

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1997

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming are checked below.

- Coloured covers / Couverture de couleur
- Covers damaged / Couverture endommagée
- Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- Cover title missing / Le titre de couverture manque
- Coloured maps / Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- Bound with other material / Relié avec d'autres documents
- Only edition available / Seule édition disponible
- Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from filming / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments / Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed / Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies / Qualité inégale de l'impression
- Includes supplementary material / Comprend du matériel supplémentaire
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image / Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.
- Opposing pages with varying colouration or discolourations are filmed twice to ensure the best possible image / Les pages s'opposant ayant des colorations variables ou des décolorations sont filmées deux fois afin d'obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below / Ce document est filmé au taux de réduction indiqué ci-dessous.

	10x		14x		18x		22x		26x		30x	
									✓			
	12x		16x		20x		24x		28x		32x	

The copy filmed here has been reproduced thanks to the generosity of:

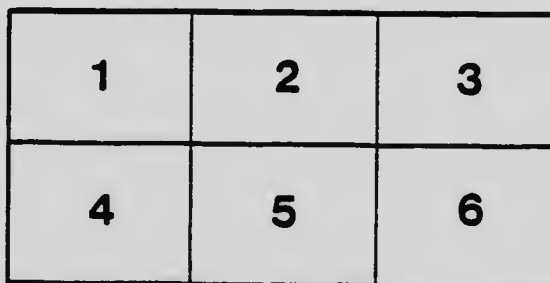
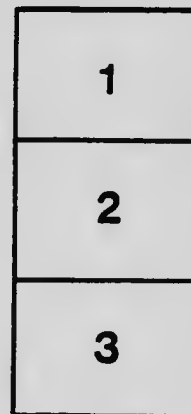
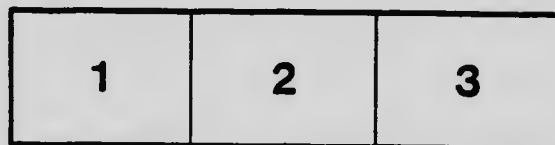
Library
Agriculture Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche sheet contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Bibliothèque
Agriculture Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

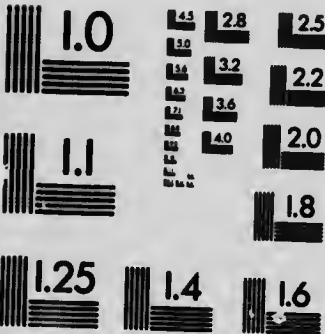
Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

MICROCOPY RESOLUTION TEST CHART

(APC and ISO TEST CHART No. 2)



APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

C

DOMINION OF CANADA, DEPARTMENT OF AGRICULTURE

SEED BRANCH,

GEO. H. CLARK, Seed Commissioner.

CONDITIONS OF THE TRADE IN CLOVER AND GRASS SEEDS

IN THE

PROVINCE OF BRITISH COLUMBIA

SPECIAL BULLETIN

— BY —

W. C. McKILLICAN, B.S.A.,
Seed Inspector for Alberta and British Columbia.

and

HARVEY H. MILLER,
Assistant Seed Analyst,
Seed Laboratory, Calgary, Alberta.

Published by direction of the HON. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.

AUGUST, 1907,

631.531038
C212

DOMINION OF CANADA,

DEPARTMENT OF AGRICULTURE

SEED BRANCH,

Ottawa, Canada.

GEO. H. CLARK, - - - Seed Commissioner and Official Seed Analyst.
GEO. MICHAUD, - - - Assistant Seed Analyst, Ottawa.
HARVEY H. MILLER, - - Assistant Seed Analyst, Calgary, Alta.

DISTRICT OFFICERS AND SEED INSPECTORS.

W. C. McKILLICAN, B.S.A., - Calgary, for British Columbia and Alberta.
HARRIS McFAYDEN, B.S.A., - Regina, for Saskatchewan.
E. D. EDDY B.S.A., - - - Edward's Block, Winnipeg, for Manitoba.
T. G. RAYNOR, B.S.A., - - - Ottawa, for Ontario.
J. C. COTÉ, - - - - - Ottawa, for Quebec.
S. J. MOORE, - - - - - Truro, for Maritime Provinces.

OTTAWA, August 1st, 1907.

To the Honourable
The Minister of Agriculture.

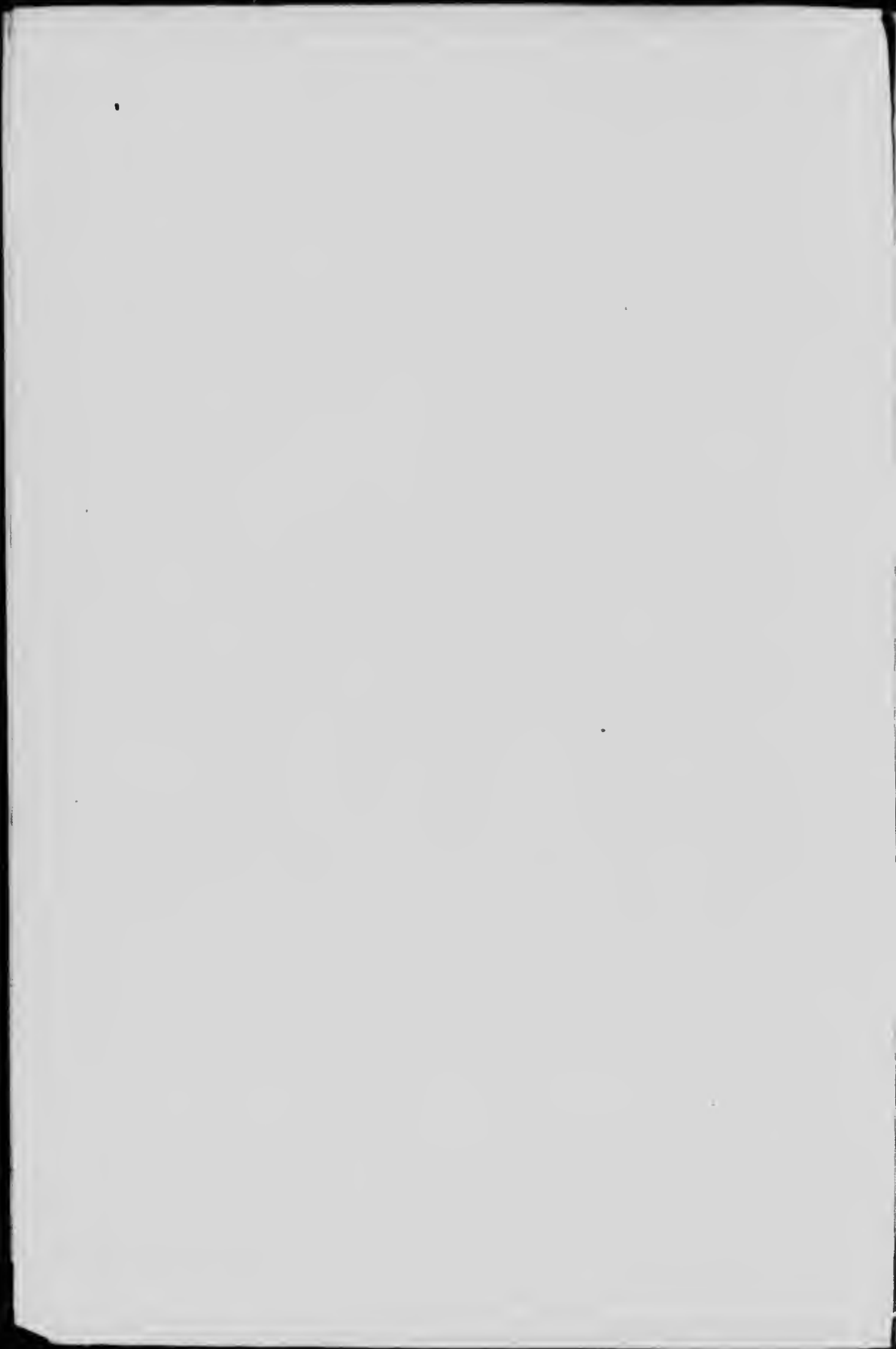
SIR,—I have the honour to transmit herewith a special bulletin treating with the conditions of the trade in clover and grass seeds in the Province of British Columbia.

This bulletin has been prepared by Messrs. W. C. McKillican and Harvey H. Miller of this Branch. The work of seed testing, which provides the data for this bulletin, was carried on in the Seed Laboratory that was recently established at Calgary in accordance with your instructions. The information contained in the bulletin should be of much value to the farmers of British Columbia. I beg to recommend, therefore, that it be printed for general distribution in that province.

I have the honour to be, sir,

Your obedient servant,

GEO. H. CLARK,
Seed Commissioner.



CONDITIONS OF THE TRADE
IN
CLOVER AND GRASS SEEDS
IN THE
PROVINCE OF BRITISH COLUMBIA.

INTRODUCTION.

A large proportion of the cultivated land of the province of British Columbia is used for the production of forage crops. The grasses and clovers are used almost entirely for this purpose. Practically none of the seed for these crops is grown by the farmer who uses it. It is therefore obvious, that the purity of the grass and clover seed sold throughout the province is a very important factor in determining whether or not the land is to be infested with noxious weeds. It is the purpose of this bulletin to state as concisely as practicable, a summary of the present conditions of the trade in clover and grass seeds in the province of British Columbia. The facts here presented are based on the results of an investigation made in the year 1907.

THE SUPPLY.

With the exception of a small quantity of Timothy seed, almost all the clover and grass seeds used are brought in from outside the province. The bringing in is done chiefly by a few wholesale houses. These are either branches of the large eastern seed firms or distributors for them. We have therefore no seedsmen who conduct the business of recleaning and grading seed. The reason for this is that the whole of the seed business in the province is not large enough to justify a firm in putting in expensive cleaning machinery. They therefore bring the seed in a ready-for-market condition from the larger seed-houses, and distribute it to the retailers. There is a considerable amount bought direct from outside wholesalers by the retailers. There is also a considerable mail-order business conducted directly between the farmers and outside firms. While these latter methods of bringing in the supply cut out the middleman's profit, this advantage is probably fully counterbalanced by the proportionately larger transportation charges on the smaller lots. On account of the absence of cleaning machinery what little seed is produced locally is retailed again in practically the same condition as it came from the grower. It therefore shows up to disadvantage against the imported seed, unless it is grown on very clean land. Otherwise the local-grown seed compares very favourably with the other. It is brighter in colour, and usually stronger, and plumper. Were a greater quantity grown, it would pay local wholesalers to fit up recleaning plants. There is no reason why more should not be grown. It would be a profitable line of agriculture, and would lessen the constant danger of bringing in new weeds with eastern grown seed.

THE DEMAND.

The extent of the demand has already been referred to in the introductory remarks and in treating of the supply. Unfortunately for the agriculture of the province, there

is too great a demand on the part of the buyers of seed for something cheap rather than something good. The merchant can hardly be blamed for trying to meet this demand and consequently selling a poor quality of seed. The demand however is improving. The farmers are beginning to realize that it is cheaper in the end to pay a little more in the initial cost, and avoid the danger of having their fields polluted through the false economy of cheap seed. This demand for low-grade seeds exists chiefly through lack of knowledge on the part of the buyer as to the danger that exists. It has been the object of the Seed Branch in this province, as in the rest of the Dominion, to supply that knowledge.

THE SEED CONTROL ACT.

The Seed Control Act 1905, has now been in force nearly two years. It is not the object of the Act to compel farmers to purchase for their own use seeds of a better quality than they desire, except in so far as extremely bad seed is held to be a public nuisance. Its purpose is rather to give the farmer a means of protecting himself if he wishes to do so. It also serves the purpose of protecting a merchant who wishes to do a high-class trade, from the unfair competition of unscrupulous rivals.

The sections of most direct interest to the public are the following :

(*Revised Statutes of Canada, 1906.*)

Section 5. "The provisions contained in the next following section shall not apply to the sale of seed that is grown, sold and delivered by any farmer on his own premises, for seeding by the purchaser himself, unless the purchaser of the said seed obtains from the seller at the time of the sale thereof a certificate that the said seed is supplied to him subject to the provisions of the Act."

The exception in Section 5, is based on the supposition that in such circumstances the purchaser is in a position to ascertain for himself the nature of the seed he is buying without the protection of the law.

Section 6. "No person shall sell, or offer, or expose or have in his possession for sale, for the purpose of seeding, any seeds of cereals, grasses, clovers or forage plants unless they are free from the seeds of the following weeds; Wild Mustard or Charlock, (*Brassica sinapistrum*, Boiss); Tumbling Mustard (*Sisymbrium sinapistrum*, Crantz); Hare's-ear Mustard, (*Conringia orientalis*, Dumort); Ball Mustard, (*Neslia paniculata*, L. Desv.); Field Penny-cress or Stinkweed, (*Thlaspi arvense*, L.); Wild Oats, (*Avena fatua*, L. and *Avena strigosa*, Schreb.); Bindweed, (*Convolvulus arvensis*, L.); Perennial Sow-Thistle, (*Sonchus arvensis*, L.); Ragweed, (*Ambrosia artemisiifolia*, L.); Great Ragweed, (*Ambrosia trifida*, L.); Purple Cockle, (*Lychnis Githago*, Lsm.); Cow Cockle, (*Vaccaria vaccarra*, L. Britton); Orange Hawkweed or Paint Brush, (*Hieracium aurantiacium*, L. and *Hieracium praealtum*, Vill.); and from *Sclerotia* known as Ergot of Rye, (*Claviceps purpurea*, Tul.) unless each and every receptacle, package, sack or bag containing such seeds, or a label securely attached thereto, is marked in a plain and indelible manner:—

- (a.) with the full name and address of the seller;
- (b.) with the name of the kind or kinds of seed;
- (c.) with the common name or names of the aforementioned weeds, the seeds of which are present in the seed sold or offered, exposed or had in possession for sale.

Section 7. "No person shall sell or offer, expose or have in his possession for sale any seeds of Timothy, Red Clover, Alsike, or any mixture containing the said seeds, in or from any receptacle, package, sack, or bag upon which is marked 'No. 1' or any other designation which represents such seeds as of first quality, unless they are free from the seeds of weeds named in section 6 of this act, and are also free from seeds of White Cockle, (*Lychnis vespertina*, Sibth) Night-Flowering Catchfly, (*Silene noctiflora*, L.); False Flax, (*Camelina sativa*, Crantz); Canada Thistle, (*Cnicus arvensis*, Hoffm.); Oxe-Eye Daisy, (*Chrysanthemum leucanthemum*, L.); Curled Dock, (*Rumex crispus*, L.); Blue weed (*Echium vulgare*, L.); Ribgrass, (*Pantago lanceolata*, L.) Chicory, (*Cichorium intybus*, L.) and contain out of every one hundred seeds not less than ninety-nine seeds of the kind or kinds represented, or seeds of other useful and harmless grasses and clovers, of which ninety-nine seeds ninety seeds must be germinable".

It will be noted that section seven applies only to Timothy, Red Clover and Alsike seed, and provides for a higher standard for seed that is marked as of first quality.

Section 8. "No person shall sell, or offer, expose or have in his possession for sale for the purpose of seeding in Canada, any seed of Timothy, Alsike or Red Clover or any mixture containing the said seeds, if the seeds of the weeds named in sections six and seven of this Act are presented in a greater proportion than five to one thousand of the seed sold, or offered, exposed or held in possession for sale."

This section also refers only to Timothy, Red Clover and Alsike seed, and designates the maximum proportion of weed seeds allowed in the good seed. It forbids their presence only when the seed is to be used in Canada, but allows its exportation.

Section 4. "The provisions contained in this Act shall not apply to:—

(a) any person growing or selling seeds for the purpose of food in respect of seed sold, or offered, exposed or had in possession for sale, for such purpose;

(b) any person selling seeds to merchants to be cleaned or graded before being offered for sale for the purpose of seeding in respect of seeds sold, or offered, exposed, or had in possession for sale, for such purpose;

(c) seed that is held in storage for the purpose of being recleaned, and which has not been offered, exposed or held in possession for sale for the purpose of seeding;

(d) seed marked 'not absolutely clean' and held or sold for export only."

The purpose of section 4 is to make the necessary exceptions to the application of the Act in order that it may not hamper legitimate trade.

The remaining sections refer to the method of inspection and analysis of seed, the enforcement of the Act, penalties, etc. The full text of the Seed Control Act may be had by applying to the Seed Commissioner's office.

While the Seed Control Act prevents the sale of extremely bad seed, it is not by any means a drastic measure. Seed may be sold under its provisions that is really inferior in quality. The section most frequently violated in British Columbia is section 8 as stated above. What the proportion of five seeds per thousand amounts to in bulk lots may be understood from the fact that a pound of average sized Red Clover seed contains about 350,000 seeds, of Alsike 700,000 seeds, and of Timothy 1,350,000 seeds. Timothy, therefore that contained 6,000 seeds of Canada Thistle per pound, if it contained no other seeds, and was not sold as No. 1 would be allowed under the Act. Except in the section governing seed sold as No. 1, there is no provision made against any other weeds than those mentioned. It is therefore possible to sell seed of which a large proportion is the seeds of other less noxious weeds. In some few samples examined from British Columbia, Sheep Sorrel was found in large quantities. White clover, Alfalfa, and the grasses other than Timothy are not controlled by the Act except in Section 6. It is therefore possible to sell these seeds with any other weeds in them in any proportion provided the fourteen named in Section 6 are not present. There is also no protection given as to the germination of any seeds other than Timothy, Red Clover, and Alsike, and only in respect of these when they are sold as No. 1. It will therefore be seen that the Act provides only a measure of protection to farmers and seed merchants who desire to protect themselves in the purchase or sale of seeds of the more common kinds of farm crops.

TRADE NAMES.

More than half the seed sold in British Columbia is sold without any trade name or brand. Most merchants have only one grade in stock and use no name to describe it. The greater part of that which does bear a grade name might just as well be unnamed, so far as the name conveys any meaning to farmers. Such names as "Globe," "Eider," "Lion," "Pine Tree," "Beryl" and others equally meaningless to farmers are used by seedsmen. It is apparent that by selling his seeds under such names the seedsman assumes no responsibility as to their quality. The farmer who buys seeds with these picturesque names is getting therewith no assurance that they are clean and good. There is a small proportion of Timothy, Red Clover, and Alsike seed sold as "XXX" or No. 1. The merchant who marks thus is, according to Section 7 of the Seed Control Act, responsible for a much higher quality in his seed, than if he did not so mark. It is there-

fore advisable for buyers to require of seed merchants, that seed of these three kinds, be marked as of first quality. There are several names that might be used to so distinguish it. Some are "XXX," "No. 1," "First Class," "Prime," "Extra Choice," "Fancy," etc. Seed so marked must conform to the standard set in Section 7 of the Seed Control Act, if it is seed of Timothy, Red Clover or Alsike.

From the investigation made this year, 1907, it would appear that the merchants might assume a little more responsibility in marking their seed as of first quality. Of the Red Clover examined, only 9 per cent was so marked, while 53 per cent was of high enough quality to conform to the standard set for No. 1. Of the Alsike Clover, 18 per cent was marked as first-class, while 77 per cent conformed to that standard. Of the Timothy only 7 per cent was marked as first quality and 86 per cent could pass examination as No. 1. It would therefore appear that the majority of the sellers of seed are selling a first-class article, and that for the assurance of the buyer it might as well be marked as such. Such marking also makes the selling of an inferior grade by the few so disposed much more difficult.

The names given to Alfalfa, White Clover and to the grasses other than Timothy, are much more ambiguous than those given to the three kinds of seed discussed above. Such names as 'Fancy', 'Prime', or 'Extra Choice' are met with. Section 7 of the Seed Control Act does not apply to these kinds of seeds and consequently no additional responsibility is assumed by such marking.

SEED INSPECTION.

While it is possible for any individual to make prosecution under the Seed Control Act, the work of enforcing it falls chiefly on the officials of the Seed Branch. During the two seasons that it has been in force, a fairly thorough inspection has been made of the seed sold in British Columbia. As yet no prosecutions have been made under the Act in this province. There are several reasons. The violations have not been as numerous nor as flagrant as in Eastern Canada. The evidence was that where violations did occur they were not intentional. During the season of 1906 all samples analysed had to be sent to Ottawa, which occasioned considerable delay in the return of reports. For these reasons the department has so far instituted no prosecutions. Merchants who sold seed contrary to the Act have, however, been warned. Now that warnings have been made for two seasons, the department can justly prosecute those who violate in 1908.

For the season of 1907 the work of analysis was done at the new seed laboratory established at Calgary. This laboratory is within easy access of any part of British Columbia, at present under agriculture, and reports can be returned within a few days. This year, 1907, about 200 samples of the clover and grass seed sold in British Columbia were taken for inspection. The result of this investigation is presented in the following tables.

RED CLOVER.

Red Clover is grown more extensively in British Columbia than is any other kind. There are two distinct varieties commonly used, the Common Red and the Mammoth Red. Of these the Common Red is more generally in use. It is a deep-rooted biennial plant. Though rarely appearing in quantity after the second year, if the aftergrowth is not cut or closely pastured, it freely reseeds itself and thus continues its existence. Its stems are shorter and finer than those of the Mammoth variety, and it matures a few days earlier. The Mammoth clover is a short-lived perennial, but after the second year it seldom produces a profitable crop, unless it has re-seeded. It is very hardy and is considered a better variety for light soils than the Common Red.

It is practically impossible to distinguish the seeds of one variety from the other. The Mammoth seeds sometimes show a little higher colour. The two varieties are very often mixed.

Very little Red Clover seed is grown in British Columbia. It is a branch of agriculture that might profitably be entered upon. The seed can be grown success-

fully. Prices are necessarily high owing to high transportation charges. Most of the seed used at present is grown in Ontario and the United States.

RED CLOVER.

Laboratory test Number.	Where Obtained.	Grade as named by Merchant.	Per cent Germination.	Per cent Purity.	NO. OF SEEDS OF WEEDS NAMED IN SEED CONTROL ACT, 1905, IN SAMPLE OF 5 GRAMS (1/2 OZ. APPROX.)				Total Number of Weed Seeds per lb.
					Rib-grass.	Curled Dock.	Rag-weed.	Catch-fly.	
411	Armstr'ng	"Mink"	92	92.4	12	3		17	6,120
412	"	"	99	98.9		4		4	1,620
417	"	"	100	99	2	4	2		2,250
419	"	"	98	93.7		4		8	5,130
478	Vancouver	"	100	99.6	3		1		540
483	"	"Elder"	95	94.4	1	1		5	10,350
484	"	"Otter"	94	93	2	2	1	4	5,220
485	"	"XXX"	100	99.9	2				540
486	"	"Victor"	97	97.6				1	2,790
489	"	"XXX"	98	99.9	1				90
490	"	"Dove"	98	99.3	1	1			1,080
496	Victoria	"	99	98	47				4,320
497	"	"	98	99.3		1	1		1,440
507	"	"	99	99.8	2				180
512	"	"	89	99.1	3				990
514	"	"	98	97.5	9				900
525	Kelowna	"	99	99.5					990
550	Kamloops	"Lion"	97	99.7					1,350
552	"	"Elder"	90	90.2	1	5	(2 C'n'da Thistle)	13	9,900
555	Enderby	"	96	94.4					1,080
557	"	"	96	99.4					0
561	Kelowna	"Otter"	97	99.7	1				270
562	"	"Victor"	98	99.8	2	2			900
563	Vernon	"Tiger"	97	96.4				1	3,150
570	"	"XXX"	98	99.8	1				270
575	"	"	98	99.7					450
579	New Westminster	"No. 2"	98	94.2	3				5,670
581	"	"XXX"	96	99.3	1				720
584	"	"	90	97.8	22				6,570
587	"	"	97	99.5					270
600	Ladner	"	97	99	2				2,970
611	Nanaimo	"2nd"	95	92	7	3		2	3,600
614	"	"	96	99.8		1			360
616	"	"	88	99.4	4	2			5,130
619	"	"Elder"	97	87.6	9	9	(6 C'n'da Thistle)	10	7,830
620	"	"Otter"	98	99.8				1	2,250
623	Victoria	"	89	99.8	13				2,520
624	"	"	98	99.8	2				270
631	"	"	92	92.6	6	5		9	11,070
636	Duncan	"	98	99.8	1				360
638	"	"	94	99.4	7				2,706
641	Chilliwack	"	96	99.2		1	1		1,800
643	"	"	89	99.8	9				2,790
646	"	"	94	95.8	28				8,190
604	Nanaimo	"2nd"	93	99.9				1	270
607	"	"XXX"	98	99.9					360
652	Chilliwack	"	98	99.8		1			270
655	Kamloops	"Otter"	92	99.3					7,290
662	"	"Victor"	97	99.9					360
643	"	"Elder"	97	99.9		1			360
645	"	"Otter"	92	99.39					7,290
669	"	"Dove"	96	99.8	2	3		3	900
670	"	"Otter"	97	91	8	4			3,690
671	"	"	97	94	2	18			3,780
675	"	"	94	99.8	18				3,240

More noxious impurities were found in Red Clover than in any other kind of seed inspected. Nos. 411, 496, 552, 584, 619, 631, 646, 671, and 675 violate Section 8 of

the Seed Control Act. The five lots marked "XXX" comply with the requirements of Section 7. Of the weeds not named in the Seed Control Act, Green Foxtail is the most prevalent, occurring in the following quantities in the lots named, as well as in smaller proportions in others:

No. 411, 2,520 per lb.
" 483, 9,180 per lb.
" 484, 4,050 per lb.
" 486, 2,790 per lb.
" 552, 2,340 per lb.
" 568, 2,700 per lb.
" 600, 2,160 per lb.
" 611, 2,340 per lb.
" 616, 2,700 per lb.
" 631, 3,600 per lb.
" 646, 5,670 per lb.
" 655, 6,390 per lb.

Other weeds occurring in large quantities are: In No. 552, 5400 Black Medick per lb.; in No. 579, 5220 Yellow Foxtail per lb.; in No. 619, 3780 Black Medick; in No. 631, 1890 Lambs-quarter's per lb. Fourteen different species of weeds were found in No. 631. The vitality of the Red Clover was uniformly good.

ALSIKE CLOVER.

Alsike is not nearly as extensively grown in British Columbia as is Red Clover. However, it is used to quite an extent to mix with Timothy, particularly in the districts near the Coast. It is a hardy plant, in some soils perennial, but not usually living more than from two to four years. Its stems are finer and shorter than those of Red Clover, and it produces a finer hay but not as heavy a crop. When once cut, it produces no aftergrowth the same season. Alsike will grow in land that is too wet for other clovers.

The seed is about half the size of Red clover seed and is a deep green colour, varying to yellow. The deeper coloured seed is usually the stronger.

Most of the Alsike seed used in the province is grown in Ontario.

ALSIKE.

Laboratory test Number.	Where Obtained.	Grade as named by Merchant.	Per cent Germination.	Per cent Purity.	NUMBER SEEDS OF WEEDS NAMED IN SEED CONTROL ACT, 1905, IN SAMPLE OF 2 GRAMS ($\frac{1}{16}$ OZ. APPROX.)				Total Number of Weed Seeds per lb.
					Rib-grass.	Curled Dock.	Canada Thistle.	Catch-fly.	
476.....	Vancouver		99	93.5	1				34,425
487.....	"	"XXX"	99	99.9					0
488.....	"	"No. 2"	96	99.8					450
493.....	"	"No. 1"	97	99.4					1,125
504.....	Victoria		98	99.3		1			675
511.....	"		98	96.4		4		10	3,600
523.....	Nanaimo		98	98.1		8			1,800
553.....	Kamloops	"XXX"	94	99.8					675
556.....	Enderby		92	98.9					2,475
569.....	Vernon		94	89				16	16,200
580.....	New Westminster		91	99.1					450
585.....	"		92	99.8					675
597.....	Ladner		96	99.1				2	2,025
603.....	Nanaimo		91	99.9					0
625.....	Victoria		94	99.7					2,250
642.....	Chilliwack		93	99.6					0
648.....	"		89	98.8		1	2	4	3,375
650.....	"	"Hawk"	94	98.8	1				2,475
654.....	Kamloops	"XXX"	97	100			1		0
665.....	"	"Duke"	89	99.9					450
666.....	"	"Elk"	93	99			1		1,350
674.....	"		96	99.9					0

No. 569 violates section 8 of the Seed Control Act in having 16 seeds of Catchfly in 2 grams or at the rate of 3,600 per lb. The three lots marked "XXX" and one lot marked No. 1, all comply with the requirements of section 7. The weeds present in largest quantities were as follows: in No. 476, 21,375 seeds of Sheep Sorrel and 2,250 of Mayweed per lb.; in No. 569, 11,025 seeds of Black Medick per lb.

The vitality of the Alsike seed was uniformly good.

WHITE CLOVER.

Although White or Dutch Clover is used very little for hay production, the seed is sold in considerable quantities throughout British Columbia to be used for lawns and permanent pastures.

The plant forms a fine dense growth near the ground and makes a splendid turf. It is well suited to permanent pasture as it is extremely hardy, and will stand close-cropping. Its seed is rather smaller than Alsike seed, and is light yellow in colour.

WHITE CLOVER.

Laboratory test Number.	Where obtained.	Grade as named by Merchant	Per cent Germination	Per cent Purity.	Total Number of Weed Seeds, per lb.
409	Armstrong		84	99.0	900
416	"		95	89.9	2,475
474	Vancouver		95	98.7	225
479	"	" Fancy "	96	99.0	5,175
502	Victoria		92	97.4	0
513	"		86	98.6	12,150
515	"		98	95.5	15,750
528	Kelowna		89	73.3	8,100
529	Vancouver		94	73.6	6,975
573	Vernon		94	99.3	2,025
577	"		93	99.6	1,350
578	New Westminster		91	99.0	225
586	"		92	96.3	225
602	Nanaimo		87	99.7	2,700
626	Victoria		91	99.2	6,750
630	"		93	99.7	4,050
634	Duncan		96	99.6	1,125
647	Chilliwack		90	99.3	1,575
658	Kamloops		93	99.8	1,125

Sections 7 and 8 of the Seed Control Act do not apply to White Clover. The weeds present in largest quantities were: in No. 479, 4,500 seeds of Broad-leaved Plantain per lb.; in No. 513, 7,650 seeds of Sheep Sorrel per lb.; in No. 515, 9,500 seeds of Sheep Sorrel and 2,700 of Broad-leaved Plantain per lb.; in No. 528, 5,585 seeds of Black Medick per lb.; in No. 529, 5,400 seeds of Black Medick per lb.; in No. 626, 5,625 seeds of Broad-leaved Plantain per lb. Nos 528 and 529 each contained about 25 per cent of Alsike seed; as Alsike retails for less than White Clover and is not suited to the purposes for which the latter is used, this must be considered as an undesirable, though not a noxious adulteration.

ALFALFA.

Alfalfa or Lucerne is a crop that is year by year coming into greater popularity and more general use. Particularly in the dryer regions in the interior of the province, it is being used extensively as a forage crop.

It is a deep-rooted long-lived perennial. With reasonable care the life of the plant has scarcely a limit. The roots penetrate far into the lower subsoil in search of moisture. It can withstand drought better than any of the other clovers in use. The hay produced is very nutritious. Two or three cuttings can be made each year.

The seed is as large or a little larger than Red Clover seed, is kidney shaped, and dull yellow in colour. The principal source of the seed in British Columbia is the region including the States of Utah, Idaho and the neighbouring Mountain States of the Union. Some Alfalfa seed is grown locally. So far the amounts have seldom been greater than the grower's needs. None of the seed herein reported was sold as local-grown. It can, however, be grown with success in the Interior region of the province.

ALFALFA.

Laboratory test Number.	Where obtained.	Grade as named by Merchant.	Per cent Germination	Per cent Purity.	Total Number of Weed Seeds, per lb.
477.	Vancouver		99.6	97.0	1,350
482.	"	"Turkestan"	97.0	98.9	360
503.	"		99.0	97.5	630
526.	Kelowna		95.0	99.1	270
530.	Vancouver		83.0	98.5	630
551.	Kamloops	"Extra Choice"	83.0	99.8	180
567.	Vernon		94.0	99.7	360
576.	"		96.0	98.9	1,080
588.	New Westminster		66.0	100.0	0
657.	Kamloops	"Choice"	98.0	99.9	0
661.	"		98.0	99.8	360
667.	"		96.0	99.9	90
673.	"		98.0	99.8	360

Sections 7 and 8 of the Seed Control Act do not apply to Alfalfa. No. 530 contained 6,300 seeds of Green Foxtail per lb. Six out of the thirteen lots contained seeds of Ribgrass. No. 588 was in appearance the best sample of Alfalfa in the lot; the low germination (66%) is due to the fact that a large proportion of the seed remained hard during the test, and neither germinated nor decayed. This is occasionally found in particularly fine-looking seed, and is due to a thick impermeable seed-coat. Exposure to frost while the seeds are wet will start many of them. Nos. 530 and 551 contained a large proportion of dead seed.

TIMOTHY.

Timothy is grown much more extensively as a forage crop than any other, in all parts of British Columbia. Probably the acreage devoted to Timothy is equal to that devoted to all the clovers and other grasses combined. Even when other crops are used, they are usually mixed with Timothy.

It is a long-lived hardy perennial plant. Its root spreads by throwing out secondary roots from the crown, thus producing branches; it has not the running underground rootstock of some perennial grasses. It is very shallow-rooted and feeds at the surface. Consequently when left several years, it starves itself out and produces poor crops. For the first year or two it is a heavy yielder. The hay is of excellent quality and is the standard hay of commerce.

The seed is very small, 1,350,000 approximately being required to make a pound. The principal source of supply for British Columbia is the central Northern part of the United States, including Iowa, Illinois, and Minnesota, also some Ontario seed is used. There is more Timothy seed produced in the province than there is of all the other grasses and clovers. Many farmers grow their own supply. Some few grow more than their own needs, and there is a little offered for sale in the trade. The British Columbia grown seed is remarkable for its plumpness and its bright colour. There being no recleaning machinery in the province, it shows at a disadvantage in point of percentage of purity. The impurities are not usually of a seriously noxious nature.

TIMOTHY.

Laboratory test Number.	Where obtained.	Grade as Named by Merchant.	Per cent Germination	Per cent Purity.	Total Number of Weed Seeds, per lb.
410.....	Armstrong.....	"Globe".....	98	100	0
414.....	".....	"Local".....	99	99.9	0
415.....	".....	"2nd".....	96	90	43,775
418.....	".....	"Beryl".....	99	99.2	0
475.....	Vancouver.....	".....	98	99.75	5,850
491.....	".....	"XXX".....	96	99.99	225
492.....	".....	"Globe".....	97	99.9	225
498.....	Victoria.....	".....	93	98.5	3,600
506.....	".....	".....	98	99.7	225
520.....	".....	".....	73	99.8	0
527.....	Kelowna.....	".....	96	99.7	1,125
524.....	Nanaimo.....	".....	100	99.9	225
531.....	Vancouver.....	"Pine Tree".....	99	99.8	450
549.....	Kamloops.....	".....	98	99.9	225
554.....	Enderby.....	".....	63	100	0
558.....	".....	"Local".....	99	98.8	1,350
559.....	Kelowna.....	"Pine Tree".....	98	98.9	9,225
560.....	".....	"Globe".....	96	100	0
566.....	Vernon.....	".....	94	99.3	0
574.....	".....	"Globe".....	94	99.8	450
562.....	New Westminster.....	".....	100	95.1	15,750
593.....	Victoria.....	".....	98	99.6	4,050
598.....	Ladner.....	"Local".....	99	66.4	6,975
599.....	".....	".....	97	81.5	2,475
601.....	".....	".....	99	97.8	4,500
605.....	Nanaimo.....	".....	98	99.9	225
606.....	".....	"XXX".....	98	99.9	450
615.....	".....	".....	97	99.9	0
621.....	".....	".....	98	99.9	450
622.....	Victoria.....	".....	97	99.9	675
632.....	".....	".....	90	99.6	5,175
633.....	Duncans.....	".....	98	99.8	325
635.....	".....	".....	98	99.5	3,825
640.....	Chilliwack.....	".....	73	99.8	675
644.....	".....	".....	99	93	16,200
645.....	".....	"Local".....	98	99.9	675
649.....	".....	".....	98	99.9	0
651.....	".....	".....	98	99.9	0
653.....	Kamloops.....	"Pine Tree".....	96	99.9	225
659.....	".....	"XXX".....	98	100	0
664.....	".....	"Globe".....	94	100	0
672.....	".....	".....	99	98.8	0

There were no violations of the Seed Control Act, in the sale of Timothy seed in British Columbia. The weed, the seed of which is most prevalently found, is Sheep Sorrel. No. 415 contained 40,500 seeds of it per lb.; No. 559, 9,225 per lb.; No. 582, 15,750 per lb.; No. 598, 4,725 per lb. and No. 601, 4,275 per lb. No. 632 contained 2,250 seeds of Cinquefoil per lb. No. 598 contained over 30 per cent of Alsike and No. 599 had a considerable proportion of both Alsike and Red Clover. While these are impurities, they retail at a higher price than Timothy and are often mixed with it for sowing; the buyers would therefore not consider this mixing as objectionable. With these two exceptions and those of the samples named above, the purity of the Timothy in British Columbia is very good. With the exception of Nos. 520, 554 and 644, evidently old seed, the vitality is uniformly good.

OTHER GRASSES.

The grasses other than Timothy are not grown extensively. A small amount of Orchard grass is used for hay production, particularly on Vancouver Island. Red Top is also used to a slight extent for the same purpose. The Blue-grass and the Rye-grasses are used for lawns and permanent pastures, but the sale of seed is quite limited.

OTHER GRASSES.

Orchard Grass.

Laboratory test Number.	Where obtained.	Grade as named by Merchant.	Per cent. Germination	Per cent. Purity.	Total Number of Weed Seeds, per lb.
413.....	Armstrong.....	.....	28	98.7	360
480.....	Vancouver.....	.....	92	90	900
501.....	Victoria.....	.....	57	99	0
563.....	Kelowna.....	.....	38	98.9	180
590.....	New Westminster.....	.....	52	98.5	0
608.....	Nanaimo.....	.....	61	100	0
617.....	".....	.....	50	99.8	0
627.....	Victoria.....	.....	52	99.4	720
637.....	Duncans.....	.....	56	99.8	0
639.....	".....	.....	44	99.7	360

Brome Grass.

668.....	Kamloops.....	58	99	0
----------	---------------	-------	----	----	---

Red Top.

494.....	Vancouver.....	.....	91	88.1	81,675
495.....	".....	"No. 1.".....	92	89.1	0
510.....	Victoria.....	.....	57	99	0
571.....	Vernon.....	.....	95	99.3	225
592.....	New Westminster.....	.....	92	70	1,125
656.....	Kamloops.....	"Fancy".....	91	88	83,025

Perennial Rye Grass.

481.....	Vancouver.....	.....	97	99	540
509.....	Victoria.....	.....	80	100	0
518.....	".....	.....	40	99.3	90
623.....	".....	.....	65	99.59	0

Italian Rye Grass.

500.....	Victoria.....	.....	69	98.1	0
519.....	".....	.....	60	95.1	0
589.....	New Westminster.....	.....	56	99	0
591.....	".....	.....	89	99.2	0

Kentucky Blue Grass.

508.....	Victoria.....	.....	64	99.9	90
517.....	".....	.....	43	99	0
564.....	Kelowna.....	.....	54	99.7	450
572.....	Vernon.....	.....	21	99.5	900
593.....	New Westminster.....	.....	34	99.5	0
613.....	Nanaimo.....	.....	39	99.7	4,500
629.....	Victoria.....	.....	46	99.5	4,050
660.....	Kamloops.....	.....	50	99	450

Canadian Blue Grass.

565.....	Kelowna.....	50	98.9	1,125
----------	--------------	-------	----	------	-------

No. 656 has the distinction of having the largest number of weed seeds of any sample in the whole investigation. It contained 83,025 per lb. made up of 72,450 seeds of Cinquefoil, 6,075 seeds of Broad-leaved Plantain and 4,500 of a species of Mint. No. 494, evidently from the same source, was a close second with 72,000 seeds of Cinquefoil, 5,175 seeds of Broad-leaved Plantain and 4,500 seeds of the same Mint. No. 613 had 2,250 seeds of Shepherd's Purse per lb. and No. 629 had 2,025 seeds of Mouse-ear Chickweed per lb. Nos. 495 and 592 had a large proportion of Timothy.

The vitality of the grasses is on the whole not satisfactory. The sale is very small and merchants in many instances hold over stock from year to year, and the vitality gradually lessens. All the Orchard Grass except No. 480 is low. The one sample of Brome grass is low. The Red Top with the exception of No. 510 is very good in vitality. Kentucky Blue Grass is not expected to germinate a high percentage, but should not be so very low as Nos. 572, 593 and 613.

