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Clinton Oats Arrive

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Clinton oats in a test plot at the Agronomy Farm of the Iowa Agricultural Experiment Station at Ames. Note the strong, upright plants. Among Clinton's more undesirable features are irregularity in height, date of maturity.

A VARIETY of oats that promises to turn the poor oats years into good ones will be grown by a few farmers in every county of Iowa in 1946, and if the carefully laid plan of producing seed works out satisfactorily, then it should be in many Iowa farmers' fields by 1947.

Many of you no doubt know something about Clinton oats, for it has been grown in community trials all over the state for several years. It has rather consistently outyielded all other named varieties with which it has been compared. It has the stiffest straw and weighs out better than any other variety tested in Iowa. It is not as uniform as we would like for height and varies slightly in maturity.

In Clinton oats, Iowa farmers should have in wet years a variety that will outyield Tama, Boone, Marion and Control about as much as these varieties did the older ones—Gopher and Richland (Iowa 103). In 48 Community Grain trials reported for 1945, the average yield of Richland and Gopher was 57 bushels to the acre; Marion, Tama and Boone averaged 70 bushels—13 bushels more than Gopher and Richland; and Clinton yielded an average of 84 bushels to the acre—14 bushels more than the average for Tama, Boone and Marion.

Clinton's Record

Clinton is a medium tall, yellow, early oat (1 day later than Tama, Boone and Richland, but 3 days earlier than Marion). The kernels are plump and the hulls thin. It grows about 2 inches taller than Tama and Boone.

Clinton outyielded Tama, Boone, and Marion by an average of about 14 bushels to the acre in the 1945 community trials in Iowa, but what about the other years? We have a comparison of Clinton with Tama, Boone, Marion, Gopher and Richland over a period from 1938 to 1945 in tests of the Iowa Station at Ames and Kanawha. In these tests (see the table) it has outyielded Tama an average of nearly 15 bushels to the acre; it is ahead of Boone an average of 16½ bushels to the acre. It has outyielded Marion nearly 17 bushels to the acre. Clinton has produced an average of 27 and 28½ bushels more to the acre than the older varieties—Gopher and Richland.

The Community Grain trials indicate that Clinton is as well adapted or has about as much advantage over other varieties in one part of the state as another.
Dr. Murphy is shown at the left in an oat nursery at the Iowa Station where he is injecting rust spores into plants of a variety known to be susceptible to all races of both crown and stem rust. The adjacent sections are given a natural test for rust resistance because of the opportunity rusts have to spread from the rows which are infected.

If we should run into a cycle of years when rusts do not bother, Iowa farmers may find that Clinton does not yield much better than Tama, Boone, Marion and Control, but in the wet years when diseases “go to town,” Clinton has shown a marked advantage.

In the rust-free years, even though Clinton may not show any great advantage in yield, it should be superior in its strength of straw and in weight per bushel. In fact its very stiff straw, which gives a long period for safe harvest, may be the quality that farmers will like most, for Clinton has the ability to stand up on very rich soil and this ability to stand continues for 10 days to 2 weeks after it is ripe.

Because of its sturdy straw, we should be able to delay harvest until Clinton is fully ripe and thus get away from the trouble of heating in the bins which many have had with Tama, Boone and the other new varieties. You can leave Clinton in the field longer and permit it to dry out well before it is cut or combined. In that way, it can be put into the bin in a condition that will not cause trouble from heating.

With the old varieties in which the hulls made up a relatively large proportion of the grain, one could harvest the oats much greener, and even if they were binned with considerable moisture in them, they would be less likely to heat because of the big portion of hull. That is not true with Tama, Boone and the others released with them, and it is not true of Clinton. They are all thin-hulled.

Because of its sturdy straw, it may be feasible to combine Clinton oats “direct” while standing in the field—after they have become well dried out. Of course there is a limitation to the time they can stand before they will go down, but they should stand much longer and should stand up on much richer soil than the older varieties, including those like Tama and Boone.

Plan for Distribution

Careful consideration has been given to the method of distributing Clinton oats so as to make them available to the largest number of Iowa farmers in the shortest possible time.

In the fall of 1943 the Agricultural Experiment Station turned its seed of this new variety over to the Committee for Agricultural Development for increase and distribution.

There are about 20,000 to 25,000 bushels of this seed to be distributed to Iowa farmers in 1946, and they will be allotted to the various counties on the basis of their 1944 oat acreage. None of

<table>
<thead>
<tr>
<th>Variety</th>
<th>Date ripe</th>
<th>Height</th>
<th>Amount of lodging</th>
<th>Test weight</th>
<th>Yield</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Before ripe</td>
<td>Ripe</td>
<td>After ripe</td>
<td></td>
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<tr>
<td>Clinton</td>
<td>July</td>
<td>Inches</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
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<tr>
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<td>23</td>
<td>39</td>
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<td>52</td>
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<tr>
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<td>37</td>
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<td>17</td>
<td>34</td>
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<td>Richland</td>
<td>15</td>
<td>32</td>
<td>44</td>
<td>43</td>
<td>80</td>
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</table>
this seed will be available to farmers in other states in 1946. Some farmers in Indiana and Illinois can get Clinton through their state agricultural colleges. Seed was made available to these institutions for testing in 1939 and 1940 and for increase in 1945. It was agreed that the variety would be released simultaneously in these three central Corn Belt states.

Each Iowa county to receive Clinton oats must have a county seed distribution committee. The county extension directors will usually act as secretaries for these committees. All actively interested county organizations will be invited and urged to appoint representatives to these county committees. These may include the Farmers’ Union locals, county Farm Bureau, Grange, vocational agriculture groups, county agricultural conservation (AAA) associations, Soil Conservation districts and any others interested.

Persons interested in growing Clinton oats should get in touch with their county committee. Don’t write to the college at Ames. Seed will go only to the persons selected by the county committee.

This committee will meet and select farmers who in their judgment are best able to grow a good clean crop of seed and who can be trusted to handle the seed in the best possible manner. Those selected will be sent a letter of explanation by the county committee, a questionnaire and an agreement form. The questionnaires will be filled out and returned to the county committee.

Choose Growers

From the information in the questionnaires and the members’ own knowledge and judgment, the county committees will make their selections and list the farmers—who are the prospective seed growers—in the order in which they consider them best fitted to produce seed for the farmers of that county. Each county committee will send its list of farmers, together with the questionnaires for each, to the Committee for Agricultural Development at Ames. This group will go over the questionnaires again and may eliminate any name if the facts in the questionnaire indicate that the person cannot be expected to produce a maximum amount of high quality Clinton seed.

The farmers chosen will be notified and invited to sign agreements and make their remittance for seed. The seed will be sent out in lots of 24 to 45 bushels. This will be sold to the farmers at $2.25 a bushel f.o.b. Ames or Marshalltown. It will be sent in 3-bushel bags. The farmers who are selected and agree to grow this variety must also agree to have it certified.

Those who get Clinton seed must agree to sell at least one-half the crop to other farmers for seed and they cannot sell more than 50 bushels to any one man without consent of the county seed distribution committee. The price limitation on the seed they sell will be $1.00 above the Des Moines December 1 price of U. S. No. 2 oats. No oats can be sold to anyone outside the county without the permission of the county seed distribution committee.

All of these and other restrictions have been put on Clinton oats to try to make it available to the most Iowa farmers in the shortest possible time and to assure that it will be handled by honest, capable farmers who have the soil and equipment to get the most possible high quality, clean seed from that distributed.

Clinton oats should have real advantage to the farmer who harvests with a binder, for their stiff straw makes it feasible to leave them standing in the field until they are fully ripe. This is an increase field, grown under contract for Agricultural Development Committee, Iowa State College, on the Joe Judge farm near Ames, Iowa.
How Clinton Originated

Hybrid seed has become a kind of magic term to many farmers because they have seen what hybrid corn seed can do to yields, its superiority in drouth years, its sturdy stalks and other advantages. Clinton oats is not a hybrid—it is a new variety that comes from hybrid origin. Oats in general are self-pollinated so that they are inbreds. If you want to cross two varieties of oats, the tiny flower must be opened and the pollination made by hand—a very tedious, slow process.

The oat breeding work at Ames is cooperative between the Bureau of Plant Industry, Soils and Agricultural Engineering of the USDA and the Iowa Agricultural Experiment Station. Clinton oats originated at the Iowa Station as a selection from a cross of D69 with Bond. Its value was determined in extensive tests in Iowa and in tests cooperative with the agricultural experiment stations in nearby states.

The parent D69 was developed from a cross of Richland and Green Russian. Bond came from Australia and was obtained with many others by the U. S. Department of Agriculture. Bond is a stiff-strawed, mid-season variety which produces a plump, reddish-yellow kernel. It is nearly immune from most of the races of crown rust (leaf rust) which are found in North America. It also is resistant to most races of both loose and covered smut, but it is susceptible to all races of stem rust. Clinton gets its stem rust resistance from the other parent, D69.

25 Pounds to 1,207 Bushels

In one year Clinton oats was increased from 25 pounds to 1,207 bushels! In the fall of 1943 we sent 25 pounds of seed to the Arizona Experiment Station for a winter crop. It was sown under the direction of Dr. A. T. Bartel at Mesa, Arizona, in October, 1943. From this planting 67 bushels were harvested the next spring—May, 1944—and this seed was immediately expressed to the Aberdeen Substation of the Idaho Agricultural Experiment Station. There it was grown under the supervision of Superintendent J. L. Toevs. Arrangements for these increases in Arizona and Idaho were made in cooperation with the United States Department of Agriculture.

The seed was planted in Idaho in May, 1944, and 1,207 bushels were harvested in the fall of 1944 and shipped to Ames. So, from a 25-pound lot a year before, we had approximately 1,200 bushels in the fall of 1944. Had it not been for a severe windstorm before the crop was fully harvested in Idaho, we should have had around 2,000 bushels.

Clinton Isn’t Perfect

Despite its good record, Clinton has some weaknesses. First of all, it is a bit uneven in height and in date of ripening. Furthermore, it is susceptible to some of the races of crown rust—race 45, and similar ones.

There are races or “varieties” of the rusts just as there are of crops. For instance, there are 82 known races of crown rust (leaf rust), which has been the most important disease so far as oats are concerned. Although most oats are highly susceptible to race 45 and similar ones, this race has never caused any serious damage to the crop in Iowa. Race 45 is rather wide spread throughout the United States, but so far it has always come into Iowa too late to seriously affect the yield.

Just what this race may do in the future cannot be predicted. It is possible that eventually it may build up enough to cause serious damage to Clinton. A number of years ago when Richland and Iogold were two of our important varieties, it was predicted that their resistance to stem rust would not continue to hold up because they were susceptible to certain races of rust which at that time had not been important. Richland and Iogold were widely grown for many years, however, without serious damage from these races of stem rust. The same thing could happen to Clinton with race 45 and similar races of crown rust.

Races 8 and 10 of stem rust have been known for many years, and since 1943 they have built up to the extent that they have caused damage to the varieties susceptible to them. Richland, Iogold, Boone, Tama, Vicland, Control, Cedar and Marion all are susceptible to races 8 and 10 of stem rust. Clinton is resistant to races 8 and 10 and to the other common races of stem rust.

In contrast to the build-up of races 8 and 10 of stem rust, which...
have increased with the growing of more susceptible varieties of crown rust, race 41, to which Tama, Boone, Control and Vicland are highly susceptible, has not increased materially even though these varieties are now widely grown. It may be that race 45 will not increase and cut down the advantage of Clinton.

Rusts Compete

Rusts compete with one another somewhat as plants do. If one is eliminated others may come in. There is also some crossing of races, bringing in new ones. There are 82 known races of crown rust, 13 races of stem rust, 31 races of loose smut and 14 known races of covered smut. Additional races certainly will be found.

Treat Seed Oats

Many farmers have been of the opinion that if they were growing an oat variety that was resistant to smuts then there was no need of treating their seed. We consider it desirable to treat grain seed with New Improved Ceresan or some other approved fungicide. Treating the seed will eliminate some root diseases, and it will cut down the chances of the appearance and increase of new races of the smuts to which Clinton may be susceptible. So even though Clinton oats are resistant to the known races of smuts in Iowa, we still advise treating the seed. Treating the seed can be done at very small cost.

The Blights

One of the big advantages which Clinton oats has over Tama, Boone, Control, Vicland, Cedar and Marion is that it is resistant to halo blight and Helminthosporium leaf blotch, diseases which cause seedling blight and leaf spot, thereby cutting down the ability of the plant to manufacture food to build the kernels.

Clinton’s Advantages

We believe that Clinton oats has three distinct advantages over other varieties now grown in Iowa. They are:

1. Higher yielding ability.

2. Stiffest straw of any variety now available. In some of the community grain trials birds have been noted lighting on these sturdy Clinton plants and picking out the plump kernels. Some other varieties are not strong enough to hold a blackbird or a sparrow, but Clinton is.

3. Higher test weight. The kernels are plump and the hulls thin. They will provide a much more valuable oats for feeding.

Clinton should prove a real boon to Iowa farmers. While it is not perfect, our tests show that it is superior to anything else so far available. Considerable Clinton seed should be available in 1947 and enough for everyone in 1948.