

Sterile holoparasite *Cuscuta australis* R.Br. (dodder) spread and its physiological impact on hosts in tropical Brunei Darussalam

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Summary Two proliferative modes of dodders (fertile and sterile) were observed in Brunei Darussalam. The fertile dodder was identified as *C. australis* R.Br. Field studies conducted over six years have revealed except for a few isolated localized populations, almost all *Cuscuta* spp. are exclusively spread by means of perennation and they are widespread along the waterways and low lying areas and show invasive traits. Using a DNA barcoding approach, we found that ITS and *trnL*-F sequences of the sterile dodder were identical to those of *C. australis* and different from *C. campestris* Yunck.

Even though it is widely known that dodders negatively affect host photosynthesis, the information on their impact on hosts in the presence of environmental stress factors (i.e. drought) in the tropics is poorly known. Results of a parallel study showed that the concomitant presence of *C. australis* infection

and drought significantly impacted leaf traits, gas exchange (i.e. decreased stomatal conductance, transpiration rates and increased water use efficiency) and quantum yield of Chl *a* fluorescence of one of its common hosts *Mikania micrantha* Kunth.

The presence of a single stress factor (*C. australis* infection or drought), however, only significantly affected leaf traits and gas exchange of host. Results suggested that additive effects of *C. australis* parasitism and drought significantly suppressed the photosynthesis of *M. micrantha* due to both stomatal and non-stomatal limitation of host photosynthesis. This study provides pioneering insights into a novel method of *Cuscuta* spread and varying magnitudes of its impacts on hosts with changes in the abiotic environment.

Keywords Parasitic plants, *Cuscuta*, invasiveness, photosynthesis.