

Biological control of *Mikania micrantha* in India: opportunities and constraints

K.V. Sankaran^{1*}, C.A. Ellison² and T.A. Suresh¹

¹ Kerala Forest Research Institute, Peechi—680 653, Kerala, India

² CABI Europe-UK, Bakeham Lane, Egham, Surrey TW 20 9 TY, UK

*Corresponding author: sankarankv@gmail.com

Mikania micrantha Kunth. ex. H.B.K. (Asteraceae), the fast growing invasive plant from the neotropics, is now widespread in the Asia-Pacific region. In India, it poses serious threat to natural and plantation forests and agricultural systems in the moist tropical zones of the south-west and north-east. Attempts to manage the weed through mechanical and chemical methods were unsuccessful due to various reasons. Hence, fungal pathogens from the native range of the weed were assessed for their biological control potential. *Puccinia spegazzinii* de Toni (*Pucciniales: Pucciniaceae*), a rust fungus which causes stem, petiole and leaf infection in mikania was located as a suitable candidate. Host specificity studies conducted in India and UK showed that a pathotype from Trinidad is the most virulent against the Indian population of mikania.

The pathogen was imported to India in October 2005 and after preliminary trials released in tea gardens and experimental areas of plantation crops in the state of Assam and agricultural systems and degraded moist deciduous forests in Kerala state during 2005-2006. The rust, although it spread from the source plants to the native population of mikania in Assam, did not establish apparently due to the presence of a biotype of the weed that was partially resistant to the rust pathotype. In Kerala, there was good spread of the rust in the field during August (when the pathogen was released) till late October. But, the rust did not survive beyond October due to unfavourable atmospheric conditions like high temperature and low humidity. Attempts are currently being made to release the pathogen at more frequent intervals and at higher inoculum levels during early June along with the onset of the southwest monsoon in Kerala so that the pathogen will reach critical concentrations and the rust will enter into an epidemic phase before the onset of summer. Release of another pathotype of *P. spegazzinii* collected from Peru is also under consideration.

KEYWORDS: Assam; Kerala; pathotype; Peru; *Puccinia spegazzinii*; rust fungus; Trinidad; weed biotype