

Genetic Leaf Blotch of Peach and Nectarine

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ABSTRACT

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Genetic leaf blotch symptoms appear annually, in early summer, on mature leaves of certain peach and nectarine cultivars. The chlorotic blotches often develop irregular necrotic centers that dry and drop out. The disorder is not graft-transmissible and is concluded to be genetic rather than caused by a virus or other graft-transmissible agent.

Necrotic spots surrounded by irregular chlorotic areas were first observed in 1980 on mature leaves of peach (*Prunus persica* (L.) Batsch) seedlings in our breeding program. Symptoms were distinct from those of reported viral diseases of *Prunus* (5). Symptoms occurred only on mature leaves and were first visible in early summer. Leaves on some trees showed only light chlorotic areas, whereas those on other trees had more severe symptoms, with numerous shot holes and dark yellow to orange blotches (Fig. 1). Leaves were not distorted or wrinkled. Symptom expression was consistent from year to year and from tree to tree for a given genotype. Our objectives were to determine if the disorder was pathogen-induced, as by a virus, or of genetic origin and if the problem posed a threat to the peach industry.

More than 200 cultivars and selections of peach and nectarine (*P. p.* var. *nectarina* (Aiton) Maxim.) at Byron, Georgia, were evaluated for symptoms each year for 5 yr in midsummer, when symptom expression was most obvious. Transmission of the disorder was attempted: 1) by budding from two severely affected selections (BY79N1152 and BY79N1194) to three normal, symptomless Lovell rootstocks each and 2) by using, as rootstocks, 60 symptomatic seedlings of Transvaal Yellow peach budded to various symptom-free selections and cultivars.

Buds from symptomatic trees were June-budded onto branches of cherry (*P. serrulata* Lindl.) cultivar Shirofugen, a common indicator for stone fruit viruses, particularly Prunus necrotic ringspot (PNRSV) and prune dwarf (5). Leaf blade tissue from symptomatic lines was used in ELISA tests against PNRSV (3).

Nectarine cultivars Columbia, Cherokee, and Pocahontas were symptomatic at Byron and in commercial orchards in Georgia and South Carolina. Columbia and Pocahontas trees budded from virus-indexed scion wood from IR-2 (Prosser, Washington) also were symptomatic. Lexington and Mericrest nectarines and October Cling, Red English, Soliel d'Octobre, Tennessee Natural, and Transvaal Yellow peaches were symptomatic, as were seedlings of the peaches. No local commercial peach cultivars were symptomatic. Scions budded on Transvaal Yellow remained symptom-free, as did rootstock suckers of trees with symptomatic scions. Positive virus reactions were not correlated with symptom expression, although a few lines were ELISA-positive for PNRSV.

Hofman (2) reported a non-graft-

transmissible peach leaf blotch from Virginia that may be identical to ours, and Smith and Cochran (4) reported a noninfectious heritable leaf spot and shot hole on seedlings of Beauty plum. Fridlund (1) reported a chlorotic mottle of certain *Prunus* hybrids that apparently is genetic; symptoms were worse when air temperature was high. Several years of unusually warm summer temperatures at Byron may have made the leaf blotch symptoms more obvious. Even severe symptoms are easy to overlook, however, if the observer is looking at the fruit and if sunlight and wind cause varying patterns of light and dark on the leaves.

We conclude that this leaf blotch is genetic rather than pathological because it was not graft-transmissible, and we believe it poses no threat to the peach and nectarine industries in the southeastern United States.

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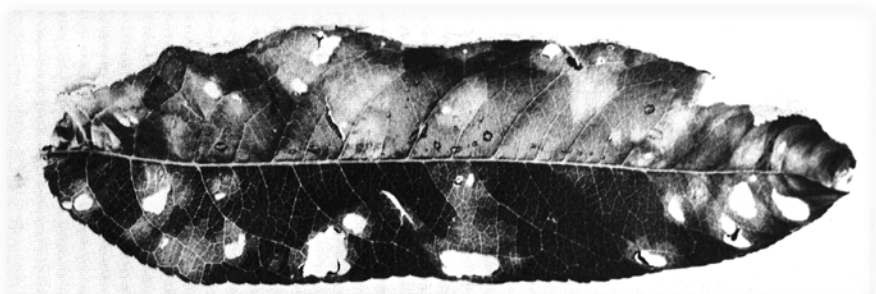


Fig. 1. Leaf of nectarine selection BY79N1152 with chlorotic blotches and shot holes, typical symptoms of genetic leaf blotch.

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