

## **Determining the Identity and Possible Origins of a Collembola Pest of Lettuce and Tree Seedlings**

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### **Abstract**

Lettuce farmers in the Salinas Valley of California have reported debilitating losses to their crop as a result of damage to the roots of lettuce plants. Similar symptoms have also been reported by maple and poplar tree nurseries in Oregon. A study of the arthropods associated with the damaged lettuce and tree seedling roots indicated that feeding by a Collembola is the likely cause of the damage. Using morphological evidence the Collembola were identified as *Protaphorura fimata*. We used molecular tools, the mitochondrial gene cytochrome oxidase I (COI), to confirm the identity of this pest as well as to determine the genetic relationship between the California and Oregon *P. fimata* populations to each other and with a population from Europe. The goals of this research are as follows: 1) Confirm species identity of California and Oregon *P. fimata* populations. 2) Determine genetic relationship of California, Oregon and European *P. fimata* populations in order to assess whether *P. fimata* is an invasive species.