Yields of Native Clones of Lowbush Blueberry under Cultivation

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The production of fruit of the lowbush blueberry (*Vaccinium angustifolium* Ait.) in Maine and in the Atlantic Provinces of Canada is based on native plants growing in their original location. These plants are encouraged to yield greater crops of fruit through burn-pruning and weed control. Attempts have been made in Minnesota (4), West Virginia (5) and in Maine (8) to breed elite lowbush blueberry cultivars. In Minnesota and West Virginia, interest seems to have been lost, while in Maine, the emphasis seems to have been turned, at least in part, to breeding more winter-hardy highbush types (7).

At this point one should distinguish between highbush and lowbush blueberry management practices. The difference lies not so much in the desired height of the bushes as in the method and degree to which they are pruned. Lowbush blueberries are typically burn-pruned by either oil burners, or by straw which was spread the previous autumn. The object is to prune the plants back to ground level and consequently the grower obtains only one crop every two years. Undoubtedly, the fire every second year is very important in reducing the incidence of insect and disease pests. The highbush type, however, is typically hand-pruned every year in an attempt to maintain vigor, to achieve a balance between fruit and foliage, and to maintain relatively new wood on the above ground parts. It is not unusual for highbush cultivars to have lowbush species in their family tree (7). The reciprocal case is rare or non-existent.

Our program of lowbush blueberry improvement started in 1963. Between then and 1968, we selected nearly 1000 lowbush blueberry clones from commercial fields at the approximate rate of one selection per 200 native clones examined. Rhizome cuttings of the selections were brought to Kentville, and the clones were subsequently established in a transplant garden. Since their establishment, we have engaged in a continuous program of clonal evaluation. Three of the clones have now been named and released (3, 2, 6), and approximately 800 have been discarded as of no further value.

Part of the evaluation consisted of replicated fruit yield trials. Four trials each consisting of 5 replicate 12-plant plots, were set up and evaluated. Plots were burn-pruned biennally for the most part and the fruit hand-picked. Fruit yields are given as metric tons per hectare (Table 1) and berry size as milligrams per berry (Table 2).

A breeding program utilizing select native clones of the lowbush blueberry as parental material was initiated in 1967. Including the crosses made in 1977 for field planting in 1978, we have so far grown over 45,000 hybrid seedlings. A total of 229 of these have been selected for further evaluation, but none has as yet been named.

Generally, when seedlings were transplanted to the field they grew as vigorously and produced about as well as plants derived from rooted stem cuttings. Moreover, the seedlings had a more spreading type of growth than the rooted cuttings (1) and they produced more rhizomes. We, therefore, included 3 lowbush progenies in our 1971 replicated yield trial and 4 such progenies in our 1972 trial (Table 1).

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Table 1. Lowbush blueberry fruit yields (metric tons/hectare).

I Planted 1969 — Sheffield Farm

Clone	1970	1971	1973	1975	70 + 71 + 73
382	.19 de	1.75 cde	1.13 def	—	3.08 cd
399	.12 e	1.22 de	1.68 cde	—	2.66 cd
439	.42 cd	2.18 bcd	.68 ef	—	3.28 cd
451	.79 a	3.51 ab	2.19 bcd	—	6.49 ab
510	.48 bc	3.51 ab	2.34 bcd	13.68 abc	6.32 ab
521	.38 cde	2.82 abc	1.74 cde	—	4.93 bc
559	.40 cde	3.14 ab	2.32 bcd	11.88 bc	5.85 b
560	.20 cde	1.34 de	.23 f	—	1.78 d
564	.40 cd	3.03 abc	2.46 abcd	—	5.89 b
Augusta	.69 ab	4.04 a	3.78 a	14.48 a	8.52 a
ME3	.41 cd	3.16 ab	3.23 ab	14.11 ab	6.79 ab
NB3	.12 e	.59 e	2.60 abc	11.47 c	3.09 cd
340	.12	1.59	—	8.05 d	—
Chignecto	.50	2.36	—	13.40 abc	—
524	.08	1.29	—	—	—
532	.24	1.64	—	—	—
Mean	.38	2.52	2.03	12.44	4.89

II Planted 1971 — Sheffield Farm

Clone	1973	1975	1977	73 + 75 + 77
259	.08	3.04 def	6.04 def	9.16 f
393	.06	3.54 cdef	7.20 cdef	10.81 def
494	.40	2.05 ef	5.89 ef	8.34 f
698	.12	5.66 bcd	4.53 fg	10.31 ef
718	—	1.07 f	1.83 g	2.90 g
Augusta	1.34	4.72 bcde	9.79 abc	15.86 bcd
ME3	.63	10.33 a	9.03 abcd	19.99 ab
ME4161	1.11	10.21 a	11.80 a	23.12 a
NB3	—	6.90 b	10.77 ab	17.68 bc
097 x 674	.47	6.08 bcd	8.42 bcde	14.96 bcde
680 x 670	.25	6.33 bc	10.03 abc	16.60 bc
Brunswick x 682	.72	7.84 ab	4.74 fg	13.30 cdef
Mean	.43	5.65	7.51	13.58

III Planted 1972 — Sheffield Farm

Clone	1974	1976	74 + 76
69-1	.09	9.29 bc	9.38 bc
70-21	.06	15.08 a	15.14 a
70-27	.08	8.63 bcd	8.71 bcd
70-28	.09	12.25 ab	12.34 ab
70-36	.06	14.94 a	15.00 a
70-42	.10	5.08 cd	5.18 cd
70-56	.08	3.42 d	3.50 d
70-64	.05	10.36 abc	10.41 abc
70-21 x ME4161	.10	8.04 bcd	8.14 bcd
70-27 x 70-40	.07	3.56 d	3.63 d
70-32 x 70-28	.06	6.00 cd	6.06 cd
ME2827x 70-64	.06	5.82 cd	6.88 cd
Mean	.08	8.54	8.62

Table 1. Cont'd

IV Planted 1973 — Sheffield Farm

Clone	1975	1977	75 + 77
648	2.28a	3.26 def	5.54 cd
662	2.01 a	1.74 fg	3.74 de
679	2.36 a	5.55 bc	7.91 abc
704	1.96 a	4.55 cde	6.51 bcd
718	0.96 bc	0.44 g	1.40 e
736	1.01 bc	0.97 g	1.98 e
740	0.64 c	0.60 g	1.23 e
794	0.98 bc	0.76 g	1.75 e
70-21	1.50 abc	2.48 efg	3.97 de
70-24	2.14 a	5.19 bcd	7.33 bc
70-27	2.14 a	8.15 a	10.29 a
70-28	1.96 a	6.17 abc	8.13 abc
70-32	2.01 a	5.58 bc	7.59 abc
70-36	1.72 ab	7.04 ab	8.76 ab
70-40	2.00 a	5.12 bcd	7.13 bc
70-46	0.96 bc	4.44 cde	5.40 cd
Mean	1.67	3.88	5.54

Table 2. Lowbush blueberry berry size (mg/berry) — Sheffield Farm

Clone	1973	1975	Clone	1975	1977
382	304 cd	—	648	384 de	360 g
399	392 bc	—	662	284 f	528 cdef
439	392 bc	—	679	364	528 cdef
451	208 d	—	704	440 bcd	592 abcde
510	464 b	396 bc	718	432 bcd	552 bcdef
521	408 bc	—	736	372 def	592 abcde
559	304 cd	420 abc	740	416 bcd	512 def
560	360 bc	—	794	404 cd	624 abcd
564	392 bc	—	70-21	412 bcd	432 fg
Augusta	704 a	497 a	70-24	506 ab	656 abc
ME3	344 c	448 ab	70-27	576 a	584 abcde
NB3	344 c	424 abc	70-28	428 bcd	688 ab
340	315 cd	364 c	70-32	496 abc	688 ab
Chignecto	295 cd	354 c	70-36	544 a	704 a
524	315 cd	—	70-40	412 bcd	440 fg
532	373 bc	—	70-46	311 ef	480 efg
Mean	368	415	Mean	424	560
69-1	522 ab	936 a	259	636 a	728 abc
70-21	778 a	688 bcdef	393	668 a	800 ab
70-27	752 a	800 bc	494	588 ab	712 abcd
70-28	560 ab	808 b	698	712 a	552 cde
70-36	624 ab	784 bcd	718	456 cde	664 bcd
70-42	528 ab	672 cdef	Augusta	644 a	672 bcd
70-56	480 b	608 efg	ME3	492 bc	680 bcd
70-64	679 ab	584 fg	ME4161	383 cde	888 a
70-21 x ME4161	536 ab	536 g	NB3	484 bcd	528 de
70-27 x 70-40	588 ab	592 fg	097 x 674	408 cde	448 e
70-32 x 70-40	480 b	728 bcde	680 x 670	364 de	520 de
ME2827 x 70-64	581 ab	656 defg	Brunswick x 682	340 e	472 e
Mean	592	699	Mean	515	639

While none of the hybrid progenies has been really outstanding, their performance on the whole has been as satisfactory as that of the average clonal line. Further tests on this point are underway.

The results of fruit yields per plot suggested that there may have been noteworthy interactions between clone and year, clone and plant age, or maybe both. Unfortunately, the tests were not set up in such a way that this could be readily tested.

In summary, one can conclude that the fruit yields from plants set out in a systematic way, and given a reasonable amount of care, will yield approximately twice as much fruit in the first two or three fruiting cycles as will presently operated average to good lowbush blueberry fields.

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Rabbit Damage to Interstem Trees

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Jerry Mills, Rt. #1, Marine, Illinois, has reported rabbit damage to his three and four year old apple orchard of Stark Interstem trees. Trees on M-26 had negligible feeding injury.

Rabbit Damage to Interstems in Winter of 1977-78

Stock	No. trees planted	Completely girdled No.	Completely girdled %	Partially girdled No.	Partially girdled %
C-6	791	29	3.7	105	13.3
C-52	353	2	0.6	15	4.2

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