

wild-type control plants. If it does, there is a risk that the test may not recognize practical levels of resistance that are overwhelmed by excessive inoculum pressure. Plants should normally be inoculated when young, vigorously growing, and susceptible to infection, since older plants may not develop definitive symptoms and may acquire resistance to infection and systemic invasion. The method of inoculation should be based on the means of transmission of the particular virus in nature. Transgenic resistance effective against mechanical transmission has not always been effective against vector transmission (7).

3.3.3.3. VIRUS STRAIN SPECIFICITY TESTS

The purpose of this test is to determine whether a resistance selected for efficacy against the homologous virus is also effective against the major variants and strains of the same virus. This test is similar to the test for resistance to the homologous virus, but it is repeated for each of many different isolates or strains of the virus, and the data taken should be the same. To maintain a manageable size, only a few lines considered for commercialization should be included.

Virus strain specificity tests for quantitative characteristics cannot be conducted in the field in areas of high natural disease pressure mediated by mobile vectors. Contamination by natural exposure would compromise the data for any particular isolate or strain. It is a feasible field test if the virus is restricted to mechanical transmission. It is also a feasible test for a vectored virus, provided that the resistance is qualitative and the objective is to determine whether any isolate or strain of the virus, including those that might be introduced to the test by vectors, will break the resistance.

To prevent any possible interference by crossprotection reactions, it is important to preclude or limit infection from outside sources prior to and during the intentional inoculation with specific virus isolates. For this purpose, the plots may be covered with a floating net. Vectors viruliferous with the specific isolate for intentional inoculation are released under the net. The nets may be removed, exposing plots to natural exposure after an appropriate period for inoculation with the specific isolates. If there is a need to minimize exposure after the nets are removed, vector-control measures may be applied throughout the season.

3.3.3.4. NATURAL EXPOSURE TESTS

In natural exposure tests, the experimental plots are planted in a statistical arrangement and exposed to the viruses and vectors that occur in the region at the discretion of nature, with no effort to control the exposure. Ultimately, this is the test that resistance must survive, but there are serious disadvantages to this approach for rapid selection of resistance in the early stages of selection.