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survival of field-grown rhizobia over the dry summer period in Western Australia

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Abstract

The survival over summer of field-grown root nodule bacteria was studied in the field and the laboratory during the course of an investigation into a nodulation problem of annual clovers. Dry field soils containing *Rhizobium trifolii* and *R. lupini* were subjected to a range of temperatures in the laboratory, the bacteria surviving 6 h exposure to temperatures as high as 80°C. Soil temperatures during summer were recorded at different depths. Populations of rhizobia were estimated at these depths from the end of the growing season (October) to early autumn (April) in plots which had carried dense swards of subterranean clover and Serradella. High populations of *R. lupini* were maintained in the Serradella plots throughout the summer. Populations of *R. trifolii* in the subterranean clover plots were initially much lower, and declined with both time and depth.

The problem known as "second-year clover mortality" is primarily due to low numbers of clover rhizobia in the soil at the end of the growing season. This situation is aggravated over the long hot dry summer, when there is a further decline in numbers.



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