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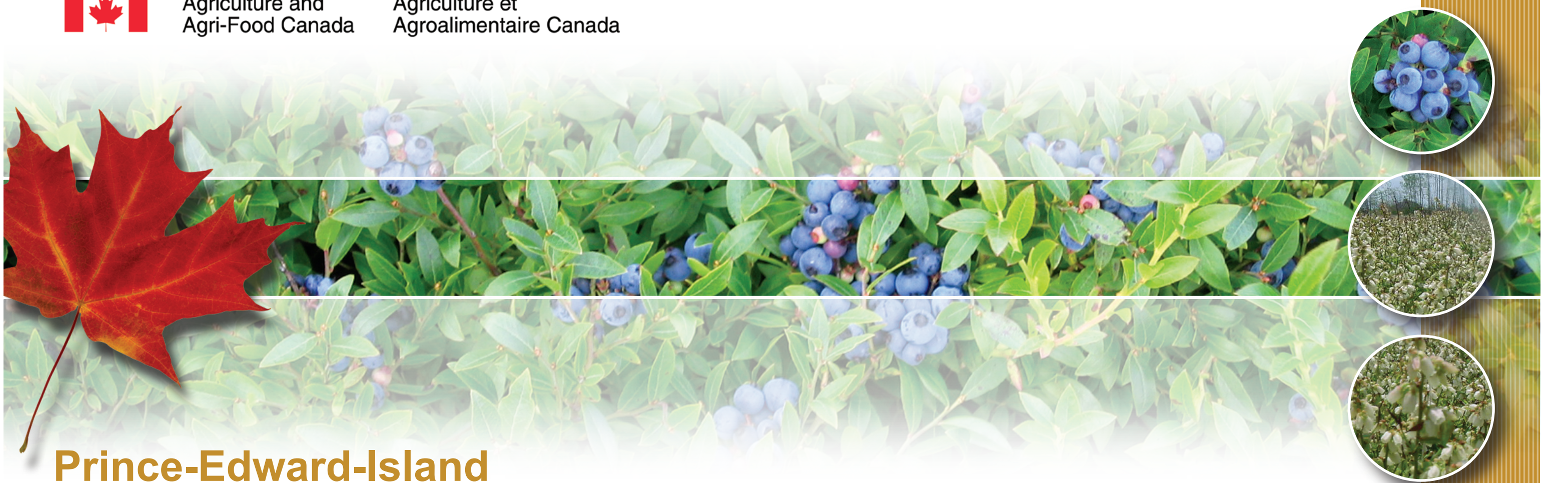

Prince-Edward-Island
Wild Blueberry Leaf Nutrient Ranges

Growers routinely apply chemical fertilizer hoping to increase wild blueberry (*Vaccinium angustifolium* Ait.) growth and yield. Generally, leaf nutrient standards developed in Maine by Trevett (1972) are used by the North American wild blueberry industry. The Trevett standards outline minimum and maximum levels of leaf nutrients which should be present in a healthy plant. Many factors influence the reliability of these standards, including regional differences, soil type, management practices, climate change, plant evolution in a modern monoculture system and more.

To address the concerns of Prince Edward Island wild blueberry growers, we performed a nutrient survey to validate leaf nutrient ranges found in PEI blueberry fields.

New PEI leaf nutrient ranges

Over a three-year period (2003-2005), fields were sampled at the tip die-back growth stage during the sprout year of the traditional two-year blueberry cycle. All fields sampled were considered to be well developed with at least 90% vine coverage, having healthy plants and a record of good yield. Field selection occurred within major blueberry growing regions in PEI, Canada (Figure 1). Thirty (30) fields were sampled in 2003, 20 in 2004 and 11 in 2005.

Leaf tissue was collected randomly across all fields and sent to the Soil and Feed Testing Laboratory of the PEI Department of Agriculture, Fisheries & Aquaculture for analyses. All samples were analyzed using Leco N and Mehlich III extractant. All results were reported on a dry matter basis.

Leaf N, P, Mg, Cu and Mn content were not affected by year surveyed (Table 1). Leaf K, Ca, B and S were higher and Zn and Fe were lower in 2003. Nutrient content was not different for 2004 and 2005. Most elements were notably deficient of Trevett standards except for K and Mg (Table 2). Leaf Ca and Mn were in excess by 77% and 48%, respectively.

Data analysis indicates all elements except for Mn are described by the mean ± 1 SD (>67% of total). Based on this data, we propose new wild blueberry leaf nutrient ranges as presented in Table 3. Additional survey data can be added to increase precision.

Table 1: Wild blueberry leaf analysis for 2003 - 2005

	N	P	K	Ca	Mg	S	Cu	B	Zn	Fe	Mn
Year	---------------------- % ----------------------						------------- ppm -------------				
2003	1.46	0.130	0.55	0.64	0.16	0.31	2.6	37.5	10.3	15.5	1382
2004	1.56	0.126	0.48	0.55	0.17	0.13	3.0	25.4	12.2	25.6	1163
2005	1.57	0.120	0.45	0.53	0.17	0.15	2.9	26.1	13.2	31.2	1609
Mean (n = 61)	1.51	0.127	0.51	0.59	0.16	0.22	2.8	32.0	11.4	21.6	1351

Summary

These new ranges provide growers with a snapshot of plant nutrient status in good producing fields in PEI. Growers can now review leaf nutrient results from their fields and compare them to locally found levels. For growers using fertilizer as a management tool, individual nutrient levels can now be more accurately assessed. Additional savings may be realized by knowing that nutrient levels are already within these new ranges.

Table 2. - Percent of total fields below and above Trevett standards.

	Trevett Standards		PEI Status (2003-2005)		
	Min	Max	Mean	% Deficient	% Excess
N	1.6 %	2.0 %	1.51 %	70	0
P	0.125 %	0.222 %	0.127 %	48	0
K	0.40 %	0.90 %	0.51 %	3	0
Ca	0.27 %	0.52 %	0.59 %	0	77
Mg	0.13 %	0.25 %	0.16 %	15	0
S	n.a. %	n.a. %	0.22 %	n.a.	n.a.
Cu	7 ppm	14 ppm	2.8 ppm	100	0
B	24 ppm	60 ppm	32 ppm	26	0
Zn	25 ppm	50 ppm	11 ppm	100	0
Fe	50 ppm	100 ppm	22 ppm	95	0
Mn	750 ppm	1490 ppm	1351 ppm	25	48

Table 3. - PEI's wild blueberry leaf ranges

	PEI Leaf Nutrient Ranges	
	Min	Max
N	1.3 %	1.7 %
P	0.112 %	0.142 %
K	0.43 %	0.58 %
Ca	0.51 %	0.67 %
Mg	0.13 %	0.19 %
S	0.07 %	0.38 %
Cu	2.1 ppm	3.4 ppm
B	22 ppm	41 ppm
Zn	7 ppm	16 ppm
Fe	7 ppm	36 ppm
Mn	486 ppm	2217 ppm

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For more details, please contact:

Kevin Sanderson, B.Sc., P.Ag.
Research Scientist, Sustainable Production Systems
Agriculture and Agri-Food Canada
Crops and Livestock Research Centre
Charlottetown, PE
Tel. 902 566-6881
E-mail: sandersonk@agr.gc.ca

Collaboration

This research was conducted in collaboration with:
Chris Jordan, M.Sc., P.Ag.
Berry Crop Development Officer
PEI Department of Agriculture, Fisheries and Aquaculture
Charlottetown, PE
and
Sherry Fillmore, M.Sc.
Statistical Project Manager
Agriculture and Agri-Food Canada
Atlantic Food and Horticulture and Research Centre
Kentville, NS

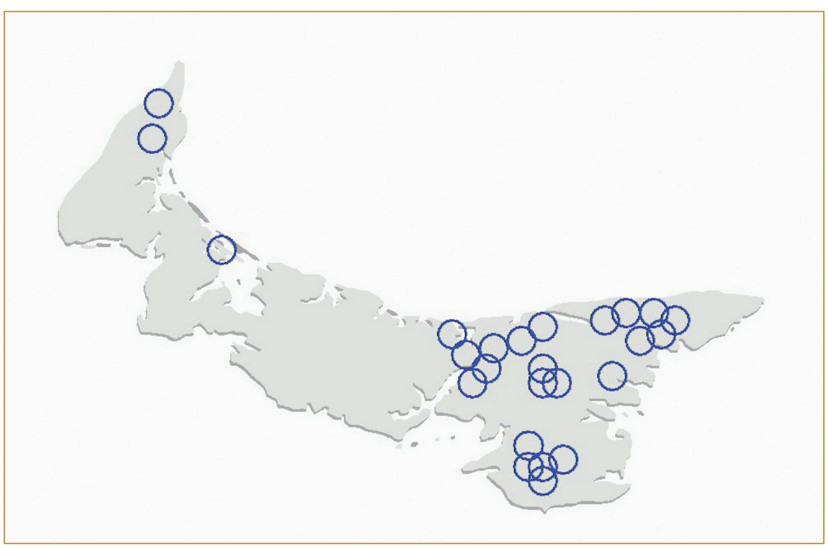

Fig. 1. Tissue sampling regions 2003-2005

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