Circular No. 16 - Better Seed

Frank S. Harris

Follow this and additional works at: https://digitalcommons.usu.edu/uaes_circulars

Part of the Agricultural Science Commons

Recommended Citation
Harris, Frank S., "Circular No. 16 - Better Seed" (1914). UAES Circulars. Paper 12.
https://digitalcommons.usu.edu/uaes_circulars/12
Better Seed

BY

FRANK S. HARRIS

Logan, Utah, March, 1914
## UTAH AGRICULTURAL EXPERIMENT STATION

### BOARD OF TRUSTEES.

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>LORENZO N. STOHL</td>
<td>Brigham</td>
</tr>
<tr>
<td>THOMAS SMART</td>
<td>Logan</td>
</tr>
<tr>
<td>JOHN Q. ADAMS</td>
<td>Logan</td>
</tr>
<tr>
<td>ELIZABETH C. McCUNE</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>J. W. N. WHITECOTTON</td>
<td></td>
</tr>
<tr>
<td>JOHN DERN</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>JOHN C. SHARP</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>ANGUS T. WRIGHT</td>
<td>Ogden</td>
</tr>
<tr>
<td>J. M. PETERSON</td>
<td></td>
</tr>
<tr>
<td>HAZEL L. DUNFORD</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>GEO. T. ODELL</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>JOSEPH QUINNEY, JR.</td>
<td>Logan</td>
</tr>
<tr>
<td>DAVID MATTSON, Secretary of State, Ex-officio</td>
<td>Salt Lake City</td>
</tr>
</tbody>
</table>

### OFFICERS OF THE BOARD.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>LORENZO N. STOHL</td>
<td>President</td>
</tr>
<tr>
<td>ELIZABETH C. McCUNE</td>
<td>Vice-President</td>
</tr>
<tr>
<td>JOHN T. CAINE, JR.</td>
<td>Recording Secretary and Auditor</td>
</tr>
<tr>
<td>JOHN L. COBURN</td>
<td>Financial Secretary</td>
</tr>
<tr>
<td>ALLAN M. FLEMING</td>
<td>Treasurer</td>
</tr>
</tbody>
</table>

### EXPERIMENT STATION STAFF.

**E. D. BALL, Ph. D.**
Director

**H. J. FREDERICK, D. V. M.**
Veterinarian

**ROBERT STEWART, Ph. D.**
Assistant Director and Chemist

**E. G. TITUS, Sc. D.**
Entomologist

**L. D. BATECHEOR, Ph. D.**
Horticulturist

**F. S. HARRIS, Ph. D.**
Agronomist

**F. L. WEST, Ph. D.**
Meteorologist

**J. E. GREAVES, Ph. D.**
Bacteriologist

**W. E. CARROLL, M. S.**
Animal Husbandman

**BYRON ALDER, B. S.**
Poulttryman

**G. R. HILL, JR., Ph. D.**
Plant Pathologist

**JOHN STEWART, B. S.**
Associate Chemist

**C. T. HIRST, B. S.**
Assistant Chemist

**ARCHIE EGBERT, D. V. M.**
Assistant Poulttryman

**H. W. STUCKI, B. S.**
Assistant Agronomist

**H. SWEITZER, B. S.**
Assistant Horticulturist

**H. J. WAUGHAN, B. S.**
Assistant Agronomist

**J. I. LAURITZEN, B. S.**
Assistant Plant Pathologist

**B. L. RICHARDS, B. S.**
Assistant Plant Pathologist

**GEORGE STEWART, B. S.**
Assistant Agronomist

**C. Y. CANNON, B. S.**
Asst. Animal Husbandman

**LESLEY A. SMITH, B. S.**
Assistant Bacteriologist

**VIOLET GREENHALGH**
Clerk and Librarian

**O. BLANCHE CONDIT**
Stenographer

### IN CHARGE OF CO-OPERATIVE INVESTIGATIONS WITH U. S. DEPARTMENT OF AGRICULTURE.

**W. W. McLAUGHLIN, B. S.**
Irrigation Engineer

**L. M. WINSOR, B. S.**
Irrigation Engineer

**A. D. ELLISON, B. S.**
Assistant Agronomist
Better Seed
By FRANK S. HARRIS

1. Need of Good Seed.

It is impossible to produce good crops unless good seed is used. The soil may be of the best quality and it may be prepared in the most thorough manner, the supply of moisture may be ample, the season may be the most favorable, yet all these count for little if worthless seed is planted.

Farmers seldom use seed that is entirely bad, but they very often are satisfied with what is far short of the best. In every farming community there are many who pay but little attention to what they sow, using whatever kind of seed happens to be in their bins at the time of planting.

It is usually poor economy to save on seed, being much better to do the saving in some other way. It is not always necessary to pay fancy prices for good seed; but it is usually wise to get good seed at a high price rather than to plant that of inferior quality even though it can be obtained at slight expense.

With a crop of corn it is very easy to cut down the yield 25 or 50 per cent by planting poor grain. The loss by this decreased yield would be sufficient to justify paying what might seem fabulous prices for good seed corn rather than using that of inferior quality. Using poor seed is more a question of thoughtlessness than anything else, for any farmer by doing a little figuring can easily convince himself how unwise such a procedure is.

2. Clean Seed.

Seed, in order to be first class, must be free from impurities of all kinds; that is, it should be 100 per cent of the kind of seed it is represented to be. One of the most common but least harmful impurities is dirt and other inert matter. The chief disadvantages in having this kind of material present are that it lessens the actual amount of good seed and in addition may interfere with the proper operation of planting machinery.
Very often the seed that is sown is not of any one variety, but is a mixture of many varieties. Thus it is next to impossible to buy any quantity of wheat that is unmixed. There are many disadvantages of having mixed crops where but one kind is desired; so every effort should be made to prevent mixing. This requires constant attention if a number of varieties of each crop are grown in the same community or on the same farm.

The most undesirable kind of impurity consists of the seeds of noxious weeds. These often render otherwise good seed almost valueless for planting. Most every crop has weeds which are especially bad for it. Thus dodder is a special enemy of alfalfa; mustard is difficult to eradicate from a wheat field; and wild oats are a great pest in the oat field. On the dry-farm special care should be taken to have seed free from weeds, as these pests take the much needed moisture from the regular crops. It is a wise practice to run most seed through a fanning mill in order to remove just as many of the weed seeds as possible. Purchasers of seed of any kind should insist above all things on the greatest possible freedom from weeds.

3. Seed Free From Disease.

The presence of disease is a constant menace to many kinds of crops. The small grains are attacked by the smuts to such an extent that it is unwise to ever plant wheat or oats without first treating the seed.

The treatment usually recommended for the covered smut of wheat and the loose smut of oats is as follows: Place one pint of formalin containing 40 per cent formaldehyde into 40 to 50 gallons of water. Immerse the seed in burlap sacks in this solution for about ten minutes, then remove and allow to drain. Let the wet grain remain in a pile covered with sacks or other similar material a number of hours, after which it is spread out and allowed to dry as rapidly as possible. As soon as dry it is ready to plant. There are a number of other treatments that are good, but the formalin treatment seems to be the most successful.

The diseases of potatoes are becoming much more prevalent in the State than formerly, and great care should be taken to prevent their wider spread.
There are a number of seed treatments, but these have not
been widely tried under Utah conditions, so their local value
is not well known. Every farmer should be on the safe side
by using for seed only potatoes that are as free from disease as
possible. It is also much safer not to raise potatoes on the same
piece of land so long that the soil becomes filled with disease
organisms.

In cutting seed potatoes it is well to cut off the stem end
first. The worst Utah potato disease, dry rot or the fusarium
wilt, can thus be detected and the diseased tubers discarded.
The diseased potatoes will show a browning or blackening about
one-fourth inch under the skin on the cut surface.

4. Seed That Will Germinate.

A high percentage germination is very desirable. Seeds
that will not germinate might as well be made of wood for all
the value they are to plant. A good crop cannot be obtained
without a proper stand, and it is impossible to get a good stand
from seeds that will not germinate.

Corn, the grasses, and some of the legumes are most com-
monly low in germinating power. This condition arises from
improper methods of curing and storage, from age, and a num-
ber of other causes. One sample of corn that had been used
for seed was tested at the Experiment Station and found to
have only sixteen per cent of kernels that sprouted. It would
be necessary literally to fill the ground with this kind of seed
in order to get a good stand of corn.

The only safe way is for farmers to test every lot of seed
before planting, unless they are certain its germinating power
is good. It is too late to make the test after the seed has been
planted, and the stand found to be poor.

5. Plant Best Varieties.

Wise farmers will carefully study the question of varieties.
There are too many who pay no attention to varieties or strains.
They simply plant wheat or potatoes without regard to kind.

There is probably no best variety of any crop for all con-
ditions, but a community should try to find the varieties of each
crop best suited to its needs. It is better for a community to
raise a few standard varieties of known merit than to produce
a little of everything, but not enough of any one kind to
supply a good market.
6. Good Strains.

There are many breeders of crops who have gone to the trouble of producing high yielding strains of a certain variety. They have, through long selection, eliminated the poorer individuals and have produced pedigreed strains whose yielding power and quality for a number of generations are known.

Before crop production has reached the highest standard of perfection no seed, the producing power of which is not known, will be planted. There is no reason why it is not just as important to have good strains of crops as of live stock. This is especially true, since it is possible in a few years to produce enough from a single kernel to seed great areas. Thus a little seed of high quality can have a great economic effect in a comparatively short time.

No better field of agriculture is open in Utah than the development of strains of the leading crops that would be well adapted to the conditions of the State.

7. Good Seed of Various Crops.

No set rules for getting good seed of all crops can be given although a number of the general principles hold for practically all kinds. The seed of a number of types of crops will be discussed separately.

a. The Small Grains. In securing seed of the small grains due attention should be given to varieties in order to get those best suited to local conditions. Perhaps the most common impurity is the presence of a small amount of seed of numerous other varieties as previously mentioned. This can be overcome largely by hand selecting a few heads and planting them on clean land to get a start of pure seed.

The small grains are not as often low in germinating power as some other crops, but it will usually pay to make a germination test, especially of oats and barley. Before planting, they should always be run through the fanning mill to remove dirt, weed seeds, and broken and small kernels. They should always be treated for smut according to directions already given.

It would pay each farmer to improve his seed by selecting the heads of a number of desirable plants and planting them in a special seed garden to furnish seed later for the entire farm. If this were continued every year it would result in much better strains of grain.
b. Corn. The chief danger with corn is the likelihood that it will be low in germinating power. This is brought about by the fact that the germ in the kernel spoils if left for any length of time on a moist cob. The corn should be well matured and the ears allowed to dry rapidly, in order that the germ will not be injured.

Seed corn should be selected in the field. The farmer should take ears from only the most desirable plants. The plant on which the ear grew is much more important than the appearance of the individual ear. Select ears from plants producing a number of good ears rather than from those having but one.

After the seed ears have been selected, they should be husked and placed in a warm dry place, with good ventilation, to cure properly. Then to be absolutely certain, it often pays to remove a few kernels from each ear and test them for germination. This seems a great deal of work, but it yields big returns. Seed corn selected in this manner cannot help but give good results. Where it is necessary to buy corn for seed in bulk it should always be tested before planting.

c. Alfalfa. Alfalfa seed is often rather low in germinating power; so this point must always be kept in mind. The most common weed is the dodder. The presence of a few dodder seeds with alfalfa greatly lowers its value on the market.

There is quite a tendency among alfalfa seed growers to select strains yielding a large amount of seed regardless of the forage produced. It must be kept in mind that alfalfa is usually grown for forage, and the selections should be made toward that end.

e. Grasses. There are not many sections of the country adapted to the production of grass seed, so a great part of the best seed comes from a relatively few regions.

The seed of many of the grasses is often very low in germination, and is usually adulterated with cheaper and inferior kinds of seed. Special precaution should therefore be taken before planting to test for germinating power and to detect adulterations.

f. Potatoes. There is probably no crop that will give as great returns for a little attention regarding seed as potatoes. The variety is an important consideration. Often when two varieties are grown side by side under the same conditions, one will yield five or ten times as much as the other. Freedom from disease must always be kept in mind in selecting potatoes for planting.

It is not necessary, and is not even a good thing, to change potato seed provided proper methods of selection are followed. Of
course if the Utah farmer pays no attention to seed selection, while a farmer in Maine is doing everything possible to get better seed, it would be wiser to use good seed from Maine than poor seed from Utah. It is possible, however, to produce better seed for Utah right in the State than outside.

The place to begin selecting is in the field. Before harvesting the main crop dig, with a shovel, a number of hills that have a good appearance. From these choose the hills to be used for seed. Select those having a large number of tubers of the right size and shape, free from disease and desirable in every way. If it is impossible to select seed in this manner for all the land that is to be planted, the selected hills could be planted in a special seed plat that would produce enough the next year for the entire field.

The Experiment Station by selecting good and poor hills for two years was able to produce more than four times as great a yield with the seed from the good hills as with that from the poor.

Care should be taken to store potatoes used for seed in such a way that they will remain firm and that there will be no spread of disease among the tubers.

g. Garden Seeds. At present most of the garden seed used in Utah is imported from the outside. Seed dealers are often compelled to hold this seed over from one year to another, and as a result, it loses in vitality from year to year till sometimes only a small part of it will germinate on account of age. Those buying garden seeds should insist that they get nothing but fresh stock.

There is a good opportunity in Utah for someone to produce seeds that are adapted to the conditions of the State. Irrigation and bright weather furnish ideal conditions for seed production.

8. Summary.

1. There is probably nothing in the agriculture of Utah needing greater attention than the use of better seed.
2. Seed should be free from inert material, mixed varieties, and weed seeds.
3. Freedom from disease should be kept constantly in mind before sowing seed.
4. Seed to be of value for planting must be of high germinating power.
5. In purchasing seed care should be taken to get the best varieties and strains.
6. There are special points to be kept in mind concerning the seed of each crop.
7. All agricultural interests of the State should co-operate to improve the quality of seed used in the production of crops.