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Conference Abstract

Bonsai plants as pathway for invasive alien plants

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Abstract

Highly problematic invasive alien plant species have multiple pathways for introduction into new areas, both intentionally and unintentionally. For Europe, one of the main pathways is via horticultural trade. Although escape from gardens is a well known problem of formerly horticultural plants, like *Reynoutria japonica* (Polygonaceae), there is also the lesser-known risk of contaminants from invasive plants in plants for planting. When looking at the Union list of invasive species (Regulation 1143/2014), it is known that multiple plant species make use of this pathway. Occasionally they are found in potted plants imported from Central America, like *Parthenium hysterophorus* (Asteraceae) which was intercepted in the Netherlands in a *Coffea arabica* from Honduras (EPPO 2016b). Most Union list species however, can be found in so called “pseudobonsai” plants imported from Asia (EPPO 2024). These pseudobonsai plants tend to stay for a longer period at the production and exporting acility in the country of origin and are most often shipped with so called growth medium. Because of these two factors, the chance is higher that an invasive plant can end up in the bonsai plant and is shipped to the country of import. Before the current study four Union list species have been found in the Netherlands as weed in pseudobonsai plants from Asia, namely *Alternanthera philoxeroides* (Amaranthaceae), *Humulus scandens* (Cannabaceae), *Lygodium japonicum* (Schizaeaceae) and *Persicaria perfoliata* (Polygonaceae). Meanwhile, in the risk assessment for *Microstegium vimineum* (Poaceae), this pathway was listed as very likely to occur, but until this study the species was never found in Europe (EPPO 2016a).

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In 2022 and 2025 there where two surveys in the Netherlands to investigate which Union list species occur as weed in plants for planting, what the origin region is and in which potted plant it grows as weed. More in general we were also interested in which other weeds grow in potted plants and if there are patterns regarding origin and host plant. When combining the two surveys a total of 1074 weeds have been sampled, raised in a greenhouse and, if possible, identified both morphological and with DNA. Over 250 different species were identified spread across 73 families, from small herbs to climbers and even what would have become a large tree. Many of these species were never found in earlier projects and will be included in an online multi-access identification key.

Of the previously intercepted Union list species, *Alternanthera philoxeroides, Humulus scandens* and *Lygodium japonicum* were found. All of them with China as country of origin and mostly in pseudobonsai plants, with one exception of *A. philoxeroides* found as weed in *Poenix* palms at one company. Beside these already known Union list species, *Broussonetia papyrifera* (Moraceae) was also found, again with China as country of origin. Lastly, at the end of 2025 after a growth period of more than half a year a broadleaved grass came in to flower. The sample was taken from a very expensive true *Pinus* bonsai from Japan. To our great surprise this grass was morphologically identified as *Microstegium vimineum Fig. 1*, with a confirmation on DNA. This is for the first time that this plant was found in Europe. Findings like these shows that we need to keep inspecting this type of bonsai companies for invasive alien plants.

Figure 1.

Microstegium vimineum after two months of growth in greenhouse.

Keywords

Unionlist Of Invasive Alien Species, Horticulture, Bonsai, Biological Invasions, *Microstegium vimineum*

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Conflicts of interest

The authors have declared that no competing interests exist.

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