ing and advanced serological techniques have, in some cases, prompted a re-evaluation of relationships based on crossprotection studies ***(5)***. Further limitations to crossprotection in studying taxonomic relationships include the facts that in some pairs of related virus isolates, crossprotection operates in one order of inoculation, but not the reverse ***(6,7)***, and in some other viruses, crossprotection may not operate at all ***(8)***.

The potential for using a protective inoculation with a mild strain of virus as a disease-control measure against chance infection by a severe strain was recognized at an early stage ***(9)***, and as early as 1937 there was a report of further attenuation of a naturally occurring mild strain of potato virus Y by high-temperature treatment of infected root cultures ***(10)***. However, the potential for use of protective inoculations in crop protection was not rapidly taken up, and it was not until the late 1950s that mild strain protection was shown to be effective in a few crops under field conditions ***(11–13)***. Today, mild strain protection occupies a small and highly specialized niche in world agriculture's defenses against plant viruses. It is widely used on only a few crops, and generally other methods are preferred if available. However, there are instances in which it has been of great value in crop protection. This chapter will review the practice and application of crossprotection, its merits and drawbacks, and consider possible mechanisms.

2. Terminology

A wide variety of terms have been used to describe phenomena of the crossprotection type. These include "interference," "acquired immunity," "antagonism," "acquired tolerance," "premunity," "cross immunization," "induced resistance," and "acquired resistance." Fulton *(14)* makes the valid point that terms based on immunity are inaccurate, because they exaggerate the level of protection generally conferred. The term crossprotection is now widely accepted for cases in which the protecting virus spreads systemically in the host. The virus involved in a second infection may be naturally occurring and transmitted, or may be deliberately introduced for experimental purposes. It may normally cause systemic or necrotic infections in the absence of crossprotection. The second virus is frequently referred to as the "challenge" inoculation or infection, and occasionally as "superinfection."

A separate pair of interactions between sequential virus inoculations are known as "localized" and "systemic acquired resistance." These occur when a plant is first inoculated with a necrotic lesion-forming virus, which does not spread systemically. The plant then appears to be resistant to a challenge inoculation by a further lesion-forming virus, because the lesions formed, either on the primarily infected leaf, or on previously uninoculated leaves, tend to be smaller or less numerous than those formed on previously untreated plants