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Abstract

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Effect of light on perithecial production in homothallic *Neurospora* species.

Evidence suggesting that light may be required for perithecial production in homothallic species of *Neurospora* came two years ago from experiments of Stuart Brady on ascospore shooting. Subsequent determination of five homothallic *Neurospora* species show marked differences in their abilities to fruit under different light conditions. All five species fruit well on minimal medium at 25°C using an alternating light-dark regimen.

Perithecial production of *N. africana* (FGSC #1740), *N. dodgei* (FGSC #1692), *N. galapagosensis* (FGSC #2290) and *N. lineolata* (FGSC #1910) is drastically reduced either by continuous fluorescent light (about 1000 lux units) or by continuous dark. In contrast, all four species form a similar number of perithecia in an alternating 12 h light-dark regimen or in diurnal conditions. Cultures of the four homothallic species that produce few or no perithecia in continuous light (or dark) subsequently form numerous perithecia after exposure to an alternating light-dark regimen.

Another homothallic species, *N. terricola* (FGSC #1889), is, however, unaffected by light/dark conditions. Similarly, the pseudohomothallic, *N. tetrasperma* (FGSC #1270 and 1271), with both A and a strains inoculated simultaneously is also unaffected by light or dark. Light has no effect on fruiting of the homothallic *Sordaria macrospora* (Esser 1980, *Mycologia* 72: 619). However, in *Gelasinospora reticulispora*, exposures to both light and dark are necessary to induce perithecial formation (Inoue and Furuya 1970, *Development, Growth and Differentiation* 12: 141; additional references may be found in "The Filamentous Fungi", Vol. 3, Chapters 16 (G. Turian) and 17 (K.K. Tan), eds J.E. Smith and D.R. Berry, 1978. John Wiley & Sons, New York). These preliminary observations indicate that both light and dark influence perithecial

formation in some species, but not in others. Since perithecial production is significant for laboratory genetics as well as for the photobiology and ecology of Neurospora, observations should be extended to the four known heterothallic species. (Supported by Public Health Service Research Grant AI 01462.)

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