

THE 1918 FLAX CROP

By H. L. Bolley

(From Department of Botany and Plant Pathology, North Dakota Experiment Station)

The Nation Needs A Big Flax Crop: The war makes linseed oil a Government necessity. It is needed by our Army, Navy and Supply Industries. It is essential to the health and protection of our soldiers and sailors and to the competent prosecution of the War. It paints ships, hospitals and cantonment buildings. Waterproofs and preserves canvas, tents and slickers and protects supplies at the front. Through the art of camouflage, it gives protection to marching troops and cloaks the location of batteries and supplies. The Government's orders, for paint alone amount to millions of dollars. Flax crop production is now needed by our people and by our fighting friends, the Allies, as never before. All depend upon linseed oil. It is a necessity in metal, wood and glass construction. It is used in paints, varnishes, tarpaulins, linoleums, floor finishes, printer's ink, canning industries, etc. and is essential in sanitary housing. There is scarcely a process of manufacture that does not directly or indirectly use this valuable oil.

There should be a Large Flax Acreage This Year: If suitable weather prevails for production, market conditions predict high pay for the producers. The Nation, in 1917, used about 28,000,000 bushels of flax seed. This was met by a 1916 production of approximately 15,000,000 bushels and importations approximating 13,000,000 bushels.

Conditions: The American flax seed output has gradually fallen off since 1909. Usually there has been a decreased acreage in older states. Increased breakings of new lands have not made up the deficiency. The price of flax seed and linseed products continually ranges higher. It is evident that a relative crop shortage will bring distressing results to our industries, to home and farm life.

The entire crop of the United States in 1917 was less than 9,000,000 bushels.

Since 1900 North Dakota has produced somewhat over one-half of the entire linseed output.

Cropping Areas: The flax growing area of the United States is a confined one. In 1917 it was as follows:

North Dakota	965,000 acres	Montana	422,000 acres
Minnesota	220,000 acres	South Dakota	140,000 acres
Kansas	34,000 acres	Iowa	12,000 acres
Missouri	6,000 acres	Nebraska	4,000 acres
Wyoming	3,000 acres	Colorado	2,000 acres

The area was therefore 1,809,000 acres. Had weather been normal it should have produced 15,000,000 to 18,000,000 bushels. Drought brought almost a failure to over one-half of the area cropped.

The Nation's need for 1918 is thus less than one-third met. Importation is difficult. The 1917 Argentine crop was far below normal. Shipping facilities usually available for transport of that

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seed to this country is needed and largely used for other purposes. Other oils used as substitutes for linseed in the making of soaps and various crude paints are in large demand for purposes of war or are not easily available.

Several billion dollars worth of American industries and factory products are based on the use of flax seed and its by-products. The paint industries, alone, represent an annual investment of \$850,000,000. The mills and factories of the United States use 25,000,000 to 30,000,000 bushels of flax seed per year. The American crop has not, in late years, furnished the full supply.

Flax Seed, United States, annual yields and acreages:		
The 1902 crop was	29,285,000 bushels on	3,740,000 acres
The 1905 crop was	28,478,000 bushels on	2,535,000 acres
The 1909 crop was	19,513,000 bushels on	2,083,000 acres
The 1910 crop was	12,718,000 bushels on	2,467,000 acres
The 1911 crop was	19,370,000 bushels on	2,757,000 acres
The 1912 crop was	28,073,000 bushels on	2,851,000 acres
The 1913 crop was	17,853,000 bushels on	2,291,000 acres
The 1914 crop was	13,749,000 bushels on	1,645,000 acres
The 1915 crop was	14,030,000 bushels on	1,387,000 acres
The 1916 crop was	15,459,000 bushels on	1,605,000 acres
The 1917 crop was	8,473,000 bushels on	1,809,000 acres

The Nation's Call: Flax seed and flax fiber to be used in the United States after June 1918, in most part, must be produced here. The Government may rightfully expect this production chiefly in North Dakota, Montana, Minnesota and South Dakota. The call is for 28,000,000 bushels.

The four States named, with reasonable help from others, can produce the crop needed. The total acreage should exceed 3,000,000 acres. North Dakota's quota should be, at least 1,500,000 acres and should produce 15,000,000 bushels. Will we do it? The State has done that well before. Let's do it again.

North Dakota, under favorable weather conditions, produces an average of nine to eleven bushels per acre. Some growers raise much larger yields. There are authentic records of sixteen to twenty-five bushels per acre.

Flax Seed—Annual production and acreage in North Dakota:		
The 1902 crop was	15,552,000 bushels on	2,100,000 acres
The 1905 crop was	15,743,184 bushels on	1,357,171 acres
*The 1909 crop was	13,229,000 bushels on	1,530,000 acres
The 1912 crop was	12,086,000 bushels on	1,246,000 acres
The 1915 crop was	6,534,000 bushels on	660,000 acres
The 1916 crop was	8,137,000 bushels on	790,000 acres
**The 1917 crop was	3,764,000 bushels on	965,000 acres

NOTE: *—During 1902 to 1911 a destructive root and seed disease very greatly reduced yields where a rather continuous system of flax cropping was practiced. The disease was introduced into the lands by infected seed and caused following flax crops to die out. In the years 1910 and 1911 the crop also suffered severely from drought.

**—1917 Drought. North Dakota again increased its acreage, but drought was excessive. Thousands of acres of this seed never came up. Large areas were never harvested. The estimates are therefore as unreliable as those of 1910 and 1911. They form no basis on which to judge possible crop production.

A Big Crop May Yet Be Grown: Statistics would seem to indicate that a flax seed crop is rather unreliable. There are, however, a number of conditions, which should be taken into consideration. Chief of which is that flax has commonly been used as an emergency crop and has been poorly cropped. The fact remains that the money value of the crop has usually been exceptionally high, particularly for the Dakotas and Montana. These States cannot afford to lose this general field crop from their rotation series. They do not need to. The disease known as wilt should henceforth not materially interfere.

Seed Selection and Crop Rotation: Farmers now understand how to escape damage by wilt. On new lands proper seed selection, seed cleaning, and seed treatment reduces the injury to a minimum. There is also now no reason why old flax lands of the

FEATURES IN FLAX RAISING

AND

SOME REASONS FOR RAISING A BIG CROP IN 1918

By H. L. Bolley

There is especial need for a flax crop this year.

Farmers need not fear large competition from other countries because shipping facilities are not likely to be available for the importation.

The United States government particularly needs the linseed oil for its war purposes.

There are no good reasons why the old-time acreages and annual yields may not be had, for there is plenty of available land and resistant seed, seed treatment and crop rotation controls wilt.

There is every reason to expect that the price of flax seed cannot be materially lower.

The seed available is of high quality.

It may be difficult to get enough seed evenly distributed throughout the state to supply the demand. Every one should aid. The Pure Seed Laboratory will test and report on samples from any source.

Prepare all seed beds so they will be even and give good surface drainage. Firm the soil so that the drill discs will not cut deep. Do not sow over an inch deep. Pack the ground or roll down immediately after seeding.

Sow on fresh worked land as early as possible. Do not allow land to dry after it is plowed. Work and sow immediately to save the moisture.

Whenever possible treat the seed with the usual formaldehyde solution. One pound of formaldehyde to 40 gallons of water. Put it on with a fine spray or sprinkler. Shovel and rake over the seed until all are damp over entire surface but not matted together. Use about one-half gallon of solution to each bushel of dry flax seed.

On new lands or light lands of the semi-dry region sow one bushel of seed to each three acres.

On the old lands in wet, heavy soil, use fourteen to sixteen quarts of seed per acre.

On old land likely to be wilt infected, use resistant varieties whenever possible to procure the seed.

Save the seed from all large clean areas. Harvest dry. There will be a large call for clean bright seed in 1919.

Have your seed crop fields inspected for weeds and disease during the summer. Apply to the State Seed Commissioner, Agricultural College, North Dakota.

An acre of flax properly seeded in 1918 prepares the ground for wheat in 1919 without further plowing.

FLAX

IS A
NATIONAL NECESSITY

**WAR CONDITIONS DEMAND
AN
INCREASED ACREAGE**

Will
North
Dakota's

1918 CROP

Meet the
Nation's
Call?

**U. S. A. NEEDS 28,000,000 BUSHELLS
FOR
OUR ARMY - OUR NAVY - OUR INDUSTRIES**

Linseed oil is an absolute necessity. There is no satisfactory substitute. It preserves wood and steel. It waterproofs tents and slickers. It enters into the manufacture of innumerable supplies. It protects and camouflages batteries and equipment at the front.

The Nation's crop of flax seed in 1917 was only 8,473,000 bushels. Our State produced approximately one-half of this yield. North Dakota's old time annual output was from 12,000,000 to 17,000,000 bushels.

Let's Do It Again -- Use New Lands -- Use Remaining Old Lands

AN ACRE PROPERLY SEEDED TO FLAX IN 1918

MEANS

AN ACRE PROPERLY PREPARED FOR WHEAT IN 1919

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North Dakota Agricultural College
and
U. S. Dept. of Agriculture Co-operating

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Red River Valley and other flax growing regions may not be successfully cropped to flax. Resistant varieties have solved this question. Since 1908, farmers have been obtaining even larger yields of flax on wilt infected lands than are produced on new lands further west. There is, at present, a fair supply of such resistant flax seed. Crop rotation, a firm seed bed formation and proper drainage associated with the use of the resistant seed assures good crops on these old but fertile lands.

Much success has been obtained by the use of the following short seried rotation: **Sod, Flax, Wheat, Corn, Flax.**

This series may be varied and extended according to the years of grass and pasture used. Any cereal may be substituted for wheat. Flax is the most suitable nurse crop with which to seed grasses, alfalfa or clover. It does not over-shade the ground. It leaves a sturdy protective stubble.

Threshed Straw Valuable: Clean, weed-free, threshed straw is used for many fiber productions: rugs, matting, toweling, insulation boards, building papers, etc. Weed-free, baled straw is in big demand from \$7 to \$12 per ton. Fight the weeds.

The Seed: If this greater crop is to be produced, every move must count. Is the seed available? This can only be answered by each person who has seed making it his business to plant as much as he can prepare ground for and by offering the rest for sale to his neighbors. It is a duty to let it be known by every means possible where good seed is to be had and in what amount. The quality available is of unusual excellence. There is perhaps enough available but difficult to locate and to get distributed. The National Seed Stock Committee, 320 Flour Exchange Building, Minneapolis, The Commissioner of Agriculture, Bismarrk, N. D. The State Seed Commissioner, Agricultural College, N. D., County Auditors, County Agents, Elevator Companies, Linseed Crushers, Seed Houses, Seed Dealers, and Improved Seed Growers are all in position to help.

The Pure Seed Laboratory: It is the work of the State Seed Laboratory to examine seed for any citizen. If good seed is found, a list is made showing the name of the owner and the amount. The list is sent to all who wish to buy. Send in a sample, if you wish to sell, let us know how many bushels. Give complete information. You will receive a report and such aid as can be properly given according to the sample.

Time: An early spring has made it possible to plant a large cereal crop and yet leaves time to properly plow and prepare sod lands and to use remaining old lands for a big flax crop. Sow as early as possible. Do not fear spring frosts. Frost, after flax plants are a few days old, does not hurt. It is very destructive to the immature crop in the fall. In the south-half of the State, flax can be safely seeded until July 1st. Early seeding insures an evenly ripened crop.

Available Lands: There remain millions of acres of prairie which, if properly plowed, worked and seeded to flax will not only give a good flax crop, but will be prepared for wheat in 1919. Break as deeply as can be and have the furrow slices lie flat. Pack behind the plows. Mash down so there are no air spaces underneath. Disc lightly. Do not cut up the sods. Work just enough to fill up the cracks. Follow with the drill while the ground is fresh. Sow as fast as plowed. There are thousands of acres of worn out pastures, coulees and low areas, which, when properly drained and worked as above will give splendid yields.

There are perhaps some lands on which corn was grown last year. Corn lands always give high yields of flax. They should not be plowed but simply surfaced and leveled.

There are large areas of wheat, oats and barley stubble. If these were well plowed last year and are reasonably free from weeds, they should not be plowed for flax. Disc lightly in two directions, then pack. If there are some weed seeds, after these begin to sprout, disc and pack again. Then sow. Follow the seeder with the packer. A firm seed bed gives root protection. Flax thrives best in a firm well-packed seed bed. It can not do well in a mellow or loose soil. If the stubble lands are weedy, full of pigeon grass etc. plow deeply, disc, harrow and pack. Seed as fast as worked. Before the flax germinates put on the packer and give it another packing. All grasshopper infested stubble lands should be so worked and seeded to flax.

Drainage: In wet areas and on heavy lands arrange the surface so that the water from heavy rains may immediately run off. It must not stand on the surface, flax cannot stand it.

Summary, and What To Do:

1. There is exceptional need for a large flax crop this year.
2. There is reason to expect that the price of flax seed cannot be materially lower.
3. The seed available is of high quality because well matured and harvested dry.
4. It may be difficult to locate enough seed to supply the demand. Many should aid. The Pure Seed Laboratory will test and report upon samples from any source.
5. Prepare seed beds so they will be even and give good surface drainage. Make them firm so that the drill disc will not cut deeply. Do not sow over an inch deep. Pack or roll the ground down immediately after seeding.
6. Sow the seed on the fresh plowed land. Let it have advantage of the moisture.
7. Treat all seed with the usual formaldehyde solution. One pound of formaldehyde to forty gallons of water. Put it on with a fine spray or sprinkler. Shovel and rake over the seed until all seed are thoroughly damp but not matted together. Use about one-half gallon of solution to each bushel of dry flax seed.
8. On new lands or light lands of the semi-dry region sow approximately one bushel of seed to each three acres.
9. On the old lands, in wet heavy soils, use twelve to sixteen quarts of seed per acre.
10. On old land, likely to be wilt infected, use one of the resistant varieties.
11. Save the seed from all large clean areas, Harvest dry. There will be a call for clean bright seed in 1919.
12. Have your seed crops, field inspected for weeds and disease during the summer. Apply to the State Seed Commissioner, Agricultural College, North Dakota.

An acre of flax properly seeded in 1918 prepares the ground for wheat in 1919 without further plowing.