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PINE TWIST RUST (*MELAMPSORA PINITORQUA*)  
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*M. pinitorqua* is a heteroecious rust. Its aecial host in the northern coniferous forests of Asia and Europe is *Pinus sylvestris*. Some other pines, e.g. *P. pinaster* in the Mediterranean can be seriously infected. The rust has been successfully inoculated also on larch and Douglas fir. The rust kills or damages growing shoots in young pines causing losses in height increment and in the stem value. The main uredial host is aspen, *Populus tremula*, on which the rust occurs with three other rusts as a collective species called *M. populnea*. The rust overwinters on aspen leaves on the ground.

Direct chemical control of the rust is usually acceptable only in the nurseries. The most effective means of controlling rust in pine plantations is the chemical or mechanical eradication of aspen. Biological control using micro-organisms could also be considered. For this purpose, more investigation is needed about the dynamics of the leaf surface microflora, including parasites of aspen and hyperparasites of the rust.

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SCLERODERRIS CANKER OF CONIFERS - THE PRESENT SITUATION IN EUROPE  
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The dangerous Scleroderris canker disease of conifers (*Gremmeniella abietina*) is distributed through nearly whole Europe. Main damage was observed in *Pinus nigra* stands in central Europe 20 years ago, particularly in the Netherlands and in Germany. Since then the epidemic decreased. In the last years came alarming news from N-Sweden. The introduced and in a large scale planted *Pinus contorta* is damaged there very seriously. Also in Finland an interaction between diseased Scots pine (*Pinus sylvestris*) and frost pockets can be observed. The disease is also typical for young *Pinus cembra* at high elevations in the Alps of Austria and N-Italy, particularly influenced by unsuited sites and not adapted provenances. Recently one found the fungus also on Scots pine in Poland and on *Pinus nigra* in Bulgaria. - Not yet fully understood is the occurrence of the fungus e.g. in Norway spruce (*Picea abies*) under the influence of acid rain and other air pollutants.

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CHARACTERISTICS OF SCLERODERRIS CANKER ON CONIFERS IN JAPAN  
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In Hokkaido, the northern island of Japan, many young plantations of *Abies sachalinensis* have been severely damaged by Scleroderris canker caused by *Gremmeniella abietina*. One of the most characteristic symptoms of the disease on the *Abies* species is that fresh and green needles fall onto the snow surface from 1-year-old shoots in early spring. The disease generally occurs in deep snow areas, where the fungus only attacks stems and shoots buried under the snow. Field observation and results of inoculation experiments indicated that the snow cover was one of the most important environmental factors influencing development of the disease. Details of the role of the snow cover in the development of this disease, however, are still unknown.

Recently, 4 *Abies* species were recorded from Hokkaido as new hosts to the fungus by the author, so the number of the hosts has totaled to 7, which were 6 *Abies* species and *Pinus strobus*. With the increase in the number of the hosts, it has become more evident that the main host of the fungus in Japan is the genus *Abies*, while that in Europe and North America is the genus *Pinus*. From various evidence, it is considered that the disease affecting *P. strobus* is caused by a different race of the fungus from that on the *Abies* species.

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CURRENT RESEARCH ON SCLERODERRIS IN NORTH AMERICA  
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A near 100% concordance was obtained in comparative electrophoresis and serology tests in the identification of *Gremmeniella* isolates from pines; results were inconsistent with the spruce and fir isolates from Quebec. Retaining *Gremmeniella* as a distinct genus was validated, based on result of electrophoresis, morphology, and cultural studies (in cooperation with Dr. O. Petrini, ETH, Zürich) *Gremmeniella* collections from pines were different from those on other hosts. In *Gremmeniella*, the "Eur." race was isolated from diseased natural regeneration of *P. banksiana* and from ascomata on the latter. Both Eur. and N.Am. races are now widespread in Quebec; no noticeable changes of disease incidence have been made in other Provinces, except Nfld. As control tests conducted from 1983-1987, pruning lower branch whorls up to the highest infection level gave satisfactory control when infection rates were less than 20%. Variability of disease resistance in jack pine was tested (G. Bussières, Univ. Laval), using 41 provenances; those from NE Que. were more resistant than those from other locations.

Investigations (by Dr. M. Marosy, Univ. Wisc. USA) of factors related to disease development showed that following inoculation, at least 44 conducive days (1 conducive day = T between -5 and +6°C, or when host tissue is completely covered with snow) were necessary for disease development. Infection was obtained under completely artificial conditions.