CHARLOTTETOWN RESEARCH CENTRE **Factsheet: 96-02**
February 1996 **- HORTICULTURE -** **Agdex: 235.540**

EFFECT OF GYPSUM ON WILD LOWBUSH BLUEBERRY YIELD

Wild lowbush blueberries have been grown in Prince Edward Island (P.E.I.) for many years and an increasing number of hectares are currently being brought into production. Significant changes have occurred in the management of the crop in the past 15 years with improved herbicides, land levelling, pruning methods, fertility programs, and mechanical harvesting. Lowbush 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 limiting for adequate plant growth. In P.E.I., both gypsum and lime have been used to increase the yield of certain horticultural crops. Gypsum is a more soluble form of Ca than lime and may also, when used as a soil amendment, maintain or even decrease soil pH. Field investigations were conducted to determine the response of wild lowbush blueberry yield in P.E.I. to increasing rate 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 sites for 3 cropping cycles.

Results indicate that the marketable yield of wild lowbush blueberries grown in P.E.I. was increased by broadcasting gypsum in the spring of the sprout year in the first cropping cycle only (Table). Gypsum had little residual effect as yield was not affected in the subsequent second and third cropping cycle. Based on data from individual sites, gypsum applied at 4 and 6 t ha^{-1}, gave the greatest yield increase in yield at 3 of the 6 sites in the first cropping cycle. Averaged over the 6 sites, yield was increased 26% by the application of gypsum at 4 t ha^{-1}.

Studies conducted over several years indicate that growers may be able to increase yield of wild lowbush blueberries using gypsum as part of their fertility management program. Studies are currently underway to determine response to repeated applications of gypsum every cropping cycle.

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Table. Effect of gypsum applied in the initial sprout year on marketable yield (t ha^{-1}) of lowbush blueberry, over the first cropping cycle, at six sites in Prince Edward Island

	Tignish	Mount Stewart	Peakes	Wood Islands	Caledonia	Christopher Cross	Average
Treatment	---------- 1st cropping cycle ----------						
Control	4.8	2.9	0.5	1.3	4.2	6.5	3.4
Gypsum @ 2 t/ha	6.2	2.8	1.0	1.1	4.1	7.2	3.7
Gypsum @ 4 t/ha	6.7	3.3	1.2	1.3	6.1	7.3	4.3
Gypsum @ 6 t/ha	6.8	3.9	1.0	1.4	5.1	6.6	4.1
Gypsum @ 8 t/ha	6.2	3.3	0.9	1.4	4.2	7.3	3.9
SEM	0.46	0.37	0.18	0.22	0.51	1.08	
Significant effects	L, Q†	NS	Q	NS	Q	NS	

†L, Q indicates significant linear and quadratic effects (P = 0.05) respectively: NS, not significant