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# GOOD SEED

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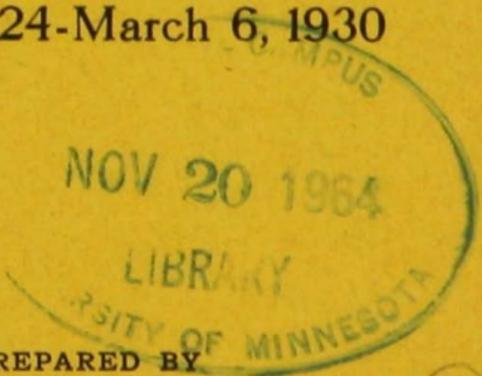
## Growing Investment



### Minnesota Seed Special

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# ***Good Seed Is a Growing Investment***

## **Good Seed Is Right Varieties**

Crop plants, like men, differ in their growth habits and in their ability to produce or yield. No single variety is best for all places and purposes. The *Right Variety* for a farm or region is found only after repeated tests and comparisons with other varieties. Such tests are being made continuously by the Minnesota Agricultural Experiment Station at the regional station farms and in co-operation with farmers. The results of these tests are summarized annually into a list of Varieties Recommended for Minnesota with advice as to the region and conditions for which each is best suited. This list will put you in the way of getting the *right variety for your farm*.

## **Good Seed Is Clean Seed**

Will it be wild oats, Kingshead, cocklebur, or clean grain? That will depend upon what you sow. Few samples of seed grain are absolutely free from weed seeds. Yet seed grain can be cleaned of weed seeds without great expense. Cleaning machinery is available that will make a separation of weed seeds from the grain and that will grade the grain to uniform size and weight. There is *no legitimate excuse for sowing weed seeds with seed grain*.

## **Good Seed Is Tested and Treated Seed**

Do you know that it will grow? *You should, and you can*. Germination tests prior to seeding will tell the story and will enable you to avoid serious losses.

Plant diseases, such as the smuts and wilts, cause millions of dollars' loss to farmers annually. Many of these can be controlled by disinfection of the seed, in many cases increasing the yield and improving the market quality of the grain.

## Every "Variety" Has Its Day

**M**INNESOTA now ranks first in barley, second in oats and flax, fourth in corn, and fifteenth in wheat production in the United States.

In 1900 Minnesota was one of the great wheat producing states, with an annual production of 51,000,000 bushels. Wheat followed wheat on many farms. Corn was grown in southern Minnesota to a limited extent only. Since 1900 wheat production has declined 61 per cent. Diversification and crop rotation have come to play a rôle of ever increasing importance in Minnesota's agriculture. Winter wheat and flax are replacing spring wheat as the cash crops. Corn, oats and barley constitute the feed crops for our great herds and flocks of livestock.

### **New Varieties Replace the Old**

Bluestem wheat has been superseded by Fife, Preston, Marquis and now Ceres and Marquillo. Farmers of southern Minnesota demanded a winter-hardy winter wheat. Plant scientists at the Minnesota Agricultural Experiment Station crossed the non-winter-hardy turkey variety with the winter-hardy but otherwise undesirable Odessa variety and produced



Minturki. The farmers demanded an early, stiff-strawed variety of oats. Gopher was produced by selection from the variety Sixty-day. The awns of the common barley were objectionable at harvest time. By crossing Manchuria with smooth-awned types the varieties Velvet and Glabron were produced. The production of wilt-resistant flax varieties has reduced the losses due to this disease and made it possible to grow flax on old ground. It is only reasonable to assume that new and improved varieties will continue to replace the old ones from time to time as conditions warrant new introductions.

### **New Varieties Rigidly Tested**

New varieties are recommended by the Minnesota Agricultural Experiment Station only after years of testing in comparison with varieties already grown. Only new productions which are superior to varieties already grown are distributed. Extensive tests are made also in farmers' fields throughout the state. A strip of an improved variety is sown through the farmer's field and the yield of the old and new varieties compared. From 225 such tests, from 1925-29, it was found that Gopher oats yielded 7 bushels more than the local varieties. In 159 similar tests, Velvet barley yielded 4 bushels more than the local varieties.

### **Double-Crossed Corn**

Double-crossed or hybrid seed corn is produced by combining, through crossing, four inbred lines of corn; first into two single crosses and then these two single crosses are combined to form the double cross. Three such double crosses, from inbred lines of Rustler and Minn. No. 13 or Rustler and Northwestern Dent, are being released to the farmers of Minnesota in a small way for the first time in 1930. These crosses are particularly adapted to central Minnesota and will probably be too early for highest yields in southern Minnesota. Breeding for other crosses



adapted for southern Minnesota is being continued, but as yet no such crosses are ready for distribution.

### **Seed Certification—Seed Verification**

Seed Certification is established by the Minnesota Crop Improvement association; only recommended varieties are certified; seed must be grown by a member of the association; the seed must pass a rigid field and bin inspection; and the variety, purity, germination and grower are known. Certified Seed, therefore, means good seed of a tested variety.

Seed Verification is established by the United States Department of Agriculture. Verified alfalfa or red clover seed refers only to locality where grown. Variety or quality are not specified. Extensive experimental field trials with seed of alfalfa and medium red clover have been made through the co-operation of the United States Department of Agriculture and state experiment stations. These many trials show that alfalfa from Argentine and southern United States is not hardy for Minnesota. Medium red clover from Italy and France are not adapted to the Northwest.

# Seed Grain Must Be Clean

“**A**S ye sow so ye shall reap” is a statement, the truth of which can be doubted by no one; its importance is apparent to every farmer. It is more profitable to reclean seeds than to spend time and money trying to kill weeds already introduced. Destroying the enemy beyond the front line has always been found to be more effective than inviting him into the trench for a hand-to-hand conflict.

## Why Weeds Are Costly

Larger yields are obtained from a weed-free field. Weeds require space that might otherwise be occupied by the grain plant, and they rob the crop of its full share of soil moisture and plant food.

Harvesting a weedy crop of wheat or oats requires much more labor and expense than to harvest without weeds. With the use of the combine, this handicap imposed by weeds becomes even more noticeable. Weedy fields make necessary the use of the windrowers where straight combining usually would be satisfactory in a clean field.

Planting weed seeds means a loss at the market. Many farmers are suffering increasing penalties each year from dockage and reduced yields. A single wild oat plant may produce 200 seeds, a mustard plant may produce 10,000 seeds, whereas the number of kernels produced from a wheat seed averages about 25.

## Types of Cleaning Equipment

There are a number of ways in which weed seeds differ from small grain seeds. The most important of these are size, shape and weight of the kernel. These are the points of difference that are taken advantage of in most grain cleaning equipment.

The fanning mill is perhaps the most generally used machine for cleaning grain on the farm. It utilizes

both an air blast to separate the lighter material from the heavier, and sieves to separate the grains according to size. Other machines such as the wild oat kicker and the disk cleaners use the length and shape of the kernel as the basis of separation. The spiral gravity separator does its work on the basis of the shape of the kernel, utilizing gravity and centrifugal

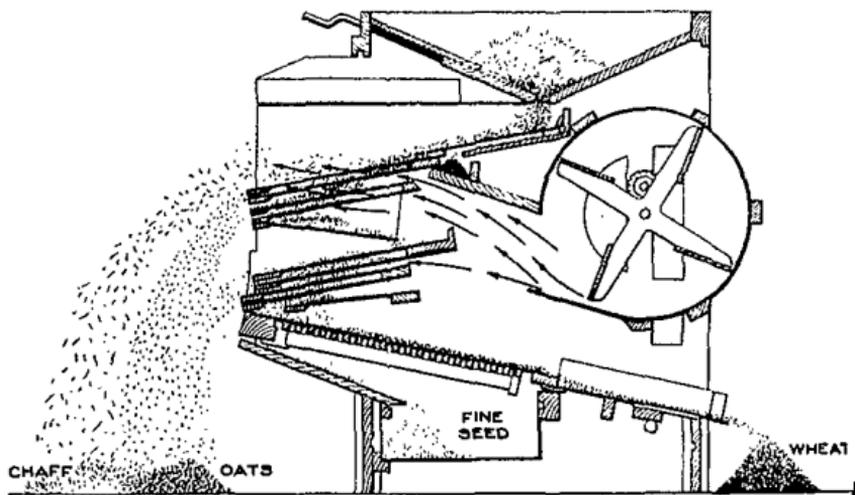


Illustration from U. S. D. A. Farmers' Bulletin No. 1542

force. Barley reels separate wild oats from barley, or pin oats from wheat, on the basis of diameter of the kernel.

The fanning mill may be used for a large variety of work, especially where there are considerable amounts of oats and barley to be cleaned. It should have a complete set of sieves and for best results care must be exercised to get the best adjustment of sieves and air blast for the mixture to be cleaned. Fanning mills come equipped with self-cleaning screens; some also have barley reels in place of the regular small mesh weed screen.

Wheat growers find the disk cleaner which separates the kernel on the basis of length suited to cleaning this crop. It is made of a number of flat disks which have pockets of different sizes. The disks with the small sized pockets pick out the small weed seeds;

the next larger sized pockets remove the larger weed seeds, and cracked and shrunken wheat; the good wheat is taken out by pockets just large enough to hold these kernels.

### **Clean Seed Returns Profits**

It is not difficult for the average grain grower to clean his seed. Several types of grain cleaning equipment are available in various sizes and capacities so that a machine may be selected to suit the volume of grain to be cleaned on any particular farm. The cost of such equipment is relatively small and the time required for doing the work is negligible since it may be done during the winter season when other work is not pressing.

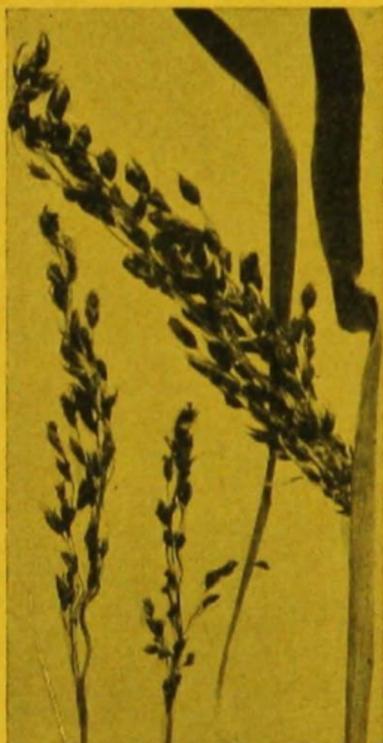
In other words, the investment in time and money for obtaining weed-free seed grain returns big dividends in the form of higher yields, reduced harvesting costs, less dockage and consequent higher prices at the market, clean fields for future crops, and a consequent reduction in the cost of producing future crops.

### **Write for This Bulletin**

Farmers desiring further information about seed cleaning, together with definite directions for doing the work, may write the Superintendent of Documents, United States Department of Agriculture, Washington, D. C., for a copy of Farmer's Bulletin No. 1542, entitled "Cleaning Grain on Farms and in Country Elevators."

## Disease Control Pays

**I**N the seed treatment story brought out on the Minnesota Seed Special, farmers who habitually treat their seed grain are represented by a character known as "Art Sure" and those who do not by "Slim Chance."



Loose Smut of Oats

Their methods of avoiding disease losses might be called the sure method and the chance method. The sure method entails a little more labor and slightly more expense, but the farmer who follows it gets a crop of better quality and larger yield. In grain crops, the larger yield means a lower cost of production on each bushel of grain. The chance method is much easier because less labor is required. But with this method diseases will take their toll, the quality of the crop will be lower and the cost per bushel higher. How can a sure

crop be secured with "Slim Chance" methods? In the following paragraphs is told, briefly and concisely, the principal facts concerning "Sure" methods.

### **Clean Seed**

The fanning mill renders some service in the control of diseases of seed grain. It removes the weak, shriveled seeds and much of the scabby grain. Seed treatment will not control scab. Scabby seed causes seedling blight and poor stand of grain. Unbroken

smut balls are also removed by the fanning mill. This is very important, as seed treatment will not reach the spores inside these balls.

## **Treated Seed**

Seed treatment gives the best protection against grain smuts. Smut spores will stick to the grain even though it has been fanned. Oat smut and the covered smuts of wheat and barley are carried in this way. The formaldehyde method is the cheapest treatment for oat smut. One pint of formaldehyde (40 cents) will treat about 40 bushels of oats, when the grain is sprayed, sprinkled or dipped. Ceresan has been used for dusting seed oats with good results. It is more expensive than formaldehyde, but the dust method is preferred by many. Corona oat dust is a new product that has not been thoroughly tried in this state.

The copper carbonate dust (20 per cent) is fast winning popularity for treating wheat for stinking smut. A pound of this dust will treat 8 bushels of wheat at a cost of about 3 cents per bushel.

Barley treated with Ceresan dust will be protected from both covered smut and stripe. This dust is applied at the rate of 3 ounces per bushel of seed. Formaldehyde is sometimes used to treat barley, but it is effective only on covered smut.

These chemical treatments will not affect loose smut on wheat or barley. Loose smut can only be controlled by the hot water method, which requires considerable equipment and care.

The stand and yield of corn has frequently shown marked benefit by treating the seed with one of the organic mercury dusts such as Semesan Jr. This dust will not control corn smut but often prevents the rotting of seed and thereby increases the yield.

## **Rotation of Crops**

Many of the root diseases of grain crops are best handled by a 3- or 4-year rotation. Soils become sick

when used for the same crop or closely related crops. It is not advisable to plant wheat or barley on corn land, unless the stalks have been turned under by thorough plowing. Certain molds growing on corn stubble cause scab on barley and wheat.

### **Resistant Varieties**

Some varieties of grain show considerable resistance to certain diseases. Buda and Bison flax are resistant to rust and wilt. The Anthony oat is quite resistant to rust; Marquis wheat is somewhat resistant to loose and covered smut. Manchurian and Peatland barley are noticeably resistant to scab; Velvet barley is resistant to stripe.

### **Sources of Information**

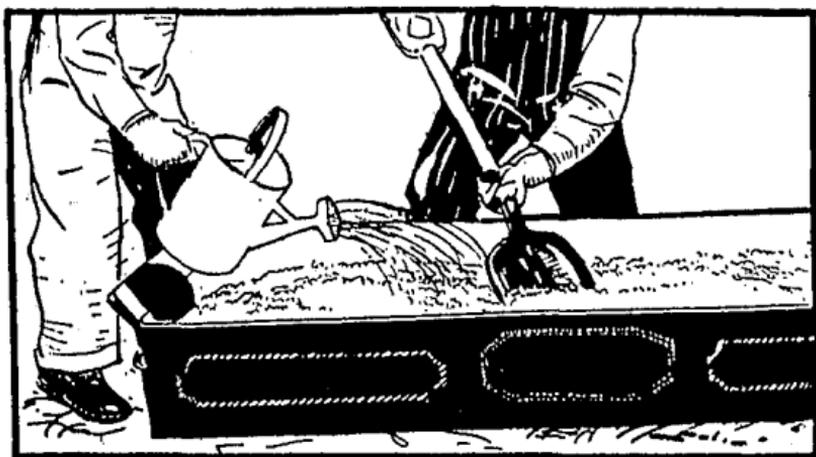
Ask your county agent for bulletins—

Formaldehyde Seed Treatment for Oat Smuts, U. S. D. A., Misc. Publ. 21

Copper Carbonate Seed Treatment for Stinking Smut of Wheat, U. S. D. A., Misc. Cir. 108

Scab of Wheat and Barley, U. S. D. A., Farmers' Bulletin 1599

Control of Barley Stripe, Minnesota Cir. 31



## CO-OPERATING AGENCIES

Chicago & Northwestern Railway  
Chicago, St. Paul, Minneapolis & Omaha Railway  
Minnesota Agricultural Extension Division  
Minnesota Agricultural Experiment Station  
Northwest Crop Improvement Association  
United States Department of Agriculture  
Minnesota Seed Council  
Local Community Organizations



## VISIT UNIVERSITY FARM

during the crop growing season and see new varieties in the making. Study the methods used in developing and testing new varieties of wheat, oats, barley, flax, corn and other farm crops. Ask questions. You are always welcome.