

Wartime HEMP Production in Minnesota

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Above—Retted and bundled hemp straw stacked at the mill.
Below—A good field of hemp about ready for harvest.

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UNITED STATES NEEDS FIBER NOW

Why should Minnesota farmers grow hemp in 1943?

Hemp is an important fiber crop. Supplies from usual sources are not available. Importation of Manila hemp fiber from the Philippines has ceased entirely. Shipping shortage has also limited imports of sisal and jute fiber. In this emergency, hemp fiber is badly needed to take the place of these imported fibers. It can be used for rope, cordage, and threads.

How many acres are asked for?

The United States government is asking for a production of 300,000 acres in 1943. This country has produced 13,000 acres or less in previous years.

Why has the United States not produced enough hemp in previous years?

Suitable fibers can be produced in other countries under ordinary peace time conditions and transported to the United States at lower cost per pound than they can be produced here.

If these fibers cannot be produced here economically in peace times how can they be produced in competition with essential food and feed crops when all costs of production are higher?

Hemp fiber is essential to the war effort. In order to stimulate the production of fiber, the United States government, through its corporate agency, Commodity Credit Corporation, is offering contracts to Minnesota farmers

in selected areas, in 1943, for growing of 60,000 acres of hemp for fiber production. The contract price for the retted straw ranges from \$50.00 to \$30.00 per ton, according to grade. Yields of retted hemp straw vary from two to three tons per acre.

COST OF PRODUCTION

How do the costs of producing hemp and corn compare?

The estimated cost per acre of producing corn harvested with a mechanical picker in Minnesota is \$21.00 compared with \$43.00 for hemp.¹ The higher cost per acre of producing hemp is due largely to the higher cost of seed, and the greater number of man hours required to handle the crop properly. The cost for hemp seed will be \$14.00 per acre compared with \$1.25 for corn. Hemp will require 21.1 man hours compared with 11.8 hours for corn. If turning the hemp straw during the retting process is not necessary, the man hours required per acre will be five less.

Is hemp a new crop in Minnesota?

Between 500 and 600 acres of hemp were grown in Minnesota in 1942 for the privately owned and operated mill at Lake Crystal. In 1934, about 6,400 acres of hemp were grown in the state and in the two following years a smaller acreage. Satisfactory yields per

¹ Estimates of cost of production of hemp and corn supplied by Dr. G. A. Pond, Division of Agricultural Economics, University of Minnesota.



FIG. 1. Cutting and spreading hemp in one operation.

acre were produced on the majority of the farms. Contracts with the United States government at attractive prices assure good incomes per acre for hemp grown on Minnesota farms in 1943.

Is it necessary for each grower to apply to the Internal Revenue for a license to grow hemp?

Yes. Since hemp plants contain a narcotic substance known as marihuana, all hemp producers and all persons transporting hemp or hemp seed must first obtain a federal license as required under the provisions of the marihuana tax act of 1937.

The Commodity Credit Corporation will send in the signed contracts as applications for the licenses, pay the fees, and aid growers in making reports.

SOIL AND MOISTURE REQUIREMENTS

What are the soil and moisture requirements?

Well-drained, productive corn land that will yield 50 to 60 bushels, or

more, of corn per acre is necessary for the production of satisfactory yields of hemp. Sandy, gravelly, or heavy clay soils and those low in organic matter should not be selected for hemp production.

Are peat and muck soils suited to hemp production?

Peat or muck soils usually cause a rank, coarse growth which is difficult to handle and the fiber produced is low in quality.

Is hemp hard on the soil?

Present information indicates that a good crop of hemp will remove slightly more nitrogen and potash and about the same amount of phosphate as would be removed by a crop of corn grown on the same fields. On most farms, the corn crop is fed to livestock and the manure returned to the soil. When the corn crop is handled in this way only a small part of the plant nutrients removed from the soil is sold from the farm. The entire hemp crop is sold from the farm and with it all of the plant nutrients removed from the soil.

Rotation No.	Number of Crops in Rotation			
1	Grain	Hay	Corn on part and hemp on part of field	Grain
2	Grain	Hay	Corn	Grain on part and hemp on part of field
3	Grain	Hay	Corn on part and hemp on part of field	Hemp following corn on part and grain on part of field

How does hemp compare with corn as to moisture requirements?

To produce good quality fiber, hemp plants should grow rapidly and continuously from planting time to harvest. It is important that the soil moisture be ample throughout the growing season. The growing period for hemp is shorter than that of corn; but after harvest, abundant rain and dew are necessary to bring about the necessary rotting (retting) of the hemp stems as they lie in the fields.

HEMP NEEDS TO BE ROTATED

What crops in rotation should hemp follow?

Best yields of hemp are obtained following clover, alfalfa, a mixed legume grass pasture or meadow sod, or following the corn crop. Therefore, hemp can be grown to advantage either on part of the corn field or the

next year following corn. It is not advisable to have hemp follow grain crops in the rotation.

Three examples of rotations containing hemp are shown above.

What fertilizers are needed to produce satisfactory yields of hemp?

The same fertilizers are needed for hemp as have been used for corn. Keeping up the supply of organic matter and nitrogen in the soil by growing legumes and applying manure is as necessary for high yields of hemp as for high yields of corn. On soils where an application of phosphate or of phosphate and potash fertilizer has resulted in increased yields of corn, the probabilities are good that increased yields of hemp will result also from the application of the same fertilizer.

SEED AND SEEDING

What is the source of the seed recommended for planting in Minnesota?



FIG. 2. This machine picks up and binds the hemp straw.

Hemp crops produced from seed grown in Kentucky have proved the most satisfactory. Seed for the 1943 crop will be furnished by the mills on contract at \$11.00 per bushel.

What is the best time to sow hemp?

Seeding hemp just after oats have been planted and somewhat before the normal time for corn planting is the usual and best practice.

What kind of a seedbed preparation does hemp require?

Fall-plowed land is best. The soil should be worked thoroughly to kill all weed seedlings and the seedbed made smooth and firm. It is desirable to use a cultipacker just before planting where the soil is in loose condition.

How much hemp seed is recommended?

On good fertile soils a bushel and a quarter to a bushel and a half per acre gives best results. On soils somewhat less fertile, a bushel of seed is the amount usually sown. A bushel of hemp seed weighs 44 pounds.

How is hemp seeded?

The method of sowing is the same as for small grain. It is necessary to set each drill to sow the right amount of seed before seeding time. The drill should be set to seed accurately. The seed should be planted not over one inch deep.

Why is a turnway important?

When drilling the seed, a turnway of from 16 to 20 feet wide should always be left on both ends and both sides of every field. This is essential in order that the hemp harvester may lay the hemp cut in making the first round on the ground in an even layer. After the hemp has been sown, a grain crop may be seeded in these turnways. The grain may be cut either for hay or seed, and be out of the way before hemp harvest begins.

CAUSES OF DAMAGE

How does hail damage hemp?

Rapidly growing hemp plants stripped of their leaves by hail cannot make normal development. Hail stones bruise the stems and damage the fibers. It is well to carry hail insurance.

Are insect pests and plant diseases common?

On spring-plowed sod, cutworms and white grubs may destroy many of the young plants. Fall plowing is advisable. Grasshoppers may move from harvested small grain fields into the edges of hemp fields and defoliate the plants. As a general rule insect pests and diseases have not been a serious handicap in Minnesota.

HARVESTING

When should hemp be harvested?

Harvest should begin when the male or pollen-bearing plants are in full bloom. Most of the lower leaves have fallen and the upper leaves have started to turn yellow at this stage of development. In southern Minnesota, cutting may often start shortly after the middle of August. Starting as soon as the hemp is ready gives ample time to complete the harvest within a period of about three to four weeks up to early seed formation. Hemp harvested after a considerable portion of the seed has ripened cannot be expected to produce fiber of good quality.

What machines are used in harvesting hemp?

Special harvesters which cut the hemp and spread it evenly on the stubble at one operation are now standard equipment. When the hemp is ready to cut, harvesters are supplied and later pick-up machines to bind the crop, each accompanied by an experi-

enced operator, are supplied from the mill at a combined charge of \$5 per acre. The grower furnishes the tractor and its operator. It is important to keep the stalks straight in the swath.

PROPER RETTING ESSENTIAL

What is meant by retting hemp?

The hemp stalks are left lying on the ground in the field exposed to rain and dew until they have rotted enough so that the layers of fibers can be separated readily from the woody core.

How long does retting take and how can a farmer know when it is done?

If warm moist weather occurs following the harvesting of the green stems, the retting may be completed in from a week to ten days. Dry weather after harvest often delays the completion of retting until late fall. If the retting is delayed, more satisfactory results can be obtained if the straw is turned. The grower should avoid binding the crop up before complete retting has taken place. Expert advice is necessary in determining when the proper stage of retting has been reached.

BINDING AND SHOCKING

What method is used in picking up and binding the straw?

When the straw has reached the proper stage of retting, special hemp pickers which keep the straw straight are used to gather and bind it into bundles. The usual rate of binding is 10 acres per day. These machines are supplied on a rental basis by each mill. The farmer furnishes the power.

What is the purpose of shocking hemp in the field?

Careful shocking is important in order that the straw may dry out thoroughly and the quality of the straw may be maintained. Hemp bundles are bulky but light in weight. They are placed in shocks somewhat larger than corn shocks.

Is the straw stacked on the farm?

As soon as the hemp straw has become thoroughly air dry in the shocks, the straw is hauled to the mill yard and stacked there. The yield of dry straw per acre ranges between two and three tons. Keeping the stacks high in the middle so that the outside bundles slant sharply is highly important.

MILLING HEMP STRAW

How is the fiber removed from the straw?

Each hemp mill is equipped with a dryer to remove excess moisture, corrugated rolls to crush the straw and remove the fiber, and scutchers to clean and brush the fiber. The long straight fiber is called line fiber. This is used in the manufacture of ropes and cords and is the most valuable part. The short tangled part called tow is much less valuable.

What is the usual percentage of line fiber and of tow recovered?

Fifty-five per cent of line fiber and 45 per cent tow are the usual proportions recovered from hemp straw produced on good hemp soil. The fiber recovered from hemp straw grown on poor soil may be nearly all tow.