

Fifty plants of each mutant line were evaluated and checks were made three times in each season. A comparison of the currant tomato mutants with the standard tomato varieties demonstrates the better resistance (Table 1) shown by the mutant germplasm to the main pathogens. The degree to which some currant tomato mutants were affected by Verticillium was lower than that of the most Verticillium-resistant samples of tomato evaluated between 1975 and 1981 (Table 2). The mutants of currant tomato should therefore be of interest as germplasm in breeding tomatoes for improved multiple disease resistance.

(Contributed by G.f. Govorova, Krymsk Experimental Breeding Station of the N.I. Vavilov All-Union Scientific Research Institute of Plant-Growing, Krasnodar Region, Krymsk, 353330 USSR; V.V. Khrustaleva, V.K. Shcherbakov, Department of Radiation Genetics and Radiobiology, N.I. Vavilov All-Union Scientific Research Institute of Plant-Growing (Moscow Branch), Moscow Province, Domodedovo District, Zelenaya roshcha Post Office, USSR).



XA0201356

Mutant of Japanese pear resistant to Black Spot Disease

'Nijisseike' is one of the leading cultivars of Japanese pear (Pyrus serotinea Rehd.), but susceptible to black spot disease. Farmers try to prevent this disease by wrapping the fruit with a paper bag and by repeated spraying of fungicides. The disease is caused by a Japanese pear pathotype of Alternaria alternata (Fr.) Keissler. Susceptibility is controlled by a single dominant gene.

In 1962, grafted trees of this cultivar were planted at a distance between 53 and 93 m from the ⁶⁰Co source in the gamma-field (daily dose 15-4 rad). One branch on a tree planted at 53 m was detected as resistant in 1981. Under field conditions, black spots were observed on many fruits and leaves of the original trees by natural infection in early July, however, they were not observed on the mutant. To examine the resistance of the mutant, artificial inoculations were made using spores of the pathogen and the host specific toxin produced by germinating spores.

When some drops of the spore suspension are placed on leaves, the formation of black spots depends upon the leaf age. In a resistant cv. as 'Chojuro', black spot symptoms are formed only when inoculated on young leaves. An intermediate reaction was observed in the mutant, whereas the original 'Nijisseiki' showed severe symptoms. When inoculation was made on matured fruit skins, no black spot was formed on the mutant just like on the resistant cv. 'Chojuro', while many small black spots were formed and grew into large spots overlapping each other on the susceptible cv. 'Nijisseiki'.

In case of the crude toxin inoculation (4-0.04 ppm) of cv. Nijisseiki black spots were formed on the surface of the susceptible fruit skin, and necrotic lesions at the cut end of detached small pieces of leaves, although reaction on fruit skins was weaker compared with inoculation by spores. However, no symptoms were observed from the toxin application on the mutant and the resistant cv. 'Chojuro'. That the resistance of the mutant is classified as "moderate" could be due to a periclinal chimeric structure of the mutant.

[Excerpt from T. Sanada, T. Nishida and F. Ikeda, Technical News No. 29, Feb. 1986, Institute of Radiation Breeding, Ohmiya, Ibaraki-ken]