CONTROLLING GIANT BUTTERCUP WITH *SCLEROTINIA SCLEROTIORUM*

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Giant buttercup (*Ranunculus acris* L.) is a serious weed of dairy pastures in many regions of New Zealand and at its peak can occupy over 50% of the pasture area. It is unpalatable to cattle and is avoided to the extent whereby pasture plants in the immediate vicinity are also avoided. The national revenue loss incurred by New Zealand dairy farmers from current infestations of giant buttercup is estimated to be \$118 million annually. The emergence of resistance to the herbicides historically used to control this weed has led to the need for alternative options for control. Previous work investigated the potential of the fungus *Sclerotinia sclerotiorum* as a mycoherbicide against giant buttercup. This poster reports on a continuation of this developmental work in which we compare the pathogenicity of three different formulations of *S. sclerotiorum*. The standard formulation (WH1) and two novel biopolymer formulations (T425 and T425N) were tested in bioassays on excised giant buttercup leaves and the resulting lesions measured after 24, 48 and 72 hours. After 72 hours both T425 and T425N had produced significantly ($P<0.05$) larger lesions than WH1, indicating that the two novel biopolymer formulations were more pathogenic towards giant buttercup than their rudimentary counterpart.

CHARACTERISATION OF BIOTIC FACTORS AFFECTING THE PATHOGENICITY OF A *SCLEROTINIA* *SCLEROTIORUM*-BASED MYCOHERBICIDE

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Pathogenicity and solid media studies were conducted to assess factors contributing to the success of *Sclerotinia sclerotiorum* as a mycoherbicide for giant buttercup (*Ranunculus acris*). In pathogenicity studies, under moist conditions there was a significant isolate effect ($P<0.001$) with the mycoherbicide isolate LU458 producing 33% more infection than isolate LU459. This suggests that the genetic background of the isolate may be an important component of the mycoherbicide. Under dry conditions, neither isolate could infect the host, indicating the importance of appropriate formulation components that protect the isolate under adverse moisture conditions. As nitrogen fertilisers are used extensively in New Zealand pastures, the ability of *S. sclerotiorum* isolates to grow on urea-amended media was assessed. At field rates, growth of both isolates decreased by 20-60% that of the control. Subsequent studies to assess *S. sclerotiorum* pathogenicity on plants treated with nitrogen fertiliser will be done.