

Mini data sheet on *Asparagus asparagoides* (Asparagaceae)

Added in 2012 - Deleted in 2013

Reasons for deletion:

Asparagus asparagoides was added to the EPPO Alert List in 2012 but as no immediate risk was perceived, it was transferred to the Observation List in 2013.

Why

Asparagus asparagoides (Asparagaceae) is a rhizomatous perennial climbing vine originating from South Africa. One of its English common names is "bridal creeper". This species is invasive in Australia. It is used as an ornamental plant in the EPPO region, and is listed as an invasive alien plant in Spain, but is also present in other EPPO member countries. Considering the invasive behavior of this species elsewhere in the world as well as in EPPO countries, it is considered that Mediterranean and Macaronesian countries may be at risk, and that the species should usefully be monitored.

Geographical distribution

EPPO region: France (including Corse), Italy (Sicilia), Malta, Morocco, Portugal (Azores, Madeira), Spain (including Islas Canarias), Tunisia.

Note: The species had erroneously been indicated as present in Slovenia (from an incorrect interpretation of Jogan, 2005).

Africa (native): Ethiopia, Kenya, Lesotho, Malawi, Morocco, Namibia, South Africa, Swaziland, Tanzania, Tunisia, Uganda, Zimbabwe.

North America: Mexico, USA (California, Hawaii (East Maui)).

South and Central America: Argentina, Guatemala, Uruguay.

Oceania (invasive): Australia (New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia), New Zealand.

Morphology

A. asparagoides is a geophyte with a perennial cylindrical, slender (about 5 mm wide), branching rhizome, growing parallel to the soil surface, bearing fleshy tubers (25-42 mm long and 8-20 mm wide). It produces thin shoots, slightly woody at the base and up to 6 m long when support is available. Shoots emerging from the below-ground root system entwine with each other and surrounding vegetation, allowing them to climb understory shrubs and small trees. *A. asparagoides* produces leaf-like stems called cladodes which are stalkless, broadly ovate to lanceolate, 10-70 mm long, 4-30 mm wide, dark glossy-green when growing in shade, but dull and light green in exposed locations. They are solitary and alternate along the stem, or are borne in groups on short side branches.

Flowers are 8-9 mm wide and 5-6 mm long when fully expanded. They are borne on 3-8 mm long and slightly bent pedicels, singly or in pairs in the axils of the reduced scale-like leaves, tepals are greenish white. Fruits are globular berries, 6-10 mm wide, initially green and ripening to red. They generally contain 0-4 black (maximum 9), shiny, spherical or ovoid seeds.

In which habitats

In its native range in South Africa, *A. asparagoides* mainly occurs as a minor understory species. In contrast, it invades a variety of habitats in warm temperate climates of Australia and New Zealand including coastal heath or sandy dunes, woodlands or forests, creek and river banks, swamps, dry coastal vegetation, dry and damp sclerophyll open-forest, and littoral rainforest. It prefers shaded or part-shaded habitats. According to the Corine Land Cover nomenclature, the following habitats are invaded: mixed forests, conifer forests, broad-leaved forests, coastal wetlands, banks of continental water, riverbanks/canalsides (dry river beds), road and rail networks and associated land, other artificial surfaces (wastelands), green urban areas including parks, gardens, sport and leisure facilities, scrub.

Biology and ecology

Flowers of *A. asparagoides* are bisexual and self-compatible. In Australia, seeds germinate in autumn or early winter and flowering generally occurs from late winter to early spring three years after germination. Fruits develop in spring, they mature into red berries from late spring to late summer,

depending on the region, and can be retained on senescing plants for several months. Fruit production may exceed 1 000 berries/m². Seed viability is reported to approach 90% and seed longevity is a few years. The species may also reproduce vegetatively through rhizomes, as a new plant can regrow from rhizome fragments. Rhizomes may remain viable for more than 5 years. *A. asparagoides* is particularly vigorous in soils with a high moisture content. It grows best at sites with high levels of available nitrates, potassium and iron.

Pathways

A. asparagoides is used as an ornamental plant. Careless disposal of garden waste and earthworks (e.g., roadside grading) can spread rhizomes over considerable distances. Seeds may also be transported in mud attached to machinery and vehicles.

When the plant colonizes river banks, seeds may also be dispersed downstream by water flows. Seeds are also dispersed by frugivorous birds, as well as by rabbits and foxes.

It has been estimated in Australia that patches of about 10 m² expanded radially by approximately 0.6 m per year.

Impacts

A. asparagoides is not known to invade agricultural systems, except for citrus orchards in irrigated areas of Australia, where it smothers trees and prevents the normal growth of citrus roots leading to reduced fruit production. It is estimated that at least 20% of growers who manage a total of more than 6500 ha of citrus orchards in districts bordering the Murray River in Australia, are affected by *A. asparagoides*. The cost of control is estimated to be as high as 2000 AUD per hectare and per year. *A. asparagoides* does not invade pastures as it cannot withstand constant grazing. It invades pine plantations, but it is not perceived to have a significant impact on tree growth. *A. asparagoides* invades both disturbed and undisturbed natural ecosystems, where it quickly dominates and smothers understorey vegetation and changes the structure, floristic composition and ecology of the system. Plant colonies may form a dense tuberous mat underground, preventing other plants from accessing soil moisture and nutrients. Once an infestation is established, the amount of light reaching the soil surface is very low, thereby preventing other plants from persisting. In Australia, plant communities as well as native protected species are directly threatened by *A. asparagoides*. In addition, plant shoots can form dense mats which die-back in the summer, creating a fire hazard.

Control

Preventive measures include avoiding composting, mulching or dumping garden refuse containing *A. asparagoides* rhizomes. In Australia, it is recommended to place uprooted plants in black plastic bags and leave them out in the sun for many months to kill rhizomes. Cleaning of earthmoving equipment is important to prevent the spread of viable rhizome fragments that may be present in the attached soil. Eradication of *A. asparagoides* at a local scale is only feasible for recently established infestations and before the fructification of the plant. Isolated young plants of *A. asparagoides* with an underdeveloped root system can be pulled-out by hand. Manual removal of mature plants and their root system is only appropriate for small and isolated infestations. Removed root mats should be disposed of by deep burial (>2 m deep) or by burning (after a drying period). Follow-up control is often required as *A. asparagoides* regenerates from small pieces of living rhizome left in the soil.

Mechanical removal of the above-ground biomass is effective at reducing seed production if performed before fruiting, but many repeated operations are necessary to exhaust below-ground reserves. *A. asparagoides* is palatable to mammals, and thus livestock grazing is potentially an effective control method.

Several herbicide trials have been conducted during the last 20 years, and glyphosate, metsulfuron methyl and some related sulfonylureas have been identified as the most effective non-selective, systemic, herbicides against *A. asparagoides*. Since most *A. asparagoides* seeds are dispersed by animals within 300–500 m of the source, it is recommended to also control outlying plants or patches within a buffer zone of 500 m around the edge of a main infestation.

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