CHARLOTTETOWN RESEARCH CENTRE **Factsheet: 96-11**
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GYPSUM ENHANCES LEAF NUTRIENT CONTENT OF WILD BLUEBERRY

Wild blueberry production in Prince Edward Island (P.E.I.) is rapidly expanding. Currently, 3,000 acres are in active production with an additional 5,000 acres under development. P.E.I. produces approximately 2 million pounds of wild blueberries per year. Many improvements have been developed during the past 15 years in weed control, fertility programs and mechanization. Wild blueberry soils are strongly acidic with pH generally from 4.0 to 5.2. These soils are low in exchangeable ions and clay content. Under these conditions, calcium (Ca) may be a limiting factor for adequate plant growth. Gypsum and lime are both sources of Ca. Gypsum is a more soluble form of Ca than lime and may also, when used as a soil amendment, maintain or even decrease pH. Field investigations were conducted to determine the response of wild blueberry in P.E.I. to increasing rates of gypsum

Six sites were evaluated over a nine year (1987-1995) period. Two different sites were established each year for three consecutive years. Treatments were untreated control and four rates of gypsum ($CaSO_4.2H_2O$) at 2, 4, 6, and 8 t ha^{-1}. The gypsum was broadcast on the soil surface in late May of the sprout year. Gypsum treatments were applied at initial setup only and no additional treatments were applied during the course of the study. All sites were managed on a two year production cycle. Two sites were evaluated for 2 cropping cycles and four for 3 cropping cycles. Tissue samples were taken from all plots at tip dieback of the sprout year and soil samples were taken in September of the sprout year.

Averaged over 6 sites, yield was increased 26% by the application of gypsum at 4 t ha^{-1} in the first cropping cycle (Agri-Info; Factsheet: 96-02: February 1996). Yield was not affected in subsequent cropping cycles.

Soil pH was decreased while soil Ca was increased by treatment in the first cropping cycle (Table 1). By the second cropping cycle soil pH had returned to the original level but soil Ca was still slightly increased (data not shown). Leaf nutrient content of P, K, Ca, S, B, Cu, and Mn was significantly increased by treatment (Table 2). Mg was decreased while Zn and Fe were not affected by treatment. In general, leaf content of K, Ca, Mg, S, and B remained slightly increased in the second cropping cycle (data not shown).

Studies conducted over several years in P.E.I. indicate that leaf nutrient content of wild blueberry can be greatly enhanced by applications of gypsum. Generally nutrient uptake by the wild blueberry can be both limiting and difficult to attain. Gypsum as a soil supplement appears to provide a suitable environment for nutrient uptake by this native wild plant. Studies are currently underway to determine response to repeated applications of gypsum every cropping cycle

K.R. Sanderson and J.A. Ivany

Agriculture and Agri-Food Canada

Research Centre
P.O. Box 1210
Charlottetown, P.E.I. C1A 7M8
Tel.: (902) 566-6800 Fax.: (902) 566-6821

Table 1: Effect of gypsum applied in the initial sprout year on pH and mineral content of wild blueberry soil in Prince Edward Island (mean of all sites).

Treatment	1st Cropping Cycle			
	pH	K	Ca	Mg
	%			
Control	4.65	44	140	17
Gypsum @ 2 t ha^{-1}	4.50	40	243	15
Gypsum @ 4 t ha^{-1}	4.42	41	382	15
Gypsum @ 6 t ha^{-1}	4.36	43	509	15
Gypsum @ 8 t ha^{-1}	4.35	44	609	16
LSD (P=0.05)	0.08	NS	147	NS

NS indicates means not significantly different

Table 2: Effect of gypsum applied in the initial sprout year on nutrient content of wild blueberry in Prince Edward Island (mean of all sites).

Treatment	%				ppm					
	P	K	Ca	Mg	S	B	Cu	Zn	Mn	Fe
	1st cropping cycle									
Control	.117	.47	.43	.19	.12	35	3.8	14	679	14
Gypsum @ 2 t ha^{-1}	.127	.55	.46	.18	.23	37	4.3	15	716	12
Gypsum @ 4 t ha^{-1}	.129	.57	.48	.17	.25	42	4.5	15	852	12
Gypsum @ 6 t ha^{-1}	.129	.56	.48	.18	.26	43	4.6	15	949	13
Gypsum @ 8 t ha^{-1}	.129	.56	.50	.18	.27	44	4.2	15	867	12
LSD (P=0.05)	.006	.03	.04	.01	.04	6	0.5	NS	180	NS

NS indicates means are not significantly different