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EVALUATION OF COMPATIBLE AND OREGON BARTLETTS ON QUINCE

A number of pear trees planted in Oregon, and even in California, are grafted on Provence Quince (Q) (Lapage series C and BA-29) and Angers Q 'A'. Quince, although compatible only on Anjou and Cornice, has given a precocious bearing tree with uniform growth and with some tree size control of a semi-dwarf tree. Quince roots thrive best on well-drained heavy to medium texture soils, but are susceptible to winter damage, lime induced chlorosis, fireblight infection and "wet feet." The bud union should be kept two-three inches above the ground level to prevent scion rooting, but high worked quince produces a limber tree which is difficult to support. Incompatible varieties, such as 'Bartlett' and 'Bosc', are usually grafted on an 'Old Home' or 'Hardy' sandwich interstock on quince root. However, these have certain disadvantages because some tree size control is lost. Also, 'OH', although resistant to fireblight, is susceptible to bacterial canker infection and both have been 'dirty' with vein yellows virus. Dr. Ron Cameron of OSU now has a clean source of 'Hardy'.

Few 'Bartlett' trees have been propagated on quince in Oregon and California because of the expense of the double graft and because the variety on most rootstocks is quite precocious. However, two 'Bartlett' sources from Europe have supposedly been found to be more compatible and, therefore, a trial was established in 1968 to evaluate the performance of these two Swiss and French sources, on two quince rootstock, Prov. Q and Q'A' in comparison with the Oregon Bartlett (OP-9) with and without 'OH' interstock. Two other rootstocks were included in the study, 'OHx F#97' as a standard clonal *P. communis* rootstock and self rooted Bartlett (OP-9) for a semi-dwarf tree.

After the 7th year, compatibility of the three 'Bartletts' on the two quinces indicated that the Swiss source was the most compatible (95% of the trees were still on the quince) while OP-9 at 81% standing was better than the French at 63%. In fact, the Swiss source was as compatible as OP-9 with an 'OH' interstock. However, OP-9 on OHxF#97 was completely compatible at 100%.

Comparing the accumulated yield for the first four years of bearing, we found that the OP-9 on the two quinces and on OHxF#97 had the largest yield. The yields of both compatible Bartletts were considerably lower than the Oregon Bartlett. Also, the 'OH' interstock reduced the yield of the Oregon Bartlett from 1.25 boxes to 1.09 boxes.

Evaluation of size control was based on the cross sectional area of the trunk in 1975 because of its relationship with tree size. You will note that French Bartlett on quince was the smallest (17 cm^o) with the Oregon pear on the quince slightly larger than 22 cm^o. These two combinations were only half the trunk area of the standard sized trees on OHxF#97. 'OH' interstock increased the trunk area of trees on quince rootstock.

We were also interested in the yield efficiency (yield per tree area) of these scion-rootstock combinations which can be evaluated by dividing the cross sectional trunk area into the accumulated yield. The yield, in this case, has been converted to kilograms to use the metric system for simplicity. Comparing yield efficiency of these combinations indicated the advantage of using quince as rootstock because the two *P. communis* rootstock had the lowest. But, among the 'Bartlett' scion sources, the OP-9 had by far the greatest efficiency, about 70% greater than for Swiss and French. OP-9 with an 'OH' interstock had a greater efficiency than the two compatible 'Bartlett' sources without an interstock, although 'OH' reduced the yields.

It has been clear in this evaluation that the performance of the Oregon 'Bartlett' (OP-9) is far superior to the Swiss and French compatible sources on quince rootstocks. Only the Swiss source appears to be more compatible than the OP-9, but it lacks complete compatibility. Therefore, a physical support such as a wire and post system or a single post at each tree should be used to prevent breaking of the graft union on all 'Bartlett' quince combinations but particularly when using OP-9 direct on quince in order to take advantage of its superior performance.

Table 1. Performance of compatible and Oregon (OP-9) 'Bartlett' pear trees on quince for a semi-dwarf tree in relation with 'Bartlett' on two *P. communis* clonal stocks.

Bartlett/Rootstock	Compatibility (% trees standing 1975)	Accumulated yield 1971-75 (boxes/tree)	Cross-sectional trunk area 1975 (cm^2)	Yield efficiency 1975 (kilograms of yield/cross sectional trunk area in cm^2)
Swiss Comp./Prov.Q.& Q'A'	95	1.0	28	0.61
French Comp./Prov.Q.& Q'A'	63	0.6	17	0.64
OP-9/Prov.Q. & Q'A'	81	1.3	22	1.01
OP-9/'OH'/Prov.Q. & Q'A'	92	1.1	27	0.74
OP-9/OHxF#97	100	1.3	44	0.53
Self-rooted OP-9	100	0.9	28	0.56

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