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Summary

Highbush blueberries are a promising new crop and can be successfully grown in southern Illinois to supply wholesale fresh markets.

Recommended varieties for trial in commercial plantings in southern Illinois, in order of season of maturity

are: Bluecrop, Berkeley, Jersey, Herbert and Burlington.

Literature Cited

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Performance of Apple Varieties on Various Roots and Interstocks*

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A size-controlled root and interstock orchard was planted at the Howell Hort. Field Station, Ogden, Utah, in March, 1956. The trees were planted on a uniform, Iron-ton silt loam, which is moderately well drained, highly calcareous, with a pH of 7.8-8.0. The planting distances used were 17.5×20 feet, except for the trees on East Malling IX (EM IX), which were planted 6×18 feet, and attached to wire trellises. The soil has been clean-cultivated, and the trees lightly pruned, and adequately irrigated.

The rootstocks involved in this study are EM II, VII and IX, Columbia (Canadian), and Hopa (from South Dakota). Interstocks include Clark (believed by some to be identical to EM VIII), Robin, O-524 (from Ot-tawa), EM VII and IX, Bud sports Delicious, Golden Delicious, McIntosh, Jonathan and Winesap are the

scion varieties.

The trees are in one block, but are in non-replicated plots. In most cases there are three to five trees with the same variety / interstock / rootstock combination, although in some instances only two trees are alike. The trees have been fertilized annually, with all trees receiving the same quantity of fertilizer except those on EM IX, which received smaller applications because of their smaller size.

The tree growth and yield have been determined each year; however, yields have fluctuated due to spring frosts, which killed most flowers in 1961, and a large number in 1963.

Tree Growth

Rootstocks. Trees on EM II and VII rootstocks show approximately the same trunk circumference and width; however, those on EM II are a foot taller (see Tables 1 and 2). The vari-

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The orchard was planted under the supervision of Dr. R. A. Norton, formerly at Utah State, and now supt. of NW-Wash. Exp. Sta., Mt. Vernon, Wash.

Table 1. Trunk circumference of apple scions grown on different root and interstocks. Trees planted March, 1956, and measured August 28, 1963. Measurements taken 12 inches above ground and recorded in tenths of a foot.

Rootstock	Interstock	Red Delic.	Golden Delic.	McIntosh	Rome Beauty	Jonathan	Winesap	Mean
Hoppa	Clark		.84			.79		.82
Columbia	Clark	1.22 ^a		.82	.69		.96	.92
	Robin			1.58	1.19		1.52	1.43
	O-524	1.36		1.41	1.24		1.56	1.39
	EM VII	1.42		1.57	1.17		1.32	1.37
	EM IX	1.51		1.52	.76		1.26	1.26
IX	Red Delic.	.66		.58				.62
	Golden Delic.	.66						.66
	Jonathan	.65	.66					.66
	No Interstock	1.02	.96			.72		.90
VII	No Interstock	1.24	1.25	1.38		1.17		1.26
II	No Interstock	1.24	1.26					1.25

^aMean of three to five trees in most cases.

Table 2. Height of apple trees grown on different root and interstocks. Trees planted March, 1956, and measured November, 1963. Data recorded in feet.

Rootstock	Interstock	Red Delic.	Golden Delic.	McIntosh	Rome Beauty	Jonathan	Winesap	Mean
Hoppa	Clark		9.2			9.0		9.1
Columbia	Clark	15.0 ^a		9.5	8.3		11.5	11.1
	Robin			18.0	13.5		15.2	15.6
	O-524	14.3		15.5	14.0		16.0	15.0
	EM VII	16.7		16.0	11.3		14.0	14.5
	EM IX	15.3		17.5	10.0		14.3	14.3
IX	Red Delic.	12.9		7.5				10.2
	Golden Delic.	9.4						9.4
	Jonathan	10.7	10.2					10.5
	No Interstock	11.0	9.5			9.5		10.0
VII	No Interstock	14.0	14.8	16.0		13.5		14.6
II	No Interstock	16.3	15.1					15.7

^aMean of three to five trees in most cases.

eties on EM II and VII, without an interstock, are larger trees for their age than trees of the same combination reported from other areas. The Columbia root, in combination with the Robin, O-524, EM II and VII interstocks, has produced trees similar to EM II and VII without interstocks. These trees have also gotten larger than was expected, and approach the size of trees on seedling roots. It ap-

pears that a 17.5 × 20 ft. planting distance will not provide, in the future, enough space for orchard equipment, with some of these trees.

Hopa and Columbia rootstocks with Clark interstocks show restrictions. These trees show the same height as those on EM IX rootstocks, but have a greater spread. Trees on EM IX and those with Clark interstocks are five

to six feet shorter than most of the other trees. The EM IX trees, planted six feet apart in the row, have formed a hedge, with their branches interlaced.

Interstocks. The Clark interstock has surpassed growth more than any of other interstocks. Most of the Clark/Columbia and Clark/Hopa trees are similar in size to the trees on EM IX roots. Only small differences are evident among the varieties on Robin, O-524, EM VII and IX interstocks. The latter two have slightly less growth than the others.

The EM IX interstock produced much larger trees than when it was used as a rootstock. The EM IX interstock produced trees as large as those with the EM VII rootstock.

Delicious, Golden Delicious and Jonathan interstocks on the EM IX rootstock have resulted in trees with smaller trunk diameter and spread of the top (although of comparable height), than those on EM IX rootstocks, without interstocks.

Scion Variety: In general, the Rome Beauty trees are smaller than the Delicious and McIntosh trees on similar rootstock and interstocks. The Winesap trees are intermediate. Only a few comparisons can be made with Jonathan and Golden Delicious trees, but they are, on the average, the same size as the Delicious trees.

Trunk Growth: Most of the interstocks and scions have grown at the same rate, resulting in a smooth graft union. The Clark and EM IX interstocks, however, grew more rapidly than the scion, producing an interstock overgrowth. The Robin interstock, on the other hand, grew slower than the scion, resulting in a growth restriction.

Limb Breakage: No trunk or limb breakage has occurred which could be

associated with a particular rootstock, interstock, or scion variety.

Fruiting

In 1958, the third growing season for the orchard, 9 out of 13 Rome Beauty, 9 out of 15 Winesap, 2 out of 6 Golden Delicious, and 5 out of 17 McIntosh trees fruited. No Delicious trees fruited the third year. The size of all fruit during 1958 was $2\frac{1}{2}$ " to 3" diameter. Rootstock and interstock influence on fruiting was not observed in 1958.

A definite trend was established in the second year of fruiting. The Clark interstock trees produced the largest crops, followed by EM IX rootstock and EM VII and IX interstock trees. The Winesap and Golden Delicious trees produced the most fruit, averaging 12 pounds per tree. Only a few Delicious fruit developed in 1959.

In 1962, the Winesap trees on the Columbia rootstock produced up to 8 bushel of fruit per tree. The Delicious and Golden Delicious on the larger trees produced up to 6 bushel per tree in 1962 and 1963. The Delicious trees on EM IX rootstock averaged a bushel-and-one-half per tree in 1963.

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N.Y. 981 is a European type plum from New York which appears promising in Massachusetts. It is a large, attractive, purple plum of high quality, which ripens in early September.

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The editor recently observed that fruit from seven year old trees of spur-type Delicious apple sports show much limb rub, because of the way they lay against the very upright limbs of the young trees of these varieties.