

knives on the cutting-box be kept very sharp, else good work cannot be done, and in putting the corn into the silo it is always well to have plenty of men inside to tramp. The tighter the corn goes in, the better will be the silage from it. We would rather have one man too many in the silo than one too few.

A good average crop of a heavy-yielding variety of silage corn, on a well-manured, spring-

ploughed, clover sod, grown from tested and selected seed, with the crop frequently and carefully cultivated throughout the growing season should give an average yield of fifteen tons per acre one year with another. A heavier yield than this is possible, but this is a good average. Corn is King and silage corn is King of all corn.

from Experiment stations can be maintained for many years by the method of selection recommended by the Association. At the Ontario Agricultural College about thirty varieties of farm crops have been grown continuously for a quarter of a century, without any change whatever from one farm to another. These varieties include oats, two-rowed and six-rowed barley, hull-less barley, winter wheat, common spring wheat, and potatoes. The results show that in many instances in recent years, instead of a decrease there has been an actual increase in yield of grain per acre. The soil has changed but little in fertility in all that time, and no plant selection was practiced. The selection of the seed and the growing of the crop were given due attention, and the test has shown that a variety suitable to the district and the soil on which it is grown, can be depended upon for a long number of years. A change of variety is, of course, quite in order, and will often effect a considerable increase in yield, but it appears unnecessary to change the seed simply for the purpose of rejuvenation, or whatever the belief is. Improvement through seed selection should be the aim of every farmer.

VARIETIES.

When one attempts to advise varieties for such a broad and varied field as Ontario, or Canada, the recommendations must be correspondingly broad. However, in almost every kind of grain there are one or more varieties that have demonstrated superior qualities when grown east of the Great Lakes. In oats, one must look for a small percentage of hull, a fair amount of straw that stands up well, and a good yield of grain per acre. For Eastern Ontario, Prof. J. H. Grisdale, Director Experimental Farms, Ottawa, favors the Banner, which is a tried and true kind, and one that has stood the test of time. No one will make a very bad mistake who sows a good sample of Banner oats. Another variety, the Siberian, will often out-yield the one previously mentioned, and under many circumstances it gives very satisfactory results. The Joannette, a black oat, is thin in the hull, and a good yielder. The O. A. C. No. 72 is of recent origin, but it stands up remarkably well with other oats, regarding quality and yield. Prof. C. A. Zavitz, who brought this oat into existence, has great hopes for its popular acceptance as the standard variety in Ontario. It has made rapid progress, it has given satisfaction, and has become prominent in field crop competitions and tests. Other varieties, such as Abundance, Ligowa, and New Sensation, are also worthy of mention. The Daubeney and O. A. C. No. 3 are early oats, suitable to be sown with barley in a mixture. They will be discussed in another paragraph.

In barley there are two leading varieties, namely, Mandscheuri, and O. A. C. No. 21. It is estimated that 95 per cent. of all barleys grown in Ontario consists of the two varieties named. They are both six-rowed, bearded, white, and good yielders. The O. A. C. No. 21 is probably making the most rapid progress. It is a safe variety to sow.

In spring wheat, used for the production of flour, the standard variety for many years has been the Red Fife. Marquis has been introduced, and on strong land has done very well. As a general thing, however, it will not give the same quantity of straw as Red Fife. Of the durum or hard wheats, the best known variety is Wild Goose.

For a long period the Common Gray buckwheat was the leading variety of this grain in Ontario. It has, of late years, been replaced to a considerable extent by the Silver Hull and some of the Japanese varieties. At the Ontario Agricultural College, Rye Buckwheat surpassed the kinds already mentioned in the average yield per acre, throughout a ten-year period of experimentation. The Rye Buckwheat has been grown extensively in the Maritime Provinces, especially in Nova Scotia.

Rye is not a popular farm crop in Ontario. However, it is often sown on light soils where other kinds of grain would not thrive. The spring varieties have yielded at the Ontario Agricultural College, in the order named: O. A. C. No. 61, 23 bushels; Petkus, 26.8 bushels; Common, 23.5 bushels; Prolific Spring, 23.4 bushels.

VARIETIES IN MIXTURES.

Perhaps the most popular mixture of grains grown in Ontario is that made up of oats and barley. An early variety of oats is necessary that the two different grains may ripen together. One bushel of Daubeney oats combined with one bushel of O. A. C. No. 21 barley have given excellent satisfaction as a farm crop. The O. A. C. No. 3 oat has proven itself a better yielder than the Daubeney, and, since it is just as early, it could be used in a mixture of this kind. In fact, it has proven itself to be very well adapted for this purpose.

Stockmen often resort to combinations, in order to provide suitable grain for fattening purposes. A very successful steer-feeder in Huron County sows a mixture made up of one bushel of oats, one-half bushel of barley, and one peck of Goose Wheat per acre.

The Preparation and Selection of Seed Grain.

Farmers of Canada will face a shortage of farm labor in 1916, such as has never been experienced in this country in the past. Many will find themselves alone on 100 or 150 acres of land, and this they will be expected to till, sow and reap, that the nation may have bread. The duties of a great number of land owners will be arduous in the extreme, and no doubt the women of the rural districts will volunteer their services in the fields. The wives, mothers, and sisters on the farms are the kind that do not shirk work; they are the kind that help. While an immense amount of work, and hard work, is in store for Canadian farmers this coming season, none, we trust, are faint-hearted enough to sit down on the job. Now is the time to speed up the fanning mill and get the seed grain ready for the ground. The man is not true to himself, or true to his family, who, in the spring of 1916, will sow poor seed and devote all labor at his disposal to the production of a mediocre or indifferent crop. After the land is dry enough, the seeding should be practically all finished inside of ten days. That leaves little time for cleaning, or selecting grain. Yet it is important that good, plump seed be sown in every case. This is one way of increasing the yield. There will probably be five weeks, and in some cases more, before the drill is backed out of the shed, oiled up and filled with seed. In that five weeks while the earth is still dormant, a farmer can clean and select his seed grain, prepare mixtures and perform other timely work that will alleviate the rush when seeding comes, and in many cases increase the yield five bushels per acre. This is worth while. The actual influence of seed selection is not appreciated as it should be. We have been too careless in the past regarding what we have sown. Efficiency is the watchword for 1916; let us apply it to the seeding.

THE INFLUENCE OF SEED SELECTION.

At the Ontario Agricultural College, Prof. C. A. Zavitz tested, for over twenty years, the results of sowing heavy and light oats of the same variety. The Joannette, which is a black oat, was chosen. Grains which were large, plump and black made up one test. Grains light in weight and grayish in color made up another test, and in a third plot were sown grains from which the hulls had been removed in threshing. For a three-year period before the results were published, the average yield of grain per annum per acre from the plump seed was 67.2 bushels; from the light seed it was 50.2 bushels per acre, and from the hulled grain it was 61.4 bushels. The difference between the results from the plump and light grain amounted to 17 bushels per acre, which is an outstanding argument for special seed selection. The average yield of oats per acre per annum for the whole period of twenty-one years was 63.7 bushels for the large, plump seed; 51.4 bushels for the light seed; and 60.8 bushels for the hulled seed. This indicates that the careful selection of the large, plump seed tended to increase the crop, and that the continuous selection of the light seed tended to decrease the crop in yield of grain per acre. In another experiment, grain was selected as it came from the thresher, and several classes were made of the same kind of grain. On the average there were seven tests made in each case. The last two columns in the accompanying table show the average yields per acre per annum. This was not a case of continuous selection, for the samples were taken separately each spring. The outcome or results are similar to what the practical farmer might expect from planting the different qualities of seed in various proportions.

COMPARATIVE RESULTS FROM SEED SELECTION.

Selections.	Class of grain.	Tons of straw.	Bus. of grain by wt.
Large seed.....	Oats.....	1.9.....	62.0
Medium-sized seed.....	Oats.....	1.8.....	51.1
Small seed.....	Oats.....	1.8.....	46.6
Large, plump seed.....	Barley.....	1.5.....	53.8
Small, plump seed.....	Barley.....	1.5.....	50.4
Shrunken seed.....	Barley.....	1.4.....	46.0
Broken seed.....	Barley.....	1.3.....	43.2
Large plump seed.....	Spring wheat.	1.4.....	21.7
Small, plump seed.....	Spring wheat.	1.3.....	18.0
Shrunken seed.....	Spring wheat.	1.2.....	16.7

The average seed used will contain the undesirable kinds indicated in the table, along with superior seed. The yields will suffer in proportion to the percentage of small, shrunken or

broken seed put into the ground, and although the average farmer probably does not lose 7.9 or 15.4 bushels of oats per acre per annum, as indicated in the table, on account of sowing some medium-sized or small oats, yet he does lose in proportion to the percentage of these inferior grains that go through his drill in the spring. There is a splendid opportunity in seed selection to increase the sheaves and bushels of grain on every acre. Choose for the coming season the plump, healthy-looking sample, and the harvest will reward anyone for the extra trouble and expense.

THE FANNING MILL.

At this juncture it seems opportune to recommend the use of the fanning mill. Too often the seed grain is left till the land is harrowed, and then run speedily through the winnowing machines at a rapid rate. The wind, of course, will clean out the chaff and some light grains, but, to get a good sample, plenty of time is required, and a number of screens to take out weed seeds, shrunken and light kernels, and other kinds of grain. If the old-fashioned apparatus is the only one available, put the grain through several times, or until the sample for use is plump and as free from weed seeds and other kinds of grain as it is possible to get it with the machine at hand. The modern fanning mill is a vast improvement over the old type. There are sufficient screens to separate the wheat, oats, barley and other grains and remove the weed seeds. The light kernels are eliminated and the resulting stock for seed will be the best, if the grain was good and the mill was operated properly. Cleaning grain is not timely during seeding. It should be done in the late winter, or early spring, before the rush starts. In some districts a fanning mill is purchased by a number of farmers and used alternately by them. It can either be set up permanently in one place, and the grain brought to it, or it can be moved about to suit the convenience of those who have shares in it. Each 100 acres should afford a suitable mill for cleaning seed grain; failing this, farmers should endeavor to hire the use of one long enough to prepare their seed.

When speaking of cleaning seed grain, it would not be out of place to remind readers of the tremendous toll taken each year by weeds. This reminder, we believe, is sufficient, for farmers all know full well that noxious weeds are all too plentiful. The only way to remain their master is to rotate, grow hoed crops, and cultivate with the end in view that they be destroyed. In the proper system of rotation, grain would follow corn or roots, and if the seed grain or grass seeds should contain any appreciable amount of weed seeds, one season's labor in cleaning the ground would be nullified to a considerable extent.

In the spring of 1913 officers of the Seed Branch took samples, representing as accurately as possible the average seed used in the districts visited, from over 2,000 farmers throughout Canada. Nine hundred and seventy-eight samples of oats were analyzed at the Ottawa Seed Laboratory, and 547 of these or 56 per cent., contained an average of 76 noxious weed seeds per pound. The highest number being 4,838 in the pound. Eight hundred and sixty, or 89 per cent., contained other weed seeds. The highest number being 6,954 per pound. With this weed seed content, and the rate of seeding reported, an average of 6,400 noxious and 20,800 other sorts of weed seeds would be seeded on each acre of land in oats. Barley and wheat showed similar results. This is an indication of how weed seeds are disseminated. From these figures the significance of the weed pest can be partially realized.

CHANGING SEED GRAIN.

The question of changing seed grain is a moot one. Some practical farmers believe that to attain the best results, a change of seed is required. Other farmers, quite as successful, claim there is nothing in the idea that grain should be changed, and they base their hope for improvement on the annual selection of the best from the previous season's crop. By sowing only the quality they wish to propagate, they claim to be able to improve both on the yield and quality of the product. The work of the Canadian Seed Growers' Association is based on this principle. They believe that improvement can take place on the farm by a proper selection of seed from the best individual plants, and also that the superior qualities of the newly-bred varieties obtained