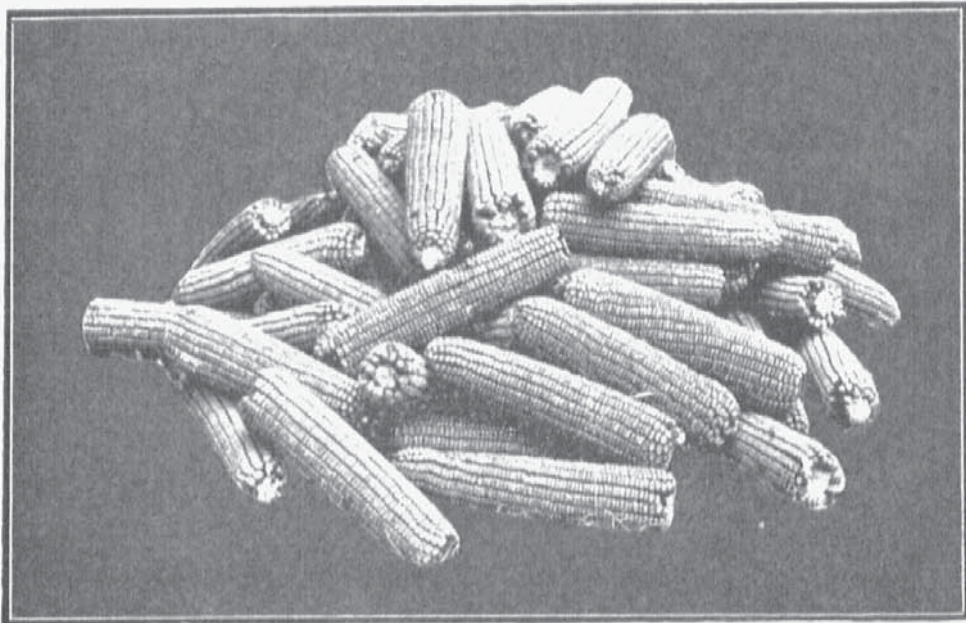


UNIVERSITY OF MISSOURI.

COLLEGE OF AGRICULTURE

Agricultural Experiment Station.

BULLETIN NO. 87.



Co-operative Variety Tests of Corn

Variety Tests of Corn at Columbia

COLUMBIA, MISSOURI.

May, 1910.

UNIVERSITY OF MISSOURI

COLLEGE OF AGRICULTURE

Agricultural Experiment Station

BOARD OF CONTROL.

THE CURATORS OF THE UNIVERSITY OF MISSOURI.

THE EXECUTIVE COMMITTEE OF THE BOARD OF CURATORS.

HON. J. C. PARRISH, Chairman,
Vandalia.

HON. C. B. ROLLINS,
Columbia.

HON. C. E. YEATER,
Sedalia.

ADVISORY COUNCIL.

THE MISSOURI STATE BOARD OF AGRICULTURE.

OFFICERS OF THE STATION.

THE PRESIDENT OF THE UNIVERSITY.

F. B. MUMFORD, B. S., M. S., Director, Animal Husbandry.	L. D. HAIGH, M. S., Asst. Chem.
PAUL SCHWEITZER, Ph., D., LL. D., Agr. Chem. Emeritus.	CHARLES K. FRANCIS, A. M., Asst. Chem.
J. C. WHITTEN, M. S., Ph. D., Hort.	FRANK H. DEMAREE, B. S. A., Asst. Agron.
J. W. CONNAWAY, D. V. S., M. D., Veterinary.	W. T. BOVIE, A. M., Asst. Bot.
C. H. ECKLES, B. Agr., M. S., Dairy'g.	R. J. CARR, B. S., Asst. Animal Husb.
M. F. MILLER, M. S. A., Agron.	A. A. JONES, B. S. A., Asst. Chem.
C. F. MARBUT, B. S., A. M., Soil Sur- vey.	H. E. McNATT, B. S. A., Asst. Dairy Husb.
P. F. TROWBRIDGE, Ph. D., Chem.	R. E. HUNDERTMARK, B. S. A., Asst. Dairy Husb.
W. L. HOWARD, M. S., Ph. D., Hort.	F. S. PUTNEY, M. S., Asst. to Direc- tor.
C. S. GAGER, Ph. D., Bot.	H. KRUSEKOPF, B. S. in Agr., Asst. in Soil Survey.
G. M. REED, Ph. D., Asst. Bot.	ROY E. PALMER, ¹ B. S. in Ch. E., Asst. in Dairy Chemistry.
E. A. TROWBRIDGE, B. S. A., Asst. Animal Husb.	ARTHUR RHYS, Herdsman, Animal Husb.
GEO. REEDER, ¹ Dir. Weather Bu- reau.	I. T. VAN NOTE, Herdsman, Dairy Husbandry.
W. H. CHANDLER, M. S., Asst. Hort.	F. E. MILLER, Gardner.
C. A. WILLSON, B. S., Asst. Animal Husb.	J. G. BABB, M. A., Secretary.
E. A. PERKINS, ¹ B. S., Asst. Dairy Chem.	R. B. PRICE, B. S., Treasurer.
L. S. BACKUS, D. V. S., Asst. Vet.	LEOTA RODGERS, Stenographer.
L. G. RINKLE, B. S., Asst. Dairyman.	
C. R. MOULTON, M. S. A., Asst. Chem.	
C. B. HUTCHISON, B. S. A., Asst. Agron.	

¹ In the service of the U. S. Department of Agriculture.

TABLE OF CONTENTS

CO-OPERATIVE VARIETY TESTS OF CORN.

	Page
I. Plan of Co-operation	101
II. Varieties Tested	103
III. Sources of Seed	104
IV. History and Description of Varieties	105
1. Boone County White	106
2. St. Charles White	107
3. Commercial White	108
4. Johnson County White	109
5. Silvermine	111
6. Reid's Yellow Dent	112
7. Leaming	113
8. St. Charles Yellow	114
9. Cartner	116
10. Cob Pipe or Collier	117
V. List of Co-operators	118
VI. Table of Co-operators for 1905	119
VII. Table of Co-operators for 1906	120
VIII. Table of Co-operators for 1907	123
IX. Table of Co-operators for 1908	125
X. Table of Co-operators for 1909	127
XI. Methods of Averaging Yields	130
XII. Table Showing Average Yields in Bushels per Acre for the Entire State	130
XIII. Averages for the State	130
1. Table Showing Average Yields in Bushels per Acre for North Missouri	131
2. Averages for North Missouri	131
3. Table Showing Average Yields in Bushels per Acre for South Missouri	132
4. Averages for South Missouri	132
5. Tables Showing Average Yields per Acre for Section I. (Northwest Missouri)	133
6. Average for Section I. (Northwest Missouri)	133
7. Tables Showing Average Yields in Bushels per Acre for Section II. (Southwest Missouri)	134
8. Averages for Section II. (Southwest Missouri)	134
9. Tables Showing Average Yields in Bushels per Acre for Section III. (Ozark Region)	135
10. Averages for Section III. (Ozark Region)	135
11. Tables Showing Average Yields in Bushels per Acre for Section IV. (Southeast Missouri Lowlands)	136
12. Yields for Section IV. (Southeast Missouri Lowlands)..	136
13. Table Showing Average Yields in Bushels per Acre for Section V. (East Central River Counties)	137
14. Averages for Section V. (East Central River Counties)..	137

15.	Tables Showing Average Yields in Bushels per Acre for Section VI. (Northeast Missouri)	138
16.	Averages for Section VI. (Northeast Missouri)	138
XIV.	Relative Popularity of Varieties	139
1.	Table Showing the number of Men Preferring Various Varieties	139
XV.	Variations Due to Season	139
XVI.	Variations Due to Soil	141
XVII.	Barren Stalks	142
1.	Experiments in Thickness of Planting at the Missouri Experiment Station	142

VARIETY TESTS OF CORN AT COLUMBIA.

I.	Yield of Corn Varieties at Columbia in bushels per acre.....	144
II.	Average Yields of Corn Varieties at Columbia	145
III.	Per cent of Shelled Corn	146
IV.	Stalk Characteristics	147
V.	Shrinkage of Ear Corn	149
VI.	Per cent of Moisture Lost by the various Varieties from Husking Time, October, 1908, until April 23, 1909	150
VII.	Relation of Color of Corn to Yield	150
VIII.	Relation of Color of Corn to Feeding Value.....	151
IX.	Relation of the Character of the Kernel to Productiveness.....	152
X.	Twin Eared Varieties	153
XI.	Possibilities of Improving Varieties by Selection.....	153
XII.	Value of the Corn Breeding Block.....	154
XIII.	Moving Seed Corn from one Region to Another.....	155
XIV.	Summary.....	156

CO-OPERATIVE VARIETY TESTS OF CORN.

M. F. MILLER AND H. D. HUGHES.

In 1905 the Department of Agronomy of the Missouri Experiment Station began a series of co-operative corn variety tests with farmers in various parts of Missouri, the object of which was, first, to determine which of the standard varieties of corn are best adapted to the various sections and soils, second, to emphasize the importance of using well bred varieties of corn and third to distribute samples of these standard varieties throughout the state. In order to accomplish the latter purpose more effectively, each co-operator was furnished as payment for his trouble, a peck of the variety which suited him best for his next year's planting.

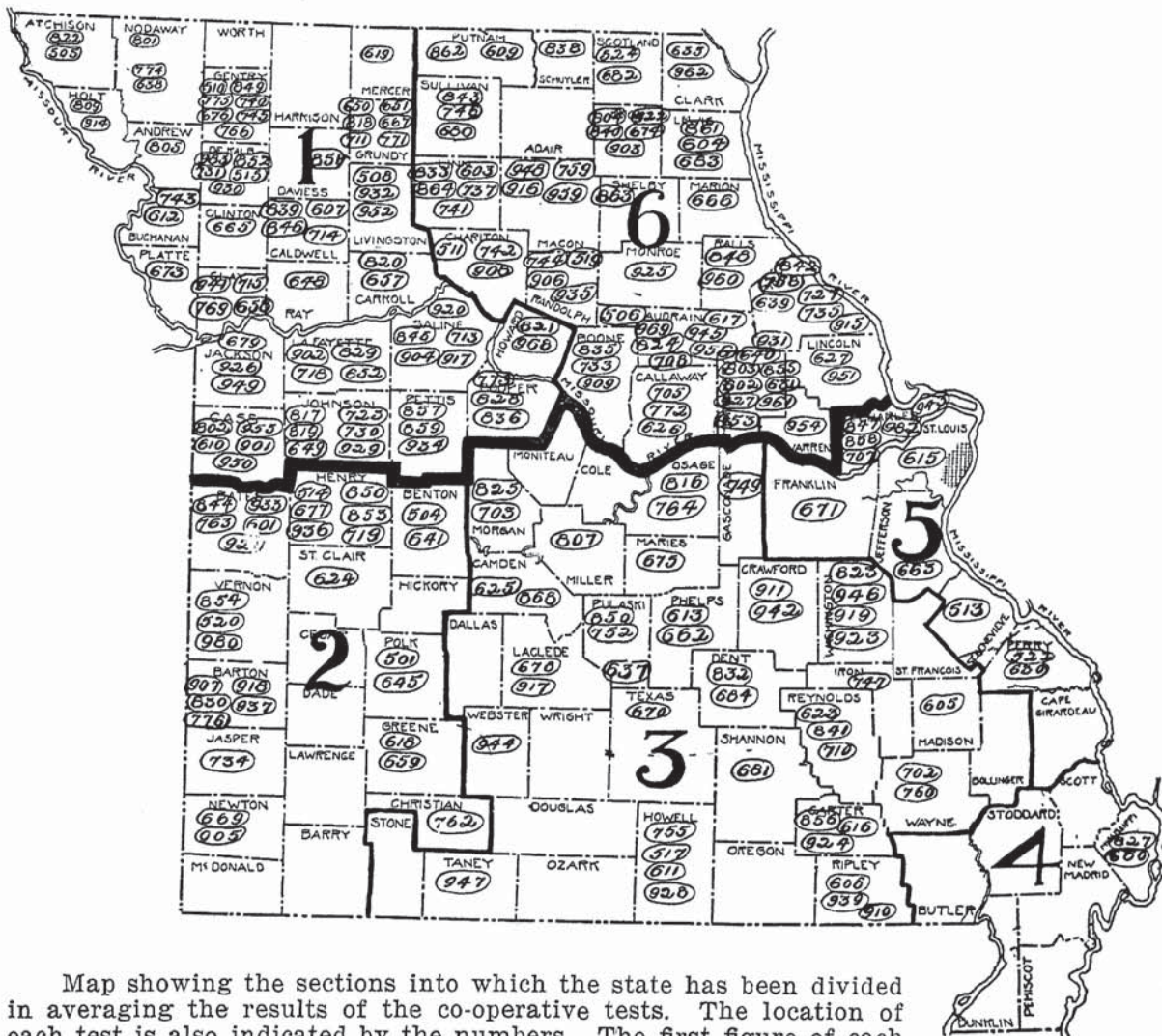
The experiment was extended materially in the years 1906, 1907, 1908 and 1909, and is still being carried on, but the accumulated data is of sufficient value to warrant its publication at this time.

PLAN OF CO-OPERATION.

The plan in this co-operative work has been to test on all of the important soil types of the state, those varieties of corn which have given greatest promise of value for Missouri conditions. Each co-operator was supplied seed of ten or twelve prominent varieties of corn in quantities sufficient for planting at least one-fourth acre of each. These were planted side by side on the average corn land of the community, care being taken to select a piece of land that was uniform in fertility. Where possible the varieties have been planted in long rows, rather than in blocks, as this gives more uniform soil conditions. They have been given the same care in each case so that each variety has had an equal chance. As the season advanced each co-operator made careful observations and notes on the growth and development of the corn and finally upon the yield of each by husking each variety separately. These observations and weights were forwarded to the Experiment Station on blanks furnished for the purpose.

The co-operators for these experiments were secured partly by correspondence and partly through the Missouri Co-operative Experiment Association, of which a considerable number of these men are members. The tests have been quite well distributed throughout the state with the exception of the Southeast Missouri lowlands from which only one report has been received. This distribution is shown in the accompanying map, each co-operator being given a number which represents approximately the location of the test. The first figure of these numbers refers to the year the test was conducted and those fol-

lowing to the actual number given the co-operator that year. Those conducted in 1905 bear the numbers from 501 to 524, those in 1906 the numbers from 601 to 683, while those in 1907, 1908 and 1909 are numbered from 701 to 776, from 801 to 868 and from 901 to 983 respectively. Keeping in mind the serial numbers, one interested in tests in a particular section of the state can quickly find the number con-



Map showing the sections into which the state has been divided in averaging the results of the co-operative tests. The location of each test is also indicated by the numbers. The first figure of each number refers to the year in which the test was made and the other figures indicate the number of the co-operator that year. By referring to the table of co-operators the name and the results of the test of each co-operator may be determined.

ducted and what years they were made for that section, while a reference to the table of co-operators and yields will show the name and address of the co-operator, together with the character of soil, and the yield in bushels of ear corn per acre for each variety tested. A

number have conducted tests in one or more of these years which furnished valuable data, but they were not able to report the actual yields in bushels per acre, so that the location of such co-operators is not indicated.

The yields in all of these tests are given in bushels of ear corn per acre at husking time. An attempt was made to secure the per cent of corn to cob of each variety but the data secured proved so unreliable that it was impossible to calculate the bushels of shelled corn in the majority of cases, and to make the results uniform it has been necessary to give them all in ear corn.

In order to make these results of the greatest local value the state has been divided into six sections, the counties of each section representing as nearly as possible the same soil and climatic conditions. A reference to the map will show the boundaries of the various sections and the counties included in each. In summarizing results, the averages are given for each of the sections separately as well as for North Missouri, for South Missouri and for the whole state.

VARIETIES TESTED.

In selecting varieties for the experiment, preference was given to those recognized types most commonly grown in Missouri and especially to those which the variety tests at the Experiment Station have shown to be most valuable. To these were added a few varieties from nearby states which bore promise of having adaptation for certain sections of Missouri. The varieties used have not been the same throughout the test, the number having been considerably increased during the last three years. Reference to the tables will show the varieties under test each year.

The names of all varieties tested are as follows:

White.	Yellow.
Boone County White.	Reid's Yellow Dent.
St. Charles White.	Leaming.
Farmers' Interest.	Cartner.
Johnson County White.	St. Charles Yellow.
Silvermine.	Legal Tender.
McCauley's White Dent.	Hogue's Yellow Dent.
Commercial White.	Golden Eagle.
	Hildreth's Yellow Dent.

SOURCES OF SEED.

The seed of the various varieties has been secured each year from the same sources as nearly as possible. Unfortunately these could not all be secured from the same locality and it is quite probable that this has had some influence upon the relative yields. There is no means of obviating such variations as may come from changing seed in such tests as these however, since it is manifestly impossible to secure seed of all varieties grown in the neighborhood. Since practically all the varieties are Missouri grown, however, such differences as might occur from a change of location are probable of little consequence.

The names of the growers and their addresses, showing the localities in which the various varieties were grown, are shown in the following table:

Variety.	Year.	Growers.
Boone County White,	1905	Geo. M. Tucker, Blodgett, Mo.
	1906	J. E. Matheny, Miami, Mo.
	1907	J. E. Matheny, Miami, Mo.
	1908	J. E. Matheny, Miami, Mo.
	1909	J. E. Matheny, Miami, Mo.
	1909	J. G. Douglass, Shelbina, Mo.
Cartner,	1905	J. W. McFarland, Boonville, Mo.
	1907	Christ. Ohlendorf, Boonville, Mo.
	1908	Chris. Smith, Boonville, Mo.
	1909	Christ. Ohlendorf, Boonville, Mo.
Commercial White,	1907	P. E. Crabtree, Hannon, Mo.
	1908	J. M. Thompson, Hume, Mo.
	1909	J. M. Thompson, Hume, Mo.
Farmers' Interest,	1906	E. T. Long, Fayette, Mo.
	1907	E. T. Long, Fayette, Mo.
Hildreth's Yellow Dent,	1907	C. E. Hildreth, Altamont, Kansas.
	1908	C. E. Hildreth, Altamont, Kansas.
	1909	C. E. Hildreth, Altamont, Kansas.
Silvermine,	1905	Berry & Co., Clarinda, Iowa.
	1906	Berry & Co., Clarinda, Iowa.
	1907	Berry & Co., Clarinda, Iowa.
	1908	J. E. Brown, Mitchellville, Iowa.
	1908	W. W. Noe, Sibley, Illinois.
	1909	W. W. Noe, Sibley, Illinois.

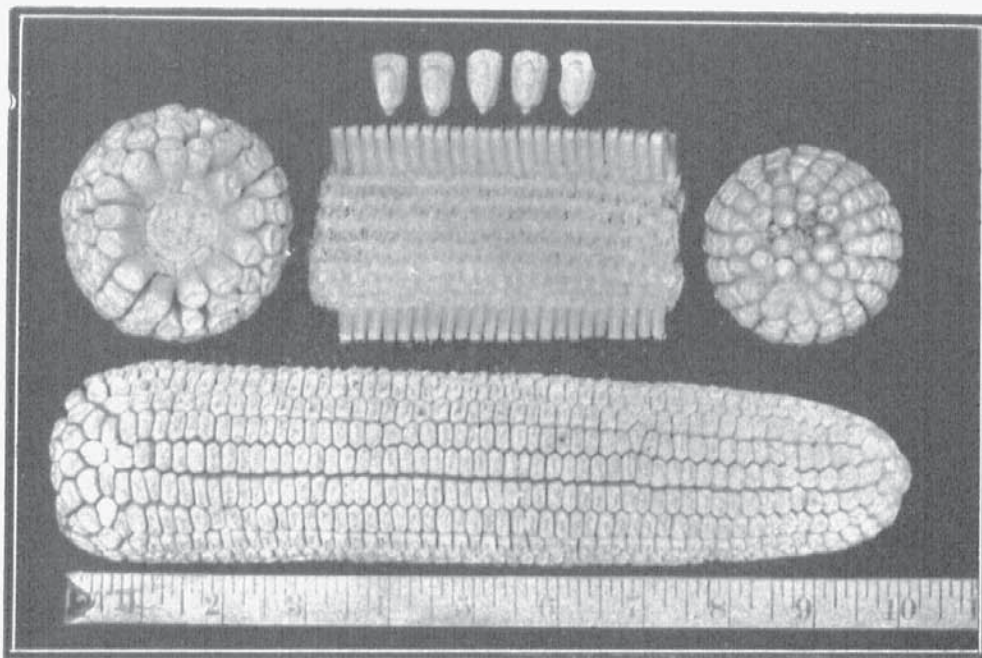
Variety.	Year.	Growers.
Johnson County White,	1906	E. L. Hughes, Glasgow, Mo.
	1907	E. L. Hughes, Glasgow, Mo.
	1908	E. L. Hughes, Glasgow, Mo.
	1909	E. L. Hughes, Glasgow, Mo.
Legal Tender,	1906	H. R. Scott, Tarkio, Mo.
	1907	H. R. Scott, Tarkio, Mo.
	1908	H. R. Scott, Tarkio, Mo.
Leaming,	1905	E. E. Chester, Champaign, Ill.
	1906	E. E. Chester, Champaign, Ill.
	1907	E. E. Chester, Champaign, Ill.
	1908	E. M. Miller, Mound City, Mo.
	1909	Ernest Huggard, Columbia, Mo.
Reid's Yellow Dent,	1905	H. C. Crain, Elmo, Mo.
	1906	H. C. Crain, Elmo, Mo.
	1907	H. C. Crain, Elmo, Mo.
	1908	Christ. Ohlendorf, Boonville, Mo.
	1909	Chris. Ohlendorf, Boonville, Mo.
	1909	J. G. Douglass, Shelbina, Mo.
St. Charles White,	1909	J. Lockwood, Columbia, Mo.
	1905	J. H. Plackemeier, St. Charles, Mo.
	1906	J. H. Plackemeier, St. Charles, Mo.
	1907	J. H. Plackemeier, St. Charles, Mo.
	1908	J. H. Plackemeier, St. Charles, Mo.
St. Charles Yellow,	1909	H. I. Ohlms, St. Charles, Mo.
	1905	C. A. Griesnauer, O'Fallon, Mo.
	1906	C. A. Griesnauer, O'Fallon, Mo.
	1907	C. A. Griesnauer, O'Fallon, Mo.
	1908	C. A. Griesnauer, O'Fallon, Mo.
Champion White Pearl,	1909	C. A. Griesnauer, O'Fallon, Mo.
McCaughey's White Dent,	1906	G. H. Perrine & Sons, Centralia, Ill.
		Kansas Agricultural Experiment Station, Manhattan, Kansas.

HISTORY AND DESCRIPTION OF VARIETIES.

The history and description of the more common varieties included in these tests have been compiled, and are given in the pages which follow. The histories are as nearly authentic as it has been possible to make them and the descriptions and photographs are from characteristic ears of the various varieties.

BOONE COUNTY WHITE.

History. The Boone County White corn was originated by James Riley of Boone County, Indiana. He began this work in 1876 using as a basis, a large coarse late maturing variety of corn known as White Mastodon. The selections from the White Mastodon corn were planted in a separate field and from that time on were never allowed to mix with other corn. Mr. Riley selected a smaller, earlier maturing ear than was prevalent in the White Mastodon and as a result of persistent work he secured earlier maturity, deepened the grain and increased the proportion of corn to cob. The new variety was named after the originator's home county, Boone County White.



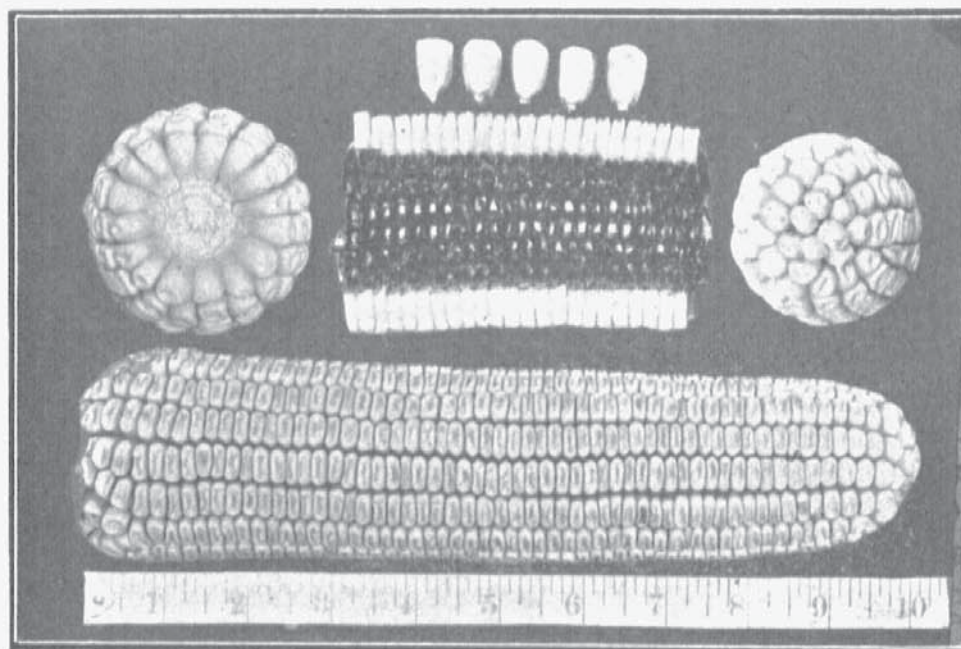
BOONE COUNTY WHITE.

About three years after Mr. Riley put this variety out among the farmers, Mr. O. C. Block of Champaign county, Illinois began breeding it. He is perhaps the best known breeder of this corn after its originator. By this work Mr. Block deepened the kernel materially, increased the roughness and also the circumference in proportion to the length.

This variety of corn is one of the most prominent in Missouri. It is grown very largely along the Missouri and Mississippi River Bottoms and the better uplands of the state.

Characteristics. The Missouri standard for this variety calls for ears $10\frac{1}{2}$ to 11 inches long and $7\frac{1}{2}$ to 8 inches in circumference.

They are cylindrical, or nearly so in shape, having straight rows which number from 16 to 20 on the average. The spacing between the rows is of medium width. The butts are fairly large at the shank and only moderately rounded. The tips are blunt, with a tendency towards good kernels extending well out to the end. The cob is rather large. The kernels are medium to wide, rather thick and of medium depth. They have slightly curved sides, a square shoulder at the tip and are pearly white in color. The germ is generally large and bright extending well up into the kernel. The indentation varies according to the breeder from a smooth elongated dimple to a short beak.



ST. CHARLES WHITE.

The Boone County White is a medium late maturing variety requiring from 120 to 125 days for complete ripening. The stalks are strong and thick and grow to an average height of about 8½ feet for the state. The stalks are medium leafy and make good silage and fodder. The corn matures well in the field with an exceptionally high per cent of marketable corn.

ST. CHARLES WHITE.

History. The St. Charles White is a native of Missouri having been developed in St. Charles county, where it has been grown for a great many years. It is the most popular variety in the southern half of the state and hundreds of bushels are shipped to the southern states

each year, where it is one of the most widely grown varieties. Hundreds of bushels are also shipped east each year where it is used as a silage corn.

Two types of this corn are recognized—the small St. Charles and the large St. Charles, the former being slightly earlier and better adapted to thin lands. The variety is a hardy one with wide adaptations. It is a particularly valuable variety for south Missouri conditions, the small type on the uplands and the larger type on the bottoms.

Characteristics. The ears taper somewhat from butt to tip with rows straight and slightly paired. The butts are moderately rounded and the tips tend to be well covered with fairly deep kernels. The cobs possess the striking peculiarity of being blood red in color. The variety should be 10 to 10½ inches in length and 7¼ to 7½ inches in circumference to conform to the variety standard.

The kernels are medium broad and of good depth. They are, however, only slightly wedge shaped, consequently not closely spaced at the top. They show a large per cent of horny starch, medium to large germs, and are deep creased to crumple creased in indentation. The kernels are pearly white in color.

St. Charles White is a late maturing variety averaging 125 to 130 days for complete maturity. The stalks are also strong growers, averaging somewhat taller than Boone County White. They range in height from 8½ to 9½ feet for the entire state. The leaves are broader than those of Boone County White and it is an excellent silage corn.

COMMERCIAL WHITE.

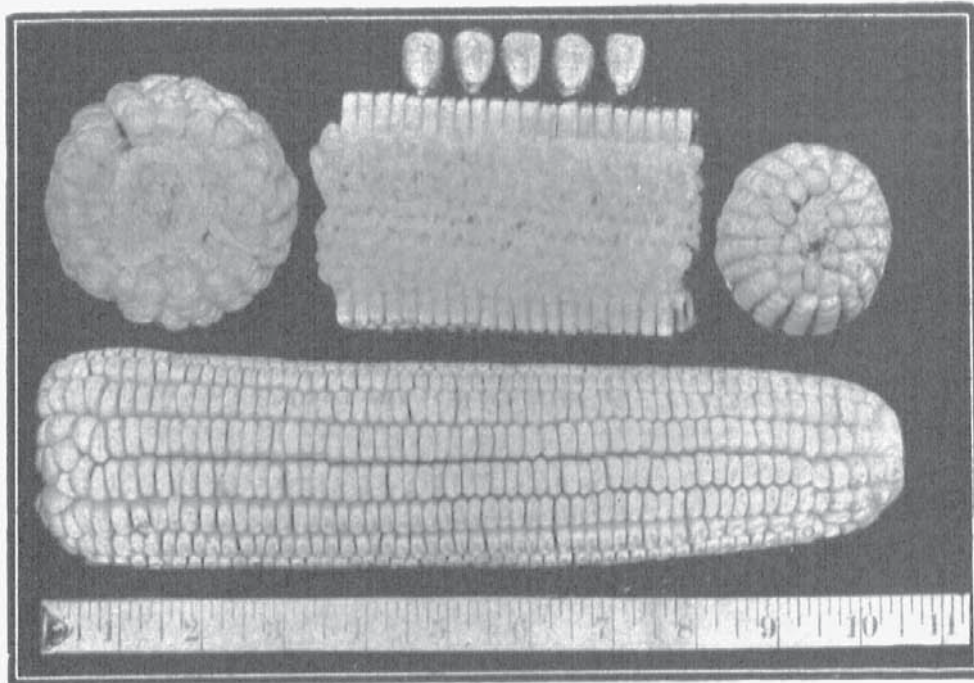
History. The Commercial White corn is a native Missouri variety. It was originated by P. E. Crabtree, of Hannon, Barton county, who developed the corn by a systematic selection of the white cobbled ears of the St. Charles White. The ideals which have been kept in mind in selection are uniform kernels of medium depth, with a low amount of crown starch and large germs.

The co-operative corn variety tests of the Missouri Experiment Station have shown this to be one of the highest yielding varieties in the state. It is hardy and the strong sound kernels bring very thrifty stalks. The variety is especially adapted to the best uplands of Southwest Missouri.

Characteristics. The ears are larger in circumference and more cylindrical than are those of the St. Charles White but often taper quite abruptly at the tip. The rows are straight and distinctly paired. The butts have a tendency to be flat and often have a large shank.

The tips are fairly well covered with kernels of fair depth but becoming smooth. Length 10 to 10½ inches, circumference 7½ to 7¾ inches.

The kernels are broader than those of St. Charles White and are of only medium depth. They are thick and a trifle more wedge shaped than the St. Charles and more rounded at the top giving a wider space. They possess a small amount of crown starch and are a pearly white in color. The indentation is a shallow crinkled crease. The germs are large and very strong.



COMMERCIAL WHITE.

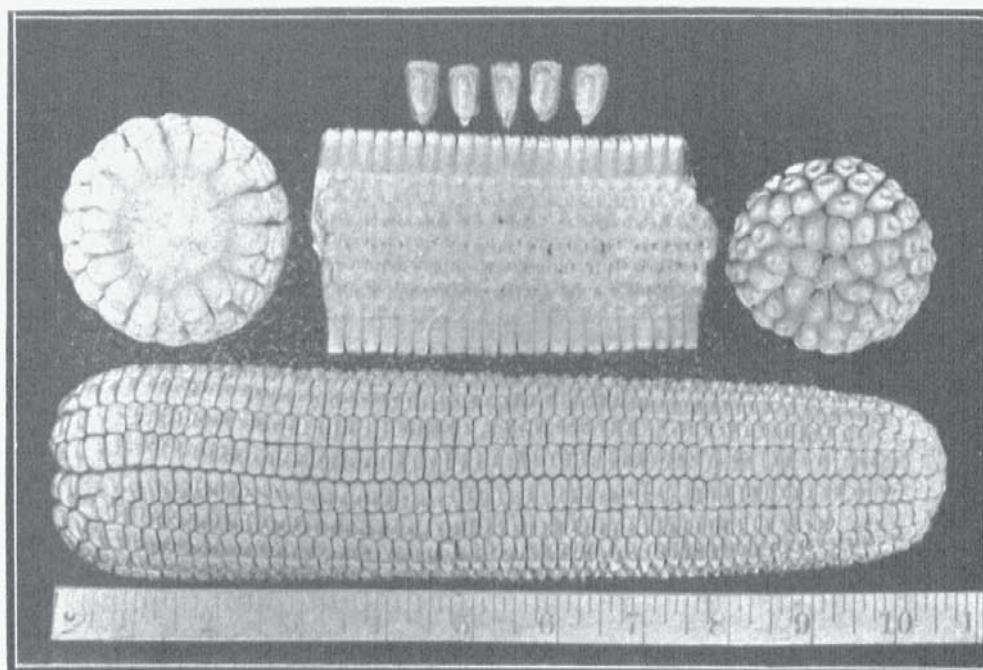
Commercial White is a late maturing variety which requires 125 to 130 days for complete ripening. It is a tall growing corn, averaging about 9 feet for the state and very leafy. The stalks are very strong and stocky. The large cob which has a tendency to dry slowly prevents as high a per cent of marketable corn as either Boone County White or St. Charles White.

JOHNSON COUNTY WHITE.

History. This variety of corn was originated in Johnson county, Indiana about 20 years ago. It is a cross between Boone County White and Forsythe's Favorite. The first cross was made by Mr. J. D. Whitesides between Forsythe's Favorite and a white variety he had been calling Dungan's White Prolific, but which afterward proved to be Boone

County White. Somewhat later Mr. L. B. Clore, of the same county, made the cross between Boone County White and Forsythe's Favorite, independently of Mr. Whitesides. Also Mr. J. R. Overstreet began breeding the corn at about the same time from seed received from Mr. Whitesides. Each man gave a different name to the corn, Whitesides calling it Whitesides Imperial White Dent, Clore calling it Farmer's Interest and Overstreet naming it Overstreet's Peerless. In 1899 the three men decided to combine and to call the corn Johnson County White Dent by which name it is now generally known.

This variety of corn has been well bred by these men and it has won the grand sweepstakes prize for three years at the National Corn Show.



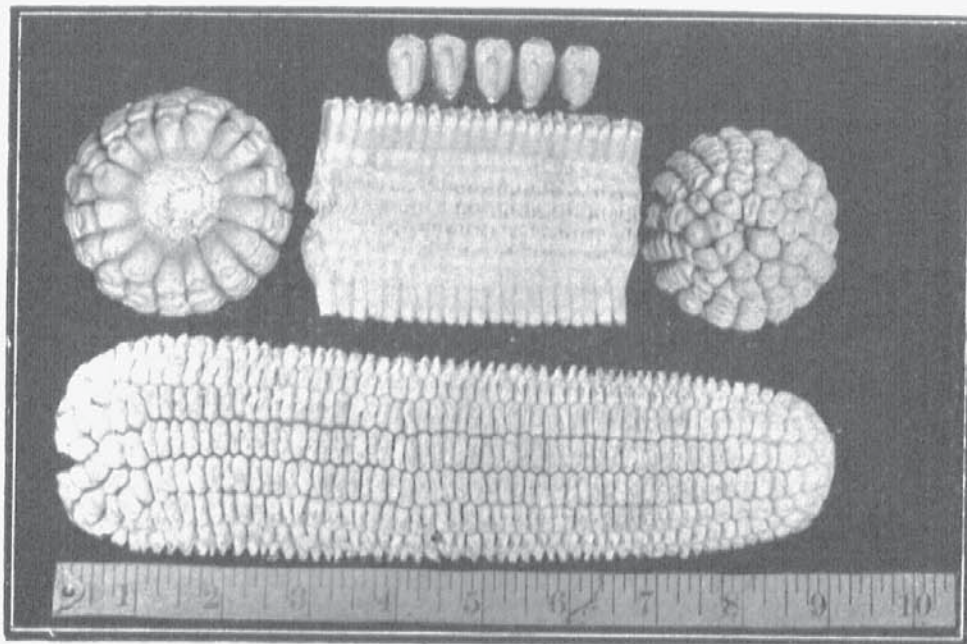
JOHNSON COUNTY WHITE.

Characteristics. The corn does not differ materially from Boone County White in size but it is rougher and the tips have a sharper taper. The length is $10\frac{1}{2}$ to 11 inches, and the circumference $7\frac{1}{2}$ to $7\frac{3}{4}$ inches. The kernels are somewhat narrower and are nearly square at the summit having straight instead of curved sides. They also average deeper than do those of Boone County White and are more starchy in composition which gives them a rather starchy white color. The rows are straight and the kernels uniform in character. The indentation is properly a deep crinkled crease to a short pinch.

Johnson County White matures in 120 to 125 days. It does not differ materially in stalk character from Boone County White and is quite comparable to it in this respect.

SILVERMINE.

History. This variety of corn originated with J. A. Beagley of Sibley, Illinois, who used as a base, some white corn which won a prize at the Ford County Farmer's Institute in 1890. His crop was bought in 1895 by the Iowa Seed Company of Des Moines, Iowa. They named the corn Iowa Silvermine. At the present time the corn is known as both Iowa and Illinois Silvermine.



SILVERMINE.

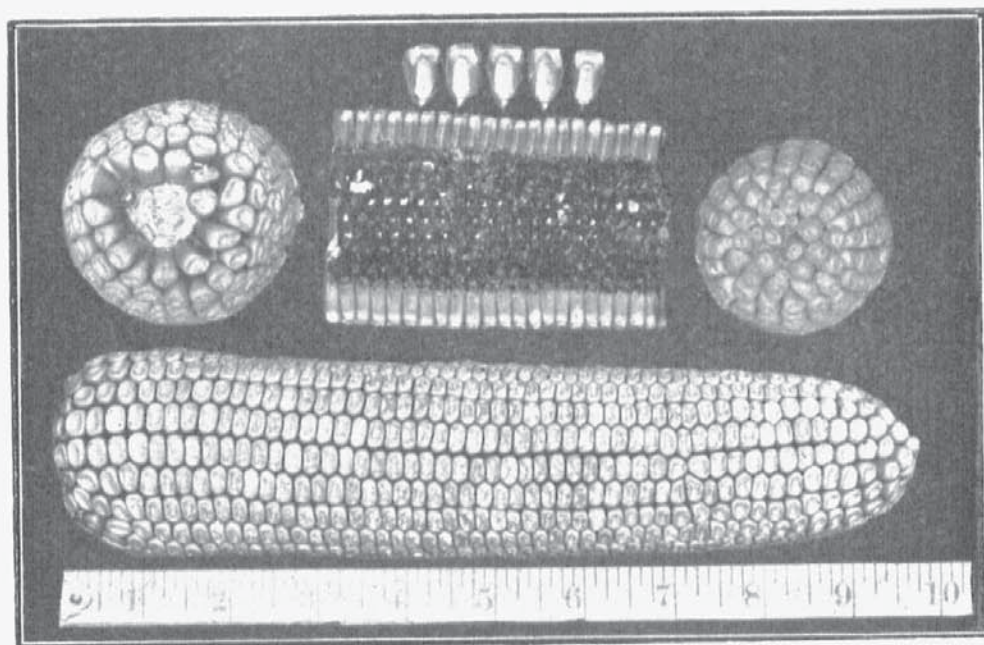
Characteristics. The ears range from 9 to 9½ inches in length and 7 to 7¼ inches in circumference. They are partly cylindrical, then taper slowly to the tip. The rows are straight or slightly wavy with a tendency to pair though not so distinctly as in some other varieties. The butts are moderately well rounded and the tips are generally blunt and well covered. The spacing of the rows is medium.

The kernels are medium to broad in width, slightly rounding at the summit, slightly wedged with a square shoulder at the tip. They are creamy white in color and only medium horny in composition, bearing good sized germs of strong vitality. The indentation is a pinched dent ranging to a full pinch and a beak giving the corn a rough indentation.

This variety matures in 100 to 110 days thus ranking it as an early corn. It is not a tall grower, averaging about 7 feet, and only fairly leafy.

REID'S YELLOW DENT.

History. In 1846 Robert Reid brought from Brown county, Ohio, to Illinois a variety of corn known at the time as the Gordon Hopkins corn. It was a reddish colored corn, grown widely in the vicinity of Red Oak settlement, the home of Robert Reid. Seed was selected from this crop for the next season's planting. On account of its immaturity a poor stand was the result, so the missing hills were replanted with seed of a small yellow corn. The cross then, between the Gordon Hopkins and this small yellow corn was purely accidental. The result was the beginning of the Reid's Yellow Dent we know today.



REID'S YELLOW DENT.

Mr. James L. Reid, son of Robert Reid was the first to recognize the real merits of the new corn and at once began to improve it by selection. Since the year 1847 the corn has not been crossed by Mr. Reid. Fifty years of continued careful selection has firmly fixed the characteristics of this corn.

Characteristics. Standard ears of this variety are 10 to 10½ inches long and 7¼ to 7½ inches in circumference. They are cylindrical or partly so in shape, often tapering off at the tip. The rows are

straight, sometimes paired, the most closely spaced of any variety and from 18 to 24 in number. The butts are deeply rounded and symmetrical and the shank small, making a striking characteristic. The tips are generally well covered though often rather abruptly pointed and are sometimes covered with "shotty" kernels. The cob is rather small and dark red in color.

The kernels are square at the summit, narrow to medium in width, medium in depth, slightly wedged, but with the tip often rounded to pointed. They are properly a lemon yellow in color and are medium starchy in composition. The germs are often small owing to the narrow kernels. The indentation ranges from a creased dimple to a crumpled crease according to the breeder.

Reid's Yellow Dent is a medium early maturing variety requiring 115 to 120 days for complete ripening. It averages about 8 feet in height for the state and is only medium leafy. It has a decided tendency to mature soundly and is best adapted to lands above medium in fertility.

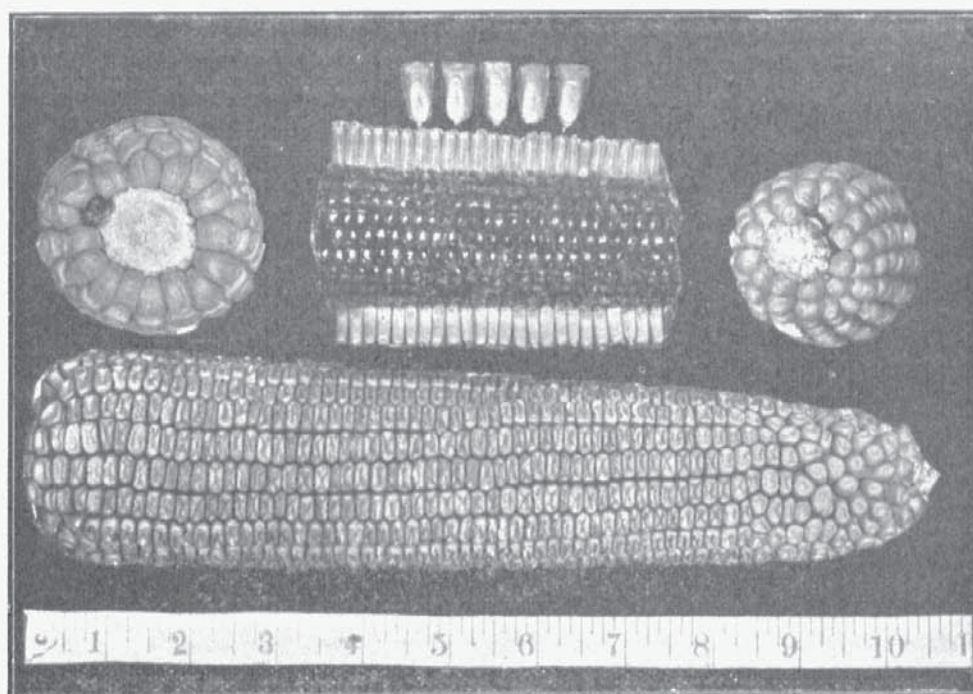
LEAMING.

History. The Leaming variety of corn was originated by Mr. J. S. Leaming of Hamilton county, Ohio, who began his selection in 1826. He began his breeding work by selecting the earliest ripened ears from a small yellow to flesh colored corn called "The Little Yellow," then commonly grown on the bottom lands of the Little Miami River. He also selected from stalks that tapered slightly from the base to the tassel and that had a heavy foliage. The Little Yellow corn was very tapering, had large butts and pointed tips. From this start, after 56 years of continued selection, Mr. Leaming produced a corn having as variety characteristics, a distinctly tapering ear, fairly large butts, rather pointed but well-covered tips with kernels of a deep yellow color and with very irregular rows.

J. S. Leaming, Jr., continued the work of his father but selected for ears more cylindrical in shape with straighter rows but always of early maturity. Now a third J. S. Leaming is at work on the same variety of corn, intent upon its further improvement. He is located at Waynesville, Ohio.

Most noted among breeders of Leaming corn in the middle west, was the late E. E. Chester of Champaign, Illinois. He secured his original seed from Mr. Leaming in 1885. He selected the early maturing ears and developed a more cylindrical rougher type of corn than that grown by the Leamings.

Characteristics. Standard ears of this variety in Missouri should average 10 to 10½ inches long and 7½ to 7¾ inches in circumference. They taper somewhat, having fairly straight rows which number from 16 to 24 with a tendency to drop one or two near the middle of the ear. The spacing is of medium width. The butts are medium large, sometimes enlarged and only moderately rounded. The tips are slightly pointed and well covered, though the rows are often not well defined. The cob is from medium to large in size and light red in color. The kernels are medium in width, square cut at the summit, wedge shaped, having nearly straight sides and are orange yellow in color. The indentation varies from a crumpled crease to pinched indented.



LEAMING.

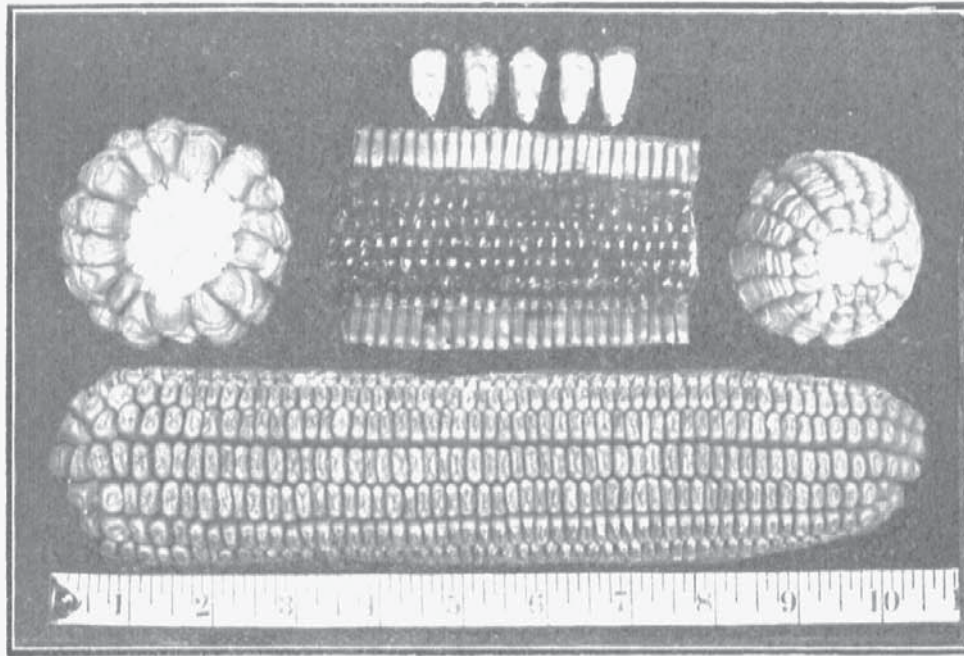
Leaming is a medium late maturing corn requiring 120 to 125 days for complete maturity. It grows to about the same height as Reid's Yellow Dent but has a decidedly tapering stalk, strong at the base, tapering to the tassel. It is only medium leafy. It matures soundly and is a good hardy variety with wide adaptations.

ST. CHARLES YELLOW.

History. This is a native Missouri variety, developed by C. A. Griesenauer of O'Fallon, Missouri, through persistent selection from a large Mexican corn which the originator brought from Old Mexico

more than 30 years ago. This corn proved to be a very vigorous grower and produced larger ears than our native corn.

Characteristics. The ears of this variety are fairly cylindrical, tapering only slowly from butt to tip. The rows are straight and distinctly paired. The butts are flat to moderately rounded, while the tips are abrupt and tend to be well covered with kernels of good depth and shape. The cob is medium in size and dark red in color. The variety standard calls for ears 10½ to 11 inches long and 7¼ to 7¾ inches in circumference.



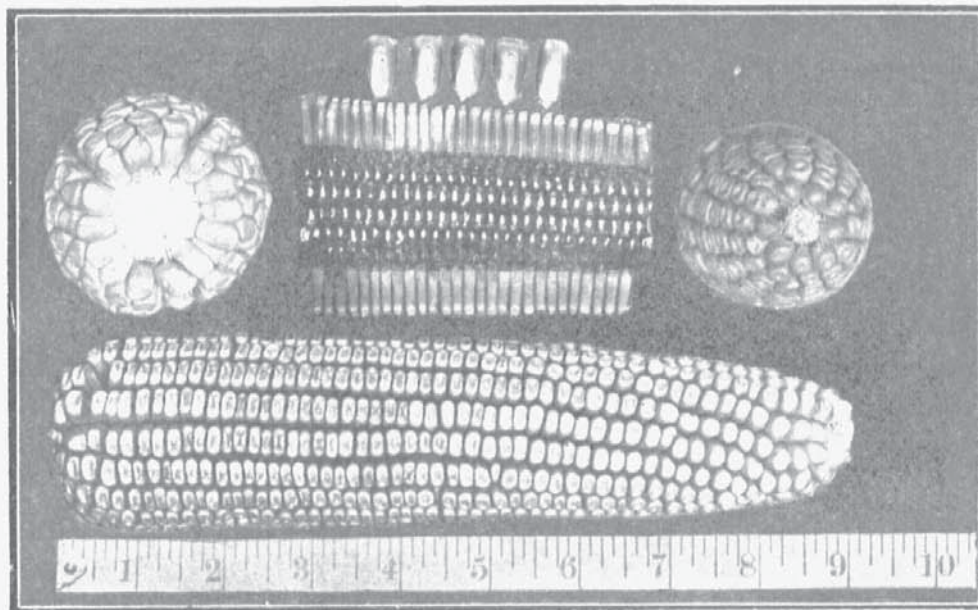
ST. CHARLES YELLOW.

The kernels are medium to wide and of medium depth. They are square at the summit, possess a rather rounded shoulder at the tip, while the sides are nearly parallel, causing the spacing between rows to be fairly wide. They are of an orange yellow color and rather starchy in composition, bearing germs of good size but with a tendency to wrinkle and blister, not having the vitality they should possess. The indentation is a long crinkled crease.

St. Charles Yellow is a late maturing yellow variety which requires 125 to 130 days to ripen. It is a strong rank grower and is especially adapted to bottom and good upland soils. It is like the St. Charles White, a very leafy variety. The main objection to this variety is its soft, spongy cob which prevents quick drying out. The market condition of the crop is often injured on this account.

CARTNER.

History. This variety of corn was originated by John Cartner of Boonville, Missouri about 1862. He planted together two yellow varieties of corn (names unknown), one having very deep kernels and an extremely small cob, the other, large ears and a medium sized cob. Thus a cross was effected, the progeny of which partook of the characteristics of both its parents. Mr. Cartner continued his work after the first cross by rigid selection, always picking for a certain type. He sold much seed to his neighbors and it became known as "Cartner" corn.

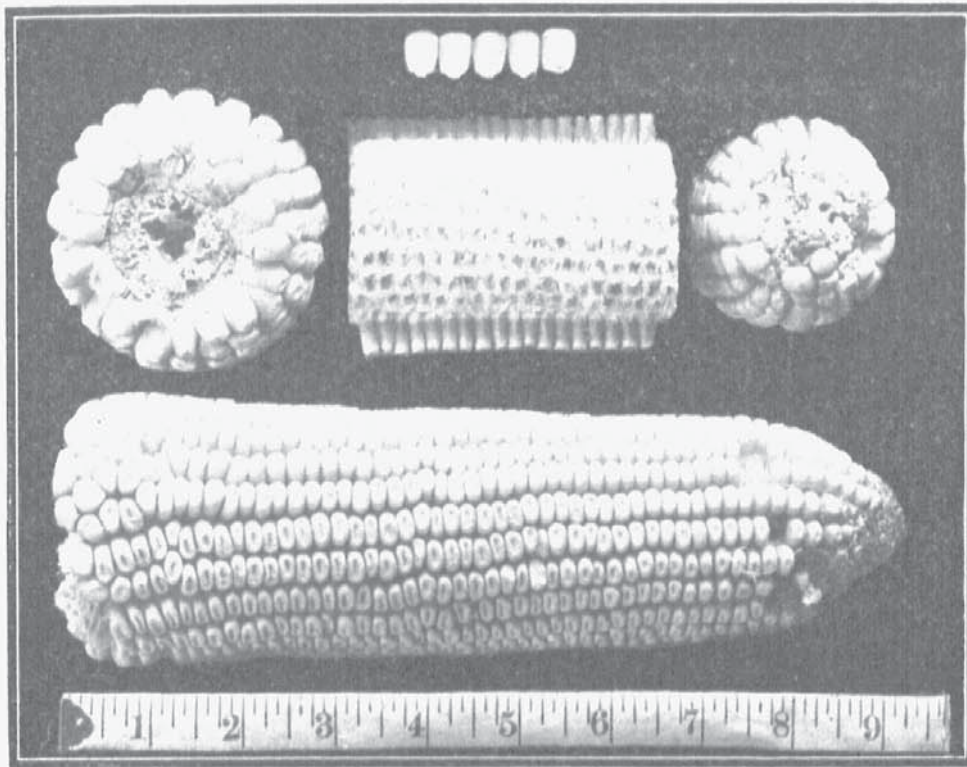


CARTNER.

The variety did not become widely known until quite recently. Mr. T. W. McFarland of Boonville, Missouri, recognizing the merits of the corn, took a sample to the World's Fair at St. Louis where it shelled out the largest per cent of corn to cob of any variety shown. Since then the corn has been bred by Mr. McFarland and a number of others in Cooper county and is now known over a wide territory.

Characteristics. The ears of this variety of corn should be from 9 to 9½ inches long and 7¼ to 7½ inches in circumference. They are cylindrical or partly so, often tapering to a rather pointed tip. The rows are straight and rather wide apart, ranging from 18 to 22 in number. The butts are only moderately rounded, often rather flat, and the shank is small. The tips tend to be well covered with kernels of fair depth. The cob is very small and blood red in color.

The kernels are medium wide, *very* deep and of a bright orange yellow color. They are rounded at the summit, sides somewhat rounded, making wide spacing, with tips rounding to pointed. The bodies of the kernels are quite horny and bear large, full germs which extend well up in the grain. The corn is noted for its high shelling quality. The indentation is very uniform varying only from a crinkled crease to a short double pinch.



COLLIER OR COB PIPE.

Cartner is one of the latest maturing varieties, requiring 130 to 135 days for complete maturity. The stalks grow rather tall and are only medium leafy.

COB PIPE OR COLLIER.

History. Cob pipe corn is a native of Missouri, having been produced through years of selection, in the vicinity of Washington, Missouri, where a number of pipe factories are located. The variety is characterized by very large cobs which are especially suited to pipe making. These cobs sell at from 25 cents to 40 cents per hundred, which in addition to the grain shelled makes the growing of this corn a very profitable industry. This variety is sometimes called the Collier from the man who has been most instrumental in developing it.

Characteristics. The ears of this variety are 7 to 10 inches long and are frequently 9 to 11 inches in circumference at the butt. The ears are generally tapering and have large swollen flat butts and blunt tips. The cobs are typically white although there is a strain of the corn having red cobs. The kernels are broad, shallow and smooth in indentation and will not as a rule, shell out more than 70 per cent corn to cob. The spacing between rows is fairly wide.

The Cob Pipe corn ranks very late in maturity as it requires from 135 to 140 days to ripen. The stalks grow very tall and in the rich bottoms where it is best adapted grow to immense proportions as compared with other varieties.

LIST OF CO-OPERATORS.

The tables which follow show the list of co-operators for the various years in which these tests have been conducted. In addition to the names and addresses of each man, there is also given the character of soil on which the experiment was conducted and the yields of each variety in bushels of ear corn per acre. In figuring these acre yields 70 pounds has been used as the weight per bushel, since most of the corn was not gathered until thoroughly ripe. It is of course recognized that this is a less weight per bushel than is usually figured at gathering time, but as there is no regular rule which is followed uniformly throughout Missouri, it was considered best to use the 70 pound standard.

NAME, ADDRESS, AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH
THE YIELDS OF THE DIFFERENT VARIETIES, IN BUSHELS OF EAR
CORN PER ACRE, AS TESTED IN THE YEAR 1905.

Number.	Name.	Town.	County.	Soil.	Boone County White— Bushels.	Reid's Yellow Dent—Bushels.	Leaning— Bushels.	Cartner— Bushels.	St. Charles White— Bushels.	St. Charles Yellow— Bushels.	Silvermine— Bushels.
1	Geo. W. Williams	Humansville	Polk	Second Bottom	34.9	52.4	49.5	37.0	39.0	39.6	....
4	C. T. Marsh	Warsaw	Benton	Black Loam	96.4	64.9	68.9	69.8	90.9	75.0	....
5	Geo. H. Sly	Rockport	Atchison	Clay Loam	79.0	61.2	72.7	53.5	68.8	....	61.2
6	Wm. Wallace	Vandalia	Audrain	Bottom	30.0	30.0	30.0	30.0	....	42.8	....
8	R. E. L. Black	Sampsel Station	Livingston	Black Sandy Loam .	28.5	31.6	34.6	23.1	16.1	....	24.1
10	Walter Kom	Gentry	Gentry	Creek Bottom	13.6	13.7	12.3	12.0	12.0	....	12.9
11	T. L. Carter	Salisbury	Chariton	Sandy Loam	65.1	71.4	68.6	61.8	50.8	....	50.8
13	Joshua Wood	Thurman ..	St. Genevieve	Sandy Clay Loam ..	93.1	86.8	60.8	85.4	48.2	24.5	....
14	Mason Redding	Finney	Henry	Sandy Bottom	54.0	49.1	42.5	45.4	54.8	38.5	....
15	J. P. McWilliams	Amity	De Kalb	Prairie Loam	26.0	43.0	42.0	40.0	26.0	....	25.0
17	H. B. Ganschow	Willow Springs	Howell	Bottom Loam	59.5	59.5	59.5	50.5	50.6	35.7	....
19	S. Warren	Cairo	Randolph	Clay Loam	75.0	....	66.6	50.0	41.6	....	33.3
22	Elliott Tucker	Perryville	Perry	Bottom	57.6	54.8	66.3	65.0	55.1	65.0	....
23	J. F. Archer	Walker	Vernon	Upland Sandy Loam	47.6	45.4	45.4	45.4	50.0	54.5	....
24	Arthur S. Young	Memphis	Scotland	Clay Loam	71.4	89.2	85.7	66.3	53.5	....	53.5

NUMBER, NAME, ADDRESS, AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHEL OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1906.

Number.	Name.	Town.	County.	Soil.	St. Charles White— Bushels.	Farmers' Interest— Bushels.	Leaming— Bushels.	Boone County White— Bushels.	Legal Tender— Bushels.	Hogue's Yellow Dent—Bushels.	Reid's Yellow Dent—Bushels.	Johnson County White— Bushels.	Silvermine— Bushels.	Golden Eagle— Bushels.	McCauley's White Dent—Bushels.	St. Charles Yellow— Bushels.
1	J. W. Bailey	Rich Hill	Bates	Prairie Loam	56.0	9.3	8.7	9.0	9.0	....	9.3	8.1	....	....	....	8.6
2	R. C. Webb	Wellsville ...	Montgomery	Prairie Loam	66.0	....	62.0	62.4	63.0	63.0	64.0	....	60.0	48.0	....	....
3	J. S. Hill	Brookfield	Linn	Sandy Loam	112.0	....	115.0	119.0	....	116.0	117.0	....	115.0	114.0	....	....
4	Geo. K. Thrasher	Lewistown	Lewis	Second Bottom .....	....	....	38.5	61.6	50.0	42.0	55.7	....	42.5	42.5	....	....
5	A. L. Abbot	Fredericktown ...	Madison	Bottom .....	....	63.5	64.0	56.8	62.5	....	35.5	65.5	....	....	....	....
6	B. W. Slayton	Kingbee	Ripley	Bottom	44.7	44.0	41.0	21.0	55.5	....	23.7	12.0	....	....	....	23.5
7	Sidney Frost	Mirabile	Caldwell	Bottom	56.0	48.0	28.0	43.5	....	....	71.0	....	40.7	....	....	....
9	Jas. W. Magee	Livonia	Putnam	Bottom	28.7	....	109.9	106.5	99.4	98.1	63.2	....	91.4	92.3	....	....
10	Willard Hobbs	Strasburg	Cass	Black Loam	52.4	57.0	61.7	54.0	64.8	....	70.5	54.7	....	....	....	65.5
11	H. B. Ganschow	Willow Springs ...	Howell	Bottom	71.5	74.8	73.8	72.5	62.0	....	52.1	74.7	....	....	....	65.0
12	Geo. S. Homan	Easton	Buchanan	Second Bottom	40.0	32.1	44.7	43.1	45.7	....	18.3	....	33.1	36.4	....	....
13	C. L. Shoreman	Rolla	Phelps	Sandy Clay .....	....	....	....	20.3	....	22.9	....	....	16.6	14.5	17.5	21.8
15	F. W. Hagemeyer	Glencoe	St. Louis	Bottom	23.3	34.0	....	20.0	....	....	....	25.7	....	....	....	25.6
16	W. L. Tuley	Peggy	Carter	Bottom	38.7	37.7	....	39.0	....	....	....	37.0	....	....	....	....
17	Wm. Wallace	Vandalia	Audrain	Bottom	12.8	10.5	....	13.7	....	....	10.7	....	12.5	11.5	....	....
18	Frank Headley	Springfield	Greene	Upland .....	....	....	....	29.1	27.6	26.4	28.2	....	27.1	25.1	25.7	25.7
19	R. E. Owens	Mill Grove	Mercer	Bottom .....	....	....	....	34.2	22.7	20.0	20.0	....	27.5	17.5	21.4	20.1
23	M. B. Smith	Ellington	Reynolds	Bottom	49.7	40.7	38.5	42.0	....	....	32.0	....	28.7	29.3	....	....
24	R. A. McGruder	Appleton City ..	St. Clair	Second Bottom	29.1	....	27.3	33.7	....	....	27.7	32.1	30.4	27.3	....	25.1

25	John L. Parrick	Montreal	Camden	Bottom	70.0	69.3	63.8	67.3	66.7	....	68.8	68.8	....	....	....	67.3
26	H. G. Tenner	Fulton	Callaway	Bottom	94.0	65.5	58.5	73.5	43.5	....	42.0	....	42.5	48.0	....	....
27	Frank Norwold	Troy	Lincoln	Sandy Bottom	20.0	....	17.0	23.3	....	....	23.3	16.5	22.5	18.0	....	17.0
30	Elliott Tucker	Perryville	Perry	Bottom	35.1	41.2	35.2	38.6	35.9	....	38.4	39.4	....	....	....	33.9
31	A. B. Whitehead	Wellsville ..	Montgomery	Bottom	73.0	65.0	59.0	62.0	63.0	....	60.0	....	60.0	61.0	....	....
35	A. E. Martin	Farmington, Iowa ..	Clark	Loam	44.5	45.7	36.0	43.5	35.7	....	37.0	....	34.3	38.8	....	....
37	A. B. Deaton	Bloodland	Pulaski	Clay Soil .....	....	....	....	46.3	28.5	45.7	22.8	....	34.3	22.8	43.5	57.0
38	E. F. Payne	Maryville	Nodaway	Prairie	87.0	75.0	53.0	48.3	64.3	....	59.4	....	57.5	50.7	....	....
39	S. O. Craig	Cyrene	Pike	Prairie	80.4	73.5	66.2	80.4	44.6	....	63.1	....	51.5	37.8	....	....
40	Alfred Hook	Wellsville ..	Montgomery	Prairie	43.0	....	....	44.7	35.3	36.0	35.3	17.3	43.0	33.0	....	....
41	J. R. Hunt	Cole Camp	Benton	Prairie	22.0	15.3	15.3	20.0	14.5	....	....	58.3	....	....	....	13.0
45	M. Loomis	Schofield	Polk	Upland	48.7	44.0	40.0	45.0	44.8	....	37.8	....	....	....	....	....
48	Josiah Beery	Hardin	Ray	Prairie	50.0	....	....	50.0	50.0	50.0	50.0	....	25.0	25.0	....	....
49	M. Neher	Leeton	Johnson	Prairie .....	....	....	....	13.3	15.3	12.3	....	....	11.0	10.8	13.0	13.5
50	N. E. Stepheson	Trenton	Grundy	Prairie .....	....	....	....	31.7	27.9	27.6	49.3	....	50.2	24.8	26.3	27.3
51	O. F. Rader	Trenton	Grundy	Prairie .....	....	....	....	41.4	33.1	31.1	58.0	....	49.7	24.8	31.0	26.9
52	Edward Rhodokohr ...	Corder	Lafayette	Prairie	50.5	45.8	43.8	48.5	46.0	....	44.0	46.0	....	....	....	48.0
57	Virgil Traughber	Carrollton	Carroll	Upland .....	....	....	....	49.0	37.8	40.0	46.7	....	37.8	31.3	46.7	53.5
58	R. L. Harbaugh	Liberty	Clay	Upland	83.3	75.5	76.0	81.3	80.3	....	71.5	....	63.0	62.3	....	....
59	H. T. Kelso	Willard	Greene	Upland	25.3	26.4	20.6	25.4	26.6	....	23.9	26.6	....	....	....	23.5
60	A. J. Rushing	Bertrand	Mississippi	Upland	66.2	66.4	59.7	62.7	62.9	....	61.7	67.6	....	....	....	61.2
62	George J. Brown	Rolla	Phelps	Upland .....	....	....	....	80.0	76.5	71.0	70.0	....	60.5	....	77.3	....
63	Fred Schmidt	Flucom	Jefferson	Upland .....	....	43.2	....	44.4	38.6	....	39.6	37.4	....	....	....	....
64	Orin Smith	Gladden	Dent	Upland .....	....	....	....	31.3	....	....	22.0	....	27.0	19.3	20.0	24.0
65	Lewis Marlatt	Cameron	Cliton	Upland .....	....	....	....	54.7	42.9	43.7	53.5	....	44.9	34.5	52.6	52.3
66	Charles Gentry	Oakwood	Marion	Upland	51.7	65.6	47.4	55.9	65.6	....	40.5	....	40.6	40.5	....	....
67	G. M. Thomas	Speckard	Grundy	Upland .....	....	....	45.5	33.5	....	30.0	36.3	....	26.0	42.5	40.3	....
69	F. H. Richardson	Neosho	Newton	Upland	60.5	42.5	37.0	45.3	32.2	....	44.3	33.4	....	....	....	40.1
70	D. P. Leonard	Houston	Texas	Upland	46.3	52.7	33.3	48.2	30.3	....	23.7	43.3	....	....	....	34.0
71	F. W. Evans	Lonedell	Franklin	Upland	47.0	47.3	42.0	45.0	40.7	....	37.0	47.3	....	....	....	44.0

NAME, ADDRESS, AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHELS OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1906.

Number.	Name.	Town.	County.	Soil.	St. Charles White— Bushels.	Farmers' Interest— Bushels.	Leaming— Bushels.	Boone County White— Bushels.	Legal Tender— Bushels.	Hogue's Yellow Dent—Bushels.	Reid's Yellow D—Bushels.	Johnson County White— Bushels.	Silvermine— Bushels.	Golden Eagle— Bushels.	McCauley's White Dent—Bushels.	St. Charles Yellow— Bushels.
73	Mahlon Gabbert	Weston	Platte	Upland	53.0	....	51.3	56.2	56.0	59.3	51.3	....	54.0	47.0	....	....
74	Wm. Cottey	Knox City	Knox	Upland	53.7	50.7	52.7	49.5	44.5	....	53.3	....	43.7	41.0	....	....
75	G. P. Spraggs	Van Cleve	Maries	Upland	14.2	16.3	14.5	14.3	11.2	....	12.7	16.3	....	....	....	13.5
76	Walter Kom	Albany	Gentry	Upland	11.0	....	....	24.0	....	....	6.0	....	10.0	8.0	....	....
77	W. H. Rusk	Windsor	Henry	Upland	46.1	....	39.6	38.5	41.2	....	....	....	30.6	27.7	42.0	30.6
78	J. B. Atchley	Lebanon	Laclede	Upland .....	....	34.0	50.0	49.5	43.0	....	40.7	54.5	....	....	....	41.0
79	S. M. Hudson	Buckner	Jackson	Upland .....	....	....	21.7	....	20.7	....	28.5	....	22.7	21.0	....	....
80	Paul Purdy	Harris	Sullivan	Upland	46.5	50.0	54.3	53.5	54.2	....	50.9	....	59.7	41.9	....	....
81	Orlando Regnan	Monteer	Shannon	Upland .....	....	14.7	13.0	8.5	9.7	....	10.3	16.5	....	....	....	14.0
82	G. R. Pulliam	Gorin	Scotland	Upland	12.6	....	13.9	13.1	....	8.2	17.7	....	12.3	12.7	....	....
83	C. O. Raine	Canton	Lewis	Upland	37.8	32.3	36.0	39.5	37.3	....	40.0	....	30.8	33.5	....	....

NAME, ADDRESS, AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHEL OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1907.

Number.	Name.	Town.	County.	Soil.	Commercial White—Bushels.	Boone County White—Bushels.	Farmers' Interest—Bushels.	Hildreth's Yellow Dent—Bushels.	Reid's Yellow Dent—Bushels.	Johnson County White—Bushels.	Leaming—Bushels.	St. Charles White—Bushels.	Legal Tender—Bushels.	Cartner—Bushels.	St. Charles Yellow—Bushels.	Hogue's Yellow Dent—Bushels.	Silvermine—Bushels.
2	Wm. Woods	Patterson	Wayne	Clay Loam	16.8	11.1	13.3	10.2	12.9	18.5	11.0	10.4	10.3	13.1	15.5	9.0	5.7
3	Arthur Wahlers	Versailles	Morgan	Bottom	43.4	56.9	54.0	61.7	53.4	50.8	61.7	47.2	53.1	54.6	54.0	55.9	47.2
5	H. S. Turner	Fulton	Callaway	Upland Clay	32.1	46.8	51.3	60.4	46.8	42.7	53.5	32.5	51.3	32.1	62.5	49.4	31.2
7	John Sandfoot	St. Charles ..	St. Charles	Upland	86.4	68.4	70.6	60.1	55.6	67.6	72.1	75.1	66.9	64.6	63.1	57.8	57.8
8	J. E. Smoot	Centralia	Audrain	Prairie	75.7	68.1	82.6	46.6	39.7	68.1	41.1	75.7	42.2	36.5	42.4	26.5	56.8
10	M. B. Smith	Ellington	Reynolds	Gravelly Bottom	36.0	31.2	33.8	24.6	24.7	33.8	27.2	30.5	30.5	29.4	24.4	26.8	....
11	N. E. Stevenson	Trenton	Grundy	Prairie	43.5	48.5	42.9	52.2	47.8	42.1	48.3	41.7	43.8	43.7	46.5	45.3	45.8
13	C. T. Shafer	Malta Bend	Saline	Bottom	114.5	104.5	104.1	104.1	98.9	118.3	....	114.5	93.7	....	98.9	93.7	....
14	Chas. Streeter	Hamilton	Caldwell	Prairie .....	....	45.6	50.8	40.4	41.9	43.3	41.6	47.7	....	40.4	43.3	44.2	40.5
15	E. K. Stroeter	Kearney	Clay	Upland	76.3	99.5	90.9	84.4	105.2	....	77.5	76.8	86.5	105.5	95.7	81.7	....
18	Harry Rhodokohr	Corder	Lafayette	Prairie	63.7	57.2	56.1	55.6	55.3	51.8	56.9	52.9	54.5	49.8	55.9	51.8	41.3
19	W. H. Rusk	Windsor	Henry	Prairie	55.6	49.8	54.4	....	....	40.6	44.8	40.6	39.0	46.0	40.6	51.4	34.0
23	M. Neher	Leeton	Johnson	Upland	79.4	71.4	65.8	70.4	62.6	65.4	67.6	54.3	61.6	64.6	65.8	56.0	....
27	S. J. Moxley	Ashley	Pike	Upland .....	....	71.7	79.6	65.3	46.0	76.4	46.4	....	46.2	43.1	43.2	....	30.0
30	H. F. Leary	Warrensburg	Johnson	Bottom	101.9	93.2	74.2	125.2	88.0	82.6	106.5	75.2	68.2	106.5	88.0	82.6	64.8
31	A. V. Lincoln	Maysville	DeKalb	Prairie .....	....	77.9	75.0	69.9	71.4	65.2	38.8	....	66.0	50.5	55.4	75.7	69.5
33	C. C. Lockwood	Columbia	Boone	Bottom	48.	38.9	....	48.3	....	....	48.6	....	80.1	51.2	44.8	28.7	35.7
34	C. H. Kelly	Carthage	Jasper	Upland	16.3	8.9	15.9	14.2	10.8	8.7	7.9	8.4	11.6	15.7	9.0	8.2	....
35	C. D. Keithley	Bowling Green	Pike	Upland .....	....	39.8	44.0	46.7	47.6	37.2	47.6	....	34.4	34.1	28.2	....	33.6

CO-OPERATIVE VARIETY TESTS OF CORN.

NAME, ADDRESS, AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHEL OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1907.

Number.	Name.	Town.	County.	Soil.	Commercial White—Bushels.	Boone County White—Bushels.	Farmers' Interest—Bushels.	Hildreth's Yellow Dent—Bushels.	Reid's Yellow Dent—Bushels.	Johnson County White—Bushels.	Leaming—Bushels.	St. Charles White—Bushels.	Legal Tender—Bushels.	Cartner—Bushels.	St. Charles Yellow—Bushels.	Hogue's Yellow Dent—Bushels.	Silvermine—Bushels.
37	J. G. Harvey	Browning	Linn	Upland	....	70.0	60.9	66.3	66.9	62.8	57.0	....	60.3	68.7	61.1	73.3	38.8
40	Sanford Hyde	McFall	Gentry	Upland	51.0	48.0	48.0	48.0	48.0	45.0	42.0	42.0	45.0	48.0	48.0	68.3	....
41	H. Harrington	Bucklin	Linn	Upland	9.9	10.7	9.9	11.1	10.1	10.2	9.5	10.5	10.1	10.7	10.2	11.1	8.7
42	C. O. Houston	Salisbury	Chariton	Prairie	43.3	54.6	43.7	46.6	54.3	45.0	53.0	48.2	51.8	45.0	40.2	50.1	45.6
43	Geo. S. Homan	Easton	Buchanan	Upland	65.1	53.0	51.4	71.4	56.0	60.5	68.0	60.8	56.0	68.5	66.8	50.8	46.2
44	S. F. Huntsman	Cairo	Randolph	Upland	....	39.0	49.6	44.0	55.5	41.4	52.9	....	....	43.6	43.8	....	40.6
45	R. J. Howitt	King City	Andrew	Upland	....	73.5	61.2	46.5	44.1	49.0	49.0	....	....	44.1	49.0	....	53.9
46	Paul J. Purdy	Harris	Sullivan	Upland	85.5	70.7	70.0	73.7	59.4	64.6	67.3	63.2	69.7	61.7	55.2	64.5	53.9
47	Wm. O. Huff	Sabula	Iron	Upland	....	71.7	83.4	59.2	53.3	71.1	71.8	....	....	77.0	68.1	....	42.0
49	H. F. Geidenhagen	Mt. Sterling	Osage	Bottom	....	90.9	88.7	90.9	78.9	79.6	75.1	74.4	71.4	75.1	....	72.1	62.4
52	A. B. Deaton	Bloodland	Pulaski	Clay Upland	15.9	12.1	17.1	17.9	10.9	14.6	12.2	12.1	11.2	11.1	15.0	11.8	....
55	Jno. Dowell	Hutton Valley	Howell	Upland	13.5	14.2	12.5	14.2	20.2	18.7	16.6	17.8	20.0	17.4	18.7	19.3	....
58	S. O. Craig	Cyrene	Pike	Prairie	32.4	31.1	31.8	26.1	29.5	18.1	28.3	21.1	25.7	28.7	23.5	25.8	17.9
59	W. D. Cook	Callao	Macon	Sandy Loam	....	55.9	63.1	53.5	58.9	55.4	60.7	....	42.4	45.4	62.5	51.0	39.5
60	A. L. Clayton	Loundes	Wayne	Clay Loam	46.0	45.4	47.6	43.8	45.0	....	47.6	46.3	42.8	44.4	46.0	44.7	....
62	Geo. Spor	Billings	Christian	Upland	34.1	29.0	33.1	26.0	33.1	30.6	31.1	30.1	....	33.1	34.7	29.0	....
63	J. W. Bailey	Rich Hill	Bates	Black Loam	42.1	42.3	40.3	38.3	55.1	40.3	48.2	29.7	51.7	41.3	41.3	37.9	39.4
64	Joe Bourgeret	Voshall	Osage	Upland	48.0	49.2	47.7	38.1	43.0	47.7	46.3	44.3	41.3	43.1	46.7	34.9	35.0
66	W. H. Bulla	King City	Gentry	Black Loam	54.0	51.6	51.6	49.7	36.1	34.9	41.5	43.4	36.1	39.6	44.3	44.3	33.9
69	George Boone	Liberty	Clay	Bottom	56.8	43.5	38.4	21.5	22.2	29.5	23.8	29.5	20.2	22.0	19.4	26.8	31.9
71	C. D. Axtell	Dunlap	Grundy	Upland	52.8	52.8	44.0	48.4	44.0	44.0	44.0	39.6	44.0	26.2	48.4	39.6	35.2
72	W. T. Wasel	Auxvasse	Callaway	Prairie	56.2	49.6	37.3	41.5	34.9	43.8	36.6	40.9	34.8	34.8	32.4	33.7	....
73	G. R. Kelly	Blackwater	Cooper	Upland	29.3	35.6	37.0	28.4	23.3	39.6	21.8	32.6	24.7	25.1	25.8	30.8	34.6
74	J. J. Barr	Maryville	Nodaway	Prairie	80.1	22.2	67.0	83.6	74.0	62.7	79.8	66.2	67.0	67.0	73.1	77.5	60.9
75	W. L. Kom	Gentry	Gentry	Upland	67.3	77.7	72.9	68.0	66.6	68.4	62.1	....	67.3	65.8	71.7	59.2	65.8
76	P. Standiford	Fulton, Kan.	Bourbon	Prairie	44.6	53.5	50.5	49.1	38.9	35.7	35.7	41.3	43.1	49.1	44.6	40.1	....

NUMBER, NAME, ADDRESS AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH
THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHELS OF EAR CORN
PER ACRE, AS TESTED IN THE YEAR 1908.

Number.	Name.	Town.	County.	Soil.	Commercial White— Bushels.	St. Charles White— Bushels.	Boone County White—Bushels.	Johnson County White—Bushels.	St. Charles Yellow— Bushels.	Legal Tender— Bushels.	Reid's Yellow Dent—Bushels.	Hildreth's Yellow Dent—Bushels.	Hogue's Yellow Dent—Bushels.	Leaming— Bushels.	Cartner— Bushels.	Silvermine— Bushels.
1	E. H. Payne	Maryville	Nodaway	Upland	65.0	55.0	53.0	49.0	57.0	54.	65.0	59.0	54.0	56.0	49.0	40.0
2	H. S. Hewitt	Harrisonville	Cass	Upland	35.0	39.0	26.0	34.0	34.0	37.0	39.0	31.0	34.0	34.0	33.0	40.0
3	Marvin Miller	Montgomery City, Montgo'y		Prairie	45.0	41.0	43.0	45.0	39.0	46.0	37.0	17.0	40.0	38.0	30.0	38.0
4	Charles Weishar	Edina	Knox	Prairie	23.5	26.8	25.3	27.0	26.7	26.5	25.6	25.9	25.0	23.5	25.3	25.3
5	G. E. Barrow	Rosendale	Andrew	Upland	58.4	67.0	57.0	59.7	60.0	63.7	57.7	47.0	61.7	61.7	51.0	61.7
7	W. H. Crum	Olean	Miller	Upland .....	....	30.5	33.1	31.0	27.2	25.4	26.2	24.4	24.8	32.2	23.2	....
9	E. W. Smith	Maitland	Holt	Upland	48.0	46.7	54.1	45.0	46.5	42.0	60.0	45.0	36.2	54.8	33.4	32.1
16	Joe Bourgeret	Voshall	Osage	Upland	82.1	83.1	85.4	85.1	80.5	81.1	82.8	80.1	64.1	82.1	80.0	82.7
17	J. M. Rice	Pitsville	Johnson	Upland	52.4	56.9	45.6	47.9	55.6	46.9	46.6	52.1	45.6	39.5	43.1	43.4
18	C. D. Axtell	Dunlap	Grundy	Upland	38.7	38.9	43.0	34.4	34.4	38.7	34.4	38.7	38.7	34.4	30.1	43.0
19	H. T. Leary	Warrensburg	Johnson	Bottom	35.2	29.3	37.5	36.4	37.7	35.6	36.0	34.1	34.0	36.4	36.9	28.2
20	D. E. Thurlo	Bosworth	Carroll	Prairie	30.3	26.3	23.7	22.3	22.5	21.2	25.5	27.0	22.7	21.0	24.7	20.4
21	S. H. Pile	Glasgow	Howard	Upland	69.0	63.9	60.1	58.3	63.4	61.1	68.5	66.6	43.9	62.9	56.5	48.6
22	W. F. Carlson	Tarkio	Atchison	Upland	84.0	83.4	84.0	75.7	77.0	74.1	84.5	70.0	81.1	81.6	62.8	83.4
23	Henry Collins	Hulsey	Washington	Upland	41.1	43.7	53.0	30.8	44.0	30.1	37.3	34.7	50.1	39.2	41.7	30.5
24	O. L. Carpenter	Molino	Audrain	Upland	32.8	34.2	45.0	24.7	25.2	31.9	27.0	21.2	19.8	23.0	23.4	21.6
25	Arthur Wahlers	Versailles	Morgan	Bottom	63.0	43.0	57.0	50.8	37.7	48.8	50.8	61.0	46.8	54.5	40.7	44.7
28	Chris Ohlendorf	Boonville	Cooper	Bottom	60.3	64.9	62.6	67.3	67.3	60.3	69.6	60.3	58.0	55.6	64.9	62.6
27	Robert McGill	Bertrand	Mississippi	Bottom	85.8	70.7	74.8	69.1	74.4	....	54.2	72.7	56.7	68.8	67.1	40.3
29	Harry Rhodokohr	Corder	Lafayette	Prairie	60.0	54.0	56.5	51.0	52.0	51.0	52.0	48.6	47.9	50.0	45.0	45.0
30	P. Standiford	Fulton, Kan.	Bourbon	Upland	73.6	67.1	65.9	70.0	70.8	62.7	62.7	73.2	57.8	61.1	63.5	66.7
32	S. Y. Yeater	Laconia	Dent	Bottom .....	....	45.0	41.0	40.0	....	....	....	....	....	41.0	38.0	30.0
33	W. P. Brinkley	Linneus	Linn	Prairie	29.0	26.5	29.0	27.0	25.6	25.6	25.6	29.0	30.0	26.5	24.8	26.1
35	T. L. Beazly	Columbia	Boone	Upland	48.8	42.6	43.2	45.6	42.0	35.4	39.6	36.0	34.8	36.0	36.0	35.4
36	L. C. Dibo	Boonville	Cooper	Upland	68.7	55.0	50.9	54.2	50.0	64.4	49.2	54.2	55.0	45.8	....	65.3
38	George Armi	Queen City	Schuyler	Upland .....	....	44.8	37.9	45.1	46.8	44.2	45.1	46.8	37.7	38.8	33.7	....

NUMBER, NAME, ADDRESS AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH
THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHEL OF EAR CORN
PER ACRE, AS TESTED IN THE YEAR 1908.

Number.	Name.	Town.	County.	Soil.	Commercial White— Bushels.	St. Charles White— Bushels.	Boone County White— Bushels.	Johnson County White— Bushels.	St. Charles Yellow— Bushels.	Legal Tender. Bushels.	Reid's Yellow Dent— Bushels.	Hildreth's Yellow Dent— Bushels.	Hogue's Yellow Dent— Bushels.	Leaming— Bushels.	Cartner— Bushels.	Silvermine— Bushels.
39	Charles Streeter	Hamilton	Caldwell	Upland	22.8	13.7	21.0	20.5	17.1	13.7	23.6	25.1	27.4	22.8	20.1	18.2
40	Wm. Melike	Baring	Knox	Upland	34.2	41.3	31.3	38.4	46.0	38.6	39.9	37.0	51.3	34.6	22.8	34.2
41	F. M. Owen	Ruble	Reynolds	Bottom	41.0	35.8	40.3	35.8	33.0	33.0	37.0	36.6	26.9	38.0	36.0	25.0
42	S. O. Craig	Cyrene	Pike	Prairie	39.7	....	37.0	36.8	39.0	34.0	34.0	42.0	31.0	31.0	34.0	27.0
43	Paul Purdy	Harris	Sullivan	Prairie	49.8	55.8	30.8	49.1	55.7	43.9	56.2	51.3	59.2	55.3	50.3	31.5
44	G. C. Phillbrick	Rich Hill	Bates	Upland	29.5	20.8	24.5	24.1	20.8	22.8	22.8	20.8	20.1	22.8	18.1	18.1
45	L. A. Brown	Malta Bend	Saline	Upland	54.6	53.1	50.3	48.6	54.6	49.9	50.5	49.9	50.1	46.5	44.5	34.9
46	C. O. Baker	Hamilton	Caldwell	Prairie	35.0	27.0	34.0	28.0	22.0	24.0	27.0	28.0	27.0	31.0	24.0	38.0
47	Mitchell Castlio	Howell	St. Charles	Upland	36.0	35.2	39.5	38.0	36.0	50.5	39.5	34.0	39.5	39.5	33.6	35.0
48	G. E. Morris	New London	Ralls	Upland	65.2	60.7	69.7	65.2	63.0	67.5	58.5	69.7	63.0	63.0	54.0	65.2
49	J. L. Sweat	McFall	Gentry	Prairie	36.0	28.0	37.0	31.0	28.0	37.0	33.0	35.0	32.0	29.0	23.0	33.0
50	R. E. Butcher	Beardstown	Henry	Upland	51.4	52.3	52.1	55.7	40.2	38.5	49.0	53.4	38.5	44.7	48.1	26.8
51	W. R. Stewart	Hamilton	Davies	Prairie	56.0	57.0	41.0	47.0	60.3	60.1	47.6	49.0	47.6	48.0	50.4	31.5
52	W. M. Roberts	Maysville	DeKalb	Upland	30.3	32.2	26.0	31.0	35.6	34.6	36.7	35.9	40.9	38.3	29.3	27.4
53	D. W. Rusk	Windsor	Henry	Prairie .....	....	35.4	35.4	22.8	25.8	18.9	19.8	40.8	27.0	27.0	30.6	25.2
54	J. W. May	Montevallo	Vernon	Upland	25.0	22.5	22.5	20.0	....	....	18.0	16.0	18.0	18.0	18.0	....
55	W. J. Suhre	High Hill ..	Montgomery	Upland	48.0	53.0	42.0	43.0	48.0	47.0	44.0	45.0	47.0	48.0	49.0	43.0
56	D. L. Massie	Fremont	Carter	Upland	30.0	28.8	29.1	28.8	29.4	23.0	21.4	24.4	21.8	21.8	19.4	17.3
57	J. E. Hall	Lamonte	Pettis	Upland	38.7	28.0	44.1	30.5	32.8	35.2	37.3	30.1	38.6	36.5	31.5	36.5
58	George Tyler	Defiance	St. Charles	Upland .....	....	90.1	105.0	102.0	104.0	90.4	88.0	103.0	....	100.0	103.0	....
59	J. M. O'Bannon	Lamonte	Pettis	Upland	9.1	9.0	16.0	8.2	12.7	8.9	12.3	5.4	9.0	12.0	7.8	11.3
60	A. B. Deaton	Bloodland	Pulaski	Upland	25.8	18.8	17.1	24.3	20.1	20.2	26.4	21.7	21.2	20.8	20.2	14.0
61	C. O. Raine	Canton	Lewis	Upland	50.1	48.0	40.7	40.7	36.4	40.7	40.2	30.4	33.2	40.0	32.0	38.5
62	W. A. Pollock	Powersville	Putnam	Prairie	43.8	37.8	45.3	37.1	36.2	37.1	44.5	33.4	31.9	44.5	31.2	28.9
63	J. G. Douglass	Shelbina	Shelby	Upland	40.0	26.0	50.0	45.0	36.0	37.0	40.0	45.0	34.0	26.0	24.0	22.0
64	G. J. Betson	Linneus	Linn	Upland	58.9	45.8	48.1	45.4	51.2	54.9	53.5	39.6	52.8	50.2	45.2	40.1
68	James Garrison	Montreal	Camden	Bottom	35.0	34.6	35.3	34.8	35.2	31.2	35.1	35.0	32.8	34.0	34.5	29.8

NUMBER, NAME, ADDRESS AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHEL OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1909.

Number.	Name.	Town.	County.	Soil.	Commercial White—Bushels.	St. Charles Yellow—Bushels.	St. Charles White—Bushels.	Johnson County White—Bushels.	Boone County White—Bushels.	Leaming—Bushels.	Hogue's Yellow Dent—Bushels.	Silvermine—Bushels.	Reid's Yellow Dent—Bushels.	Champion White, Pearl—Bushels.
1	J. G. Waltmire	Raymore	Cass	Upland Prairie	43.8	65.8	59.5	53.2	62.6	62.6	59.5	37.6	59.5	....
2	Edwin Walkinhorst	Concordia	Lafayette	Upland Loam	65.7	54.5	60.4	58.6	66.8	52.1	60.4	61.0	57.4	61.0
3	Chas. Weishar	Edina	Knox	Upland Prairie	42.0	41.2	41.6	43.6	44.8	39.2	38.8	42.8	53.4	....
4	J. E. Weber	Sweet Springs	Saline	Upland	14.0	12.0	12.0	14.0	13.5	12.5	11.5	12.0	13.0	14.5
5	J. E. Woodbridge	Granby	Newton	Upland Prai. & Tim.	17.8	16.0	15.7	20.7	23.3	25.6	25.8	17.2	24.6	24.6
6	Lusk Truby	Renick	Randolph	Upland Timber	40.8	43.0	49.6	40.8	55.2	49.6	49.0	50.1	50.6	49.6
7	P. Standiford	Fulton	Bombon, Kan.	Upland, Dark, Sandy	64.5	66.6	61.4	63.2	62.8	....	59.5	54.4	54.7	60.8
8	Anton Sutterer	Salisbury	Chariton	Black Upland	36.0	36.3	38.1	42.6	38.4	45.7	34.8	25.8	37.2	36.3
9	E. R. Spence	Columbia	Boone	Timber Upland	23.0	17.2	15.2	19.9	25.4	18.4	15.4	22.8	18.1	16.9
10	J. J. Schwarz	Doniphan	Ripley	Upland Clay	47.3	51.5	41.8	39.1	39.1	37.7	35.4	24.3	35.4	32.6
11	C. A. Stucks	Jacobston	Crawford	Upland Loam	33.2	34.8	32.8	33.2	34.6	....	33.0	34.0	33.6	33.4
14	E. W. Smith	Maitland	Holt	Upland Prairie	55.6	24.7	37.1	37.1	55.6	55.6	55.6	55.6	55.6	....
15	John Shuckenbrock	Bowling Green	Pike	Timber Loam	36.3	28.9	22.0	32.0	33.9	32.9	29.8	32.2	42.5	41.2
16	John Rus	New Cambria	Macon	Upland	72.8	67.5	67.3	68.8	66.5	64.5	66.8	59.2	63.2	70.3
17	A. G. Ross	Slater	Saline	Prairie	60.7	72.0	58.9	58.9	52.0	48.8	46.3	48.8	50.1	49.5
18	W. J. Rudisale	Lamar	Barton	Prairie Loam	22.5	22.2	29.8	28.7	29.4	31.8	21.2	25.3	23.5	33.3
19	C. D. Parkin	Mineral Pt. ..	Washington	Upland	21.1	25.6	20.5	22.4	20.8	18.8	20.8	21.1	24.9	23.8
20	Otto Pinkepank	Sweet Springs	Saline	Upland Loam	10.5	9.5	9.3	9.5	10.4	9.6	8.7	9.7	9.5	9.7
21	W. E. Osborne	Butler	Bates	Second Bottom	17.0	17.9	24.4	24.5	23.9	19.0	13.7	14.3	15.4	17.4

NUMBER, NAME, ADDRESS AND CHARACTER OF SOIL OF EACH CO-OPERATOR, TOGETHER WITH THE YIELDS OF THE DIFFERENT VARIETIES IN BUSHELS OF EAR CORN PER ACRE, AS TESTED IN THE YEAR 1909.

Number.	Name.	Town.	County.	Soil.	Commercial White—Bushels.	St. Charles Yellow—Bushels.	St. Charles White—Bushels.	Johnson County White—Bushels.	Boone County White—Bushels.	Leaming—Bushels.	Hogue's Yellow Dent—Bushels.	Silvermine—Bushels.	Reid's Yellow Dent—Bushels.	Champion White Pearl—Bushels.
22	Wm. Melike	Baring	Knox	Prairie	16.0	12.5	14.0	17.5	16.0	16.5	14.5	15.5	14.0	24.5
23	Guy Mitchell	Caledonia	Washington	Upland	29.9	24.5	25.2	26.9	25.7	....	25.7	25.8	26.4	28.7
24	D. L. Massie	Fremont	Carter	Upland	39.3	39.3	33.4	40.5	33.8	....	23.9	37.3	34.6	33.8
25	F. M. Luttrell	Paris	Monroe	Upland	66.5	63.0	69.6	78.3	69.6	50.1	55.9	52.3	56.1	....
26	Leonard Lefholz	Oak Grove	Jackson	Upland Timber .....	....	....	....	....	39.4	....	....	36.3	....	....
27	Ernest Linke	Jonesburg	Montgomery	Prairie	36.9	32.7	37.0	35.1	28.6	33.8	34.2	24.6	31.2	29.2
28	Rich Lucas	Mountain View	Howell	Timber Upland	16.3	19.2	17.8	17.3	18.0	13.2	19.8	15.5	19.1	19.0
29	H. F. Leary	Warrensburg	Johnson	Timber	57.1	58.8	55.6	57.1	59.0	52.0	55.0	51.9	51.6	55.6
30	A. V. Lincoln	Maysville	De Kalb	Upland Prairie	21.6	22.6	22.0	20.8	23.2	19.7	22.8	20.8	23.0	....
31	R. L. Keithley	Curryville	Pike	Upland	12.0	32.0	23.1	24.6	22.2	23.4	23.4	15.7	30.0	....
32	R. W. Jones	Dawn	Livingston	Bottom Loam .....	....	....	11.2	10.1	10.8	10.8	11.5	11.4	11.7	....
33	W. L. Hammer	Rockville	Bates	Upland Loam	32.4	25.6	29.2	25.6	27.0	31.6	25.5	....	29.8	30.6
34	J. Ed. Hall	Lamonte	Pettis	Upland Prairie	31.0	36.4	30.7	30.6	33.9	29.9	36.5	34.8	37.8	27.8
35	J. F. Flinderman	Benick	Randolph	Upland Prairie .....	....	30.8	42.7	35.8	45.2	61.5	52.0	59.0	58.0	61.7
36	W. L. Griffith	Clinton	Henry	Upland Prairie	45.9	36.6	37.2	35.1	34.4	30.6	26.6	25.0	29.4	31.0
37	Geo. Taubinn	Sheldon	Barton	Upland Prairie	25.5	....	25.6	....	22.3	18.8	23.8	26.5	....	18.8
39	John Frees	Doniphan	Ripley	Bottom Loam	51.6	52.1	49.5	56.0	62.9	58.6	41.6	46.8	53.3	49.4
41	Roy Dale	Smithville	Ray	Timber Upland	64.0	63.2	59.1	77.6	70.6	71.4	66.8	65.8	67.6	....
42	W. C. Chapman	Bourbon	Crawford	Bottom Timber Loam	7.0	8.0	8.0	8.0	7.2	7.0	7.0	6.5	7.5	....

43	Mitchell Castlio	Howell	St. Charles	Timber Upland	51.1	51.8	51.8	46.0	45.7	48.3	47.0	38.7	50.3	....
44	John Calogna	Marshfield	Webster	Upland Loam	22.4	20.6	22.2	29.7	25.3	34.0	29.9	21.3	19.2	24.4
45	O. L. Carpenter	Molino	Audrain	Upland Prairie	23.2	34.9	34.4	33.2	32.3	36.7	30.3	31.2	31.8	....
46	Henry Collins	Hulsey	Washington	Timber Upland	35.1	31.7	31.7	31.7	33.0	....	29.4	27.2	28.5	28.5
47	C. S. Clayton	Kirbyville	Taney	Upland .....	....	10.6	....	....	....	10.6	10.9	....	10.6	....
48	J. G. Crawford	Atlanta	Macon	Upland Prairie	9.9	22.3	23.8	23.4	23.8	26.7	26.0	27.1	26.7	....
49	Chester Bailey	Greenwood	Jackson	Prairie	49.5	38.1	47.1	44.0	45.7	45.4	41.9	38.1	39.1	40.9
50	Frank Barr	Belton	Cass	Upland Prairie	27.0	24.0	30.0	33.0	30.0	30.0	27.0	34.0	33.0	30.0
51	R. E. Brown	Ethlyn	Lincoln	Upland	44.1	48.4	39.2	40.0	46.0	33.9	57.6	38.4	45.8	....
52	Herman Metzner	Chillicothe	Livingston	Bottom	18.4	....	18.5	....	17.3	....	....	20.5	....	19.6
53	Tony Engel	High Hill	Montgomery	Prairie	30.0	37.0	33.0	41.0	33.0	41.0	35.0	29.0	45.0	45.0
54	Edw. Gross	Wright City	Warren	Timber	17.1	26.4	26.4	27.0	27.5	25.0	29.5	22.4	23.7	21.1
55	G. W. Switzer	Harrisonville	Cass	Timber Upland	23.8	11.6	11.6	12.1	12.8	12.5	14.1	12.5	14.7	12.5
56	Jno. O'Brien	Thompson	Audrain	Prairie	19.7	19.7	39.4	25.6	26.2	33.5	35.5	37.6	35.5	25.6
59	Gran Goodson	New Cambria	Macon	Upland Prairie	27.2	41.6	35.2	35.6	42.8	39.2	41.6	44.0	40.8	38.4
60	Robert Tompkins	New London	Ralls	Timber Upland .....	....	....	55.5	57.8	48.6	....	....	54.5	....	....
61	L. B. Bell	Monroe City	Monroe	.....	20.4	....	16.0	17.2	15.6	16.0	17.6	21.9	15.6	....
62	E. J. Zinnert	Medill	Clark	Upland	38.6	50.8	44.7	48.8	36.6	42.5	63.0	48.8	52.8	....
64	H. G. Anthony	Bucklin	Linn	Upland Prairie	25.6	....	16.2	....	....	....	14.0	16.1	16.2	14.2
68	C. L. Buoy	Fayette	Howard	Bottom Land	38.9	37.1	40.9	39.5	39.9	41.0	39.9	40.9	42.8	47.2
69	P. T. Bruce	Thompson	Audrain	Prairie	34.4	31.9	32.9	32.9	32.5	34.7	32.5	32.9	31.3	34.1
70	R. F. Baker	Thompson	Audrain	Prairie	23.8	22.2	20.3	22.2	21.8	22.5	21.8	22.2	20.6	23.1
71	M. W. Lorance	Conway	Laclede	Bottom Loam	53.3	50.9	47.2	50.2	50.2	....	43.5	42.9	43.5	46.6
80	C. E. Rhodes	Nevada	Vernon	Prairie	13.6	10.2	12.8	13.1	11.6	20.0	11.7	15.0	9.0	15.9
82	George Tyler	Defiance	St. Charles	Upland	74.6	74.6	74.6	74.6	74.6	59.7	74.6	74.6	74.6	....
83	L. L. Hofstatter	Maysville	De Kalb	Prairie	9.3	18.8	14.1	28.2	18.8	32.9	18.8	37.0	27.7	27.2

METHODS OF AVERAGING YIELDS.

In averaging the yields of the varieties for the five years, it would be manifestly unfair to include with the varieties running the full period, those tested for three years or for four years only. Consequently in order to get comparative averages, they have been made first, for varieties tested the full five years, second for all varieties tested the last four years, and third for all varieties tested the last three years. The order of the arrangement of varieties in the tables follows the order of the yield of those varieties tested for five years. Those tested for less than five years are arranged miscellaneously.

Co-operators were asked to test the yield of their own variety planted beside the other varieties, but such a small number reported the results that it was considered unfair to include this in the averages.

TABLE SHOWING AVERAGE YIELDS IN BUSHEL PER ACRE FOR THE ENTIRE STATE.

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Boone County White	54.7	45.9	54.2	44.2	35.4	43.6	44.0	44.9
Leaming	52.3	40.5	50.2	41.3	35.8	41.3	41.6	42.5
St. Charles White	46.5	50.6	48.4	43.2	34.3	42.0	43.8	43.7
Reid's Yellow Dent	53.1	42.0	51.0	42.6	34.4	41.5	41.7	42.5
Silvermine	37.2	38.8	45.4	36.8	32.8	37.1	38.2	38.2
Commercial White .....	....	....	58.1	45.7	34.1	43.4	....	....
St. Charles Yellow	45.6	31.0	49.3	43.0	34.6	41.9	41.2	41.1
Cartner	47.7	....	49.4	38.0	....	....	....	....
Johnson County White .....	....	37.6	50.7	42.3	35.7	42.0	41.5	....
Hogue's Yellow Dent .....	....	44.3	49.0	39.0	33.4	39.4	39.8	....
Farmers' Interest .....	....	45.9	55.8	....	....	....	....	....
Legal Tender .....	....	43.9	49.9	41.9	....	....	....	....
Golden Eagle .....	....	35.1	....	....	....	....	....	....
McCauley's White Dent.....	....	35.1	....	....	....	....	....	....
Hildreth's Yellow Dent .....	....	....	54.1	41.8	....	....	....	....
Champion White Pearl .....	....	....	....	....	32.7	....	....	....

AVERAGES FOR THE STATE.

Reference to the accompanying table will show that of the varieties tested for all five years, when the state as a whole is considered, Boone County White is the highest yielding variety, with St. Charles White second, Reids Yellow Dent and Leaming third, St. Charles Yellow fourth, and Silvermine fifth.

For the varieties tested for 1906, 1907, 1908 and 1909 the rank in yield is as follows: Boone County White, St. Charles White and Reid's Yellow Dent, Leaming, Johnson County White, St. Charles Yellow, Hogue's Yellow Dent and Silvermine.

For the varieties tested during 1907, 1908 and 1909 the order is as follows: Boone County White, Commercial White, St. Charles White and Johnson County White, St. Charles Yellow, Reid's Yellow Dent, Leaming, Hogue's Yellow Dent and Silvermine.

In general Boone County White is easily the leading variety in yield when the state as a whole is considered while Commercial White, St. Charles White, Reid's Yellow Dent and Johnson County White and Leaming follow rather closely. The Silvermine and Hogue's Yellow Dent have both fallen considerably below the others in yield, but it must be remembered that these varieties are early and were doubtless considerably drier than the later varieties at time of weighing.

TABLE SHOWING AVERAGE YIELDS IN BUSHELS PER ACRE FOR NORTH MISSOURI.

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Boone County White	48.5	50.3	60.6	42.8	36.3	45.1	46.3	46.5
Reid's Yellow Dent	48.5	47.1	57.6	42.9	36.2	44.2	44.9	45.1
Leaming	51.5	51.8	55.4	40.3	36.0	42.9	44.6	45.0
St. Charles White	38.4	51.7	56.6	42.5	34.8	44.4	46.4	44.0
Silvermine	37.2	41.1	47.1	37.7	34.4	38.7	39.3	39.2
Commercial White .....	....	....	70.3	45.1	34.0	46.0	....	....
St. Charles Yellow	42.8	30.0	55.2	42.0	35.2	43.8	43.7	42.5
Gartner	42.0	....	54.1	35.8	....	....	....	....
Johnson County White .....	....	33.3	56.3	41.0	36.5	43.4	42.1	....
Hogue's Yellow Dent .....	....	45.1	56.2	40.2	35.6	42.7	43.0	....
Farmers Interest .....	....	52.1	62.1	....	....	....	....	....
Legal Tender .....	....	47.8	56.0	41.8	....	....	....	....
Golden Eagle .....	....	38.3	....	....	....	....	....	....
McCauley's White Dent ....	....	33.0	....	....	....	....	....	....
Hildreth's Yellow Dent ....	....	....	61.4	40.0	....	....	....	....
Champion White Pearl .....	....	....	....	....	34.2	....	....	....

AVERAGES FOR NORTH MISSOURI.

The five year averages for North Missouri which includes Sections I and VI show the varieties yielding in the following order: Boone County White, Reid's Yellow Dent, Leaming, St. Charles White, St. Charles Yellow and Silvermine.

For the years 1906, 1907, 1908 and 1909 the order is as follows: St. Charles White, Boone County White, Reid's Yellow Dent, Leam-

ing, St. Charles Yellow, Hogue's Yellow Dent, Johnson County White and Silvermine.

For the years 1907, 1908 and 1909 the order is as follows: Commercial White, Boone County White, St. Charles White, Reid's Yellow Dent, St. Charles Yellow, Johnson County White, Leaming, Hogue's Yellow Dent, and Silvermine.

It will be seen that for the five-year average Boone County White leads although it drops below St. Charles White in the four-year average and below Commercial White in the three-year average. The Commercial White is rather outstanding in the years 1907 and 1908, while St. Charles White and Reid's Yellow Dent on the whole average high.

TABLE SHOWING AVERAGE YIELDS IN BUSHEL PER ACRE FOR SOUTH MISSOURI.

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Boone County White	61.8	40.3	42.3	47.7	33.6	40.5	40.0	41.7
St. Charles White	54.7	45.1	36.3	44.5	32.9	37.6	39.5	40.9
Leaming	53.1	37.5	40.6	44.0	29.0	37.9	37.8	39.0
Reid's Yellow Dent	57.6	34.5	38.2	41.9	30.8	36.3	35.8	37.6
Silvermine .....	....	30.8	40.4	....	29.7	33.5	35.3	....
Commercial White .....	....	....	38.3	47.6	34.3	39.1	....	....
St. Charles Yellow	46.0	31.7	37.2	45.2	32.8	38.3	37.7	38.2
Cartner	54.2	....	41.0	42.2	....	....	....	....
Johnson County White .....	....	38.5	39.8	44.8	34.3	39.3	39.2	....
Hogue's Yellow Dent .....	....	41.5	35.6	34.6	29.5	33.2	33.4	....
Farmers Interest .....	....	40.5	44.1	....	....	....	....	....
Legal Tender .....	....	38.9	37.9	42.2	....	....	....	....
Golden Eagle .....	....	23.0	....	....	....	....	....	....
McCauley's White Dent ....	....	32.6	....	....	....	....	....	....
Hildreth's Yellow Dent ....	....	....	39.1	45.7	....	....	....	....
Champion White Pearl .....	....	....	....	....	30.7	....	....	....

AVERAGES FOR SOUTH MISSOURI.

In the five-year average for South Missouri which includes Sections II, III, IV and V, Boone County White ranks first in yield, with St. Charles White, Leaming, St. Charles Yellow, and Reid's Yellow Dent in the order named.

In the four-year averages the order is as follows: Boone County White, St. Charles White, Johnson County White, Leaming, St. Charles Yellow, Reid's Yellow Dent, Silvermine and Hogue's Yellow Dent.

In the three-year averages the order stands: Boone County White, Johnson County White, Commercial White, St. Charles Yel-

low, Leaming, St. Charles White, Reid's Yellow Dent, Silvermine and Hogue's Yellow Dent.

In general Boone County White is outstanding as the highest yielder with St. Charles White, Johnson County White, Commercial White and Leaming averaging well.

TABLE SHOWING AVERAGE YIELDS IN BUSHELS PER ACRE FOR SECTION I. (Northwest Missouri).

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Reid's Yellow Dent	37.3	47.3	64.8	45.8	36.7	48.6	48.3	47.7
Boone County White	36.7	47.1	67.3	43.3	36.6	48.1	47.9	47.3
Leaming	40.4	47.5	61.0	42.7	36.3	46.4	46.5	46.1
St. Charles White	30.7	53.7	61.9	43.9	33.5	45.7	46.1	45.9
Commercial White .....	....	....	80.9	46.7	36.8	53.0	....	....
St. Charles Yellow .....	....	39.7	63.2	43.9	36.5	48.1	47.6	....
Cartner	32.1	....	63.7	38.1	....	....	....	....
Johnson County White .....	....	50.3	61.4	41.8	36.2	46.1	46.3	....
Silvermine	30.8	36.3	53.3	39.8	34.4	41.4	40.4	39.8
Hogue's Yellow Dent .....	....	41.0	63.6	42.0	35.7	....	46.5	....
Farmers Interest .....	....	55.6	67.6	....	....	....	....	....
Legal Tender .....	....	47.6	62.3	43.3	....	....	....	....
Golden Eagle .....	....	32.7	....	....	....	....	....	....
McCauley's White Dent ....	....	37.4	....	....	....	....	....	....
Hildreth's Yellow Dent ....	....	....	69.6	42.4	....	....	....	....
Champion White Pearl .....	....	....	....	....	32.5	....	....	....

AVERAGES FOR SECTION I.

(Northwest Missouri.)

In the five-year averages, Reid's Yellow Dent, ranks first in yield, Boone County White second, Leaming third, St. Charles White fourth, and Silvermine fifth.

In the 1906, 1907, 1908 and 1909 average, the order is as follows: Reid's Yellow Dent, Boone County White, St. Charles Yellow, Leaming and Hogue's Yellow Dent, Johnson County White, St. Charles White and Silvermine.

In the 1907, 1908, and 1909 average, the order stands: Commercial White, Reid's Yellow Dent, Boone County White and St. Charles Yellow, Leaming, Johnson County White, St. Charles White and Silvermine.

It will be seen that Reid's Yellow Dent shows a special adaptation for this section but with Boone County White and Commercial White yielding high. St. Charles Yellow and Leaming also rank well.

TABLE SHOWING AVERAGE YIELDS IN BUSHELS PER ACRE FOR SECTION II. (Southwest Missouri).

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
St. Charles White	58.6	40.1	30.0	39.6	29.5	32.4	34.8	38.1
Boone County White	58.2	30.7	36.7	40.8	29.3	34.3	33.2	36.5
Reid's Yellow Dent	52.9	28.8	34.4	34.4	26.6	30.0	30.3	33.8
Leaming	51.5	26.9	33.5	35.3	25.3	30.6	29.6	32.7
Commercial White .....	....	....	36.5	44.8	29.9	35.9	....	....
St. Charles Yellow .....	....	26.2	34.0	39.4	27.9	32.6	21.3	....
Cartner	49.6	20.2	35.0	35.6	....	....	....	....
Johnson County White .....	....	31.7	31.1	38.5	30.1	32.9	33.0	....
Silvermine .....	....	29.3	36.7	34.2	25.5	30.3	29.3	....
Hogue's Yellow Dent .....	....	26.4	33.0	32.2	25.9	29.7	28.5	....
Farmers Interest .....	....	27.5	38.8	....	....	....	....	....
Legal Tender .....	....	27.9	36.3	35.7	....	....	....	....
Golden Eagle .....	....	26.7	....	....	....	....	....	....
McCauley's White Dent ....	....	33.9	....	....	....	....	....	....
Hildreth's Yellow Dent ....	....	....	31.9	40.8	....	....	....	....
Champion White Pearl .....	....	....	....	....	29.0	....	....	....

AVERAGES FOR SECTION II.

(Southwest Missouri.)

In the five-year averages for Section II the order of the varieties as to yield is as follows: St. Charles White, Boone County White, Reid's Yellow Dent and Leaming.

In the 1906, 1907, 1908 and 1909 averages, the order is as follows: St. Charles White, Boone County White, Johnson County White, St. Charles Yellow, Reid's Yellow Dent, Leaming, Silvermine and Hogue's Yellow Dent.

In the averages for 1907, 1908 and 1909 the order stands: Commercial White, Boone County White, Johnson County White, St. Charles Yellow, St. Charles White, Leaming, Silvermine, Reid's Yellow Dent, and Hogue's Yellow Dent.

It will be noticed that Commercial White stands out as the leading yielder in the years it has been in the test, while St. Charles White, Boone County White and Johnson County White average well. Reid's Yellow Dent and Leaming average rather low in this section.

TABLE SHOWING THE YIELDS IN
BUSHELS PER ACRE FOR SECTION
IV. (Southeast Missouri Lowlands).

VARIETY.	1905	1906	1907	1908	1909
Boone County White	62.7	....	....	....
Leaming	59.7	....	....	....
St. Charles White	66.2	....	....	....
Reid's Yellow Dent	61.7	....	....	....
Commercial White
St. Charles Yellow	61.2	....	....	....
Cartner
Johnson County White	67.6	....	....	....
Silvermine
Hogue's Yellow Dent
Farmers Interest	66.4	....	....	....
Legal Tender	62.9	....	....	....
Golden Eagle
McCauley's White Dent
Hildreth's Yellow Dent
Champion White Pearl

Note: Only one report received from this section.

YIELDS FOR SECTION IV.

(Southeast Missouri Lowlands.)

Only one report was received from Section IV which gave accurate yields. This shows Johnson County White and St. Charles White as the highest yielders with the next varieties, Legal Tender, Boone County White, Reid's Yellow Dent and St. Charles Yellow, Leaming, and Legal Tender following in the order named.

On the whole St. Charles White is one of the most common varieties grown in this section and it is to be recommended together with Johnson County White, Legal Tender and Boone County White.

TABLE SHOWING THE AVERAGE YIELDS IN BUSHELS
PER ACRE FOR SECTION V. (East Central
River Counties).

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Boone County White	70.3	34.3	68.4	72.2	60.1	66.6	54.5	57.7
Leaming	53.1	35.2	72.1	69.7	54.0	63.9	59.1	57.6
Reid's Yellow Dent	66.1	39.0	56.6	63.7	62.4	61.3	55.1	57.5
St. Charles White	49.1	39.2	75.1	62.6	63.2	65.3	57.8	55.9
Commercial White .....	....	....	86.4	36.0	62.8	62.0	....	....
St. Charles Yellow	39.5	17.0	63.1	70.0	63.2	65.9	57.7	53.2
Cartner	65.4	....	64.6	69.8	....	....	....	....
Johnson County White .....	....	26.5	67.6	70.2	60.3	65.6	50.9	....
Silvermine .....	....	22.5	57.8	35.0	56.6	51.5	45.7	....
Hogue's Yellow Dent .....	....	....	57.8	39.5	60.8	54.7	....	....
Farmers' Interest .....	....	39.4	70.6	....	....	....	....	....
Legal Tender .....	....	37.2	66.9	70.4	....	....	....	....
Golden Eagle .....	....	18.0	....	....	....	....	....	....
McCauley's White Dent ....	....	....	....	....	....	....	....	....
Hildreth's Yellow Dent ....	....	....	60.1	68.5	....	....	....	....
Champion White Pearl .....	....	....	....	....	....	....	....	....

AVERAGES FOR SECTION V.

(East Central River Counties.)

The five-year average for Section V shows Boone County White to yield first, Leaming second, Reid's Yellow Dent third, St. Charles White fourth, and St. Charles Yellow fifth.

In the averages for 1906, 1907, 1908 and 1909 the order stands: Leaming, St. Charles White, St. Charles Yellow, Reid's Yellow Dent, Boone County White, Johnson County White and Silvermine.

In the 1907, 1908 and 1909 averages, the order stands: Boone County White, St. Charles Yellow, Johnson County White, St. Charles White, Leaming, Commercial White, Reid's Yellow Dent, Hogue's Yellow Dent and Silvermine.

It will be seen that there is quite a wide variation in the rank of the various varieties in the different averages due undoubtedly to the small number of tests reported. On the whole, Boone County White, St. Charles Yellow, St. Charles White and Leaming are the varieties giving most consistent returns.

TABLE SHOWING THE AVERAGE YIELDS IN BUSHELS
PER ACRE FOR SECTION VI.

(Northeast Missouri).

VARIETY.	Average.							
	1905	1906	1907	1908	1909	1907-9	1906-9	1905-9
Boone County White	60.3	52.1	53.0	42.0	36.2	42.2	44.9	45.8
Leaming	62.7	54.1	49.0	37.1	35.7	39.6	42.9	44.1
St. Charles White	48.6	51.7	45.8	40.5	35.3	40.7	41.8	42.1
Reid's Yellow Dent	63.5	46.8	48.6	39.2	35.9	39.9	41.8	41.4
Commercial White .....	....	....	53.2	42.6	32.0	39.4	....	....
St. Charles Yellow .....	....	22.8	45.2	39.7	35.2	39.2	38.0	41.1
Cartner	52.0	....	43.9	39.7	....	....	....	....
Johnson County White .....	....	16.9	49.1	40.2	36.6	40.8	39.9	....
Silvermine	45.8	43.6	41.0	34.8	34.4	37.7	38.3	38.6
Hogue's Yellow Dent .....	....	47.2	44.3	38.0	35.6	38.1	39.7	....
Farmers Interest .....	....	50.9	54.8	....	....	....	....	....
Legal Tender .....	....	47.9	48.5	39.9	....	....	....	....
Golden Eagle .....	....	41.2	....	....	....	....	....	....
McCauley's White Dent ....	....	29.7	....	....	....	....	....	....
Hildreth's Yellow Dent .....	....	....	51.3	37.1	....	....	....	....
Champion White Pearl .....	....	....	....	....	35.4	....	....	....

AVERAGES FOR SECTION VI.

(Northeast Missouri.)

In the five-year averages for Section VI the Boone County White ranks first, Leaming second, St. Charles White third, Reid's Yellow Dent fourth, St. Charles Yellow fifth, and Silvermine sixth.

In the averages for 1906, 1907, 1908 and 1909 the order is as follows: Boone County White, Leaming, St. Charles White and Reid's Yellow Dent, Johnson County White, Hogue's Yellow Dent, Silvermine and St. Charles Yellow.

In the averages for 1907, 1908 and 1909 the order stands: Boone County White, Johnson County White, St. Charles White, Reid's Yellow Dent, Leaming, Commercial White, St. Charles Yellow, Hogue's Yellow Dent and Silvermine.

In general it will be seen that for this section Boone County White easily leads as the highest yielder for all averages while Leaming, St. Charles White, Reid's Yellow Dent and Johnson County average well.

RELATIVE POPULARITY OF VARIETIES.

Each co-operator was asked to report his preferences among the varieties tested, giving a first, second and third choice. The matters which should determine these preferences were left entirely to the co-operators, and it is probable that in addition to yield, such matters as time of maturity, soundness, ease of husking, stalk growth and lodging were given much weight. Not all of the co-operators reported on this matter but the summary of results secured is shown in the following table:

TABLE SHOWING THE NUMBER OF MEN PREFERRING THE VARIOUS VARIETIES.

VARIETY.	First choice.	Second choice.	Third choice.	Rating.
Boone County White	37	18	14	1155
Commercial White	18	6	9	835
Reid's Yellow Dent	12	25	13	740
St. Charles Yellow	14	16	9	635
Johnson County White	9	6	17	400
Leaming	4	12	9	325
St. Charles White	5	7	8	270
Hogue's Yellow Dent	5	4	7	220
Silvermine	4	4	6	190

It will be seen that Boone County White easily leads in popularity, while Commercial White, Reid's Yellow Dent and St. Charles Yellow follow in the order named. The figures in the column giving a numerical rating of the popularity of the varieties, were secured by allowing 25 points for each first choice, 15 for second and 5 for third.

VARIATIONS DUE TO SEASON.

In testing varieties of corn too much emphasis should not be placed upon the results of a single season. It represents a comparative trial of a number of varieties under one set of conditions only, and these may not be representative of the average season. With other seasonal conditions the order of yields of the various varieties may be markedly changed. This has been true in a number of instances in these co-operative tests. It has also frequently been observed in tests at the Experiment Station.

The causes for this variation in yield as effected by seasonal conditions are not easy to determine, but there are doubtless a number of factors concerned. The moisture supply is undoubtedly the most important of these. The most vital period in the growth of corn is during the time the ear is forming, and any deficiencies of moisture at this particular time will have a pronounced effect in decreasing the yield. It is for this reason that the late summer drought is of so much injury; and the drier the soil naturally, the greater the effect of this drought upon the crop. The particular stage of growth therefore, in which dry weather occurs is very important in influencing the yield. Frequently an early variety will pass the crucial stage of growth before the drought comes on, while later varieties will be greatly affected. The reverse may also sometimes be true as where the drought comes earlier and is followed by good rains. In such cases the early varieties may be caught while the later varieties may pass over the drought period before the ear forming stage is fully reached, in which instance the early corn will be the one which will suffer most. It will be seen therefore that slight variations in the time of maturing of the varieties may have considerable effect upon their productiveness in any given season. Even two or three days difference in the time of a rain fall during a droughty period sometimes appreciably affects the comparative yields of different varieties. Where intensive shallow cultivation is followed during the droughty period, this goes a long way towards so conserving the soil moisture as to make this variation of much less importance.

Another factor which undoubtedly enters into the moisture relations as affecting yields, is the greater power of certain varieties to resist drought, although it is not quite clear just what characters of the plant indicate drought resistance. The Hogue's Yellow Dent included in these tests, comes from the region of Nebraska with a less rainfall than is common in most parts of Missouri and one of its striking characters is its rather narrow leaf which would indicate a smaller transpiration of moisture. This seems to be one of the reasons for its adaptability to Nebraska conditions. On the other hand some of the varieties which seem to be as drought resistant as any in these tests have rather wide leaf growth, such as the St. Charles White and Commercial White. The experiments have not given conclusive evidence of the relative drought resistance of any of these varieties and this is a matter which still remains to be investigated. It is quite probable that a great deal of the drought resistance that has been reported for various varieties of corn may have been due to the stage of growth of the variety when the drought was at its worst. There is evidently an appreciable difference in the ability of various varieties to stand dry weather, and it is hoped that further experiments will demonstrate the relation which these varieties bear to droughty conditions.

VARIATIONS DUE TO SOIL.

The effect of the soil upon corn yields is everywhere recognized as very striking, and the adaptation of various varieties to different soils is a matter of common observation among farmers. For instance on rich soils the large varieties are almost invariably to be preferred, while on thin soils, the earlier and smaller varieties are better adapted. Here again however, no very fine distinctions have been worked out as to the relations of distinct soil types to the yields of the various varieties, other than the matter of fertility. It will be noticed that in observing the yields of Section III, which includes the Ozark region, that Boone County White, which is a large corn, adapted particularly to rich lands, leads in yield; and to one not acquainted with the Ozark conditions, this would not seem to be in accord with the above statements. It must be remembered however, that the land which is used for corn in the Ozark region is almost invariably the better valley lands and bottoms. These variety tests therefore apply more particularly to these lands than to the Ozark upland property. It will be noticed too that Boone County White is almost invariably the highest yielding variety in the various sections, as well as in the average of the whole state. This may in part be due to the fact that in spite of the persistent recommendations of the Experiment Station that these varieties be tested on average lands, most farmers will give them a little better than the average soil, so that the Boone County White and the larger varieties have a better chance than the smaller varieties. This may partially account too, for the rather low yields of the Silvermine and Hogue's Yellow Dent, two rather early, small varieties.

An attempt was made to average the results of these tests on the basis of soil types within the various sections, but the data secured from the co-operators regarding the soil was found to be too unreliable to make these results accurate. In general however, the varieties which seem best adapted to rich lands are the Boone County White, Johnson County White, the large strain of St. Charles White among white varieties and Reid's Yellow Dent and St. Charles Yellow among yellow varieties.

For lands of medium fertility the white varieties that seem to be best adapted are the Commercial White and the smaller strain of St. Charles White, while among yellow varieties the Leaming seems best adapted.

For lands of low fertility the smaller strain of St. Charles White among white varieties, and the Leaming among yellow varieties are seemingly as hardy as any. For dry, poor lands which suffer from drought, the Silvermine has a better adaptation as it is early and will usually escape serious injury from the dry weather.

BARREN STALKS.

No reliable data has been secured from the co-operative tests regarding the tendency to barrenness among the various varieties, since the difficulty of determining just what shall be considered a barren stalk prevents the securing of accurate data from the co-operators regarding this matter. There are, as a matter of fact, very few absolutely barren stalks, that is, stalks which bear no shoots whatever; and there are of course all gradations between stalks bearing ears of normal size and those bearing merely undeveloped shoots. As a rule, only those stalks are considered barren which have no development of grain on the cob, this, of course, usually occurring upon stalks bearing very poorly developed shoots.

The effects of thickness of stand, of vigor of plants, and the effect of season seem to be the controlling factors in the matter of barrenness. Where stalks have plenty of plant food and moisture, due either to a thin stand or to the effect of soil and season, the production of barren stalks is very low, while in the case of unfavorable conditions, due to a bad season or to crowding, the production of barren stalks is much increased. The following table shows results secured at Columbia with varying rates of planting, which, it should be said, agree closely with those of other experiment stations in this matter.

EXPERIMENTS IN THICKNESS OF PLANTING AT THE MISSOURI EXPERIMENT STATION.

No. stalks per hill.	Yield bu. per acre.	No. barren stalks.	Per cent of barren stalks.
2	46	54	9.00
3	55	88	10.26
4	54	152	14.35
5	55	211	17.40

It will be seen from this data that the barrenness increased with the thickness of planting, due evidently to a less amount of plant food and moisture per plant, and it would seem that the matter of barrenness is largely one of environment. Undoubtedly heredity has considerable influence in this matter since there is a variation in the barrenness of different varieties grown side by side, but a part of this variation may be due to the way these various varieties were affected by the season. Given a good soil and good season with corn planted only

moderately thick and with most varieties the matter of barrenness will be of little consequence.

Whether the matter of allowing a barren salk to develop in the field is of sufficient injury to warrant the expense of its removal through detasseling or otherwise, is difficult to determine. It is improbable that crossing with a barren stalk, which is barren because of unfavorable conditions, should in any way tend to increase barrenness. It is possible that crossing with a stalk that is barren by nature,—that is one bearing no shoots whatever,—might have some detrimental effect on yield, but how much injury, if any, is not shown. It must be remembered that since barren stalks produce no seed, there is a tendency for them to be weeded out by nature. Experiments are now under way at this station which are planned to throw some light on this point.

The difficulty of detasseling barren stalks at the proper time to prevent their shedding pollen is an important factor, since pollination begins soon after the tassel comes out of the "boot" and at a time when it is almost impossible to determine whether or not the stalk is to form an ear. The shoots at this time are just appearing and it is practically impossible to tell whether they will develop normally or fail to produce an ear. The only distinct characteristics of barren stalks we have been able to detect as yet, are very upstanding, fleshy leaves, and distinctly round stalks, almost devoid of the groove between nodes.

VARIETY TESTS OF CORN AT COLUMBIA.

In the past five years forty-two different varieties of corn have been tested on the station farm at Columbia. Some of these have been continued through the five seasons, while others have been dropped and new ones added later in the period. Those discontinued were either not adapted to our conditions, were very similar to others, or it was impossible to get seed of the variety.

The soil on which these tests were made is an upland loam, representative of this part of the state. The plots have never received any commercial fertilizer of any sort, but the land has been regularly rotated with other crops, and it is in a good state of fertility. Boone County White was used as a check, and every other plot, or every third plot, was planted with this variety, so that any variation in the yield of these check plots would measure any possible variation in the fertility of the soil. By striking an average of these check plots and then comparing the yields of checks on each side of the variety, the yield of each has been calculated to uniform soil conditions. The yields given in the accompanying table, therefore, indicate the yields of the varieties on soil of uniform fertility,

YIELD OF CORN VARIETIES AT COLUMBIA. BUSHEL
PER ACRE.

VARIETY.	1905— Ear bu.	1906— Ear bu.	1907— Ear bu.	1908— Ear bu.	1908— Shelled bu.	1909— Ear bu.	1909— Shelled bu.
St. Charles White	53.1	64.1	80.3	53.8	52.22	60.6	64.03
Boone County White	53.8	62.5	81.2	42.7	40.82	54.2	56.30
Leaming	46.1	67.9	64.9	36.9	37.54	54.5	57.22
Reid's Yellow Dent	41.7	67.0	64.3	36.5	36.66	52.2	54.76
Cartner	49.2	44.8	68.3	33.3	33.06	51.9	55.70
Iowa Silvermine	54.4	59.0	40.8	34.9	35.34	46.9	47.79
St. Charles Yellow .....	....	67.1	83.9	40.1	38.97	....	....
Farmers' Interest .....	....	63.3	79.7	43.2	42.46	....	....
Johnson County White .....	....	67.1	74.9	42.8	42.07	57.1	59.1
Legal Tender .....	....	59.0	75.8	36.7	35.94	....	....
Hogue's Yellow Dent .....	....	51.3	40.9	41.1	42.33	53.4	55.27
Hildreth's Yellow Dent .....	....	....	92.2	34.9	29.60	52.5	55.5
Boone County Special	46.5	59.9	....	....	....	....	....
Gold Standard Leaming	46.1	29.3	....	....	....	....	....
Funk's Silver King	41.3	32.5	....	....	....	....	....
Funk's Yellow Dent	47.6	....	....	....	....	....	....
Cob Pipe .....	....	....	92.5	....	....	65.9	64.24
Commercial White .....	....	....	86.8	46.1	40.85	57.5	59.75
White Superior .....	....	....	64.8	....	....	47.3	....
Champion White Pearl .....	....	....	....	47.0	45.12	47.3	49.28
Funk's 90 Day	43.5	....	....	....	....	....	....
Kansas Sunflower .....	....	....	....	43.0	38.28	....	....
McCauley's White Dent .....	....	....	....	41.5	....	....	....
Golden Beauty .....	....	....	....	41.0	37.99	....	....
Ratekin's Yellow Dent	40.4	....	....	....	....	....	....
Marlboro Prolific .....	....	....	....	40.1	38.42	....	....
St. Charles Special	40.0	....	....	....	....	....	....
Roseland .....	....	....	....	39.7	33.60	....	....
Cocke's Prolific .....	....	....	....	37.4	32.94	....	....
Golden Eagle .....	....	....	....	36.5	37.37	....	....
Graves' Yellow Dent .....	....	....	....	36.1	34.14	....	....
Illinois Silvermine .....	....	....	....	36.0	36.45	63.1	64.3
McMacken's Gourd .....	....	....	....	36.0	33.06	....	....
Diamond Joe .....	....	....	....	30.7	28.95	57.9	59.92
Eclipse .....	....	....	....	....	....	46.9	49.05
Pride of Nishna .....	....	....	....	....	....	45.6	47.28
Farmers' Reliance .....	....	....	....	....	....	40.6	41.08
Lenocher's Homestead .....	....	....	....	....	....	46.6	47.16
Queen of Nishna .....	....	....	....	....	....	44.6	47.90
Clay County White .....	....	....	....	....	....	48.8	51.39
Pride of the North .....	....	....	....	....	....	38.0	41.08

**AVERAGE YIELDS OF CORN VARIETIES AT
COLUMBIA.**

VARIETY.	Average yield of field dry corn, 1905-9	Average yield of field dry corn, 1906-8	Average yield of field dry corn, 1907-9.	Average yield for 1908 and 1909	
				Field dry ear	Dry shelled
St. Charles White	62.4	64.7	64.9	57.2	58.12
Johnson County White .....	....	60.5	58.3	50.0	50.58
Boone County White	58.9	60.2	59.4	48.5	48.56
Leaming	54.1	56.1	52.1	45.7	47.38
Reid's Yellow Dent	52.3	55.0	51.0	44.4	45.71
Cartner	49.5	49.6	51.2	42.6	44.88
Iowa Silvermine	47.2	45.4	40.9	40.9	41.56
Commercial White .....	....	....	63.5	51.8	50.30
Hildreth's Yellow Dent ....	....	....	59.8	43.7	42.55
Illinois Silvermine .....	....	....	....	49.6	50.37
Hogue's Yellow Dent .....	....	....	45.1	47.3	48.80
Champion White Pearl .....	....	....	....	47.2	47.25
Diamond Joe .....	....	....	....	44.3	44.43

It will be seen from this table that St. Charles White has given the highest average yield for the five years as well as for the four, three and two year averages. The order of the yield in the five year average is, St. Charles White, Boone County White, Leaming, Reid's Yellow Dent, Cartner and Iowa Silvermine. In the four year averages, the Johnson County White follows the St. Charles White in yield, with Boone County White third. In the three year average, the Commercial White ranks next to St. Charles White with Hildreth's Yellow Dent and Boone County White next in order. In the two year average, Commercial White again follows the St. Charles White with Johnson County White, Illinois Silvermine and Boone County White following in the order given.

PER CENT OF SHELLED CORN.

The per cent of corn to cob is naturally an important factor in determining the value of a corn variety. The depth of kernel, and consequently the per cent of corn to cob, have always been given great emphasis by the practical man. Experiments indicate, however, that so far as yield per acre is concerned, too much attention has frequently been given this matter. A kernel of medium depth, all things considered, seems to give better results than one that is very deep or one that is very shallow.

Determinations have been made of the percent of shelled corn found in the varieties tested in 1908 and 1909 when thoroughly air dried. It will be noticed that the majority of these varieties when thoroughly dry in the spring will shell considerably more bushels of corn figured at 56 lbs. per bushel than when figured at 70 lbs. of ear corn.

THE PER CENT OF SHELLED CORN FOUND IN THE VARIETIES TESTED AT COLUMBIA.

VARIETY.	1908		VARIETY.	1909	
	% of shelled corn, April 23d.	100 bu. of dry ear corn when shelled will equal—Bushels.		% of shelled corn, April 23d.	100 bu. of dry ear corn when shelled will equal—Bushels.
Golden Eagle	89.1	111.3	Pride of the North	86.5	108.1
Cartner	88.3	110.3	Queen of Nishna	85.9	107.4
Hill Corn	87.5	109.3	Cartner	85.8	107.3
Legal Tender	86.5	108.1	Hildreth's Yellow Dent	84.6	105.7
St. Charles White	86.0	107.5	St. Charles White	84.6	105.7
Hogue's Yellow Dent	85.9	107.3	St. Charles Yellow	84.2	105.3
Leaming	85.7	107.1	Clay County White	84.2	105.3
McCauley's White Dent	85.1	106.3	Leaming	84.0	105.0
St. Charles Yellow	85.0	106.2	Reid's Yellow Dent	83.9	104.9
Iowa Silvermine	84.7	105.8	Eclipse.....	83.7	104.6
Reid's Yellow Dent	84.3	105.3	Champion White Pearl	83.5	104.4
Graves' Yellow Dent	84.2	105.3	Commercial White	83.1	103.9
Champion White Pearl	83.9	104.8	Boone County White	83.1	103.9
Boone County White	83.8	104.7	Pride of Nishna	83.0	103.7
McMacken's Gourd Seed	83.7	104.6	Diamond Joe	82.8	103.5
Kansas Sunflower	83.6	104.5	Hogue's Yellow Dent	82.8	103.5
Marlboro Prolific	83.6	104.5	Johnson County White	82.8	103.5
Diamond Joe	83.3	104.1	Silvermine	81.5	101.9
Roseland	83.3	104.1	Farmers' Reliance	81.0	101.2
Hildreth's Yellow Dent	83.1	103.8	Lenocher's Homestead	81.0	101.2
Johnson County White	83.0	103.8	Cob Pipe	78.0	97.5
Golden Beauty	82.7	103.3			
Commercial White	81.2	101.5			
Cocke's Prolific	77.4	96.7			

STALK CHARACTERISTICS.

In the accompanying table of stalk characteristics the varieties have been arranged in order of height of stalk from highest to lowest. It will be noticed that the varieties which are among the more prominent in Missouri are included among those having a height of stalk between eight and ten feet. It will be seen, too, that while yield is in general greater among the larger growing varieties, this is not universally true.

It will be observed that while there is a general relation between height of stalk and height of ear on the stalk, this is by no means absolute. For instance, Boone County White which gave the third highest stalk growth, averaged but .1 of a foot greater in the height of ear than did Golden Beauty which is next to the lowest in height of stalk. The height of stalk naturally bears quite a direct relation to the yield of stover, although there are marked exceptions. For instance, Cook's Prolific and Marlboro's Prolific, two varieties having a medium to small height of stalk are among the heaviest yielders in stover, due evidently to a stocky growth and a large leaf development. Both of these are southern varieties, however, which largely accounts for this character. The Leaming is rather a low producer of stover as compared with its height while the Illinois Silvermine and Golden Eagle are very low in total stover production.

The number of pounds of corn to one pound of stover is very variable, ranging from .38 pound in the case of St. Charles Yellow, to 1.2 pounds in the case of the Golden Eagle. In general, the highest yielding varieties are among the medium to large producers in stover. As a general rule, the heaviest ears are found on the large to medium large growing varieties although there are some exceptions to this rule. Golden Beauty, for instance, with a yield of stover ranking sixth from the lowest, gave the highest average weight of ear. Attention is called to the low weight of ear in Cocke's Prolific and Marlboro's Prolific, two varieties with high yield of stover. As mentioned these are southern varieties and they are of the "prolific" type, bearing as a rule two or more small ears per stalk rather than a single ear. This accounts for the low average weight of ear on these varieties.

CHARACTERISTICS OF CORN VARIETIES GROWN AT COLUMBIA (Season 1908).

VARIETY.	Ht. of stalk.	Ht. of ear.	General vigor.	Brace root development.	Drop of ear.	Wt. corn per acre.	Wt. stover per acre in lbs	No. lbs. corn from 1 lb. stover.	Av. wt. of ears—ozs.
Johnson County White	10.3	5.9	good	med	med	3045.5	4101.0	.74	11.0
Hildreth's Yellow Dent	10.0	6.2	good	good	med	2643.5	6850.0	.38	13.0
St. Charles Yellow	10.0	5.2	good	med	med	2412.2	4372.5	.55	12.0
Boone County White	9.9	4.6	good	med	med	3181.3	3684.0	.86	11.7
Farmers Interest	9.9	4.6	med	med	med	2578.2	3548.2	.72	11.6
Roseland	9.7	4.2	med	poor	poor	3035.0	4272.0	.71	11.7
Commercial White	9.7	4.3	med	med	poor	2643.5	4151.3	.63	13.0
St. Charles White	9.2	4.8	med	med	med	3422.5	3181.3	1.08	12.0
Leaming	9.2	5.0	med	med	med	2186.1	2890.0	.75	11.2
Cartner	9.2	5.1	good	med	med	2261.5	3402.4	.66	11.2
Hogue's Yellow Dent	9.1	4.8	good	med	good	3095.8	3015.3	1.02	10.4
Champion White Pearl	9.1	4.5	good	med	good	3367.0	3769.0	.89	11.7
Reid's Yellow Dent	9.0	4.3	good	med	good	2312.0	2874.7	.81	10.7
Kansas Sunflower	8.8	4.5	good	med	poor	3045.5	3970.0	.76	9.4
Iowa Silvermine	8.7	4.3	med	med	med	2477.5	2628.5	.94	9.4
Marlboro Prolific	8.5	4.9	med	med	poor	2995.2	4473.0	.67	8.8
Diamond Joe	8.5	4.0	good	med	good	2995.5	3282.0	.96	10.8
McCauley's White Dent	8.4	4.7	med	med	med	3266.5	3608.5	.90	12.0
Legal Tender	8.4	4.8	med	med	good	2693.8	3493.0	.77	10.1
Illinois Silvermine	8.3	3.7	med	med	med	2261.5	1975.1	1.14	9.5
McMacken's Gourd Seed	8.1	5.0	med	good	poor	2012.0	3407.5	.59	13.7
Golden Eagle	8.0	3.6	med	med	good	2327.0	1940.0	1.20	10.0
Graves' Yellow Dent	7.8	4.0	good	good	good	2327.0	2879.0	.80	7.0
Golden Beauty	7.5	4.5	good	good	poor	3216.5	2930.0	1.10	14.0
Cocke's Prolific	7.4	5.2	poor	med	poor	3085.0	4101.0	.75	9.6

SHRINKAGE OF EAR CORN.

The yields of the different varieties reported in this bulletin are given in bushels of ear corn per acre as weighed in the fall. It is, of course, understood that there is always considerable shrinkage during the winter due to loss of moisture. This shrinkage is influenced by the character of the weather in the fall, by the variety of corn, and by the time of gathering, so it is impossible to estimate the amount of such shrinkage that may take place.

The Illinois Station reports a shrinkage varying from 12 per cent to 20 per cent for an average of two years at two different points in the state. In Bulletin 45, the Iowa Experiment Station reports a shrinkage of 19.4 per cent for one year's test, while in Bulletin 77, of the same Station an average shrinkage of 20.9 per cent for four varieties is given.

Determinations were made of the shrinkage of these varieties between gathering time in October, 1908, and April 23, 1909. It was found that the shrinkage varied in the different varieties from four per cent to 14 per cent with an average of 9.3 per cent. This means that if a variety would shrink as much as the average, 100 bushels of ear corn in the fall when figured at 70 lbs. per bushel would equal 90.7 bushels the following spring. In figuring these results 70 lbs. has been used as the weight per bushel at gathering time, although it is recognized that as corn is ordinarily measured in the fall this weight is rather low. However, as there is no uniform rule governing this matter in Missouri, and as these varieties have always been very ripe before gathering, it was considered best to use the 70 lb. standard.

In comparing this table with the one giving the per cent of shelled corn in the various varieties, it will be seen that if bushels of shelled corn were figured in the spring instead of ear corn, the overrun due to the high shelling capacity of many of the varieties largely offsets the shrinkage. Consequently an examination of the table of yields will show very little difference between the number of bushels of ear corn of each variety in the fall, figured at 70 pounds, and the number of bushels of shelled corn in the spring figured at 56 pounds.

Results of these shrinkage determinations are shown in the following table:

PER CENT OF MOISTURE LOST BY
THE VARIOUS VARIETIES FROM
HUSKING TIME, OCTOBER
1903, UNTIL APRIL 23, 1909.

VARIETY.	% of moisture lost.	100 bu. of 70-lb. ear corn in fall will equal in spring— bushels.
Hogue's Yellow Dent	4.0	96.0
Illinois Silvermine	4.3	95.7
Reid's Yellow Dent	4.6	95.4
Leaming	5.0	95.0
Johnson County White	5.3	94.7
Golden Eagle	8.0	92.0
Marlboro Prolific	8.3	91.7
Champion White Pearl	8.4	91.6
St. Charles Yellow	8.5	91.5
Boone County White	8.7	91.3
Cocke's Prolific	8.9	91.1
Diamond Joe	9.4	90.6
Legal Tender	9.5	90.5
Hill Corn	9.5	90.5
St. Charles White	9.7	90.3
Cartner	10.0	90.0
Graves' Yellow Dent	10.2	89.8
Golden Beauty	10.3	89.7
McMacken's Gourd Seed	12.2	87.8
Commercial White	12.7	87.3
Kansas Sunflower	14.8	85.2
Hildreth's Yellow Dent	18.3	81.7
Roseland	18.7	81.3
Average	9.3	90.7

RELATION OF COLOR OF CORN TO YIELD.

There is a prevalent opinion among farmers that the color of corn has an important influence upon the yield, and inquiries are constantly being received at the Experiment Station regarding this matter. To answer these questions, the comparative yields of the yellow and white varieties in these co-operative tests for the various years as well as those at the Experiment Station have been averaged. The results are given in the following table:

	White varieties— Bushels per acre.	Yellow varieties— Bushels per acre.
Cooperative tests	42.4	42.5
Tests at Columbia	54.3	40.1

The United States Department of Agriculture in summing up the tests of varieties made at all the experiment stations of the United States has found that in 1267 comparative tests with 490 varieties, the average yield of 217 white varieties has been 2.5 bushels per acre in excess of the average yield of 273 yellow varieties.

It will be seen from these results that while the yield of corn is not determined by its color, it is evidently true that when all averages are considered, there seems to be more high yielding white varieties than yellow varieties, although the average of the cooperative tests which represent a total of approximately 50,000 bushels of white, and the same amount of yellow corn, show practically no difference in this respect. The experiments at Columbia however, show a greater number of high yielding white varieties than yellow varieties. As a matter of fact, there are many yellow varieties that will outyield many white varieties, while the reverse is just as true. In other words the yield of corn is not dependent upon color but upon such characteristics as size, time of maturity, adaptability to the soil and region, character of kernel, per cent of corn to cob, etc.

RELATION OF COLOR OF CORN TO FEEDING VALUE.

The opinion that yellow corn feeds better than white corn is a very common one throughout the corn belt states and many men seem to be perfectly confident that more gain in animals can be produced with yellow corn than with white. That this opinion is in the main erroneous is shown by the following table compiled by Jenkins and Winton from the average analysis of 28 varieties of yellow corn and 30 varieties of white corn.

	Protein.	Fat.	Nitrogen free Extract.	Fiber.	Ash.
White	11.6	5.8	78.4	2.5	1.7
Yellow	11.5	5.4	78.9	2.5	1.8

Evidently the feeding value of yellow and white corn, when all varieties are compared, will be approximately the same. There are doubtless certain varieties or strains of yellow corn which contain a larger proportion of protein and fat than certain varieties and strains of white corn, but on the other hand the reverse is just as true. The same variations also exist among varieties of like color. Doubtless many farmers have picked seed corn which is higher in protein content, for instance, than that picked by other men, since there is quite a wide range between the different ears in this respect, whether they be white or yellow. The protein content is correlated with certain physical characters such as horniness of kernel, while the oil content is correlated usually with a large germ. By the persistent selection for one or the other of these characters it is perfectly possible to appreciably change the composition of corn. This merely goes to prove however, that the whole matter of feeding value and composition is one of variety and strain rather than of color, and there is no evidence on which to base an opinion that there is a difference in feeding value between the yellow and white varieties where color alone is considered.

RELATION OF THE CHARACTER OF THE KERNEL TO PRODUCTIVENESS.

There is considerable evidence that the composition and character of the kernel has an important effect upon the early growth of corn, and also upon the yield. Experiments are now in progress at this station bearing upon this point. While these results are not conclusive, the experiments to date have shown a strong correlation between density of kernel and yield, and between size of germ and yield. In other words the highest yielding types are usually those having a fairly horny and dense kernel, rather than a starchy kernel, and a large germ, rather than a small germ. Since very deep kernels are usually starchy with small germs the types of kernel which seem to promise best results are those of medium depth. It therefore seems safe to recommend that for high yielding ears and types of corn, ears should be selected with kernels which have a medium depth, a large germ, and which are medium horny or horny in character. Such ears usually tend to the smoother types of indentation, rather than to the rough types and as a rule possess a strength of germination not found in the deeper grained, rougher and more starchy ears. From the results of these experiments thus far it would seem that the character of the kernel is of greater importance in controlling yield than most of the grosser characters of the ear. It should be observed in this connection that the Commercial White variety which has given rather uniformly high yields since its introduction into the variety tests, has a dense

kernel, with a small amount of crown starch, a medium depth and a large germ. These kernel characters are the most striking features of the ears of this variety. Boone County White and St. Charles White two of the other high yielders have kernels with a medium horny composition.

TWIN-EARED VARIETIES.

A great deal has been said regarding the possibility of developing varieties of corn which tend to bear two ears per stalk, but little has been determined regarding the character of the varieties under test in this particular matter. Experiments which have been conducted with varying rates of planting, show that the yield per stalk is determined largely by the environment of individual stalks. Where the planting is thin and the stalks have greater room, plant food and moisture, the average size of ear is increased, while it decreases with a thicker planting. It is also a matter of common observation that the richer the land the greater the number of stalks there will be which bear two ears. Likewise the smaller the variety the greater the tendency for the production of two ears per stalk, flint corn, sweet corn and popcorn being illustrations of this tendency.

So far as experiments have gone at various experiment stations, there seems little to be gained in the corn belt, with varieties of medium size, in attempting to secure more than one ear per stalk. It will mean a smaller average size of ear, poorer quality and extra labor in gathering. Where corn is to be gathered by hand one good ear per stalk appears to be more economical than two medium to small ears, or a medium sized ear and a nubbin. If the corn is to be hogged or fed to cattle on the stalk, or even if it is to be husked with a machine, it is possible that the gain from securing two ears per stalk might be worth while, but as corn is usually handled, it seems to be impractical under corn belt conditions to produce a profitable twin-eared variety.

THE POSSIBILITIES OF IMPROVING VARIETIES BY SELECTION.

There are the same possibilities of improving varieties of corn by persistent selection as there are of improving live stock by judicious mating. Practically all the varieties in these tests have been produced by the careful selection practiced by one or more men. It must be remembered too, that all varieties tend to deteriorate in the hands of the average corn grower who is not particular in selecting or in preventing mixing, and it therefore requires the constant care of men who will keep these varieties pure and well selected, to prevent their becoming

extinct. It is also perfectly possible for a man to take any variety of corn and by persistent selection along some particular line to so change it as to make an entirely new variety in appearance and type within a reasonable length of time. This cannot be done in a season, or even in a half dozen seasons, but it can be greatly changed in its general appearance within a few years. To fix a type as Reid's Dent is fixed, requires years of persistent selection. We have many men who set out to modify existing varieties, but do not follow the selection long enough to give a fixedness of type that will endure. Corn varieties can be permanently affected by careful selection, especially in adapting them to various sections or regions, but the rather common practice of selecting a variety along a certain line for two or three years and then putting it out as a new variety under a new name is to be discouraged. It makes for confusion rather than advancement.

The man who judiciously selects in order to adapt his variety of corn most thoroughly to his conditions, or who, beginning with a native local type, improves it by persistent selection to a variety of constant character, is a corn breeder in the truest sense. Such a man deserves the highest respect, not only as a farmer but as one who has accomplished something of permanent value to his community. There is just as much to be gained in corn breeding as in animal breeding for the man who has the inclination or ability to follow it. We need more corn breeders in Missouri,—men who will apply both time and thought to the study of the problem. The value of such work to the community and state should be a sufficient incentive to persistent effort, to say nothing of the financial returns open to the worker.

THE VALUE OF THE CORN BREEDING BLOCK.

The corn breeding block where ears may be planted, each in a row to itself, to determine its power to produce, is of great value to the corn breeder. The block to be of most value should contain from 80 to 100 rows, each from 75 to 100 hills long. The ground should be as uniform in fertility as possible so as to give all rows an equal chance. It should be marked out both ways with a marker or corn planter and the corn put in with a hoe. It is well to shell only one-half of each ear longitudinally, as this will give an abundance of seed for this length of row, and the rest of the ear may be preserved intact in a safe place for comparing with the corn it has produced when the rows are harvested. Men who have never tried this plan will be surprised to find differences in yield from these various ears of 50 per cent or more. It sometimes happens that one row will yield double the one lying immediately beside it. At the end of the season, if the original ears are then examined one can get some idea of the highest producing types of that particular

variety. One also has a supply of seed grown from ears that are known to be high yielding for planting his regular fields the following season.

In a test plot of 100 ears one will usually find several ears that have given particularly good yields of high quality corn. If the remainders of these high yielding ears are then shelled together and planted in an isolated plot, this will give a strain of corn grown from ears that have shown themselves to be high producers. The value of such work from an educational standpoint in learning the types of high producing ears is of very much importance in addition to the better strain of corn secured. It will pay every corn breeder to maintain such a plot for its educational value even if it is of only 50 rows.

Experiments do not indicate that results of much value can be secured within a reasonable length of time by continually selecting ears from the high yielding rows and continuing these in a breeding block each year. The mixing which comes in such a block is a great disturbing factor in such selection and the time and labor required for securing results are too great for the average corn breeder. The plan of testing out a large number of ears and the next year planting together the remnants of the few really good ones, as determined by the test, is a more practical plan.

MOVING SEED CORN FROM ONE REGION TO ANOTHER.

Every farmer should recognize that in order to secure best results from seed brought from a distance the corn must be acclimated to the region in which it is to be grown. Many farmers have been induced to buy well bred corn only to find that their first crop did not exceed, and perhaps did not equal, that produced by their unimproved variety, and they have at once discarded the new seed to return to the variety previously grown. Still others, with equally unfortunate and discouraging experiences the first year, have given the corn further trial, to find the second year's crop superior to the first in both quantity and quality; and where they continue to select from this corn for two or three years they usually report an improvement in every way as the variety becomes better adapted to their conditions. There is however, little to be feared in moving corn east or west, even as much as 250 to 300 miles so far as climatic conditions are concerned, unless one is moving corn into the drier regions of the west, but any great change north or south should be avoided. One hundred to one hundred and fifty miles should be the limit of north and south change as a rule, and the nearer to one's location the corn can be secured, the better.

Changing corn from one soil to another usually has an important influence on yield. One can rarely move corn from rich to poor land, or the reverse, with satisfaction, although there are certain varieties that seem to have a much wider adaptability in this respect than others. The larger varieties are as a rule better adapted to the richer lands, and the smallest varieties to the thinner lands, although this is not necessarily universally true. The Boone County White, the Commercial White and the St. Charles White seem to have rather a wide adaptability in this respect, although all are rather large growing varieties. Reid's Yellow Dent, on the other hand, does not seem particularly well adapted to thin lands. Undoubtedly some of the variations observed in the results of these cooperative tests are due to the necessary change in soil and region from those where these varieties were produced but obviously this can not be avoided in such experiments.

SUMMARY.

Co-Operative Tests.

1. In the averages for the entire state, Boone County White easily leads as the highest yielding and most popular variety, especially on lands above the average in fertility. It can therefore be generally recommended for practically all of the good corn lands of Missouri.

The varieties ranking next to Boone County White in the state's averages are as follows: Commercial White, St. Charles White and Reid's Yellow Dent. The first and second of these are adapted to lands of medium fertility and the St. Charles White is also well adapted to lands below the average in fertility. Reid's Yellow Dent requires land above medium fertility for best results.

2. For North Missouri as a whole Boone County White ranks first, while Commercial White, St. Charles White and Reid's Yellow Dent follow closely.

3. For South Missouri as a whole, Boone County White is the highest yielder, while St. Charles White, Johnson County White, Commercial White and Leaming ranks in the order given.

4. In Section I (Northwest Missouri) the varieties to be especially recommended, on the basis of average yield, are Reid's Yellow Dent among yellow varieties and Boone County White among white varieties. Reid's Yellow Dent outyields Boone County White slightly in this section. St. Charles Yellow and Leaming are also well adapted. These recommendations apply particularly to the better lands. For lands somewhat worn, the Leaming and Commercial White are recommended.

5. In Section II (Southwest Missouri), Commercial White and St. Charles White stand out as the varieties to be recommended according to average yield, while Boone County White and Johnson County White follow closely and are to be recommended for the better corn lands of this section. St. Charles Yellow is the yellow variety that shows best adaptation to this section and it is recommended for the richer lands.

6. In Section III (Ozark Region) Boone County White is the variety showing the best adaptation according to the yields, with Johnson County White and Leaming yielding well. Commercial White, St. Charles Yellow and St. Charles White show a fair adaptation also. These recommendations are for the valley lands and better uplands on which practically all of these tests have been conducted. For the thinner, drier uplands, the earlier, smaller varieties, such as Silvermine should be used.

7. In Section IV (Southeast Lowlands) Johnson County White and St. Charles White show the best adaptation, with Legal Tender and Boone County White next in order. Experiments have shown however, that for the larger varieties, such as the Johnson County White and Boone County White, seed must frequently be brought in from North Missouri, as in time they tend to grow too large in stalk. St. Charles White seems a better variety for continued use. The larger strain of St. Charles White should be used on the richer lands and the smaller strain on the sandy lands.

8. In Section V (East Central River Counties) Boone County White is best adapted, followed by St. Charles Yellow, St. Charles White and Leaming. The first two are recommended for the river bottoms particularly and the two last named varieties for the uplands, although they have also a fair adaptation for the bottoms.

9. In Section VI (Northeast Missouri) the varieties to be recommended according to yield are in order, Boone County White, Leaming, St. Charles White, Reid's Yellow Dent and Johnson County White. The Boone County White, Reid's Yellow Dent and Johnson County White are recommended for the richer lands and the St. Charles White and Leaming for the lands of medium to low fertility.

Tests at Columbia.

1. For the five year average the highest yielding varieties are as follows: St., Charles White, Boone County White, Leaming and Reid's Yellow Dent.

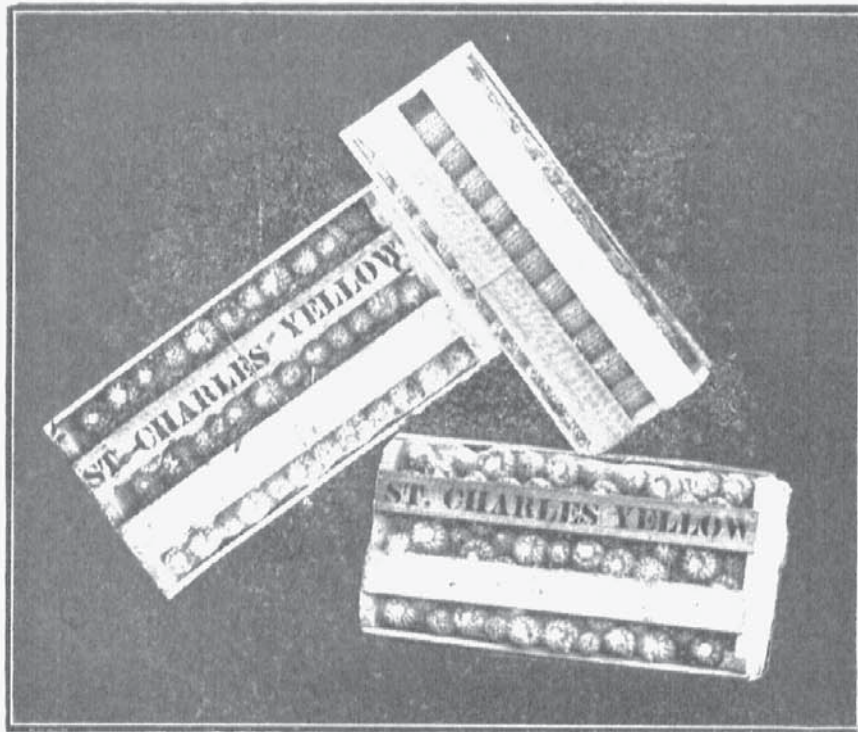
2. For the four-year average, the highest yielding varieties are as follows: St. Charles White, Johnson County White, Boone County White, Leaming, and Reid's Yellow Dent.

3. For the three-year average, the highest yielding varieties are as follows: St. Charles White, Commercial White, Hildreth's Yellow Dent, Boone County White, and Johnson County White.

4. For the two-year average, the highest yielding varieties are as follows: St. Charles White, Commercial White, Johnson County White and Boone County White.

5. Among the varieties tested there are more high yielding white varieties than yellow.

6. In these tests the yield of field-cured ear corn and of dry shelled corn is approximately the same.



A good method of crating fancy corn for shipment.
The crates are lined with wire screen.
Corn should always be
bought in the ear.