CURRENT STATUS OF BEECH BARK DISEASE IN FRANCE[1]

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Abstract.--The two organisms involved in beech bark disease are endemic everywhere in France. Nevertheless the disease is restricted to the northern part of the beech's range, where it grows on the plains. During the last five years beech bark disease has shown a general decrease in severity but there have been local increases in the north and north-eastern parts of forests where the disease has been present for a long time. Some French foresters feel that beech bark disease is a sanction against the growth of beech in inappropriate ecological conditions.

INTRODUCTION

Beech bark disease is well known to French foresters due to the severe damage it causes and they are thus able to give a good account of the disease situation in France. Thus I was able to prepare this report on the basis of information obtained from the French Forest Service. The current status of beech bark disease can be superimposed on the beech distribution map (Fig 1). Because of its ecological tolerance, beech is present almost everywhere in France especially in the northern part of the country. Nevertheless this map reveals that beech is a plain tree in the northern part of its range whereas it is a mountain tree in the meridional one, (Anon. 1981). Beech grows well in France in a wide range of site conditions.

Cryptococcus fagisuga is endemic everywhere even in high elevation stands of the Alps, Pyrénées and the mountains of the Massif-Central. Heavy infestations of the insect and the consequential dieback of beech after N. coccinea infection are restricted to the northern part of the beech's range particularly in the north-west where the disease has occurred for a long time (Fig 1). From time to time foresters have noticed heavy infestations of C. fagisuga with rare subsequent N. coccinea infections.

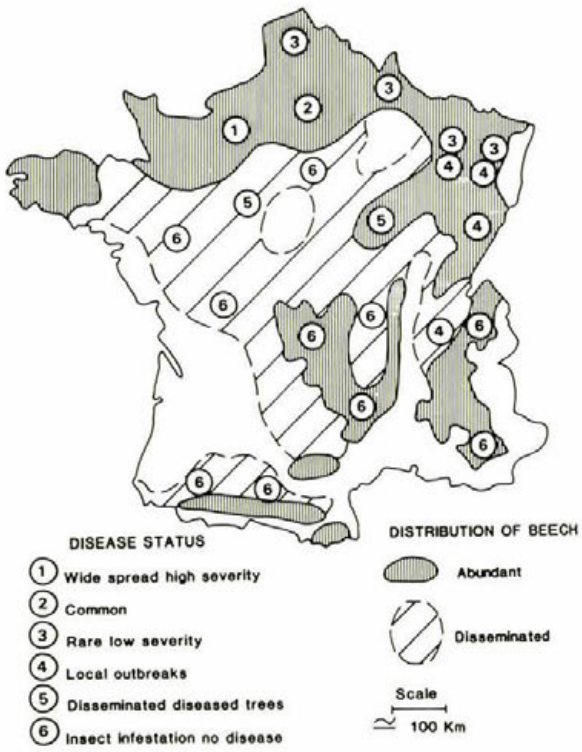

Figure 1.--Status of beech bark disease in France in 1982.

During the last four years, the severity of the disease decreased in most cases after a maximum level of damage during 1977. Recent records indicate a northward or north-eastward trend in the appearance of new out-

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breaks of the disease. These local outbreaks have been observed following particular circumstances or special events.

Detailed observations are available from the region where the disease first appeared. The harvest of beech bark diseased trees from 1968 can be seen in Fig. 2 for three of the most important forests in Haute-Normandie. Despite some inaccuracy owing to changes in foresters assessment methods from year to year there

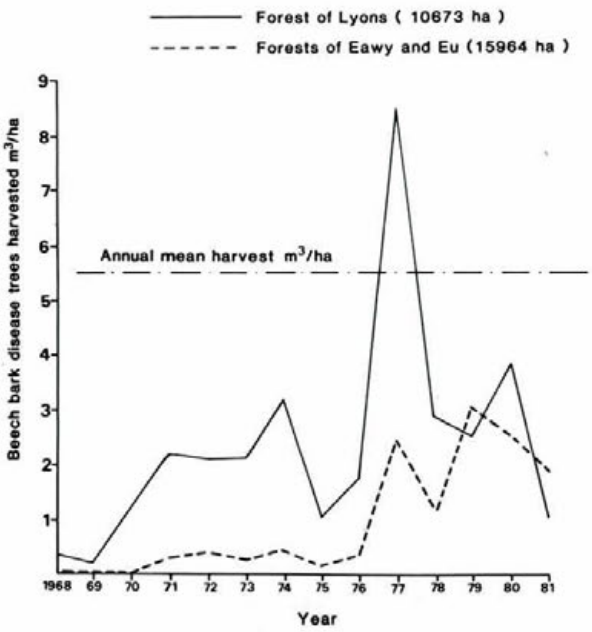

Figure 2.--Annual harvest of trees affected by beech bark disease.

is an obvious decrease in loss of trees to beech bark disease in the forest of Lyons following the peak in 1977. In this forest diseased trees were cut at an early stage but in the forests of Eawy and Eu, trees were removed late in the disease process. These opposite control strategies account not only for the different numbers of trees removed in these forests, but also for the changing rates of loss of trees from the disease (Fig. 2). Foresters from other regions (Alsace, Nord-Pas de Calais) have also noted the benefit of early removal of diseased trees, as recommended in the conclusions of the 1977 colloquium of beech bark disease.

SOME FACTORS INFLUENCING BEECH BARK DISEASE IN FRENCH FORESTS

Foresters agree that the sudden and exceptional increase in mortality in 1977 resulted from the 1976 drought. The influence of climate may also appear as a result of some particular site conditions. Disease development seems most intense in two opposite site conditions; shallow soils above calcareous material where beech may suffer from water stress and clay loamy soils of high yield potential whose physical components are sometimes unfavourable to the beech (pseudogley).

Most of the foresters have noticed that in some areas high density crops and pure stands of beech are the most diseased, whereas the contrary is true in other areas. Thinning which is a necessary silvicultural treatment reduces tree density but does not appear to reduce disease severity. On the contrary the observations of French foresters suggests that there is a renewed outbreak after thinning and efforts to reduce disease development by a stand thinning have proved to be of negative value.

Conflicting opinions are advanced about the most sensitive trees of a stand. Some people maintain that they are the dominant ones, others consider that only suppressed trees are diseased. Old over mature trees are very often sensitive but there is, however, a great variability from one tree to another. Some trees never succumb despite a heavy infestation of C. fagisuga and severe infection of N. coccinea.

CONCLUSIONS

During the last five years beech bark disease has shown a general decrease in severity but has spread northwards or north-eastwards. Nevertheless it is not possible to distinguish a disease front as in the U.S.A.; C. fagisuga and N. coccinea are endemic everywhere in France. The apparent extension of the diseased area is due to local increases in disease severity in the north and north-eastern parts of a region in which forests have been affected for a long time rather than new outbreaks inside a disease free area.

From the observations of French foresters it seems that beech bark disease occurs preferentially or is particularly severe on trees or in stands in adverse ecological conditions: sites near the limit of the ecological range of beech, pure stands, inappropriate silvicultural treatment and the artificial maintenance of beech on the same site for hundreds of years. However, some forests remain healthy for a long time despite high amplitude climatic fluctuations suggesting that beech bark disease appears as a sanction against the growth of beech in inappropriate ecological conditions. Stands or trees having a restricted ecological plasticity are critically exposed to the disease. Will we now learn the lesson of this disease by managing forests on an

ecological basis? Post-disease intervention may not change the course of beech bark disease but we can expect a big influence of preventative management i.e. that which allows beech to have the most ecological resistance.

ZUSAMMENFASSUNG

Die beiden an der Buchen-Rindennekrose beteiligten Organismen sind überall in Frankreich anzutreffen. Nichtsdestoweniger ist die Krankheit auf den nördlichen Teil des Buchenareals begrenzt, wo die Buche in der Ebene wächst. Während der vergangenen fünf Jahre war ein allgemeiner Rückgang der Krankheitsintensität zu beobachten. Örtlich begrenzt kam es jedoch auch zu verstärktem Auftreten der Krankheit in den im Norden und Nordosten gelegenen Wäldern, wo die Buchen-Rindennekrose schon seit langer Zeit vorkommt. Manche Forstleute in Frankreich sind der Ansicht, die Buchen-Rindennekrose sei die Strafe für den Anbau der Buche unter ungeeigneten ökologischen Bedingungen.

RÉSUMÉ

Les deux organismes impliqués dans la maladie de l'écorce du hêtre sont endémiques partout en France. Toutefois, la maladie ne se retrouve que dans la partie nord de l'aire de distribution du hêtre où il croît dans les plaines. En général, la gravité de la maladie de l'écorce du hêtre a diminué au cours des cinq dernières années bien qu'il y ait eu des augmentations locales dans les parties nord et nord-est des forêts où la maladie était présente depuis longtemps. Des forestiers français croient que la maladie de l'écorce du hêtre est une conséquence de la culture du hêtre dans des conditions écologiques inappropriées.

LITERATURE CITED

Anon, 1981. Le Hêtre. I.N.R.A. Paris 613 pp.