



# Dothistroma needle blight



## Field Guide 2012

## 2012 DNB sampling guidance

### Needle samples to be collected:

Needle samples should be collected from all components, (i.e. species within a stand), where the disease is believed to be present.

Select one shoot per stand with symptomatic needles (**including fruit bodies of *D. septosporum***) and place in a zip lock freezer bag.

Label the bags with the following information:

- The forest name.
- Stand ID (if appropriate) and grid reference.
- The species (e.g. LP).
- The planting year.
- The area of the stand.
- The name of the assessor and the date the sample is taken.

Please post the samples on the day of collection or keep refrigerated overnight and send to:

Anna Brown/Richard Baden,  
Centre for Forestry and Climate Change,  
Forest Research,  
Alice Holt Lodge,  
Farnham,  
Surrey,  
GU10 4LH.

## DNB symptoms and further information

### Symptoms of Dothistroma needle blight

These will include some (if not all) of the following:

- Early symptoms of yellow/tan spots and bands.
- Needle tip dieback of older needles (i.e. not current year's) whilst the needle bases remain green. The dead tip of the needle often appears red/brown in colour.
- Red or brown banding on the needle.
- **Small brown/black raised fruit bodies.** These are generally within the red/brown bands but may be scattered up the length of the needle.
- Shortened needles.
- Loss of older needles (i.e. not current), resulting in a thin crown and tufts of needles at the ends of branches giving a "lion's tail" appearance.

For more information on Dothistroma needle blight see:

[www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-6ZCKAE](http://www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-6ZCKAE)

[www.forestry.gov.uk/forestry/infd-74jjfk](http://www.forestry.gov.uk/forestry/infd-74jjfk)

or contact:

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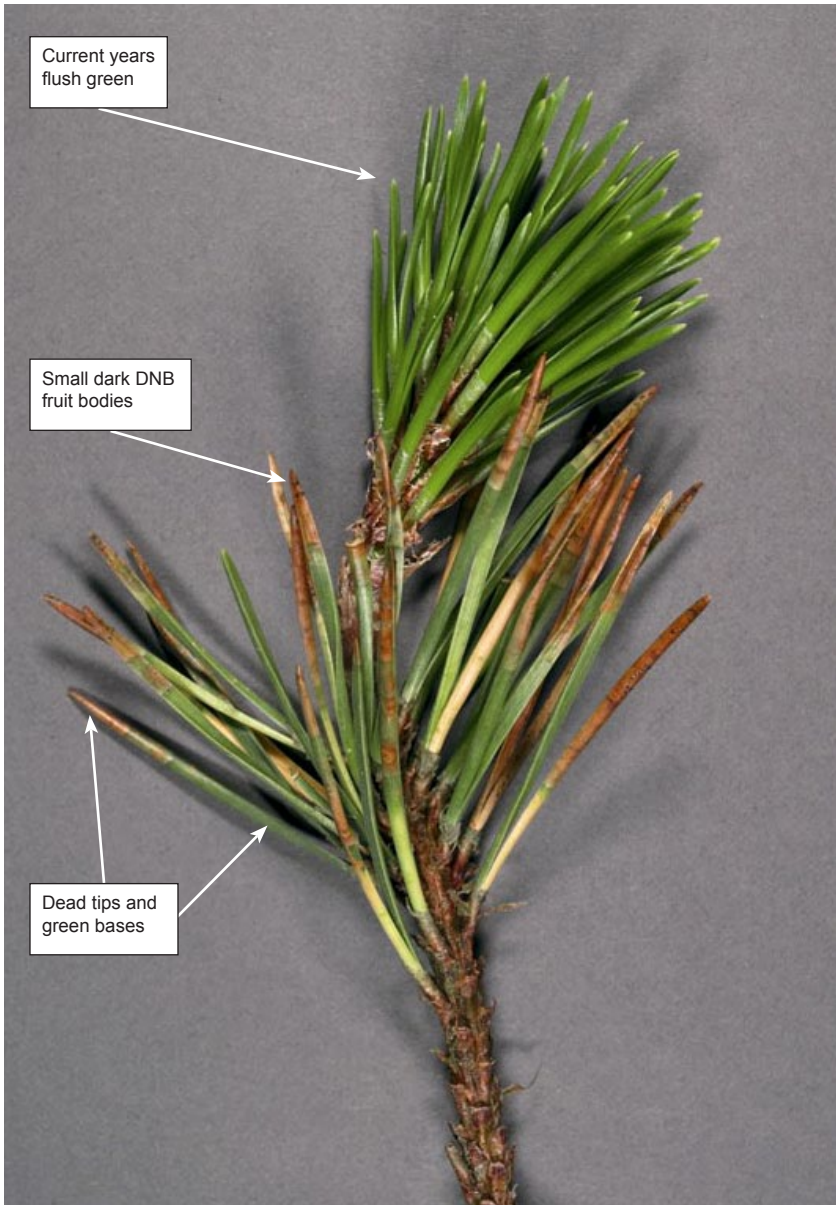
Direct dial: 01420 526246; Mobile: 07827 873646

Email: [anna.brown@forestry.gsi.gov.uk](mailto:anna.brown@forestry.gsi.gov.uk)

# DNB on lodgepole pine.



DNB on lodgepole pine.



## DNB on Scots pine.



DNB on Scots pine.



## Typical disease symptoms of different pin

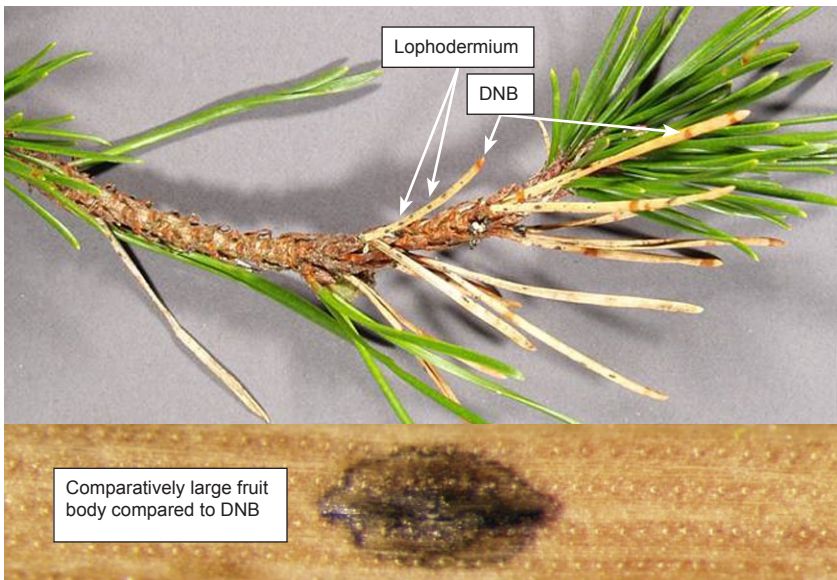
CAUSE and Hosts	NEEDLES
<p>DNB</p> <p>Pine and potentially NS, SS, DF</p>	<ul style="list-style-type: none"> <li>- Orangy-red brown distal ends, darker red bands, some needles with green bases remaining;</li> <li>- Fruit bodies small and fairly round (approx. &lt;0.5mm), black, scattered, often in groups, generally within the bands, &amp; detectable by finger/thumb nail when emergent.</li> </ul>
<p><i>Lophodermella sulcigena</i></p> <p>CP SP (LP)</p>	<ul style="list-style-type: none"> <li>- Distinctively PALE colours: yellow, pale/pinkish brown, pale grey.</li> <li>- Needle tips and bases usually still green; often only one needle of a pair infected.</li> <li>- Fruit bodies dark but under a pale skin, in central pale grey area of lesions, usually long (&gt;2mm) and thin, longitudinally aligned, visible.</li> </ul>
<p><i>Lophodermella conjuncta</i></p> <p>CP, SP</p>	<ul style="list-style-type: none"> <li>- As for <i>L. sulcigena</i>, above, although there may be resinous red bands in centre of lesions.</li> </ul>
<p><i>Lophodermium seditiosum</i></p> <p>SP (CP) (LP)</p>	<ul style="list-style-type: none"> <li>- Variable browns but usually including some reddening, and complete necrosis (or loss) of needles likely.</li> <li>- Fruit bodies, if present, large &amp; easily visible rugby-ball-shaped with central longitudinal split, black when wet or grey when dry, positioned in lines.</li> </ul>
<p><i>Cyclaneusma minus</i></p> <p>SP LP</p>	<ul style="list-style-type: none"> <li>- Rapid progression from light green spotting to yellow banding to ENTIRELY YELLOW needles. May then get brown banding on SP.</li> <li>- Fruit bodies, on browned needles, are distinctive 'trap-doors', but unlikely within survey period.</li> </ul>
<p>Shoot diseases</p> <p><i>Ramichloridium pini</i> LP</p> <p><i>Brunchorstia pinea</i> CP SP (LP)</p> <p><i>Sphaeropsis sapinea</i> CP SP (LP)</p>	<ul style="list-style-type: none"> <li>- Needles tend to die from the base upwards</li> <li>- Affected needles usually all at about the same stage, and a single colour (i.e. without banding).</li> </ul>
<p>Insect (e.g. <i>Tomicus piniperda</i>)</p>	<ul style="list-style-type: none"> <li>- Chewed or punctured.</li> <li>- No fruit bodies (except from secondary infections).</li> </ul>
<p>Abiotic damage</p>	<ul style="list-style-type: none"> <li>- Uniform damage: no green tips or bases.</li> <li>- No fruit bodies (except from secondary infections).</li> </ul>



## damaging agents seen in JUNE and JULY

SHOOTS	TREES
<ul style="list-style-type: none"> <li>- Current year's needles still green;</li> <li>- Older needles affected (liable to be only last year's that are still retained, but older symptomatic needles possible).</li> </ul>	<ul style="list-style-type: none"> <li>- First infections in lower crown.</li> <li>- Liable to be widespread through the stand.</li> </ul>
<ul style="list-style-type: none"> <li>- Current year's needles still green but, later in survey period (particularly on SP), needle tips may be distinctively pinkish or purplish brown.</li> <li>- Older needles affected - PALE grey or straw colours; may be broken green stubs of 2<sup>nd</sup> or 3<sup>rd</sup> year needles.</li> </ul>	<ul style="list-style-type: none"> <li>- CP most susceptible; may affect entire trees or stands.</li> <li>- SP usually younger trees, and only individuals or small groups of trees affected; rarely widespread throughout a stand.</li> </ul>
<ul style="list-style-type: none"> <li>- Current year's needles still green.</li> <li>- Older needles affected (may have 3 year-old symptomatic needles): distinctively PALE colours.</li> </ul>	<ul style="list-style-type: none"> <li>- CP &amp; SP equally susceptible; usually only in younger crops, but may be widespread in them.</li> </ul>
<ul style="list-style-type: none"> <li>- Current year's needles still green, but shoot maybe stunted.</li> <li>- 2<sup>nd</sup> year needles affected; complete browning /needle loss likely by early summer; needles may droop prior to casting.</li> <li>- Symptoms may be one-sided on shoot</li> </ul>	<ul style="list-style-type: none"> <li>- If severe, then 'bottle-brush' appearance (as compared to DNB which has less obvious stunting of shoots and many older needles still attached in mid summer.)</li> <li>- Liable to be widespread through the stand.</li> <li>- May be one-sided on tree.</li> </ul>
<ul style="list-style-type: none"> <li>- Current year's needles still green.</li> <li>- Older needles affected. ALL YELLOW (or yellowing), looking very like premature senescence.</li> </ul>	<ul style="list-style-type: none"> <li>- Infections rarely severe.</li> </ul>
<ul style="list-style-type: none"> <li>- Current year's shoot dead.</li> <li>- Older needles still green.</li> <li>- Shaving away bark on shoot may reveal necrotic internal woody tissues.</li> </ul>	<ul style="list-style-type: none"> <li>- Damage is usually particularly noticeable precisely because it occurs at the branch tips.</li> </ul>
<ul style="list-style-type: none"> <li>- Damage may be consistent over all years' needles OR</li> <li>- Current year's shoot dead and older needles still green.</li> <li>- Shaving away bark on shoot may reveal insect activity.</li> </ul>	<ul style="list-style-type: none"> <li>- Tree may be browner above and greener below (i.e. the opposite of the usual fungal pattern).</li> </ul>
<ul style="list-style-type: none"> <li>- Dead or damaged shoots with older needles still green.</li> <li>- May be one-sided on shoot.</li> </ul>	<ul style="list-style-type: none"> <li>- May be one-sided on tree.</li> </ul>

▼ Lophodermium spp.

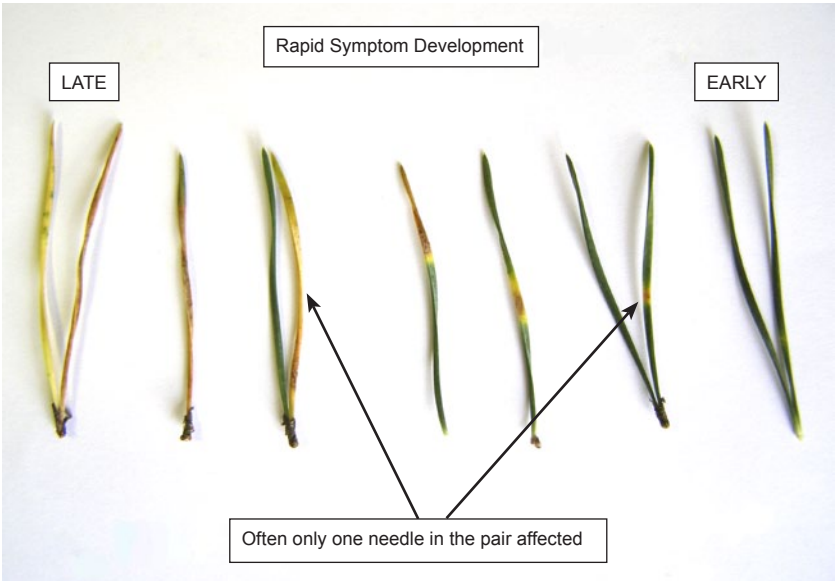


▲ DNB and secondary Lophodermium on lodgepole pine.

## Cyclaneusma on Scots pine.



# Lophodermella on Scots pine.

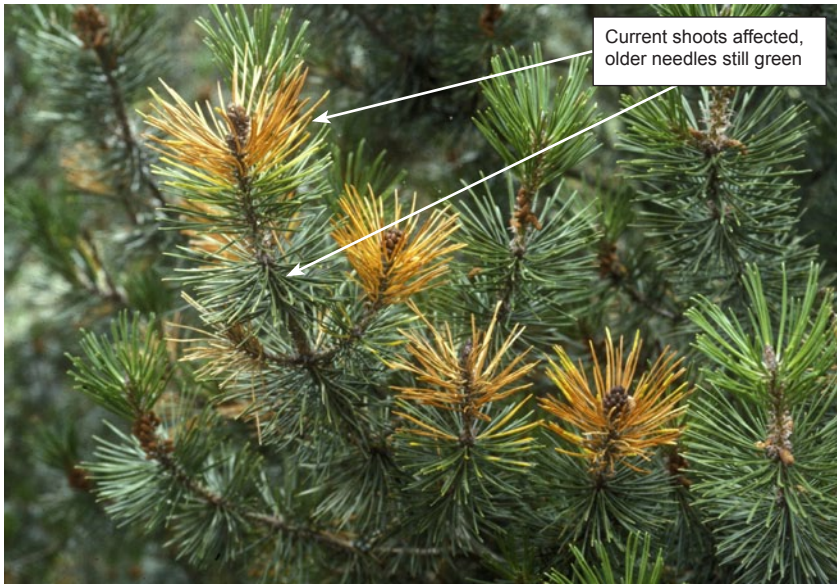


▼ Lophodermella on Scots pine.



▲ Scots pine needle pair with both DNB and Lophodermella.

▼ Shoot Disease - *Ramichloridium pini*.



▲ Shoot Disease - *Brunchorstia pinea*.

## DNB on spruce.



Photograph courtesy of Mendel University



Photograph courtesy of Mendel University



DNB on Corsican pine.

