

Data Sheets on Quarantine Pests

Lopholeucaspis japonica

IDENTITY

Name: *Lopholeucaspis japonica* Cockerell

Synonyms: *Leucaspis hydrangeae* Takahashi
Leucaspis japonica var. *darwinensis* Green

Taxonomic position: Insecta: Hemiptera: Homoptera: Diaspididae

Common names: Japanese long scale, pear white scale (English)
Kermès japonais (French)
Yaponskaya palochkovidnaya shchitovka (Russian)

Bayer computer code: LOPLJA

EU Annex designation: II/A1 - as *Leucaspis japonica*

HOSTS

The main hosts of economic importance are *Citrus* spp., although various other fruit trees - apples (*Malus pumila*), cherries (*Prunus avium*), pears (*Pyrus pyrifolia*), persimmons (*Diospyros kaki*), figs (*Ficus* spp.) - and outdoor woody ornamentals (*Acer*, *Betula*, *Cytisus*, *Laurus*, *Magnolia*, *Rosa*, *Syringa*, *Tilia*) are also attacked, and some glasshouse ornamentals (*Camellia*). Borchsenius (1966) has recorded the scale on 15 genera in 13 families. The host range could be equally wide in the EPPO region, though *Citrus* would be the main potential host.

GEOGRAPHICAL DISTRIBUTION

L. japonica originated in the Far East, but has spread to various tropical or semitropical areas throughout the world. In particular, it spread to a limited extent to different parts of the USSR (Konstantinova & Gura, 1986).

EPPO region: Russia (Krasnodar province only; Konstantinova, 1992), Turkey; Ukraine. A record in Germany erroneously appeared in the earlier edition of this data sheet (EPPO/CABI, 1992); the species concerned, found only once in Germany, was *L. cockerellii*, not *L. japonica* (Schmutterer, 1959).

Asia: Azerbaijan (western), China, Georgia, India (unconfirmed), Iran, Japan (Hokkaido, Honshu, Kyushu, Shikoku), Korea Democratic People's Republic, Korea Republic, Myanmar, Pakistan, Russia (Far East), Taiwan (unconfirmed), Turkey.

Africa: Absent, but a closely related species, *L. cockerellii*, with a more tropical distribution, attacks citrus, various subsistence crops and numerous wild species from West Africa to Mauritius (Balachowsky, 1958).

North America: USA (Connecticut, Maryland) (Ferris, 1938).

South America: Brazil.

Oceania: Australia (found many years ago in Northern Territory but not established; never found in Queensland).

EU: Absent.

BIOLOGY

L. japonica hibernates under the bark and leaves of trees in its second larval stage. In spring, the adult females lay 35-60 eggs and the crawler larvae move up to several tens of cm to affix themselves on the upper surface of the leaves, along the veins and leaf margin). Scales are also found on the bark of branches and sometimes on fruits (Kukhtina, 1970). The pest has a single generation in the Far East of Russia, but two generations in Georgia (the first in May-June, the second in July-August). In the Far East, *L. japonica* readily overwinters at temperatures of -20 to -25°C.

DETECTION AND IDENTIFICATION

Symptoms

Attacks by *L. japonica* result in dieback and premature leaf fall, due to senescence of all infested branches. In the case of light attacks, the scales may be found in cracks in the bark, and are then difficult to detect on superficial examination.

Morphology

Eggs

Oval, 0.25 mm long, light-violet in colour, few in number, laid at the rear edge of the female shield.

Larva

Bodies oval in shape, elongated, with five-segmented antennae; the last segment is transversely ridged and as long as the other four together. Twin cephalic glands present. The second larval instar (female) is narrowly pyriform, constricted at both ends, whitish, 0.5-0.6 mm long, covered with a long, dark, mytiliform shield carrying a white secretion of first-instar exuviae projected forwards. The second larval instar (male) is elongate, same colour as female, developing under a linear white shield of the same structure as that of the female, not exceeding 0.8-1 mm in length.

Adult

The female is pyriform, elongate, with maximum width at the anterior of the abdomen. Cephalic and pygidial parts narrowed. Strong cryptogeny: the female, with a fine membranous cuticle, remains enclosed in the exuvia of the second larval instar, which thickens and takes on a horn-like shape. Shield narrow, elongate, straight or slightly curved, dark, but entirely covered in a more or less caducous white secretion 1-1.8 mm long.

MEANS OF MOVEMENT AND DISPERSAL

Like other diaspid scales, *L. japonica* is naturally dispersed by wind and animals at the mobile first instar stage; once fixed in place, the scale is not naturally dispersed. It is therefore only liable to be carried on consignments of planting material of host species, including parts of plants like budwood or cut branches. *L. japonica* has not been particularly mentioned in lists of pest interceptions, but diaspid scales (unidentified) are very frequently intercepted on imported plants.

PEST SIGNIFICANCE

Economic impact

The pest attacks all citrus with the same severity. It can multiply very rapidly, forming dense colonies that cover the trunk, branches and young shoots of a tree. Individual trees are killed by these heavy infestations, while adjoining trees are hardly infested. *L. japonica* has caused serious problems on citrus, especially satsumas (*Citrus unshiu*) but also lemons

(*C. limon*) and the rootstock *Poncirus trifoliata*, in the Transcaucasian republics (Azerbaijan, Georgia) and has also been damaging to citrus and *Laurus nobilis* when recently introduced into southern Russia (Konstantinova, 1992).

Control

In its areas of origin, *L. japonica* is kept under control by its natural enemies, and the literature contains no particular information on the need for any other control measures. In Georgia, certain natural enemies were introduced from the Far East (*Marlatiella prima* and *Pteroptrix chinensis*) (Yasnosh, 1986), but failed to establish. Indigenous natural enemies exist (*Encarsia citrina* and *E. intermedia*), but are not specific for the pest and do not prevent heavy infestations of individual trees (Orlinskii & Basova, 1993). The usual control programme involves the introduction of organophosphorus insecticides into petroleum oil-based fungicide sprays. In the case of *L. japonica*, it is recommended to concentrate treatments on single infested trees (Orlinskii, 1991).

Phytosanitary risk

At the present time, *L. japonica* is not considered as a quarantine pest by any regional plant protection organization. It was, however, on the quarantine list of the USSR, and Kukhtina (1970) considered that it had the potential to spread from Georgia to southern Russia, Azerbaijan, Moldavia and southern Ukraine, as well as the Central Asian Republics; it has indeed done so since (see Geographical distribution). However, *L. japonica* has now been deleted, with other citrus pests, from the current regulations of Russia, but remains in those of Ukraine and Belarus. Lemon production in Uzbekistan and Turkmenistan remains at risk. In the EPPO region, this polyphagous scale could possibly attack citrus and other fruit crops throughout the Mediterranean basin, from the Middle East to Spain (Balachowsky, 1953). It could possibly also damage woody plants in glasshouses throughout Europe. However, it should also be noted that its introduction into various countries (see Geographical distribution) does not seem to have been followed by any rapid spread or very significant damage. In general, little is published about this pest, which circumstantially indicates that it has relatively minor importance in practice.

PHYTOSANITARY MEASURES

Woody plants from countries where *L. japonica* occurs should be carefully inspected, including both rooted plants and budwood material. In addition, they should be fumigated before export.

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