

GRASS AND CLOVER SEEDS.

An Address Delivered at the Last Meeting of the Farmers & Dairymen's Association Woodstock, by C. H. Clarke of the Seed Department, Ottawa.

Timothy, Alsike and Red Clover are the principle grass and clover seeds on the markets in the maritime provinces. There is a limited quantity of Timothy produced in New Brunswick, but practically all of the Alsike and Red Clover is imported and the greater part of it is grown in Ontario. Farmers who grow these seeds in Ontario sell them either direct to the wholesale seed houses or to local buyers who in turn resell to the larger firms. In the large seed houses in Toronto, Montreal and other places these grass and clover seeds are re-cleaned and graded. Generally speaking the large seed firms do not offer the lower grades of seed for sale in their retail trade. They have a reputation at stake which would be injured by so doing. They prefer to wholesale the lower grades to local dealers.

Competition in the seed trade has been, and still is, too largely confined to prices without due attention being given to quality. Competition among local dealers in towns and villages induces them to buy the cheaper grades of seed for their trade. They know that most farmers, like themselves, are incapable of judging estimating the real value of the sample or of detecting noxious impurities. There are few articles in the commerce of agriculture in which the real worth is so difficult to judge from appearance as grass, clover, and other small seeds.

Canadian seedsmen make use of a non-warranty clause which is usually printed in their catalogues, in their blank order sheets, and attached to or enclosed with shipments of seed. They claim that it is necessary to protect themselves by inserting such a clause because the seed they sell is seed which they have purchased and with which they receive no guarantee regarding its genuineness, purity or vitality. Again it is claimed by some seedsmen that purchasers of seeds might make claims for damages because of crop failures, even though the seeds were genuine pure and vital.

PURITY AND VITALITY.

The principal indication of value in seed grain is the pedigree or history of the stock from which it came. Although purity and vitality count for much in seed of wheat, oats or barley, it is a great deal more important that the seed be true to name and taken from a crop that possess vigour and productiveness. Purity and vitality, however, is of great importance in grass and clover seeds. It would be impossible to estimate the loss that is sustained by the farmers of New Brunswick because of the abuses in the seed trade. The cost of labour in fighting weed pests has grown to be a very important item of expense to the farmers. Many of the worst weed pests have, undoubtedly, been introduced by unwittingly sowing them with grass and clover seed.

Crop failures caused by the use of seed of low vitality are inconsiderable items of loss when compared with the serious injury that is done by sowing seed which contains noxious weeds. Fresh, well ripened seed of grasses and clovers is seldom deficient in vitality. On account of unfavourable weather conditions it is sometimes difficult to ripen seeds of Red Clover, and in some seasons a great deal of seed is harvested before it is fully matured, consequently it is weak in vitality and vital energy. Again during seasons of low prices, grass and clover seeds are carried over by wholesale firms from year to year. If these seeds be kept in a cool dry place they do not lose their vitality rapidly, but if improperly stored or kept for two or more years the power to germinate and vital energy become seriously weakened.

SEED INVESTIGATION 1902.

With a view to obtain some definite information regarding the conditions of the trade in Timothy, Alsike and Red Clover seed, a seed laboratory was established in connection with the Commissioner's branch of the Dominion Department of Agriculture. Last year 513 samples of these seeds were secured from local dealers and analyzed for both purity and vitality. The idea of establishing seed testing stations with a view to improve the quality of seed sold as well as to safeguard the interests of agriculture is not a new one. Seed testing stations have been established in most of the European countries. Germany alone supports 39 establishments for the testing of seeds.

With the assistance of Mr. Peters, Deputy Commissioner of Agriculture for New Brunswick, we were able to obtain samples of Timothy, Alsike and Red Clover seed that were offered for sale by local dealers in the towns and villages in this province. With

each sample information was received giving the name of the place and the dealer by whom it was sold, the price per pound or per bushel, and the origin of the seed.

TIMOTHY.

About 60 per cent of the samples of Timothy seed received from the province of New Brunswick were reported to have been taken from seed that had been obtained by the local dealers from Toronto seed houses. A number had been obtained from Montreal and a few from the United States. Out of the twenty four samples analyzed, eight contained over 1,000 weed seed per pound. One sample contained eleven and another thirteen species of weed seeds.

ALSIKE.

Only four samples of Alsike seed were obtained from this province and those contained 11 species of weed seeds. Sheep Sorrel, White Cockle, Black Medick and Canada Thistle were the most common impurities. One sample which was obtained from Sussex contained 21,600 seeds of Sheep Sorrel per pound, and had evidently been taken from old seed because it was very low in vitality.

RED CLOVER.

Twenty-one samples of Red Clover were obtained from New Brunswick, one of which was reported to have been grown in Carleton County. The rest had been obtained by the local dealers from Montreal and Toronto wholesale seed houses. A ten gram sample (about one-third of an ounce) from one lot contained the following weed seeds:—Lamb's Quarter, 80 seeds; Stickseed, 4; Canadian Thistle, 21; Catnip, 17; Mayweed, 5; Barnyard Grass, 1; Curled Dock, 44; Green Fox-tail, 303; Yellow Fox-tail, 3; Panicum Glabrum, 15; Plantain, 8; Bull Thistle, 1; Black Medick, 55; Black Bindweed, 2; in addition having 9 seeds of White Clover, 245 of Timothy and 953 of Alsike. Three of the samples contained Charlock or Wild Mustard and each contained eighteen or more species of weed seeds. Twelve cut of the twenty-one samples contained over 5,000 weed seeds per pound. Their general appearance as well as the results of their analysis is quite in keeping with the statements made by one of Toronto's prominent seedsmen: "Certain districts in the eastern provinces are an excellent dumping ground for the screening of western grown seed."

CONCLUSIONS AND SUGGESTIONS.

The trade in grass and clover seeds is an exceedingly fruitful medium for the dissemination of noxious weeds. Many of the most noxious weed seeds cannot be separated from grass and clover seeds by mechanical processes, therefore it is highly important that seed growers should thoroughly clean their fields of weeds before the crop is harvested.

The relative market prices of Timothy, Alsike and Red Clover seeds are not determined by their actual value. Competition in the seed trade has been too largely confined to prices without due attention to quality. Too many local dealers dabbling in the seed trade are incompetent to safeguard their customers from the dangers connected therewith. Under the present conditions it is advisable to purchase seeds direct from seed firms that are known to be reliable. Ignorance on the part of farmers, as well as ignorance and a lack of progressiveness on the part of seed merchants, are responsible for most of the abuses connected with the seed trade. Ignorance is an environment in which fraud flourishes. As long as Canadian farmers are content to use cheap, low grades of seed, without having any definite knowledge of their real worth, so long will the best quality of our home grown seeds be exported to countries where the seed trade is conducted on a more business like basis. Much permanent improvement may be accomplished by disseminating information regarding the conditions of the seed trade, among seed growers, seed merchants and seed consumers, through the medium of newspapers, bulletins and agricultural meetings. This process of education, however, is necessarily slow and will need to be supplemented by other measures, if the evils connected with the seed trade are to be checked in the near future. There is great need for wise measures and energetic and persistent efforts to protect Canadian farmers and their fields from the far reaching and long continuing damages which arise from the sale of seed containing noxious impurities. It is not unreasonable to ask seedsmen to test their seeds, to grade them as to quality, and sell them accordingly; and it is not too much to require seed merchants to furnish a statement showing the percentage of purity and vitality of the grass and clover seeds they sell, instead of a non-warranty declaration. The sale of seed containing seeds of such weeds as Bindweed, or Wild Morning Glory, Wild Oats, Charlock or Wild Mustard, Field Penny-cress or Stinkweed and Perennial Sow Thistle should be restricted or prohibited.

SEED SELECTION.

Good seed is an important factor in the production of farm crops. The same principles that underly the improvement of live stock by feeding, selection and breeding also apply in the improvement of seed grain.

If we take an ideal pure bred, short horn calf of excellent conformation and raise it on skim milk, straw stack, and strong east wind ration the resultant animal will be a very undesirable one for breeding purposes.

Here in New Brunswick maximum yields of grain are obtained from the use of a fair amount of seed. It appears to be advisable to use a larger quantity of seed per acre in this province than in Ontario because the season for growth here in the maritime provinces is considerably shorter. It is well known that thin seeding is favourable to stooling on account of which the time required for the crop to reach maturity is extended. By thick seeding the land is supplied from the start with all the plants it can carry through the season and the crops will not be retarded because of stooling; consequently the time required from the date of seeding until maturity is shortened. The farmers in the province of Ontario can better afford to allow their spring grain crops to be held back for stooling, because they have a longer period for growth and a warmer season for ripening the crop.

The amount of seed required to give the best results here in New Brunswick or elsewhere, will depend on the season, on the kind and variety of grain, but most of all on the condition of the soil. With an average New Brunswick season, it good seed of the Banner oat be early and evenly sown and well covered in good conditioned and well prepared soil, two bushels of seed per acre should be quite sufficient.

Many farmers here in New Brunswick have an idea that it is necessary for them to get a fresh supply of seed from the West every two or three years. They have proven to their own satisfaction that after they have obtained fresh Ontario grown seed and have used it for three years it becomes "run out." It certainly does become "run out," and there are very good reasons for it.

The practice of buying ordinary grain that is brought in from the West and using it for seed has been playing havoc with grain growing in this province. The farmers of New Brunswick are awakening to the fact that weeds are taking possession of their fields. Where they come from is a mystery to many, but if they now had samples of the seed oats which they have been using during the last 10 years it would help them to solve the problem. There is, however, another excellent reason why maritime farmers should not use western grown seed. The climatic conditions of the West are very dissimilar to those in New Brunswick, and the violent change strongly induces a tendency in seed to deteriorate in vigor and productiveness.

The average yield per acre of wheat and oats taken from the crop returns for the province are low. During the last three years accurate yields of wheat and oats have been obtained from some 60 quarter-acre seed plots that were operated in connection with the Macdonald Seed Grain Competition. The following table shows the average yields from seed plots that were conducted on the same farms in the province of New Brunswick, compared with the average yields per acre taken from the crop returns for the province.

Yields per acre of wheat and oats in New Brunswick.
Macdonald Seed Plots versus Average for Province.

WHEAT.		
Year	Average Yield for Province bus. per acre.	Average yield from Seed Plots. bus. per acre.
1900.....	18.7	25.9
1901.....	18.4	26.4
1902.....	20	33.3
OATS.		
1900.....	29.5	49.2
1901.....	26.8	53.7
1902.....	30.8	75.

If the average yield per acre of oats alone can be increased by one bushel per acre it will mean valuing oats at 30 cents per bushel, an increase of \$55,000 to the farmers of this province. Judging from the results that have been obtained from the Macdonald Seed Grain Competition an increase of five bushels per acre of oats can be had by the use of improved seed. Corresponding increases in yields can be had from other crops by the same means.

Seed grain that is used in New Brunswick should be grown in New Brunswick, or some place where the conditions of climate are not dissimilar to this province. Seed grain should not be taken from land that is in poor condition or from a crop that is forced by thick seeding. If the practices of thick seeding be found to give the best returns for the general crop it follows that it should be continued, but a supply of seed should be provided from plants that have had plenty of room to stool and fully develop and from a crop that is

grown on specially fitted soil from seed that has been improved by careful and continued selection.

There is much need for a few farmers in each locality here in New Brunswick who will make a specialty of growing pure and improved seed in quantity. The improvement of seed grain is a very simple matter. On the average 100 acre farm there is usually 5 or 10 acres of land that is well suited to growing cereal crops. A portion of this land should be specially fitted each year for the growing of seed. The object should be to give each individual plant an opportunity to reach the best possible development, rather than to force the crop to a maximum yield by thick seeding. In the growing of seed grain it has been found a good practice to use an ordinary grain drill and set to sow one and one half bushels per acre, having every other drill tube plugged; that would leave the drills of grain about 14 inches apart. When the crop is coming up it is advisable to harrow it length wise of the drill, that is equal to once hoeing. It is also advisable to hoe the crop once when the grain is about four inches high. When this seed crop is fully ripened a couple of hundred pounds of the largest and best heads should be gathered. The rest of the crop should then be harvested and used for seed for the general crop of the farm. The seed from the large heads should be used to sow a seed plot for the following year.

An important movement has already been started in Canada for organizing seed growers associations. There are at present in the province of New Brunswick about 60 farmers who are in possession of improved seed, and arrangements are being made so that they may combine their efforts and form what may be called the New Brunswick Seed Growers Association. This Association will be in a position to provide its members with some recognized way whereby the seed grain they produce may be known on the markets from ordinary grain. The time is not far distant when pedigreed seed oats in the province of New Brunswick will bring prices that will be remunerative to the producer.

Another movement that is under way for the holding of spring seed fairs. Annual seed fairs have been held at several places in the province of Ontario for a number of years. An important one has been held at Guelph every spring for over 30 years, and has proven to be exceedingly useful to the farmers living within a radius of 20 or 25 miles from that place. It is usually held in March or early in April. The object of these fairs is to bring together seed growers and seed buyers for the sale and exchange of seed grain and potatoes.

In districts where they have been held they have done much to encourage seed growing as a special industry in farming. It is within the province of any agricultural society to provide funds for prizes and arrange for the holding of these seed fairs. It has been found wise to hold them on market days, and in places convenient to the market in centrally located towns or cities. Prizes should not be offered at these seed fairs for less than 5 or 10 bushel lots of seed grain that are brought out and offered for sale, and no prize should be given for any seed that is not true to kind and free from noxious impurities. This movement is worthy of the best support of every maritime farmer.

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11.35 A EXPRESS—Week days—for Presque P Isle, Edmundston, and all points North.
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1.45 P MIXED—Monday, Wednesday, and P Friday—for Fredericton, etc., via Gibson Branch.
4.45 P MIXED—Tuesday, Thursday and Saturday—for Fredericton, etc., via Gibson Branch.
5.38 P EXPRESS—Week days—for Houlton, St. John and East; Vanceboro, Sherbrooke, Montreal, and all points West, Northwest and on Pacific Coast; Bangor, Portland, Boston, etc. Palace Sleeper McAdam Jct. to Montreal. Pullman Sleeper McAdam Jct. to Boston.

ARRIVALS.
11.35 A. M.—EXPRESS—Week days, from Saint John and East; Fredericton, St. Stephen, Houlton, Boston, Montreal, etc.
12.10 P. M.—MIXED—Week days, from Perth Jct.
12.25 P. M.—MIXED—Monday, Wednesday and Friday, from Fredericton, etc., via Gibson Branch.
12.20 P. M.—MIXED—Tuesday, Thursday and Saturday, from Fredericton, etc., via Gibson Branch.
5.38 P. M.—EXPRESS—Week days, from Presque Isle, Carleton, Edmundston, etc.
7.46 P. M.—MIXED—Week days, from Aroostook Jct.
11.40 P. M.—MIXED—Week days, from Houlton, Fredericton, St. John and East; St. Stephen, St. Andrews, Bangor, Portland, Boston, etc.
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