) Compilation of the most important directly available information allowing a first preliminary estimation of the phytosanitary risk. This short assessment is necessary for the decision on a notification to EU and EPPO as well as the preparation of a complete risk analysis, for the information of the countries and as a basis for the possible initiation of eradication measures. Regarding the phytosanitary risk especially the possibility of the introduction to and spread in Germany and the Member States as well as possible damage are taken into account.
- 2) Taxonomic classification – also subspecies – in the case that the taxonomical classification is uncertain the JKI-scientist initiates the taxonomic classification as far as possible.
- 3) If so, which organism (which organisms) is (are) transmitted and does it (do they) occur in Germany / the MS?
- 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 severity of the symptoms/damage on the different host plants
- 6) Presence of host plants in protected cultivation, open field, amenity plantings, forest.....; where, in which regions are the host plants present and to which extent?
How important are the host plants (economical, ecological, ...)?
- 7) Presence of the host plants in protected cultivation, open field, amenity plantings, forest; where, in which regions are the host plants present and to which extent?
How important are the host plants (economical, ecological, ...)?, possible origin
- 8) f.e. acc. to CABI, EPPO, PQR, EPPO Datasheets
- 9) Which pathways are known for the pest and of which relevance are they in respect to the probability of the spread? Primarily the transport over long distances is meant, normally with infested traded plants, plant 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 (native areas and areas of introduction)
- 13) Description of the economic, ecological/environmental and social damage in the area of origin resp. areas of occurrence up to now
- 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 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 current distribution resp. by third countries)?
- 17) Description of possibilities and methods for detection. Detection by visual inspections? Latency? Uneven distribution in the plant (sampling)?