

Effect of Colored Shade Nets on Pepper Powdery Mildew (*Leveillula taurica*)

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The effect of colored shade nets with different shade intensities and qualities of irradiation transmittance on pepper powdery mildew was tested in mini-plots and field experiments. Leaf coverage by *Leveillula taurica* and leaf shedding due to the disease were more severe in the shade, by up to 275% and 70%, respectively, than in the open field. Leaf coverage by *L. taurica* symptoms and leaf shedding from plants grown under 25% shade black nets were higher, by up to 70% and 180%, respectively, than under 40% shade nets. The color of the shade nets affected the intensity of photosynthetically active (PAR), ultra-violet (UV), blue, red and far red radiations, the UV/blue light ratio, and percent PAR and UV transmitted. The various nets suppressed the disease differently. Black, blue-silver, green and red nets were associated with lower levels of disease in the field experiments. The red net was also superior in the mini-plots. The other results from the mini-plots were not similar to those from the field, probably reflecting more intensive epidemic development in the mini-plots. No interaction between net type and cultivar was found when two cultivars were grown under the nets. Yield was higher under nets than in the open; nevertheless, the yield from plants grown under the 40% shade black net was not higher than that of the plants under the 25% black net, despite the significantly lower levels of disease at the higher shade intensity. B-quality pepper yield was significantly higher in the plots covered by 25% shade. Yield differences between the different colored nets were also not well correlated with disease levels, probably due to factors negating the direct effect of the nets on the plants and their yield. Implementation of either 'friendly' (*Ampelomyces quisqualis* AQ10/ *Trichoderma harzianum* T39/ sulfur/ neem seed extract) or chemical (sulfur/ pyrifenoX/ Polyoxin AL/ myclobutanil/ azoxystrobin) spray regimes successfully reduced disease severity under the different nets. There was no interaction between net type and spray regime. Thus, growing sweet pepper under shade nets results in increased yields and also in higher powdery mildew severity. Disease is negatively associated with the rate of shading and is variably affected by the quality of light filtered through the different colored shade nets.

KEY WORDS: Alternation; biocontrol agent; biological control; *Capsicum*; integration; selective light filtration; sweet pepper.

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