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More Oats, Fewer Acres!

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More Oats, Fewer Acres!

Enough Seed of New Disease-Resistant Varieties Available This Year to Plant Iowa’s Oat Acreage

IOWA FARMERS have been asked to reduce their oat acreage by 8 percent in 1943. But Iowa farmers are “holding an ace in their hands”—they have enough seed of the new disease-resistant varieties so that they can cut their acreage 8 percent and still produce as many bushels of oats as with the larger acreage of the older varieties.

Iowa oat yields will increase 5 to 25 bushels per acre over that obtained from older varieties if only the new, high-yielding, disease-resistant varieties are planted. Sufficient seed of the new varieties was produced in every part of the state in 1942 to sow the entire 1943 Iowa oat acreage. If the season is a “good oat” year these new varieties should raise the average yields 5 to 10 bushels per acre over what would be obtained from older varieties. Should we experience a severe crown rust (leaf rust) outbreak in 1943 the new varieties might easily yield 20 to 30 bushels per acre more than other varieties.

These new, high-yielding, rust and smut-resistant varieties are Tama, Boone, Control and Marion. They have yielded an average of 6 bushels more than the three leading older varieties during the good oat years (1939, 1940 and 1942) in tests by the Iowa Station at Ames and Kanawha. During the poor oat years (1938 and 1941), when crown rust was severe, they outyielded the older varieties by an average of 28 bushels per acre. The new varieties consistently have had a higher weight per bushel than the older varieties with the difference being very great when crown rust was severe.

The new varieties—Tama, Boone, Control and Marion—were developed cooperatively by the Iowa Agricultural Experiment Station and the United States Department of Agriculture. They are highly resistant to crown rust (leaf rust), stem rust and both smuts of oats. Older varieties, such as Gopher, Iogold, Iowa 105 (Richland), Iowa 103, Vanguard, have no resistance to crown rust and have suffered badly during years such as 1935, 1938 and 1941 when crown rust infection was severe.

Tama, Boone and Control were selected from a cross of Victoria x Richland. They inherit their crown rust and smut resistance from Victoria, a variety introduced from Argentina in 1927. From Iowa 105 (Richland) they inherit yielding ability, early maturity, stiff straw, yellow grain and resistance to stem rust. Tama has outyielded Boone, Control and Marion in all Iowa tests by about 3 bushels per acre. Boone, Control and Marion are similar in average yield.

Marion was selected from a cross of Markton x Rainbow. High resistance to smut and some yielding ability were inherited from Markton, a variety developed at Moro, Oregon, from an unnamed variety introduced from Turkey. Marion inherited additional yielding ability, high resistance to stem rust and moderate resistance to crown rust from Rainbow, a selection from Green Russian developed by the Iowa Station at Kanawha.

By H. C. MURPHY and L. C. BURNETT

CROWN RUST YEARS (1938 AND '41)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Average Yield</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAMA, MARION, BOONE</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>GOPHER, IOWA 105</td>
<td>32</td>
<td></td>
</tr>
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</table>

GOOD OAT YEARS (1939, '40, '42)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Average Yield</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAMA, MARION, BOONE</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>GOPHER, IOWA 105</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

1 REPRESENTS 6 BUSHELS
North Dakota Experiment Station. Marion is high-yielding, has superior grain quality, is almost white in grain color, thin hulled and averages high in bushel weight. It is taller than Tama, Boone or Control and is a few days later in maturity. Marion may lodge on rich soils, but it is as stiff strawed as the old standard varieties.

These new smut and rust-resistant oat varieties are not "wonder crops," nor are they "hybrid oats." They are well-adapted, early varieties which give higher yields and heavier weights mainly because of their resistance to diseases. It is true they are of hybrid origin, but that does not mean that they are "hybrid oats" in the same way that we speak of hybrid corn. Oat varieties of hybrid origin—such as Tama, Boone, Control and Marion—lost all of their hybrid vigor during the process of selection long before they were ready for distribution.

It is a well known fact that hybrid corn loses its hybrid vigor rapidly in the generations following hybridization. For this reason corn growers purchase first generation seed each year. But it is not feasible to do this with oat hybrids, because at least 10 generations usually elapse between hybridization and the distribution of a variety.

Crossbreeding oat varieties is slow and tedious work since oats are a self-pollinated plant, and each flower within a seed head uses its own pollen to make a kernel. To cross oat varieties a plant breeder must go through a delicate hand procedure with each single kernel produced. He must carefully open each flower with a pair of forceps and pull out the male parts before the pollen ripens. After a day or two, he must dust on a tiny bit of pollen from the other plant involved in the cross. The production for an entire year of even an experienced man would not exceed a half peck of seed.

Boone and Control were not available for distribution until 1940, 10 years after the original cross was made between Victoria and Richland in 1930. Likewise, the Vanguard oat, a late, stem rust-resistant variety developed by the Dominion Rust Research Laboratory at Winnipeg, Canada, was first distributed in 1936 from a cross made between Hajira and Banner in 1926.

Oat varieties selected from hybrids do not "run out" in the sense that hybrid corn does, and providing the seed is kept pure it is not necessary to obtain new seed of a particular variety from year to year.

The yield and quality of the oat crop can be increased by sowing early. A delay in sowing after the earliest possible date will usually decrease yield about 1 bushel per acre for each day of delay.

For best results oat seed should be cleaned and treated with New Improved Ceresan or some other approved fungicide. Even though the new varieties are resistant to both smuts, seed of these varieties should also be treated. There are many other diseases besides the smuts, such as the root rots and seedling blights, which can be controlled wholly or in part by seed treatment. For the small cost involved, cleaning and treating oat seed pays bountiful dividends.

Farmers can obtain a list of those selling seed of Tama, Boone, Control and Marion from their county extension director (county agent). A list of growers having certified seed of Tama, Boone and Marion for sale also can be obtained from the same source or by writing to the Secretary of the Iowa Agricultural Experiment Association, Ames, Iowa. By purchasing certified seed, a farmer can be sure of obtaining a start with good, pure seed of the variety he desires.

Marion oats on the Ed Overland (he's the man at the right) farm near Jewell.