Clover as a Fertilizer.

(Ottawa correspondence.)

The value of clover as a fertilizer was the subject of an address by Prof. Frank T. Shutt, Chemist at the Central Experimental Farm, before the Agricultural Committee last week. By means of charts, showing the results of experiments with clover at the Central Experimental Farm, he produced and emphasized many convincing arguments why clover should be grown extensively on every farm. The soil, said Mr. Shutt, to produce good crops should be rich in nitrogen, and by growing clover the amount of nitrogen in the soil could be greatly increased.

In order to ascertain the amount of nitrogen added to the soil by growing clover, the following experiments were conducted at the Experimental Farm: Galvanized iron pots about nine inches deep and six inches in diameter were filled with earth, which had been analyzed to ascertain its nitrogen content. When the experiment was commenced the soil in one of the pots contained .0892 pounds of nitrogen, or an estimated amount of nitrogen for one acre of soil, nine inches deep, of 1.076 pounds. Clover was sown in the pot in the spring, and in the fall the leaves and stems of the plants were cut up finely and returned to the soil. The same was done the next year, and the soil in the pot left undisturbed until the following spring, so that the soil was enriched by two years' growth of clover. In the spring an analysis of the soil was made, which showed that the amount of nitrogen in the soil at this time was .0547 pounds, or .0155 pounds increase from two years' growth of clover. Estimated for an acre, this gives 1,255 pounds, or 179 pounds increase in two years.

A similar experiment, conducted with a small plot of clover, gave similar results. When the experiment was commenced the amount of nitrogen in a plot containing the 160th part of an acre, taking the soil to a depth of four inches, was .0437 pounds. After two years' growth of clover the same soil contained .0580 pounds of nitrogen, or an increase of .143 pounds. Estimating for an acre the amount of nitrogen in the soil, four inches deep, at the beginning of the experiment, was 633 pounds, and after two years 708 pounds, or a gain of 75 pounds of nitrogen per acre from two years' growth of clover.

Prof. Shutt also gave the results of another experiment, or series of experiments, to ascertain to what extent clover affects the growth of field crops. In the spring of 1900 two plots adjoining each other, and containing exactly the same kind of soil, were seeded, one with wheat and clover, the other with wheat alone. In 1901 corn was planted on these plots. The plot where the wheat and clover had been grown the year previous produced at the rate of 27 tons 1,760 pounds of corn per acre, while the plot where wheat alone had been grown yielded at the rate of only 19 tons 1,280 pounds per acre. The following year, or in 1902, oats were sown on these plots. The yield from the plot where the clover had been grown in 1900 was 75 bushels 10 pounds per acre, and from the plot where clover had not been grown, 51 bushels 28 pounds per acre. In 1903 sugar beets were grown on the same two plots. The plot where clover had been grown three years previous yielded 22 tons 600 pounds per acre, and the plot where clover had not been grown, 8 tons 1,200 pounds per acre, truly a remarkable difference. Mr. Shutt said he attributed the large yields from the plot where clover had been grown almost solely to the growing of this legume. Besides adding to the fertility of the soil, he said, the clover kept the soil in better condition physically, which was conducive to growing big crops.

A second series of experiments was started in 1901, when two adjoining plots were sowed, one with oats and clover, and the other with oats alone. For convenience of explanation, let plot No. 1 represent the plot sown with clover and oats, and plot No. 2 the plot where oats alone were sowed. In 1902 both plots were planted with corn. Plot No. 1 yielded 20 tons 800 pounds per acre, and plot No. 2, 15 tons per acre. The following year, or 1903, potatoes were planted. The yield per acre from plot No. 1 was 202 bushels, and from plot No. 2, 154 bushels 40 pounds per acre. or a difference of over 50 bushels from the plot where clover was grown in 1901. Barley was sown in both plots in 1904, the past year. Plot No. 1 produced at the rate of 45 bushels per acre, and plot No. 2, 38 bushels 16 pounds per acre.

"These figures speak for themselves," said Mr. Shutt, "and prove conclusively that it pays well to grow clover with all farm crops. Corn, oats, sugar beets, potatoes and barley all show greatly increased yields from the plot where clover was grown. These results should leave no one in doubt."

The speaker also exhibited a chart, showing the amount of nitrogen contained in an acre of clover—stems, leaves and roots all being taken into consideration. In an acre of Mammoth Red clover, sown in April, 1894, and collected in May, 1895, the roots being taken to the depth of four feet, there was a total of 150 pounds of nitrogen, 101 pounds in the stems and leaves, and 49 pounds in the roots. Prof. Shutt values the nitrogen in this form at 10c. per pound, or $15.00 worth in an acre of clover of one year's growth. Numerous experiments along this line bore out the results of the one cited above, showing the great value of clover as a fertilizer.

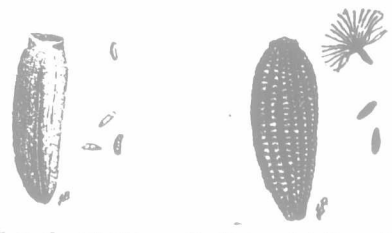
Beware of Weed Seeds.

The first step in the war with weeds is circumspection in purchase of seeds. Especially is this important in the case of grass and clover seeds, although serious infestation may also occur through cereals, notably wheat and oats. Most people utterly fail to realize the chance of introducing weeds in this way. It would be a wonderful eye-opener if every farmer would take a few handfuls of seed of one kind and another, place them on a table, and with a knife separate into piles the good seed, the inferior seed and the impurities. He certainly would be amazed, as we have often been, at the large proportion of weeds that may be present in what appears a pretty clean sample.

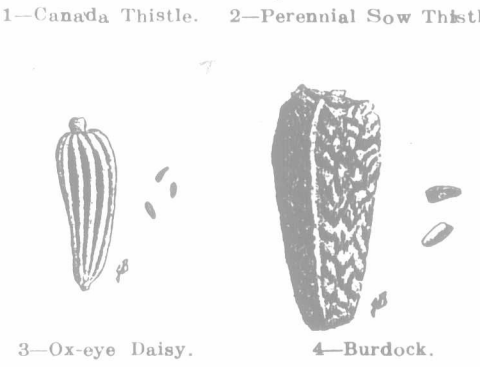
In buying seeds, the number of weed seeds is not nearly so important as the kind. Never judge seed by general appearances. Before purchasing a pound of small seeds take a representative sample of the lot, spread out on a sheet of white paper, and with the aid of a small magnifying-glass separate the impurities, noting the kind of each, rejecting the sample if it contains any seeds of the more noxious weeds, and basing your estimate of value upon the result of your analysis.

To aid in identifying some of the common weed seeds, we print herewith reproductions of accurate drawings. The first sixteen cuts have been loaned by the Canadian Correspondence College, of Toronto. The remainder have been especially made for us.

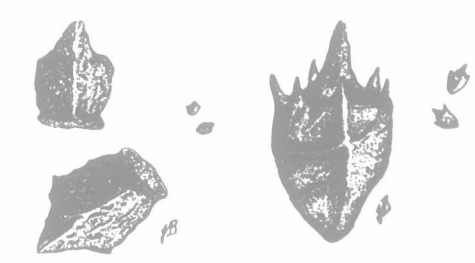
A study of these drawings will assist in familiarizing one with some of the seeds to be avoided. The cuts show natural and enlarged size.



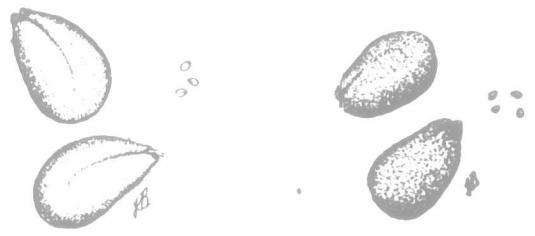
1—Canada Thistle. 2—Perennial Sow Thistle.



3—Ox-eye Daisy. 4—Burdock.

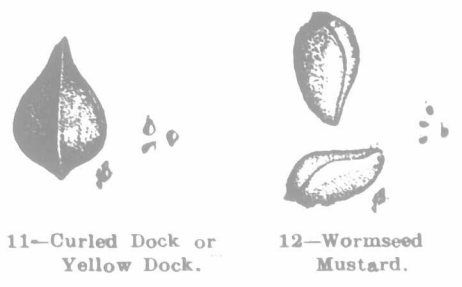


5—Blueweed. 6—Ragweed.



7—Peppergrass. 8—False Flax.

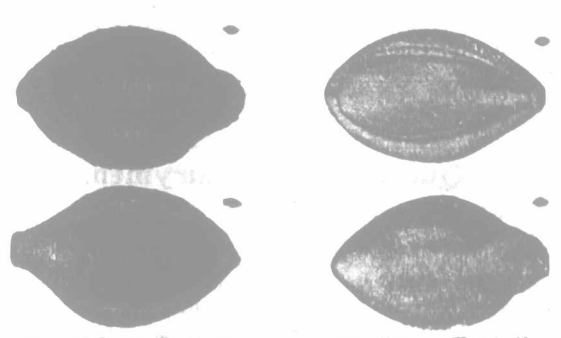
9—Bindweed. 10—Chess.



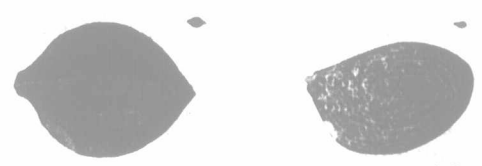
11—Curled Dock or Yellow Dock. 12—Wormseed Mustard.

13—Night-flowering Catchfly. 14—White Cockle.

15—Ribgrass. 16—Lamb's-quarters.



17—Yellow Foxtail. 18—Green Foxtail.



19—Sheep Sorrel. 20—Pennycress (stinkweed).

21—Cinquefoil. 22—Mayweed.

23—Ergot.

Beet-pulp Feeding.

FOURTH-PRIZE ESSAY.

In handling and feeding one car, 26 tons, of sugar beet pulp, I will give my experience and opinion of its value:

1st.—For unloading from car, I used the large ensilage fork, which handles the pulp quickly and easily. To those who have had experience in handling and storing pulp, it is well known how juicy or sappy it is, and it is very objectionable to have a flood of water in one's feed room or root cellar, or running through the cracks from the floor above onto the stock, as I have seen. Now, after filling, my silo settled, as all silos do, and I planned to put the pulp in the silo on top of the corn. I rigged a set of carriers, run by the windmill, so as to elevate the pulp. The wind blew, and the carriers ran the pulp up as fast as a man could fork it from the wagon. The silo is an ideal place for pulp, and over the corn is best, as the juice soaks into the silage and is not wasted. Any quantity could be stored, and for an indefinite period. It ferments slowly, but does not heat, and the stock like it better the longer they feed on it.

2nd and 3rd.—I fed the pulp to all kinds of stock—horses, milch cows, fattening cattle, pigs and chickens. Horses like it fairly well in small quantities, but I believe prefer a mangold. Milch cows go at it like June grass, and milk accordingly, with no signs of scours, or any taint to milk whatever. Fattening stock are