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Evaluation of Biological Components on the Infection of three Rose Varieties by *Peronospora sparsa* Berkeley under Controlled Conditions

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Abstract

Downy mildew is considered one of the most important diseases affecting greenhouse rose crops in the Bogota Plateau (Cundinamarca, Colombia). Under proper environmental conditions, rapid and hard to control epidemics of this pathogen may cause the total loss of a susceptible rose variety plantation, thus showing its importance to agriculture. In spite of this, no detailed research had been conducted on key aspects of the biology of this pathogen as it affects rose crops under Colombian conditions. Thus, the aim of this study was to investigate said biological aspects of *Peronospora sparsa* in rose under laboratory conditions, on samples of the pathogen collected from commercial crops in the Bogota Plateau. In order to determine the effect of temperature and light on spore germination, suspensions of the latter in water agar were poured into Petri dishes and incubated at 10, 14, 18 and 22°C and permanently in the light or darkness, or under 12 hour cycles of alternating light/darkness conditions. The latent period took place in detached leaves of cultivars Charlotte, Classy and First Red at detailed temperatures under a regular light/darkness regime. The effect of the interaction between temperature and light conditions on spore germination was found to be significant. Yet, the percentage of sporangia germination was significantly affected by temperature four and eight hours after incubation. Contrast analysis identified 14°C as an optimal temperature for spore germination, with a remarkable reduction at higher temperatures. However, this was not the case under darkness conditions, where the temperature increment did not cause a strong reduction in spore germination. Variety Classy showed the shortest latent period, whereas the longest one was observed in variety First Red. It can be concluded that higher temperatures favored pathogen sporulation. Latent period and sporulation intensity variations were temperature and variety specific.

Keywords: Downy mildew, pathogenicity cycle, roses