segmented after extraction. The viruses occur as a persistent infection that can only very rarely be discerned. Only in *Ustilago maydis* and some yeasts is a virus-induced proteinaceous substance excreted, which affects sensitive cells. Those systems are therefore the most amenable to genetic and biochemical studies and have contributed to the understanding of the genetic organization of the fungal viruses and the expression of these viruses.

Viruses were recovered from isolates of 40 species of plant pathogenic fungi. The relation between the presence of the viruses and pathogenicity is unclear and confusing, particularly in view of the lack of understanding of the viral coded functions and the etiology of the viruses. However, some plant pathogenic fungi that contain viruses interact with other strains in a way suggesting their possible potential use for biological control of plant pathogens of the same and related species. Three systems of potential application are the causal agents of corn smut *(U. maydis)* and of chestnut blight, *(Endothia parasitica)*, and the soil pathogen *Rhizoctonia solani*. In *Ustilago* the cloning of the viral information coding from the toxin may enable the transformation of this information into various hosts and the expression of the viral function in plant cells, thus providing these cells with a new defense mechanism. The *U. maydis* toxin is effective against related species of the order Ustilaginales and therefore the *U. maydis* virus information may be applied against a range of plant pathogens within this order. The recovery of the chestnut trees occurred through the dispersion of hypovirulence, apparently by cytoplasmic transmission among strains of *Endothia* of viruses that suppress the virulent form of the pathogen. A similar situation was detected recently in *Rhizoctonia*. The prevalence of dsRNA among numerous fungal specimens suggests some regulatory role that confers a selective advantage. In the case of pathogenicity, the metabolic coordination between the host and its pathogen may convert parasitic relations into a form of commensalism. The occurrence of dsRNA in saprophytic forms may indicate the natural history of these forms.

EPIDEMIOLOGY, CROP DAMAGE, RESISTANCE AND CHEMICAL CONTROL UNDER FIELD CONDITIONS OF *PSEUDOMONAS TOMATO*, CAUSAL AGENT OF BACTERIAL SPECK OF TOMATO

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Under both controlled and field conditions, a relationship was found between climatic conditions and outbreak of bacterial speck disease of tomato. Disease outbreak occurred at high relative humidity, with free water on the foliage and temperatures between 13° and 25° C. A decrease in humidity and/or an increase in temperature led to arrest of the disease, but the renewal of favorable conditions enhanced it again.

Bacterial speck damaged tomatoes grown for the fresh market and also industrial varieties in winter and early spring, but not in late spring or summer. Infection of young seedlings caused losses of up to 75% of the total yield, whereas the losses in plants infected later were at most 25%. The damage caused to the fruits was minimal. The low pH of the fruit probably inhibits *Pseudomonas tomato* development. Tomato plants of cv. 'Rehovot 13' exhibited good field resistance to *P. tomato*. Cultivar susceptibility to infection was tested in the greenhouse and under field conditions, using infected tomato seeds, soils or inoculated leaves.

Control of bacterial speck was achieved with copper compounds [$Cu(OH)_2$ and $CuCl_2$-$3(OH)_2$] applied either before or after the appearance of symptoms. Such treatments, especially copper hydroxide (Kocide 101), reduced disease spread and severity but did not give complete control.