Sweet Cherry Trees on Gisela 6 Rootstock Significantly Larger Than Those Grown on Gisela 5 in Massachusetts

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About ten years ago, the introduction of the Gisela series of dwarfing rootstocks for cherries presented growers an alternative to large cherry trees. In southern New England, the option of using these rootstocks in Pick-Your-Own or direct-market orchards is attractive. Gisela 5 (G.5) and Gisela 6 (G.6) are the two most widely available Gisela rootstocks. G.6 is reported to be about 70% of the standard (Mazzard) in tree size, whereas G.5 was reported to be 40-50%. But, there has been little or no field tests of these rootstocks in New England to date. So, in 2001 a sweet cherry orchard was planted at the UMass Cold Spring Orchard Research & Education Center in Belchertown, MA with several objectives: 1) compare the overall size of cherry cultivars grown on Gisela 5 (G.5) vs. Gisela 6 (G.6) rootstocks after five growing seasons; 2) determine if cultivar made a difference in tree size on G.5 or G.6 rootstocks; and, 3) observe yield and fruit quality of the cherry cultivars in the planting

Tree growth data have been collected from planting through 2006 and the results are presented in this article. Fruit quality characteristics will be discussed in a subsequent article. Accurate yield data have been difficult to collect for several reasons, but will be addressed briefly here as it apparently relates to rootstock.

Materials & Methods

Although a total of sixteen different cherry cultivars were planted, the four specific cherry cultivars used in making the rootstock comparison for tree size include Regina, Rainier, Chelan, and Jubileum. Jubileum is actually a tart-sweet cherry, resembling a tart cherry more than a sweet cherry in growth habit. One tree of each cultivar was planted on G.5 or G.6 rootstock in a split-plot experimental design with five replications. Trunk circumference (at 30 cm, above the graft union)

Table 1. Trunk cross-sectional area in 2005 and 2006 and tree height and canopy spread in 2005 of cherry trees on G.5 and G.6 rootstocks.

	2005			2006
Rootstock	Trunk cross-sectional area (cm^2)	Tree height (m)	Canopy spread (m)	Trunk cross-sectional area (cm^2)
G.5	55	3.1	2.5	68
G.6	116	3.6	3.2	138

Table 2. Trunk cross-sectional area in 2005 and 2006 and tree height and canopy spread in 2005 of four cherry cultivars.

Rootstock	2005 Trunk cross-sectional area (cm^2)	2005 Tree height (m)	2005 Canopy spread (m)	2006 Trunk cross-sectional area (cm^2)
Regina	57 a	3.2	2.7 ab	72 a
Rainier	73 ab	3.5	2.6 a	82 ab
Chelan	83 b	3.3	2.7 ab	99 ab
Jubileum	129 c	3.5	3.3 bc	159 c

*Means within columns not followed by the same letter are significantly different at odds of 19 to 1.

was measured at planting and subsequently at the end of each growing season. Tree height and canopy spread were measured in 2005 (fifth leaf). The trees started cropping in 2004, and some yield data were collected in 2005 and 2006 by either measuring whole-tree yield, or sometimes just from individual branch(s). Yield data have been inconsistent and difficult to track accurately, given the problem of harvesting the crop on a timely basis and loss of crop to birds and cracking.

Results

Results of tree growth data are presented in Tables 1 and 2. Indeed overall, tree size of G.6 was significantly larger than G.5 (Table 1). In fact, G.6 was almost twice as big as G.5 in trunk cross-sectional area (TCA). The difference in height and spread were not as great, because they were affected by pruning.

The rootstock effect did not vary with cultivar, however, cultivar affected tree size (TCA) (Table 2). Jubileum was the largest tree, followed by Chelan and Rainier, which did not differ . Regina, was smaller than both Chelan and Jubileum but not Rainier.

Casual observation suggests that fruit yield approximately followed tree size, i.e. greater tree size equals greater yields. This suggest G.6 may be as yield-efficient as G.5, but that is not a given.

Results of this study shows that G.6 clearly produces a larger cherry tree than G.5 (about twice the size) in southern New England, and growers contemplating planting cherries need to take this effect into account when planning their orchard.

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