



# Diagnostics of Armillaria Root Disease

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## - STEP 1 -

### Tools and Techniques for Recognizing and Collecting *Armillaria* Fungi

**Rhizomorphs, mycelial bark fans and honey mushrooms are three sure signs of the presence of *Armillaria*.**



**Rhizomorphs** - Rhizomorphs are found on the surface of a root, growing freely through the soil, and under the bark of an infected tree.



**Mycelial Bark Fans** - Mycelial bark fans are found on dead and live trees, but bark fans from live trees can indicate that the *Armillaria* individual is pathogenic.

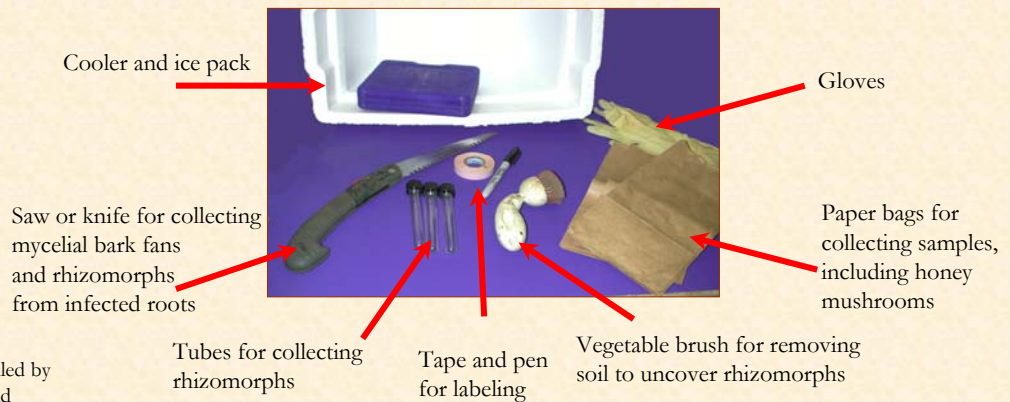


**Honey Mushrooms**- *Armillaria* "honey mushrooms" are found in fall; however, mushroom production can be unpredictable or rare.

### Tools for collecting rhizomorphs, mycelial bark fans, and honey mushrooms



Recently dead or dying trees with red needles killed by *Armillaria* fungi often have mycelial bark fans and rhizomorphs.



Cooler and ice pack

Gloves

Saw or knife for collecting mycelial bark fans and rhizomorphs from infected roots

Tubes for collecting rhizomorphs

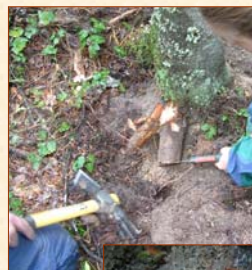
Tape and pen for labeling

Vegetable brush for removing soil to uncover rhizomorphs

Paper bags for collecting samples, including honey mushrooms



Field data are collected: site location (GPS), tree species, habitat type, etc.



Rhizomorphs are placed in a collection tube, labeled, and stored in a cooler on ice.



Roots of infected trees are excavated using a trowel or Pulaski.



Roots samples (bark still intact) with mycelial bark fans and/or rhizomorphs are collected, labeled, placed in a paper sack, and stored on ice inside a cooler for transport back to the laboratory.



*Armillaria* mushrooms are placed in a paper sack, labeled, and stored in a cooler.