

## **Protozoa and the decline of Rhizobium populations added to soil**

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### **Abstract**

A fall in Rhizobium abundance occurred in nonsterile soil inoculated with large numbers of the root-nodule bacteria but many of the rhizobia still survived. No such decline was evident in sterile soil. Protozoa feeding on these bacteria were isolated from soil and other environments. As the abundance of Rhizobium meliloti and a cowpea Rhizobium strain in soil decreased, the protozoan density increased. The inability of the predators to eliminate their prey, from soil was not the result of the presence of organisms feeding on the protozoa because many rhizobia survived in sterile soil inoculated with the prey and cultures of individual protozoa nor was it the result of the rapid multiplication of the bacteria to replace those consumed because survivors were still numerous in essentially organic matter free soil in which the bacteria did not grow appreciably. The lack of elimination also was not associated with a protective effect of soil particles because survivors were still abundant in solutions inoculated with protozoa and bacteria. It is suggested that the size of the prey population diminishes until a density is attained at which the energy used by the predator in hunting for the survivors equals that obtained from the feeding.