

EFFECTS OF TEMPERATURE AND WETNESS DURATION ON INFECTION OF WINTER OILSEED RAPE LEAVES BY *Pyrenopeziza brassicae* (LIGHT LEAF SPOT)

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Background and objectives

Light leaf spot, caused by *Pyrenopeziza brassicae* Sutton and Rawlinson (anamorph *Cylindrosporium concentricum*) is responsible for considerable yield losses in winter oilseed rape crops in the UK. A provisional version of a forecasting scheme based on disease survey data, which will guide farmers in taking spray decisions, has been produced [1]. To improve this forecasting scheme, more specific knowledge about effects of the environment on the development of light leaf spot epidemics is necessary. It is likely that epidemics are initiated by primary infections resulting from wind-dispersed ascospores and that further epidemic progress is mostly dependent on infections from splash-dispersed conidiospores. Therefore a better understanding of the criteria for infection for both spore types will provide useful information to improve the forecasting scheme. The effects on infection of leaf wetness duration and temperature and their interactions are being studied. Information is available about effects of leaf wetness duration on infection by conidiospores at 12 and 18°C [2], but these temperatures rarely occur during winter in the UK. The criteria for infection by conidiospores at lower temperatures have never been studied.

Materials and methods

Plants of winter oilseed rape (cv. Bristol) were grown in a controlled environment room at 16°C. After 3 weeks, the plants were divided between controlled environment cabinets at 4, 8, 12, 16, 20 or 24°C and inoculated with a conidiospore suspension (0.5×10^6 spores/ml) when they had 4 to 5 expanded leaves (GS 1.5). After inoculation, the leaves were kept wet for 6, 10, 16, 24, 36, 48 or 72 h. The latent period of *P. brassicae* was estimated for each leaf as the time from inoculation to first sporulation and the percentage leaf area with sporulation was estimated regularly.

Results and conclusions

Conidiospores of *P. brassicae* infected winter oilseed rape leaves at temperatures as low as 4°C. At the optimum temperature of 16°C, the percentage leaf area with sporulation was greatest and maximum sporulation was attained most rapidly. The latent period increased from 10 to 20 days as the temperature decreased from 16 to 4°C. At all temperatures, the percentage leaf area with sporulation was greater when the duration of leaf wetness after inoculation was longer. The minimum leaf wetness duration required for successful infection depended on the temperature. At 16°C, infections occurred with 10 h of leaf wetness, but at 4 or 8°C, 22 or 16 h of leaf wetness, respectively, were required for infection. The minimum leaf wetness duration for infection was greater at lower temperatures, because germination rates of conidiospores were smaller at lower temperatures. The criteria for infection by ascospores will be determined and compared with the criteria for infection by conidiospores.

References

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2. Figueroa L, Fitt BDL, Welham SJ, Shaw MW, McCartney HA, 1995. Plant Pathology 44, 641-54.