

### Flax as a Nurse Crop.

Editor "The Farmer's Advocate":

Until the other day, when some one "wondered" how flax would do as a nurse crop, I never figured out why so few Canadian farmers have had experience in this particular. So far as I can see it is partly because flax has usually been cropped on rich, "new breaking"—cereal and root crops following in immediate succession; partly because as flax is usually put in under straight rental arrangements between farmer and flax manufacturer, it rarely happens that the rotation of the particular field bargained for is at the seeding down point; and partly because fiber flax in Canada has never been given a fixed place in a regular rotation as it has in many European countries where similar soil and climate prevail.

Thus arose the doubt referred to in regard to the suitability of flax as a nurse crop. Few farmers are aware that flax is one of the very best nurse-crops we can use in this climate. Some who have tried it consider it better than wheat, oats, rye or barley, as we shall see.

There are three main points of merit to be explained in this connection. They are as follows: 1, the effect of flax on forage crop (and of clover on flax) in the matter of growth; 2, the bearing of flax to forage crop on the question of soil ingredients; and 3, the fitness of clover to follow flax because of the requirements of the best rotation scheme that embraces flax.

Let us first look at point number one. Flax, as everybody knows, cuts off less light than any other nurse crop we employ; thus a more complete and healthy growth of the nursed crop is assured. Then again the clover, for instance, by shading the soil from its low position, prevents the baking of clay soils—a condition that occasionally kills off flax. The clover "shades out" weed seeds that are of tardy germination, because of being buried deeply, and weeds of small size.

In sowing these crops in the above relation it is advisable to put the flax in first alone, after a week or ten days, when the little plants break ground, the clover should be seeded in. This precaution is advisable, because of the difference in the time required for the two seeds to come up. The second point mentioned embraces the fact that flax is more exhaustive of the nitrogen in the soil and less hard on all the other mineral ingredients (except lime) than our other common crops. Examine the following table compiled from experiments by H. L. Bolley, Botanist of the North Dakota Agricultural college:

	Crop	Nitrogen	Ph. acid	Potash
	bus.	lbs.	lbs.	lbs.
Wheat .....	20	35	20	35
Barley .....	40	40	20	38
Oats .....	50	50	18	45
Flax .....	15	54	18	27

[Note.—The cash returns on above are not to be determined by the seed alone when flax is grown for fiber. A normal crop of 2 tons of flax to the acre (seed on) would be worth \$14 a ton, \$28. This year's crop in Ontario will run as high as 3 tons to the acre and the price as high as \$14.50 a ton, (seed on).]

We note from the above table that flax is hard on the nitrogen, and easy on the potash and phosphoric acid. Now, clover and its sister crops are especially beneficial in storing up nitrogen in the soil; thus when clover immediately follows flax the balance of fertility is in a large measure restored; then, too, flax has a delicate and shallow root system while the forage crops go deeply and extensively into the soil. The reduction of fertility made by the flax has chiefly affected the upper inch or two of soil, while the sustenance of the forage crop is derived from lower depths. This distributes the task of supporting plant growth.

Flax has a few peculiarities that must be understood and considered when it is to be embraced in a fixed rotation. It is probably to some extent lack of familiarity with these characteristics that has left it out of regular rotations in Western Ontario where mills are available to handle flax. One of these peculiarities is that flax for fiber does not yield satisfactorily immediately after fresh manuring. The best fiber flax grows of even quality and length,—requirements that are hard to procure when the elements of fertility are not thoroughly distributed in the soil. Flax, because of its delicacy of seed and rootage needs a fine, compact level seed-bed which is not always procurable—except with extra labor—as for example after a heavy sod, spring plowed. Such a case requires early fall plowing. Corn is found to be the best crop to precede flax under Ontario conditions. When a hoed crop precedes flax the destruction of noxious weeds is more thoroughly accomplished. As the straw of fiber flax is over twice as valuable as the seed, it is important not only that the

stand during the growing period be not interfered with and choked by weeds, but that the yield, as harvested, be free from foreign substances. Even where hand pulling is the method of harvesting the crop weeds are a nuisance in delaying the work and causing loss of flax. Where the most successful machine puller works the weeds are pulled with the flax. This, of course, is a big advantage to the farmer in ridding his fields of weeds, but it means a loss to the flax man in different ways, such as extra labor, false weight, and inferior products. Therefore, a hoed crop, especially corn, preceding flax embodies a special recommendation to the flax-mill man who is seeking flax land; and such corn land, by the way, usually brings a greater rental price. It should because it is worth more.

These and other considerations tend to recommend the adoption of such a rotation as the following: Flax and clover; forage; pasture; fall wheat, oats or barley manured and plowed down; corn or roots, well cultivated; flax.

Perth Co., Ont.

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### Ground Limestone for Sour Soils.

A popular edition of the New York Agricultural Experiment Station Bulletin with the above title has been issued by F. H. Hall. The author points out that probably three fourths of the cultivated area of that State is in need of lime, either because the soil has become acid or because there is insufficient lime to meet the food requirements of ordinary crops. As a general thing a ton of ground limestone, 1,500 pounds of hydrated lime and 1,200 pounds of burned lime are of equal value in correcting soil acidity. It is claimed that the lower cost of ground limestone more than counter-balances its smaller lime content. A point worth noting in this connection is that the magnesium oxide, which is found combined with the calcium oxide in limestone, has a value of almost one-fifth more than calcium oxide in sweetening soils. In computing the value of limestone for correcting acidity the rule given is to multiply the amount of magnesium by 1.19 and add the figure obtained to the amount of calcium contained in the limestone.

Ground limestone, being chemically neutral can never injure crops or soils as quicklime occasionally does through its caustic properties. It is pointed out that this is also an advantage when applying the limestone, as it has not the unpleasant effect that quicklime has upon the skin and eyes of the sower. The author claims that the limestone need not be ground excessively fine. If ground so that all the stone will pass through a sieve with ten meshes to the linear inch there will be enough fine material present for the immediate needs of soil and plant while the coarser particles will gradually become available as needed. In this shape the material is easily handled and does not need to be sacked, like finely-ground burnt lime or hydrated lime. It has been found that most soils in the State in need of lime should have an initial application of two tons ground limestone per acre to be followed by an application of from one to two tons in every rotation of from three to six years. On poor soils when preparing for alfalfa an application of from four to six tons is recommended.

Ground limestone can now be procured at most Stations in New York State at from \$1.25 to \$3.00 a ton. Illustrations of the profit derived from its application are also given. In Ohio moderate applications on soils only moderately acid have given an average net profit of \$15 per acre when applied alone. When applied in conjunction with phosphorus, phosphorus and potassium, complete fertilizer or barnyard manure the profits have been from \$17 to \$20 per acre. In New Jersey the value of the increase in general farm crops in five years after a two-ton application was estimated to be \$25 per acre, and the value of the increase in vegetables was placed at \$48.

Where serious difficulty is experienced in growing good crops of red clover and alfalfa lime is usually needed. Soils of a light color,—gray, grayish-brown or yellowish soils are said to be most frequently in need of lime. The following test for acidity is recommended by the author: Obtain a ball of wet soil about the size of the fist, break it open and insert a double thickness of blue litmus paper (obtainable at any drug store). Press the ball firmly together and allow to stand as much as a half hour. If at the end of this time the paper in contact with the soil has distinctly changed to a pink color there is positive evidence of acidity and it may safely be assumed that benefit will follow liming. Of course, it is best to make a number of tests in different parts of the field and the surface should be examined as well as the soil. The practice sometimes recommended of placing a piece of filter paper between the litmus paper and the soil renders the test of no value. The litmus must come in direct contact with the soil.

### Smut Very Prevalent.

Complaints are still coming to hand about the prevalence of smut, particularly in oat fields grown from seed which had not been treated. Conditions seem to have been ideal for the development and spread of smut spores this season. Smut diseases do their worst work in a humid atmosphere and in wet seasons. It is interesting to note that fields grown from seed carefully treated with formalin solution are still comparatively free from the disease. A subscriber called at the office a few days ago and stated that he had been examining plots grown from treated seed and from untreated seed and while he found 150 smutted heads in a square yard of the crop grown from the untreated seed he was only able to find two smutted heads in a square yard of crop grown from treated seed. Another subscriber reports that in 56 heads counted in one drill in an oat field he found 12 affected with smut. This is a little over one-fifth of the crop and according to our correspondent the entire field showed the same prevalence of the disease. At Weldwood the crop grown from seed treated with formalin is quite clean, no smut having been noticed in it so far. A commercial treatment, tried on the place has not given as good results. Crops this year should prove conclusively the value of care in treating with formalin, and growers should not neglect to treat their seed with this.

### An Iceless Refrigerator.

Down in Colorado agricultural authorities are recommending for household use an iceless refrigerator. According to those familiar with this device it is not necessary to purchase a manufactured article, but with a little work an ordinary cupboard may be prepared for the purpose. Construct the framework of a cupboard from four 2 x 2 posts, and line the inside with wire netting to keep out the flies and mice. On the outside of the cupboard, and placed so it will not touch the wire netting, tack burlap. For the top of the cupboard have the tinsmith make a galvanized-iron tank exactly the size of the cupboard, and from 4 to 6 inches deep. When set in place the bottom of the tank then makes the top of the cupboard. The tank is kept full of cold water and the burlap is thoroughly wet, and besides this wet woollen cloths are hung around the three sides of the tank. These cloths are arranged to carry water from the tank to the burlap to keep it moist. The evaporation of this moisture lowers the temperature of the refrigerator and keeps it cool.

### Influence Felt.

A resident of Amherst Island, Ontario, recently informed a representative of "The Farmer's Advocate" who was visiting the Island that a large percentage of the farmers on the Island were readers of "The Farmer's Advocate," and to this he attributed in no small degree their progressiveness. In this man's belief its influence has been very marked in the progress of agriculture on this little island 12 miles long and 8½ miles wide. It is gratifying to note that effort is being appreciated.

## THE DAIRY.

### The By-Products of the Dairy

Editor "The Farmer's Advocate":

#### 1.—WHEY.

There are three chief dairy by-products, skim-milk, buttermilk and whey. The relative feeding values are in the order named, but owing to the recent increase in cheesemaking we shall treat of the cheese by-product first and the others in two articles to follow.

Two points should be made clear at the outset, namely that dairying is a manufacturing business and that the profits in many lines of manufacture come from a wise use of the by-products. We have all heard of the Lumber Company which utilized all of the logs at their mill except the knot-holes, and also of the Packing Company which makes use of every part of the pig except the squeal and which is now negotiating to "can" this and sell it to the Scotchmen for use instead of bagpipe music.

In the past, manufacturers of dairy goods, have not made as good use of the by-products as they might, chiefly because the farmers have in most cases claimed these as being their property, and the manufacturer consequently did not "care a hang" what became of the farmer's property. Too well known is the odor to be found around the whey, skim-milk, and buttermilk tanks of cheese factories and creameries. However, the public is beginning to wake up on this question and they are demanding that these receptacles for dairy by-products shall be kept clean in order to preserve the food value of the contents; and also

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