

ASSOCIATION OF RHIZINA INFLATA WITH GROUP DYING OF SITKA SPRUCE

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GROUP dying of Sitka Spruce (*Picea sitchensis* Carr.) was apparently first recorded from the Lake District in England in 1936. Since then, the trouble has been reported from widely separated localities in both England and Scotland, and it has been attracting considerable attention. The importance of this malady and its relation to shallow soils and wind-throw have been adequately discussed by Day in a recent article in *Forestry* (2). Group dying of Sitka spruce, however, is not confined to Britain, as it has been under observation here in Ireland for some time, and, during a visit to this country by Mr. J. S. Murray, Assistant Pathologist, British Forestry Commission, several plantations were inspected this year, where the disease symptoms of the dead and dying groups were stated to be typical of those occurring in Britain.

A rather unusual occurrence in an affected group of trees was brought to the writers' notice by Mr. W. Shorten, Head Forester, Glendalough, Co. Wicklow. Quoting from Mr. Shorten's letter dated 17th September, 1953—

“When making a thinning of S.S. in compartment 20, Lugduff, I came across one of the diseased patches that we had thinned out 3 or 4 years ago. Beside it now is a patch in what I would call the middle stages of decay and in what I would consider a perfect state for investigation.”

The authors accordingly visited the plantation at Glendalough on 21st September and found fructifications of a fungus present at the base of practically every affected tree in this particular group, which comprised between two and three dozen trees. These were about thirty years old, and an examination of their roots showed that many of them were dead right up to the base of the stem. Resin flow was profuse from affected trees; in some cases it was confined to a height of a foot or so above ground, but in others the resin was exuding from the stems to a height of three or four feet. Although the entire root system was frequently found to be dead, there was no rot of any kind found in the base of the stem when a sample tree was felled.

The fungal fructifications occurred on the soil surface around the base of the stems, and not infrequently directly over a dead root. They were fleshy and sessile; upper surface somewhat glutinous and chestnut-brown in colour, under side pale buff, woolly, with loose mycelial strands hanging down. They tended to be circular in outline but were rather diverse in shape, with diameters varying from half an inch to two inches.

Larger forms were found which seemed to be due to several fructifications having coalesced. Further examination of the fructifications in the Department of Plant Pathology showed that the glutinous upper surface was made up of innumerable eight spored asci (some of which were 400 microns long), interspersed with paraphyses. Microscopical examination also revealed fungal hyphae in the cortex of the brown lesions on the roots. The fungus was provisionally identified as *Rhizina inflata* (syn. *R. undulata*), and this identification was confirmed by Dr. P. O'Connor, National Museum, Dublin.

The fungus *Rhizina inflata* is often found growing saprophytically on woodland soils, and not infrequently occurs near tree stumps. Mycelial strands ramify through the soil and invade the roots of neighbouring healthy trees. When the mycelium reaches the collar of the tree, the tree suddenly succumbs. The parasitic nature of this fungus was first shown by Hartig (3). He records it attacking the following species of conifers, *Abies pectinata*, *Tsuga Mertensiana*, *pseudotsuga Douglasii*, *Picea Sitchensis*, *Pinus strobus*, and *Larix europea*. Brooks (1) reported attacks of it on Scots Pine, Corsican pine, European larch and Japanese larch. Apparently the fungus seldom attacks broadleaved trees.

The general symptoms of "group dying" in Sitka spruce plantations are similar to those described by previous workers for conifers dying from attacks of *Rhizina inflata*, with perhaps the sole exception that "group-dying" occurs mainly in plantations thirty years old and upwards, whereas attacks of *R. inflata* have formerly occurred on young trees four to ten years old. In view of these facts, the object of the present note is to record the occurrence of the fungus *Rhizina inflata* on Sitka spruce showing typical "group dying". Further investigation of the relation of the fungus of "group dying" would appear to be very desirable.

REFERENCES

1. Brooks, F.T. *Rhizina undulata*. Quart. Jour. of Forestry, Vol. IV, pp. 308-309, 1910.
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3. Hartig, R. Text-Book of the Diseases of Trees. (English Translation) p. 123, 1894.