Loblolly Pine Needle Damage Sampling Protocol 2020

To determine the causal agent of extensive damage to loblolly pine foliage, we are asking State Partners/Forest Health Co-op members in Alabama, Mississippi, Louisiana and Georgia to provide us information about needle symptoms and affected stands.

Host: *Pinus taeda* (Loblolly Pine) **or**

Alternate Host: Herbaceous plant – *Solidago* (Goldenrod), *Aster* (Aster)

Needle sample: Symptomatic

Pathogen: Unknown

Impact: Growth retardation, tree mortality and sporadic occurrence

Needle disease picture:

Figure 1: Needle symptoms (A) yellow or brown discoloration of needles, die-back of the apex of the needles (B) tree crown looks thin or empty (C) reddening of the needles (D) dead needles on the lower side of a branch (E) exudation of resin from base of the needles (F) affected lower canopy

of a tree (G) black round spots on needles (H) fruiting bodies on the needles & (I) symptomatic leaves of alternate host *Solidago* (Goldenrod)

If disease incidence is high during summer, then stands shall be sampled during this period and fall season too. Please collect and send samples with following collection instructions and information to be filled out at each stand. **N.B.** If you are not able to send, we will come and collect samples from your infected stand(s).

Survey form (The information from this one page survey will help us to learn about stand disease prevalence)

Your Name:	Date:
Your address:	Phone Number: Email:
Location where collected (state, county, township, range, section)	
GPS coordinates of the stand (Latitude and Longitudes)	
Ownership (circle answer): National Forest State Private	
Stand type (circle answer): Plantation Natural Other: _____	
Seedlot/Genetics Species (a) Open- pollinated (b) Close-pollinated	
Extent of damage (approximate acres or number of trees affected):	
Site description (circle all that apply): 1) edge of waterbody 2) wet area 3) dry, steep slope 4) Other:	

Recent silviculture (rate and date applied) (a) Fertilizer (b) Herbicides (c) Fire (d) Insecticide (e) Thin/Harvest						
Tree #	Age (years)	Tree Height (m)	Tree DBH (cm)	Condition **D**=Disease **H**=Healthy)	Part of crown affected (Circle all that apply)	Proportion of total crown affected (circle one)
Tree 1					Bottom Middle Top	0 1/3 1/3-2/3 >2/3
Tree 2					Bottom Middle Top	0 1/3 1/3-2/3 >2/3
Tree 3					Bottom Middle Top	0 1/3 1/3-2/3 >2/3
Tree 4					Bottom Middle Top	0 1/3 1/3-2/3 >2/3
Tree 5					Bottom Middle Top	0 1/3 1/3-2/3 >2/3

HOW TO COLLECT SAMPLES:

1. Identify 4 symptomatic (preferably 2 understory and 2 overstory) and one healthy, control tree. If it is not possible to collect foliage from overstory trees, collect foliage from 3 symptomatic trees total. If a healthy tree cannot be found in the stand, then collect foliage from a nearby healthy tree with a green crown.

2. Collect branch tips with symptomatic needles (include current growth and up to 3-year old needles if present) from several locations on the tree. Do not remove needles from fine twigs. Place all samples collected from each tree in a separate one-quart size plastic bag.

3. Keep samples dry inside the bag. Do not add water and if necessary, add a dry paper towel to absorb moisture.

4. Label sample bag with date, tree#, location (state, county, stand #), tree size, diseased/control (healthy).

5. Keep samples cool (keep on ice during transportation from the field and refrigerate if they cannot be mailed right away).

6. If possible, please take pictures of the site and symptomatic trees and e-mail to address below.

7. Collect samples from the same stands in Spring and Summer. If possible collect sample from the same tree. Please note if sample was taken from the same tree or from a different tree on the sample bag or datasheet.

8. Mail completed form with sample as soon as possible to address below.

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Some queries about your problem:

1. When did you first observe needle damage/defoliation in your stand (s)? Is this spreading?

2. Are your trees experiencing reduced growth/death or both?

3. What is the site conditions of your infected stand (s)? If possible, provide us information about NRCS soil code and drainage class of your infected site (s).

4. Please tell us about your seedlots/genetics?

5. Are there any recent silvicultural treatments applied to the infected stands? If so, is there any improvements?