

population dynamics. Seed production and seedling colonization of gorse was significantly reduced by the insect under conditions of plant intra- and inter-specific competition. A synergistic weevil-plant competition effect during early gorse spread from the parental seed source was demonstrated. The insect also significantly affected the gorse seeds in the soil but seed-bank depletion was influenced more by plant competition.

Virulence of heterokaryons of *Fusarium oxysporum*

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Selection for increased virulence in *Fusarium oxysporum* is hindered by its lack of sexual recombination. In most organisms, genetic variability can result only from the sexual cycle. Nonsexual reproduction results in the procreation of individuals that are genetically identical to a single parent. This lack of sexual recombination can be overcome by the formation of heterokaryons and subsequent parasexual recombination. Pathogenic strains of *F. oxysporum* were isolated from papaver plants from Russia, Colombia, Thailand and the United States of America. Nitrate-utilization mutants were selected from representative isolates and paired on media containing nitrate as a sole nitrogen source. The virulence of resulting heterokaryons on host- and non-host species was determined and compared with the virulence of the parent isolates. Heterokaryons were screened for parasexual recombination by isolation of individual macroconidia and determination of nitrate utilization.

Phytoflagellates (Trypanosomatidae: Mastigophora): the pathogenicity of new plant diseases and their potential as biological control agents

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Phytoflagellates (Phytomonas: Trypanosomatidae) were described in plants of the families Euphorbiaceae and Asclepiadaceae at the beginning of the century. Since the 1930s, several acute diseases, which are connected with trypanosomatids, were registered in agricultural plants, notably, coffee, cassava, coconut, oil palm, tomatoes and many fruits. Bugs serve as vectors. Recently 13 species in the genus *Phytomonas* and many undetermined trypanosomatid flagellates were described from 10 families of plants. Representatives of *Phytomonas* species were found in Europe, India, Africa and America. During the last decade we have found phytoflagellates in Asclepiadaceae in central Asia, Caucasus and Israel. So the genus *Phytomonas* is widespread. It is likely that the milkweeds are the oldest plant-hosts of *Phytomonas* species. The association between non-milkweed plants and *Phytomonas* species are new parasite-host systems that usually are less common and very pathogenic. Therefore, it is reasonable to expect *Phytomonas* species to be useful as biological control agents of non-milkweed plants that are weeds.