D-37: Response of some phylloplane inhabiting micro-organisms to UV radiation

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Effect of increasing fluxes of ultraviolet radiation (UV-B: 280-320 nm) on some phyllosphere inhabitants of *Vicia faba* in the field was studied using UV filters to reduce UV-B fluxes and also in the laboratory using lamp sources to supply enhanced UV-B.

Young leaves were inoculated with *Sporobolomyces roseus* (pink yeast) or *Cryptococcus* spp (white yeast), or a 1:1 mixture before exposing plants to solar UV-B radiation. After exposure to sunlight, plants from all treatments were sampled and it was found that colonies of pink yeast were less numerous than those of white yeast in both monoculture and mixture under all screens. However, absolute numbers and the difference between pink and white yeast was much greater in the absence than in the presence of UV-B. Pink yeast was found to be less sensitive than white yeast when growing

colonies were exposed to similar doses of broad band UV-B radiation in the laboratory. Nevertheless, photo-reactivation mechanism was found to be present and more efficient in white yeast than pink yeast. *In vitro* studies in which pink yeast and white yeast were exposed to discrete waveband (approx.10 nm wide) of UV showed highest mortality at wavelengths less than 320 nm. Survival was almost zero at 290 nm or shorter wavelengths.

Germination and the germ tube growth of spores were determined by irradiating spores with UV-B in the laboratory. The germination of the uredospores of *Uromyces viciae-fabae* on agar was not affected by realistic doses of UV-B treatment whether irradiated in the beginning or in the middle of the first 6 h of the 24 h germination period. However, germ tube growth was affected when spores were treated with a similar dose of UV-B in the middle of the experiment. This indicated that intact pigmented spores were resistant to UV-B than their hyaline germ tubes. Neither germination nor germ tube growth was affected on the detached leaf surface when inoculated spores were treated with similar levels of UV-B. However, there was a tendency for the germ tube length to be lower on the UV-B treated leaves.

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