

PRELIMINARY STUDIES ON COMPETITION BETWEEN TWO INVASIVE PLANTS UNDER DIFFERENT SOIL FERTILITY REGIMES

M. N. KARUNARATNA AND H.M.S.P. MADAWALA WEERASINGHE

Department of Botany, Faculty of Science, University of Peradeniya

Competitive interactions among neighboring plants may be important determinants of species composition and abundance in natural ecosystems. Invasive plants could exhibit high competitive ability on the native vegetation and of widespread management concern because of their detrimental effects on ecosystem processes and possible economic consequences. Invasive plants could be more plastic compared to native plants because of their robust growth over other species. Understanding the eco-physiological aspects of invasive plants is therefore an important phenomena leading to successful management of invasive plants.

The competitive effect and response of two invasive plants species, *Clusia rosea* (Clusiaceae) and *Clidemia hirta* (Melastomataceae) on each other was tested using a pot experiment. The two species were planted in mixed- and mono-culture in 4 different treatments. In order to test the competition under different fertility regimes, half of the pots were supplied with a nutrient solution (enriched) and the rest were not supplied with any nutrients (un-enriched). Dry shoot and root biomass measurements were taken and calculated shoot*/shoot, root*/root and shoot/root ratios. Growth rates at the time of the final harvest were also calculated.

Results revealed that when *C. hirta* in competition with *C. rosea*, *C. hirta* produces significantly higher root and shoot biomass compared to *C. rosea*, under both enriched and un-enriched conditions. The growth rate of *C. hirta* was significantly higher than *C. rosea* in mixed-culture treatments; but in mono-culture, the growth rate of *C. hirta* was poor. The results indicate that *C. hirta* exhibit more competitive ability over *C. rosea* at least during the early stages of their life cycle. Biomass allocation patterns were more or less similar in all treatments. Interestingly, both *C. hirta* and *C. rosea* performed poorly in monoculture. Therefore, we could suggest that the intra-specific competition among plants was much more pronounced than inter-specific competition, hence resulting poor performance by the both species in monoculture treatments. The results also support the idea that plastic responses seem to have triggered off when plants are in competition with another species than in monoculture.