Peach Rootstock Trials at Geneva: A Progress Report

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The severe winter weather of 2004 and 2005 caused the death of many peach trees in Western New York, but it gave us an opportunity to evaluate the hardiness of several new peach rootstocks. There are at least two new interesting dwarfing stocks that are showing greater hardiness than 'Lovell' and are more size controlling than either 'Bailey' or 'Lovell'.

'Lovell' and 'Bailey' peach seedling rootstocks remain the recommended stocks for both peach and nectarine orchards in New York State. This remains true in spite of three separate, ten-year long experiments where we have tested over 40 other candidates. However, there is new hope! New results from the 2005 season (when severe winter cold hammered our 2002 planted Cresthaven rootstock experiment) gave rise to signs that there are at least two other interesting options. Two dwarfing stocks are showing that they possess hardiness that surpasses that of 'Lovell' and are more size controlling than either 'Bailey' or 'Lovell'. These two dwarfing candidate rootstocks are: 'Krymsk 1' (=VVA 1, Russian origin), and 'Controller 5' (K146-43 from University of California). Our results are preliminary and we need a couple of milder winters so that we can better judge their yield capacities.

2001 NC-140 National Peach Rootstock Trial

The national fruit-tree rootstock testing group, known as the NC-140 project, has continued to test new peach rootstocks from all over the world. A national peach rootstock trial, not planted at Geneva, is showing some significant differences in dwarfing and yield. In Utah and New Jersey the most vigorous rootstock has been 'Cadaman', followed by 'Lovell', 'BH-4', 'Slap', 'SC17', 'Pumiselect', 'Hiawatha', 'Bailey', 'Controller 9' (=P30-135), 'K146-44', 'Controller 5' (=K146-43), 'Jaspi', and 'Krymsk 1' (=VVA 1). The two Controller stocks and the elite K146-44 all originated from a joint breeding project of the University of California and the USDA-ARS. In both Utah and New Jersey, 'Bailey' has had the highest cumulative yield efficiency after two years of fruiting.

2002 NC-140 National Peach Rootstock Trial at Geneva

The latest trial was planted by the NC-140 group at Geneva in the spring of 2002 and has Cresthaven as the scion variety. It has several promising new stocks from Russia, Europe and California. The planting experienced severe winter cold damage in January 2004 and again in January 2005. We lost all of the flower buds in each of those years, and there was also extensive wood damage and tree death from the cold. Although the trial is too young to make any final conclusions some of the early clues on hardiness and dwarfing are very interesting.

The most vigorous stock in this planting was 'Lovell' followed by 'Adesto', 'Cadaman', 'MRS 2/5', 'Penta', 'Pumiselect', 'Controller 5', 'Krymsk 1' and 'Krymsk 2' (Table 1). The last three stocks were about 65-70% as large as 'Lovell'. Following the two severe winters in 2004 and 2005, the trees with

Figure 1. The semidwarf peach rootstock 'Controller 5' is in the foreground and the standard peach rootstock 'Lovell' is in the background.

TABLE 1

Tree Size and Hardiness of Cresthaven Peach on Several Rootstocks after 4 years at Geneva, NY. (2005 data)

Stock	Trunk Circ. 10/2005 (cm)	% Live Trees 10/2005	% of Bearing Surface Still Functional 10/2005
Lovell	27.1	75	44
Adesto	26.6	25	19
Cadaman	26.1	63	40
MRS 2/5	25.5	13	9
Penta	24.4	38	31
Pumiselect*	22.3	75	70
Controller 5**	19.3	88	87
Krymsk 1 (=VVA1)	19.2	88	86
Krymsk 2 (=VSV1)	17.0	50	45

* Pumiselect has weak anchorage and needs a trellis.

**Controller 5 trees were planted only in adjacent guard rows outside the 2002 NC-140 Peach Rootstock Trials.

the greatest survival rate and the greatest percentage of functional canopy were 'Controller 5' and 'Kyrmsk 1' followed by 'Pumiselect', 'Lovell', 'Cadaman' and 'Krymsk 2'. The other three stocks ('Adesto', 'MRS 2/5' and 'Penta') all had less than 40% survival. Although 'Lovell' had relatively good survival, the canopy was largely non-functional. 'Pumiselect' had good survival with a good canopy, but it had poor anchorage and is likely too weak to resist wind storms. It will need a trellis if planted commercially.

2002 Nectarine Rootstock Trial

We planted another peach rootstock trial in 2002 with 'RosePrincess' nectarine to answer the question whether nectarine scion cultivars perform differently than peach with several new peach rootstocks. This trial compared 'Cadaman', 'Penta', 'Ishtara', 'Jaspi', 'Krymsk 1', and 'Mariana' GF 8-1 rootstocks. 'Ishtara', 'Cadaman' and 'Penta' were the three most vigorous stocks – all three with significantly greater trunk cross-sectional area than 'Jaspi', 'Krymsk 1', and 'Mariana GF 8-1' in descending order of vigor. Almost half of the 'Mariana GF 8-1' trees died within four seasons and we suspect that this stock is probably incompatible with the 'RosePrincess' scion. The behavior of the 'Ishtara' stock in this trial was quite different from what we saw in an earlier trial with 'Redhaven' Peach which was planted in 1994. In that trial 'Ishtara' was one of the three least vigorous stocks among 19 other stocks.

Summary

For the immediate future, 'Lovell' and 'Bailey' peach seedling rootstocks remain the recommended stocks for both peach and nectarine orchards in New York State. Two new dwarfing stocks ['Krymsk 1' (=VVA 1, Russian origin), and 'Controller 5' (K146-43 from University of California are showing that they possess hardiness that surpasses that of 'Lovell' and are more size controlling than either 'Bailey' or 'Lovell'. We have also found that some peach and nectarine cultivars are graft incompatible with some of the peach and plum rootstocks in our trials.

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