

GROW FLAX FOR FIBRE

The Canadian Farmer's opportunity to save
the lives of many of our men and
aid directly in our victory.

Aeroplane wings must be covered with
Linen.

The supply of Flax for this purpose is
alarmingly short and most sources
of supply are cut off.

Canada is expected to do her utmost to
make up the deficiency.

DOMINION EXPERIMENTAL FARMS.

SPECIAL CIRCULAR No. 20.

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War conditions have afforded an excellent opportunity for farmers in certain sections of Canada to engage extensively in the production of fibre flax. *They will thereby not only add to their sources of income but will also be of direct and vital aid in the war efforts of the Allies.*

The mastery of the air is proving a great, perhaps the determining factor, in the struggle now going on. Aeroplanes are being built in vast numbers as rapidly as possible. As a covering for the wings of these, linen is the only material found satisfactory. Large quantities are also needed for machine gun webbing, ambulance and truck covers, thread for sewing uniforms, and a number of other uses. *Were the supply of fibre flax for these purposes to fall short, as is threatened, it would directly and profoundly affect the success of the Allied forces.*

Before the war, flax was imported into the United Kingdom mainly from Belgium, France, Germany, the Netherlands and Russia. The German supply is, of course, now cut off, while in 1916 France produced no flax for export, Belgium a mere fraction of its former supply, and the Netherlands about half its former quantity. Owing to conditions in Russia no exports of fibre flax can be depended on this year; Ireland, the great flax-producing country in the United Kingdom itself, cannot with the best of seasons and with the largest possible acreage under flax, commence to meet the demand for fibre.

From the year 1914 to 1916, inclusive, the imports of flax fibre into the United Kingdom were as follows:—

Country—	Imports per Year.		
	1914. Tons.	1915. Tons.	1916. Tons.
Belgium.....	13,987	1,165	62
France.....	1,691	3,199	—
Germany.....	74	—
Netherlands.....	4,145	5,710	2,052
Russia.....	53,248	68,647	51,999

These figures show that the trade with these countries is now practically eliminated especially when we recall what has been stated before regarding trade conditions existing between Russia and the United Kingdom at the present time. During the period 1914 to 1916 Canada grew 1,400 acres in 1914, 4,000 in 1915, and 5,500 acres in 1916; only a small proportion was exported, which found a market in the United States. In 1917 approximately 10,700 acres of flax for fibre were grown in south-western Ontario, with a fibre equivalent of probably 1,300 tons.

Canada must Aid in Flax Production.

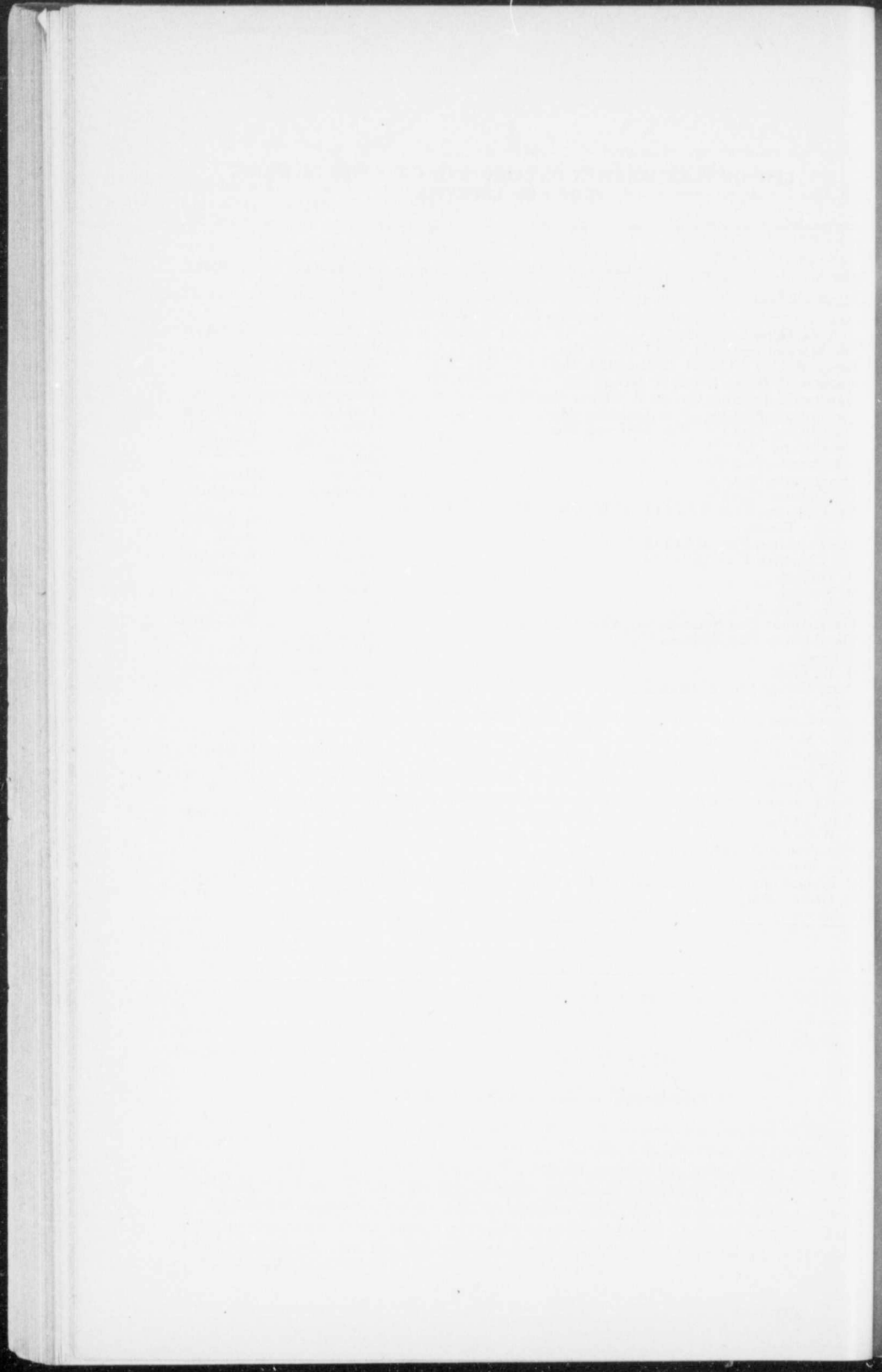
From a glance at these data it is obvious that if Canada is to fill the breach in maintaining the essential flax fibre supply to the Motherland *an urgent effort must be made immediately to increase the acreage and yield of this war munition.*

So serious is the situation that the British Government has commandeered all flax products entering the United Kingdom, and Ireland has taken extraordinary steps to increase the 1918 flax acreage in the British Isles. It has to this end imported large quantities of flax seed from western Canada, although but little is known of the possibilities of the prairie-grown seed for fibre production.

Flax Growing in Canada not an Experiment.

It is clear from the above how strong are the incentives to the farmers of Canada to grow flax for fibre. It is not a new crop in Canada, but has been grown for local use since the days of our early settlers. Rather, its possibilities have in the past been overlooked until war conditions forced them upon our attention.

The Experimental Farms Branch for the past four years has been making a study of flax production and has carried on many experiments with excellent results. Fibre flax has been grown on the Central Experimental Farm and on acre plots in every part of Canada.



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The crops from plots in the various provinces have been shipped to Ottawa, then retted and scutched in a fully-equipped flax-mill at the Central Farm. The flax straw from many of these plots yielded fibre of first-class quality. An exhibit of flax fibre and products, prepared by the Experimental Farms, won a gold medal at the Toronto Exhibition last year.

Experiments have also been made, and are being continued, in the utilization of western flax straw. Special attention has been given to the production of a practicable flax harvester and it is hoped that such a machine will soon be on the market.

Several publications dealing very fully with flax and flax growing have been issued recently and are available free to any one writing the Publications Branch, Department of Agriculture, Ottawa.

A FEW CULTURAL HINTS.

For the information of those thinking of doing something with this crop in 1918 or succeeding years, the following notes will be found useful:—

Soils and Rotation.

By attention and careful cultivation good flax may be grown in various soils, but some are much better adapted for it than others. The best is a firm, dry, deep loam. The land should be fairly well drained. Land long saturated with surface water, or with the water level near the surface need not be expected to give good flax. Flax does best after a crop that has been hoed, but very satisfactory results may be expected on fall-ploughed sod or even on spring-ploughed sod if the land is well worked down right after ploughing.

Preparation of Soil.

The preparation of the land should be such as will reduce it to as fine a state of tilth as possible. If possible it should have been ploughed in autumn to a moderate depth, if light, but to a greater depth if heavy. Spring ploughing need not be so deep as autumn, and, in either case, this land should be worked frequently in the spring to pulverize it thoroughly. Land that is badly infested with weeds should not be used for flax, as weeding must be done by hand after the seed germinates. The seed-bed should be compact, and to accomplish this it will be necessary to roll it, either before the seed is sown or after, preferably before. Sometimes the land is rolled both before and after sowing, the practice depending largely on the nature of the soil. If the soil is so soft that the horses' feet leave a deep impression, the seeds, when sown on the rolled surface, will have a tendency to accumulate in these hollows, and will probably be buried more deeply than on the rest of the field; hence the crop will not be uniform.

On the other hand, if the soil contains a considerable amount of clay, the practice of rolling after sowing the seed will tend to make the surface crust even more readily after rain.

Is Flax a Specially Exhausting Crop?

This question is usually answered by our farmers in the affirmative, but this opinion does not appear to be warranted by the chemical analyses which have been made of this crop, showing the principal elements of fertility taken from the soil during the period of its growth. The results which have been obtained by chemical examination have furnished the following figures, which represent approximately the plant food removed from the soil by flax, wheat and oats.

An acre of flax producing 15 bushels of seed and 2,000 pounds of straw takes from the soil 26 pounds nitrogen, 14.86 pounds phosphoric acid, and 9.28 pounds potash for the 840 pounds of seed, and 20 pounds nitrogen, 9 pounds phosphoric acid,

and 28 pounds potash for the straw, a total of 46 pounds nitrogen, 23.86 pounds phosphoric acid, and 37.28 pounds potash.

A crop of wheat, yielding 25 bushels of grain and 2,200 pounds straw to the acre, would take from the soil 28.5 pounds nitrogen, 12.68 pounds phosphoric acid and 8.54 pounds potash for the 1,500 pounds grain, and 12.03 pounds nitrogen, 4.96 pounds phosphoric acid, and 20.57 pounds potash for the straw, a total of 40.53 pounds nitrogen, 17.64 pounds phosphoric acid, and 29.11 pounds potash.

An acre of oats yielding 50 bushels grain and 2,200 pounds straw takes from the soil 32.13 pounds nitrogen, 10.48 pounds phosphoric acid, and 8.05 pounds potash for the grain, and 13.90 pounds nitrogen, 4.74 pounds phosphoric acid, and 24.83 pounds potash for the straw, a total of 46.03 pounds nitrogen, 15.22 pounds phosphoric acid, and 32.88 pounds potash.

It will be seen that the grain, in the case of the wheat crop, takes up a little more nitrogen and somewhat less of phosphoric acid and potash than is taken by the flax seed; while the oat crop takes for the grain a larger proportion of nitrogen, nearly one-third less of phosphoric acid and about one-eighth less of potash. The difference, however, in exhaustive effect of these several crops on a rich soil would scarcely be perceptible, and would not justify the opinion that flax is a very exhausting crop.

Seed.

The seed best adapted for the generality of soils is Russian or Dutch, or else the produce of such seed grown in Canada, free from weed seeds, which will save a great deal of after trouble when the crop is growing.

Amount to Sow.

If the seed gives a germination of 95 per cent or better, $1\frac{1}{4}$ bushels to the acre, with a germination of 85 to 95 per cent, $1\frac{3}{4}$ bushels per acre, and if the germination falls between 75 and 85 per cent, 2 bushels per acre. Fifty-six pounds are reckoned to the bushel.

Time to Sow.

The best time to sow will depend on the character of the season. It is a good plan to sow as early as the land can be got into proper condition. It should not be sown later than May 20 or thereabout. Flax can withstand a considerable amount of frost. Only a frost that would freeze the ground solid is likely to injure it.

Harvesting.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable, and if pulled too late the additional weight does not compensate for the coarseness of the fibre. It may be stated that the best time for pulling is when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow for about two-thirds of its height from the ground.

Marketing the Crop.

In the practice now prevailing in flax-growing districts it is customary for the flax growers to work in co-operation with the flax-mill. In southwestern Ontario about thirty-two of these mills are now looking for land rentals. Usually the millmen rent fields at from \$12 to \$18 an acre. The mill furnishes the seed and the farmer attends to the sowing, weeding, etc., and in some cases hauls the crop to mill. For this reason rental has generally been restricted to within hauling distance of the mill, but at present there is a tendency to enlarge this radius to take in points twenty-five to thirty miles from the mill, the flax straw being baled and shipped by rail. *Delivered at a siding from \$15 to \$20 per ton is paid for the straw (unthreshed).* In view of the great present demand and very high prices for flax fibre it is quite likely that still better prices for the unthreshed straw will be offered this season.

LIST OF FLAX MILLS IN ONTARIO AND COUNTIES IN WHICH
THEY ARE LOCATED.

NAME.	PLACE.	COUNTY.
T. A. G. Gordon.....	Sarnia.....	Lambton.
The Marline Linen Co., F. C. Miles, Mgr.....	Petrolia.....	"
James McCall & Co., G. G. Bramhill, Mgr.....	Alvinston.....	"
Macdonald, Burns & Co., R. Burns, Mgr.....	Dresden.....	Kent.
Macdonald, Burns & Co., A. W. Dewar, Sec'y.....	Oil Springs.....	Lambton.
The Ontario Flax Co., F. S. Lockhart, Mgr.....	Parkhill.....	Middlesex.
The Ontario Flax Co., Wm. Jefferson, Mgr.....	Tilbury.....	Kent.
The Ontario Flax Co.....	Ailsa Craig.....	Middlesex.
The Ontario Flax Co.....	Shipka.....	"
The Ontario Flax Co.....	Exeter.....	Huron.
The Ontario Flax Co.....	Theford.....	Lambton.
The Canadian Flax Mills Ltd., F. W. Lukes, Mgr., No. 1 Toronto St., Toronto.....	Seaforth.....	Huron.
The Canadian Flax Mills Ltd.....	Sebringville.....	Perth.
The Canadian Flax Mills Ltd.....	Drayton.....	Wellington.
H. Fraleigh.....	Forest.....	Lambton.
H. Fraleigh.....	Wallaceburg.....	Kent.
C. M. Fleck & Co.....	Corunna.....	Lambton.
The Barbour Flax Spinning Co., Geo. Weir, Mgr.....	Alma.....	Wellington.
The Barbour Flax Spinning Co.....	Moorefield.....	"
V. Stock.....	Tavistock.....	Oxford.
H. W. Ebel.....	Conestogo.....	Waterloo.
Doon Twines Ltd., Kitchener.....	Flordale.....	"
Owen Geiger.....	Hensall.....	Huron.
Owen Geiger.....	Blyth.....	"
A. L. McCredie.....	St. Mary's.....	Perth.
Tipling & Mills.....	Wingham.....	Huron.
McMurchy & Anderson.....	Ripley.....	Bruce.
F. C. Kalbfleisch.....	Zurich.....	Huron.
A. Heiderman & Sons.....	Zurich.....	"
Wm. Ward.....	Lucan.....	Middlesex.
A. Willard.....	Dashwood.....	Huron.
Nicholson & Hodgins.....	Crediton.....	"
Wm. Forrester.....	Mitchell.....	Perth.
P. Livingstone.....	Linwood.....	Waterloo.
H. Griffin, Mgr.....	Arthur.....	Wellington.