CANADA—DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH

THE FERTILIZER TRADE IN CANADA

July 1, 1935—June 30, 1936

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OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1937

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THE FERTILIZER TRADE IN CANADA

JULY 1, 1935—June 30, 1936

By

W. H. LOSEE, B.Sc.,

Chief of the Mining, Metallurgical and Chemical Branch.

The Canadian fertilizer industry showed considerable improvement during the twelve months ending June 30, 1936, when compared with that of the preceding fertilizer year, according to the annual survey made by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics in co-operation with the Fertilizer Division of the Department of Agriculture.

An analysis of the records received by the Bureau indicates that 22 plants were engaged in making mixed fertilizer in Canada during the year; 29 were making fertilizer materials; 6 made both. Reports were received from 12 companies which operated as dealers only. There were 37 importers and 20 exporters. During the period under review, mixed fertilizer production increased 25 per cent, and the output of fertilizer materials showed a gain of 6 per cent. Exports of mixed fertilizers as reported by the manufacturers increased 127 per cent, and exports of fertilizer materials were 6 per cent greater than in the preceding year. Fertilizer materials imported showed a gain of 2 per cent over the year ending June 30, 1935. Imports of mixed fertilizers into Canada are practically nil.

The consumption of mixed fertilizers increased in the Maritime Provinces, Quebec and Ontario, but the amount used in the Prairie Provinces and in British Columbia was less. It is also noted that in every province, with the exception of Nova Scotia and British Columbia, sales of fertilizer materials, not including those sales which were made for the production of mixed fertilizers, were less than during the preceding twelve months.

Production.—The total output of fertilizers reached 436,826 tons as against 388,535 tons in the preceding year. This total consisted of 160,839 tons of mixed fertilizers and fertilizer materials, the principal items of which were calcium cyanamide, 116,057 tons, practically all of which was exported; ammonium sulphate, 86,711 tons, an increase of 20 per cent over the preceding year; and superphosphate, 44,951 tons. Bonemeal, tankage, and whale products showed little change; the output of dried blood more than doubled; fish meal production increased more than 4½ times, but the output of ammonium phosphate decreased 28 per cent.

Imports.—Imports of fertilizers reached 198,092 tons, a slight gain over the preceding year. Calcium nitrate, nitrate of soda, superphosphate, nitrochalk, natural phosphate rock, sulphate of potash, tankage, fish meal, whale products, and ammonium phosphate were brought into Canada in larger quantities than during the period July 1, 1934—June 30, 1935. The imports of ammonium sulphate, basic slag, muriate of potash, potash manure salts, and sheep manure were less.

Exports.—Exports of mixed fertilizers totalling 17,994 tons were more than double those of the preceding year, and exports of fertilizer materials rose to 190,268 tons as compared with 179,532 tons during the preceding twelve months. The principal fertilizer materials exported were: Sulphate of ammonia, 52,980 tons; calcium cyanamide, 116,358 tons; superphosphate, 8,799 tons; and ammonium phosphate, 9,070 tons.

Sales.—Sales of fertilizer materials and mixed fertilizers, including exports and excluding sales for the production of mixed fertilizers, totalled 442,102 tons as against 399,940 tons in the preceding year. Sales in Canada reached 233,840 tons as compared with 212,479 tons during the twelve months ending June 30, 1935. Decreases occurred in the sales of many of the fertilizer materials used for home mixing and increases were apparent in the sales of mixed fertilizers. Table IV presents in detail the sales of mixed fertilizers by grades and by provinces. As in the preceding year, a mixture containing 2 per cent nitrogen, 12 per cent phosphoric acid, and 6 per cent potash was sold in larger quantities than any other mixture. Sales of this grade totalled 34,625 tons, a gain of 59 per cent over the preceding year. Of the total sold, Ontario farmers took 64 per cent, Quebec farmers, 23 per cent, and the remainder was divided among Prince Edward Island, Nova Scotia and New Brunswick. The mixture next to this in total amount sold was a 4-8-10, sales in Canada totalling 18,030 tons, over half of which went to the province of Quebec. The greater part of the remainder was sold in Ontario and Prince Edward Island, though Nova Scotia, New Brunswick, and the Prairie Provinces used some of this grade. It is also noted that this was the most popular mixture sold in Prince Edward Island. Nova Scotia farmers showed preference for a 9-5-7 mixture, though 5-10-5; 2-10-4; 2-12-6; 4-8-4; 4-8-6; and 4-8-10 were purchased in considerable volume. New Brunswick agriculturalists favoured a 4-8-4 combination, but 2-10-4; 4-8-13; 5-8-12; 5-9-8 were also used extensively. The mixtures used in Quebec and Ontario showed greater variety than in any of the other provinces, whilst as in the preceding year, a 5-10-8 mixture constituted nearly half the sales in British Columbia during the year.

I.—Total Sales of Fertilizer Materials and Mixed Fertilizers for the Fertilizer Years ended June 30, 1935 and 1936

(Short tons)

Provinces	Fertilizer materials			Mixed fertilizers		
	1935	1936	Percentage increase + decrease −	1935	1936	Percentage increase + decrease −
	tons	tons	p.c.	tons	tons	p.c.
Prince Edward Island	11,440	10,167	−11·13	5,301	7,759	+46·37
Nova Scotia	12,839	12,907	+ 0·53	16,011	21,463	+34·05
New Brunswick	15,333	12,897	−15·89	12,957	14,490	+11·83
Quebec	26,245	24,298	− 7·42	19,016	27,438	+44·29
Ontario	24,533	23,688	− 3·44	47,686	60,261	+26·37
Manitoba, Saskatchewan and Alberta	10,466	8,350	−20·22	299	88	−70·57
British Columbia	3,855	4,172	+ 8·22	6,498	5,862	− 9·79
Canada	**104,711**	**96,479**	**− 7·86**	**107,768**	**137,361**	**+27·46**
Exported	179,532	190,268	+ 5·98	7,929	17,994	+126·94
Grand Total	**284,243**	**286,747**	**+ 0·88**	**115,697**	**155,355**	**+ 34·28**

II.—Production in Canada, Imports and Exports of Fertilizers, as Reported by the Manufacturers and Importers during the Years ended June 30, 1935 and 1936

(Short tons)

Items	1935			1936		
	Manufactured	Imported	Exported	Manufactured	Imported	Exported
Mixed fertilizers	129,083	–	7,929	160,839	40	17,994
Sulphate of ammonia	72,356	8,253	52,010	86,711	4,483	52,980
Calcium cyanamide	107,059	106	103,696	116,057	37	116,358
Calcium nitrate	–	152	–	–	1,847	1,175
Nitrate of soda	–	9,100	209	–	9,884	181
Superphosphate*	49,903	71,073	9,435	44,951	80,593	8,799
Basic slag	–	8,615	11	–	8,373	5
Nitrochalk	–	56	1	–	95	2
Natural phosphate rock	–	36,854	–	–	52,571	–
Bone meal or bone flour	1,154	145	–	1,071	215	43
Muriate of potash	–	45,628	371	–	29,528	124
Sulphate of potash	–	3,921	81	–	4,276	94
Potash manure salts and kainite	–	7,504	–	–	810	–
Tankage	2,004	550	923	2,010	1,035	838
Sheep manure	–	787	–	–	570	–
Dried blood	743	10	345	1,650	–	219
Whale products	542	–	272	527	150	100
Fish meal	1,296	124	–	5,439	359	280
Ammonium phosphate	24,395	922	12,178	17,518	1,772	9,070
Other materials	–	867	–	53	1,454	–
Total	**388,535**	**194,667**	**187,461**	**436,826**	**198,092**	**208,262**

* Contains 16%, 20% and 45% superphosphate.

III.—Sales of Fertilizers, except for Manufacturing Purposes, during the Year ended June 30, 1936

(Short tons)

Fertilizers	P.E.I.	N.S.	N.B.	Que.	Ont.	Man., Sask. and Alta.	B.C.	Total sold in Canada	Exported from Canada	Grand Total
Nitrate of soda	164	2,469	1,401	233	660	6	209	5,142	181	5,323
Sulphate of ammonia	1,192	1,599	1,325	1,924	1,809	103	534	8,486	52,980	61,466
Calcium cyanamide	–	626	1	71	906	–	46	1,650	116,358	118,008
Nitrochalk	49	2	1	–	–	–	–	52	2	54
Calcium nitrate	–	–	–	–	2	–	–	2	1,175	1,177
Superphosphate	7,865	3,173	7,157	16,634	16,366	719	807	52,721	8,799	61,520
Natural phosphate rock	–	3	55	–	5	–	–	63	–	63
Basic slag	–	3,680	712	3,041	1	–	17	7,451	5	7,456
Bone meal or bone flour	–	135	32	74	509	62	442	1,254	43	1,297
Muriate of potash	897	1,183	2,096	1,916	1,089	5	309	7,495	124	7,619
Sulphate of potash	–	1	28	191	121	–	57	398	94	492
Potash manure salts and kainite	–	–	–	17	17	1	7	42	–	42
Tankage	–	6	23	–	324	22	157	532	836	1,370
Sheep manure	–	28	5	145	298	–	53	529	–	529
Dried blood	–	–	1	–	78	84	126	289	219	508
Whale products	–	–	–	–	–	–	422	422	100	522
Fish meal	–	–	54	–	39	–	673	766	280	1,046
Ammonium phosphate	–	2	6	52	1,010	7,348	241	8,659	9,070	17,729
Other fertilizer materials	–	–	–	–	454	–	72	526	–	526
Total fertilizers	**10,167**	**12,907**	**12,897**	**24,298**	**23,688**	**8,350**	**4,172**	**96,479**	**190,268**	**286,747**
Total mixed fertilizers	7,759	21,463	14,490	27,438	60,261	88	5,862	137,361	17,994	155,355
Grand Total, 1936	**17,926**	**34,370**	**27,387**	**51,736**	**83,949**	**8,438**	**10,034**	**233,840**	**208,262**	**442,102**
Grand Total, 1935	**16,741**	**28,850**	**28,290**	**45,261**	**72,219**	**10,765**	**10,353**	**212,479**	**187,461**	**399,940**

IV.—Mixed Fertilizers sold during the Year ended June 30, 1936

(Short tons)

Formulae			P.E.I.	N.S.	N.B.	Que.	Ont.	Man., Sask., Alta.	B.C.	Canada	Exported from Canada	Grand Total
N	P_2O_5	K_2O										
0	10	10	–	–	–	167	3	–	–	170	–	170
0	10	16	–	–	–	–	–	–	218	218	–	218
0	12	6	–	–	–	27	6,332	–	–	6,359	–	6,359
0	12	10	–	–	–	–	605	–	132	737	–	737
0	12	14	–	–	–	–	55	–	–	55	–	55
0	12	15	–	–	–	1	1,038	–	–	1,039	–	1,039
0	16	6	15	314	32	220	184	–	–	765	–	765
2	8	4	–	–	–	554	2,995	–	–	3,549	–	3,549
2	8	5	–	–	–	–	1,892	–	–	1,892	–	1,892
2	8	10	–	–	–	192	627	–	–	819	–	819
2	8	16	–	–	–	4	139	–	–	143	–	143
2	8	24	–	–	–	–	68	–	–	68	–	68
2	10	4	200	2,198	2,273	–	–	–	–	4,671	256	4,927
2	10	6	–	–	–	–	164	–	–	164	–	164
2	10	8	–	–	–	–	8,200	–	49	8,249	–	8,249
2	12	2	–	–	–	45	10	–	–	55	–	55
2	12	6	1,475	1,921	865	8,160	22,204	–	–	34,625	29	34,654
2	12	10	–	–	–	1,209	1,130	–	–	2,339	1	2,340
2	16	6	–	–	–	83	2,461	–	19	2,563	–	2,563
3	7	10	–	–	–	–	–	–	60	60	–	60
3	8	4	–	–	–	–	326	–	–	326	28	354
3	8	15	–	–	–	824	–	–	–	824	–	824
3	10	5	–	–	–	–	1,946	–	–	1,946	–	1,946
3	10	6	–	–	–	–	1,814	–	5	1,819	–	1,819
3	10	8	–	–	–	–	71	2	2,761	2,834	–	2,834
3	12	5	–	–	–	–	322	–	–	322	–	322
4	6	10	–	1,332	4,265	–	–	–	–	5,597	168	5,765
4	8	4	–	2,815	167	229	12	2	–	3,225	214	3,439
4	8	6	–	–	–	64	1,739	–	–	1,803	–	1,803
4	8	7	638	2,057	542	–	–	–	–	3,237	564	3,801
4	8	10	3,889	864	522	9,512	3,229	14	–	18,030	1,987	20,017
4	8	13	945	396	2,810	–	–	–	–	4,151	–	4,151
4	8	28	–	–	–	–	62	–	–	62	–	62
4	9	4	–	–	–	–	197	–	–	197	–	197
4	10	8	1	9	6	30	54	15	9	124	–	124
4	10	10	–	–	–	787	–	2	1,342	2,131	–	2,131
4	12	4	–	–	1	33	243	1	–	278	–	278
4	12	6	–	–	–	27	179	–	–	206	–	206
4	24	12	–	–	–	98	2	1	–	101	–	101
5	6	9	–	–	–	87	–	–	–	87	–	87
5	8	7	–	35	10	931	964	–	–	1,940	362	2,302
5	8	10	–	–	156	19	–	–	–	175	1,103	1,278
5	8	12	–	36	1,292	1,649	–	–	–	2,977	2,871	5,848
5	9	8	504	1,543	1,340	–	–	–	–	3,387	5,238	8,625
5	10	5	92	3,621	152	–	205	2	300	4,372	97	4,469
5	10	10	–	–	–	44	–	–	1	45	306	351
5	12	2	–	2	5	32	17	–	4	60	1	61
6	7	4	–	–	–	–	–	–	307	307	–	307
6	7	10	–	–	–	78	–	–	151	229	–	229
6	8	10	–	–	1	1,747	196	–	–	1,944	–	1,944
6	10	10	–	–	–	–	–	–	385	385	–	385
7	5	2	–	7	2	37	53	–	10	109	2	111
7	13	11	–	–	–	–	–	–	–	–	103	103
7	13	16	–	–	–	–	–	–	–	–	869	869
8	16	14	–	–	–	–	–	–	–	–	487	487
8	16	17	–	–	–	–	–	–	–	–	669	669
8	16	20	–	–	–	166	5	–	–	171	2,480	2,651
9	5	7	–	4,272	34	241	67	–	–	4,614	–	4,614
10	5	2	–	3	–	33	14	–	–	50	3	53
Other mixtures			–	38	15	108	437	49	109	756	156	912
Total			7,759	21,463	14,490	27,438	60,261	88	5,862	137,361	17,994	155,355

V.—Nitrogen, Phosphoric Acid and Potash contained in mixed fertilizers sold in Canada, during the Years ended June 30, 1935 and 1936

(Short tons)

Provinces	1935				1936			
	Total tonnage	Nitrogen	Phosphoric acid	Potash	Total tonnage	Nitrogen	Phosphoric acid	Potash
	tons	lb.	lb.	lb.	tons	lb.	lb.	lb.
Prince Edward Island	5,301	400,880	875,880	1,015,980	7,759	564,440	1,383,640	1,397,620
Nova Scotia	16,011	1,450,900	2,528,580	1,978,920	21,463	2,056,940	3,586,020	2,722,220
New Brunswick	12,957	1,057,440	2,127,140	2,353,280	14,490	1,094,080	2,344,480	2,664,840
Quebec	19,016	1,360,800	3,522,920	3,188,560	27,438	1,905,640	5,277,480	4,772,600
Ontario	47,686	2,089,050	10,289,020	6,205,900	60,261	2,501,720	13,092,680	8,034,040
Manitoba, Saskatchewan and Alta.	299	18,020	54,700	32,820	88	7,780	20,740	12,300
British Columbia	6,498	457,600	1,257,260	1,091,800	5,862	422,220	1,149,000	1,002,220
Total Canada	**107,768**	**6,834,690**	**20,655,500**	**15,867,260**	**137,361**	**8,552,820**	**26,854,040**	**20,605,840**
Exported from Canada	7,929	870,280	1,469,620	1,652,280	17,994	1,968,920	3,668,860	4,088,740
Grand total	**115,697**	**7,704,970**	**22,125,120**	**17,519,540**	**155,355**	**10,521,740**	**30,522,900**	**24,694,580**
Miscellaneous (no analysis given)	316	–	–	–	454	–	–	–

VI.—Nitrogen, Phosphoric Acid and Potash Contained in Fertilizer Materials Sold, except for Manufacturing Purposes, during the Year ended June 30, 1936

Provinces	Total tonnage	Nitrogen (N)	Phosphoric acid (P_2O_5)	Potash (K_2O)
	short tons	pounds	pounds	pounds
Prince Edward Island	10,167	543,980	2,621,520	897,000
Nova Scotia	12,907	1,700,540	2,376,480	1,188,760
New Brunswick	12,897	994,560	2,855,200	2,117,020
Quebec	24,298	890,340	7,204,580	2,139,580
Ontario	23,688	1,643,260	6,575,660	1,428,480
Manitoba, Saskatchewan and Alberta	8,350	1,563,760	7,473,060	5,600
British Columbia	4,172	607,400	819,300	365,980
Total for Canada	**96,479**	**7,943,840**	**29,925,900**	**8,142,420**
Exported	190,268	75,470,940	8,147,800	210,640
Grand Total	**286,747**	**81,414,780**	**38,073,700**	**8,353,060**

VII.—Reporting Companies

Nature of Trade*	Names	Addresses
m.m.f.; i.	Agricultural Chemicals, Ltd	Port Hope, Ont.
d.; i.	Aldershot Distributing Co-op. Co., Ltd	Aldershot, Ont.
m.s.a.; e.	Algoma Steel Corporation, Ltd	Sault Ste. Marie, Ont.
d.; i.	Associated Shippers Inc	Charlottetown, P.E.I.
d.	Bailey, W. A. & Co	Winona, Ont.
d.	Bégin, P. E	Levis, Que.
	B.C. Electric Railway Co	425 Carrall St., Vancouver, B.C.
d.; i.	Buckerfield's, Limited	Vancouver, B.C.
m.o.; e.	Burns, P. and Company	Calgary, Alta.
m.o.; e.	" "	Edmonton, Alta.
	" "	Regina, Sask.
m.o.; e.	" "	Winnipeg, Man.
m.m.f.; o.; i.	" "	Vancouver, B.C.
d.	Canada and Dominion Sugar Co., Ltd	Chatham, Ont.
m.m.f.; o.; i.	Canada Packers Limited	West Toronto, Ont.
m.m.f.; o.; i.	" "	Montreal, Que.
m.m.f.; i.; e.	" "	St. John, N.B.
m.m.f.; i.	Canadian Fertilizer Co., Ltd	Chatham, Ont.
m.m.f.; s.p.; i.; e.	Canadian Industries, Limited	Montreal, Que., Plants at Halifax, N.S., Beloeil, Que., Hamilton, Ont., and New Westminster, B.C.

VII.—Reporting Companies—Concluded

Nature of Trade*	Names	Addresses
m.o.; e.	Canadian Packing Co., Ltd	Peterborough, Ont.
m.m.f.; i.	Chase, Geo. A	Port Williams, N.S.
m.o.	City Renderers Ltd	Montreal, Que.
m.m.f.; i.; e.	Colonial Fertilizer Works	Windsor, N.S.
m.a.p.; s.p.; s.a.; e.; i.	Consolidated Mining & Smelting Co. of Canada, Ltd	Trail, B.C.
m.o.; e.	Consolidated Whaling Corp	Victoria, B.C.
d.	Co-opérative Fédérée de Québec	130 St. Paul St. E., Montreal, Que.
m.o.	Deep Bay Fishing and Packing Co., Ltd	Bowser, P.O., B.C.
m.s.a.; e.	Dominion Steel & Coal Corp. Ltd	Sydney, N.S.
m.o.; e.	Dumart's Limited	Kitchener, Ont.
d.	The T. Eaton Co., Ltd	Winnipeg, Man.
m.o.	Fearman Co., Ltd	226 Rebecca St., Hamilton, Ont.
m.o.	Gainers Limited	South Edmonton, Alta.
i.	George, W. J., Company	120 King St. E., Toronto.
m.o.; i.	The Globe Fertilizer Co	Vancouver, B.C.
m.s.a.; e.	Hamilton By-Product Coke Ovens, Ltd	Hamilton, Ont.
m.o.	Harris W. Co., Limited	200 Keating St., Toronto, Ont.
	International Agricultural Corp	708 Stock Exchange Bldg., Buffalo, N.Y., U.S.A.
m.m.f.; i.	International Fertilizers Ltd	71 St. Peter St., Quebec, Que.
m.m.f.; i.; e.	International Fertilizers Ltd	Saint John, N.B.
m.m.f.; i.; e.	Island Fertilizer Co., Ltd	Charlottetown, P.E.I.
d.	Lincoln Supply Co	St. Catharines, Ont.
d.	MacDonald, Kenneth & Sons	Ottawa, Ont.
d.i.	Macrae's Grocery & Feed	Mission City, B.C.
m.m.f.	Manchester Products	Galt, Ont.
m.o.	Marquis (Estate F. Canac Marquis)	5 rue Courcelette, Quebec, Que.
	Milwaukee Sewerage Commission	Milwaukee, Wis., U.S.A.
m.m.f., i.	Misner, J. H. Ltd	Port Dover, Ont.
m.s.a.	Montreal Coke Manufacturing Co	P.O. Box 1660, Montreal, Que.
d.	Mount MacKay Feed Co	Fort William, Ont.
m.m.f.	Multel Soil Service Ltd	2239-30th Ave. E., Vancouver, B.C.
m.o.; e.	Nelson Bros. Fisheries, Ltd	Vancouver, B.C.
d.	New Brunswick Agricultural Societies	East Centreville, N.B.
m.c.; e.; i.	North American Cyanamid Co	Niagara Falls, Ont.
d.; e.; m.m.f.	Paterson, R. Downing	89 Water St., Saint John, N.B.
d.; i.	P.E.I. Potato Growers' Assoc., Inc	Charlottetown, P.E.I.
i.	Potash Company of Canada	814 Royal Bank Bldg., Montreal, Que.
i.	Pulverized Manure Co	Chicago, U.S.A.
i.	Rennie, Wm. Seeds Co	Toronto, Ont.
m.o.	Rupert Marine Products Ltd	P.O. Box 1694, Prince Rupert, B.C.
m.m.f.	Saguenay Fertilizer Company	Chicoutimi, Que.
d.	St. Catharines Cold Storage & Forwarding Co., Ltd	Davidson St., St. Catharines, Ont.
d.	Sayer and Son, Ltd	509 Richards St., Vancouver, B.C.
m.o.	Schneiders Limited, J. M	321 Courtland Ave. E., Kitchener, Ont.
m.m.f.; i.	Scottish Fertilizers Ltd	Welland, Ont.
i.	Standard Trading Company Ltd	604 Dominion Square Building, Montreal, Que.
m.s.a.	Steel Company of Canada, Ltd	Hamilton, Ont.
m.m.f.; i.	Stone, Wm. and Sons, Limited	Ingersoll, Ont.
m.m.f.; i.; e.	Summers Fertilizer Co., Ltd	St. Stephen, N.B.
m.m.f.; o.; e.; i.	Swift Canadian Company, Limited	Keele & St. Clair, West Toronto, Ont.
m.m.f.; i.	Toronto Chemical & Fertilizer Co	248 Keele St., Toronto, Ont.
d.; i.	United Farmers' Cooperative Co., Limited	Toronto, Ont.
d.; i.	United Fraser Growers Ltd	Vancouver, B.C.
d.; i.	United Fruit Companies of Nova Scotia, Ltd	Kentville, N.S.
d.	Witts Fertilizer Works	Norwich, Ont.
m.m.f.; o.; i.	Young and Company	166 Keating St., Toronto, Ont.
d.; i.	Ed. Webb & Sons	93 King St. E., Toronto.

*m.—Manufacturing.
m.a.p.—Manufacturing ammonium phosphate.
m.c.—Manufacturing cyanamide.
m.m.f.—Manufacturing mixed fertilizers.
m.o.—Manufacturing organics.
m.s.a.—Manufacturing sulphate of ammonia.
m.s.p.—Manufacturing superphosphate.
e.—Exports.
i.—Imports.
d.—Dealer.

The Use of Fertilizers in Canada

By C. H. Robinson, B.A., Dominion Agricultural Chemist

Experimental work to study the economic employment of fertilizers is carried on in all the provinces of the Dominion by the Experimental Farms Branch of the Federal Department of Agriculture. The results of these investigations are of value in furnishing the grower with information which serves as a guide in his selection of fertilizer mixtures and general soil management. Suggestions with respect to the fertilization of special crops under varying soil and climatic conditions are made but such suggestions must of necessity be very general in character. It is noteworthy, however, that due to a close co-operation between federal and provincial institutions and provincial fertilizer boards a greater uniformity in recommendations has been possible. The provincial fertilizer councils or advisory boards are composed of representatives of federal and provincial scientific agricultural institutions and prominent manufacturing concerns. These officials meet once a year and discuss the results of fertilizer and soil investigational work and, if thought desirable, amendments to previous recommendations are made. As a result the number of fertilizer analyses considered as being adequate to meet average requirements has been greatly reduced within the last few years, and the lower grade mixtures are apparently becoming less popular with the grower. As evidence of this trend in the use of fertilizers, it may be pointed out that of the 60 various analyses sold in Canada during the past year about ten furnished the greater bulk of the fertilizer used, and of these the sales of the 4-8-10 and 2-12-6 mixtures far exceeded all others.

The recommendations of the councils may be obtained from the provincial departments of agriculture and the user of fertilizers is strongly advised to consult these when selecting his fertilizer requirements.

The results of the investigational work conducted by the Experimental Farms Branch emphasize the desirability of giving attention to factors other than the fertilizer mixture, which influence crop yields. Best results from the application of any fertilizer cannot be expected if a good supply of organic matter is not maintained, if drainage is inadequate, if the soil reaction is unfavourable or if a suitable rotation is not followed. The maintenance of organic matter through the use of manures has been found to be especially important and for this reason the best use of fertilizers in ordinary farm practice is often as a supplement to barnyard manure.

Much attention has been given recently to studying the effect of trace elements—particularly boron—on the composition and yield of certain crops. It has been found that the application of small amounts of boron has resulted in improved development of some crops and in the control of physiological disorders. While considerable progress has been made in these studies it is felt that the investigational work has not yet reached the stage where definite recommendations with respect to the use of such materials as boron can be made. Boron can be safely applied to the soil in small amounts only; excess of this element in the soil is decidedly toxic to plant growth. Consequently until a further knowledge of the limits of toxicity of trace elements and of their residual effects is available, the indiscriminate use of such materials in fertilizers is not advised.

The Fertilizers Act

By G. S. Peart, Chief Fertilizer Division, Dominion Department of Agriculture.

The sale of fertilizers in Canada has been regulated by law since 1907. The present Act came into effect in 1922 and has proven satisfactory in protecting buyers against fraud and in improving the quality of fertilizer sold in Canada. The Act requires vendors to guarantee minimum percentages of nitrogen,

phosphoric acid and potash and to label each container with the guarantee. The guarantees must be registered annually with the Fertilizer Division of the Department of Agriculture and are checked regularly by the inspectors appointed under the Act. The inspectors take official samples mostly at buyers' destinations, and failure to meet guarantee as proven by the analysis is severely penalized. Moreover the results of analyses are published each year in pamphlet form so as to permit buyers to compare them with the guarantees of the vendors. This has the effect of further penalizing vendors whose records are unsatisfactory and is of great advantage to those with good records. The publishing of the results of analyses stimulates the manufacture and importation of better quality fertilizers and is a strong incentive toward law observance.

Failure to meet guaranteed analysis is becoming rarer as years pass, due to general improvement in the fertilizer industry. Modern fertilizers are more uniform in analysis and possess better mechanical condition than at one time and Canadian buyers are becoming more critical of these points.

A few years ago, Canadian farmers were not well informed on the subject of fertilizers. The practice was to sell the farmer just a fertilizer with a brand name, for he was not able to value it according to its nitrogen, phosphoric acid and potash content. This situation is changing. More farmers each year are studying the scientific feeding of crops and buying fertilizers accordingly. As a result vendors of fertilizers are gradually becoming purveyors of the three essential plant foods: nitrogen, phosphoric acid and potash. This trend is likely to become more marked as the farmers' knowledge of scientific feeding of crops increases. The fact that the law requires fertilizers to be sold subject to an honest guaranteed analysis of the three essential plant foods, has made it possible to buy fertilizers of suitable formula and analysis for the different crops and soils.

Unsatisfactory fertilizers, that is those of doubtful plant food content, and those of such mechanical condition that they will not feed satisfactorily through a drill, are becoming rarer each year. Occasionally, however, inspectors find shipments of such fertilizer. Usually it is the casual vendor who most often violates the Fertilizers Act. Manufacturers and importers with intentions to stay in the business do not deliberately hurt their reputations by delivering unsatisfactory goods, and are, therefore, the most dependable sources from which to buy. In any event, farmers are advised to buy subject always to guaranteed analysis and satisfactory mechanical condition, and refuse to accept delivery when the bags are improperly labelled, or not labelled at all, or when the guarantee stated on the bag or label is lower than that of the fertilizer ordered; also when the mechanical condition will not permit of uniform application, as indicated by too high moisture content or inadequate screening.

Any complete or mixed fertilizer, delivered without the official registration number, together with a statement of guaranteed analysis on the label or bag, is being sold illegally, and should be guarded against at all times. The only exception to this is when the fertilizer has been bought under prescription, for in such cases, the buyer waives protection under the Act. Farmers should remember this when agents offer to sell them unregistered fertilizers by prescription. There is believed to be a wide enough choice of registered mixed fertilizers to give satisfactory results under any soil condition or crop requirement without resorting to prescription buying.

It should be added that the Department of Agriculture is always ready to investigate any alleged violations of the Fertilizers Act. The public is invited to communicate at any time with the inspectors stationed in their locality or with the Fertilizer Division at Ottawa. The Act is enforced by the Dominion Seed Branch, with district inspection offices located at Sackville, N.B., Montreal, Que., Ottawa, Ont., Toronto, Ont., Winnipeg, Man., Saskatoon, Sask., Calgary, Alta., and Vancouver, B.C.