Pacific Pests, Pathogens, Weeds & Pesticides - Online edition

Giant sensitive plant (450)

Common Name

Giant sensitive plant; it is also known as *nila grass* in Papua New Guinea. CABI prefers the name creeping sensitive plant. CABI calls *Mimosa pigra*, giant sensitive plant.

Scientific Name

Mimosa diplotricha. It was known previously as *Mimosa invisa.* It is a member of the Fabaceae.

Distribution

Asia, Africa, North, South and Central America, the Caribbean, Oceania. It is recorded from Australia, American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, New Caledonia. Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Vanuatu, and Wallis & Futuna.

It is native to tropical South and Central America, and parts of the Caribbean.

Invasiveness & Habitat

A major perennial (sometimes annual or biennial) weed of plantations - coconut, pineapple, rubber, sugarcane, tea - upland rice, food crop gardens and pastures. In sugarcane, it is able to germinate and grow within the crop and eventually to smother it; similarly, it grows over pastures and chokes them. Apart from plantations and pastures, it is also a weed of roadsides, drains and waste sites. Its invasiveness is due to rapid growth, production of large amounts of seeds when only a few weeks old, and seeds that survive in the soil for many years.

The giant sensitive plant prefers moist soils of good fertility and light. It is not a weed of closed forests. Cattle avoid the weed because of its thorns, and there have been suggestions of toxicity.

Description

A fast growing, sprawling spiny perennial shrub (Photos 1&2). The stems are four-sided and bear short stiff backward-pointing thorns (Photo 3). Leaves are alternate along the stems, bright green, and 10-20 cm long; they are divided into 4-9 pairs of leaf-like segments, each with 12-30 pairs of leaflets, 6-12 mm long, attached to a central midrib without stalks (Photo 4). The leaflets fold together when disturbed, injured or at night. Flowerheads, a cluster of pink to purple, individual flowers, with long stamens (male parts), forming fluffy balls, 12 mm diameter, each borne on a short prickly stalk, usually arising from a leaf axil (Photos 5&6). The seedpods are soft, spiny, 10-35 mm long, and occur in clusters, and break into two to four, 1-seeded parts.

Spread

Spread occurs by seeds in a number of ways. They are spread by flowing water, and by birds and other animals, and humans that catch their barbed spines. Spread also occurs as seeds attached to machinery. There have been intentional introductions to use the weed as a ground cover, as well as accidental ones associated with the movement of sand and gravel for roadworks, as contaminants of pasture seeds, or in consignments of hay.

Photo 1. Thicket of giant sensitive plant, *Mimosa diplotricha.*

Photo 2. Individual plant, giant sensitive plant, *Mimosa diplotricha*, showing stem, leaves and flowers.

Photo 3. Backward-pointing thorns, giant sensitive plant, *Mimosa diplotricha.*

Photo 4. Leaves of giant sensitive plant, *Mimosa diplotricha.* Note, leaflets of the central leaf have collapsed.

A thornless variety has been introduced to some countries (e.g., Solomon Islands), and this has reverted to the thorny form.

Impact

A weed with potential to cause economic, environmental and social impacts in the Pacific and Southeast Asia. In Australia, it has spread across tens of thousands of hectares of pasture and sugarcane land, and in other parts of the world food crops are at risk, as reported for cassava in Nigeria. Not only are there increased costs of production, but invariably yields are reduced, and harvesting becomes problematical: machinery can be damaged, and hand-harvesting is hazardous. Diversity of native plants is threatened, too, by this invasive weed, and indirectly native animals. Also, large infestations impede movement of people as well as increasing the risk of fires as the thickets die and dry out.

Uses

It has been used as a ground cover, and also as a fallow crop.

Management

BIOSECURITY

There is a high risk of introduction of the giant sensitive plant. Once established, it is extremely difficult to control. Countries not yet infested should consider all likely pathways for entry, and apply quarantine measures accordingly. *Mimosa diplotricha* is a restricted invasive plant under biosecurity acts in some parts of Australia; this means - *a person must not release these invasive plants into the environment, give away or sell as a plant or something infested with its seeds*. Seed of this weed is available on the internet.

Six Pacific island countries - French Polynesia, New Caledonia, Papua New Guinea, Samoa, Solomon Islands and Vanuatu - consider giant sensitive plant among their top 10 weeds.

BIOLOGICAL CONTROL

Heteropsylla spinulosa, a psyllid, was introduced into Australia from Brazil in 1987, and caused reduced vigour, brittle stems, stunting and reduced seed production of the giant sensitive plant. Later, it was introduced into Samoa and Papua New Guinea with similar beneficial results. Plants stunted by the psyllid are said to be less spiny and therefore more grazed by livestock. A fungus, *Corynespora cassiicola,* native to Australia causes defoliation and dieback in hot humid conditions.

CULTURAL CONTROL

- Physical & Mechanical
  - Slashing is a possible control method, but has to be carried out regularly, before the plants have set seed. Note, slashing to remove the top of the plants results in plants regrowing from the base or crown.
  - Hand weed when seedlings are very young, before seed formation, but protection from thorns is needed, otherwise they can result in sores. Using a hand-held hoe is best.
- Hygiene
  - Treat vehicles and farm machinery. Wash down vehicles first before moving from areas where the weed occurs to those weed-free. Wash to remove soil and seed. Also, ensure seeds are not carried on clothes between infested and 'clean' areas.

CHEMICAL CONTROL

It is best to slash or burn the giant sensitive plants and then apply herbicide to the regrowth. Herbicides registered in Australia are: dicamba; fluroxypyr; glufosinate-ammonium. In Fiji, glyphosate.

Note, EU approval to use glyphosate ends in December 2022.

When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. **Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate herbicides to use should always be sought from local agricultural authorities.**

Photo 5. Flowerhead of giant sensitive plant, *Mimosa diplotricha.* Note, the fruits, left and beneath the stem, and the backward, curved thorns on the stem and leaf stalk.

Photo 6. Close-up fluffy flowerhead of giant sensitive plant, *Mimosa diplotricha*, showing long stamens.

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Adapted from Giant sensitive weed *(Mimosa diplotricha)* (2018) Weeds of SE Qld and Northern NSW. Lucidcentral. (**https://www.lucidcentral.org/editors-pick-animal-and-plant-identification-keys/key-to-weeds-of-se-qld-and-northern-nsw**); and additional information from [1]Waterhouse DF, Norris KR (1987) *Mimosa invissa* Martius ex Colla. *Biological Control Pacific Prospects*. Inkata Press, Melbourne; and CABI (2019) Mimosa diplotricha (giant sensitive plant). Crop Protection Compendium. (https://www.cabi.org/cpc/restricted/?target=%2fcpc%2fdatasheet%2f34196); and from DAF (2020) Giant sensitive plant *Mimosa diplotricha (=Mimosa invisa)*. The State of Queensland. (hhttps://www.daf.qld.gov.au/__data/assets/pdf_file/0017/67121/giant-sensitive-plant.pdf). Photo 1 Obsidian Soul Giant_false_sensitive_plant_(Mimosa_diplotricha)_from_Mindanao,_Philippines_1. Photo 4 Challiyan at ml.wikipedia. Photo 5 Ks.mini Giant Sensitive plant Name Mimosa diplotricha Family Fabaceae.

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