

The leaf smut fungus, *Entyloma ageratinae* R.W. Barreto & H.C. Evans, has been released as a biological control agent against mistflower (*Ageratina riparia* (Regel) R.M. King & H. Rob.) infestations in South Africa. For many years, this weed was only known from the Pietermaritzburg and Hilton (KwaZulu-Natal) area, where the fungus is widespread and appears to have completely suppressed the plant. Recently, however, plants have been found in the Karkloof area, and infestations have been recorded in Kloof (both in KwaZulu-Natal). These populations require monitoring to determine whether the fungus is having an impact.

DESCRIPTION

This fungus was originally collected in Jamaica. From there, it was introduced as a biological control agent into Hawaii, where it proved to be highly successful. From Hawaii, it was introduced into South Africa in 1989 at a single locality in Hilton. This fungus does occur in the native range of the plant in Mexico, where the plant is very rare. The first signs of the leaf smut fungus are small white areas that appear on the under-surface of the leaves in summer (i). These areas expand, and later become angular brown lesions where the area of the leaf has been killed (ii). The white is the smut fungus emerging (iii) from the leaves' stomata (breathing pores) to produce masses of tiny, long and narrow, thin-walled spores (iv) (arrows show spores, and the club the spore producing structure). The brown lesions are old infestations that have died off.

LIFE CYCLE

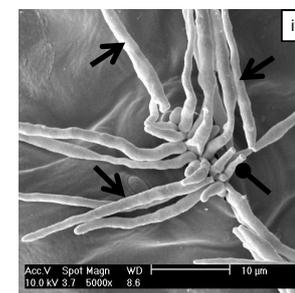
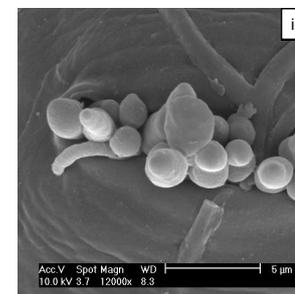
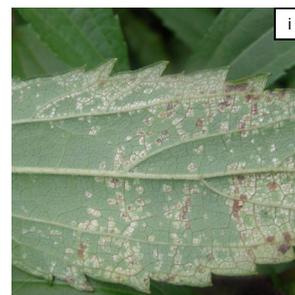
The ideal temperature for the spores to germinate is 18°C, which occurs during cool evenings in summer when rain has fallen or dew has formed. The germinated spores infect the leaves and, after about 14 days, new spore-producing structures develop through the leaf stomata (iv). Numerous generations can be produced during the season. These spores are dispersed to new leaves by wind.

DAMAGE TO THE HOST PLANT

Infection and the development of the lesions cause the leaves to drop off the plant early. With fewer leaves producing food, the plant's growth and flowering is reduced, and individual plants are much smaller than they could potentially be. These stunted plants are unable to compete with surrounding vegetation and eventually die or remain stunted. In addition, far fewer new plants establish because the affected plants produce less seed.

IMPACT ON MISTFLOWER

This leaf smut fungus appears to have brought this invasive plant in the Pietermaritzburg and Hilton areas under complete biological control. In these areas the scattered plants are generally small, with only a few relatively short branches per plant, and they are typically dominated by other surrounding plants. No further control measures are required.



environmental affairs

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