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STILLWATER, OKLAHOMA

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EXTENSION DIVISION  
IN COOPERATION WITH  
UNITED STATES DEPARTMENT OF AGRICULTURE  
W. D. BENTLEY, DIRECTOR OF EXTENSION AND STATE AGENT

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**CORN**  
A GUIDE FOR JUDGING VARIETIES ADAPTED TO  
OKLAHOMA CONDITIONS

Prepared for the Extension Division  
BY ADRIAN DAANE and F. F. FERGUSON

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**INTRODUCTION**

Because of the variable conditions existing in Oklahoma, the demand for adaptable varieties of corn to suit these conditions is apparent. No one variety is suited to the whole State, and it is, therefore, necessary to choose such varieties as are best adapted to the prevailing soil and climatic conditions. Some varieties mature early enough to avoid drouths while others are so late in maturing that a drouth in July or August makes them a failure. It is evident, therefore, that those who wish to grow corn in Oklahoma must exercise great care in choosing a variety.

By selection, a strain may be greatly improved not only in production but also in adaptation to the soil and climatic conditions of the locality in which it is grown. A variety improved for one section may not be suited to another.

In view of the irregular rainfall extending over a large portion of the State and the protracted season of drouth usually occurring during the latter parts of June and July, which is often accompanied by hot winds and high temperatures, it is necessary to confine the corn acreage to the most fertile portions of the farm and plant varieties which will mature before the unfavorable seasons occur. As excessive stalk growth and large cobs require the maximum amount of moisture and retard maturity, a field of opportunity is open to the progressive farmer in developing a desirable type to avoid these difficulties where a grain crop is desired.

To develop a desirable type of corn for any section of the United States, it is very necessary that the grower have in mind a standard of excellence defining the type of corn which would be suited to fit the soil and climatic conditions for his section. A standard for a variety grown in one section of the United States may not be, and usually is not, the right standard for the same variety grown in a different section. Each section of the United States having similar soil and climatic conditions should have its standard for each variety grown within its boundary.

The advanced corn growers of the United States have created five divisions called zones, namely, the central, northern, southern, eastern and western. The central zone is the real corn section by nature, with proper types of soil and climatic conditions. These corn growers created a standard with certain measurements to best serve their purpose for profitable corn production in this one zone. The National Corn Growers' Association, which was composed largely of these same corn growers, adopted the same standard. The other four zones have been attempting to produce corn measured by this standard, and by so doing have been working at a great disadvantage. The standards of measurement for judging exhibits of corn suggested in this bulletin are intended for judging differences in varieties adapted to Oklahoma conditions. These standards make it possible for any sample in any group of early corn to score just as high in its respective class as does the late corn by the central or national standards. These standards are flexible enough to meet not only any condition of the southern zone, but it also protects the central zone standards.

The score card divides as nearly as possible in proper proportion the value of the four fundamentals in corn production, which are shelling percent, vitality, uniformity and purity. Shelling percent is the primary object of corn production as long as it does not come at the expense of vitality, which controls the yield. A deep kernel is necessary to a large shelling percent, and time is necessary to develop a deep kernel. As a general proposition, this extends the time of maturity into the heated period of Oklahoma or the early frost dates of Minnesota, either of which makes unprofitable corn production, if there be any produced.

In variety standards it was necessary to create five groups to cover all the variations in corn types produced in Oklahoma. The number of groups was made as few as five by taking such varieties as had approximately the same number of rows of kernels, the same circumference, the same length of ear, etc., and placing them in the same group. Where these differences were very marked another group was made. In fixing a certain number of rows to any one variety it is realized that when planted and reproduced, mutations and variations will occur. For example, the product of an ear of Silver Mine containing sixteen rows may be ears containing from fourteen

to eighteen rows, but by persistent selection to this standard of sixteen rows each year, less mutations and variations will be the result, and consequently more uniformity, therefore the necessity for special seed selection.

Boone County White, St. Charles White, Golden Eagle, White Wonder, Strawberry and other late-maturing varieties are placed in the same group as to standard of measurement, for they differ only in some minor characteristics.

Due to drouth conditions in some parts of the State, early-maturing varieties are desirable. Of these Silver Mine, Chisholm, Bloody Butcher, Long John, Reid's Dent and Dent Squaw are the most common. However, the varieties in this class have been placed in four separate groups, due to their different natural tendencies in growth.

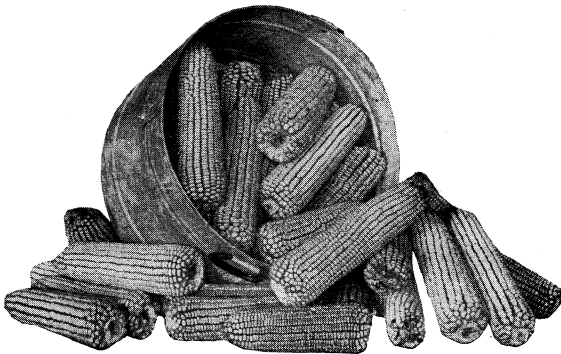


Figure 1

## VARIETY STANDARDS

### Group 1

Boone County White .....	{ Length of ear 9 to 10 inches. Circumference $7\frac{1}{4}$ to $7\frac{3}{4}$ inches. These varieties should contain 20 rows. Kernels should be from 9-16 to 11-16 inches in depth with 6 kernels to the inch. St. Charles White has a red cob.
St. Charles White .....	
Golden Eagle .....	
White Wonder .....	
Strawberry and other late-maturing varieties .....	

### Group 2

Silver Mine .....	{ These varieties should contain 16 rows to the ear. Length of ear 9 to 10 inches, circumference $6\frac{1}{2}$ to 7 inches, 6 kernels to the inch. Depth of kernels 6-16 to 8-16. Chisholm has a red cob.
Chisholm and other early-maturing varieties .....	

### Group 3

Bloody Butcher .....	{ These varieties should contain 14 rows to the ear. Length of ear 10 to 11 inches, circumference $6\frac{1}{4}$ to $6\frac{3}{4}$ inches. Depth of kernels 5-16 to 7-16, 6 kernels to the inch. Bloody Butcher has a white cob.
Long John .....	

### Group 4

Reid's Dent .....	{ This variety should contain 18 rows to the ear; $8\frac{1}{2}$ to $9\frac{1}{2}$ inches in length, $6\frac{1}{2}$ to 7 inches in circumference; depth of kernel 6-16 to 8-16, with 6 kernels to the inch.
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### Group 5

Dent Squaw .....	{ This variety should have 14 rows to the ear. Length of ear 8 to 9 inches, circumference 6 to $6\frac{1}{2}$ inches. Depth of kernel 5-16 to 7-16 inches, 6 kernels to the inch. Color of kernels, blue and white. Cob may be either white or red.
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## RULES FOR JUDGING EXHIBITS OF CORN

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|----|---|----|
| 1  | <b>Uniformity of exhibit</b> .....<br>Uniform in shape, length, circumference, and number of rows. For each ear deficient, cut one-half point.  | 5  |
| 2  | <b>Length of ear</b> .....<br>Varies with variety measurement. For each one inch excess or deficiency in length, cut one point.   | 10 |
| 3  | <b>Circumference of ear</b> .....<br>Varies with variety measurement; for each one inch in excess or deficiency in circumference, cut one-half point.   | 5  |
| 4  | <b>Shape of ear</b> .....<br>Approaching the cylindrical, with straight rows and with proper proportion of length to circumference, according to standard of variety. For each ear deficient cut one point.   | 10 |
| 5  | <b>Tips of ear</b> .....<br>Oval shape with well dented kernel, corresponding to kernels of ear. Protruding cob objectionable. For each inch protruding, cut one-half point. Full cut will be made for removal of protruding cobs.  | 5  |
| 6  | <b>Butts of ear</b> .....<br>Kernels rounding over the butt in regular manner, leaving a depression when shank is removed, and the kernels of butt corresponding to kernels of ear. For each poorly shaped butt, cut one-half point.  | 5  |
| 7  | <b>Kernel Shape</b> .....<br>Approaching wedge-shape and full at germ, with full depth, according to variety. For each kernel deficient or in excess, cut one-half point.   | 5  |
| 8  | <b>Kernel formation</b> .....<br>True and even to conform to variety. For each ear deficient, cut one-half point.   | 5  |
| 9  | <b>Space between rows</b> .....<br>Wide furrows between rows objectionable. For each ear with 1-16-inch furrows, cut one-fourth point.  | 5  |
| 10 | <b>Space between kernels at cob</b> .....<br>Weakens vitality and reduces shelling percent. For each ear so affected, cut one-half point.   | 5  |
| 11 | <b>Color of grain and cob</b> .....<br>For each foreign or mixed kernel, cut one-fifth point up to 5 kernels. Six or more foreign kernels disqualify ear. Color of cob should be uniformly red for yellow corn and usually uniform white for white corn. For one off-colored cob, disqualify exhibit. | 10 |
| 12 | <b>Seed condition</b> .....<br>Mature, sound, and of strong vitality. For one dead ear, disqualify exhibit.   | 10 |
| 13 | <b>Trueness to Type</b> .....<br>Conforming to variety characteristics. For each ear not true to type, cut one point.   | 10 |
| 14 | <b>Percentage of shelled corn</b> .....<br>Should be 85% for deep kernel, late varieties, and 80% for shallow grain, early-maturing varieties. For each ear not complying with above requirements, cut one point.   | 10 |

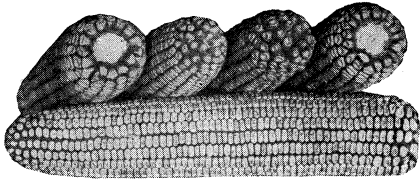


Figure 2—Showing Straight Rows. (See Rule 4, page 5)

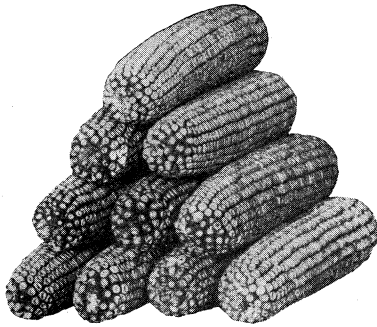


Figure 3—Showing Ideal Tips. (See Rule 5, page 5)

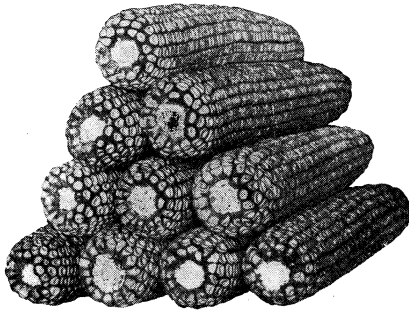


Figure 4—Showing Ideal Butts. (See Rule 6, page 5)

## VARIETIES OF CORN

### Boone County White

This corn was originated in Boone county, Indiana, in 1876. It is grown very extensively on the rich river bottom lands of Oklahoma with fair success.

This is a large white corn with little spacing between rows. The butts are medium in size and only moderately rounded. The tips are blunt, with a tendency toward good kernels extending well out to the end. The cob is medium in size. The kernels are medium to narrow in width, rather thin, and of medium depth. They have slightly curved sides, a square shoulder at the tip, and are milk-white in color. The germ is medium and bright of color, extending well up into the kernel. The indentation varies according to the grower from a smooth, elongated dimple to a double flap or beak. It is a late-maturing variety requiring from 115 to 125 days for complete ripening. The stalks are medium leafy and make good silage. The ears are usually located above the middle of the stalk. This may be improved by selection.

### St. Charles White

This corn was originated in St. Charles county, Missouri, and is a popular corn in the southern half of that State. It is also grown in many sections of Oklahoma, as well as throughout the corn-growing States.

The ears taper somewhat from butt to tip, with rows straight and slightly paired. The butts are slightly rounded, and the tips tend to be well covered with fairly deep kernels. The cob possesses the peculiarity of being red in color. The kernels are medium broad and of good depth. They are only slightly wedge-shaped, consequently not closely spaced at the top. They show a large, bright germ, and are deep-creased to crumple-creased in indentation. The kernels are pearly white in color. St. Charles White is a late-maturing variety, requiring 120 to 130 days for complete ripening. The stalk characteristics are much the same as in the Boone County White.

### Golden Eagle

This is a large, late-maturing, deep yellow dent corn which is extensively grown throughout the State. There is nothing available as to its early history, but it has been grown in the State for twenty-five years or more. It is not a very good show type on account of its poor seed condition at show time, due to the depth of kernel and large cob, which retain the moisture until late in the fall. The ear inclines to be large in circumference and short in length. The stalk is thickset and vigorous, and grows to a height of 10 to 12 feet. It requires from 120 to 130 days in which to mature.

### White Wonder

This is a large, white variety, very coarse in conformation, with wide space between the rows at the top and undesirable butts and tips. It has very large white cobs which cause a small shelling percent. Very little information is obtainable with reference to its early history or origin, but it is claimed that it was originated in Oklahoma. The stalk is thick, close-jointed and very vigorous when grown on fertile soils, where it reaches a height of 12 to 14 feet, thus making good corn for silage purposes. It feeds heavily on moisture, but seems also to be very hardy. It requires from 125 to 130 days in which to mature.

### Strawberry

(Often called "Calico")

This variety of corn is widely known throughout most of the corn-growing regions of the United States. It has been grown for over half a century, and its characteristics are so well established that they change but little, even when grown under widely varying climatic conditions. While it is a late-maturing variety, it is not so late as Golden Eagle or White Wonder. Still it is not adapted to the uplands or dry sections of the State.

The ear is cylindrical, tapering abruptly at the tips. The butts are usually well formed, but have rather large shanks. The tips are rounded, with deep, well-dented kernels. The rows are straight, generally closely spaced. The kernels are deep and wedge-shaped. The name of this variety of corn partially describes the color of the kernel and the cob. The plant usually grows to a height of 8 to 9 feet, and requires from 110 to 120 days for maturing. It is a hardy variety for the sections of the State to which it is adapted.

### Silver Mine

This variety of corn was originated in Illinois in 1890. The Iowa Silver Mine and the Illinois Silver Mine both originated from the same stock. It is grown extensively in the corn belt of the United States and is one of the most popular of the early-maturing varieties in Oklahoma.

The ears are partly cylindrical, tapering but slowly at the tip. The rows are straight or slightly wavy and have a tendency not to pair as distinctly as in some other varieties. The butts are rounded, but have a tendency to swell at the shank, causing rather a flat butt, while the tips are blunt and well covered. The kernels are medium to broad in width, generally rounded at the top or crown, slightly wedged, tapering abruptly at the tip. The color is of a creamy white, while the germ is of a good size with strong vitality. The indentation ranges from a pinched dent to a rough beak. This variety ma-



tures in 90 to 100 days. It has a thick, close-jointed stalk with broad leaves. The average height of the plant is about seven feet, with ears near the middle of the plant.

### **Chisholm**

This is a red-cob, white corn which had its origin in Texas and has been successfully grown for a number of years in Southern Oklahoma. Very little is known of its early history, but it is generally supposed to be a mutation from St. Charles White, occasioned by environment on being introduced into Texas. While the ear, which inclines to taper, naturally makes the desired length difficult to attain, it usually contains from fourteen to eighteen rows, very straight from butt to tip. The tips are usually well covered with fairly deep kernels. The kernel is broad, with round-shouldered crown and large germ, with slight indentation, and is pearly-white in color. The stalk is thick, heavy and well-jointed, with broad, dense leaves, slightly heavier and taller, but otherwise very similar to Silver Mine. It requires from 100 to 110 days in which to mature.

### **Bloody Butcher or Golden Cap**

This variety was probably brought to this State from Nebraska, and has grown in favor among Oklahoma farmers on account of its drouth-evading qualities. It is an early-maturing variety containing twelve to sixteen rows, with a shallow, round-shouldered crown, and consequently does not permit close spacing between the rows at the top. The indentation of the kernel is slight, the corn soft and easily masticated. The color of the kernel is a medium deep red with a golden or yellow cap. The cob is very slender and white in color. The plants make a vigorous growth in fertile soils, rivaling in size the Boone County White or St. Charles White. It requires from 100 to 110 days in which to mature.

### **Long John**

This variety was brought into Oklahoma in an early day from Kansas, and there is nothing authentic available as to its origin. It is an early-maturing variety, containing twelve to fourteen rows, with a shallow, rocker-shaped kernel. The kernels have very slight indentations, yet it is not classed among the flint varieties. The cobs are small and of a pale red color. The stalks are slender, long-jointed and sparsely leafed, and usually grow to a height of 7 feet. It requires from 85 to 95 days for maturity.

### **Reid's Yellow Dent**

This variety of corn was originated in Illinois in 1847. It is really an accidental cross which came about by "planting in" a small yellow dent in a field of Gordon Hopkins variety of corn.

The ears are cylindrical in shape, slightly tapering off at the tip. The rows are straight and very closely spaced. The butts are deeply rounded, with a small shank. (A small shank is a very objectionable feature to this variety in Oklahoma on account of its being dried out by excessive heat, followed by high winds which sometimes result in a large portion of the ears being blown to the ground. Should this be followed by rains, much damage is done.) The tips are abruptly pointed and well covered with kernels. The kernels, yellow in color, are square at the crown, narrow to medium in width and depth, slightly wedged, with tips rounded to pointed. The germ is rather small. The indentation ranges from a creased dimple to a crumpled crease. The stalks are 7 to 8 feet in height, with rather long joints and narrow leaves. It matures in 95 to 105 days. In growing this corn in Oklahoma it seems that the change in climatic conditions has resulted in dwarfing its growth, which has decreased its size in both length and circumference. The continued selection for a show type has resulted in diminishing the size of the germ, thus weakening its vitality to a very marked degree. Because of these facts, Reid's Dent is not so popular as its early maturity and other good characteristics should demand; therefore this score card attempts to increase the vitality of this corn by making the standard eighteen instead of twenty rows to the ear, which also tends to earlier maturity.

#### Dent Squaw

This is an early hybridized corn which has been grown in Oklahoma and the old Indian Territory for almost a century. Very little or nothing is known of its early history, but the fact of its having been reproduced for this great length of time under the peculiar climatic and soil conditions of the State, is its best recommendation. The stalk is thick and short, ranging in height from 6 to 7 feet, with heavy foliage and short joints. On fertile soils it has a tendency to sucker. The suckers frequently bear good, well-shaped ears under favorable climatic conditions. It matures in 75 to 85 days, according to the season.

## SPECIAL SEED SELECTION

The ear-to-row plat is the practical method to bring quick results in securing uniformity; yet, in gathering from the field, by placing a special seedbox on the endgate of the wagon, the true type of ear which has been produced from the right kind of plant, with the ear formed at the right place upon the stalk, may be selected and placed in the seedbox and saved for seed, with about equal results. Some of the best practical corn growers in the world claim that the ear selected from the field is superior to the ear produced within the ear-to-row seed plat, by reason of the pollen from the thousands of intermingled seed plants adding vitality over the more closely inbred ear in the ear-to-row plat.

For all practical purposes for the average man, field selection is the better plan. Yet, for those who wish to establish a type in the shorter period, and at the same time select from such rows as produce the greatest yield, the ear-to-row plan is recommended.

### Ear-to-Row Seed Plat

Select 100 ears of uniform type of any one variety; also select a uniform tract of land 100x380 feet. This necessitates rowing the corn the short way. Planting the rows east and west gives better cross-pollinization, which influences yield, though by this the south rows are placed at a disadvantage. Commence on either side with row No. 1 and number the ears according to the row in which it is placed. As from 600 to 800 planting kernels will be secured from an ear, according to variety, after nubbing and butting, there will be practically seven-eighths of the ear left after planting a 100-foot row. Each remnant should be filed away in a separate container, secure from moth and weevil, and given the corresponding number of the row which it planted. Give equal cultivation of whatever nature. At the conclusion in the fall, gather each row separately and weigh to determine yield. The rows showing the greatest yield, other qualities as to formation of plant being equal, should determine the remnant ears retained for seed. Certain rows may yield at the rate of sixty bushels per acre, while others next to them may yield only at the rate of thirty bushels per acre. It is readily seen that the good yield would be worthless as a high-yielding strain, by reason of being crossed with that of the low yield. Therefore, all the remnants which were saved at planting time, showing a yield of fifty to sixty bushels, should be selected from those showing thirty to forty bushels yield. The poor yield could be fed to the pigs and the best thoroughly mixed and planted the following spring in an isolated spot where all danger of hybridizing from other sorts would be removed. The product from this is a foundation for good seed. If two-thirds to three-fourths of this amount in this ear-to-row plat prove good, there would be a sufficient amount of these remnants to plant a four to six-acre seed plat.

## GROWING SEED CORN

In growing corn for seed purposes in Oklahoma, especially in the western half of the State, where moisture is the controlling factor in profitable crop production, the rows should always be not less than six feet apart. Seven feet is better, because it permits the use of the two-horse cultivator without changing its adjustment.

Hundreds of tests have proven that the acre yields of corn in wide rows are as great or greater, one year with another, than with the usual three and a half foot rows. The quality of the corn is always better in the wide rows, so that the farmer who desires to grow high-grade seed corn for the market will find it more profitable to use the wide-row method. Wide row tests on the east side of the State, where the greater rainfall makes corn a much more certain crop, usually show a larger yield of corn of much better quality than the usual narrow rows.

The wide row, too, makes it possible to grow a row of cowpeas or Spanish peanuts between the rows of corn, thus having a leguminous crop growing on one-half of the land all the time without interfering in any way with the corn. As a rule cowpeas are better for this purpose than Spanish peanuts.

These crops afford a large amount of valuable feed for stock which may be turned into the field and harvested by them after the corn has matured and been gathered. By growing the corn where the cowpeas grew and the cowpeas where the corn grew the previous year, corn may be grown on the same land many years without decreasing the corn yields. In fact, for Oklahoma conditions, we consider this one of the very best crop rotation systems.

Objection is sometimes made that it is difficult to gather corn that has been planted in seven-foot rows; also that the two-row planter cannot be used in planting alternate rows of corn and cowpeas. These objections are overcome by planting alternate pairs of rows in corn and cowpeas, and the results by this method are nearly as good as the alternate one-row system. Soil fertility is maintained as well by the alternate double-row plan as by the alternate single-row plan, and it is much more convenient to harvest both the corn and the cowpeas.

## PLANT QUALIFICATIONS

The value of corn for seed purposes depends to a great extent on the care that has been taken in selecting it. Besides selecting those ears that come up to the standards hereinbefore mentioned, one should select ears from desirable plants. It is therefore necessary to select seed ears from stalks that are well developed, and this can be done only by selecting from standing stalks at ripening time. In picking the seed corn, be observant of the following points as regards the plant:

The stalk should be free from smut or other disease.

Do not select ears from stalks which show a marked tendency to sucker.

Select ears from plants which are of vigorous, healthy growth.

One ear to the stalk is preferable to two or more.

The ears should grow slightly below the middle of the stalk.

The ear shank should not be more than 4 or 5 inches long.

Much disappointment has been experienced by farmers of Oklahoma who have attempted to grow corn during the last four years, when the rainfall has been below normal and the temperature and hot winds have broken all previous records. These unfavorable conditions, together with poor seed, poor preparation and cultivation, which generally prevail, have placed this crop in disfavor in many sections of the State.

This circular has not attempted to deal with cultural methods, but has discussed very briefly variety characteristics of a few strains of corn commonly grown throughout the State. However, it is urgent that farmers exercise the utmost care in choosing types of soil on which to plant corn. It is also very necessary that proper attention be given to the time of breaking the land and the kind of seedbed prepared, the distance apart of rows and the spacing of the plants in the rows. Due observance of these things, together with adapted seed and proper cultivation, should produce a fair yield of corn in most every section of the State.





