Notes

FOREST HEALTH SURVEYS IN IRELAND: 1987 AND 1988 RESULTS

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Summary

Results of the 1987 and 1988 forest health surveys indicate that defoliation and discolouration are evident in Irish forests. Damage is generally attributed to insect or disease attack, nutrient deficiency or climatic stress. These results contribute to the annual EC forest health survey.

Introduction

Since the early 1980s, many European countries have been carrying out surveys of forest health. The initial impetus for many of these surveys was to evaluate the effects of atmospheric pollution on the health and vigour of forests. Such surveys have evolved over time and now measure the effects on forests of many damaging agents, e.g. insects, disease and adverse weather conditions.

All Member States of the EC are now obliged to carry out these surveys and results from Ireland have contributed to the EC reports on forest health in 1987 and 1988.

Methods

The survey is based on assessments of trees at locations selected using a 16 x 16 km grid. Co-ordinates of the intersection points of the grid were supplied by the EC and assessment plots selected only where the intersections occur within forest areas of greater than 1 ha. The official EC grid was not available to us in 1987 and results presented here for that year are based on different trees than those assessed in 1988 (Figure 1). Different assessment procedures were also used. Results, therefore, are not comparable between 1987 and 1988. From 1988, results will be directly comparable from year to year. A total of 22 plots was established in each year and individual trees (20-25 per plot) assessed for defoliation (5 classes) and discolouration (4 classes). Assessments made on each tree were the same as those carried out in other Member States: results, therefore, can be compared between the countries involved.

Results

Species assessed were Norway (*Picea abies*) and Sitka spruce (*Picea sitchensis*) (1987 and 1988) and lodgepole pine (*Pinus contorta*) (1988 only). Because the 1988 results will act as the base-line data for future surveys, only these data are shown here in any detail (Figures 2 and 3). The 1987 and 1988 results for all species are, however, given for completeness (Tables 1 and 2).

Norway spruce showed lower levels of defoliation than Sitka in both the 1987 and 1988 surveys. Lodgepole pine was found to have more defoliation than either of the spruces and had over 7

Figure 1: Location of forest health survey plots for 1987 (▲) and 1988 (●).

DEFOLIATION CLASS	ALL SPECIES COMBINED 1987	1988
0 : 0 - 10%	95.9	69.9
1 : 11 - 25%	4.1	25.3
2 : 26 - 60%	-	4.5
3 : > 60%	-	0.3
4 : Dead	-	-

TABLE 1.

Percentage distribution of defoliation class. Direct comparisons between years (1987 and 1988) are not possible for reasons outlined in text.

per cent of trees moderately or severely defoliated (classes 2 and 3, Figure 2).

In the 1988 discolouration assessments (Figure 3), Norway spruce had only slight yellowing (3.2 per cent). Sitka spruce and lodgepole pine, however, showed 23.4 and 53.7 per cent respectively of trees falling into the slightly and moderately discoloured categories (classes 1 and 2).

Possible Causes of Observed Damage

Although individual trees were assessed for defoliation and discolouration, it is difficult to attribute either of these two factors specifically to the effects of atmospheric pollution.

In the spruces, most of the defoliation was attributed to climatic stress (mainly exposure to wind) or attacks by the green spruce aphid (*Elatobium abietinum*). Only edge trees were surveyed in this genus, and the defoliation levels assessed may be an overestimate of the situation within stands.

In lodgepole pine, almost all of the needle loss was attributed to feeding by the European pine sawfly (*Neodiprion sertifer*).

Discolouration in the spruces was generally slight and was caused mostly by green spruce aphid attack and/or nutrient deficiencies. This latter factor was also the cause of most of the discolouration in lodgepole pine. Yellowing of the shoot tips was evident on some lodgepole pine trees and was caused by the fungus *Ramichloridium pini*.

Wide genetic variation in crowns, in terms of quantity of branching, was observed, but not evaluated in this survey. The variation occurred irrespective of defoliation, and appears substantial in some cases, especially for lodgepole pine.

DISCOLOURATION CLASS	ALL SPECIES COMBINED 1987	1988
0 : 0 - 10%	97.8	68.6
1 : 11 - 25%	1.7	30.5
2 : 26 - 60%	0.5	0.9
3 : > 60%	-	-

TABLE 2.

Percentage distribution of discolouration class. Direct comparisons between years (1987 and 1988) are not possible for reasons outlined in text.

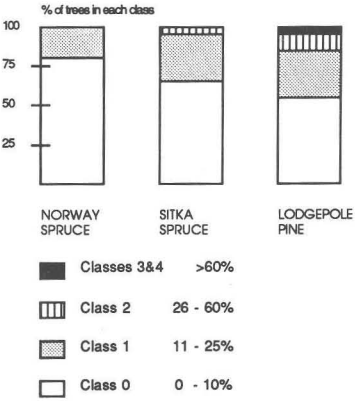

FIGURE 2. Percentage distribution of defoliation class by species (1988)

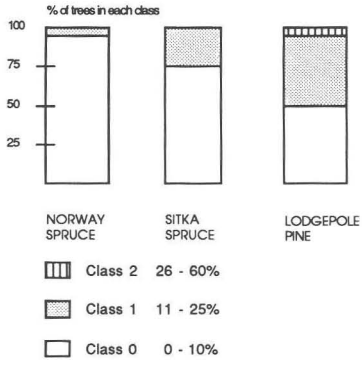

FIGURE 3. Percentage distribution of discolouration class by species (1988)

Conclusions

The data presented in this note indicate that defoliation and discolouration are evident in Irish forests. Although these two symptoms are those most commonly associated with forest decline on the continent, the crown thinning and yellowing of the survey trees described above were generally caused by factors other than atmospheric pollution.

Much of the defoliation attributed to atmospheric pollution in central Europe is found in older forests (>60 years old) – an age class not represented in the current survey. Likewise, highest defoliation levels caused by atmospheric pollution generally occur at an elevation at or above our current planting limit.

Since this is only the initial phase of the survey, the results can, at this stage, only be indicative of the general health status of the entire forest estate. Additional information, however, will be available from another project which examines the possible effects of atmospheric pollution on forests in 25 potentially vulnerable locations.

NEW STRUCTURAL TIMBER REGULATIONS

Effective from April 1, 1989

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The Irish Standard Recommendation, SR 11: 1988 – 'Structural Timber for Domestic Construction' – was launched in Eolas in 1988 by the Minister for Forestry, Mr. Michael Smith. It was produced after extensive consultations with architects, engineers, distributors and processors. It reflects good trade practice in the use of structural timber in Ireland.

SR 11 has now been incorporated into the Proposed Building Regulations. These are modelled on the regulations currently in force in the U.K. They now form a basis for building control in this country through the specifications of consulting architects and engineers. The requirements of SR 11 formally came into effect from April 1, 1989. Under the new regulations all structural timber should be stress graded and marked to the requirements of SR 11.