

A Review of Disease Resistance of Gisela Rootstock

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In the Mid-Columbia region of Oregon more than 70% of new cherry blocks are now planted on productive rootstocks such as the Gisela series from Germany. The same trend has occurred in most of the rest of the world, with Europe leading the way. With these new plantings there is a need to learn more about the disease and cold resistance of the Gisela rootstocks. At the 5th International Cherry Symposium Dr. Sabina Franken-Bembenek presented a review of recent work on disease resistance and Dr. Terrance Robinson et al discussed the hardiness of selected cultivars on Gisela rootstocks.

In many of the wetter production areas bacterial canker, caused by *Pseudomonas syringae*, has been a problem. Grower experience suggests that Gisela rootstocks cause greater susceptibility to this pathogen. Thornton and Nugent, 2002 verify that trees on Gisela rootstocks exhibit increased susceptibility to *Pseudomonas* in the orchard. However, Azarenko and McCluskey, 1998 found that mature Gisela trees exhibited tolerance to infection.

Crown Gall caused by *Agrobacterium tumefaciens* can infect young trees planted in infested soil resulting in weak growth and branch dieback. In contaminated soil, Schmidt, 1989 found that 7-year-old grafted Gisela 5 and 6 trees were not infected, whereas trees on *Prunus avium* F12/1 were heavily infected.

Proffer et al., 1988 found that inoculated 1-year-old ungrafted Gisela 6 plants were susceptible at a similar level as mahaleb to *Armillaria mellea*. In the Mid-Columbia, young trees often become infected with this fungus when planted into soils previously populated with infected native oak trees. Young trees often collapse as the weather turns hot in the spring or early summer and further investigation reveals the presence of fan shaped white mycelia enveloping the roots. This fungus can be found throughout much of the world. Gisela 12 was more susceptible than Gisela 6.

Nematodes can cause reduced tree vigor in both replant situations and mature orchards.

Ungrafted, unstressed 1-year-old Gisela 6 plants demonstrated some resistance to *Pratylenchus penetrans*, the root lesion nematode (Melakeberhan et al., 1997). According, to Pinochet et al., 2003 inoculated young ungrafted Gisela 5 plants were moderately resistant to *P. vulnus*. Both species cause damage to cherry trees in the Pacific Northwest.

Cold weather areas such as New York give ample opportunity to test the cold hardiness of rootstocks and their affect on various cherry varieties. Robinson et al., found that winter damage in January affected Gisela 6 trees more than Gisela 5. In addition, buds of 'Regina' grafted onto Gisela rootstocks survived well, whereas buds of 'Sweetheart' and 'Lapins' survived poorly.

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