

## Promising Scab Resistant Apple Selections for Quebec, Canada

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### Introduction

Scab resistance in apple copes very well with the new concept of the low input sustainable agriculture. Of all the scab resistant apple cultivars introduced only a few have been recognized commercially important and have been used by the growers. The rest of them have been grown by home gardeners. One of the most important apple disease after scab in Quebec has been frog-eye leaf spot (*Botryosphaeria obtusa*). The present report deals with the resistance of both scab and frog-eye leaf spot.

### Methods

In the spring of 1988 a randomized complete block design with 10 replicates was used to evaluate 16 apple selections chosen from a scab resistant breeding program at Frelighsburg, Quebec. Three known scab resistant cultivars ('Richelieu,' 'Prima,' 'Liberty') and a scab susceptible cultivar ('McIntosh') treated with fungicides were used as control. The rootstock was MM.106. All trees were staked and trained in the slender spindle system. No irrigation was provided and a two-meter-wide herbicide-treated strip was maintained in each row.

### Results

Twelve selections (QAS-1, QAS-2, Ott.-533, QAS-4, QAS-5, QAS-6, QAS-7, QAS-8, QAS-9, QAS-10, QAS-11, QAS-12) as well as 'Liberty,' 'Prima' and 'Richelieu' outyielded 'McIntosh.' Other fruit characteristics (size, picking season, firmness, soluble solids, acidity, flavour and tree characteristics (trunk cross-sectional area, precocity,

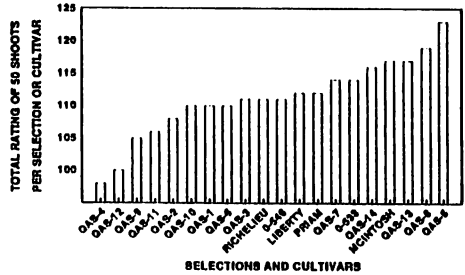


Figure 1. Field susceptibility of scab resistant selections and cultivars to frog-eye leaf spot (*Botryosphaeria obtusa*) in 1992 at Frelighsburg. Rating for each shoot was 0 for no lesion, 1 for 1-5, 2 for 6-25 and 3 for 26-50 lesions.

cold-hardiness, susceptibility to frog-eye leaf spot) have been evaluated (Figures 1 and 2). QAS-11, QAS-4, QAS-13, QAS-7 and QAS-3 had good flavor after 3 months in storage. Their other fruit and tree characteristics were also commercially acceptable.

### Conclusions

'McIntosh,' even when treated with fungicides, has been extremely susceptible to frog-eye leaf spot and should have received specific treatments for this disease as well as most other genotypes. QAS-11, QAS-4, QAS-13, QAS-7 and QAS-3 have been reproductive and had good fruit and tree characteristics. They show promise for commercial propagation.

### References

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2. Granger, R. L. 1991. 'Rouville,' In Register of New Fruit and Nut Varieties. HortScience, Vol. 26(8):957.

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**Table 1. Fruit and tree characteristics of scab resistant genotypes compared to 'McIntosh.'**

Genotype	Picking season *1(code)	Flavor *2(rating)	Color %	Fruit firmness (Kg)	Soluble solids (brix)	Acidity (% malic acid)	Trunk circ. (mm)	Total yield (Kg/arb)	Mean weight of one fruit (g)	Yielding efficiency Kg/cm <sup>2</sup>
QAS-1	E	3	73	6.23	11.70	0.845	148	7.9	137	0.46
QAS-2	E	3	33	8.32	11.50	1.045	147	17.6	88	1.02
Richelieu	MS	3	69	6.90	13.45	0.995	134	12.6	151	0.86
QAS-3	L	3	88	7.70	11.45	1.010	144	16.4	109	0.99
QAS-4	L	2	84	7.75	12.55	0.960	154	22.1	113	1.12
QAS-5	L	5	18	7.42	11.85	0.860	126	15.3	116	1.18
QAS-6	L	4	89	6.15	13.05	1.175	119	15.1	125	1.30
QAS-8	L	5	43	6.81	13.95	1.050	130	6.9	110	0.45
McIntosh	L	1	73	7.61	12.00	0.985	156	10.5	154	0.53
O-533	L	4	69	5.67	12.60	0.910	151	17.5	118	0.95
QAS-10	L	5	40	7.69	12.70	1.140	125	13.1	112	1.03
QAS-14	L	5	69	7.83	11.50	0.855	110	16.9	90	1.71
Liberty	VL	1	85	8.40	11.95	1.025	147	15.2	132	0.85
O-546	VL	4	68	9.20	11.90	1.065	127	6.7	125	0.49
QAS-7	VL	3	73	8.20	12.65	0.915	126	8.8	153	0.64
QAS-9	VL	5	62	9.54	12.85	0.690	148	15.2	157	0.86
QAS-11	VL	2	81	7.81	11.50	0.970	143	14.5	129	0.88
QAS-12	VL	5	41	7.78	12.80	0.710	146	12.9	143	0.75
QAS-13	VL	1	84	7.67	12.15	0.840	139	19.6	120	1.26
Priam	VL	4	63	6.94	12.15	0.940	154	14.0	121	0.74
LSD %		-	-	-	-	-	15	5.1	20	0.27

\*1) E = early, 2 = mid season, L = late, VL = very late.

\*2) After 3 months in storage, 1 = excellent, 2 = very good, 3 = good, 4 = fair, 5 = no good.

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