A STUDY OF CONFORMATION AND THE CORRELATION OF PARTS IN EARS OF MAIZE.

by

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CONTENTS.

Corn is pre-eminently the important cereal grain of America, and its production and study perhaps entirely overshadow that of any other single crop and yet a great many things remain to be learned about the plant before we are able to intelligently answer many of the simplest and most commonly encountered questions.

Volume upon volume has been written and page after page of statistical material has been compiled in regard to the yield of corn, the various varieties, the many soil requirements and the fertilizing problems. Not-withstanding all this, vast amount of data and all of this work that has been done, we find but comparatively little in regard to the individual ear and its various characteristics.

In spite of this lack of experimental data and authentic results, we find practically every experiment station in the country constructing a corn score card on which is described, more or less briefly, the ideal ear of corn and a percentage value given the various points according to their relative importance. At least, given in as nearly the relative importance as the authors were able with their meager data.

As for example, in the Missouri score card, we find "Shape of ear - (10) - Ears should be as nearly cylindrical as possible and have straight rows running from the butt to the tip. Rhese characters usually indicate a high percent of corn to cob and a large number of kernels of uniform size and shape for planting." This is only one example of many where the ideal is chosen as one which "will usually indicate a high percent of corn to cob."

Again in the same score card we find, "Space - (5) - There should be no open space between rows, nor between the kernels in the row, either at the crown or at the cob." Here again, reason had perhaps as much or more to do with the choice of the ideal than did the comparatively small amount of actual data available.

Still we find other statements, "The ideal kernel is slightly wedge shaped but not pointed, the length of which is approximately one and one-half times as great as the width at the widest part." In the same score card, just as in many others, the length and circumference is also specified and of course, while somewhat arbitrary, it is understood to represent the ideal.

In addition to the above mentioned things which are largely matters of external appearance of the ear,

the cob should also be considered and indeed is in all score cards, each one saying in substance that there are two extremes - the medium being the best to choose. In addition to size, the density or firmness of the cob no doubt has some importance.

Strange as it may seem, with all the studies that have been made and with all the correlations that have been secured, practically nothing is known in regard to the amount of the moisture lost by corn after harvest and the various things affecting this problem.

OBJECT OF THE INVESTIGATION.

In view of this seeming lack of data on those important points, and realizing that a careful study of a large number of ears would throw some light upon some of these fundamental relations existing between the various characters of an ear of corn, this thesis was begun in the fall of 1910.

SCOPE OF THE PROBLEM.

Not only was it decided to study the various ear characters in regard to their effect upon the shelling percent, but several other problems were included. The investigations carried on in the study of this problem may be said to cover six lines of investigation as well as various closely associated considerations. These main lines of investigation include, the relation existing between -

I. Ear charcter and shelling percent.

II. Kernel character and shelling percent.

III. Cob character and shelling percent.

IV. Ear character and rapidity of curing.

V. Kernel character and rapidity of curing.

VI. Cob character and rapidity of curing.

Of course, these various subjects serve but to indicate the line of work as the characters crossed and interlaced so completely that the actual data secured in pursuance of the investigational work was greatly increased.

WORK OF OTHER INVESTIGATORS.

An exhaustive study of the various publications revealed the fact that previous work along these lines was very limited and that in but very few cases had the problems in this investigation even been taken up at all.

An abundance of literature could be found in regard to the heredity of the various characters so far as field productivity was concerned, but beyond this but little could be found.

The Nebraska Experiment Station carried on some very interesting work in regard to the various ear and kernel characters and their germination and productivity. The Indiana and Ohio stations have both done considerable work with ear characters, but the work tends largely to the production side and therefore is found to be only slightly applicable in this connection. While in each of these cases and in many others, the ear characters as well as the kernel and perhaps the cob characters were considered, it was from a different viewpoint and therefore the results are not useful in this connection.

PLAN OF THE WORK.

The work which was begun in 1910 was divided into two distinct sections - one, the study of factors influencing the shelling percent,and the other the rate or amount of shrinkage as affected by various characters.

The 1910 Corn.

The original sample of corn; six-hundred and sixty ears of pure bred Boone County White was secured from Mr. George Hechler of Dalton, Missouri. The corn, which was grown on rather rich alluvial land, was somewhat above the average for Boone County White and had a slight tendency to run rather rough but taken as a whole, the type was good for a large strain of Boone County White corn.

In the selection of this corn, no particular pains were exercised other than to select good seed corn fairly true to the type of the variety. The selection of the seed was done in the field covering a period of time from about November first to December twentieth. Throughout the work of selection, the quality and size as well as type were uppermost in the minds of the men doing the selection with the result that the size as a whole may be slightly greater than is that of ordinary Boone County White.

To be sure, during the month and a half of time which elapsed from the beginning of the husking to the last, there was considerable unfavorable weather and this fact may have had some influence upon the quality of this corn. In addition to this fact, the corn was piled in a tightly boarded crib in considerable quantity,perhaps 200 bushel, and allowed to remain there until spring.

It can not be questioned but that a great amount of this corn, especially that which was gathered in early November, had a large amount of water in it and being piled in a tight crib would not be at all conducive to rapid drying.

It is a generally recognized fact that corn containing a relatively high amount of moisture as this corn undoubtedly did, will when exposed to freezes and cold weather before being given time to dry out, be inclined to depreciate especially in viability. The moisture contained within the cells will freeze thereby rupturing the germ. This may perhaps be an explanation of why a comparatively high percent of this corn had wrinkled germ surfaces.

The 1911 Corn.

The corn for the work begun in 1911 was an entirely different type of corn and as the descriptions

will show that in sections A, C, D & E was an extremely large corn for a strain of Boone County White. The five-hundred ears included in this lot of corn were much more variable in type and did not represent nearly so uniform a quantity of seed corn.

The Boone County White corn selected for this work received no special treatment or care other than that given ordinary seed. The corn was secured from Mr. J.L. Carpenter of Molino, Missouri and was grown on rich, second-bottom land near Molino.

The corn was selected from the field during the first week in October. Section A was started in the test immediately. Sections C, D, and E were selected from the field October tenth and were sent within a few days the drying test being started some time later due to slow transfer on the railroad.

The Cob-pipe corn, Section F, was secured from Mr. Wm. Brune and was grown in the bottom near Hartsburg. The ears were quite typical for the variety and, as the descriptions show, many ears were very much larger and yet had a good amount of corn on them. This corn received no particular care other than to practice field selection. The corn was received about ten days before the experiment was started.

This corn was not selected to a definite close type, but on the other hand was selected with the idea of giving considerable variation within types and as the descriptions show, this was very well done. There is a great variation in length, circumference, weight, indentation and composition, as well as in the other characters.

The corn used in this work was separated into five groups of one-hundred ears each and one group of twenty-five ears. The first section was received the last of October and weighed and the characters taken November first. The second section was received December fifth and the characters taken December seventh. The third, fourth and fifth sections were received December tenth and the tabulations made December thirteenth. The fifth and last section was received December twentieth and started December twenty-ninth.

The object of making these various sections was to facilitate the work of keeping the notes and also to distribute the work out so that it would not be too great at any one time. This was especially advisable as the work of checking the rate of moisture loss necessitated weighing the ears every two weeks and as one-hundred ears took about two hours time to weigh and take notes on, it was especially beneficial to have the weighing come on different days.

The first three sections (A,B,C,) and the last one (F) were weighed bi-weekly and any outstanding peculiarities or importent changes were noted. These weighings were continued throughout a period of twelve weeks and the final weight and characters made at the time of the last weighing or as soon thereafter as could be done.

On account of the much greater amount of time required to weigh on a torsion balance and also on account of the possibility of making an error in the reading, it was decided to use a spring or postal scale provided this could be used without any serious sacrifice of accuracy.

PRELIMINARY DATA.

Accuracy of Spring Scales.

In order to determine the actual amount of such inacuracy, should there be any, a preliminary test was made with two spring scales as compared with an accurate torsion balance. Ten ears of corn were weighed in each test and the total weight as recorded by the scales and by the balance, was recorded.

The result of this investigation is shown in the table following:

Weight in Grammes.

Sample No.	Balance.	Spring Scale. No.1.	Spring Scale. No.2.
1	5495.40	5475.70	5509.00
2	4036.05	4028.42	4045.07

The results here shown are responsible for the decision to use spring scale, number 2 instead of using the balances as was first thought. This scale, which is shown in the picture opposite page 27 , registered in ounces and the transfer from that denomination to grammes was made with the slide rule.

Methods of Taking Descriptions.

In order to do any authentic correlation work, it is necessary to take very accurate and complete descriptions

otherwise the possibility of securing correlations is greatly lessened and the liklihood of drawing wrong conclusions is materially increased.

It was decided that in order to minimize the chance for error, the work of taking the descriptions should all be done by the same person. This was considered advisable because of the possibility of two individuals having different ideas as to relationship and the danger therefore that one would call a kernel wide and shallow where another would term it medium in each particular.

The seventeen characters were each taken separately disregarding all others but the one in question. This method, it was thought, would eliminate the possibility of error to a minimum and would therefore make the descriptions as accurate as it was possible to get them.

The dimensions were all made with the same instruments both at the first and at the last of the period. All lengths were measured with a wood scale which had a movable block at the end making it possible to read accurately to sixteenths of an inch. The circumferences were all measured with a spring, pocket tape and were read to the closest sixteenth.

The last column of the first six plates, that of average weight of kernel, was secured by weighing

accurately twenty average kernels and then dividing the weight thus secured by twenty. The average kernel, which was selected, was, as accurately as was possible to get it, the representative of the ear. The corn all being shelled and bottled, it was necessary to take the sample from the bulk seed. The bottle was thoroughly shaken and the corn poured out. A representative type of kernel was chosen and the twenty were picked according to the standard. These same kernels were later immersed in water to get the density of the kernels.

The various characters that were taken both on the 1910 and the 1911 corn, sections A-F, are to be found in the following tables. The descriptions for the 1910 corn were taken in the spring of 1910 while the others were taken in November 1911.

Definition of Terms.

There is probably but a few legends which need any explanation. The following terms used in the descriptive tables may be needed in order that the tables may be more fully understood.

Shape of ear.

cy - - - - -cylindrical
P.Cy.- - - -partly cylindrical
T.- - - - - tapering

Rows.

St.- - - - -straight
T.R.- - - - twist to right
T.L.- - - - twist to left.

Space between rows.

C.- - - - - - -close
M.C.- - - - -medium close
M.O.- - - - -medium open
O.- - - - - - -open.

Thickness of kernel.

Th- - - - - thick
M.Th- - - - -medium thick
M - - - - - -medium
M.T.- - - - -medium thin
T.- - - - - -thin

Size of germ.

L.- - - - - -large
M.L.- - - - -medium large
M.- - - - - -medium
M.S.- - - - -medium small
S.- - - - - -small.

Further explanation should perhaps be given the various classifications which will be used throughout the following pages. The "Ear Characters" include length, circumference, number of rows, weight, shape of ear, and indentation. "Kernel Characters" comprise depth, width, space between rows, composition, and size of germ.

EAR CHARACTERS

Ear Number	Length of Ear	Circum. of Ear	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between Rows	Indentation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Ozs	Shelling Per Cent	Wt. Average Kernel-Oz.
8	8.50	6.75	12	340	16	S	C	M	R	W	M	MH	L	S	M	2.25	83.63	.342
18	9.62	7.00	13	368	22	T	PC	C	R	N	M	S	S	M	M	1.76	88.71	.273
26	9.50	7.00	12	340	18	S	T	M	R	N	S	S	S	S	M	2.38	81.01	.279
27	8.75	7.50	15	425	20	S	C	M	M	M	M	MS	M	S	D	2.50	83.33	.372
32	9.75	8.00	17	482	18	S	PC	M	R	W	M	MH	L	L	M	2.75	85.13	.317
33	9.50	7.75	17	482	20	S	C	C	M	M	D	MH	N	M	M	2.75	85.99	.387
34	10.50	7.25	16	454	18	T	T	M	M	M	M	MH	M	L	M	2.62	86.13	.366
35	9.00	7.37	17	482	18	T	PC	M	R	W	M	MH	M	L	M	3.25	82.89	.392
36	9.62	7.50	19	539	18	T	PC	M	M	M	M	MH	M	M	M	3.50	81.81	.385
37	9.00	7.37	14	397	18	T	PC	M	R	M	D	MS	L	L	M	2.12	87.28	.356
38	9.75	7.25	16	454	16	S	PC	M	M	M	M	MH	L	M	M	2.25	87.22	.437
39	9.50	7.25	16	454	16	S	PC	M	M	M	M	MS	M	L	M	2.88	83.45	.408
56	10.0	7.50	17	482	20	S	PC	M	M	N	M	MH	M	M	M	3.00	83.33	.346
57	9.13	7.00	12	340	18	S	T	M	R	N	M	MS	S	M	M	2.00	84.90	.307
58	8.38	7.75	15	425	18	S	C	C	R	M	M	MS	M	M	M	2.50	86.06	.396
59	8.00	7.87	16	454	18	T	C	M	R	M	M	MS	M	S	M	2.25	86.12	.328
60	8.88	7.63	16	454	16	S	C	M	R	W	D	MH	L	S	D	2.25	84.21	.456
61	9.50	7.25	15	425	18	T	T	C	M	N	M	MS	M	S	M	2.38	85.48	.380
62	9.25	7.00	12	340	18	T	C	M	S	N	M	MH	S	M	D	2.12	86.82	.351
63	8.13	7.38	14	397	18	T	T	M	R	M	M	MS	M	M	F	2.38	83.47	.381
64	9.00	7.88	15	425	18	T	C	M	R	M	M	MH	M	L	M	2.50	85.40	.365
65	9.50	7.00	14	397	16	S	T	M	M	M	M	MS	S	S	M	2.38	85.49	.401
66	9.25	7.50	16	454	20	T	C	M	M	N	M	MH	M	M	D	2.50	86.12	.310
67	10.00	7.75	17	482	18	T	T	M	R	M	M	MS	M	S	M	3.12	82.40	.390
68	8.50	7.88	15	425	20	S	PC	M	R	N	M	MS	M	S	M	3.00	00.00	
69	9.38	7.63	15	425	16	S	PC	M	R	W	M	MH	M	M	M	3.00	82.35	.408
70	9.38	7.88	15	425	20	T	T	M	M	N	D	MH	M	S	F	1.88	88.47	.297
71	8.50	7.88	15	425	18	T	PC	M	M	M	M	MS	M	S	M	2.50	85.40	.383
72	9.50	7.75	16	454	20	S	PC	M	R	M	M	MS	M	M	D	2.50	87.01	.398
73	9.50	7.63	16	454	20	S	PC	M	M	N	M	MH	M	M	D	2.88	83.92	.325
74	9.50	7.75	17	482	22	T	T	C	M	N	S	MH	S	M	M	3.50	79.71	.299
75	9.13	7.75	16	454	18	T	T	M	R	M	M	MS	M	M	M	3.25	82.40	.369
76	10.0	6.88	16	454	20	S	T	C	S	M	S	MS	M	M	M	3.00	82.80	.331
77	8.88	8.00	14	397	22	T	PC	M	M	M	S	MS	S	L	M	2.38	84.61	.327
78	8.25	7.63	13	368	22	T	C	M	R	M	D	MS	M	S	M	2.00	86.72	.298
79	8.63	7.00	13	368	18	T	T	M	S	M	M	MH	M	L	M	2.12	86.74	.389
80	8.00	7.25	14	397	18	T	C	O	M	M	M	MS	M	M	M	2.75	83.58	.369
81	8.75	7.88	17	482	22	T	C	M	R	M	M	MS	S	M	F	3.38	82.67	.329
82	9.63	7.00	12	340	18	T	T	M	M	M	M	MS	S	L	M	2.50	83.85	.334
83	8.25	7.50	15	425	18	S	C	C	M	W	M	MH	S	L	F	2.88	80.45	.414
84	8.00	7.87	14	397	20	S	C	M	M	M	D	MH	S	S	D	2.00	87.30	.387
85	10.0	7.75	16	454	18	T	T	M	R	M	D	MS	S	L	M	3.25	83.40	.415
86	9.25	7.00	13	368	18	T	T	M	M	M	M	MH	S	M	M	2.50	85.40	.349
87	8.00	7.75	14	397	22	S	C	M	R	M	D	MH	L	S	D	2.25	87.76	.370
88	9.75	7.50	17	482	18	T	T	M	R	M	M	MS	M	L	M	3.38	81.48	.381
89	10.25	7.75	18	510	18	T	T	M	M	M	D	MS	L	M	M	2.50	87.82	.445
90	9.00	7.63	14	397	20	S	T	M	R	M	M	MS	M	M	M	2.38	85.62	.339
91	9.75	7.25	14	397	16	S	C	M	M	M	M	MS	M	M	D	2.75	83.58	.412
92	9.00	7.00	14	397	18	T	C	M	M	M	S	MS	M	S	D	2.25	86.12	.336
93	7.75	7.50	15	425	20	S	C	M	M	N	M	MS	S	S	D	2.12	86.30	.307
94	8.50	7.87	17	482	20	S	C	M	R	M	D	MS	M	M	M	3.00	81.68	.350
95	9.38	7.25	15	425	16	T	PC	O	M	M	M	MH	M	M	M	2.50	86.50	.415
96	8.50	7.63	15	425	20	S	C	M	R	M	D	S	L	S	M	2.12	88.43	.382
97	9.00	8.00	18	510	20	S	C	M	R	M	M	MH	M	M	M	3.25	80.50	.376
98	9.38	7.75	18	510	18	T	PC	C	R	W	M	MS	M	L	F	3.50	83.73	.392
99	9.63	7.75	16	454	16	S	C	M	R	W	M	MS	M	L	F	3.00	82.35	.418
100	8.50	7.13	14	397	16	S	C	M	S	M	S	MS	S	S	M	2.50	00.00	.378
101	8.63	7.00	14	397	20	S	PC	M	M	N	S	MS	S	S	M	2.00	85.47	.308
102	7.25	7.25	11	312	16	S	PC	M	M	M	M	MS	M	S	M	2.00	83.33	.392
104	9.50	6.75	14	397	20	S	PC	C	M	N	D	MS	L	M	M	2.50	87.10	.419
105	9.00	7.50	14	397	20	S	PC	M	M	M	M	MS	M	M	M	2.00	88.23	.346
106	9.38	7.75	14	397	18	T	PC	M	R	M	M	MS	M	L	M	2.75	83.58	.339
107	9.50	8.25	·20	567	20	S	C	M	M	W	D	MH	L	M	M	3.62	83.80	.434
108	11.0	7.50	19	539	22	T	C	M	R	N	D	MS	M	L	M	2.88	86.16	.313
109	9.88	8.00	18	510	18	T	T	M	M	W	M	MS	M	S	M	3.25	84.71	.441
110	7.50	7.50	14	397	18	S	C	M	R	M	D	MH	M	M	M	2.00	86.02	.374
111	8.00	7.25	13	368	16	S	C	M	R	M	D	MS	L	L	M	2.00	87.09	.361
112	10.38	7.50	18	510	18	S	T	M	S	M	M	MH	M	L	M	2.75	85.59	.387
113	9.00	8.00	17	482	20	S	T	M	R	M	M	MH	M	M	M	3.00	84.[illegible]	.380
114	9.25	7.75	16	454	22	T	C	M	R	N	D	MH	M	M	M	3.00	84.61	.301
115	9.50	7.00	14	397	18	S	PC	M	M	M	S	MH	M	S	M	2.50	84.44	.389
116	8.75	7.75	14	397	20	S	T	M	R	M	M	MS	M	M	M	3.00	81.83	.313
117	10.0	7.00	14	397	18	T	C	M	S	M	M	MS	S	M	D	2.00	87.09	.356
118	9.00	7.50	16	454	20	S	C	M	S	M	M	MH	M	M	M	3.25	82.79	.378
119	8.75	8.00	16	454	22	T	C	M	M	M	M	MS	M	L	M	2.25	87.43	.378
120	9.25	7.75	16	454	18	T	T	M	R	M	D	MS	M	L	M	2.38	86.46	.397
121	9.50	8.00	15	425	20	S	T	M	M	M	M	MS	M	M	M	2.88	82.73	.374
122	9.75	8.00	17	482	22	S	T	M	M	M	M	MH	M	M	M	3.00	86.68	.332
123	9.00	7.50	15	425	18	T	T	M	M	M	M	MS	M	L	M	2.75	84.20	.343
124	9.00	7.00	14	397	16	S	PC	M	M	M	M	H	M	L	M	2.38	84.56	.348
125	9.50	7.50	16	454	20	S	PC	M	S	M	M	MH	M	L	M	2.50	83.33	.383
126	9.13	7.13	15	425	20	S	C	M	M	N	M	MH	S	M	M	2.38	85.21	.304
127	9.50	7.00	14	397	16	S	T	M	M	M	M	MS	S	L	M	2.88	82.98	.345
128	8.75	7.50	14	397	20	S	C	M	R	M	D	MS	L	S	D	2.12	86.61	.334
129	8.75	8.00	16	454	22	T	C	M	R	M	D	MH	L	L	M	2.75	84.62	.380
130	9.50	7.50	15	425	18	T	T	M	VR	M	M	MH	M	L	M	2.75	83.08	.389
131	9.75	7.00	14	397	16	S	PC	C	M	M	M	MH	L	S	D	1.75	88.52	.349
132	8.50	7.50	15	425	20	S	PC	M	R	N	M	MH	M	S	M	2.25	87.86	.372
133	8.50	7.37	12	340	20	S	C	C	R	M	M	MS	M	M	M	2.00	84.90	.303
134	9.25	7.75	15	426	20	T	PC	O	R	M	M	MS	S	M	M	2.75	85.04	.339
135	8.50	7.25	13	368	20	T	T	M	S	M	M	MS	M	L	M	2.75	81.98	.355
136	8.75	7.25	15	425	16	S	PC	M	VR	M	M	MS	S	L	M	2.63	82.05	.356
137	8.25	7.25	12	340	16	S	C	M	S	M	S	MH	M	M	M	2.12	85.95	.358
138	9.25	7.25	13	340	18	T	T	C	R	M	D	MS	M	M	M	1.88	87.31	.342
139	9.50	7.50	15	425	18	T	PC	M	M	M	M	MH	M	M	F	2.38	86.45	.369
140	10.0	7.00	16	454	18	T	PC	M	M	M	M	MS	S	S	D	2.63	83.72	.346
141	10.25	7.50	18	510	20	S	T	C	M	M	S	MS	S	M	F	4.25	79.88	.347
142	9.50	8.25	16	454	18	T	T	O	R	W	D	S	M	L	M	2.63	86.16	.381
143	10.38	7.50	18	510	18	T	T	M	S	M	M	MH	M	L	M	3.75	80.76	.363
144	9.50	7.00	14	397	18	T	T	M	M	M	M	MH	S	L	D	2.25	86.56	.371
145	9.00	7.50	14	397	18	T	C	M	R	M	M	MS	S	S	D	1.87	88.64	.338
146	9.38	7.75	17	482	20	S	C	M	M	M	M	MH	S	S	M	2.63	86.56	.322
147	9.00	7.25	15	425	20	T	C	M	R	N	M	MS	M	L	M	2.50	85.71	.345
148	9.00	7.50	14	397	16	S	T	O	R	M	M	S	M	S	M	2.25	85.71	.374
149	9.00	8.00	16	454	18	T	T	M	R	W	D	MS	L	L	D	2.75	84.71	.439
150	10.00	8.00	19	539	16	T	PC	O	M	W	D	MH	L	L	F	2.87	83.92	.471
151	10.50	7.00	15	425	18	T	T	M	M	N	S	MH	S	L	M	3.75	78.26	.349
152	9.50	7.25	14	397	20	S	T	M	M	N	M	MH	S	M	M	2.25	86.46	.347
153	9.38	7.75	16	454	20	S	C	M	M	M	M	MH	M	L	M	3.00	83.90	.353
154	9.00	7.25	16	454	22	T	C	M	R	N	D	MS	M	M	D	2.50	86.83	.319
155	8.75	7.50	15	425	20	S	C	M	M	N	D	MH	M	M	D	2.00	88.24	.335
156	8.50	7.75	15	425	18	T	C	M	VR	M	D	MS	M	S	M	2.63	84.78	.359
157	8.75	7.50	16	454	22	S	C	C	R	N	D	S	M	M	M	3.00	84.64	.291
158	10.25	7.75	19	539	18	T	T	M	M	M	M	MH	S	M	M	3.38	82.88	.403
159	9.50	7.50	16	454	20	T	T	M	R	M	M	MS	M	L	M	2.50	86.83	.361
160	9.25	7.00	15	425	18	T	PC	M	S	M	S	H	S	L	F	4.00	77.15	.350
161	9.75	7.75	16	454	16	S	PC	M	S	M	M	MS	L	L	M	3.25	82.20	.390

EAR CHARACTERS

Ear Number	Length of Ear	Circum. of Ear	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between R's	Indentation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Ozs.	Shelling Per Cent	Wt. Average Kernel-Oz.
162	8.25	7.75	15	425	20	S	C	M	R	N	D	MS	M	S	M	2.50	86.24	.372
163	9.50	6.75	13	368	16	S	C	M	M	M	S	MH	S	M	M	2.25	85.97	.358
164	9.75	7.25	15	425	16	T	T	M	R	M	M	MS	M	L	M	2.88	83.45	.355
165	8.75	7.50	14	397	22	T	C	C	R	N	S	S	S	S	M	2.50	82.41	.262
166	9.00	7.25	12	340	18	S	C	M	R	M	M	MS	M	S	M	2.63	84.21	.396
167	9.00	7.25	15	425	18	T	T	M	S	M	M	MS	M	M	M	2.87	84.08	.384
168	9.00	7.50	15	425	20	S	C	M	R	M	D	S	M	S	D	1.75	89.96	.351
169	9.00	7.50	15	425	20	S	C	M	S	M	M	MS	M	S	M	2.87	85.34	.395
170	9.75	7.00	16	454	16	T	T	M	M	M	M	MS	S	S	M	2.00	85.71	.319
171	9.75	7.25	16	454	18	T	T	M	S	M	S	MS	M	S	M	2.50	85.18	.378
172	10.75	7.75	18	510	22	T	T	M	M	N	M	MS	M	M	M	2.75	87.10	.363
173	8.75	8.00	14	397	22	T	Pc	C	R	N	M	S	S	M	M	2.63	85.22	.308
174	10.75	8.00	20	567	22	S	C	M	R	N	D	MS	M	S	M	3.75	84.20	.413
175	8.75	7.50	13	368	18	T	C	M	R	W	D	MS	M	S	M	1.75	90.00	.418
175	8.75	7.50	13	368	18	T	C	M	R	W	D	MS	M	S	M	1.75	90.00	.418
176	8.25	7.50	13	368	20	S	C	C	R	N	M	S	S	S	D	2.00	87.30	.292
177	8.25	7.75	14	397	24	S	C	C	M	N	S	MS	L	L	M	2.63	82.92	.291
178	8.75	7.75	16	454	18	T	T	M	R	W	M	MS	M	L	D	3.00	84.00	.410
179	9.50	7.50	15	425	16	S	T	M	R	W	M	MS	L	M	M	3.00	82.92	.371
180	11.00	8.00	20	567	18	T	T	M	M	M	S	MS	M	L	M	3.50	80.70	.379
181	9.50	7.50	14	397	20	S	C	M	R	N	M	MS	L	M	M	2.38	85.28	.323
182	9.25	8.00	17	482	20	S	C	M	R	M	D	MS	S	M	M	2.50	85.72	.384
183	9.75	7.25	15	425	16	S	T	M	R	M	M	MH	L	M	M	2.50	83.33	.343
184	10.00	7.25	16	454	16	S	C	M	R	M	M	MH	M	M	M	2.38	85.16	.446
185	10.75	7.75	20	567	20	T	T	M	M	M	M	MH	M	L	M	3.25	83.86	.405
186	9.75	7.50	15	425	18	T	Pc	M	R	M	M	MH	M	L	M	2.63	83.14	.337
187	8.75	7.75	15	425	18	T	T	M	R	M	D	S	M	M	M	2.12	86.87	.345
188	9.00	8.00	16	454	24	S	C	C	R	N	M	MH	M	L	M	2.50	85.72	.351
189	9.00	7.50	15	425	18	T	C	C	S	W	M	MH	M	M	M	2.75	83.66	.361
190	8.76	7.50	14	397	18	S	C	C	R	M	M	S	S	S	M	2.50	83.20	.335
191	9.00	7.75	16	454	24	S	C	C	R	N	D	MS	M	L	D	2.25	87.49	.309
192	9.75	7.75	16	454	18	T	Pc	O	R	M	D	MH	M	M	F	3.38	81.80	.352
193	10.25	7.00	14	397	16	S	C	C	M	W	M	MS	L	S	M	2.25	86.12	.358
194	8.50	7.50	14	397	20	S	Pc	M	R	N	D	S	S	M	D	1.75	87.20	.349
195	9.00	7.50	15	425	20	S	Pc	C	M	M	M	MS	M	L	M	2.25	85.44	.354
196	9.50	7.50	15	425	18	T	T	O	R	M	M	MH	L	M	M	2.00	87.09	.335
197	8.75	7.13	12	340	16	S	Pc	M	S	M	M	MH	M	M	M	2.50	84.44	.445
198	9.00	7.75	16	454	22	S	C	M	R	N	D	MH	M	M	M	2.75	84.62	.348
199	8.75	7.50	14	397	20	S	Pc	M	R	N	M	MH	S	M	D	3.00	80.65	.316
200	9.50	8.00	17	482	20	S	C	M	R	M	D	MH	M	S	D	2.50	85.72	.313
201	9.50	7.75	16	454	20	S	Pc	M	R	M	M	MS	S	S	M	2.00	87.30	.331
202	9.00	7.25	14	397	18	T	T	M	R	N	S	MH	S	L	D	2.25	85.85	.285
203	10.25	7.50	17	482	18	S	T	M	M	M	M	MS	L	S	M	3.25	82.40	.375
204	9.50	7.25	15	425	18	T	C	M	M	M	D	MS	M	S	M	2.63	86.67	.394
205	8.25	8.00	15	425	22	S	Pc	M	M	N	M	MS	M	M	D	2.00	86.73	.327
206	9.25	7.00	14	397	16	S	Pc	M	M	M	M	MH	L	M	F	2.12	86.40	.378
207	10.00	7.50	17	482	18	T	Pc	M	S	M	M	MH	M	M	M	2.25	87.00	.376
208	8.50	7.75	15	425	18	S	Pc	M	M	W	S	MH	L	S	M	3.00	81.81	.410
209	9.25	7.50	16	454	18	T	Pc	M	R	M	M	MS	S	S	D	2.25	85.71	.383
210	9.26	7.50	14	397	16	S	C	M	M	M	M	MS	M	S	D	1.87	87.39	.405
212	9.50	7.50	16	454	16	S	C	M	M	W	M	MS	M	S	D	2.12	87.60	.465
213	9.50	7.50	15	425	16	S	C	M	R	W	M	MH	M	S	M	3.00	81.81	.385
214	9.75	7.50	16	454	16	S	C	M	S	M	M	MH	M	M	F	3.25	82.76	
215	10.00	8.00	16	454	18	T	T	M	R	M	M	MH	M	M	M	2.75	84.71	.399
216	9.50	7.75	16	454	18	T	C	C	M	M	M	MH	L	M	D	2.25	85.71	.439
217	10.50	7.75	17	482	18	T	T	M	R	M	D	MS	S	M	M	3.25	0000	.384
218	9.50	7.75	16	454	24	S	C	C	R	N	D	MH	S	S	D	3.00	82.90	.305
219	9.00	8.00	16	454	20	S	C	M	M	M	M	MS	M	M	M	2.25	84.64	.359
220	9.00	8.25	18	510	20	S	C	M	M	M	M	MS	M	L	F	3.25	85.94	.401
221	10.25	7.50	16	454	20	S	C	C	S	M	M	S	M	S	M	2.50	82.78	.394
222	8.50	8.00	14	397	18	T	Pc	M	R	M	M	MS	M	M	M	2.25	85.71	.361
223	10.50	7.00	16	454	18	T	C	C	M	N	M	MH	S	M	M	2.25	85.11	.360
224	9.25	7.00	17	482	18	T	C	C	M	N	S	MS	S	M	M	3.00	86.56	.378
225	8.25	7.25	14	397	18	S	C	M	M	M	M	MH	M	M	F	3.12	81.81	.322
226	9.75	7.50	18	510	22	T	T	C	S	N	M	MH	S	L	F	4.00	79.85	.339
227	11.00	7.25	17	482	20	S	Pc	M	R	M	M	MS	M	M	M	2.50	81.10	.349
228	9.75	7.25	15	425	18	T	T	M	S	M	M	MS	M	M	M	2.25	86.69	.333
230	9.75	7.75	18	510	22	S	T	M	S	N	M	MS	S	M	M	3.00	86.68	.347
231	9.25	7.50	17	482	20	S	C	C	S	N	M	MS	M	M	M	3.87	83.45	.364
232	8.50	7.75	15	425	20	S	C	M	R	M	M	MS	L	M	D	2.63	80.13	.393
233	9.25	7.50	18	510	18	T	T	M	S	M	M	MH	L	M	M	3.00	85.76	.311
234	8.50	7.50	16	454	20	S	Pc	M	S	N	M	MH	S	M	M	2.75	82.96	.339
236	9.25	7.25	16	454	16	S	Pc	O	S	M	M	MS	M	L	F	2.87	82.98	.412
237	8.75	7.50	15	425	22	S	T	M	S	N	M	MS	M	M	M	2.12	85.35	.331
238	9.00	7.00	14	397	20	S	C	M	M	N	M	MH	M	M	M	2.25	86.46	.389
239	9.50	7.50	15	425	18	T	Pc	M	R	M	M	S	S	M	M	2.87	83.60	.339
240	9.75	7.50	15	425	18	T	T	M	R	M	S	S	S	M	M	2.00	86.02	.358
241	8.75	7.00	13	368	16	S	C	M	M	M	M	MS	L	S	M	2.12	82.78	.417
242	8.50	7.50	16	454	18	T	C	M	M	M	D	MS	L	S	M	2.50	85.40	.373
243	8.25	7.58	14	397	20	S	C	M	M	M	M	S	M	L	M	2.38	85.62	.338
245	9.25	7.00	14	397	18	S	Pc	M	M	M	M	MS	S	M	M	2.00	86.61	.335
246	9.75	7.00	14	397	16	S	C	M	R	M	M	MH	M	L	F	3.38	80.01	.338
248	9.75	7.75	16	454	20	S	T	M	R	M	M	MH	L	M	M	3.00	83.33	
250	9.00	7.00	14	397	18	S	C	M	R	M	D	MS	L	S	D	2.12	86.40	.352
251	9.50	7.75	18	510	18	T	T	M	M	M	S	S	S	S	M	2.50	85.40	.405
252	9.50	7.25	16	454	16	S	C	M	M	W	M	S	S	S	F	1.63	88.89	.406
253	9.00	8.00	16	454	18	S	Pc	M	R	W	M	MS	L	L	M	3.00	81.81	.358
254	8.75	7.25	15	425	18	S	C	M	R	M	M	MS	M	S	D	2.12	85.84	.407
255	9.00	6.75	12	340	18	T	T	M	R	N	M	MS	M	S	D	1.75	86.60	.321
256	8.50	7.50	12	340	20	S	T	C	R	N	D	MS	M	M	M	2.00	86.21	.316
257	9.50	7.00	14	397	18	T	C	C	R	N	M	MS	S	S	M	1.87	86.88	.316
258	9.00	7.37	16	454	18	T	C	M	M	W	D	MS	L	L	M	2.50	84.44	.374
259	8.25	7.50	14	397	22	S	T	M	M	N	D	MH	S	S	M	2.50	84.62	.302
260	8.00	7.25	12	340	20	S	Pc	M	M	N	D	MH	L	M	M	2.00	86.21	.325
261	9.00	7.00	14	397	18	T	T	M	M	N	D	MH	M	M	F	2.00	87.09	.369
262	8.25	7.50	14	397	22	S	Pc	C	M	N	M	MS	S	M	M	2.12	86.61	.273
263	10.38	7.50	16	454	18	S	C	M	M	M	S	S	M	M	M	2.87	83.60	.364
264	8.25	7.50	15	425	22	S	T	M	M	M	D	MS	L	M	M	2.25	87.49	.365
265	9.00	7.75	15	425	24	S	C	C	S	N	M	MS	M	M	M	2.50	86.31	.323
266	9.25	7.50	15	425	20	T	T	M	S	N	S	MH	M	M	M	2.50	0000	.335
267	8.75	7.50	14	397	16	S	C	M	S	M	M	MS	S	M	M	2.25	85.32	.394
268	8.75	7.00	13	368	18	S	C	C	M	M	M	MH	M	M	M	1.87	87.80	.359
269	8.50	7.50	15	425	22	T	C	M	R	N	M	MS	S	M	M	2.00	87.30	.297
270	9.75	7.50	16	454	20	S	T	C	M	M	M	MH	M	M	M	2.50	85.71	.363
271	9.75	7.50	16	454	22	S	Pc	M	M	M	M	MS	M	S	M	1.38	90.26	.309
272	9.75	7.50	16	454	18	T	T	M	R	M	M	MS	M	M	M	2.87	83.60	.351
273	10.50	8.00	18	510	20	S	T	O	R	W	D	S	L	M	D	2.75	84.38	.362
274	10.50	7.75	19	539	20	S	C	M	S	M	M	MS	M	M	M	3.25	84.33	.399
275	11.25	7.25	18	510	16	S	C	O	R	W	M	MH	L	S	F	3.12	82.76	.442
277	9.00	7.25	13	368	16	S	Pc	O	R	W	D	MS	L	S	M	1.75	85.11	.294
278	8.75	7.50	16	454	22	S	Pc	C	M	M	M	MH	M	S	D	1.75	88.71	.281
279	9.25	7.50	16	454	18	T	C	M	M	M	M	MH	M	M	F	2.50	85.40	.436
280	8.25	8.25	17	482	20	S	C	O	R	W	D	S	L	S	D	2.50	86.24	.308
281	8.50	7.50	15	425	18	S	C	O	M	M	M	MH	M	M	M	2.25	85.11	.399
282	9.25	7.25	14	397	18	T	T	C	M	M	M	MS	S	M	M	2.12	87.28	.358
283	10.50	7.50	16	454	16	S	C	M	M	M	M	MH	S	M	M	3.25	83.12	.390
284	9.50	7.50	16	454	20	S	Pc	M	R	M	M	MS	M	M	M	2.00	88.23	.380

EAR CHARACTERS

Ear Number	Length of Ear	Circum. of Ear	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between Rows	Inden-tation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Ozs.	Shelling Per Cent	Wt. Average Kernel-Oz.
285	9.50	7.75	18	510	20	S	T	M	M	M	M	MS	L	L	M	2.25	86.96	.451
286	10.00	7.25	16	454	20	S	T	M	M	M	M	MH	L	L	M	3.00	83.33	.399
287	9.50	8.25	16	454	16	S	C	M	M	W	M	MH	L	L	M	2.75	83.08	.446
288	10.25	7.50	18	510	18	T	T	M	M	M	M	MS	L	L	F	3.00	84.44	.354
289	10.00	8.25	18	510	24	S	PC	M	R	N	D	MS	M	L	M	3.00	84.64	.363
290	10.75	8.00	18	510	20	S	PC	M	M	M	S	MS	S	L	M	4.30	78.64	.363
291	9.25	8.00	17	482	22	S	C	M	M	M	M	S	M	S	D	2.50	85.12	.354
292	9.25	7.50	14	397	18	S	C	M	R	M	D	S	M	M	M	2.00	88.40	.420
293	8.75	7.75	14	397	22	S	C	M	M	N	D	MS	S	M	M	3.00	85.60	.332
294	8.75	7.25	16	454	20	S	C	M	M	M	D	MS	L	M	M	2.25	86.96	.407
295	9.75	8.50	18	510	20	S	C	M	R	N	M	MS	M	L	M	3.00	86.80	.406
296	9.00	7.50	17	482	24	S	C	C	M	N	M	MH	S	M	M	3.00	81.81	.279
297	7.75	7.75	14	397	20	T	C	M	R	M	M	MS	S	S	M	2.50	83.33	.364
298	10.50	7.50	18	510	20	S	T	M	M	M	M	MS	M	M	D	2.38	87.36	.367
299	10.00	7.25	15	425	20	S	T	M	M	M	M	MS	M	M	M	2.50	86.34	.339
300	8.50	7.50	14	397	18	T	T	M	R	M	M	MS	M	S	D	2.00	87.09	.315
301	9.50	7.75	16	454	20	S	PC	M	R	W	D	MS	L	M	M	2.75	83.33	.399
302	8.50	7.75	16	454	20	S	C	M	R	M	M	MH	M	M	M	2.75	83.33	.346
303	9.00	7.50	16	454	22	T	C	C	R	M	M	MS	M	S	D	3.00	82.08	.369
304	9.50	7.00	15	425	18	T	C	M	M	M	M	MH	S	S	D	1.75	88.52	.322
305	10.00	7.75	17	482	18	T	T	M	M	M	M	MH	L	M	M	2.87	83.60	.459
306	9.25	7.00	13	368	18	T	PC	C	M	M	M	MS	M	M	M	2.75	82.21	.379
307	7.75	7.50	13	368	18	T	C	M	R	M	D	MS	S	S	M	1.75	87.43	.379
308	9.50	7.00	15	425	18	T	C	M	S	M	M	MS	M	S	M	2.00	87.09	.378
309	9.50	7.50	15	425	20	S	T	M	R	M	M	MS	S	L	F	2.50	81.84	.267
310	8.50	7.50	14	397	22	T	T	C	R	N	M	MS	S	S	D	2.00	86.72	.380
311	10.00	7.00	14	397	18	S	T	M	R	M	M	MS	M	M	M	2.00	87.09	.351
312	8.50	7.50	16	454	22	T	C	C	S	N	D	MS	M	M	D	2.25	87.00	.318
313	10.50	7.75	19	539	20	S	PC	M	M	M	M	MH	M	M	M	3.87	85.44	.399
314	9.50	8.25	19	539	20	S	C	M	M	M	D	MS	M	S	M	2.50	88.89	.394
315	8.75	7.25	14	398	18	S	C	M	R	M	M	MS	M	S	M	1.50	90.40	.403
316	10.00	7.50	17	482	20	S	T	C	S	M	M	MH	S	L	M	3.00	83.90	.347
317	10.75	8.50	21	595	22	T	T	M	R	M	D	MS	M	L	M	3.25	84.70	.373
318	9.00	7.50	16	454	18	T	T	M	M	W	M	MS	M	M	M	3.00	82.96	.3[illegible]
319	10.25	7.50	16	454	18	S	T	M	M	W	M	MS	M	M	M	2.50	85.40	.423
320	9.50	7.00	14	397	18	T	C	M	S	M	M	MS	M	S	M	2.12	86.40	.373
321	9.50	7.00	13	368	18	T	T	M	M	M	M	MH	M	M	M	2.12	85.35	.320
322	10.00	7.00	15	425	18	S	C	M	M	M	M	MH	M	S	M	2.25	86.56	.319
323	9.75	6.75	14	397	16	S	C	M	M	M	S	MH	M	L	D	3.00	80.00	.365
324	9.25	7.75	16	454	18	T	T	O	M	M	M	MS	S	M	M	2.75	81.81	.334
326	9.50	7.25	16	454	20	T	T	M	S	M	M	MS	M	M	M	2.38	86.80	.359
326	9.25	7.25	17	482	20	S	C	M	M	M	M	MS	M	L	M	3.00	82.76	.367
328	8.75	7.50	12	340	18	T	T	O	R	N	D	MS	M	S	M	2.00	87.09	.389
330	9.75	7.50	16	454	20	S	C	M	R	M	M	MS	M	S	M	2.50	82.84	.351
332	9.00	7.25	14	397	20	S	C	M	M	M	M	MS	M	S	M	2.25	85.94	.316
333	9.75	7.75	17	482	20	S	T	M	M	M	M	MS	M	L	M	3.50	83.33	.390
334	9.75	7.50	16	454	18	S	T	M	R	M	M	MH	M	M	M	3.00	83.51	.377
335	10.25	7.25	16	454	18	T	T	M	M	M	M	MS	M	L	M	3.00	82.43	.381
336	9.50	8.00	15	425	18	T	T	O	R	M	M	MS	M	M	M	3.00	81.35	.406
339	9.00	7.25	14	397	16	S	PC	O	S	M	M	MH	M	S	D	2.00	87.09	.422
340	9.75	7.00	15	425	18	T	PC	M	M	M	M	MS	M	M	M	1.76	88.52	.376
341	9.25	8.00	18	510	20	S	C	M	M	M	M	MS	M	L	M	3.25	83.36	.369
342	8.75	7.25	14	397	18	T	T	O	R	M	M	MH	M	M	M	2.12	85.35	.338
343	8.25	7.50	14	397	20	S	PC	M	R	M	M	MS	M	S	M	1.75	87.72	.347
344	9.25	7.75	17	482	18	T	C	M	M	W	M	MH	M	L	F	4.00	80.86	.383
345	9.25	8.25	18	510	22	T	C	M	R	M	D	MS	M	S	M	2.75	85.74	.347
347	9.50	8.00	16	454	20	S	PC	M	M	W	M	S	M	L	M	3.25	82.20	
348	9.50	7.50	17	482	18	T	PC	M	S	W	M	MS	M	L	M	2.75	85.99	.357
350	9.75	7.50	17	482	20	S	PC	M	R	M	M	MS	S	M	F	2.50	86.67	.392
351	9.75	7.50	14	397	18	T	C	M	M	M	M	MH	M	S	F	2.50	85.40	.351
352	9.75	7.50	16	454	18	T	PC	O	R	M	D	S	S	L	M	2.88	84.56	.401
353	9.00	7.50	17	482	18	T	C	C	M	W	M	MS	M	L	M	2.87	84.10	
354	9.50	7.00	15	425	18	T	PC	M	S	M	M	MS	M	S	D	2.38	84.50	.378
355	10.25	7.50	16	454	18	T	PC	O	R	M	D	MS	M	L	F	3.75	82.90	.393
356	10.26	7.75	17	482	20	S	C	O	R	M	D	MS	M	M	F	3.25	82.70	.345
357	9.50	7.25	15	425	18	T	T	M	R	W	D	MS	M	M	F	3.25	82.70	.345
358	10.00	7.38	15	425	20	S	C	M	R	W	D	MS	L	M	M	2.12	87.30	.390
359	8.75	8.00	16	454	22	S	C	M	R	N	M	MS	S	M	M	2.75	81.98	.344
360	8.00	7.75	14	397	20	S	PC	C	R	M	M	MS	S	S	M	2.75	82.60	.369
361	9.50	8.00	17	482	24	S	C	C	R	M	M	S	S	M	D	2.26	84.78	.301
362	9.75	8.00	20	567	18	T	C	M	M	M	M	S	S	L	M	3.12	82.76	.286
363	7.75	7.75	14	397	20	S	C	M	R	M	M	MH	L	L	M	4.00	80.18	.383
364	9.50	7.00	14	397	18	T	PC	M	M	M	M	MS	M	M	M	2.00	87.97	.364
365	9.25	7.00	15	425	18	S	T	M	M	M	D	MH	L	M	M	2.25	86.56	.393
366	9.25	7.50	17	482	18	S	T	M	M	M	M	MS	S	M	D	2.88	87.02	.383
367	10.50	7.75	19	539	18	S	T	M	M	W	M	S	M	L	M	1.50	00.00	.406
368	8.50	8.25	16	454	20	S	T	M	R	M	M	MS	S	M	D	2.50	84.62	.319
369	9.50	7.50	15	425	18	S	T	O	R	M	M	MS	S	L	F	3.25	82.90	.391
370	9.25	7.26	16	454	18	S	T	M	R	M	M	MS	M	M	M	3.00	84.00	.380
371	8.50	7.50	14	397	16	S	C	O	R	W	D	MS	L	M	M	2.00	85.71	.408
372	8.75	7.50	14	397	20	S	T	C	M	M	M	S	M	M	M	2.63	83.99	.344
373	9.75	7.50	19	539	20	S	C	M	M	M	M	MH	M	M	M	2.50	87.90	.417
375	8.25	7.50	15	425	18	S	C	M	S	M	D	MS	L	S	D	2.25	85.71	.407
376	10.25	6.50	14	395	18	T	T	C	S	M	M	MH	M	M	M	2.38	85.76	.327
378	9.00	7.75	16	454	18	T	PC	M	M	M	M	MH	M	S	D	2.50	86.80	.386
379	9.75	7.50	17	482	18	S	PC	M	S	M	D	H	M	M	M	2.87	84.56	.395
380	9.50	7.00	14	397	16	T	T	O	M	M	M	MH	L	M	M	2.50	84.84	.405
381	8.75	6.75	12	340	16	S	C	O	R	M	M	MS	S	S	M	1.87	86.36	.347
383	10.00	7.50	17	482	16	S	PC	M	M	W	D	MH	L	S	M	2.50	86.94	.409
384	9.75	8.00	16	454	20	S	PC	O	R	M	M	MS	M	M	M	2.50	86.83	.355
386	9.75	7.50	18	510	20	S	C	M	M	M	M	MS	M	S	M	2.75	86.54	.386
387	10.75	7.75	20	567	16	S	PC	O	R	W	M	MS	M	M	M	3.25	83.06	.464
388	9.75	7.50	18	510	20	S	C	M	M	N	D	MS	M	S	M	3.25	84.34	.335
389	10.00	7.50	16	454	18	S	PC	M	R	M	M	MH	L	S	M	2.00	88.67	.408
390	9.50	7.25	16	454	20	T	T	M	R	N	D	MS	S	S	D	2.50	85.71	.293
391	8.75	7.25	15	425	16	S	T	M	R	M	M	MS	S	S	M	2.38	85.60	.405
392	9.50	7.50	16	454	18	S	C	M	M	M	D	MH	L	M	M	2.12	87.30	.429
393	9.75	7.75	17	482	22	S	T	M	M	N	D	MS	M	L	F	2.25	87.96	.347
394	9.00	8.00	17	482	20	S	C	M	M	M	M	MS	M	L	D	2.75	84.36	.387
396	9.50	7.58	16	454	20	S	C	M	R	M	M	MS	M	S	M	2.87	86.04	.335
397	10.00	7.50	17	482	20	S	T	M	M	M	M	MH	M	M	D	2.50	96.67	.386
398	9.50	7.50	16	454	20	S	PC	M	M	M	D	MS	L	S	M	1.87	88.89	.390
399	9.00	7.25	14	397	18	S	PC	M	R	M	D	MH	L	S	M	2.00	87.58	.397
400	9.26	7.25	16	454	20	T	PC	M	R	N	M	MS	M	S	D	2.00	88.66	.315
401	10.25	7.75	17	482	18	T	C	M	M	W	M	MH	L	S	M	3.25	82.90	.382
402	9.75	7.50	20	567	20	S	T	M	S	N	D	MH	M	M	M	2.25	87.00	.320
403	10.50	8.00	19	539	20	S	C	C	R	W	M	MS	M	S	M	3.50	83.33	.390
404	8.50	7.50	14	397	20	S	PC	O	M	N	M	MH	M	M	D	2.25	85.94	.386
405	9.50	7.50	14	397	16	S	PC	M	R	W	M	MS	M	S	F	2.00	84.61	.375
406	9.00	7.00	12	340	16	S	C	O	R	M	M	MS	M	S	M	2.00	84.00	.344
407	9.75	7.38	15	425	18	S	PC	M	M	M	M	MH	M	M	D	3.00	80.31	.395
408	9.26	8.00	17	482	18	S	C	M	S	W	D	MH	L	M	M	2.50	85.80	.453
409	8.75	7.25	12	340	18	T	PC	O	M	N	S	MS	S	S	M	2.12	84.11	.299
410	9.50	7.25	16	454	16	S	PC	O	M	M	D	MH	L	S	M	2.00	87.90	.435
411	9.50	7.50	16	454	18	S	C	M	M	M	D	MH	L	M	M	2.25	86.70	.414
412	9.25	7.12	13	368	18	S	T	M	R	M	M	MH	M	M	F	2.00	86.08	.346
413	8.75	7.00	14	397	18	S	C	C	M	M	M	MH	M	M	M	2.26	85.71	.335

EAR CHARACTERS

Ear Number	Length of Ear	Circum. of Ear.	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between R's	Inden-tation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Oz.	Shelling Per Cent.	Wt. Average Kernal-Oz.
414	10.00	7.50	19	539	18	T	T	M	S	M	D	MH	M	L	M	2.50	87.00	.407
415	9.00	7.50	15	425	18	S	PC	M	R	W	D	MS	M	M	D	2.38	87.00	.402
417	9.75	7.50	16	454	20	S	PC	O	M	N	D	MH	L	S	F	2.25	88.23	.317
418	10.25	8.00	18	510	18	T	T	M	R	W	M	MS	M	M	D	3.25	82.90	.416
419	9.50	7.50	16	454	18	T	T	M	M	M	M	MS	S	M	M	2.65	84.29	.375
420	9.25	7.25	14	397	18	T	T	M	M	M	M	MH	M	M	M	2.25	85.71	.431
421	9.75	7.50	16	454	20	S	T	M	S	M	M	MS	M	L	F	2.50	84.62	.369
422	10.00	7.50	16	454	18	T	T	M	R	M	M	MH	M	M	M	2.63	84.29	.396
423	9.75	7.50	16	454	20	S	C	C	R	M	M	MS	S	M	M	2.75	83.33	.316
424	10.25	8.00	19	539	22	T	T	M	R	N	D	MH	S	L	D	3.75	82.67	.327
425	10.50	7.50	18	510	18	S	T	M	M	M	M	MS	M	L	M	3.00	84.50	.391
427	8.50	7.25	13	368	18	S	PC	M	M	M	M	MH	M	S	M	2.50	84.89	.337
428	9.75	7.75	17	482	18	T	T	M	M	M	M	MH	L	M	M	3.25	82.89	.367
429	8.50	7.00	13	368	16	S	T	M	R	M	M	MS	M	M	M	2.50	82.76	.398
430	10.50	7.50	20	567	18	T	T	M	S	M	M	MH	M	L	F	3.78	82.30	.417
431	10.50	7.25	18	510	16	S	T	M	M	M	M	MS	M	L	M	3.50	81.10	.424
432	9.75	7.25	16	454	18	T	T	C	M	M	M	MH	M	M	D	3.12	82.40	.378
433	10.25	7.75	16	454	18	T	T	M	R	M	M	MS	M	M	M	2.25	87.49	.404
434	9.75	7.75	17	482	20	S	T	M	R	M	M	MH	M	S	M	3.12	82.76	.383
435	10.25	7.50	16	454	16	S	T	O	R	M	D	MS	L	M	M	2.50	85.71	.446
439	10.25	8.00	20	567	22	T	C	C	M	M	D	MS	S	S	M	2.75	87.50	.348
440	9.00	7.75	16	454	18	T	PC	M	R	M	M	MS	M	L	M	3.00	82.44	.364
441	8.75	7.50	14	367	20	S	C	C	R	M	M	MS	M	S	D	2.12	87.60	.361
442	8.75	7.50	15	425	20	T	T	C	R	M	M	MH	M	M	M	2.00	87.63	.340
443	10.00	7.00	12	340	16	S	PC	M	M	M	M	MS	S	S	M	2.38	84.03	.366
444	9.00	7.50	15	425	18	S	T	M	M	M	M	MS	M	M	M	2.50	0000	.322
445	9.75	7.25	16	454	20	S	C	C	M	M	S	MS	S	M	M	2.87	85.34	.398
449	9.50	7.50	16	454	18	T	T	M	R	M	M	MS	M	M	M	2.12	86.87	.392
450	10.75	7.25	16	454	22	S	PC	C	M	M	M	MS	M	M	M	2.50	86.83	.313
451	8.75	7.50	14	397	20	S	C	C	R	M	M	MS	M	M	F	2.50	84.00	.326
452	10.25	7.75	17	482	20	S	PC	O	M	M	D	MH	L	M	M	3.12	0000	.367
453	9.00	7.75	16	454	20	S	C	M	M	M	M	MH	M	L	M	2.63	84.40	.392
456	9.50	7.00	14	397	16	S	C	M	M	W	S	MS	S	L	D	2.00	86.61	.375
457	9.00	7.50	15	425	18	S	PC	C	S	M	M	MS	M	M	M	2.50	84.44	.338
458	9.00	7.75	16	454	20	S	C	O	M	M	D	MS	M	L	M	2.25	87.90	.329
459	10.25	7.25	19	539	16	S	C	M	S	M	M	MH	M	M	F	3.25	83.12	.488
460	9.50	8.00	18	510	18	T	C	M	R	M	M	MS	M	M	M	3.87	83.74	.419
461	8.75	7.25	14	397	18	T	T	M	M-	M	M	MS	M	M	M	2.25	83.71	.341
462	9.50	6.75	12	340	16	S	PC	M	S	M	M	MH	M	M	M	2.25	82.94	.388
463	9.26	7.25	12	340	18	S	C	C	M	M	S	MS	M	S	D	1.50	88.24	.367
464	10.00	7.00	14	397	18	T	T	M	M	M	M	MS	M	S	M	2.12	88.23	.322
465	8.75	7.25	14	397	18	S	C	C	M	M	M	MS	M	M	M	2.12	85.84	.412
466	10.00	7.00	14	397	16	S	PC	O	R	M	M	MH	M	M	F	2.25	84.21	.370
467	10.00	8.00	19	539	22	S	PC	M	M	M	D	MH	M	M	M	3.00	85.18	.401
468	9.75	7.00	14	397	16	S	T	C	M	W	M	MS	M	S	D	2.50	83.33	.388
469	10.25	7.75	18	510	20	S	T	M	M	N	M	MH	M	L	M	2.75	85.13	.377
470	9.50	7.00	14	397	14	T	C	O	R	W	M	MH	L	S	M	2.12	86.01	.454
471	11.00	8.00	20	567	20	T	T	M	M	M	D	S	M	L	F	3.75	83.34	.428
472	10.00	7.75	17	482	20	S	C	M	R	M	D	MH	M	M	M	3.75	82.25	.372
473	10.00	7.75	17	482	20	S	C	M	M	M	M	MS	M	M	M	3.00	85.58	.360
474	9.00	7.50	16	454	20	S	C	C	R	M	M	MS	M	S	M	3.12	82.76	.304
475	10.00	7.75	17	482	20	S	PC	M	R	M	M	MS	M	M	M	1.87	90.00	.382
476	9.50	7.75	15	425	20	S	PC	M	R	N	M	MS	M	M	M	2.63	86.06	.365
477	9.00	7.50	16	454	20	S	C	C	M	M	M	MS	M	M	M	3.00	83.33	.269
478	9.75	7.75	17	482	20	S	T	M	R	M	M	MH	M	L	M	2.87	84.49	.382
479	9.50	8.00	16	454	18	T	T	M	S	W	D	MH	L	S	D	2.25	88.30	.437
482	10.00	8.25	20	567	22	S	C	M	M	M	D	MH	M	M	D	3.12	85.60	.389
483	10.75	8.25	20	567	20	S	T	M	R	M	D	MH	M	M	M	3.87	78.83	.396
484	10.25	7.50	17	482	18	T	C	C	M	M	M	MS	M	M	M	2.25	87.50	.429
486	10.25	8.00	17	482	18	T	C	M	R	W	M	MS	M	S	M	3.25	84.56	.420
487	9.50	7.50	14	397	16	S	C	M	R	W	M	MH	M	M	M	2.50	84.30	.417
488	10.26	6.75	16	454	16	S	PC	M	R	M	M	MH	L	M	M	2.75	84.44	.393
489	9.00	7.50	14	397	22	S	T	O	R	N	D	MS	S	S	M	1.75	89.60	.342
490	8.75	8.25	16	454	22	S	PC	C	R	M	D	MS	S	M	M	3.25	82.60	.338
491	9.00	8.00	15	425	18	S	C	O	R	M	D	MS	S	M	M	2.12	88.08	.469
492	9.50	7.00	15	425	20	S	C	C	M	M	M	MS	M	S	D	2.00	87.28	.314
493	9.00	7.25	13	367	18	T	PC	M	M	M	M	MS	S	S	M	2.12	87.30	.387
494	10.00	8.00	17	482	22	S	T	O	R	M	M	MS	M	L	D	3.00	83.49	.370
495	10.00	7.50	16	454	18	T	PC	M	S	M	M	MH	M	M	M	2.75	85.60	.386
496	10.00	7.00	13	367	16	S	C	C	M	M	M	MH	M	S	F	2.00	87.50	.412
497	10.00	7.50	15	425	18	S	T	M	R	W	M	MS	L	S	F	2.88	83.59	.375
498	10.00	7.25	14	397	16	S	C	M	M	W	M	MS	M	S	D	2.50	84.49	.398
499	9.25	7.50	12	340	16	S	T	O	R	M	M	M	M	S	D	2.00	87.09	.392
500	9.25	7.00	14	397	16	S	C	M	R	M	M	MS	S	M	M	2.25	84.21	.355
501	8.75	8.00	15	425	22	S	C	C	R	M	M	MS	M	M	D	2.38	87.11	.360
502	8.50	7.50	13	367	20	T	PC	C	S	M	D	MS	L	S	M	2.26	86.96	.395
503	8.75	7.25	14	397	18	S	C	M	M	M	M	MH	M	M	M	2.87	80.45	.421
504	8.50	7.50	17	482	18	S	T	C	M	W	M	MS	S	M	D	2.25	84.70	.401
505	10.50	7.25	16	454	18	S	C	M	R	M	M	MS	M	M	M	3.00	84.00	.388
506	10.50	7.50	16	454	18	T	PC	C	M	M	M	MH	M	S	M	2.75	84.20	.381
507	9.75	7.75	16	454	20	S	T	M	R	N	D	MH	M	S	M	2.26	88.90	.329
508	10.00	7.75	18	510	18	T	C	M	M	M	M	MH	M	M	M	2.00	89.39	.383
509	10.00	7.50	16	454	20	S	PC	M	M	M	M	MH	M	M	F	2.63	83.98	.390
510	9.00	7.00	14	397	16	S	C	M	M	M	M	MS	M	S	F	2.00	86.67	.403
511	9.00	7.25	16	454	20	S	T	C	M	M	D	MH	M	M	M	2.50	84.62	.377
512	9.25	7.50	15	425	16	S	PC	C	M	W	M	MH	M	M	M	2.87	82.93	.486
513	9.13	7.00	12	340	18	T	T	M	M	M	M	MH	M	S	D	2.26	85.71	.345
514	9.50	7.50	15	425	18	T	T	M	R	M	M	MS	M	S	M	2.26	86.68	.480
515	9.00	8.00	16	454	18	S	C	M	R	M	M	MS	M	S	D	2.25	89.00	.418
516	11.00	8.00	21	595	20	S	T	M	M	M	D	MH	L	L	M	2.80	83.33	
517	10.00	7.25	16	454	20	S	C	C	S	M	M	MH	M	M	M	2.50	84.62	.377
518	10.00	8.00	20	567	18	S	T	M	M	M	M	MS	M	L	D	3.25	83.16	.429
520	10.00	8.25	17	482	16	S	PC	M	M	M	M	MN	M	M	M	2.75	84.98	.488
521	8.75	7.25	15	425	16	S	PC	M	M	M	M	MH	M	M	M	2.80	82.14	.374
522	10.00	7.50	19	539	16	S	T	M	M	W	M	MH	M	S	F	3.25	83.12	.529
523	10.50	7.25	17	482	18	T	T	M	S	N	S	MH	M	S	M	3.00	82.96	.374
524	10.00	7.25	17	482	18	T	PC	C	S	M	M	MS	M	M	M	3.00	82.96	.356
525	9.75	7.50	16	454	16	S	PC	M	R	W	M	MS	L	S	F	0.00	0000	.455
526	9.75	8.00	18	510	18	T	C	M	R	M	M	MS	M	S	D	2.75	85.13	.407
527	8.50	7.50	13	367	20	S	PC	C	M	M	M	MS	M	M	M	3.00	78.96	.295
528	9.00	7.50	16	454	18	S	PC	M	R	M	M	MS	M	M	M	0.00	0000	.369
529	9.25	7.50	16	454	18	T	T	O	R	M	M	MS	M	M	M	2.75	81.81	.398
530	9.50	8.00	17	482	22	S	T	M	M	N	M	S	M	S	D	2.63	86.22	.339
531	9.50	7.00	15	425	18	S	PC	M	S	W	M	MH	L	M	M	2.75	84.91	.448
532	9.75	7.75	16	454	16	S	PC	M	R	W	M	MS	S	M	F	2.75	83.60	.435
533	9.50	7.50	16	454	18	T	C	M	R	M	M	MS	S	M	M	3.00	82.96	.332
534	8.75	7.25	16	454	18	T	PC	M	M	M	M	MH	M	S	M	2.87	81.08	.355
537	9.75	8.00	18	510	20	S	T	M	R	M	M	MS	M	M	M	2.50	84.00	.375
539	11.50	8.25	21	595	20	S	T	M	R	M	M	S	M	L	F	3.50	83.33	.377
540	10.00	7.75	18	510	20	S	C	C	R	M	M	MS	M	S	M	2.75	84.08	.380
541	10.00	7.25	16	454	20	T	T	M	M	M	M	MS	S	M	M	2.25	87.00	.379
542	8.75	7.50	15	425	20	S	C	C	S	M	M	MS	M	M	D	2.00	86.21	.356
543	9.75	8.00	16	454	18	T	T	M	R	M	M	MS	M	S	F	3.00	82.44	.367
546	9.75	8.25	18	510	22	T	T	M	R	N	D	MS	S	S	M	3.00	83.61	.329
547	9.50	7.00	13	369	16	S	C	M	M	M	M	MH	M	M	M	1.75	88.89	.399
548	9.26	7.50	16	454	20	T	PC	M	S	M	M	MS	M	M	M	3.00	83.33	.351
549	9.50	7.25	15	425	20	S	C	C	M	M	M	MH	M	S	M	2.00	87.30	.348

EAR CHARACTERS

Ear Number	Length of Ear	Circum. of Ear	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between Rs	Indentation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Ozs.	Shelling Per Cent	Wt. Average Kernel-Oz.
550	7.75	7.75	15	425	20	S	C	O	R	N	D	MS	M	M	M	2.50	84.62	.352
551	9.00	7.00	14	397	18	T	T	M	M	N	M	MH	M	S	M	2.00	86.02	.353
552	9.00	7.50	16	454	22	T	PC	M	M	M	M	MS	M	L	M	2.50	85.26	.358
553	8.50	7.50	15	425	22	T	T	C	R	M	M	MS	M	S	M	1.75	88.71	
555	8.50	7.50	14	397	20	S	PC	C	M	N	S	MS	S	S	D	2.00	86.63	.311
556	8.50	7.50	15	425	18	T	T	M	M	M	M	MS	M	M	M	2.50	83.85	.356
557	8.50	8.00	15	425	24	S	C	M	R	N	M	MH	M	M	M	2.75	00.00	.302
558	8.50	7.50	15	425	18	T	PC	M	S	M	M	MH	M	M	D	2.63	81.81	.329
559	8.50	7.50	15	425	22	T	C	C	S	N	D	S	S	M	M	1.87	83.98	.293
560	8.00	7.25	13	368	18	T	C	O	R	M	M	MS	M	S	D	1.87	86.88	.321
561	8.25	7.50	14	395	18	S	PC	C	M	N	S	MS	S	M	D	2.00	86.02	.344
562	9.00	7.50	15	425	20	S	C	M	S	M	M	MS	M	S	M	2.38	84.69	.375
563	9.25	7.25	14	397	16	S	T	M	R	M	M	MS	M	M	M	2.00	86.67	.381
564	8.38	8.00	16	454	22	S	C	C	M	M	D	MS	M	M	M	2.75	84.62	.333
565	9.50	7.50	16	454	20	T	PC	C	M	M	M	MS	M	S	M	2.12	87.60	.386
566	9.50	7.75	17	482	18	T	C	M	M	W	M	MS	M	S	F	3.38	80.00	.379
567	10.50	7.50	17	482	18	T	T	M	M	M	M	MS	M	M	F	2.75	85.13	.363
568	9.50	7.75	16	454	20	S	T	O	R	M	D	MS	M	M	M	2.63	84.46	.345
569	9.75	7.00	17	482	18	S	PC	C	S	M	M	MH	M	M	M	2.50	84.44	.398
570	9.75	7.75	17	482	16	S	PC	O	M	M	S	MS	M	S	M	3.50	79.41	.357
571	9.00	8.50	16	454	20	S	C	C	M	N	M	MS	S	S	D	2.75	85.94	.367
572	9.75	7.50	16	454	20	S	C	C	M	M	M	MH	M	M	M	2.50	85.71	.344
573	9.25	8.25	16	454	18	T	PC	C	M	M	M	S	M	S	M	2.00	87.09	.365
574	10.25	7.25	16	454	18	S	T	O	M	W	D	MH	M	M	M	3.00	83.51	.396
575	9.50	7.00	15	425	18	T	PC	M	M	N	M	MS	M	S	D	3.00	80.46	.378
576	9.25	7.25	15	425	20	S	PC	C	M	M	M	MH	M	M	M	2.76	84.49	.335
577	8.50	7.25	16	454	16	S	T	M	S	M	M	MH	L	L	F	2.50	85.36	.443
578	9.25	7.25	14	397	18	T	T	M	R	M	M	MH	M	M	D	2.00	87.09	.337
579	9.25	8.00	17	482	22	T	PC	C	R	M	M	MS	M	S	F	3.00	83.49	.316
580	8.75	7.50	16	454	18	T	PC	M	R	M	M	MS	M	M	D	1.87	87.80	.301
581	9.75	7.50	17	482	18	S	C	M	M	M	M	MH	M	M	M	3.25	89.42	.447
583	9.75	8.50	21	595	24	S	PC	C	R	N	D	MS	S	M	M	1.87	84.80	.367
584	10.00	7.50	16	454	16	S	T	M	M	W	M	MH	M	S	D	3.58	89.20	.471
585	10.25	8.25	19	539	22	T	C	M	R	N	D	MS	L	M	M	3.25	81.99	.338
586	9.00	8.00	17	482	20	S	T	M	R	N	M	MS	M	M	M	2.38	81.56	.359
587	9.25	7.50	18	510	20	S	C	C	S	M	M	MH	M	M	M	3.00	83.33	.436
588	9.50	7.25	17	482	18	T	T	M	R	M	M	MS	M	M	M	0.00	0.00	
589	9.50	7.50	15	425	16	S	PC	M	R	M	S	MS	M	M	M	3.00	80.00	.370
590	10.50	7.25	17	482	18	S	C	M	M	M	M	MH	M	M	D	2.12	88.06	.395
591	8.50	7.00	14	397	18	S	C	C	M	N	M	MS	M	S	D	1.50	88.24	.322
592	8.75	7.50	14	397	20	S	C	C	R	N	D	MS	M	S	D	2.12	85.39	.309
593	8.38	6.88	15	425	18	S	C	C	M	N	M	MH	M	M	M	2.75	81.81	.337
594	10.50	7.63	20	567	20	S	PC	M	M	M	M	MH	M	M	M	2.25	83.36	.357
595	9.75	8.00	18	510	18	T	PC	M	R	W	M	MS	M	M	M	2.75	85.13	.440
596	8.25	7.75	14	397	18	T	PC	M	R	M	D	MS	L	S	M	2.12	86.40	.397
597	10.00	7.00	15	425	18	S	PC	M	M	N	M	MH	M	S	M	2.50	84.44	.358
598	10.00	6.75	15	425	16	S	T	M	S	M	M	MS	M	S	M	2.50	82.80	.369
599	9.50	8.50	18	510	22	S	T	M	R	M	M	MS	M	M	M	3.50	82.05	.344
600	10.00	8.00	19	539	20	S	T	M	M	M	M	MH	M	M	F	3.50	81.70	.432
601	10.00	7.75	18	510	20	S	T	C	M	W	D	MS	L	L	M	3.38	82.38	.371
602	10.25	7.75	18	510	20	S	T	M	M	M	M	MS	M	M	M	3.00	83.33	.392
603	9.50	7.75	16	454	18	T	T	M	R	W	M	MS	M	M	M	3.25	82.40	.397
604	10.50	7.75	18	510	18	S	PC	O	R	M	M	MS	M	M	M	2.50	86.31	.357
605	9.75	7.00	15	425	18	S	PC	M	M	M	M	MS	M	S	F	2.12	85.84	.405
606	9.00	7.25	16	454	18	T	C	C	M	M	M	MS	M	L	F	2.50	83.20	.379
607	8.50	7.50	14	397	20	S	PC	M	M	M	M	MS	S	M	M	1.63	87.96	.328
608	9.75	7.75	17	482	20	S	PC	M	M	M	M	MH	M	M	F	2.50	86.67	.363
609	9.25	7.75	15	425	20	S	T	M	R	M	M	MS	M	M	M	2.25	86.50	.363
610	9.25	7.00	14	397	16	S	T	M	R	M	M	MH	M	S	M	2.00	85.70	.352
611	10.00	7.50	17	482	18	T	C	M	M	M	M	MH	M	M	M	2.50	85.40	.381
612	9.50	7.50	17	482	24	S	C	M	R	M	M	MH	M	M	D	3.00	83.33	.332
613	8.25	6.50	12	340	18	S	C	C	R	M	M	MH	M	M	M	1.75	86.58	.336
614	9.25	7.50	15	425	20	S	T	C	M	M	M	MS	M	S	M	3.25	85.94	.333
615	8.50	8.25	18	510	20	S	C	C	M	W	D	MS	M	M	M	3.25	83.33	.380
617	9.25	7.75	18	510	22	T	C	M	R	N	D	MS	M	M	M	2.50	86.40	.322
618	9.00	7.50	16	454	18	S	PC	M	R	W	D	MH	L	M	M	2.12	86.40	.408
619	9.50	7.50	18	510	18	T	T	M	M	M	M	MS	M	M	M	2.75	80.77	.387
620	8.00	7.00	14	397	16	S	C	M	M	W	S	MH	M	M	M	2.25	85.35	.438
623	8.75	7.50	15	425	20	S	C	M	M	M	M	MS	M	M	F	2.12	85.39	.375
624	9.50	7.75	19	539	20	S	C	C	R	M	M	MS	M	M	M	2.87	84.82	.371
625	10.25	7.00	16	454	16	S	T	O	R	M	M	MH	M	S	F	3.00	80.00	.388
626	9.50	7.75	19	539	22	S	C	C	M	M	M	MH	M	L	F	3.50	80.49	.366
627	9.50	7.25	15	425	18	S	T	O	M	M	M	MH	M	M	M	2.25	86.68	.375
628	9.75	7.50	16	454	18	S	PC	M	M	M	M	MH	M	L	F	3.12	81.48	.358
629	9.50	7.00	14	397	16	S	T	M	M	W	M	MS	M	L	M	1.50	89.30	.404
630	9.25	7.75	18	510	20	S	C	M	R	M	M	MH	L	S	F	3.00	83.33	.384
631	9.25	7.75	17	482	20	S	T	C	M	M	M	MH	M	L	M	2.75	84.38	.329
632	9.50	7.25	17	482	20	S	C	M	S	M	M	MH	M	M	F	2.63	86.01	.381
633	9.50	8.00	19	539	20	S	C	M	M	M	M	MH	M	S	F	2.38	82.79	.400
634	8.00	7.25	15	425	18	S	C	C	M	M	M	MS	M	S	D	2.00	86.02	.345
635	10.50	7.50	16	454	18	S	T	M	S	M	M	MH	M	M	M	2.38	86.03	.403
636	9.00	8.00	17	482	20	S	PC	M	R	M	D	MS	M	M	M	2.75	84.08	.371
637	9.50	7.25	16	454	16	S	PC	M	R	W	M	MH	M	M	F	2.50	82.78	.394
638	10.25	7.75	16	454	20	S	T	M	M	M	M	MH	M	M	M	2.38	80.28	.370
639	9.00	7.75	17	482	18	T	PC	M	R	M	M	MH	M	M	F	2.75	85.13	.392
640	9.25	7.75	17	482	18	T	T	M	M	M	M	MH	M	L	F	3.25	82.41	.407
641	9.75	7.50	16	454	18	S	T	M	M	M	M	MH	L	L	M	2.63	84.80	.396
642	9.75	7.75	18	510	22	T	T	M	R	M	M	MS	M	M	D	2.63	86.33	.364
643	10.00	7.50	18	510	16	S	PC	M	R	W	M	MS	M	L	M	4.12	77.24	.431
644	11.25	8.50	21	595	20	S	T	M	R	W	M	MS	M	M	D	4.00	81.39	.388
645	10.00	8.25	20	567	20	S	PC	M	R	W	D	MS	M	M	M	3.50	83.33	.418
646	8.75	8.00	15	425	20	S	PC	M	M	M	M	MS	M	M	M	2.25	86.96	.413
647	10.00	7.00	14	397	16	S	C	M	R	M	S	MS	S	S	M	2.00	86.61	.362
648	8.75	7.50	16	454	18	S	C	M	R	M	M	MS	M	S	M	2.50	84.90	.405
649	9.00	7.00	15	425	16	S	C	M	M	M	M	MS	M	M	M	2.63	82.05	.416
650	8.50	7.50	12	340	16	S	PC	O	R	M	M	MS	M	M	M	2.25	84.27	.372
651	9.75	8.25	17	482	20	S	C	O	R	M	D	S	M	M	M	2.75	84.38	.385
652	9.75	7.25	16	454	16	S	T	M	R	M	M	MS	M	M	M	3.00	82.35	.386
653	8.50	7.50	13	368	16	S	PC	M	R	M	M	MS	M	M	M	1.75	87.21	.408
654	8.50	7.75	15	425	16	S	PC	M	R	W	D	MS	M	M	F	2.75	82.54	.456
655	9.00	7.00	15	425	18	S	T	M	S	M	M	MH	M	M	M	2.75	83.64	.333
656	9.50	7.00	14	397	18	T	PC	O	R	N	M	MH	M	M	D	2.25	85.71	.377
657	8.75	7.75	16	454	20	S	T	C	M	M	M	MS	M	S	M	2.12	86.96	.392
658	8.50	7.50	15	425	20	S	C	M	R	M	M	MS	S	M	D	1.87	87.50	.347
659	9.00	8.50	17	482	18	S	PC	M	R	W	D	MH	L	M	D	2.38	87.65	.438
660	9.25	7.75	16	454	20	S	PC	M	M	M	M	MS	M	S	D	2.75	83.33	.359
661	10.00	7.50	18	510	20	S	C	M	M	M	M	MS	M	M	M	3.25	82.20	
662	10.50	7.75	18	510	20	S	PC	C	M	M	M	MS	M	L	F	3.25	82.20	.376
663	9.75	7.50	16	454	18	T	T	O	S	M	M	H	M	M	F	3.00	84.00	.356
664	9.00	7.75	15	425	20	S	C	C	R	M	M	MS	M	M	M	1.87	88.00	.376
665	9.50	7.50	15	425	18	S	T	C	R	M	M	MS	MS	M	M	2.50	84.90	.351
666	8.50	7.75	15	425	18	T	T	M	R	M	M	MS	M	M	D	0.00	00.00	.362
667	9.50	7.25	14	397	18	T	T	M	S	M	M	MH	M	M	M	2.75	83.08	.365
668	8.25	7.75	14	397	20	S	C	C	M	M	M	MS	M	M	M	2.50	85.04	.401
669	8.50	7.75	16	454	20	S	C	M	M	M	M	MH	M	M	M	2.25	87.89	.381
670	9.50	7.50	18	510	18	T	C	M	M	M	D	MS	M	M	F	2.50	87.01	.428
671	10.00	7.25	16	454	20	T	C	C	M	M	S	S	S	M	M	2.75	84.01	.327

EAR CHARACTERS

Ear Number	Length of Ear	Circum of Ear	Ear Wt. Ounces	Ear Wt. Grams	Number of Rows	Rows Twist or Straight	Ear Shape	Space Between R	Indentation	Kernel Width	Kernel Depth	Kernel Composition	Size of Germ	Size of Shank	Shape of Butt	Weight of Cob-Ozs	Shelling Per Cent	Wt Average Kernel-Oz
672	9.75	750	15	425	22	T	C	O	R	N	D	MS	M	M	M	2.25	8761	.308
673	1000	8.50	18	510	22	S	T	M	R	M	M	MS	M	M	M	3.87	7960	.333
674	1100	775	19	539	18	T	T	M	R	W	M	MS	M	S	F	3.25	8288	.401
675	8.75	8.00	17	482	20	S	C	C	R	M	M	MS	S	M	M	3.00	8440	.384
676	10.75	775	19	539	18	T	T	M	M	M	M	MH	M	M	M	3.38	8333	.406
677	9.75	7.75	17	482	18	S	C	M	M	W	M	MH	L	M	M	3.25	8239	.380
678	9.25	7.00	15	425	18	S	T	M	M	M	M	MH	M	S	M	2.75	8075	.322
679	9.25	7.75	16	454	20	S	T	M	M	M	M	MH	M	M	M	3.25	8220	.348
680	10.00	750	16	454	18	T	T	O	R	M	M	MS	M	S	F	2.25	8467	.363
681	9.50	725	16	454	16	S	PC	C	R	M	M	MS	M	M	M	2.38	8456	.373
682	9.25	750	16	454	18	T	PC	C	M	M	M	MS	M	M	M	2.50	8580	.367
683	9.00	725	13	368	16	T	T	O	R	M	M	MS	S	M	M	2.25	8535	.426
684	9.50	750	15	425	20	S	C	C	R	N	M	MS	M	S	D	1.75	8889	.336
685	9.75	725	17	482	16	S	PC	O	R	M	M	MH	M	M	M	2.75	8540	.390
686	10.00	750	17	482	20	S	C	M	R	M	M	MS	M	M	M	2.63	8399	.341
687	9.50	725	15	425	20	S	T	M	M	M	M	MH	M	M	F	2.25	8646	.350
688	10.00	7.25	16	454	18	T	T	M	M	M	M	MH	M	M	D	2.50	8631	.356
689	9.75	7.75	17	482	18	S	T	O	R	M	D	MH	M	M	M	3.12	8360	.397
690	9.00	8.00	17	482	20	S	T	M	R	M	M	MS	S	M	D	3.00	8208	.375
691	9.00	725	15	425	16	S	C	M	M	W	M	MH	M	S	M	2.87	8192	.427
692	8.50	775	16	454	20	S	C	C	R	M	D	MS	M	S	M	2.87	8684	.371
693	9.00	750	14	397	18	S	T	M	M	M	D	MS	S	S	M	2.00	8661	.372
694	9.00	8.00	17	482	20	S	PC	M	M	M	D	MS	M	S	M	2.12	8590	.375
696	10.25	7.25	17	482	18	T	T	M	M	M	M	MH	M	M	M	2.25	8556	.375
697	9.50	750	15	425	18	S	PC	C	M	M	M	MS	S	S	D	2.75	8247	.285
698	8.50	7.00	13	368	16	S	C	M	M	W	M	MS	M	S	M	2.75	7912	.348
699	9.00	7.25	14	397	18	T	T	M	M	M	M	MH	M	M	M	2.00	8666	.412
700	9.50	725	14	397	16	S	PC	M	M	W	M	MH	M	S	M	2.38	8516	.432
701	9.25	7.75	16	454	18	T	C	M	R	W	D	MS	M	S	F	2.00	8709	.385
702	9.50	7.25	14	397	16	S	T	M	R	W	M	MH	L	S	M	2.26	8535	.380
703	8.50	7.00	13	368	18	T	T	C	M	M	M	MH	M	M	M	2.25	8333	.288
704	9.50	750	15	425	20	S	C	C	M	M	M	MH	M	M	M	2.75	8439	.344
705	9.00	750	14	397	16	S	T	M	R	W	M	MS	M	M	M	2.50	8387	.386
706	8.25	7.50	15	425	18	S	C	M	M	M	D	MH	M	M	M	2.50	8385	.373
707	8.50	750	13	368	16	S	T	M	R	W	M	MH	L	M	M	0.00	0000	.440
708	9.50	750	16	454	18	T	C	M	M	M	M	MH	L	M	M	2.50	8444	.367
709	9.50	7.75	16	454	20	S	C	R	R	M	M	MS	M	M	D	2.38	8562	.342
711	9.00	7.00	14	397	16	S	T	M	M	M	M	MH	M	M	F	2.12	8595	.396
712	9.00	7.00	16	454	18	T	PC	M	M	M	M	MH	M	M	M	2.38	8645	.417
713	9.00	7.00	14	397	16	S	T	C	C	M	M	MS	M	S	M	2.00	8797	.354
715	8.50	7.25	12	340	20	S	C	C	M	M	M	MH	M	S	M	0.00	0000	.331
716	8.75	7.25	14	397	18	S	PC	M	M	M	M	MH	M	M	M	0.00	0000	.384
717	9.50	750	16	454	18	T	PC	M	R	M	D	S	M	S	F	2.12	8730	.326
718	10.25	750	16	454	18	T	PC	M	R	M	M	MH	M	M	M	2.63	8529	.356
720	10.50	750	18	510	20	S	C	C	M	M	M	MS	M	S	M	2.50	8571	.344
721	9.50	8.00	20	567	18	T	C	M	M	W	M	MH	M	M	M	3.25	8285	.399
722	8.50	7.50	14	397	18	T	T	M	M	M	M	MH	M	M	M	1.75	8852	.354
723	10.00	7.50	15	426	20	S	T	C	M	M	M	MH	M	S	M	2.75	8408	.353
724	9.25	7.75	14	397	18	T	T	C	R	W	M	MS	M	S	D	2.25	8668	.353
725	9.75	7.25	14	397	20	S	C	C	M	M	M	MS	M	M	M	2.75	8333	.334
726	10.00	7.50	18	510	20	S	T	M	M	M	M	MS	S	L	M	3.25	8220	.330
727	9.00	7.75	16	454	16	S	T	O	R	W	M	MH	M	M	M	2.63	8461	.445
728	10.50	7.50	18	510	18	S	T	C	M	M	M	MH	M	M	F	3.63	8239	.381
729	9.00	7.75	15	425	18	T	T	M	R	M	M	MH	M	S	F	2.75	8365	.343
730	9.50	7.00	15	425	14	T	T	M	M	W	M	MS	M	M	M	2.50	8305	.406
731	9.50	7.00	13	368	16	S	T	M	M	M	M	MH	M	S	F	1.63	8962	.399
732	9.75	7.50	17	454	18	S	C	M	M	M	M	MS	M	M	M	3.25	8290	.379
733	11.25	7.75	18	510	18	S	C	M	R	M	M	MH	M	L	F	3.75	8078	.427
734	9.75	6.75	14	397	18	T	C	M	S	M	M	MH	M	M	F	2.75	8310	.383
735	10.25	6.75	14	397	14	T	T	M	M	M	M	MS	M	M	M	2.50	8484	.448
736	9.75	7.25	15	425	18	T	T	M	M	M	M	MS	M	M	M	2.75	8420	.372
737	9.00	7.50	16	454	18	S	C	M	M	M	M	MS	M	M	M	3.00	8181	.348
738	9.00	7.00	12	340	18	S	C	M	M	M	S	MH	M	S	M	2.50	8333	.328
739	9.00	7.25	13	368	20	S	PC	M	R	M	M	MH	M	M	D	1.87	8850	.358
741	10.00	7.50	17	482	18	T	T	M	S	M	M	MH	M	M	M	3.25	8240	.389
742	9.75	7.25	16	454	20	T	PC	M	M	M	M	MH	M	S	F	3.38	8030	.447
743	9.50	8.25	19	539	24	S	C	C	R	M	D	MS	M	M	M	3.50	8371	.337
744	9.75	8.00	18	510	22	T	T	C	M	M	D	MS	M	M	F	2.75	8136	.398
745	10.00	8.00	18	510	22	S	C	M	R	M	D	MS	M	M	M	3.00	8518	.389
746	9.50	7.25	16	454	20	T	T	M	R	M	M	MS	M	M	M	3.25	8220	.395
748	8.50	7.00	12	340	18	T	PC	M	M	M	M	MH	L	L	F	2.50	8320	.369
749	10.00	7.50	16	454	18	S	T	M	M	M	M	MH	M	M	M	2.50	8631	.400
750	9.25	7.75	16	454	18	S	PC	M	R	W	M	MS	L	M	M	2.50	8490	.388
751	9.25	7.50	16	454	18	T	T	C	M	M	M	MH	M	M	M	2.50	8418	.385
752	9.00	7.25	13	368	20	S	PC	M	R	M	M	MS	M	M	M	2.50	8462	.342
753	9.50	7.25	14	397	16	S	C	M	R	M	M	MS	M	M	M	2.00	8709	.402
754	9.00	7.75	17	482	16	S	T	M	S	W	M	MH	S	M	M	3.50	7944	.480
755	9.25	7.00	15	425	18	S	C	M	R	M	M	MS	M	M	M	2.00	8709	.379

EAR CHARACTERS

Ear Number	Length of Ear-Green	Length of Ear-Dry	Circum. of Ear-Green	Circum. of Ear-Dry	Wt. of Ear Gms.-Green	Wt. of Ear Gms.-Dry	Number of Rows	Rows Twist or Straight	Shape of Ear	Space Between R's	Inden-tation	Width of Kernel	Thickness of Kernel	Depth of Kernel	Size of Germ	Composition of Kernel	Wt. of Cob -Grams	Shelling Per Cent
SECTION A																		
1	10.75	10.60	7.55	7.25	541.8	482.0	22	St.	T	C	R	N	M	M	M	MH	70.88	
2	9.25	9.12	7.60	7.35	397.0	354.4	22	T.R	Cy.	C	R	N	M	M	S	M	49.61	
3	9.75	9.50	7.65	7.35	522.0	439.4	24	T.L.	T.	C	MR	N	M	M	M	M	56.70	88.67
4	10.00	9.60	6.80	6.50	397.0	354.4	16	St.	T.	M	MR	M	M	M	M	S	45.36	87.52
5	9.75	9.35	7.50	7.12	584.0	496.1	22	T.R.	T.	C	M	N	M	MD	S	MH	76.54	84.46
6	8.00	7.75	7.60	7.25	425.3	348.7	22	T.L.	T	C	M	N	MTh	M	M	M	45.36	
7	10.60	10.35	7.25	7.00	584.0	496.1	18	St.	T	M	M	M	M	MS	M	M	85.04	84.20
8	11.85	11.60	7.18	6.90	533.0	467.8	18	St.	T	M	M	MN	M	S	S	MS	70.87	86.27
9	10.60	10.50	7.65	7.50	572.6	490.5	18	T.R.	T	M	R	M	M	S	S	S	96.38	82.39
10	10.35	10.25	7.18	6.90	473.0	405.4	18	St.	T	M	MR	N	M	S	S	M	56.70	86.64
11	10.25	10.12	7.35	7.06	552.8	453.6	18	T.L.	T	M	M	M	M	M	M	S	51.03	89.09
12	10.35	10.15	7.12	6.85	521.6	453.6	18	St.	T	M	M	M	M	M	M	M	56.70	87.86
13	10.12	10.00	7.90	7.60	533.0	462.1	20	T.L.	P.Cy.	MC.	M	MN	M	MS	M	S	82.21	83.80
14	9.75	9.40	7.65	7.30	581.0	445.1	18	T.R.	T.	M	M	MN	M	M	M	M	59.53	87.72
15	10.12	9.85	8.40	8.05	638.0	547.1	22	T.R	T.	C	R	MN	M	MD	S	M	82.21	84.90
16	9.85	9.75	7.25	7.00	482.0	425.3	18	T.R	T.	C	MS	N	M	M	M	M	53.86	87.82
17	9.50	9.35	7.40	7.10	510.4	433.7	20	T.R	T.	M	M	N	M	M	S	MS	70.87	84.08
18	10.50	10.12	7.12	6.75	516.5	430.9	18	T.L	T.	MO	MS	N	M	S	MS	H	73.71	88.22
19	10.25	10.10	8.30	7.85	686.0	575.4	24	St.	P.Cy.	MC	MR	N	M	MD	MS	MS	70.88	87.78
20	9.85	9.75	7.95	7.50	598.2	490.5	18	T.R	T.	MC	R	M	M	MD	ML	M	85.05	84.21
21	10.12	10.00	8.25	7.80	541.4	473.4	18	St.	T.	M	VR	MW	M	MD	L	S	93.56	81.68
22	9.75	9.60	7.60	7.35	587.4	453.6	18	T.L.	P.Cy.	M	R	M	MT	D	L	S	65.21	86.32
23	10.25	10.12	7.50	7.25	521.6	450.7	18	T.L.	Cy.	M	MR	M	M	M	M	S	77.96	83.62
24	10.00	9.85	8.35	7.90	612.3	530.2	24	St.	P.Cy.	M	M	N	M	MD	S	M	70.87	86.69
25	10.60	10.35	7.35	6.90	555.6	470.6	18	T.R	T.	C	M	M	M	M	M	M	87.88	86.10
26	10.78	10.50	7.90	7.50	601.0	541.5	18	T.R	T.	M	M	M	M	M	M	M	79.38	85.47
27	10.61	10.35	7.50	7.00	504.6	422.4	20	St	P.Cy.	MC	S	N	M	M	S	MS	51.03	88.93
28	11.06	10.85	7.60	7.25	567.0	447.9	20	St	P.Cy.	M	MR	N	M	D	S	S	45.36	90.25
29	10.85	10.60	7.20	6.75	588.6	447.9	16	St	T.	MC	M	M	MTh.	S	S	M	73.71	88.60
30	10.25	10.12	7.20	6.85	510.3	439.4	16	St	P.Cy	M	MS	M	M	MS	ML	MH	73.71	88.99
31	10.60	10.40	7.40	7.10	567.0	481.9	18	T.L.	P.Cy	M	S	N	M	MS	MS	MH	73.71	84.71
32	10.50	10.25	7.55	7.10	595.3	487.6	20	St	Cy.	C	S	N	M	M	M	M	70.87	86.71
33	10.35	10.00	6.90	6.40	470.6	408.2	16	St	P.Cy.	M	M	M	M	M	L	M	51.03	87.41
34	10.00	9.75	6.85	6.55	442.2	402.6	16	St.	T.	M	MS	M	M	MS	M	M	53.87	86.99
35	11.18	11.12	7.44	7.00	552.8	482.0	18	St	T.	M	M	M	M	S	S	MH	85.05	82.25
36	10.68	10.25	8.25	7.80	637.8	550.0	22	St	Cy.	MC.	MS	N	M	M	MS	MH	66.70	89.85
37	9.50	9.35	7.75	7.35	504.6	433.7	20	St	T.	MC.	M	N	M	M	M	MH	56.70	87.09
38	10.50	10.35	7.87	7.50	586.8	482.0	22	T.R	T.	C.	M	N	MTh	M	MS	M	59.54	87.64
39	10.37	10.12	8.06	7.60	618.0	547.1	22	T.R	T.	MC.	M	N	M	MD	M	M	70.87	88.87
40	9.87	9.65	7.75	7.35	567.0	487.6	22	T.R.	T.	C	M	N	M	M	M	M	73.71	84.80
41	10.62	10.50	7.12	6.75	555.6	459.3	16	St.	P.Cy.	M	M	M	M	S	S	M	70.87	84.28
42	9.87	9.60	7.82	7.50	567.0	496.4	18	T.R	Cy.	M	M	M	M	MD	ML	S	65.21	86.93
43	10.00	9.85	7.12	6.55	504.6	408.2	18	T.R.	T.	M	M	M	M	MS	M	M	68.04	84.00
44	11.00	10.75	7.62	7.25	562.8	476.3	18	T.R.	T.	M	M	M	M	MS	S	M	70.87	85.21
45	10.56	10.35	6.82	6.36	445.1	479.9	18	T.L.	T.	M	MS	MN	M	S	S	MH	56.70	80.50
46	9.75	9.60	8.12	7.65	640.8	490.4	18	T.L.	T.	M	MR	M	M	MD	M	S	76.54	84.40
47	9.75	9.50	7.25	6.80	439.4	385.5	20	T.R.	T.	C	M	N	M	M	M	MS	51.03	86.77
48	10.37	10.12	7.25	6.85	524.4	450.4	18	T.L.	T.	M	M	M	M	MD	ML	S	56.70	87.73
49	10.62	10.35	7.25	6.85	470.6	394.0	20	T.L.	T.	C	M	N	M	MD	S	M	42.52	90.09
50	10.00	9.75	7.37	7.00	598.6	442.2	20	St.	P.Cy.	C	M	N	M	M	ML	MH	73.71	83.34
51	9.50	9.25	8.00	7.50	678.3	473.4	24	St	P.Cy	YC	M	N	M	MD	M	M	70.87	85.21
52	9.50	9.25	8.12	7.55	618.0	504.6	24	St	P.Cy	C	M	N	M	M	M	M	87.84	83.44
53	10.00	9.75	7.44	6.95	482.0	405.4	20	St	T.	C	M	MN	M	MS	M	M	56.70	85.72
54	9.44	9.15	8.00	7.50	581.2	481.9	22	St	T.	C	M	N	M	M	M	M	79.38	83.63
55	9.87	9.60	7.50	7.10	538.6	430.9	16	St	T.	M	M	M	M	M	S	MH	62.37	83.22
56	10.87	10.60	7.25	6.85	524.4	459.3	18	St	T.	M	M	M	M	MS	S	M	76.54	83.23
57	10.00	9.85	7.33	6.95	465.0	399.7	16	T.R	T.	O	MS	M	M	S	S	S	70.88	83.34
58	9.75	9.50	7.00	6.60	419.6	345.9	18	T.R.	T.	M	M	M	M	S	L	M	48.19	86.40
59	10.87	10.25	7.18	6.75	533.0	439.4	18	St	T.	M	M	M	M	M	L	MH	73.71	83.12
60	9.62	9.50	8.06	7.60	581.2	484.8	20	St.	Cy	C	M	MN	M	M	S	MS	76.54	85.00
61	10.00	9.75	7.56	7.20	541.5	456.5	18	St.	T.	M	MR	M	M	M	M	M	62.34	86.59
62	10.75	10.50	8.00	7.50	696.3	510.3	20	T.R.	T.	C	M	MN	M	M	M	MH	76.54	86.40
63	10.50	10.40	7.56	7.15	581.2	487.6	18	T.R	T.	M	M	M	M	M	ML	S	76.54	84.74
64	10.25	10.00	7.18	6.80	524.5	450.8	18	T.L.	Cy	M	M	N	M	M	ML	M	79.38	78.13
65	10.75	10.50	7.75	7.30	603.9	518.8	16	St	T.	M	M	M	M	M	ML	M	73.71	85.79
66	11.37	11.12	8.00	7.56	674.8	578.4	20	St	T.	M	M	M	M	M	ML	M	79.22	83.50
67	10.00	9.85	7.37	6.90	565.6	469.3	20	St	P.Cy	MC	M	MN	MTh	M	ML	M	56.70	87.51
68	10.50	10.30	7.18	6.75	513.2	447.9	20	St.	T	M	MS	N	M	MD	M	M	48.92	89.64
69	10.50	10.35	8.30	7.75	637.7	550.0	22	St	T	C	M	MN	M	D	S	S	79.38	85.86
70	9.87	9.60	7.85	7.50	567.0	467.8	22	T.R	T.	C	MR	N	M	MD	M	M	65.21	86.23
71	11.37	11.25	7.75	7.25	581.2	473.4	16	St.	T.	M	M	M	MTh	S	S	M	70.88	85.47
72	9.50	9.25	7.36	6.85	598.6	480.9	20	St.	T.	C	M	N	M	MS	S	S	68.04	84.82
73	10.25	10.10	7.12	6.75	496.0	419.6	14	St.	T.	O	MR	M	M	M	MS	M	66.70	86.40
74	10.37	10.12	7.18	6.90	501.8	430.9	22	St.	T.	C	MS	N	M	S	S	M	70.88	89.34
75	10.00	9.60	7.30	7.15	567.0	445.1	18	T	T.	M	M	N	M	M	M	MH	70.88	84.38
76	10.37	10.25	7.65	7.25	530.2	445.1	20	St.	T.	M	R	M	M	M	S	M	62.37	87.20
77	9.87	9.60	7.30	6.85	533.0	439.4	20	St.	T.	C	M	N	M	M	L	S	56.70	87.10
78	10.25	10.10	7.40	6.90	555.6	456.5	18	T.L.	T.	M	M	M	M	M	M	M	66.21	90.89
79	10.25	10.10	7.50	7.00	524.4	439.4	20	T.R	T.	C	M	N	M	M	L	MS	70.88	83.88
80	9.25	9.12	7.25	6.80	510.2	428.0	14	T	T.	M	R	W	MTh	M	ML	MS	68.04	84.61
81	10.00	9.85	7.50	7.10	552.8	450.8	18	St	T.	M	M	M	M	M	MS	M	70.88	84.76
82	10.50	10.30	7.55	7.12	538.6	456.4	20	St	T.	M	M	M	M	M	M	MH	62.37	86.97
83	10.87	10.75	6.95	6.65	513.1	445.1	18	St	P.Cy	M	M	N	M	M	ML	M	56.70	87.50
84	10.00	9.75	6.90	6.50	442.0	405.4	16	St	T.	M	M	M	M	S	M	MS	70.88	83.34
85	9.75	9.60	7.50	7.10	544.4	453.6	20	St	T.	M	M	M	M	M	M	M	62.37	86.32
86	9.25	9.12	7.12	6.65	448.0	374.2	16	St	Cy	M	M	M	M	M	M	MH	56.70	86.45
87	10.38	10.25	7.35	6.90	541.4	447.9	22	St	T	C	M	N	M	M	M	M	70.88	84.38
88	10.25	10.15	7.25	6.90	459.3	408.7	18	T.	T.	M	M	M	Th	M	ML	MS	56.70	85.92
89	11.00	10.88	6.75	6.50	527.3	447.9	16	St	T.	M	M	M	M	M	ML	H	65.21	85.89
90	10.87	10.75	7.00	6.60	538.6	450.8	18	T.R	T.	M	M	N	M	S	M	MH	73.71	83.64
91	10.25	9.90	7.50	7.12	541.6	436.6	20	St.	T.	M	M	N	M	M	S	M	56.70	87.10
92	10.25	10.00	8.00	7.55	569.8	493.3	20	St	P.Cy	M	MR	M	M	MD	MS	M	79.38	84.68
93	12.00	11.75	7.35	7.00	569.8	470.6	16	T.L	T.	O	M	M	M	M	L	M	48.19	89.70
94	11.00	10.85	8.18	7.70	689.0	552.8	18	T.R.	T.	MO	M	MN	T	MD	L	H	110.56	79.90
95	11.00	10.85	7.40	6.90	538.6	445.1	18	St.	T.	M	M	N	M	M	ML	H	62.87	86.87
96	10.50	10.25	7.80	7.25	587.0	487.6	22	St.	T.	C	MR	M	M	D	M	M	73.72	85.51
97	9.37	9.00	7.80	6.85	533.0	439.4	20	St.	T.	M	M	N	T	MD	ML	M	68.04	84.59
98	10.00	9.75	7.90	7.40	516.0	434.4	20	T.R	P.Cy	M	R	W	M	M	S	M	42.52	90.30
99	10.75	10.60	7.90	7.40	453.6	374.2	22	ST	T.	O	M	N	M	M	ML	H	—	—
100	10.12	10.10	—	—	354.4	323.2	16	St.	Cy.	O	MR	M	M	M	L	MS	—	—
SECTION B																		
1	10.12	9.65	6.50	600	382.5	311.8	14	T.R.	T.	O	S	M	Th	S	M	H	48.19	84.41
2	9.62	9.12	6.25	5.90	357.2	306.2	14	T.R.	Cy.	O	S	M	M	S	ML	M	42.52	85.98
3	8.40	8.10	7.50	7.10	436.5	365.8	20	St	Cy.	MC	MR	N	MT	MD	ML	M	51.03	87.51
4	9.62	9.00	7.12	6.65	413.9	326.0	16	St	T.	M	M	MW	T	M	ML	MH	45.36	86.64
5	9.37	9.12	7.25	6.85	425.2	362.9	16	St	T.	M	M	W	M	MS	ML	H	70.87	81.30
6	8.87	8.87	7.55	7.55	487.6	411.1	18	St	Cy.	MC	M	M	M	M	M	MS	68.04	83.96
7	8.50	8.12	6.62	6.30	326.0	275.0	14	St	Cy.	O	S	W	M	S	ML	H	56.70	80.81
8	9.12	8.60	6.50	6.12	354.3	297.7	16	St	P.Cy.	M	MS	M	M	S	M	MH	45.36	84.92
9	9.00	8.35	8.00	7.05	439.4	351.4	18	St	Cy.	M	R	MW	M	M	L	MH	48.19	86.08
10	10.12	9.65	7.87	7.45	507.4	436.6	14	T.R.	P.Cy.	O	MS	W	M	M	L	S	82.22	81.87
11	10.37	9.85	6.87	6.45	447.9	368.6	16	T.L.	Cy.	M	MS	M	MT	M	M	MH	51.03	86.88
12	9.75	9.35	6.00	5.75	317.5	277.8	14	St	T.	M	M	M	MT	M	L	M	42.52	85.83

EAR CHARACTERS

Ear Number	Length of Ear-Green	Length of Ear-Dry	Circum of Ear-Green	Circum. of Ear-Dry	Wt. of Ear Gms. Green	Wt. of Ear Gms-Dry	Number of Rows.	Rows Twist or Straight.	Shape of Ear.	Space between R's.	Indentation	Width of Kernel	Thickness of Kernel	Depth of Kernel	Size of Germ	Composition of Kernel	Wt. of Cob -Grams	Shelling Per Cent
SECTION B CONTINUED.																		
13	9.37	8.90	6.37	6.00	343.0	289.2	14	TL	T	M	MS	M	M	S	ML	MH	39.69	87.46
14	9.87	9.25	7.37	6.80	481.9	382.7	14	TL	T	M	S	W	MTh	S	L	MS	59.54	84.56
15	9.12	8.75	7.12	6.80	334.3	277.8	16	St	Cy	M	MS	M	MTh	S	M	MS	42.52	86.22
16	8.25	8.00	7.37	6.90	425.2	334.5	18	St	T	M	S	MN	M	M	ML	MS	45.36	86.89
17	9.25	8.85	7.12	6.75	357.2	314.7	22	TR	T	C	S	N	Th	M	M	S	42.52	86.72
18	9.50	9.25	6.62	6.30	326.0	283.5	14	St	PCy	M	M	M	M	MS	M	MS	36.85	87.81
19	8.62	8.15	6.87	6.50	388.0	311.9	16	St	Cy	MO	MS	M	M	S	M	M	59.54	82.04
20	8.62	8.20	7.50	7.00	436.5	368.6	16	St	Cy	M	M	M	M	MD	M	M	56.70	85.08
21	9.00	8.60	7.37	6.90	430.9	360.0	18	TL	Cy	MC	MR	M	M	M	M	MS	62.37	82.80
22	9.37	9.00	6.50	6.05	340.2	297.7	12	St	T	O	S	M	M	S	S	H	48.19	84.82
23	9.25	8.60	6.37	6.25	357.2	297.7	14	St	Cy	MO	MS	M	M	S	MS	M	42.52	86.14
24	9.37	9.00	7.00	6.60	377.0	300.5	16	St	PCy	M	R	M	M	M	ML	S	51.03	83.81
25	9.00	8.50	6.87	6.35	382.7	320.4	14	TR	PCy	M	S	M	M	M	M	MH	48.19	85.09
26	9.00	8.35	7.50	7.00	453.6	362.9	18	TL	T	MC	MS	MN	M	MD	ML	S	59.86	85.60
27	8.75	8.30	7.62	7.12	439.4	368.6	16	St	Cy	M	MR	M	M	M	M	MS	56.70	84.61
28	10.25	9.65	8.00	7.35	567.0	428.1	16	St	Cy	O	S	M	Th	S	ML	MS	79.71	83.42
29	9.12	8.75	7.25	6.75	439.4	388.4	16	St	Cy	M	MS	M	M	M	ML	S	62.37	84.06
30	9.75	9.20	6.75	6.30	396.9	326.0	14	St	T	O	S	M	MTh	S	ML	MH	53.86	83.62
31	10.50	10.10	7.12	6.75	411.1	362.9	14	TL	PCy	M	R	W	Th	S	S	M	56.70	84.74
32	9.00	8.50	6.62	6.20	326.0	369.3	14	St	Cy	O	S	M	Th	S	M	S	36.85	87.20
33	8.50	8.12	7.50	7.10	349.7	326.0	16	St	Cy	M	M	W	Th	M	L	S	59.54	82.35
34	9.00	8.55	7.00	6.60	396.9	334.5	12	St	T	O	M	M	M	S	ML	H	70.87	78.79
35	9.00	8.50	7.37	6.90	408.2	354.3	18	TL	Cy	MC	MR	M	M	MD	M	M	48.19	86.84
36	8.62	8.20	6.62	6.25	357.2	297.7	16	St	Cy	C	M	N	T	D	ML	M	31.18	89.62
37	8.87	8.40	7.75	7.30	481.9	282.7	18	TL	PCy	M	MR	MW	MTh	MD	M	M	56.70	86.28
38	9.12	8.60	6.87	6.35	396.9	334.5	12	TR	PCy	O	S	MW	MTh	M	M	H	48.19	86.72
39	9.62	9.12	8.00	7.30	496.1	405.4	18	TL	PCy	M	M	M	Th	MS	S	MS	73.71	83.50
40	9.50	8.90	7.12	6.70	467.8	382.8	16	St	Cy	M	MS	M	M	M	M	M	53.86	86.04
41	9.50	9.00	6.75	6.35	357.2	306.2	12	TR	T	O	M	M	M	S	M	H	51.03	84.36
42	8.37	7.85	6.75	6.30	354.3	297.7	14	TL	T	M	M	M	M	S	M	M	68.04	77.36
43	8.50	8.15	7.25	6.75	405.4	326.0	14	TR	T	M	M	M	MTh	M	M	S	51.03	84.34
44	8.50	7.90	6.25	5.90	311.8	249.5	12	St	T	O	MS	M	M	S	ML	M	39.69	84.27
45	9.75	9.30	7.00	6.60	382.7	334.5	18	TL	T	MC	R	M	M	M	S	M	76.54	69.84
46	9.25	9.00	7.00	6.60	368.5	320.4	16	St	T	M	MS	M	M	S	M	M	59.54	82.00
47	9.00	8.35	7.25	6.50	385.5	320.4	14	TR	T	M	M	M	Th	S	M	H	59.54	81.42
48	10.37	10.00	7.12	6.75	439.4	382.5	16	St	PCy	M	R	M	M	MD	M	MH	51.03	88.25
49	8.37	8.00	6.75	6.35	357.2	289.2	14	TL	T	O	S	M	M	MS	M	MH	48.19	83.66
50	9.50	9.00	6.75	6.35	399.7	354.3	14	TR	Cy	M	M	M	MTh	S	S	H	70.87	80.00
51	8.37	8.12	6.87	6.50	357.2	311.8	14	TR	T	M	M	M	M	M	M	M	49.61	84.73
52	9.87	9.25	7.00	6.50	453.6	379.8	16	St	Cy	MC	M	M	M	M	ML	M	68.04	82.73
53	8.62	8.25	6.50	6.12	328.9	280.6	14	TL	T	M	MS	M	M	M	L	M	39.69	86.38
54	9.00	8.35	7.62	7.00	467.8	368.5	22	TR	Cy	M	M	N	MTh	MD	S	M	51.03	86.30
55	9.00	8.50	7.62	7.12	396.9	328.9	16	St	T	MC	M	M	M	MS	ML	S	48.20	85.08
56	9.50	9.00	7.87	6.50	402.6	334.5	16	TR	T	O	M	M	M	M	L	H	56.70	84.30
57	9.12	8.50	6.62	6.25	357.2	297.7	12	TR	PCy	O	S	M	MTh	S	ML	H	51.03	82.53
58	8.50	8.25	6.37	6.00	289.2	246.7	14	TR	T	M	M	M	M	S	S	S	36.86	85.22
59	9.12	8.75	7.12	6.75	394.0	345.9	16	St	Cy	M	M	M	M	M	L	M	42.52	84.57
60	9.12	8.50	6.50	6.12	374.2	317.5	14	TR	Cy	MO	M	M	M	M	M	S	51.03	84.06
61	8.75	8.15	7.00	6.65	396.9	337.3	16	TL	T	O	M	MW	M	M	M	S	42.52	85.47
62	9.87	9.25	7.50	7.00	499.0	408.2	16	St	Cy	MO	MS	M	Th	MS	M	S	73.71	82.82
63	9.12	8.75	7.00	6.75	391.2	317.6	14	St	Cy	O	M	M	M	S	S	S	48.20	84.95
64	9.50	8.85	7.25	6.85	433.7	348.7	18	St	Cy	MC	M	N	MTh	M	M	S	42.52	88.44
65	8.87	8.00	7.00	6.60	411.1	334.5	18	TL	Cy	M	M	N	M	M	M	MS	56.70	84.16
66	9.75	9.25	7.00	6.75	346.9	340.2	16	TR	Cy	M	M	M	N	M	M	S	45.36	87.25
67	10.12	9.50	7.50	7.00	504.6	399.7	18	TR	T	MC	M	M	M	M	M	M	51.03	87.70
68	9.75	9.12	6.62	6.30	385.5	317.0	14	TL	T	MO	R	M	M	M	ML	S	42.52	86.60
69	9.37	8.50	7.37	7.30	499.0	408.2	20	St	Cy	M	MS	N	T	MD	S	H	51.03	87.58
70	10.75	10.20	6.50	6.12	411.1	354.3	14	TL	T	MO	M	M	Th	S	M	H	70.87	80.00
71	11.50	11.00	7.50	7.05	521.6	439.4	16	St	T	M	M	W	Th	S	MS	S	93.56	80.14
72	9.62	9.25	6.87	6.55	411.1	354.3	16	St	PCy	MC	M	M	Th	M	M	M	51.03	85.75
73	8.37	7.90	7.12	6.70	379.9	326.0	18	TR	T	MC	M	N	M	M	M	S	42.52	87.07
74	8.87	8.45	6.75	6.25	379.9	311.8	14	TL	T	MO	M	M	M	S	M	H	48.20	84.26
75	8.50	8.10	7.00	6.50	408.2	317.5	14	TR	T	O	S	M	T	M	L	S	48.20	84.82
76	8.75	8.25	6.75	6.35	351.5	297.7	14	TR	Cy	MO	M	M	M	M	M	H	42.52	85.70
77	9.75	9.15	8.00	7.50	518.8	425.2	20	TL	PCy	M	MR	M	M	M	S	M	79.38	81.21
78	9.37	9.00	7.50	7.12	411.1	354.3	18	TL	T	M	MR	M	M	MD	M	M	48.20	86.76
79	10.12	9.45	6.87	6.50	436.6	368.6	14	TL	T	M	M	M	M	M	L	S	48.20	87.12
80	9.00	8.50	7.00	6.60	411.1	360.0	16	St	Cy	M	MR	M	M	M	S	H	48.20	86.40
81	9.37	8.85	6.62	6.25	368.5	317.5	14	TR	T	MO	S	N	M	S	M	H	42.52	86.86
82	10.62	10.12	6.12	5.80	343.0	311.8	12	St	T	VO	S	MN	M	VS	M	H	65.21	79.49
83	10.00	9.75	6.37	6.12	368.5	326.0	14	TR	Cy	MO	M	M	M	S	M	H	48.20	86.72
84	8.87	8.45	7.25	6.75	396.9	337.3	16	St	Cy	M	M	M	M	M	MS	MH	51.03	84.60
85	8.75	8.50	7.12	6.75	371.4	328.9	16	St	Cy	MC	MR	M	M	M	S	MH	51.03	85.02
86	7.75	7.30	6.87	6.50	323.2	266.5	14	TL	Cy	MO	M	MW	M	M	L	H	39.69	85.76
87	9.37	9.00	6.62	6.25	354.4	306.2	14	TL	Cy	M	M	M	M	M	M	M	42.52	86.36
88	9.00	8.50	7.50	7.00	411.1	348.7	22	St	T	MC	M	N	M	M	S	MH	48.20	86.07
89	10.62	10.12	6.80	6.50	439.4	394.0	14	TR	T	O	MR	M	M	S	S	H	85.05	78.10
90	9.00	8.45	7.40	6.85	453.6	348.7	14	TR	T	M	M	W	M	M	M	MS	56.70	83.61
91	9.37	9.00	7.25	7.00	430.9	382.7	18	St	PCy	C	M	M	M	M	L	M	48.20	87.41
92	9.00	8.50	8.87	8.35	575.5	453.6	22	TL	T	C	M	M	M	M	S	M	79.38	[illegible]
93	9.50	9.00	7.36	7.00	467.8	402.6	16	St	T	M	M	M	M	M	M	[illegible]	56.70	[illegible]
94	8.37	7.85	7.50	6.85	396.9	314.7	16	TR	PCy	M	M	M	M	M	L	H	42.52	86.36
95	9.12	8.60	6.50	6.25	351.5	303.3	14	TR	T	M	MS	M	M	S	MS	M	42.52	87.18
96	9.25	8.75	6.75	6.50	377.1	326.7	14	TL	PCy	M	M	M	M	S	M	MH	62.97	82.26
97	10.12	9.50	6.62	6.25	416.8	[illegible]	14	TR	Cy	MO	MS	M	M	S	MS	M	62.97	84.27
98	9.50	9.00	7.50	7.00	490.5	391.2	16	St	PCy	M	S	M	M	M	M	H	82.22	81.85
99	8.12	7.85	7.00	6.60	354.4	297.7	18	TL	Cy	MC	MS	N	M	S	M	H	62.97	81.02
100	10.00	9.55	[illegible]	7.00	436.6	391.2	16	TR	PCy	C	M	M	M	S	M	M	76.54	81.64
SECTION C																		
1	10.00	9.55	7.65	7.30	470.5	411.1	16	St.	T	O	R	MW	M	M	M	MH	79.38	82.80
2	10.00	9.60	7.60	7.25	541.5	450.8	16	St	PCy	MO	MS	M	M	M	ML	H	70.87	85.48
3	11.00	10.50	8.90	8.35	655.0	552.8	20	St	T	MO	M	M	MTh	MD	L	MS	76.54	87.00
4	10.12	9.60	8.25	7.75	538.6	442.2	20	St	PCy	M	MR	M	M	M	S	H	65.21	86.50
5	9.50	9.30	7.35	7.00	447.9	379.9	14	TL	T	O	M	W	MTh	M	L	H	70.87	83.20
6	9.25	8.80	8.00	7.50	496.6	360.0	18	TR	T	MO	M	M	M	D	M	S	53.86	86.96
7	10.00	9.45	7.60	7.25	482.0	411.1	16	St	PCy	M	MR	MW	M	M	M	S	70.87	84.31
8	10.60	10.12	7.75	7.25	510.3	439.4	18	TR	PCy	M	MR	M	M	MD	M	M	70.87	84.73
9	11.20	10.55	7.50	7.00	499.0	428.0	16	St	PCy	MO	R	M	MTh	M	S	M	70.87	84.57
10	11.00	10.50	7.75	7.25	493.3	430.9	20 –	St	T	M	M	N	MTh	M	S	M	65.21	85.89
11	10.50	10.00	8.00	7.60	550.0	467.8	20	St	T	C	R	M	MT	M	S	S	79.38	83.60
12	10.50	10.00	7.75	7.20	544.5	462.1	18	TR	T	M	M	M	MTh	M	M	H	78.71	85.14
13	11.00	10.50	7.00	6.60	442.0	382.7	16	St	PCy	M	M	M	M	M	M	M	56.70	88.46
14	10.35	10.50	7.50	7.10	521.7	434.4	16	TR	T	M	MR	M	M	M	M	M	70.87	84.96
15	10.90	10.40	7.12	6.75	439.4	399.7	18	TR	T	M	M	M	M	M	M	MH	66.21	85.22
16	9.25	9.00	7.90	7.50	482.0	396.9	14	TL	T	MO	MR	W	MTh	M	ML	M	76.54	82.30
17	8.90	8.70	8.00	7.55	425.2	371.4	18	TL	T	M	R	M	M	D	ML	S	70.87	82.91
18	9.60	9.30	7.50	7.10	439.4	382.7	18	St	T	M	MR	N	Th	M	S	MS	51.03	87.55
19	9.60	9.15	8.25	7.75	541.5	442.2	22	TL	T	C	R	MN	M	MD	MS	S	65.21	85.53
20	10.00	9.50	8.00	7.50	527.4	422.4	20	TR	T	C	M	M	M	M	S	S	56.70	87.41
21	10.00	9.30	7.75	7.25	496.1	428.0	18	TL	T	M	R	M	M	M	M	S	82.22	81.73
22	11.60	11.12	8.00	7.50	620.9	521.6	18	TR	T	M	M	M	MTh	M	M	M	107.73	80.15
23	10.12	9.55	7.75	7.20	510.3	430.9	20	TL	T	C	M	N	M	M	M	S	65.21	86.14
24	9.25	8.90	8.50	8.10	447.9	368.6	20	St	T	O	R	M	M	D	M	S	51.03	87.89

EAR CHARACTERS

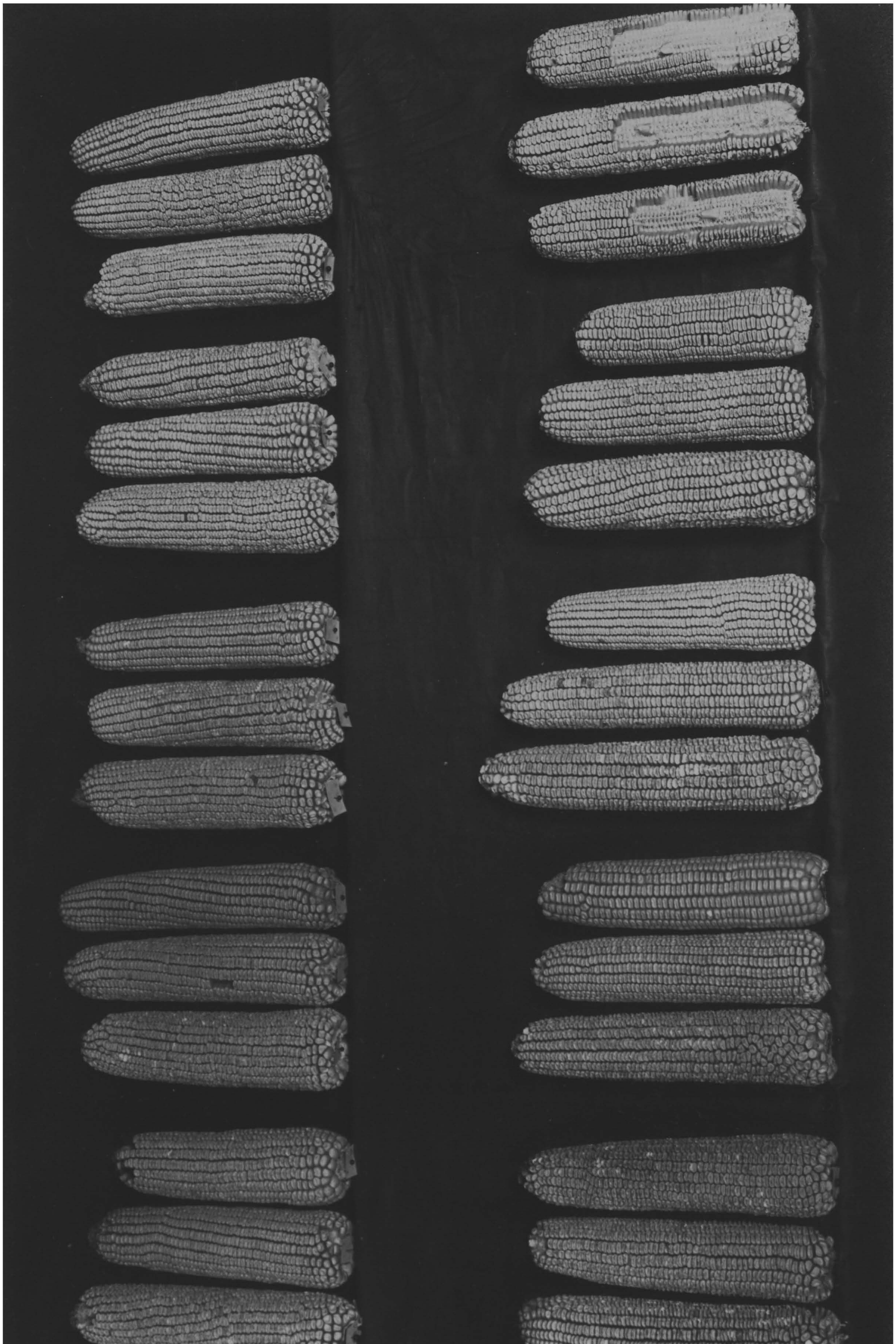
Ear Number	Length of Ear-Green	Length of Ear-Dry	Circum. of Ear-Green	Circum. of Ear-Dry	Wt. of Ear Gms.-Green	Wt. of Ear Gms.-Dry	Number Of Rows	Rows Twist Or Straight	Shape of Ear	Space Between R's	Inden-tation	Width of Kernel	Thickness Of Kernel	Depth of Kernel	Size of Germ	Composition of Kernel	Wt. of Cob -Grams	Shelling Per Cent
25	9.25	9.12	8.00	7.70	467.8	408.2	20	St.	T	M.C.	R	M	M	M	M	M	76.54	82.87
26	10.12	9.75	7.60	7.25	476.3	447.9	18	T.R	T	M.C.	M	M	M	M	M	M	79.38	82.60
27	9.90	9.55	7.50	7.00	448.0	394.0	16	St.	T	O	M.R	M	M	M	L	H	56.70	87.41
28		10.50	7.50	7.00	527.3	455.4	16	St.	T	M	M.R	MW	M	D	S	M.H.	59.54	87.59
29	9.75	9.30	8.12	7.65	507.5	439.4	18	T.R	T	M	R	M	M	M	M	S	93.56	79.34
30	9.12	8.75	7.90	7.35	439.4	382.7	20	T.L	T	N.C.	M.R	MN	M.T.	S	M.S.	H	76.54	80.93
31	9.50	9.10	8.25	7.75	496.1	428.0	20	St.	P.Cy.	M	R	M	M	M	M	M	65.21	85.46
32	10.35	10.00	7.90	7.60	442.3	399.7	20	St.	Cy.	M	R	M	M	M	M	M	65.21	85.55
33	10.00	9.55	8.12	7.80	495.1	433.6	18	T.R.	T	M	R	MW	M	M	M	S	76.54	84.40
34	10.12	9.75	7.75	7.35	493.3	411.1	18	T.L	T	M	R	MN	M	D	S	S	51.03	88.31
35	10.75	10.40	8.35	7.85	538.6	444.8	16	St.	T	M	N.R	W	M.TH.	S	M	M	113.40	78.62
36	9.75	9.40	8.90	8.35	538.6	467.8	24		T	M.C.	M.R	M	M.T.	D	M	S	85.05	84.03
37	9.75	9.45	8.90	7.50	521.6	439.4	18	T.R	T	M	M	M	M	M.D.	S	M	53.86	89.22
38	10.00	9.60	7.75	7.35	456.5	406.4	18	T.L	T	M	R	M	M.T.	D	S	S	56.70	87.34
39	9.62	9.35	7.75	7.35	419.6	368.6	18	T.R.	T	M	M	M	M.T.	M.D.	M.L	S	70.87	84.12
40	9.90	9.45	8.00	7.50	496.1	430.9	20	St.	T	M.C.	M.R	M		M	S	S	62.37	86.46
41	9.60	9.35	7.50	7.10	473.5	413.9	20	St.	T	M	M.R	N	TH.	D	M	M	56.70	87.39
42	10.50	10.00	7.75	7.30	496.1	436.6	18	T.R	P.CY.	M.O.	R	M	M.TH.	D	M	M	76.54	84.14
43	9.35	8.98	8.25	7.75	504.6	439.4	18	St.	T	M	R	MN	M	D	M.L	S	56.70	87.53
44	10.50	10.10	7.50	7.20	504.6	425.2	18	T.L	T	M	R	M	M	M	S	M	62.37	86.76
45	10.25	9.90	8.25	7.80	535.8	467.8	18	T.R	T	M.O.	R	M	M.TH.	M	M	S	70.87	85.60
46	10.25	9.75	7.75	7.25	413.6	396.9	18	St.	T	M	R	M	M	M	M	M	87.88	80.85
47	9.90	9.45	8.12	7.60	499.0	486.6	20	St.	T	M	R	M	M	M	M.S	M	56.70	87.17
48	9.75	9.60	7.25	6.45	412.1	399.7	16	St.	T	M	M	M	M.TH.	M.S.	M	H	65.21	83.69
49	9.75	9.30	8.12	7.75	552.8	482.0	18	T.R.	P.CY.	M	R	M	M	D	M	S	59.54	87.72
50	9.75	9.35	8.00	7.55	558.9	456.4	18	T.L	T	M	R	M	M	D	S	S	62.37	87.03
51	9.90	9.50	8.25	7.80	433.7	377.1	16	St.	CY.	O	M	M	M.TH.	M.S.	M.L	S	53.86	
52	9.50	9.10	7.75	7.30	430.9	430.9	20	St.	T	M	M.R	M	M.TH.	M	S	S	70.87	83.77
53	10.90	10.40	7.60	7.25	487.6	473.4	22	T.R	T	M	M	N	M.TH.	M	M	H	59.54	87.72
54	10.60	10.12	7.60	7.30	538.6	456.4	16	St.	T	M	M	W	M.TH.	M	M	S	62.37	86.42
55	11.00	10.50	8.25	7.80	569.8	504.6	16	St.	T	M.O.	M.R	W	M.TH.	M	M	M	79.38	85.40
56	10.35	10.00	8.25	7.75	550.0	473.4	18	T.R	T	M	R	M	M	M	M	S	85.05	82.93
57	10.35	9.75	7.50	7.15	521.6	439.4	18	T.L	T	M	M.R	M	M.TH.	M.D	M	S	70.87	84.91
58	10.50	10.10	8.00	7.70	518.8	453.6	16	St.	T	O	R	W	M	M	S	S	70.87	85.31
59	10.50	10.00	7.60	7.25	510.3	439.4	16	St.	T	O	R	W	M.TH.	M	M	M	65.21	85.78
60	10.75	10.30	7.25	6.90	499.0	442.2	16	T.R	T	M	M	M	M	M	M	S	70.87	84.20
61	9.35	8.85	8.00	7.60	496.1	436.6	22	St.	T	M	M.S.	N	M	M	S	H	70.87	84.36
62	10.75	10.50	8.12	7.80	533.0	467.8	20	T.R	T	C	M.R	M	M	M	S	S	76.54	83.84
63	11.75	11.25	7.60	7.10	598.1	513.2	18	T.R	P.CY.	M.C.	M.S.	M	TH	S	M	S	85.05	83.86
64	10.37	10.30	8.50	8.00	567.0	467.8	20	St.	T	M	M.	MN	M.TH.	S	M	M	90.72	81.54
65	11.25	10.80	7.75	7.25	538.6	467.8	16	St.	T	M.O.	R	MW	M	M	M	M	73.71	84.76
66	11.25	10.80	7.75	7.40	538.6	467.8	16	St.	T	M.O.	M.R	MN	M.TH.	S	M	M	90.72	80.84
67	10.25	9.75	7.90	7.45	541.5	462.1	22	St.	T	M.O	R	N	M	D	M.S.	S	65.21	86.65
68	11.00	10.35	8.25	7.75	584.0	507.5	18	T.R	T	M.O	R	M	M	M.D.	M	S	82.22	84.52
69	9.35	9.00	7.50	7.10	411.1	357.2	16	T.R	CY.	M.O	M	M	M	S	M.L	H	56.70	85.80
70	10.50	10.15	7.50	7.25	453.6	411.1	16	St.	T	M.O.	R	M	M	M.S.	S	S	56.70	86.58
71	10.50	10.12	8.12	7.75	524.5	465.0	18	St.	T	M	M.R	M	M.TH.	M	M.L	S	62.37	87.58
72	9.50	9.00	8.25	7.60	496.1	413.9	18	St.	T	M	R	M	M	D	M	S	42.52	90.03
73	9.60	9.25	8.25	7.75	552.8	470.6	18	T.L	T	M	R	M	M	M.D.	M	M	70.87	85.30
74	9.35	8.90	8.25	7.85	521.7	428.0	22	T.R	CY.	M	M.R	N	M	D	M.S.	S	56.70	87.10
75	9.00	8.55	8.35	8.00	481.9	416.8	18	T.L	T	M	R	M	M.T.	M	M.L	M	76.54	82.75
76	9.50	9.00	7.62	7.25	453.6	379.9	18	T.R	T	M	R	M	TH.	M.D	M	M	56.70	85.08
77	10.25	9.90	7.75	7.30	470.6	413.9	18	T.R	T	M	R	M	M.TH.	M	S	M	62.37	85.34
78	10.90	10.25	8.00	7.55	581.2	496.1	20	St.	T	M.C.	M	MN	M.TH.	M	L	M.S.	79.38	84.10
79	10.00	9.75	7.75	7.50	467.8	422.4	18	T.R	T	M	R	M	M	M.D.	M	S	56.70	87.01
80	9.75	9.40	8.25	8.00	504.6	450.8	24	St.	CY.	C	R	N	TH	M	S	H	70.87	84.85
81	9.50	9.15	7.35	6.90	456.5	399.7	16	St.	T	M.O	M.S.	M	M.TH.	M.S.	M	M	70.87	82.76
82	10.75	10.25	8.25	7.80	567.0	504.6	20	T.L	T	M	R	MN	M	D	S	S	68.04	86.71
83	10.00	9.70	8.90	8.50	564.2	504.6	18	T.L	T	O	R	M	M	D	M	M	73.71	86.64
84	11.35	10.90	7.25	6.85	499.0	442.2	16	St.	P.CY.	M.O	M	M	M.TH.	M	M	S	65.21	85.62
85	11.00	10.60	8.25	7.75	589.7	513.2	18	T.L	T	O	R	M	T	D	M	S	65.21	87.63
86	12.00	10.45	7.12	6.80	459.3	413.9	16	St.	T	O	M.R	M	M.TH.	M	S	H	59.54	86.47
87	10.50	9.85	8.50	7.95	609.5	499.0	18	T.L	T	M.O.	R	W	TH.	S	M	H	85.05	83.33
88	11.25	10.75	7.25	6.85	487.6	430.9	16	St.	P.CY.	M	M	M	M.TH.	S	M	S	73.71	82.90
89	12.25	11.65	7.60	7.25	567.0	493.3	16	St.	T	M.O.	M.R	M	M	M	M	S	85.05	83.41
90	10.12	9.75	8.25	7.90	538.6	467.8	18	T.R	T	M	R	MW	M	M.D.	S	S	73.71	84.94
91	9.75	9.25	8.25	7.90	552.8	481.9	20	St.	P.CY.	M	M	MN	M	M	S	M	70.87	85.71
92	9.60	9.35	8.12	7.75	496.1	447.9	18	St.	T	M	R	M	M	D	M	M	70.87	84.84
93	9.50	9.25	7.50	7.10	382.7	351.5	16	St.	T	M	M.R	M	M	M	M.L	M	59.54	81.93
94	11.25	10.85	7.50	7.00	476.3	428.0	18	St.	P.CY.	M	R	M	M.T.	M	S	S	56.70	87.46
95	10.90	10.35	7.90	7.50	535.8	481.9	22	T.R	T	M.C.	R	N	M	M	S	M.H	82.22	83.36
96	9.50	9.25	7.75	7.25	496.1	436.6	18	St.	P.CY.	M	M.R	M	M	M	M	M.H	70.87	84.64
97	10.90	11.50	7.00	6.75	467.8	408.2	16	St.	T	M	M.S	M	M.TH.	S	M	H	70.87	83.89
98	11.00	10.55	7.50	7.15	496.1	436.6	18	T.L	T	M	M.S	MN	M	M	M	M	68.04	85.85
99	10.90	10.15	8.00	7.50	484.7	430.9	20	T.	T	M	M	N	M.TH.	D	M.L	M	70.78	85.61
100	11.00	10.50	7.50	7.12	513.2	450.8	16	T.R.	T	M	M	M	M.TH.	M	M	H	56.70	87.50
SECTION - D																		
1	10.75	10.35	7.75	7.50	482.0	436.6	16	St.	T	M	R	M	M	D	M	M	73.71	84.70
2	11.25	10.85	8.50	8.00	513.2	453.6	20	St.	P.CY.	M	R	M	M	M	S	M	76.54	85.90
3	10.00	9.75	7.75	7.35	453.6	405.4	18	T.R.	T	M	R	M	M	D	S	M.S.	53.86	87.93
4	9.25	8.85	8.25	7.80	507.5	442.2	18	T.R.	T	M	R	M	M	D	S	S	70.87	85.18
5	9.75	9.20	8.25	7.85	499.0	433.7	18	St.	T	M	R	M	M	M	M	M	73.71	85.40
6	11.00	10.35	7.75	7.85	521.6	456.4	22	T.L	T	M	R	N	M	D	M	M	56.70	88.53
7	10.50	10.00	7.75	7.50	496.1	422.4	22	St.	T	M	M.R	N	M	D	M	M.H.	56.70	88.26
8	10.75	10.25	7.60	7.25	547.1	479.1	18	St.	T	C	M	N	M	M	M	M	70.87	86.23
9	10.00	9.50	7.90	7.45	499.0	433.7	22	T.R	T	M.C.	M	N	M	M	M	H	65.21	85.54
10	10.50	10.12	7.50	7.20	382.7	345.8	18	St.	T	M	R	M	M	M	M	M.S.	62.37	85.64
11	11.50	11.00	8.25	7.85	657.7	567.0	20	St.	T	M	M.R.	MN	M	M.D.	M	H	102.06	82.41
12	10.00	9.50	7.50	7.12	442.2	405.4	18	T.R.	T	M	R	N	M.T	M	M.L	S	65.21	85.26
13	10.00	9.50	8.25	7.80	547.1	470.6	22	St.	T	M	R	MN	M.T	D	M	M.S	59.54	87.45
14	9.75	9.30	7.75	7.25	470.6	396.9	18	T.L	T	M	M.R	M	TH.	M	M.L	M.H	70.87	83.44
15	9.00	8.00	7.50	7.12	439.4	385.5	18	St.	CY.	M.C	M	M	M.TH.	M	S	M.H	62.37	84.69
16	10.25	9.75	8.25	8.00	521.6	442.2	22	T.R.	T	M	R	N	M	D	M	M	76.54	84.98
17	10.00	9.30	7.35	7.00	467.8	411.1	16	T.R	T	M.O.	M	M	M.TH.	M	M.L	S	70.87	83.15
18	10.00	9.60	7.35	7.00	467.8	411.1	20	St.	T	M	M	N	TH.	M.D	M.L	M	62.37	85.12
19	10.50	10.10	8.50	8.00	541.4	487.6	22	St.	T	M.O	R	M.N	M	D	S	S	62.37	88.08
20	10.25	9.75	8.25	7.75	569.8	501.8	22	St.	T	M.C	M.R	M	M.TH.	D	S	M.H	70.87	85.87
21	9.25	8.90	7.25	7.00	411.1	379.8	18	T.R	T	M	M.R	M	M	M	M	M	56.70	86.17
22	9.00	8.75	8.12	7.75	357.2	317.5	20	St.	T	M	R	M	M.TH.	M	M	M.S	51.03	
23	9.75	9.25	7.35	7.00	467.8	411.3	16	St.	P.CY.	M.O	M	M	M	D	M.L.	M	51.03	88.28
24	11.50	11.00	7.90	7.55	567.0	496.1	20	St.	T	M	R	M.N.	M	D	M	M	65.21	87.36
25	10.00	9.50	7.25	6.90	391.2	345.8	18	T.R	T	M	M	M	M	M	M	S	51.03	87.85
26	8.00	7.50	8.00	7.50	425.2	368.5	16	St.	T	M.O.	M	M	M.TH.	S	M.S.	H	51.03	
27	10.50	10.00	7.60	7.20	504.6	445.1	16	St.	T	M.O.	M.R	M	M.T.	M	M	M	76.54	83.58
28	11.00	10.60	7.35	7.12	479.1	425.2	18	T.R.	T	M	M	M	M	S	S	M	53.86	87.46
29	10.50	10.00	8.00	7.55	541.4	467.8	24	T.R.	T	M	M	N	TH.	M.D	M	M	79.38	83.31
30	11.12	10.55	7.25	7.00	507.5	447.9	16	St.	T	M.C.	M.R	M	M.TH.	S	M	M	96.39	79.14
31	11.00	10.12	7.60	7.25	524.5	453.6	18	T.L	T	M	M	M.N.	M	M	M	S	70.87	85.09
32	11.00	10.50	8.50	8.00	643.5	561.3	22	T.L	T	M	M.R	N	M	D	S	H	85.05	85.01
33	10.50	9.40	7.50	7.12	510.3	445.1	16	St.	T	M.O	M	M.N	M.TH.	M	L	M	85.05	81.08
34	9.35	9.10	7.50	7.25	442.2	396.9	18	T.L	T	M.O	R	M	M	D	M	S	48.20	87.90
35	10.25	9.85	7.12	7.00	166.0	416.8	16	St.	T	M.O	M	M	M	M.S.	M	H	68.04	84.68
36	9.62	10.12	6.85	6.60	155.0	377.1	16	St.	T	M	M	M	M	M	S	S	42.42	89.33
37	8.85	8.50	8.85	8.35	150.0	360.0	20	St.	T	M	R	M	M	M	S	S	56.70	
38	9.50	9.00	7.50	7.12	160.0	385.5	18	T.L	P.CY.	M	R	M	M	M	M.S.	M	68.04	83.90

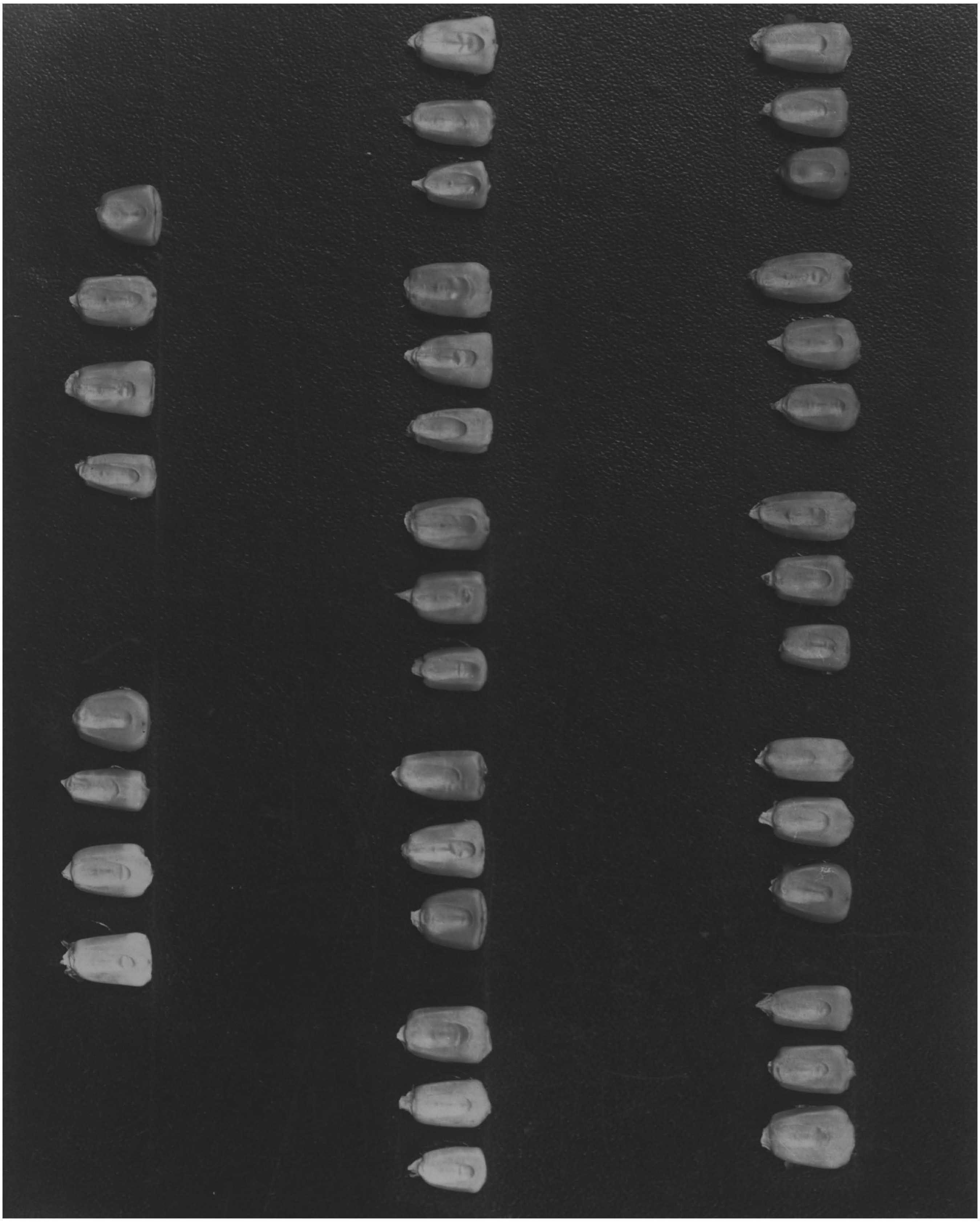
EAR CHARACTERS

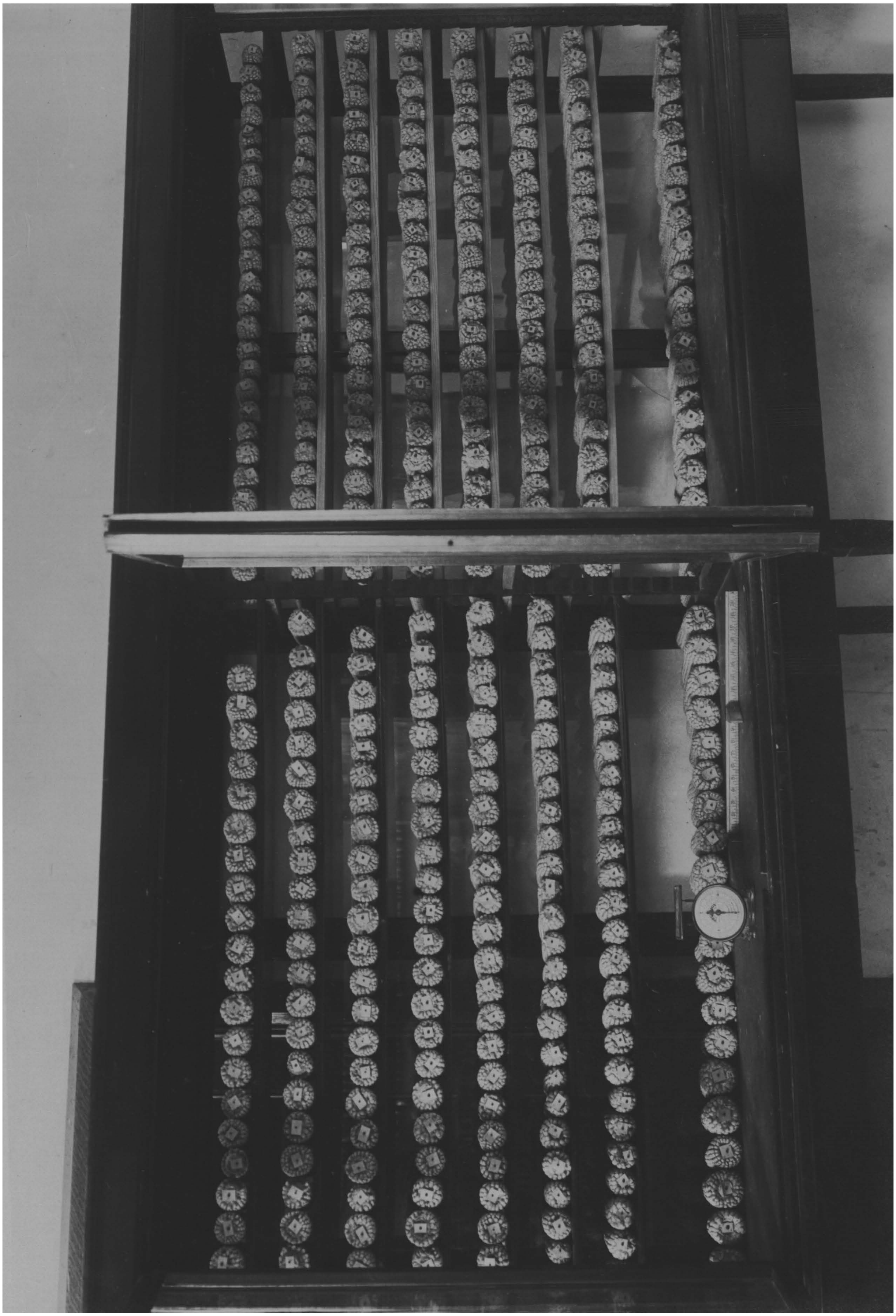
Ear Number	Length of Ear-Green	Length of Ear-Dry	Circum. of Ear-Green	Circum. of Ear-Dry	Wt. of Ear Gms-Green	Wt. of Ear Gms-Dry	Number of Rows	Rows Twist Or Straight	Shape Of Ear	Space Between Rs.	Inden-tation	Width of Kernel	Thickness of Kernel	Depth of Kernel	Size of Germ	Composition of Kernel	Wt. of Cob - Grams	Shelling Per Cent
39	10.50	10.00	7.85	7.50	555.6	470.6	18	T.L	T	M	M.R.	M	M	D	S	S	65.21	86.25
40	10.12	9.60	8.00	7.50	484.7	419.6	20	St.	T	O	R	M	M	M.D.	V.S.	S	42.52	90.32
41	11.00	10.50	7.85	7.35	561.3	470.6	20	St.	T	M	M	M	M.TH.	M	M.S.	M.S.	70.87	85.21
42	10.36	9.85	7.75	7.35	470.6	411.3	18	T.R	T	M.C.	M	M	M.TH.	S	M	H	73.71	83.11
43	10.00	9.60	7.75	7.35	496.1	436.6	18	T.R.	T	M	M.R.	M	M	M	M.L	S.	90.72	81.50
44	9.75	9.35	7.60	7.35	470.6	422.4	18	St.	T	M.O.	M.R	M	M	M.D.	M	H	65.20	85.52
45	10.00	9.15	8.50	8.20	544.3	467.8	20	St.	T	M	R	M	M	D	M	S	56.70	89.49
46	10.35	9.85	8.25	7.90	578.4	496.1	20	St.	P.Cy.	M	M.R.	M	M	M	S	M	85.05	83.06
47	10.75	10.25	7.25	6.75	487.6	419.6	16	St.	T	M.O.	M	M	M.TH.	M	M	H	70.87	84.13
48	10.00	9.75	7.75	7.50	439.4	396.9	20	St.	T	C	R	M	M	M	M	S	56.70	87.96
49	9.60	9.40	7.35	7.25	428.0	385.5	18	T.R.	T	M	M	M.W	M	M	M	M.S.	62.37	86.31
50	10.25	10.00	7.50	7.25	470.6	422.4	18	T.L	T	M	M	M	M	M	M	S	70.87	84.61
51	8.85	8.60	7.50	7.25	340.2	311.8	18	St.	T	O	R	M.N.	M.T.	D	M	S	70.87	83.15
52	8.50	8.25	8.12	7.85	439.4	396.9	24	St.	P.Cy.	C	R	N	M	D	S	S	56.70	
53	9.25	8.85	8.50	8.00	538.6	459.3	22	St.	T	M	S	M.N.	M	M	M	M	76.54	83.85
54	11.12	10.60	8.35	8.12	657.7	567.0	20	St.	Cy.	O	R	M	M	D	M	M.S.	87.88	85.40
55	10.25	10.00	7.60	7.50	430.9	354.4	20	St.	T	M.O	R	N	M	M.D.	L	M.S.	56.70	86.74
56	10.12	9.75	8.00	7.75	481.9	436.6	20	St.	P.Cy.	C	M.R	M.N.	M	M	M	M.H.	93.56	82.14
57	8.60	8.30	8.25	8.10	425.2	382.7	18	T.R.	T	M.C.	M	M.W.	M	M	M	M	56.70	
58	10.50	10.12	8.00	7.75	496.1	450.8	18	St.	T	M	M.R.	M.W.	M.TH.	M.D.	M	M.H	73.71	86.24
59	9.50	9.10	7.50	7.25	456.4	411.1	18	T.L.	T	M	M.S.	M	M.TH.	S	L	H	85.05	79.68
60	9.60	9.35	7.85	7.75	487.6	450.8	18	T.R.	T	O	R	M	M.T.	D	M	S	56.70	88.15
61	10.00	9.60	8.00	7.75	516.0	456.4	22	St.	T	M	R	N	M	D	M.L	M.S.	56.70	87.92
62	9.60	9.25	7.35	7.12	405.4	368.6	18	T.R.	T	C	M.S.	M	M	M	M.L	S	51.03	90.02
63	10.00	9.60	7.50	7.25	413.9	379.9	18	T.R	T	M	M.R.	M	M	M.D.	M.L	M.S.	48.20	89.24
64	9.25	8.85	7.85	7.50	439.4	357.2	22	T.R	T	M	M	N	M.TH.	M	M.S.	M	48.20	
65	10.25	9.85	7.75	7.50	428.0	374.2	16	T.L	T	O	R	M	M	M	M.L.	M.S.	62.37	86.37
66	10.35	10.00	7.00	6.85	374.2	340.2	16	St.	T	M	R	M	M	M	M	S	56.70	86.40
67	10.25	9.85	8.25	8.00	552.8	493.3	22	T.L	T	M.C	R	N	M	D	M	M.S.	73.71	85.87
68	10.25	9.85	7.60	7.60	516.0	459.3	20	St.	T	M.C	R	M.N.	M	D	S	S	68.04	86.00
69	9.90	9.50	7.50	7.25	405.4	362.9	24	CURVED.	T	M	R	N	M	D	M	M.S.	51.03	88.56
70	10.50	9.85	7.90	7.55	507.5	442.2	20	CURVED.	T	M.O	R	M	M	M.D.	M	H	73.71	84.60
71	11.25	10.60	7.90	7.60	527.3	473.5	18	St.	T	M	M	M	M	M.D.	L	M.H	90.72	82.04
72	10.25	10.00	8.00	7.75	411.1	382.7	20	St.	T	C	M	M.N	M	M	M	M	62.37	85.54
73	10.25	10.15	7.90	7.60	462.1	411.1	22	T.R.	T	C	M.S.	N	M	M	M	N.H	93.56	80.14
74	10.50	10.15	7.75	7.50	524.5	470.6	16	St.	T	M	M	W	M	M	M	M	73.71	85.08
75	10.00	9.75	7.12	6.90	430.9	394.1	16	St.	T	O	M	M.W.	M	D	M.L.	H	51.03	87.36
76	10.60	10.30	7.90	7.50	555.6	490.4	20	T.R.	P.Cy.	M	M.R.	N	M	M	M	H	70.87	
77	10.50	10.25	7.90	7.60	524.5	453.6	16	St.	T	M	M	W	TH.	M	M	M.H.	87.88	82.58
78	9.35	9.10	8.25	7.95	481.9	425.2	20	St.	T	M	M.R.	M	M	M.D.	M	S	79.38	83.54
79	10.25	9.85	8.25	7.85	439.4	396.9	24	St.	T	M.O.	R.	N	M	D	S	M.S	56.70	89.52
80	12.35	11.85	8.35	8.12	626.5	561.3	18	T.R.	T	O	R.	M	M.TH.	D	M.L.	S	90.72	85.25
81	9.35	9.00	8.12	7.85	459.3	405.4	24	T.L.	T	M.O	M.R	N	M	M	S	H	65.21	
82	9.75	9.35	7.60	7.35	479.1	416.7	20	St.	T	M	M	M.	M	D	S	S	56.70	87.25
83	9.90	9.50	8.00	7.75	552.8	490.4	20	St.	P.Cy.	M.C.	M	M	M	D	M	M.S.	70.87	84.85
84	9.12	8.85	7.90	7.75	399.7	357.2	20	St.	T	M.O	R	M.N	M	M	S	H	87.88	82.17
85	9.50	9.25	7.90	7.75	430.9	385.5	22	T.R.	P.Cy.	M	R	M.N.	M	D	M.S.	M.S.	56.70	86.86
86	9.60	9.25	7.90	7.50	425.2	374.2	16	St.	T	M	M	W	M	M	M	M.	62.37	
87	9.90	9.50	8.00	7.75	453.6	405.4	18	T.R.	T	O	M	W	TH.	M.S	S	M.H	51.03	87.77
88	9.90	9.40	7.60	7.30	462.1	408.2	18	T.R	T	M	M	M	M.TH.	M	M	M.H.	70.87	82.78
89	9.90	9.50	8.90	7.50	561.3	493.3	20	St.	T	C	M	W	M	M	M	S	85.05	82.94
90	10.12	9.60	7.12	6.85	416.7	385.5	16	St.	T	M.O	M.R	M.W.	M.TH.	M.D	M	M	56.70	86.16
91	9.90	9.50	7.62	7.35	459.3	422.4	18	T.L	T	O	R	M	M	M.O	M	M	48.20	86.76
92	10.12	9.75	8.00	7.60	567.0	481.9	22	T.R	T	M	M	N	M	D	M	M	76.54	84.42
93	11.00	10.50	7.12	6.85	467.8	419.6	20	St.	T	M	R	M.N	M	M	S	S	59.54	86.52
94	11.12	10.75	7.12	6.85	425.2	382.7	16	T.R.	T	O	M	M	TH.	M	M	S	68.04	85.46
95	10.75	10.35	8.25	8.00	581.2	516.0	20	St.	T	C	M	W	TH.	M	S	M.S	76.54	85.48
96	10.25	9.70	8.35	8.00	555.6	504.6	22	St.	T	O	R	M	M.TH	D	M.L.	S	85.05	83.70
97	9.75	9.35	8.00	7.75	569.8	496.1	22	St.	T	M.O	M.S.	M.N.	M	D	M	S	76.54	84.42
98	9.75	9.50	7.75	7.35	447.9	396.9	20	St.	T	M.C	M.S.	M.N.	M	M	M.L	M	85.05	82.08
99	10.50	10.12	7.60	7.35	470.6	439.4	16	St.	T	M.O	R	M	M	M.D.	M	S	62.37	85.91
100	9.75	9.35	7.75	7.50	499.0	439.4	20	T.R.	T	C	M	M.	M	M	M	M	68.04	85.41
SECTION E																		
1	10.00	9.60	7.85	7.50	442.2	396.9	18	St.	P.Cy.	O	R	M	M	M	N.L	M.H.	76.54	84.42
2	9.25	8.85	7.85	7.55	452.6	408.2	20	T.R.	T	M	M.R.	M	M	M	L	M	76.54	82.02
3	9.50	9.12	7.35	7.12	453.6	399.7	18	T.R	P.Cy.	O	M	M.W.	M	M.D.	M.L	M	56.70	86.69
4	9.75	9.30	7.60	7.35	439.4	399.7	16	St.	T	M.O	M	M.W	M	M.D	M.L	M	70.87	83.62
5	10.25	10.00	8.00	7.55	581.2	493.3	20	T.L	T	M	M	M.N	M	M.D.	M.L	M.H	99.22	80.52
6	10.50	10.00	7.84	7.50	473.5	411.1	18	T.R	T	O	M	M	M	D	M	S	68.04	85.19
7	10.50	10.10	7.60	7.35	439.4	408.2	18	St.	T	M	M.R.	M	M	M.S	M.L	M	79.38	83.33
8	8.50	8.00	7.85	7.35	408.2	311.8	22	St.	T	M	M.R	N	M	M.D	M	M	45.36	88.40
9	10.25	9.85	7.25	7.10	453.6	408.2	18	T.L	T	C	M	M	M	M	M	M.S.	76.54	82.57
10	10.50	10.00	8.00	7.75	524.5	470.6	24	St.	T	M	R	N	M.TH	D	S	M.H	79.38	83.72
11	9.00	8.75	7.60	7.35	486.6	382.7	20	St.	P.Cy.	M.O.	R	N	M	M.D.	M.L	M.H	76.54	82.24
12	9.75	9.35	8.00	7.60	456.5	402.6	18	St.	T	M	M	M	M.TH	M	M.L	M.H	107.73	78.22
13	9.50	9.15	7.25	7.00	399.7	340.2	22	St.	T	C	M	N	M	M.D	M.S	M	76.54	83.02
14	11.50	11.12	7.00	6.75	382.7	351.5	16	St.	T	M	M	M	M.TH.	M.S.	M.L	H	68.04	83.62
15	11.00	10.50	8.25	7.75	541.4	481.9	20	St.	P.Cy.	M	M.R.	M	M	M	M	M	85.05	85.02
16	10.00	9.60	8.35	8.00	581.2	496.1	20	St.	T	C	M.R.	M	M	M.D	M.S.	M	85.05	84.32
17	10.50	10.25	7.00	6.75	411.1	371.4	16	St.	T	M.C.	S	M	M.TH.	S	M	H	56.70	85.53
18	9.00	8.50	7.75	7.35	439.4	382.7	20	St.	P.Cy.	M	M.R	M	M	D	M	M.S.	56.70	86.00
19	9.25	9.00	8.50	8.12	552.8	496.1	22	T.L	P.Cy.	C	M.R	M	M	D	M	S	76.54	84.85
20	9.25	9.00	7.75	7.35	582.7		18	T.L	T	O	R	M	M	M	M.S.	H	56.70	
21	8.75	8.60	8.00	7.60	439.4	394.0	20	St.	T	C	M.R.	M	M.TH.	M.S	M.S.	M	70.87	77.76
22	10.25	9.85	7.12	6.75	413.9	371.4	18	T.L.	T	C	M	M	M	M	S	M.H	56.70	86.90
23	10.00	9.50	7.25	7.00	439.4	382.7	16	St.	T	M	M	M	M.TH.	M	S	S	68.04	83.68
24	9.50	8.90	7.00	6.85	416.8	368.5	16	St.	T	M	M.R	M	M.TH	M	M	M.S	53.86	86.55
25	10.50	9.90	7.50	7.12	544.3	436.6	18	T.R	T	M	M.S	M	M.TH.	M.S	M.L	M.H	70.87	84.51
26	10.25	9.85	7.75	7.50	453.6	413.9	18	St.	T	M.O	M.R	M	M	S	M.L	H	85.05	81.48
27	9.75	9.40	7.50	7.25	428.0	371.4	18	T.L	T	M	R	M	M	M	M	M.S	56.70	85.98
28	10.50	10.12	7.25	6.90	447.9	396.9	14	T.R	T	M.C.	M	W	TH.	S	M	H	65.21	84.70
29	10.12	9.75	7.35	7.12	439.4	399.7	16	St.	T	O	R	M	M	D	M	M	69.54	86.34
30	10.35	10.00	7.25	7.00	481.9	425.2	18	T.L.	P.Cy.	C	M	N	M	M.D.	M	M	56.70	87.21
31	9.60	9.25	7.85	7.50	442.2	402.6	16	T.R.	T	M.O	R	M	M.TH.	M	M	M	68.04	84.37
32	8.00	7.75	7.60	7.35	340.2	303.3	18	T.R	T	M	M	M.N	M	M.D	M.L	M.H	42.54	89.16
33	9.50	9.00	7.85	7.50	459.3	396.9	18	St.	P.Cy.	C	S	M.N	M	M.D	M	S	56.70	
34	9.75	9.20	9.00	8.50	615.2	487.6	24	T.L	T	C	M.R	N	M	M	L	H	99.22	79.95
35	9.75	9.50	8.12	7.70	552.8	465.0	20	St.	T	M	M	N	M.TH.	M.D.	M.L	H	85.05	82.97
36	10.00	9.60	7.25	6.90	425.2	377.1	16	St.	T	M	M	M	M	M	M	M.H.	56.70	86.41
37	10.25	10.00	7.25	7.00	462.1	425.2	16	St.	T	M	M.R	M	M.TH	M	M.L	H	87.88	80.78
38	11.00	10.50	7.25	7.00	408.2	362.9	16	St.	T	M.C.	M.R	M.W	M.TH	M.D.	M	S	45.36	88.80
39	9.75	9.25	7.75	7.45	462.1	328.9	20	St.	T	C	M	M	M	M	S	M	59.45	86.30
40	9.60	9.25	7.50	7.15	430.9	391.2	18	T.R	T	C	M	M	M	M	M.L	M	59.45	85.55
41	9.75	9.35	7.85	7.60	470.6	433.7	18	St.	P.Cy.	O	R	M	M	M	M	M.S.	62.37	85.88
42	9.75	9.35	7.75	7.30	391.2	354.4	18	T.R	T	M.O	M.R	M	M	M	M	S	56.70	88.08
43	9.50	9.10	7.35	7.10	396.9	362.9	18	St.	T	M	M	M.N.	M.TH.	S	M	H	70.87	81.43
44	10.50	10.25	8.12	7.75	510.3	479.1	20	T.R	T	M	M	M.N	M	M.D.	M.L	H	82.22	84.48
45	9.50	9.00	7.85	7.50	470.6	411.1	18	St.	T	M	R	M	M	M.D.	M	M	65.21	84.44
46	8.85	8.45	8.25	7.85	470.6	396.9	18	T.R	T	M	R	M	M	D	M	S	85.05	81.90
47	10.00	9.75	7.60	7.25	450.8	405.4	18	T.L	T	M.C.	R	M	M	D	M	S	56.70	87.26
48	9.75	9.25	7.85	7.50	467.8	411.1	18	St.	T	C	M.R.	M	M.TH.	M	M.L	M.H.	85.05	81.08
49	10.50	10.10	7.75	7.40	516.0	447.9	18	St.	P.Cy.	M	M	M	TH.	M	M	M.H.	85.05	82.52
50	9.50	9.00	8.35	7.90	552.8	465.0	18	St.	T	M.O	M.R	M	TH.	S	L	H	102.06	78.26
51	10.00	9.50	8.50	8.12	481.9	430.9	20	St.	T	C	M	M	M.	D	M	M.S.	82.22	83.04
52	9.00	8.95	8.50	8.12	496.1	445.1	22	T.R.	T	O	R	N	T	D	S	S	70.87	85.54

EAR CHARACTERS

Ear Number	Length of Ear-Green	Length of Ear-Dry	Circum. of Ear-Green	Circum. of Ear-Dry	Wt. of Ear Gms-Green	Wt. of Ear Gms-Dry	Number Of Rows	Rows Twist or Straight	Shape Of Ear	Space Between R's	Inden-tation	Width of Kernel	Thickness of Kernel	Depth of Kernel	Size of Germ	Composition of Kernel	Wt. of Cob – Grams	Shelling Per Cent
53	9.35	8.87	8.00	7.60	430.9	379.8	16	St	T	O	R	M	M.T.	D	M	S	56.70	86.97
54	9.25	8.87	7.85	7.50	425.2	382.7	20	St.	P.Cy.	M	M	N	Th.	M	M.S	H	70.87	
55	9.25	8.65	8.00	7.50	465.0	391.2	18	St.	T	M.O.	M.R	M	M.T.	D	M	M.S	65.21	85.06
56	11.12	10.75	7.50	7.20	481.9	430.9	16	T.R.	T	M.O.	R	M	M	M	M	M	65.21	86.20
57	9.00	8.50	8.60	8.15	496.1	425.2	20	St.	T	C	R	M	M.Th.	M	M	M	70.87	84.30
58	9.12	8.87	8.00	7.70	481.9	416.7	20	T.R	T	C	R	N	M	D	M	M	59.54	86.46
59	10.60	10.25	7.12	7.00	439.4	402.6	14	T.R.	T	M.O.	M	M.W	Th.	S	S	M.H	62.37	84.95
60	10.50	10.12	8.25	7.85	581.2	516.0	16	St	T	O	M.R	M	M.Th.	S	S	H	127.57	76.06
61	11.12	10.75	7.12	6.85	490.5	425.2	16	St.	T	M	M	N	M	M.D	N.L	M	65.21	85.45
62	9.12	8.65	7.50	7.15	425.2	362.9	18	St.	T	M.C	M	M	M	D	L	M.S.	42.52	88.82
63	10.25	9.85	7.36	7.10	411.1	368.5	18	St.	T	M	R	N	Th.	M.D.	M.L	M	70.87	
64	10.50	10.15	7.25	7.10	453.6	413.9	16	St	T	C	M	M	M	D	M.L.	M.H.	70.87	84.07
65	9.75	9.45	7.50	7.25	450.8	408.2	18	T.L	T	M.C.	M.R	N	M	M	M	M	79.38	82.29
66	9.36	9.10	8.12	7.65	447.9	405.4	18	T.L	T	O.	R	M	M	D	M	M.S.	65.21	85.38
67	11.00	10.60	7.75	7.35	467.8	425.2	20	T.R	T	C	M	M	M.Th.	S	S	M.S	70.87	83.79
68	10.75	10.35	7.75	7.40	479.1	430.9	18	T.R	T	C	M	M	M.Th.	M	M	S	70.87	84.60
69	11.25	10.85	7.85	7.50	552.8	504.6	18	T.L	T	M	R	M	M	D	L	M	99.22	81.00
70	10.50	10.25	8.12	7.60	521.6	467.8	16	St	T	M.O.	M	M	M	M.D.	L	M.S	70.87	86.30
71	10.00	9.50	7.85	7.45	447.9	382.7	18	T.L	T	C	M.R	M	M.Th	S	M	M	56.70	86.79
72	10.00	9.65	7.62	7.25		487.6	16	T.R	T	M	M.R	M	M	D	L	H	70.87	85.15
73	10.25	10.00	8.25	7.80	538.6	484.8	16	St.	T	M.O	M.R	M	M	M	M.S.	M	104.90	79.16
74	9.37	8.85	8.00	7.60	462.1	411.1	20	St.	T	C	M.R	M	M	M.D.	M.L.	M.S.	70.87	83.44
75	10.75	10.30	7.25	6.95	481.9	416.7	20	St.	P.Cy.	V.C.	M	M.N.	M.Th	S	S	M	56.70	86.83
76	10.00	9.60	8.75	8.25	569.8	504.6	22	T.L	T	C	M	N	M	M.D.	M.L	M	85.05	83.50
77	9.37	9.00	8.00	7.60	476.2	422.4	20	St.	P.Cy	C	M	N	M	M.D	M	M.S	51.03	88.49
78	9.85	9.50	7.75	7.35	624.5	467.8	16	St.	T	M.O	R	M	M.Th.	M	M	M.H	99.22	80.73
79	10.75	10.35	8.50	8.15	521.6	453.6	22	St.	T	M	R	M	M.Th.	M	M	M	113.40	77.60
80	9.62	9.15	8.00	7.55	439.4	382.7	18	T.R	T	C	M	M	Th.	M.S.	M	M.S	76.54	81.73
81	9.50	9.12	7.75	7.35	450.8	396.9	20	St	T	M	R	N	M	D	M	M	53.86	88.03
82	10.00	9.50	7.87	7.40	493.3	433.7	16	St	T	C	M.R	M	M	M.D	M.L	M	70.87	84.41
83	11.00	10.50	8.12	7.80	564.0	510.3	18	T.L	P.Cy.	C	M	M.W	M	M	M	M	85.05	84.49
84	9.37	9.00	8.12	7.85	411.1	371.4	18	T.L	T	M	R	M	M	M	M	M.S	70.87	83.90
85	10.25	10.00	7.35	7.50	430.9	377.0	16	St.	T	C	M	M	M.Th.	M	S	H	70.87	
86	9.75	9.25	7.50	7.35	402.6	362.9	16	T.R.	T	M	M.R	M	M	M.D	M	M	56.70	
87	9.37	9.00	8.12	7.75	436.6	371.4	22	T.R	P.Cy.	C	R	N	T	M	M	M	70.87	
88	9.75	9.30	7.50	7.25	425.2	385.5	16	St.	P.Cy.	M	M	M	M	M	M	M.S.	82.22	83.23
89	9.25	9.00	7.50	7.25	411.1	371.4	24	T.L	P.Cy.	C	M	N	M	M	M	M.H	70.87	
90	10.25	9.75	7.50	7.15	425.2	379.8	18	T.L	T	M	M.R	M.N	M	D	M.L	M	56.70	87.40
91	10.85	10.60	7.75	7.55	465.0	430.9	16	St.	P.Cy.	M	R	M	M	D	M	S	76.54	
92	9.25	8.85	7.25	6.80	391.2	337.3	16	St.	T	M	M	M	M	S	L	M.H	73.71	79.98
93	9.35	8.80	8.00	7.60	476.2	413.9	16	T.R.	T	M.O	M.R	M	Th	M	M.L	M	96.39	78.38
94	8.50	8.25	7.87	7.50	354.4	311.8	18	St.	T	M	R	M	M.Th.	M	M	M	53.86	
95	10.75	10.25	7.75	7.50		428.0	18	T.R	T	M	M	M	M	M	M	M.S	65.21	86.52
96	10.00	9.60	7.62	7.30	436.6	388.4	18	T.L	Cy.	C	R	M	Th.	S	S	S	65.21	84.88
97	10.50	10.12	7.37	7.15	453.6	413.9	16	T.R	T	M	R	M	M	M.D	M	M.S	82.22	82.54
98	9.50	9.15	8.25	8.00	487.6	436.6	20	St.	T	C	M	M	M	M.D.	M.S.	M.S	85.05	82.37
99	10.00	9.60	7.75	7.35	467.8	425.2	18	T.R	P.Cy.	C	M.S.	M	M.Th.	S	M.S.	M.H	82.22	81.65
100	9.00	8.60	7.62	7.25	459.3	399.7	20	T.L	T	C	M	N	Th.	M	M	H	56.70	86.48
SECTION F																		
1	9.25	8.75	8.25	7.80	516.0	442.2	16	St.	T	M.O	S	M	M	S	M	H	99.22	77.82
2	8.87	8.70	8.75	8.25	533.0	470.6	16	St.	T	M	S	M.W.	M	S	S	H	96.39	79.83
3	9.50	9.15	9.12	8.75	635.0	572.7	22	St.	T	M	M.S.	M	M	M	L	M.H	127.58	77.79
4	8.87	8.75	8.25	7.95	533.0	462.1	20	St.	T	M	M	N	M	M.D	M	M	85.05	81.96
5	10.25	9.90	9.75	8.80	558.4	504.6	18	T.R	T	M	M.R	M	M	S	M.L.	M.S.	121.90	75.97
6	10.00	9.35	9.12	9.10	751.3	581.2	22	St.	T	M	S	N	M.T.	S	L	M	138.91	76.16
7	10.25	9.35	8.00	7.60	558.4	501.7	18	T.R	T	M	M	M	M	M	M.L	M	93.56	81.39
8	9.25	9.00	8.12	7.60	422.4	368.6	18	St.	T	M	M	M	M	S	M.S.	S	56.70	85.64
9	10.25	9.75	8.50	8.30	652.0	581.2	20	St.	T	M	M.S.	N	M	M.S.	M	M	127.58	77.91
10	9.75	9.45	8.37	8.00	637.9	527.4	20	T.L	T	M.O	S	N	M	S	M.L.	M.H	127.58	75.89
11	10.75	10.40	8.26	7.95	623.7	535.8	18	St.	T	C	M	W	M	S	M	H	136.08	74.46
12	8.62	8.25	9.62	8.95	606.6	424.5	22	T.L	T	M	M.S	M	M.Th.	S	M	M.S.	150.25	71.50
13	9.50	9.25	8.50	8.12	547.1	473.4	18	St.	T	M	M	M	M	M	M	S	85.05	82.25
14	8.50	8.10	8.12	7.75	490.5	436.6	18	St.	T	M.C.	M.S.	M	M	M.S	M	M	90.72	79.48
15	9.50	9.10	8.00	7.80	490.5	436.6	18	T.R	T	C	M	M	M	S	M.S.	S	93.56	78.70
16	9.12	8.70	8.12	7.70	504.6	439.4	18	T.R	T	M	M.S	N	M	M	M.L	M.H	90.72	79.70
17	9.00	8.50	8.50	8.10	572.7	493.3	22	St.	T	M.C.	M	N	Th.	M.S.	M.S.	M.H.	87.88	82.18
18	10.75	10.35	8.37	8.12	609.5	538.6	18	T.R	T	M.O	S	M.N	M	S	M.L.	M.H	127.58	76.48
19	10.00	9.50	8.87	8.50	688.9	601.0	20	St	T	M.O	S	N	M	M	M.L.	M.H	127.58	78.99
20	9.87	9.35	8.75	8.45	595.4	541.4	18	T.L	T	C	M	W	M	S	M.L	M.H	133.25	75.45
21	8.75	8.35	8.75	8.30	564.2	481.9	18	T.R	T	M	M	M	M	M	S	H	113.39	76.84
22	8.87	8.55	8.75	8.25	516.0	467.8	18	T.L	T	M	M.S	M	M.Th.	S	L	H	124.73	77.78
23	8.87	8.30	8.50	8.12	558.4	484.7	18	St	T	M	M.S	M	M	M.D.	L	H	99.22	79.80
24	9.00	8.50	8.12	7.75	535.8	456.4	18	T.L	T	M	M	M	M	M.S.	M.L	M.H	104.90	77.48
25	8.62	8.00	8.30	7.95	473.4	422.4	16	St.	T	O	S	M.N	M.Th	S	M	M.H.	113.39	73.24







RELATION OF EAR CHARACTER TO SHELLING PERCENT.

An effort was made to classify the various ears into a series of related groups of distinct characters with the hope that some definite idea as to the factors governing shelling percent could be correlated.

The entire number, 1185 ears, was used in this work and while the standards were not all uniform, due to an unevenness in the size and character of the corn, the effort was made to get as nearly a proportionate number in each class as possible.

As a general rule, 15% was used as the number to represent each of the extremes and 70% therefore was used as the average. This rule was quite uniform however and with a few exceptions the figures did not miss this more than three percent either way.

(Table A.)

(Table A.)

RELATION EAR CHARACTERS TO SHELLING %.

Ear Character	Shelling Percent 1910 Corn	Shelling Percent 1911 Corn
Long Ears	84.05	84.37
Short Ears	86.11	84.49
Large Circumference	84.37	84.72
Small "	84.75	86.26
Large No. Rows	85.00	85.46
Small " "	83.33	84.51
Heavy Ears	83.82	85.96
Light Ears	89.89	85.69
Cylindrical	84.14	85.18
Tapering	84.40	84.58
Rough Indentation	84.13	83.88
Smooth "	84.24	84.23
Long-Tapering-Smooth		83.62
Long-Tapering-Rough	83.37	84.09
Long-Cylindrical-Rough	83.13	
Short-Tapering-Smooth		83.68
Short-Tapering-Rough		85.19

Length of Ear.

In both series, the short ears have the preference although in the 1911 corn the difference is not marked. This was very likely due to the fact that the short ears in this corn seemed to run more uniformly tapering and smooth than did those in the 1910 corn.

Circumference of Ear.

The small circumference in both cases gives the highest shelling percent. This is explained by the fact that as the circumference increases, the cob increases proportionately and as a rule the space between the rows likewise increases. The large circumference ears tending to have a wider space than those of smaller circumference.

Number of Rows.

Both the series show a decided advantage for the larger number of rows, due to the fact that as the number of rows increase, the space between rows, as a rule, decreases. No conclusions could be drawn however, as to any one number of rows being uniformly a higher yielder of corn than another. The shelling percent is influenced by so many other factors that about the only conclusion that can be drawn is that the greater number of rows will give a higher average percent.

Weight of Ear.

A striking advantage in favor of the light ear

in the 1910 corn with practically no difference in the 1911 sėries, the heavy seeming to have a slight advantage. This seeming contradiction may be at least in part explained by the fact that in every case this corn had an abundance of cob and very likely the large cob was found in the small ear at least to the point of equalizing the results.

Shape of Ear.

Apparently another contradiction which may be partly due to the fact that the 1910 corn was quite uniform and the actual taper to the ear was but slight while in the 1911 corn due to the great variation of types the tapering ear represents an entirely different type on which in many cases the kernels became quite shallow and round at the tip with a frequent appearance of the cobs.

Indentation.

In both series, the smoother type of corn gave the higher percent of shelled corn. The writer explains this apparent contradiction of previous theories on the basis of kernel density. As a rule, the smooth type of kernel runs medium horny to horny with a density of perhaps .10 higher than the starchy which as a rule may be said to be of a rough indentation.

This greater roughness in the starchy kernel is the result of the drying of the crown starch and as those kernels have a super-abundance of that particular constit-

uent the drying process causes a much more roughened surface.

Combined Characters.

In order to offset as far as possible, the influence of other characters it was decided to combine characters in so far as was possible, and see the relationships between the different distinct types.

In the 1910 corn it was not possible to get but two types in large enough numbers to be considered authentic. Here again the tapering ear has a shade the advantage where combined characters are used.

The rough indentation seemed to get a trifle the advantage in the long tapering ears and a noticeable increase in the short tapering ears in the 1911 section. This may be due to the fact that it was not possible to get as great a number of the rough ears, about 50% of the number represented in the smooth ear class, and in all cases the rough ears run on an average deeper kerneled, the smooth being wider kernels with less depth.

RELATION OF KERNEL CHARACTER TO SHELLING PERCENT.

The entire number of ears was further classified upon the basis of kernel characters and the relative value of the different types of kernels estimated so far as their influence upon the shelling percent could be determined. Here again the same rule was applied allowing the majority to represent about 70% of the total number.

Some difficulty was experienced in this classification when the characters were taken in regard to size of germ. No doubt, the size of germ should be considered in a relative way but this was found very difficult to do and in spite of efforts to counteract this tendency, a small kernel with a small germ which was perhaps medium to large in proportion to the kernel was very likely classed as small. This explanation may perhaps have some bearing in the table following:

(Table B.)

(Table B.)

RELATION KERNEL CHARACTERS TO SHELLING %.

Kernel Character	Shelling Percent 1910 Corn	Shelling Percent 1911 Corn
Deep	85.74	86.40
Shallow	83.05	83.24
Wide	83.79	84.12
Narrow	85.15	85.69
Close Space	85.17	85.12
Open Space	84.36	84.94
Horny Composition	81.99	83.79
Starchy Composition	85.49	85.59
Large Germ	85.14	84.78
Small Germ	83.97	85.47

Depth of Kernel.

As was expected, the deep kernel gave the high shelling percent although the difference was not as great as might at first be expected. Here again the kernel composition undoubtedly played some part and although it did not, of course, offset the depth, it gended to more nearly equalize the two.

Width of Kernel.

The narrow kernel as was anticipated gave the higher percent of corn to cob. The difference here again is not as great as it would have been had the kernels been of the same composition.

Space between Rows.

This is virtually a repetition of the kernel width and the explanation there is likewise applicable here as the wide kernel had rounded edges and wide space as a rule.

Kernel Composition.

Both series agree that kernels of a starchy composition give the higher shelling percent notwithstanding the opposing factor of the densities of the two. This fact is explained when we know that in practically every case, the starchy kernel was a kernel of more than average depth while the horny kernel included a great number which were of less than average depth, wider than the average, and with more space between the rows. At first considera-tion, this may be considered a contradiction of the result noted under "Indentation" in Table A. But upon further

analysis it is found to be entirely in keeping. It should be remembered in this connection that the indentation in Table A includes many more ears than does the composition now under consideration. It is further true that the smooth kernels, not only had a much higher density than the rough and that this group also included many kernels of medium to greater depth while the horny composition kernels were practically all medium to shallow. In the light of these facts, the results are entirely reasonable.

Size of Germ.

At first there seems to be a contradiction here which would question the result but the sixty-nine hundredths of a percent is in the writers estimation easily explainable in the light of what was mentioned just before the preceeding table. That is, that the small kernel was inclined to be given credit for having a small germ even though that germ may have been medium to large in proportion to the size of the face of the kernel.

In other words, very likely the deep, narrow kernel was marked with a small germ when in actual proportion to the germ surface it might well have been called medium in size.

In the writer's estimation, the percent shown in the 1910 corn more nearly represents the actual condition because the kernel density is undoubtedly

greater with the large germ and this would therefore have a tendency to create a relatively higher shelling percent than would be found in the small germ.

RELATION OF KERNEL CHARACTER TO KERNEL - WEIGHT & DENSITY.

The six-hundred and sixty ears of the 1910 corn were used for this work and the weight of twenty kernels was accurately determined on the chemical balances. The kernels were cleaned of any chaff or other material which would cause bubbles to adhere to the surface, immersed in an accurately graduated cylinder and a reading made of the displacement. Owing to the fact that the method was not sufficiently accurate to read closer than to tenths and estimate to hundredths of a cubic centimeter, it was not deemed advisable to make any corrections for temperature. This being the case, the displacement was divided directly into the weight to give the density.

(Table C.)

(Table C.)

CHARACTER OF KERNEL TO AVERAGE
WEIGHT & DENSITY.

Character Kernel	Wt. 20 Av. Kernels	Ave.Density Kernel
Deep Kernel	7.329	1.242
Shallow Kernel	6.672	1.365
Wide Kernel	8.204	1.242
Narrow Kernel	6.485	1.260
Close Space	6.957	1.242
Open Space	7.266	1.249
Rough Indentation	7.209	1.245
Smooth Indentation	7.238	1.294
Horny Composition	7.106	1.338
Medium Horny	7.5634	1.286
Medium Starchy	7.3439	1.237
Starchy Composition	7.089	1.191
Large Germ	7.951	1.342
Small Germ	6.651	1.252

Kernel Depth.

As might have been expected, the deeper kernel gave the greater weight although the difference was not as much as it undoubtedly would have been had it not been for the starchy character of the deep kernel. This fact is nicely shown by the density which is twelve hundredths greater for the shallow than for the deep kernel.

Kernel Depth.

The wide kernel had a decided advantage in weight although the density was in favor of the narrower kernel. The difference in this regard however, is not great, being but eighteen thousandths.

Kernel Space.

Here again, the open space shows that it is associated with the wider kernel as that type of kernel is heavier than the narrow. The density while practically the same might be said to favor the wide space should there be any preference.

Indentation.

The horny, smoother kernel again leads both in weight and density. The same reason given under kernel depth holds here. The explanation given under "kernel composition" in Table B should also be applied here in comparing the result of weight and density in the indentation and composition as shown by this table.

<u>Composition.</u>

Practically no difference is to be noted in weight between the kernels of starchy composition and those of a horny character. The greater depth of the former perhaps explains this condition as otherwise the horny kernel would most surely outweigh the starchy one.

The medium horny and medium starchy, while they each weigh appreciably more than either of the other two, bear the same relationship so far as the amount of starch is concerned. This greater weight is doubtless due to the fact that these classes included approximately seventy percent of the corn being tested and would therefore very likely run somewhat heavier than either of the two other classes as a vast majority of the wide kernels of average to greater depth were either medium horny or medium starchy and would therefore come in at this point. The starchy kernels were deep but narrow while the horny were wider but more shallow.

The density in this case is particularly significant and bears out, perfectly, what had been anticipated in the remarks in the discussions of of previous tables. The horny kernel with a density of 1.338 stands .147 higher than the starchy while the medium horny and medium starchy occupy positions in direct proportion to the ratio as set by the two extremes.

Size of Germ.

Here again the larger germ shows its influence and as was suggested, under the discussion of "Shelling Percent" as affected by this factor, proves that the larger germ with its comparative high percent of oil does increase the kernel weight and density and would therefore have a tendency to impress that character upon the shelling percent of the ear.

RELATION OF EAR CHARACTER TO KERNEL & COB DENSITY.

The entire number of ears was used for the cob density while but the six-hundred and sixty ears of the 1910 corn were used for the kernel density as was explained in the foregoing pages.

Cob density was determined very similarly to the kernel density, the weighed cobs being immersed in water contained in a graduated cylinder and the displacement read directly.

Several methods of procedure were tried but the best results were gotten by immersing the cobs untreated in the water. Coating with paraffine was tried butthis proved very unsatisfactory as much more water seemed to adhere as bubbles and the different readings on the same cob were quite variable one time with another due to this fact.

It was at first thought that the chaff on the outside of the cob would be very objectionable as it would hold a great amount of air in the form of bubbles and in order to alleviate this difficulty, burning the chaff was tried. This however, was the least practical of any of the methods as it seemed to open up the pores in the cob to such an extent that it was impossible to get a reading due to the extremely rapid absorption of water.

Everything considered, the immersion of the untreated cob was much the most practical and especially since the cobs were to be dried and later tried for their crushing strength.

The following table shows the density of both kernel and cob for the 1910 corn and the density of cob for that of 1911.

(Table D.)

Length.

Practically no difference is to be found in the long and short ear in either of these characters.

Circumference.

Here again we have the character of kernel correlated with the density of both the kernel and cob. The ears of large circumference were in most cases, ears of deep grains with a rough indentation and therefore a starchy kernel. The ears of smaller circumference were as a rule those with shallower grains and proportionately larger cobs. The larger cob is always correlated with a higher density as shown in both cases here.

Number Rows.

The same condition holds true for the number of rows. The small number of rows with the open space and wide kernel had relatively the larger cob. The ears of large number of rows were usually ears of greater circumference, the kernels being more starchy and somewhat deeper.

(Table D.)

RELATION OF EAR CHARACTERS TO COB

& KERNEL DENSITY.

Ear Character	Kernel Density	Cob Density 1910	Cob Density 1911
Long	1.253	.4281	.3596
Short	1.254	.4246	.3691
Large Circumf.	1.240	.4120	.3565
Small "	1.271	.4446	.3668
Large No. Rows	1.246	.4002	.3457
Small No. Rows	1.257	.4439	.3772
Heavy	1.250	.4312	.3567
Light	1.263	.4198	.3425
Cylindrical	1.254	.4173	.3629
Tapering	1.253	.4521	.3641
Rough	1.245	.4263	.3578
Smooth	1.294	.4431	.3723
High Shelling %	1.2518	.3620	.3201
Low Shelling %	1.2799	.4790	.3916

Weight.

Exactly what might have been anticipated in the light of the above reasoning, was secured. That is, with the heavy ears we find the lower density of kernel because these are the rough ears of the starchy composition. Here again, we have the cob densities correlated with the weight of ear, the heavy ear having the high cob density.

Shape.

As has been noted in the table there was practically no difference between the cylindrical and tapering ear in kernel density but in cob density there was quite a variation. This is explained by the fact that in the cylindrical ear the pith remains about the same in size clear to the tip while in the tapering ear it decreases more rapidly in proportion than the cob.

Indentation.

In indentation the kernel density again shows somewhat in favor of the smooth ear, therefore the more horny kernel. The density is, as might have been expected, greater for the smooth ear which has on an average a larger cob.

Shelling Percent.

Again the difference noted is one of kernel composition very largely. The high shelling ears, while they may include many smooth indentation ears, are medium

horny to starchy while the low shelling ears are medium starchy to horny. This fact explains the difference in density quite easily. In cob density, the low shelling ear with the large woody cob (the heavy cob) has a decided advantage.

RELATION OF KERNEL CHARACTER TO KERNEL & COB DENSITY.

In this work, as in the preceding table - D - all the ears were used to determine the cob density while only the 1910 corn was used in the determination of kernel density.

(Table E.)

Depth of Kernel.

Again, we note the effect of depth upon the density of kernel and also note that the same relationship exists as was found to be the rule in Table D, namely that the smooth, shallow kernel was inclined to be associated with the larger, more dense cob. The kernel density and cob density here seem to be correlated in both samples of corn.

Width of Kernel.

As in the table previously noted, the narrow kernel of greater depth was the kernel of higher density, although the difference, .018 is not enough to justify any decisions other than have been previously made.

The cob density is likewise not as decidedly influenced by this character as in some others. This, however, is a minor character for this point and no great importance is therefore attached to this. The cob densities will also be noted to disagree but as this point is a minor

one and one which other factors so completely overcome, no particular value is at stake.

Space.

In this character, as in that of the kernel width, the difference between kernel densities is not enough to be of much significance The density however, shows more difference and, as might be expected, it being highest for the open space, bears out the conclusion in Table D, under Number of Rows.

Composition.

A great difference is again noted between the starchy and horny kernel in density of kernel and this same correlation is borne out in the density of cob: that is, that as the density of kernel increases, the density of cob likewise increases although there does not seem to be a definite ratio. This correlation will be found to exist unless in some particular character where it loses its identity by overshadowing characters.

Size of Germ.

In this character, the density of kernel is the only thing which shows variation enough to justiry any very conclusive statements, other than to say that the rule just mentioned is again borne out in this character of Size of Germ.

(Table E.)

RELATION OF KERNEL CHARACTERS TO

COB & KERNEL DENSITY.

Kernel Character	Kernel Density	Density of Cob 1910	Density of Cob 1911
Deep	1.242	.4236	.3507
Shallow	1.365	.4553	.3832
Wide	1.242	.4229	.3466
Narrow	1.260	.4150	.36008
Close	1.242	.4029	.3529
Open	1.249	.4360	.3694
Horny	1.338	.5210	.3707
Starchy	1.191	.4021	.3519
Large Germ	1.342	.4468	.3573
Small Germ	1.252	.4323	.3403

RELATION OF EAR CHARACTERS TO KERNEL & COB DENSITY & CRUSHING STRESS.

In addition to determining the relative densities of the different cobs, it was decided to still further correlate the densities or rather the hardness of the cobs by a crushing strength of all the cobs in the 1910 corn.

That this might be best done, it was decided to cut each cob into two sections of exactly two inches each, starting the first of the sections two inches from the butt of the cob and allowing the other end to go where it would.

After cutting these sections and numbering them, they were accurately measured at each end, the diameter of both pith and woody fibre being considered. An average figure was then taken for these diameters as is recorded in Table F. A computing table was then used and the area of the inner circle subtracted from the whole circle and this figure taken as the area of woody fibre. This computation was made in order to get all the crushing strengths to a uniform basis.

Expressed as they are in columns of the table the Breaking Stress is comparable one with another because all are figured to the same resisting area, and it may

(Table F.)

Cob Number	Weight in Grams	Density	Diameter of Cob – in.	Diameter of Pith – in.	Area Woody Fibre -- Sq. in.	Average Crushing Stress	Stress per Sq. in.	Density of Ave. Kernel
8	63.78	.5798	.725	.352	.3314	1990	6004	1.266
18	49.61	.3421	.800	.425	.3682	1045	2838	1.244
20	70.88	.4244	.850	.360	.4909	2000	4074	1.268
26	67.18	.3839	.85	.40	.4710	2115	4490	1.265
27	70.88	.4050	.97	.45	.5400	2540	4704	1.242
30	49.61	.4725	.70	.38	.2608	1430	5483	1.364
32	77.96	.4103	1.10	.52	.7516	1720	2287	1.266
34	74.28	.4502	.85	.45	.4510	1580	3503	
35	92.14	.4981	.97	.42	.5400	3250	6019	1.264
36	99.25	.5095	.90	.42	.4955	3850	7770	1.264
58	70.88	.4050	1.00	.45	.6351	1660	2618	1.236
59	63.78	.3645	.97	.57	.4418	2040	4618	1.315
60	63.78	.4252	.90	.52	.4230	1140	2695	1.267
61	67.18	.3839	.95	.57	.3973	1620	4078	1.230
62	61.22	.3710	.87	.40	.4710	1825	3875	1.276
63	67.18	.4799	.85	.40	.3693	1745	4721	1.271
64	70.88	.3831	1.02	.55	.5369	1790	3334	1.377
66	70.88	.4430	.86	.52	.3789	1745	4605	1.294
69	95.02	.5589	.95	.51	.4940	2565	5192	1.255
70	53.02	.3213	.94	.57	.4418	1180	2672	1.261
71	70.88	.4170	1.00	.55	.5369	2120	3949	1.277
74	99.25	.4411	1.12	.50	.6351	3420	5385	1.332
75	92.14	.4725	1.05	.55	.5369	2270	4228	1.229
76	85.05	.4597	.97	.52	.4679	1870	4005	1.273
77	67.18	.3199	1.05	.65	.5495	1555	2830	1.260
78	56.70	.3658	1.00	.47	.6351	1900	2992	1.192
79	60.10	.4007	.81	.45	.3682	1565	4250	1.292
81	95.64	.4782	1.07	.63	.4818	2463	5112	1.288
82	70.88	.4573	.92	.50	.4940	1690	3421	1.263
83	81.36	.4068	1.02	.52	.5661	3805	6721	1.255
84	56.70	.3910	.75	.40	.3115	1540	4944	1.290
85	92.14	.4849	1.00	.50	.5891	2245	3811	1.276
88	95.64	.4905	.90	.47	.4495	2385	5306	1.271
89	70.88	.3938	.87	.42	.4510	1585	3515	1.271
90	67.18	.4799	.85	.45	.4510	2342	5195	1.280
91	77.96	.4872	.75	.46	.2455	2030	8269	1.262
92	63.78	.4556	.84	.40	.3796	1540	4057	1.217
93	60.10	.4007	.82	.42	.3682	1742	4731	1.251
94	85.05	.5155	.95	.52	.4679	2647	5645	1.258
95	70.88	.4888	.78	.40	.3498	1855	5304	1.279
96	60.10	.4293	.80	.37	.4081	1352	3313	1.194
97	92.14	.4188	1.00	.56	.5359	3325	6205	1.253
98	92.14	.4725	.92	.50	.4940	2445	4949	1.202
99	85.05	.4252	.95	.40	.5600	3362	6014	1.287
100	95.64	.5169	1.00	.48	.6891	4702	6824	
101	56.70	.3658	.85	.50	.3136	1837	5858	1.255
104	70.88	.4888	.80	.40	.3882	1980	5101	1.214
106	77.96	.4214	.95	.52	.4679	2247	4802	1.149
107	102.62	.4887	1.00	.47	.6891	4487	6512	1.335
108	81.36	.3874	1.00	.57	.5569	2225	4144	1.252
109	92.14	.4188	1.10	.57	.5408	2707	5055	1.261
111	56.70	.4362	.72	.40	.2762	1865	6756	1.246

Cob Number	Weight in Grams	Density	Diameter of Cob - in.	Diameter of Pith - in.	Area Woody Fibre - Sq. in.	Average Crushing Stress	Stress per. Sq. in.	Density of Ave. Kernel
112	77.96	.3898	.99	.54	.6390	.2147	3360	1.291
113	85.05	.4476	1.00	.50	.5891	2220	3762	1.267
114	85.05	.5003	.90	.52	.4234	2600	6141	1.231
115	70.88	.4170	.95	.51	.4940	1865	3775	1.295
116	85.05	.5315	.90	.42	.4950	2265	4576	1.209
118	92.14	.4850	.90	.41	.5150	1520	2952	1.259
119	63.78	.3543	1.10	.62	.5817	1280	2200	1.257
120	67.18	.3839	.95	.50	.4940	1840	3725	1.209
121	81.36	.3616	1.10	.57	.5408	1920	3550	1.247
122	85.05	.4149	1.02	.52	.5661	2185	3860	1.302
123	77.96	.4872	.85	.35	.4909	2305	4696	1.248
125	70.88	.3731	.96	.56	.4418	1635	3701	1.278
126	67.18	.3952	.88	.42	.4710	1550	3291	1.294
128	60.10	.3877	.90	.50	.4990	1990	3988	1.212
129	77.96	.3898	.95	.55	.4418	2025	4584	1.268
130	77.96	.4586	.95	.47	.4230	1890	4468	1.299
131	49.61	.3816	.79	.45	.4682	1440	3076	1.268
133	56.70	.3910	.89	.41	.5150	1725	3350	1.210
136	74.28	.5122	.75	.31	.3654	2095	5734	1.228
139	67.18	.4198	.87	.45	.4510	1667	3696	1.250
140	74.28	.4370	.92	.35	.5799	1920	3311	1.194
141	120.50	.5603	.87	.45	.4510	4295	9523	1.285
142	74.28	.3718	.92	.52	.4679	1682	3595	1.192
143	106.30	.5457	1.00	.57	.5359	3190	5953	1.297
147	70.88	.4888	.82	.30	.3882	1240	3194	1.276
148	63.78	.4254	.76	.37	.3314	1785	5386	1.249
149	77.96	.4331	.90	.57	.4230	1645	3889	1.237
150	81.36	.4172	.95	.52	.4679	2457	5251	1.292
151	106.30	.5313	1.05	.44	.6351	3295	5188	1.318
153	85.05	.4253	1.12	.65	.4495	1940	4316	1.281
155	56.70	.4050	.85	.40	.4710	1515	3217	1.314
156	74.28	.4502	.83	.32	.4418	2255	5104	1.197
157	85.05	.4475	.90	.40	.5150	3750	7282	1.098
159	70.88	.4296	.87	.40	.4710	1545	3280	1.203
160	113.50	.5974	.90	.40	.5150	4255	8262	1.319
162	70.88	.4430	1.00	.65	.5495	1342	2442	
163	63.78	.4555	.67	.30	.2945	1605	5450	1.302
164	81.36	.4649	.78	.32	.4034	1465	3632	1.268
165	70.88	.4168	.85	.45	.4510	1767	3918	1.218
166	74.28	.4952	.82	.41	.3882	1920	4946	1.258
167	81.36	.4931	.92	.42	.4600	2175	4728	1.280
168	49.61	.3675	.78	.45	.3068	850	2770	1.189
170	56.70	.3544	.82	.42	.3682	1580	4291	1.254
173	74.28	.4370	.90	.50	.4490	2390	5323	1.234
176	56.70	.3658	.82	.42	.3682	1525	4142	1.169
177	74.28	.3718	1.05	.60	.5495	2975	5415	1.190
179	85.05	.4861	.85	.42	.4696	2260	3968	1.324
180	99.25	.3970	1.04	.67	.5173	1810	3499	1.284
181	67.18	.4633	.85	.45	.4510	2160	4790	1.217
182	70.88	.3832	1.12	.45	.6152	1955	3178	1.257
183	70.88	.4168	.80	.50	.4564	2125	4656	1.296
184	67.18	.4334	.80	.42	.3682	1635	4421	1.274
185	92.14	.4980	.92	.45	.4600	1521	3307	1.313
187	60.10	.3756	.90	.47	.4495	1525	3392	1.232
188	70.88	.3544	1.00	.57	.5359	1850	3452	1.278
189	77.96	.4106	1.05	.47	.6152	2155	3503	1.288
190	70.88	.4725	.86	.45	.4280	2295	5363	1.177

Cob Number	Weight in Grams	Density	Diameter of Cob – in.	Diameter of Pith – in	Area Woody Fibre --Sq. in	Average Crushing Stress	Stress per Sq. in.	Density of Ave. Kernel
191	63.78	.3543	.88	.47	.4270	1710	4005	1.236
192	95.54	.5165	.94	.36	.5799	3200	5518	1.280
193	63.78	.3865	.82	.44	.3682	1445	3925	1.257
194	49.61	.3969	.80	.47	.4564	1800	3944	1.184
195	63.78	.3752	.90	.52	.4230	1595	3771	1.221
196	57.70	.4050	.75	.36	.3115	2050	6582	1.275
197	70.88	.5250	.87	.40	.4710	2260	4798	1.274
198	77.96	.4455	.91	.47	.4720	2920	6187	1.313
199	85.05	.4475	1.00	.57	.5359	2555	4768	1.239
200	70.88	.3938	1.00	.57	.5359	2070	3863	1.250
201	56.70	.3658	.90	.69	.2741	1950	7114	1.184
203	92.14	.4607	.92	.42	.4600	3025	6257	1.192
204	74.00	.5303	.80	.35	.4078	2195	5383	1.195
207	63.78	.3448	.90	.50	.4490	1385	3085	1.274
208	85.03	.4475	.91	.38	.5150	2800	5437	1.227
209	67.78	.4518	.87	.45	.4510	1685	3736	1.275
210	53.02	.3656	.86	.43	.4510	1385	3070	1.246
211	60.10	.3535	.90	.52	.4230	1180	2790	
212	60.10	.4006	.85	.40	.4710	1755	3726	1.162
213	85.05	.5002	.90	.35	.5249	2405	4496	1.284
215	77.96	.3626	1.05	.60	.5495	1471	2677	1.328
216	67.78	.3873	.97	.44	.5400	1520	2815	1.276
217	92.14	.4607	1.00	.45	.6351	2465	3881	
220	92.14	.4286	1.00	.57	.5395	2195	4096	1.253
223	63.78	.3448	.92	.55	.3968	1095	2759	1.334
224	85.05	.5487	.91	.42	.5600	3345	5974	1.260
225	88.44	.5202	1.02	.47	.6152	3670	5966	1.315
226	113.40	.5274	1.05	.49	.6351	3365	5298	1.307
227	70.88	.3938	.95	.47	.4230	2335	5520	1.257
228	63.78	.3751	.90	.45	.4950	1955	3950	1.284
229	63.78	.3866	.95	.41	.5600	1775	3170	
230	85.05	.3956	1.00	.55	.5359	1895	3536	1.155
233	85.05	.4597	.90	.30	.5686	3445	6059	1.305
234	77.96	.4331	.92	.39	.5150	4285	8320	1.328
237	60.10	.3435	.93	.47	.5170	2160	4178	1.298
238	63.78	.4399	.82	.47	.3682	1617	4392	1.358
245	56.70	.3780	.87	.40	.4710	1655	3414	1.290
246	95.54	.5790	.90	.47	.4495	2395	5318	1.329
249	88.44	.4212	.92	.48	.4940	2220	4494	
250	60.10	.4808	.83	.46	.3366	1420	4218	1.281
251	70.88	.3938	.90	.51	.4490	1870	4165	1.172
252	45.93	.3167	.95	.47	.4230	1045	2470	1.175
253	85.05	.4597	.97	.36	.5354	2990	5463	1.156
254	60.10	.4006	.91	.48	.4720	2360	5296	1.251
255	49.61	.3675	.82	.47	.3682	1555	4224	1.259
258	70.88	.2625	.95	.45	.5955	2335	3921	1.268
260	56.70	.4725	.75	.31	.3654	1990	5440	1.312
261	56.70	.4725	.80	.37	.3651	1135	3109	1.367
265	70.88	.3544	1.28	.72	.3467	2105	6072	1.290
266	70.88	.3730	1.10	.65	.4495	1755	4136	1.338
267	63.78	.4399	.85	.41	.3796	2027	5340	1.293
269	56.70	.3544	.81	.45	.3682	1875	5092	1.264
270	70.88	.4169	.87	.39	.4710	1960	4408	1.281
271	38.84	.2157	.95	.45	.5955	2000	3359	1.213

Cob Number	Weight in Grams	Density	Diameter of Cob – in.	Diameter of Pith – in.	Area Woody Fibre – Sq. in.	Average Crushing St.	Stress per Sq. In.	Density of Ave. Kernel
272	81.36	.5424	.75	.35	.3115	2095	6722	1.252
273	77.96	.4331	.88	.36	.4909	3247	6615	1.206
274	92.14	.3920	1.00	.60	.5495	1850	3367	1.307
275	88.14	.4535	.85	.39	.4710	2277	4835	1.261
278	49.61	.2918	1.02	.60	.4917	1000	2076	1.247
279	70.88	.4430	.83	.41	.3796	1690	4452	1.262
280	70.88	.4573	.92	.42	.4600	2532	5502	1.182
281	63.78	.4252	.92	.42	.4600	2700	5870	1.228
282	60.10	.3756	.90	.45	.4495	1705	3793	1.214
283	92.14	.5119	.95	.35	.5354	1900	3549	1.279
284	56.70	.3240	.82	.35	.4081	1490	3651	1.288
285	63.78	.3447	.90	.48	.4495	1535	3415	1.266
286	85.08	.4476	.92	.40	.5150	2340	4544	1.288
287	77.96	.4103	.95	.47	.4230	1395	3298	1.273
289	85.05	.3619	1.05	.65	.5495	1525	2775	1.267
291	70.88	.3938	1.05	.52	.5661	2672	4720	1.181
292	56.70	.3910	.95	.50	.4940	1840	3725	1.217
293	85.05	.4860	.95	.55	.4418	1345	3044	1.278
294	63.78	.3752	.87	.45	.4510	1717	3807	1.252
295	77.96	.3390	1.17	.65	.4526	1280	2828	1.249
296	85.05	.4252	.92	.47	.4940	2790	5648	1.327
298	70.88	.3938	.95	.49	.4495	1620	3604	1.243
299	67.18	.3732	.95	.52	.4679	1455	3110	1.151
300	56.70	.4050	.82	.30	.3882	1635	4212	1.286
301	81.36	.4162	.90	.46	.4495	3025	6730	1.299
302	77.96	.4103	.91	.46	.4720	3265	6917	1.308
303	85.05	.4860	.92	.49	.4720	2825	5986	1.231
305	81.36	.3784	.91	.50	.4490	2090	4655	1.310
306	77.96	.4455	.97	.47	.4725	2650	5609	1.262
307	49.61	.3969	.82	.41	.3882	1615	4160	1.284
308	56.70	.3780	.90	.42	.4955	1675	3380	1.220
309	70.88	.3881	.95	.50	.4940	2060	4170	1.287
312	63.78	.3543	.91	.47	.4720	1860	3941	1.272
314	70.88	.3730	1.05	.55	.5359	2320	4330	1.252
315	42.52	.1890	.76	.37	.3314	965	2913	1.231
316	85.05	.4477	1.05	.55	.5359	1725	3219	1.334
319	70.88	.4296	.90	.47	.4495	2120	4717	1.207
320	60.10	.4006	.90	.48	.4495	1232	2741	1.244
321	60.10	.4007	.87	.45	.4280	1795	4195	1.304
322	63.78	.4399	.82	.37	.4079	1510	3702	1.275
323	85.05	.5155	.91	.45	.4720	2270	4809	1.306
324	77.96	.3998	.91	.45	.4720	2360	4886	1.214
325	67.18	.4479	.80	.40	.3882	1960	5049	1.196
327	88.44	.4536	.93	.42	.5200	1530	2942	
328	58.70	.4200	.82	.42	.3682	1248	3389	1.273
329	70.88	.4430	.87	.40	.4710	2170	4607	
330	88.44	.4314	1.05	.60	.5495	2965	5396	1.298
331	95.54	.4777	.95	.45	.5955	2235	3752	
332	63.78	.3865	.97	.47	.4725	2415	5111	1.239
333	99.22	.4961	.97	.45	.4725	1830	3873	1.280
334	85.05	.4476	1.02	.57	.5359	2485	4637	1.324

Cob Number	Weight in Grams	Density	Diameter of Cob — in	Diameter of Pith — in	Area Woody Fibre — Sq. in	Average Crushing St.	Stress per Sq. in	Density of Ave. kernel
335	85.05	.5155	.90	.41	.5150	2115	4107	1.270
336	85.05	.4597	1.05	.55	.5359	2445	4563	1.270
337	67.18	.3952	.97	.53	.4679	1180	2522	
338	70.88	.4430	.96	.42	.5155	2265	4394	
339	56.70	.4536	.77	.36	.3697	1670	4517	1.280
340	49.61	.3006	.82	.45	.3682	1162	3156	1.254
341	92.14	.4388	1.05	.56	.5359	2620	4889	1.181
343	49.61	.3675	.82	.44	.3682	1492	4052	1.240
344	113.40	.4629	1.225	.58	.5492	3965	7220	1.278
346	85.05	.4476	.95	.40	.5600	3175	5670	
348	77.96	.4455	.90	.36	.5349	2918	5456	1.299
349	77.96	.4331	.98	.42	.6351	2177	3428	
350	70.81	.3544	1.00	.55	.5359	1607	2999	1.253
352	81.36	.4649	.80	.39	.3882	2455	6324	1.145
354	81.36	.5611	.87	.40	.4710	1832	3890	1.260
355	92.14	.4388	1.10	.57	.5359	1770	3303	1.208
357	60.10	.4007	.82	.44	.3682	1800	4889	1.257
358	77.96	.4455	.95	.42	.4955	3142	6341	1.273
359	77.96	.4586	.94	.42	.4955	3013	6081	1.275
360	63.78	.4252	.92	.45	.4600	1600	3478	1.204
361	88.44	.4020	1.15	.54	.5359	3152	5882	1.191
362	113.40	.5670	.95	.40	.5600	3700	6708	1.277
363	63.78	.4399	1.00	.47	.6351	2240	3527	1.197
364	56.70	.3294	.95	.50	.4940	1192	2413	1.298
365	63.78	.4725	.82	.40	.3882	1630	4199	1.290
366	81.36	.4649	.90	.35	.5349	2365	4422	1.276
367	42.52	.2000	.95	.50	.4940	1715	3475	1.213
368	70.88	.3544	1.10	.52	.5661	1890	3162	1.253
369	92.14	.5266	.96	.38	.5354	3380	6313	1.202
370	85.05	.5315	.91	.32	.5686	3875	6815	1.286
371	56.70	.3910	.97	.37	.5354	1925	3595	1.255
372	74.28	.4127	1.02	.42	.6351	1825	2874	1.100
373	70.88	.4296	.95	.47	.4230	1665	3936	1.282
375	63.78	.4725	.91	.32	.5686	2500	4397	1.252
376	67.18	.4479	.85	.40	.3796	1638	4316	1.288
378	70.88	.4170	.95	.45	.5955	3657	6140	1.285
379	81.36	.4931	1.05	.48	.6359	3132	4925	1.302
381	53.02	.4242	.75	.38	.3314	1150	3470	1.240
383	70.88	.4296	.90	.47	.4495	1830	4071	1.258
384	70.88	.3938	1.05	.57	.5359	1670	3116	1.205
386	77.96	.4586	.87	.40	.4710	2370	5032	1.266
387	92.14	.4285	1.03	.37	.6781	2260	3334	1.255
388	92.14	.4388	1.02	.50	.5891	2905	4931	1.219
390	70.88	.4725	.82	.35	.4081	1820	4460	1.197
392	60.10	.3877	.90	.47	.4495	1500	3337	1.321
393	63.78	.3752	1.00	.45	.6351	1220	1921	1.177
394	81.36	.4520	1.00	.47	.6341	3250	5126	1.267
395	77.96	.4874	.90	.45	.4950	1545	3121	
397	70.88	.4430	.90	.40	.5150	2185	4250	1.309
398	53.02	.3657	.80	.50	.3222	982	3048	1.238
400	56.70	.3780	.83	.40	.3882	1610	4148	1.237
401	92.14	.4388	1.05	.45	.6351	1665	2622	1.272
403	99.22	.5088	.90	.42	.4955	3220	6499	
404	63.78	.4115	1.00	.54	.5661	1680	2967	1.286

Cob Number	Weight in Grams	Density	Diameter of Cob – in	Diameter of Pith – in.	Area Woody Fibre – Sq. in.	Average Crushing St.	Stress per Sq. in.	Density of Ave. kernel
406	56.70	.3780	.95	.41	.5600	1937	3459	1.252
407	85.05	.4597	.95	.33	.5691	2610	4585	1.283
408	70.88	.3938	1.02	.55	.5359	2700	5038	1.275
409	60.10	.3431	1.00	.52	.5661	1570	2773	1.288
411	63.78	.3645	.85	.54	.2614	1925	7365	1.333
412	56.70	.3658	.90	.40	.5150	1835	3564	1.284
413	63.78	.4252	.86	.40	.4710	2055	4363	1.312
414	99.22	.5669	.95	.55	.4418	1310	3134	1.311
416	92.14	.6826	.82	.35	.4081	1725	4227	
417	56.70	.3658	.85	.50	.3136	1585	5054	1.294
418	92.14	.3921	1.07	.62	.4786	1615	3375	1.205
419	74.28	.3809	1.05	.50	.5891	2315	3930	1.250
420	63.78	.3865	.87	.37	.4710	1570	3333	1.305
421	99.22	.5088	.90	.46	.4950	1610	3253	1.249
422	74.28	.4127	.90	.45	.4950	1305	2637	1.283
423	77.96	.4214	.98	.50	.5891	2300	3904	1.238
424	106.30	.5062	1.05	.45	.6351	3985	6275	1.283
425	95.05	.4361	1.00	.46	.6351	2870	4519	1.202
426	77.96	.4331	.90	.50	.4490	1500	3341	1
427	70.88	.4888	.90	.40	.5150	2360	4583	1.320
428	92.14	.4725	1.05	.52	.5661	2605	4602	1.242
429	70.88	.5063	.85	.39	.4909	2270	4624	1.271
430	109.70	.4876	.90	.36	.5349	3810	7123	1.302
431	99.22	.5088	1.05	.45	.6351	2225	3503	1.222
432	88.44	.6100	.95	.25	.6412	2750	4289	1.260
433	63.78	.3752	.91	.47	.4720	1475	3125	1.242
434	88.44	.4533	1.00	.45	.6351	2530	3984	1.320
435	70.88	.4296	.84	.48	.3366	1725	5125	1.273
437	77.96	.3544	1.05	.50	.5891	3060	5194	
439	77.96	.3544	1.07	.55	.5400	1505	2787	1.290
440	85.05	.4361	1.02	.50	.5891	2625	4625	1.256
442	56.70	.4200	.80	.41	.3882	1567	4037	1.334
444	85.05	.5155	.95	.44	.5400	2645	4898	1.289
445	81.36	.4397	.95	.51	.5891	2385	4049	1.238
451	70.88	.4296	1.00	.42	.6351	2880	4535	1.254
453	74.28	.4370	1.02	.45	.6351	2335	3677	1.308
456	56.70	.3780	.82	.35	.4079	1580	3874	1.273
457	70.88	.4170	.95	.50	.4940	2650	5362	1.201
458	63.78	.4252	.90	.41	.5150	2060	4000	1.264
460	109.70	.4770	1.05	.47	.6341	3555	5706	1.268
462	63.78	.4398	1.00	.43	.6451	1825	2874	1.271
463	42.52	.3150	.95	.52	.4679	1165	2490	1.224
465	60.10	.3535	.86	.46	.4280	1370	3201	1.264
467	85.05	.3866	.85	.50	.2614	1115	4266	1.336
468	70.88	.5063	.80	.37	.3651	1345	3684	1.253
469	77.96	.3712	1.07	.60	.5109	1610	3134	1.257
471	106.30	.5062	1.05	.45	.6351	3275	5314	1.223
472	106.30	.5186	.95	.50	.4940	3655	5322	1.262
474	88.44	.4422	1.04	.56	.5369	2810	5234	1.216
476	74.28	.4502	.87	.43	.4510	2665	5909	1.217
478	81.36	.3784	1.02	.50	.5891	2890	4905	1.252

Cob Number	Weight in Grams	Density	Diameter of Cob — in.	Diameter of Pith — in.	Area Woody Fibre — Sq. in.	Average Crushing St.	Stress per Sq. in.	Density of Ave. Kernel
479	63.78	.3645	.90	.50	.4490	3355	7462	1.249
481	92.14	.5584	.82	.32	.4081	3615	8858	
482	88.44	.3312	1.05	.52	.5661	1775	3135	1.274
483	109.70	.4478	1.05	.55	.5400	3645	6750	1.258
484	63.78	.3271	.95	.58	.3973	1290	3247	1.225
485	81.36	.4282	.92	.35	.5799	1992	3435	
486	92.14	.3686	1.10	.52	.5681	4670	8220	1.200
488	77.96	.4725	.90	.50	.4490	1510	3343	1.288
489	49.61	.3006	.85	.54	.2614	1020	3902	1.267
491	60.10	.3339	1.00	.45	.6351	1855	2921	1.267
492	56.70	.3150	1.15	.60	.4817	1605	3425	1.259
494	85.05	.4149	1.00	.55	.5359	1185	2211	1.234
496	56.70	.3658	.80	.55	.2700	945	3500	1.288
497	81.36	.4282	1.00	.44	.6351	1620	2551	1.250
498	70.88	.4573	.95	.45	.5955	1460	2452	1.264
499	56.70	.3910	.90	.42	.5150	1160	2252	1.243
500	63.78	.4398	.90	.40	.5150	2750	4990	1.245
501	67.18	.3782	1.05	.46	.6351	2270	3575	1.201
502	63.78	.3986	.90	.35	.5349	2405	4497	1.215
504	63.78	.3645	1.10	.47	.6341	1910	3012	1.180
505	85.05	.4252	1.05	.50	.5891	2645	4490	1.202
508	56.70	.2835	1.01	.55	.5359	1047	1954	1.256
509	74.28	.4245	.95	.46	.4230	2550	6429	1.301
511	70.88	.4295	.97	.50	.5891	3085	5237	1.279
512	81.36	.4398	1.05	.55	.5400	3250	6019	1.290
513	63.78	.4115	.83	.42	.3682	2005	5446	1.329
514	63.78	.3645	.97	.42	.6351	1835	2889	1.199
515	63.78	.3447	1.05	.50	.5891	1540	2614	1.196
516	99.22	.4410	1.00	.61	.4786	1950	4074	
517	70.88	.3544	.95	.50	.4940	1775	3573	1.301
518	92.14	.4095	1.12	.54	.5661	2150	3798	1.225
520	77.96	.4724	.92	.49	.4490	2127	4737	1.225
521	70.88	.4726	.91	.47	.4720	2505	5307	1.249
522	92.14	.4850	.95	.45	.5955	3355	5634	1.261
523	85.05	.4149	.90	.42	.5150	4245	8242	1.246
524	85.05	.4860	.95	.40	.5600	3665	6544	1.269
526	77.95	.3998	1.02	.46	.6351	3165	4984	1.214
527	85.05	.4361	1.10	.60	.4817	3275	6799	1.181
529	77.96	.4455	.97	.47	.4725	2825	5979	1.231
530	74.28	.3301	1.15	.53	.5661	1037	1832	1.147
531	77.96	.4872	.90	.42	.5150	2160	4195	1.281
532	77.96	.3998	1.10	.54	.5661	1870	3303	1.226
533	85.05	.4725	.97	.50	.5891	2905	4948	1.233
535	92.14	.4285	1.12	.57	.5359	2385	4450	
536	92.14	.4725	.95	.37	.5354	4760	8890	
537	70.88	.3938	1.05	.47	.6341	2577	4064	1.251
539	99.22	.3744	1.10	.62	.4817	2330	4838	1.176
540	77.96	.3998	1.00	.50	.5891	2325	2947	1.226
542	56.70	.3780	1.00	.47	.6341	1325	2090	
544	63.78	.3865	.92	.50	.4490	1825	4102	
545	81.36	.5249	.82	.30	.4081	3165	7758	
546	85.05	.3955	1.02	.50	.5891	2560	4345	1.218

Cob Number	Weight in Grams	Density	Diameter of Cob – in	Diameter of Pith – in.	Area Woody Fibre – Sq. In	Average Crushing St.	Stress per sq. in	Density of Ave. Kernel
547	49.61	.3675	.85	.41	.3796	1010	2661	1.268
548	85.05	.4477	.97	.40	.5354	2710	5062	1.171
549	56.70	.3065	.95	.45	.4950	1110	2242	1.287
550	70.88	.4888	.92	.30	.5686	3400	5980	1.213
551	56.70	.5154	.75	.30	.3654	1535	4201	1.281
552	70.88	.4050	.95	.56	.3973	2555	6431	1.213
553	48.61	.4675	.85	.52	.2875	1000	3478	
554	60.10	.3877	1.00	.42	.6551	2465	3763	
555	56.70	.3240	.96	.50	.4495	1150	2559	1.222
556	70.88	.4373	.97	.47	.6121	1490	2435	1.206
558	77.96	.4872	.92	.42	.5600	3315	5920	1.313
559	74.28	.4015	1.00	.51	.5891	1865	3166	1.195
561	56.70	.3544	.95	.61	.3390	1175	3466	1.249
562	67.18	.3732	.97	.50	.5891	1247	2117	1.246
563	56.70	.4050	.75	.32	.3654	1555	4256	1.271
565	60.10	.3642	.80	.40	.3882	1475	3800	1.265
567	77.96	.3831	.90	.50	.4490	1895	4221	1.253
568	74.28	.4127	.95	.37	.5354	3075	5724	1.192
569	70.88	.4726	.92	.46	.4720	2060	4364	1.327
571	63.78	.3865	.92	.40	.5150	1380	2680	1.225
572	70.88	.3831	.95	.47	.4725	1905	4032	1.284
573	56.70	.3910	.92	.39	.5600	1285	2295	1.159
574	85.05	.4477	.90	.35	.5349	2410	4505	1.275
575	85.05	.5865	.84	.40	.3796	1385	3649	1.195
577	70.88	.4295	.94	.46	.5170	2170	4189	1.265
583	92.14	.4006	1.10	.50	.5891	2950	5008	1.223
584	53.02	.3314	.90	.55	.4968	875	1761	
587	77.96	.3998	1.00	.50	.5891			1.230
589	85.05	.4252	1.14	.55	.5400	2435	4509	1.281
590	60.10	.3434	.95	.50	.4940	1565	3198	1.234
591	42.52	.3543	.80	.40	.3882	1400	3607	1.297
592	60.10	.4293	.87	.50	.4050	935	2309	1.241
593	77.96	.5197	.95	.40	.5600	1965	3509	1.213
594	92.14	.4495	1.00	.55	.5400	2575	4769	1.301
595	77.96	.4455	1.00	.41	.6551	2140	3268	1.222
596	60.10	.4293	.90	.35	.5349	2335	5113	1.187
597	70.88	.4430	.85	.40	.3796	1420	3741	1.279
600	99.22	.4315	1.07	.50	.5891	2570	4363	1.311
602	85.05	.4050	1.00	.62	.4786	2045	4273	1.253
603	92.14	.4850	.95	.45	.4230	2365	5591	1.217
604	70.88	.4169	.87	.45	.4280	2205	5152	1.212
605	60.10	.4145	1.05	.55	.5400	1680	3111	1.245
606	70.88	.4169	1.00	.55	.5400	2345	4343	1.182
607	45.93	.2784	.97	.55	.4973	1580	3177	1.238
608	70.88	.3457	1.05	.50	.5891	2130	3616	1.252
609	63.78	.3644	1.05	.57	.5369	1755	3269	1.208
611	70.88	.4296	.94	.48	.5170	2235	4523	1.269
612	85.05	.4476	.95	.49	.4940	2380	4818	1.251
613	49.61	.3969	.85	.35	.4909	1165	2373	1.261
614	63.78	.4252	.95	.47	.4725	1750	3704	1.232
615	92.14	.5119	1.10	.55	.5400	2555	4731	1.226
616	81.36	.4520	.95	.45	.4230	2425	5733	
617	70.88	.4050	.95	.55	.3973	1365	3435	1.266
618	60.10	.4293	.90	.40	.5150	2095	3932	1.273
619	106.30	.5746	1.00	.45	.6351	2870	4519	1.209

Cob Number	Weight in Grams	Density	Diameter of Cob - in	Diameter of Pith - in	Area Woody Fibre - Sq in	Average Crushing St	Stress per Sq. in	Density of Ave. Kernel
620	63.78	.4252	1.00	.45	.6351	1920	3023	1.252
621	70.88	.4296	.85	.40	.3796	2345	6178	
623	60.10	.3434	.95	.50	.4940	1480	2996	1.231
625	85.05	.5315	.90	.39	.5150	2560	4971	1.294
626	99.22	.4510	1.05	.55	.5400	2185	4046	1.269
627	63.78	.4398	.77	.40	.3489	1510	4317	1.251
628	88.44	.4314	.95	.40	.5600	2530	4518	1.255
629	42.52	.3543	.87	.40	.4710	1625	3450	1.189
630	85.05	.4361	.90	.41	.5150	4145	8049	1.280
632	74.28	.4369	.85	.40	.3796	2230	5873	1.286
634	56.70	.3436	1.17	.44	.6382	2295	3596	1.233
635	67.18	.4199	.92	.40	.5150	1795	3486	1.342
636	77.96	.4725	.95	.40	.5600	2510	4482	1.197
637	70.88	.4296	.91	.44	.4950	3865	7801	1.270
638	95.54	.4660	.85	.45	.4510	1200	2661	1.316
639	77.96	.4555	.95	.47	.4725	2245	4751	1.244
641	74.28	.4244	.92	.32	.5136	2615	4262	1.299
642	74.28	.3623	.95	.45	.4230	2965	7010	1.213
643	116.80	.5309	1.12	.49	.5922	4040	6822	1.212
645	99.22	.4615	1.05	.45	.6351	3025	4763	1.176
646	63.78	.3037	1.00	.54	.5400	1425	2637	1.252
647	56.70	.3658	.85	.50	.2614	1590	6084	1.208
648	70.88	.4050	.95	.50	.4940	1685	3411	1.247
650	63.78	.4252	.90	.43	.4950	1395	2818	1.201
652	85.05	.5315	.97	.40	.5155	2950	5723	1.273
653	49.61	.3969	.80	.41	.3882	940	2567	1.235
654	77.96	.4219	.95	40	.5600	2535	4527	1.269
655	77.96	.4376	.87	.42	.4510	2385	5288	1.305
656	63.78	.4556	.87	.45	.4280	1875	4381	1.257
657	63.78	.4115	.85	.42	.3796	2700	7114	1.228
658	53.02	.3314	.90	.55	.5369	1875	3492	1.264
659	67.18	.3839	.85	.35	.4280	2115	4942	1.251
661	92.14	.4725	.92	.49	.5600	2620	4679	
662	92.14	.4188	1.00	.45	.6351	2865	4511	1.234
664	53.02	.3119	.86	.50	.4050	990	2445	1.254
665	70.88	.4295	.95	.45	.4230	1990	4704	1.173
667	77.96	.4331	.90	.40	.5150	2120	4117	1.304
668	77.88	.3296	1.10	.57	.5400	2775	5138	1.362
669	63.78	.4252	.90	.45	.4950	2035	4111	1.270
671	77.96	.4214	1.00	.50	.5891	1880	3191	1.107
672	63.78	.4115	.85	.42	.4696	2285	4866	1.222
673	109.70	.4668	1.12	.51	.5922	3340	5640	1.210
674	92.14	.4607	.95	.31	.5691	3710	6520	1.252
676	95.54	.4246	.95	.50	.4940	2475	5010	1.269
677	92.14	.4388	1.15	.45	.6152	2860	4649	1.269
679	92.14	.4981	.98	.52	.4465	3100	6942	1.288
681	67.18	.3839	.90	.45	.4950	1285	2596	1.245
682	70.88	.4430	.96	.42	.4955	2525	4096	1.204
684	49.61	.2421	.90	.50	.4490	880	1960	1.204
685	77.96	.4872	.90	.30	.5686	2430	4274	1.300
686	74.28	.3715	1.05	.63	.4786	1725	3605	1.279
687	63.78	.3986	.95	.50	.4940	1710	3461	1.250
688	70.88	.4050	.92	.50	.4940	1470	2976	1.355
689	88.44	.4913	.91	.38	.5349	2880	5384	1.324
690	85.05	.4252	.95	.50	.4940	1885	3816	1.251

Cob Number	Weight in Grams	Density	Diameter of Cob – in	Diameter of Pith – in	Area Woody Fibre – Sq. in	Average Crushing St.	Stress per Sq. Inch.	Density of Ave. kernel.
691	81.36	.4520	.94	.35	.5799	2285	3940	1.274
692	81.36	.4786	1.05	.45	.6300	3920	6222	1.236
693	56.70	.3910	.82	.35	.4250	1390	3270	1.239
695	56.70	.4050	.80	.55	.2700	1705	6312	
696	63.78	.3640	.90	.56	.4968	1465	2945	1.252
698	77.96	.4198	.85	.40	.3796	2120	5585	1.268
700	67.18	.4633	.85	.30	.4232	2450	5790	1.222
701	56.70	.3436	1.05	.56	.5369	1285	2384	1.242
702	63.78	.4115	.91	.40	.5150	1950	3786	1.227
703	63.78	.4398	.90	.41	.5150	1920	3728	1.281
705	70.88	.4725	.90	.50	.4490	2350	5232	1.282
706	70.88	.4430	1.00	.48	.6121	2560	4182	1.242
708	70.88	.4430	.95	.45	.4230	1815	4291	1.243
710	67.18	..4976	.85	.40	.3796	2070	5374	
717	60.10	.3877	.92	.50	.4940	1725	3492	1.208
718	74.28	.4126	1.00	.60	.4776	1250	2628	1.272
719	81.36	.4520	1.00	.50	.5891	2625	4456	
720	70.88	.3635	.90	.39	.5150	1435	2786	1.148
721	92.14	.4285	1.20	.50	.5922	2980	5032	1.249
722	49.61	.3816	.85	55	.3528	1225	3472	1.219
724	63.78	.3448	.97	.50	.4495	1520	3381	1.259
725	77.96	.4331	.95	.40	.5600	3370	6018	1.216
728	102.60	.5004	.97	.45	.4725	3570	7555	1.250
729	77.96	.4331	.97	51	.4495	2200	4895	1.300
730	70.88	.4295	.95	.31	.5691	2115	3716	1.230
731	45.93	.3828	.56	.26	.1994	960	4815	1.298
732	92.14	.5119	.95	.43	.4955	2520	5086	1.264
733	106.30	.4523	1.05	.55	.5400	1775	3287	1.291
734	77.96	.4725	.95	45	.4230	2320	5485	1.383
735	70.88	.4295	.77	.30	.4034	1610	3990	1.260
736	77.96	.4455	.95	.48	.4940	1275	2581	1.240
738	70.88	.4430	1.00	.50	.5891	2740	4650	1.263
739	53.08	.3787	.90	.45	.4950	1850	3738	1.255
740	77.96	.4455	.90	.39	.5150	2585	5020	
741	92.14	.4725	1.00	.48	.6121	2865	4680	1.259
742	95.54	.5307	.87	.40	.4710	2555	5425	1.255
743	99.22	.4510	1.02	.59	.5078	3085	6075	1.249
744	77.96	.4581	.97	.45	.4725	2155	4560	1.240
745	85.05	.4476	.95	.42	.5400	2275	4213	1.254
748	70.88	.4888	.95	.32	.6136	2765	4505	1.290
749	70.88	.4731	.90	.45	.4950	1385	2798	1.293
750	70.88	.4170	.95	.45	.4230	1570	3712	1.252
751	70.88	.3731	.95	.55	.4418	1685	3815	1.302
752	70.88	.4725	.87	.41	.4710	2610	5540	1.221
753	56.70	.3910	90	.50	.4490	1375	3062	1.217
754	99.22	.5363	1.10	.43	.6382	5130	8040	1.292
755	56.70	.4361	.80	.54	.4247	1155	2720	1.264

also be compared with the actual crushing stress. The accompanying table shows the results of these tests as well as the cob weight, cob density and kernel density.

(Table F.)

This table shows clearly the benefit of figuring all stress to a uniform area basis. Take, for example, ear 168 with an area of .3068 square inches and ear 289 with an area of .5495 these cobs broke quite differantly but when figured to the same basis they were actually alike so far as the resisting ability of their woody fibre was concerned.

From an observation of this table and also from those to follow, it seems in the mind of the author that the actual hardness in cobs is due to some inherent tendency within the variety or strain of corn. It seems that a cob will not be a small cob with a high density nor will it be a large cob with a low density.

From this table and from observations therefore the conclusion may be drawn that cob size is always associated with inherent plant characters and not a "mushroom growth" solely the result of environmental conditions as is sometimes argued.

In order to better classify these ears, and to more accurately determine the characters correlated with the crushing stress, the following ear characters have been compiled to show the relation if any exists between the kernel and cob density and the crushing stress.

(Table G.)

Length.

The differences shown here are of not enough difference to make any definite conclusions. With but .001 difference in kernel density, .0036 difference in cob density and but 140 pounds difference in stress it is evident that the length of ear has no effect upon these characters.

Circumference.

The kernel and cob densities are both greatest for the smaller circumference but the stress is slightly greater for the ear of large circumference. The difference, in even this case, is hardly enough to be relied upon on account of the fact that the machine which it was necessary to use for this work would not break as accurately as a smaller machine would, and consequently the limit of error was somewhat increased. The lack of correlation between the cobs of high density and the high stress is

(Table G.)

EAR CHARACTERS TO KERNEL & COB DENSITY

& BREAKING STRESS.

Character	Kernel Density	Cob Density	Pounds Stress Per Square Inch
Long	1.253	.4281	4440
Short	1.254	.4246	4590
Large (circum)	1.240	.4120	4425
Small "	1.271	.4446	4310
Large (no.rows)	1.246	.4002	4793
Small "	1.257	.4439	4477
Heavy	1.250	.4312	4736
Light	1.263	.4198	4169
Cylindrical	1.254	.4173	4352
Tapering	1.253	.4521	4383
Rough	1.245	.4263	4465
Smooth	1.294	.4431	5042
High Shelling %	1.251	.3620	3496
Low " "	1.279	.4790	5252

explained by the same law which explains why a hollow tube increases in strength up to a certain point in proportion as the diameter of the tube is increased.

Number of Rows.

Here again the densities are correlated but the unit stress does not seem to agree. The same thing which was mentioned in the circumference just preceeding would doubtless apply here also.

Weight.

The density of cob and the unit stress correlate in this case but the kernel density is somewhat variable. The kernels on the light ears are more horny in composition thus accounting for the higher density of kernel.

Shape.

Practically no difference is to be noted in the ear shape. The somewhat higher density of the cob is due to a smaller pith with a greater percent of woody fibre near the tip.

Indentation.

The smooth ear with the kernel and cob of high density is likewise the cob with the greater unit stress. This is due in the case of the kernel to the smooth kernel being the medium horny kernel with the higher density.

Shelling Percent.

This is practically a duplication of the character just preceeding as the horny kernel is the kernel of low shelling percent and the starchy is the higher. The results in unit crushing stress are very similar to those for indentation and bear practically the same relation to one another.

RELATION OF KERNEL CHARACTER TO KERNEL & COB DENSITY & BREAKING STRESS.

In addition to determining the relation existing between "ear characters" and the three characters in question, it was deemed advisable to run the same characters through for the kernel characters to determine if possible any other relationships which might exist.

The following table, H, shows the results obtained and includes a classification of the entire number of six-hundred and sixty ears of the 1910 corn.

(Table H.)

Kernel Depth.

The shallow kernel shows a consistent high density and a high stress as compared with the deeper kernel. The reason given under Table G, "indentation", likewise holds here; viz., the shallow kernel is more horny, the cob larger in proportion and more dense.

Kernel Width.

The same relationship exists here except for the kernel density which runs a trifle higher, due as pointed out in Table C to the depth and proportion of horny endosperm. The cob density and stress both go, as might be expected, with the wide kernel.

(Table H.)

KERNEL CHARACTERS TO

KERNEL & COB DENSITY & BREAKING STRESS.

Kernel Character	Kernel Density	Cob Density	Breaking Stress Per Square Inch
Deep Kernel	1.242	.4236	4549
Shallow Kernel	1.365	.4553	4947
Wide Kernel	1.242	.4229	4432
Narrow Kernel	1.260	.4150	4387
Close Space	1.242	.4029	3950
Open Space	1.249	.4560	4976
Horny Composition	1.338	.5210	6223
Starchy Composition	1.191	.4021	4271
Large Germ	1.342	.4468	4802
Small Germ	1.252	.4323	4578

Space.

Here a slight difference is to be noted in that the kernel density changes but very little, while the cob density and stress both show quite plainly a difference in favor of the open space. This of course is only bearing out what was said in the preceeding paragraph in regard to the wide kernel going with the open space.

Composition.

In this particular, we find a very marked variation and in fact one that is carried through all three characters quite strikingly. The horny, high density kernel seems to be associated with the cob of high density, and with the high crushing stress.

Size of Germ.

Except for the difference in kernel density and quite largely to the amount of oil in the large germ, there is no great difference here although the high kernel density is again associated with the same character in the cob and these with a somewhat higher stress.

RELATION OF COB CHARACTERS TO SHELLING PERCENT, KERNEL & COB DENSITY, STRESS.

In order to better ascertain the factors influencing the kernel density, the cob density and the crushing stress, it was thought advisable to go one step further and make a final classification of the cobs based on weight and density and then on combinations of the two.

For this purpose, the 1910 corn was used and various figures tried until one was found which would give approximately ninety out of the six-hundred and sixty specimens tried. This gave about 30% in the extremes and about 65 to 70% in the control or in the average class.

This was the method of selecting the specimens for heavy and light weight and high and low density. After this classification was made, the further classifying into the combinations was simple enough. By taking both the list of heavy cobs and that of high density and checking across, it became very easy to detect the numbers appearing in both classes, or were therefore heavy cobs with a high density. This method was followed in making all classifications in the following table:

(Table I.)

(Table I.)

COB CHARACTER TO SHELLING PERCENT, KERNEL DENSITY,

COB DENSITY, BREAKING STRESS.

Adams.

Character	Shelling Percent	Kernel Density	Cob Density	Breaking stress Per sq. inch
Heavy Cobs	81.54	1.2714	.4943	5487
Light Cobs	88.32	1.2423	.3449	3272
High Density	82.17	1.2648	.5356	5537
Low Density	86.97	1.2614	.3407	3604
Heavy with High Density	81.29	1.2694	.5341	5848
Heavy with Low Density	None	None	None	None
Light with High Density	None	None	None	None
Light with Low Density	88.62	1.2339	.3197	3102

Weight.

The difference here shown is very clear and conclusive and the result is considerably out of the limit of experimental error. This indicates that heavy cobs are indicative of low shelling percents, but high kernel and cob densities with high crushing stress per square inch of woody fibre in the cob. The light cob however, has the higher shelling percent but a lower kernel density and a lower cob density and crushing stress.

Density.

Just as in the foregoing paragraph, the high density or heavy cob is quite pronouncedly indicative of a low shelling percent and a high crushing stress. The kernel density here was very much of a secondary matter and almost lost its identity by the influence of other characters. This was due to the fact that these cobs came very largely from ears of medium horny and medium starchy composition and therefore the variation was considerably reduced.

Weight & Density.

With an idea of further classifying the cobs, an effort was made to group them into a class of "heavy-high density" and "heavy-low demsity". The first class was very easily found but no ears could be found in the second. This fact is very significant as it shows conclusively that weight and density are directly correlated

as was prophesied in a previous discussion under table D.

The figures for the "heavy-high density" are quite close to those for the heavy cobs and still further show the close relationship existing between those two characters.

When an attempt was made to get light cobs with a high density, the same difficulty was encountered - namely, that weight and density are correlated and it was found that cobs classed as light did not have a high density. The low density however, was quite a different proposition and there as in "heavy-high" it was no trouble to obtain a great number of cobs.

The result runs quite close to that for light cobs in the first part of this table, and this bears still further witness to the truth of the assertion that heavy cobs and high density, light cobs and low density, are always found correlated.

RELATION OF EAR & KERNEL CHARACTER TO SHELLING PERCENT & WEIGHT OF CORN PER EAR.

After calculating the percent of corn per ear and trying as far as was possible to detect all the factors governing that important point and realizing that often the ear with the high shelling percent may not of necessity be the ear with the greatest amount of shelled corn per ear, it was decided to correlate the various characters and the amount of corn per ear.

From the producers standpoint, it is not so essential that he have an ear of a certain relative amount of corn to cob nor that he shall have an ear of certain fixed proportions. What he is after primarily, is bushels of shelled corn, and, if other factors such as ear dimensions, shelling percent, etc. come in in such an ear, all well and good, if they do not no trouble is experienced so long as the new ear is one which will produce corn which will have good vitality and bear a good healthy germ capable of drying out without injury.

Realizing this point of view and knowing that many arguments have arisen against the characters as set forth in the present score card, this portion of the investigation was begun.

All ears in both the 1910 and 1911 corn were used. The shelling percents, as given in tables A and B, were used and these results pitted against the absolute

weight of corn shelled from each ear.

The following table M, shows the result of this work. Not all characters were used but as several of the characters that have been used previously have proven themselves of secondary importance and consequently it was thought best to omit them from this table. The weights of corn are given in grammes of shelled corn in each case. The shelling percent was likewise secured by figuring both corn and cob in grammes.

(Table M.)

Length.

The shelling percents both show a slight preference for the short ear as was explained in Table A. The total weight of corn however, changed somewhat and although it does not agree with the shelling percent, goes as might have been expected, in favor of the long ears.

Circumference.

The large circumference likewise gives the greater weight of corn while the smaller circumference gives the greater percent of corn. This is due to two factors, first more corn is found around a large cob due to the greater surface, and second the large circumference is usually, in standard varieties, found with a deep kernel.

(Table M.)

EAR & KERNEL CHARACTER TO SHELLING PERCENT

& WEIGHT CORN PER EAR.

Character	1910 Corn.		1911 Corn.	
	Shelling %	Wt. Shelled Corn	Shelling %	Wt. Sh. Corn
Long	84.05	451.35	84.37	393.34
Short	86.11	367.51	84.49	347.07
Large Circumf.	84.37	450.70	84.72	408.33
Small "	84.75	371.12	86.26	357.03
Heavy	83.82	464.00	85.96	421.98
Light	89.89	358.48	85.69	327.20
No. Rows, Large	85.00	441.21	85.46	411.58
No. Rows, Small	83.33	384.42	84.51	369.41
Cylindrical	84.14	412.35	85.18	326.45
Tapering	84.40	411.80	84.58	380.95
Rough	84.13	421.70	83.88	396.75
Smooth	84.24	411.80	84.23	337.58
Deep	85.74	450.05	86.40	409.24
Shallow	83.05	383.20	83.24	334.67
Wide	83.79	415.80	84.12	382.15
Narrow	85.15	419.00	85.69	393.00
Horny	81.99	391.21	83.79	346.31
Starchy	85.49	415.75	85.59	379.82
Heavy Cob	81.54	451.19	81.56	394.06
Light Cob	88.32	376.09	87.60	358.17

Weight.

The shelling percents do not agree as was pointed out in Table A but in all cases the heavy ear is the ear with the greatest absolute weight of corn per ear. This is, as reason would indicate, the correct result as the weight of ear is due very largely to the corn.

Number Rows.

In this case, the shelling percents and the absolute weights both agree that the large number of rows is the highest sheller of corn. This condition, due to the more compact rows and also to the fact that large number of rows and kernel depth correlate, is as might have been reasonably expected.

Ear Shape.

The cylindrical ears give the higher shelling percent in both sections but the tapering in the 1911 corn gives the greatest absolute weight. This is, in the author's opinion, due to the predominance of tapering ears there being two-hundred and fifty taperings to fifty-two cylindricals. This is further explained by the fact that the tapering ears were uniformly longer and this being the case, of course they would have a greater absolute weight of corn.

Indentation.

The smoother type of corn gives, in both sections, the higher shelling percent while the rough in each case

shelled a greater total weight of corn. This can be explained in the light of what was said before, namely, that the rough corn was inclined to run slightly deeper, although the density was not quite so high and that the rough ears were the larger ears with the larger cobs while the smooth ears were those with shallower kernels of higher density and with the somewhat smaller proportionate cob.

Kernel Depth.

The deep kernel gave uniformily the highest figure in all cases, as an average.

Kernel Width.

The narrow kernel, on an average, leads in this particular. The narrow kernel is of course the kernel with the large number of rows and in order to agree with what was said in regard to number of rows, this would have been very contradictory had it come out any other way.

Kernel Composition.

The starchy kernel, according to previous results in this table and in explanations previously made, must be the higher yielder here in order to carry out the correlation accurately. This is just what did occur and therefore confirms the previous statement this much further.

Cob Weights.

The result here agrees with what was secured under the "Circumference" and also what was said in regard to the large ears in all cases. The large heavy cob shells a lower percent of corn in both cases, but gives a greater total weight of corn per ear. These figures are entirely in accordance with previous statements.

PART II.

THE SHRINKAGE OF EAR CORN.

Notwithstanding the fact that it is well known to all that corn loses a great amount of moisture and that it shrinks somewhat in length and circumference, there is no data, so far as the author was able to learn, published on this common phenomenon. Illinois and Iowa have done considerable work on shrinkage but practically all their work has been with bulk corn in the crib and in that case, of course, their work was solely a matter of weight.

On account of the lack of data on this problem and believing it possible to find some correlations between shrinkage and ear character or kernel character, this portion of this investigation was started in November 1911.

The object was to find if possible the correlations existing between shrinkage losses either in size or weight or both,and ear or kernel characters. The descriptions for this corn, 1911, were shown in preceding tables, There will be found recorded the original or "green" length, circumference and weight as well as the same data for the corn after drying, for each of the five-hundred and twenty ears of corn. These figures represent the dimensions and weight of this corn at the beginning and close of a twelve-week drying period, weights and

notes being taken at bi-weekly periods during this interval.

The exact method of procedure in this investigation is to be found under "Methods of Taking Descriptions" on page 12. It is sufficient to say, however, in this connection that all dimensions and weights were made with the same instruments thereby minimizing as much as was possible the chance for error.

RELATION OF EAR CHARACTER TO LOSS IN LENGTH, CIRCUMFERENCE & WEIGHT.

In order to get the results of this test into concrete form and to get at as accurately as possible the actual results coming from this work, it was decided to compare it upon various ear and kernel characters in order to show the relative loss in length, circumference and weight for each of the various ear characters.

The accompanying table J shows this result in inches for the length and circumference and in grammes for the weight. These figures were gotten by getting the average "green" length, circumference or weight and from that subtracting the corresponding average "dry" figure. The number represented in each class varies somewhat but in all cases it runs at least 125 or about 25% of the total number of ears. In some cases as, for example, in cylindrical and tapering ears, it runs considerably over half the entire number but is fairly evenly divided between the two. This larger number is found here represented, because of the fact that there were comparatively few ears which were classed as partly cylindrical, the great numbers going either as cylindrical or tapering.

The accompanying table - J - gives the results of this work and shows some very nice correlations between characters and the various losses.

(Table J.)

Character Character	Loss-Length Inches	Loss-Length Percent Dry Length	Loss-Circumf. Inches	Loss-Circumf. Percent Dry circ	Loss-Weight Grammes	Loss-Weight Percent Dry wt.
Long - Ear	.4572	4.412	.3825	5.320	69.36	15.59
Short - Ear	.3520	4.032	.3843	5.213	61.57	16.54
Large - Circ.	.4250	4.555	.4624	5.922	75.40	17.00
Small - Circ.	.3354	3.408	.3329	4.940	49.87	12.56
Large No.Rows	.3790	4.008	.3930	5.104	77.25	17.08
Small No.Rows	.3612	3.664	.2295	3.346	59.77	14.53
Heavy - Ears	.5140	5.238	.4183	5.548	92.36	19.06
Light - Ears	.3412	3.286	.3300	4.678	44.53	12.78
Cylindrical	.4362	4.508	.4000	5.8141	63.91	17.274
Tapering	.3710	3.855	.4000	5.5170	65.76	15.641
Rough	.3651	3.7916	.3475	4.6095	58.203	13.675
Smooth	.4222	4.5314	.4030	5.8895	67.756	14.173
Deep- Kernel	.3849	4.010	.3520	4.632	89.70	20.34
Shallow- Kernel	.3108	3.220	.3700	5.448	59.83	15.66

Length.

In length of ear, the short ears show the smaller percent of shrinkage in dimensions while they reverse and give a slightly higher percent of loss in the weight. This result is doubtless due to the fact that short ears were usually of a larger proportionate circumference and likewise a somewhat larger proportion of kernel. The kernel proportion however, is not of enough variance here to be influential but the change in proportionate weight and circumference in comparison to the length is more marked and would explain this difference here noted.

Circumference.

As might have been expected, the very large ear with the large cob and the somewhat low shelling percent, gave the greater loss throughout, not only in percent of the dry dimensions, but also in actual dimensions as shown in the table. This is going somewhat against the theory advanced in the preceeding paragraph that the larger amount of corn per ear would give the greater shrinkage loss. This fact, while of undoubted importance, is secondary to the size of cob when it is so much different as it was in this particular. In other words, this will hold only when the cobs are not too greatly different in size and character.

Number of Rows.

Here again, the results show, as might have

been expected that the ears of large number of rows and the high shelling percent gave uniformly the greater loss, not only in dimension and absolute weight, but also in percent. This again confirms the statement that loss and shelling percent are correlated as the large number of rows gave practically 1% more corn than the small ears. The high shelling percent seems to be indicative of heavy moisture content and therefore, the loss would be greater from this as the high shelling corn is, as was previously explained, the starchy corn consequently the corn with more moisture.

Weight.

The weight of ear which is of course quite largely dependent upon the shelling percent should, if there is a correlation between the shelling percent and moisture loss, give a higher loss both absolute and in percentage, for the heavy ear. It takes but a glance to show that this is true and that it is very decidedly true in favor of the heavy ear which gave a somewhat higher shelling percent than did the light ear.

Shape.

In ear shape the cylindrical ear gave the largest loss both in dimension and in weight. The loss here again is with the shelling percent, although the difference between the shelling percents of the two is of no great importance.

Indentation.

In indentation, the smooth type of corn shows the greater shrinkage. This is likely due to two factors - first, the cob size which is slightly larger in the smooth corn, and second a somewhat greater shelling percent, although this difference was not of enough importance to be of any great influence. The difference here is .35 of one percent which of course is almost within the limit of error on this number of ears. This seeming contradictory statement may in part be understood when we remember that the smooth type of kernel is of a much higher density and therefore for the same number of kernels with the same displacement the smooth type would weigh the heavier. Unless this can be explained from the point of density, we must again conclude that the other characters have overshadowed this one point until it has lost its identity.

Kernel Depth.

The deep kernel again gave the greatest loss in weight and in length while the shallow kernel made the greatest loss in circumference. Why this difference should be noted, cannot be explained unless it is upon the basis of the explanation given under indentation just above. It was true, that the shallow kernels were quite largely smooth but this class was quite a little smaller than the one on smooth kernels under indentation and consequently the possibility of the variation noted.

COB CHARACTERS TO SHELLING PERCENT, COB DENSITY & MOISTURE LOSS.

In order to further classify the ears of this group in an effort to find some correlated characters appearing with the loss in moisture, and believing the cob was of considerable influence, it was thought advisable to run the cob characters for shelling percent, cob density and moisture loss. It was hoped that by this method of classifying the characters, which seemed of importance, the moisture loss could be detected.

The following table - K - shows the result of such a classification of the 1911 corn giving shelling percent, cob density, and moisture loss wherever enough cobs could be found to make classes of the various characters.

Here, as in table H, it is a very significant fact that out of the five-hundred cobs there was but one heavy cob with a low density and but two light cobs with a high density and these were barely high enough to be so classified. These classes were not used for two reasons; first, in order to be of any value there should be at least five and more properly ten to fifteen percent in each class to be considered, and second the possibility of error in reading water displacement in a cylinder graduated only in five cubic centimeter graduations was too great to base

any conclusion upon three ears which happened to just barely get over the line into these two classes.

(Table K.)

Weight.

The large heavy cob with the high density lost somewhat more moisture than the light cob with the lower density. The difference here however, was not as much as might have been expected with so great a difference in both weight of cob and cob density. This goes somewhat against the results in a previous table in regard to shelling percent but of course, as expressed then, the extra large heavy cob has too great a handicap in weight and size to have the difference equalized by the shelling percent.

Density.

In this particular, the change is equally as much unexpected as in the paragraph just previous. Here the cobs of high density were the smaller losers while the ears with cobs of low density lost a greater percent of their moisture in the twelve-week period. The cobs of low density were here again the cobs of the high shelling percent. In addition to this, it is the opinion of the writer that this somewhat greater shrinkage is due to a combination of high shelling percent and a soft spongy cob which would of course be more receptive of moisture and therefore at an early stage in the drying period would

(Table K.)

COB CHARACTERS TO SHELLING PERCENT,

COB DENSITY & MOISTURE LOSS.

Character	Shelling Percent	Cob Density	Moisture Loss Grammes	Moisture Loss Percent
Heavy	81.56	.4189	72.67	16.033
Light	87.60	.3155	58.88	15.540
High Density	82.30	.4691	65.43	15.634
Low Density	87.21	.2791	62.13	16.248
Heavy High	80.43	.4801	68.14	15.339
Heavy Low	None	None	None	None
Light High	None	None	None	None
Light Low	88.24	.2691	62.26	16.505

contain a greater percent of water.

Weight & Density.

By a combination of these two characters, we are more than ever compelled to believe the statement just made. The light cobs with a low density and a high shelling percent hold more moisture proportionately than do the heavy cobs of high density with the low shelling percent. It seems reasonable therefore to say that where there is not too great an absolute difference in cob size that the shelling percent and the cob density, firmness, govern the moisture content.

RELATION OF BI-WEEKLY MOISTURE LOSS TO EAR & KERNEL CHARACTERS.

In addition to making an effort to find the total moisture loss in ears of corn during a certain definite period, it was also within the province of this problem to get the relative amount lost for each of the six two-week periods during the progress of investigation.

For this portion of the work but four of the six sections were weighed at the stated intervals, the other two sections being weighed only at the start and finish of the period of drying.

The calculations were first made in grammes, the average loss being taken for each of the characters and then a total of the loss secured. This total serving as 100% and therefore representing the entire loss for the character, served as the basis for getting the relative figures in the various intervals.

In the following table - L - all the figures for the vatious intervals represent the percent of the total moisture loss, which was lost during that portion of the drying period. The column on the extreme right gives the percent of moisture which the particular type held at the beginning of the period. This percent is based upon the

final dry weight and should be defined as the percent of moisture which that particular type would hold and not the amount of moisture lost based upon the original or green weight.

It will be noted that in section C, the fifth period, a positive gain was made in the weight. This was due to the fact that the windows to the room in which this corn was started were left open for three days during some very heavy rains and while the rain did not actually reach the corn there can be but little doubt but that this moisture laden atmosphere is what affected this group. This is especially possible in that the date for weighing came on the third day and consequently if there was going to be any moisture absorbed it would most surely have been in the corn at that time.

(Table L.)

In several cases in the foregoing table, the total of the percents will not be exactly one-hundred and it would perhaps be noted here that that is due to the fractions of grammes which were used and as they were not carried to more than one place, the total will sometimes be a trifle below or above what it should be.

In order to better show the relative losses in moisture, the author has prepared several graphic plates showing the percentage loses of moisture during the various periods, the amount of moisture contained at

(Table L.)

EAR & KERNEL CHARACTERS TO MOISTURE LOSS BY PERIODS,

& TOTAL LOSS SHOWING RELATIVE AMOUNT.

Number	1st. Per.	2nd. Per.	3rd. Per.	4th. Per.	5th. Per.	6th. Per.	Total Moisture Loss
Large circumf.	A.36.92	28.90	13.95	5.14	13.52	1.59	16.94
	B.50.90	30.80	10.51	3.02	.0	.0	21.69
	C.50.90	30.80	2.20	9.90	+3.07	6.30	17.30
	F.84.60	6.92	8.46	.0	.0	.0	17.63
	46.24	30.17	8.89	6.02	348	263	18.64
Small circumf.	A.32.25	36.00	12.36	5.50	10.84	2.25	16.97
	B.52.12	29.58	15.30	2.79	.0	.0	15.78
	C.41.60	35.40	3.12	14.28	+4.17	-5.60	14.30
	F.85.06	1.54	10.79	.0	.0	2.31	13.60
	4199	3366	1026	752	222	262	1568
Heavy Ear	A.36.80	35.10	11.90	4.25	10.25	1.70	19.45
	B.58.26	28.51	9.25	2.50	1.00	1.00	21.94
	C.51.31	31.03	2.65	10.03	+3.12	4.96	17.34
	F.83.98	7.70	6.44	1.64	.0	.0	19.16
	4879	3155	793	559	271	255	1958
Light Ear	A.39.02	26.83	19.14	3.10	9.3	2.0	15.43
	B.53.75	30.00	15.50	.25	0	0	16.25
	C.43.25	33.12	1.47	13.29	+2.85	8.86	13.53
	F.86.72	1.32	9.32	0	0	2.64	13.12
	4534	2998	12.04	555	215	362	1507
Many Rows	A.37.04	34.95	12.50	2.78	11.23	1.23	18.13
	B.55.68	30.30	9.21	4.04	.50	.50	20.65
	C.48.82	35.56	2.93	8.78	+2.33	3.90	15.98
	F.84.20	7.13	8.56	0	0	0	13.12
	4718	3360	821	520	314	188	1825
Few Rows	A.34.90	34.80	14.70	3.00	10.80	1.80	18.21
	B.52.97	27.20	15.54	3.89	.0	0	16.06
	C.49.85	30.40	2.83	11.64	4.12	5.82	16.42
	F.81.72	4.49	10.57	3.04	0	0	14.51
	4591	3080	11.02	618	491	234	1690
Rough	A.34.10	33.00	16.00	4.10	9.75	2.23	16.52
	B.52.80	31.74	12.34	1.58	.79	.79	17.80
	C.49.80	31.74	2.25	10.44	+3.79	5.78	16.72
	F.						
	4557	3226	1070	537	225	293	1701
Smooth	A.33.25	36.70	12.75	4.75	9.50	2.25	19.09
	B.56.12	30.58	9.63	3.09	.22	.22	19.86
	C.46.50	31.00	7.75	7.75	3.29	7.00	15.48
	F.						
	4529	3276	1004	520	434	316	1814
Deep Kernel	A.44.50	29.00	14.20	3.51	5.40	4.20	20.32
	B.62.10	23.70	14.23	0	0	0	19.98
	C.49.86	32.18	1.65	10.92	+3.69	5.38	17.27
	F.86.17	3.87	7.88	1.94	0	0	15.27
	5215	2829	1003	481	.57	319	1919
Shallow Kernel	A.34.43	34.28	13.06	5.40	10.07	1.90	16.40
	B.55.20	28.31	12.36	3.76	0	0	17.15
	C.51.82	32.93	1.48	11.47	+1.85	2.29	16.50
	F.83.17	5.50	9.25	1.07	0	.54	15.60
	4715	3184	897	688	274	140	1668

Table L. cont'd.

Number	1st. Per.	2nd. Per.	3rd. Per.	4th. Per.	5th. Per.	6th. Per.	Total Moisture Loss.
Horny	A.44.75	32.05	12.02	3.05	6.56	0	18.84
	B.50.18	32.46	12.53	3.63	.21	.21	17.33
	C.478.53	32.06	2.35	11.46	+3.94	-5.58	16.67
	F.81.49	4.49	11.22	2.66	0	0	14.86
	4782	3219	897	605	.94	193	1761
Starchy	A.36.33	32.18	14.99	3.88	9.38	3.26	18.93
	B.54.75	29.53	12.61	1.34	.56	.56	19.63
	C.52.00	30.90	2.06	10.35	+3.58	4.69	17.11
	F.84.44	1.49	7.78	1.15	0	2.98	14.17
	4769	3087	989	519	212	284	1856

any one time and the percent of moisture which the dry corn held.

Here again, the figures are based upon the one-hundred representing the total loss and that therefore should stand at the highest point in the table as it will be noted. From this as the initial point, the curves come down and across the graph to 0° the dry weight at the lower right hand side of the page.

<u>Large vs. Small Circumference.</u>

With the exception of Table I, the small circumference ears held a smaller percent of moisture than the large. In that exception, however, no difference need be noted as it was but .03 percent which of course is not enough to regard seriously.

In all but Table IV, the small lost somewhat more slowly the first two periods and then the loss became about uniform. In Table IV the difference is too small to disprove the statement.

At the end of the second period in all cases more than 80 percent of the total amount of moisture had been lost showing that the first month of a drying period is the most important on account of the greater amount of moisture loss.

Heavy vs. Light Ears.

In all cases as in Table K, of cob characters, the heavy ear held the greatest amount of moisture. The difference was somewhat comparable in Tables V, VI, VII, running from 3.89 percent in Table VII to 5.69 percent in Table VI. Section F, Table VIII, however, lost more and this might have been expected as this was cob-pipe corn, some of the ears running as heavy as 150 grammes while the average weight of cob for the other sections is approximately 70.88 grammes.

The rate of loss here was just about as rapid as in circumference of ear during the first period and at the end of the second was not far from the same point.

This would indicate that the heavy ears and those of large circumference, would lose about the same amounts of moisture and in about the same ratio. This might have been expected as the heavy ear is in the majority of cases the ear with the large circumference.

Large vs. Small No. Rows.

With the exception of Section B, the small number of rows was associated with the greater moisture content and this is probably explainable by the fact that this corn was much smaller than the other sections as will be seen by consulting the descriptions and when a large number of rows was found the size of the ear was considerably

increased and usually with it was found a deeper kernel.

About the same thing can be said here as has been said before; viz., that the smaller loses somewhat more slowly at first and that the greater amount of loss is found to occur during the first two periods. This loss is faster during the early stages because the corn is more completely moistened and carrying a larger percent of moisture it would be only natural that, as the supply decreased, the loss would decrease proportionately.

Rough vs. Smooth Ears.

As will be noted, there was no classification for Section F. This was due to the fact that it was impossible to find any rough ears in that section, all seeming to run smooth.

About the same statements that have been made concerning other tables hold true here in general, that is that the heavy loss comes the first two periods.

With the exception of Section C, the smooth ears held the greater percent of moisture. The difference is due to the fact that Section C had a large number of rough ears which had quite deep kernels and very likely the change was the result of kernel moisture due to a somewhat higher shelling percent.

Depth of Kernel.

Here, the effect of the kernel moisture is clearly

noted. The deep kernel invariably has the greatest moisture loss with the exception of Section F, Table XIX. This is hardly fair, as was suggested before, because Section F has such extra large cobs. Such a condition would of course have to be counted the exception and not be permitted to disprove any other rules.

This table shows that the rate of loss of kernel moisture is practically as rapid as that of cob moisture the difference being but one or two percent at the end of the second period - one month.

Starchy vs. Horny Kernel.

Here again we have Section F, Table XXIII - the exception rather than the rule. In all but this section, the horny kernel which corresponds in the tables just previous, to the shallow kernel being the smaller in water holding capacity. Here again the extreme size of cob completely upsets all theories and cannot be accurately compared with ordinary corn.

The starchy kernel therefore is the one likely to hold a higher percent of moisture than the horny kernel, just the same as the deep kernel is apt to hold more than the shallow.

These tables again show the greater loss in the early stages of drying and the more gradual losses the remainder of the period. In general, 80% of the moisture is lost the first two periods or the first four weeks of a drying period.

TABLE I

Large vs Small Circumference.

SECTION A

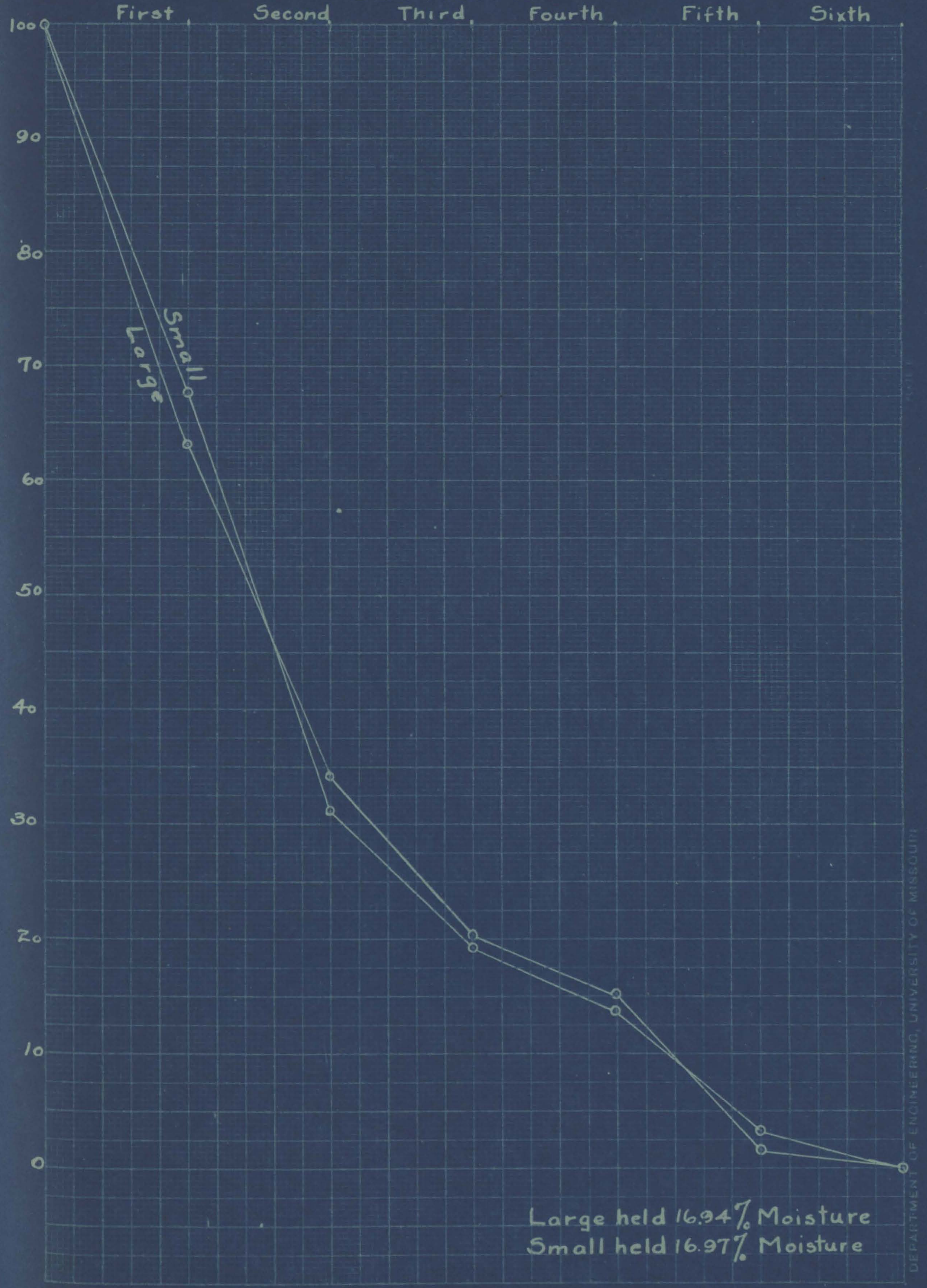


TABLE II

Large vs Small Circumference

SECTION B

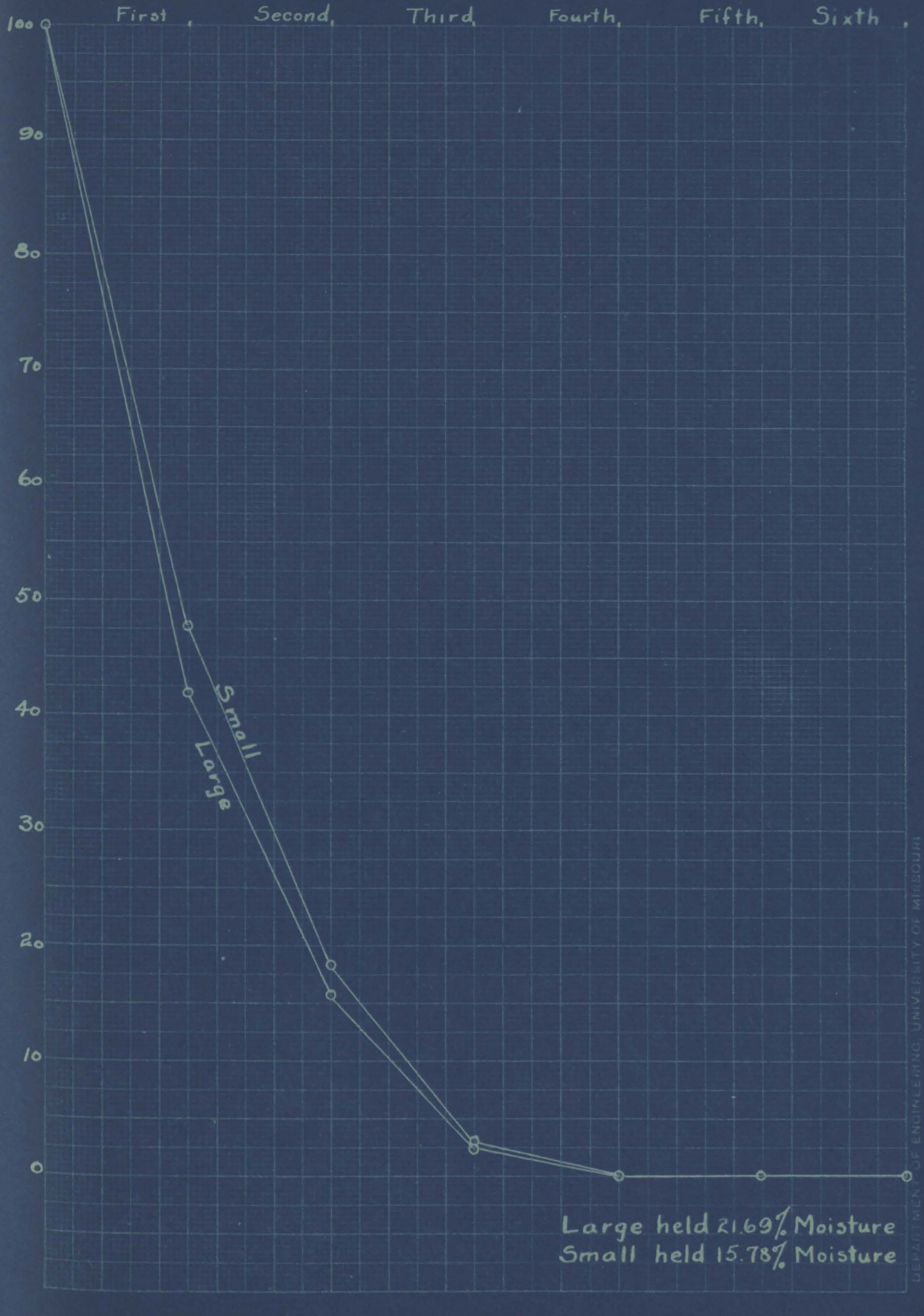


TABLE III

Large vs. Small Circumference

SECTION C

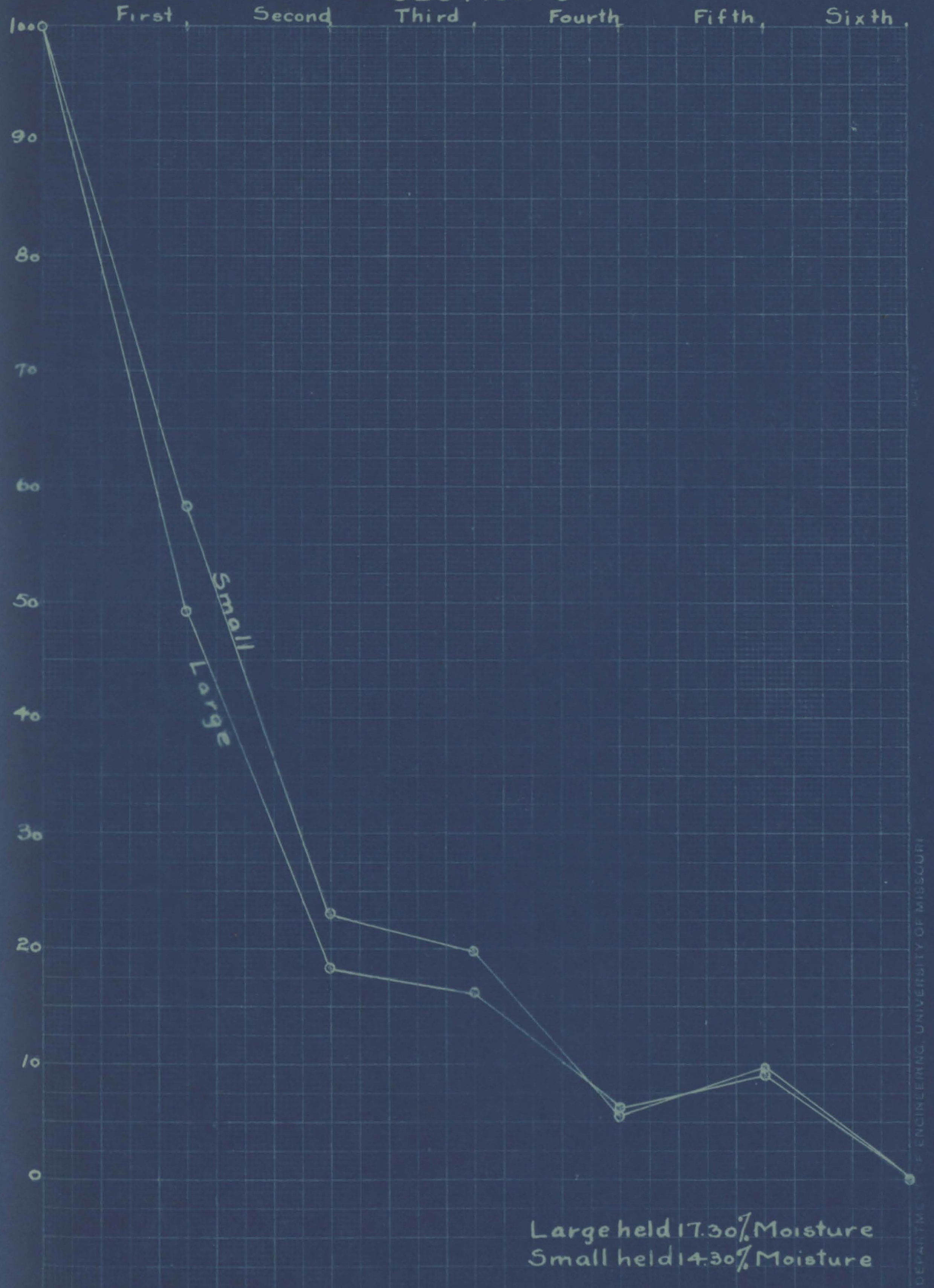


TABLE IV

Large vs. Small Circumference
SECTION F.

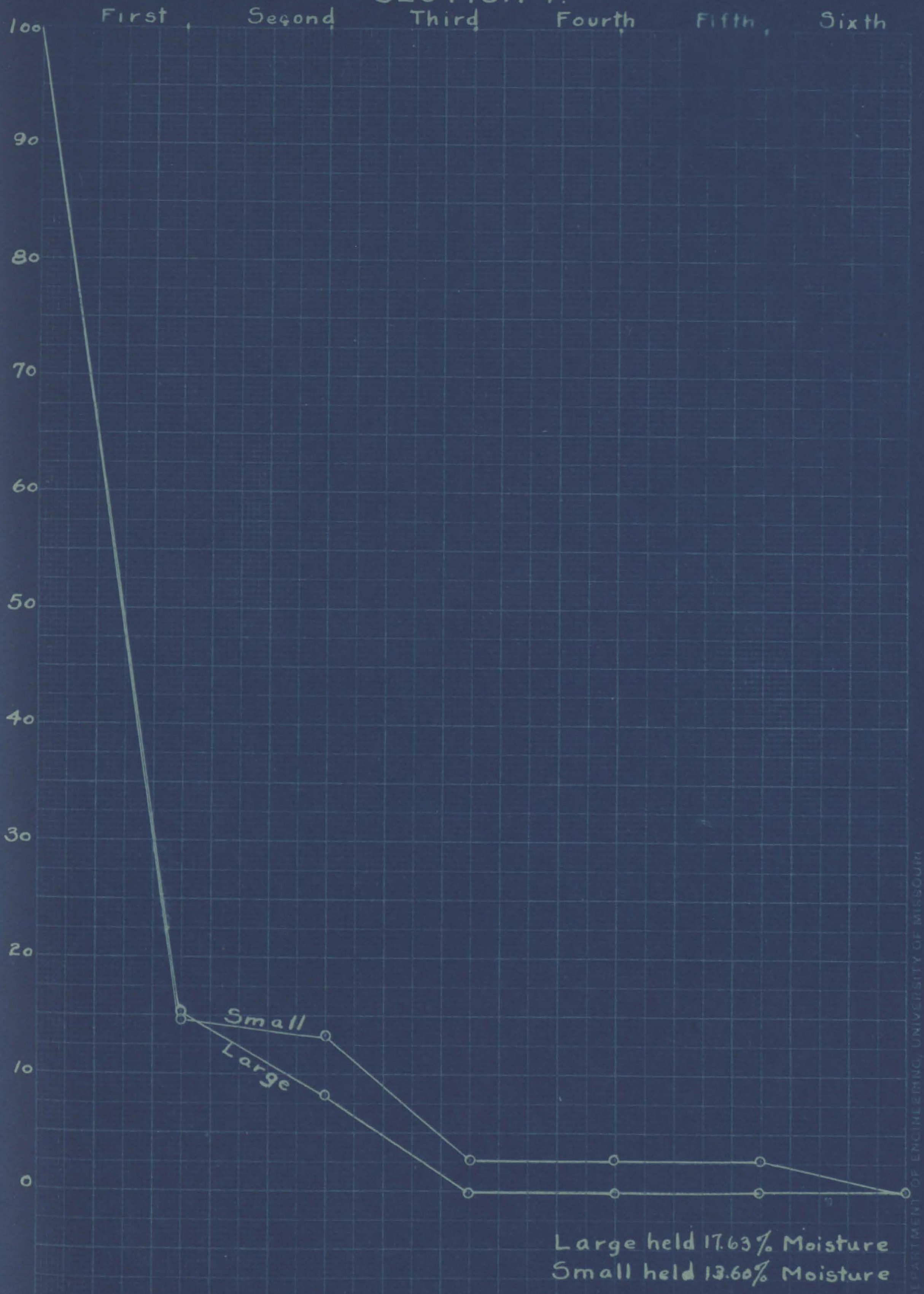


TABLE V

Heavy vs. Light Ears

SECTION A

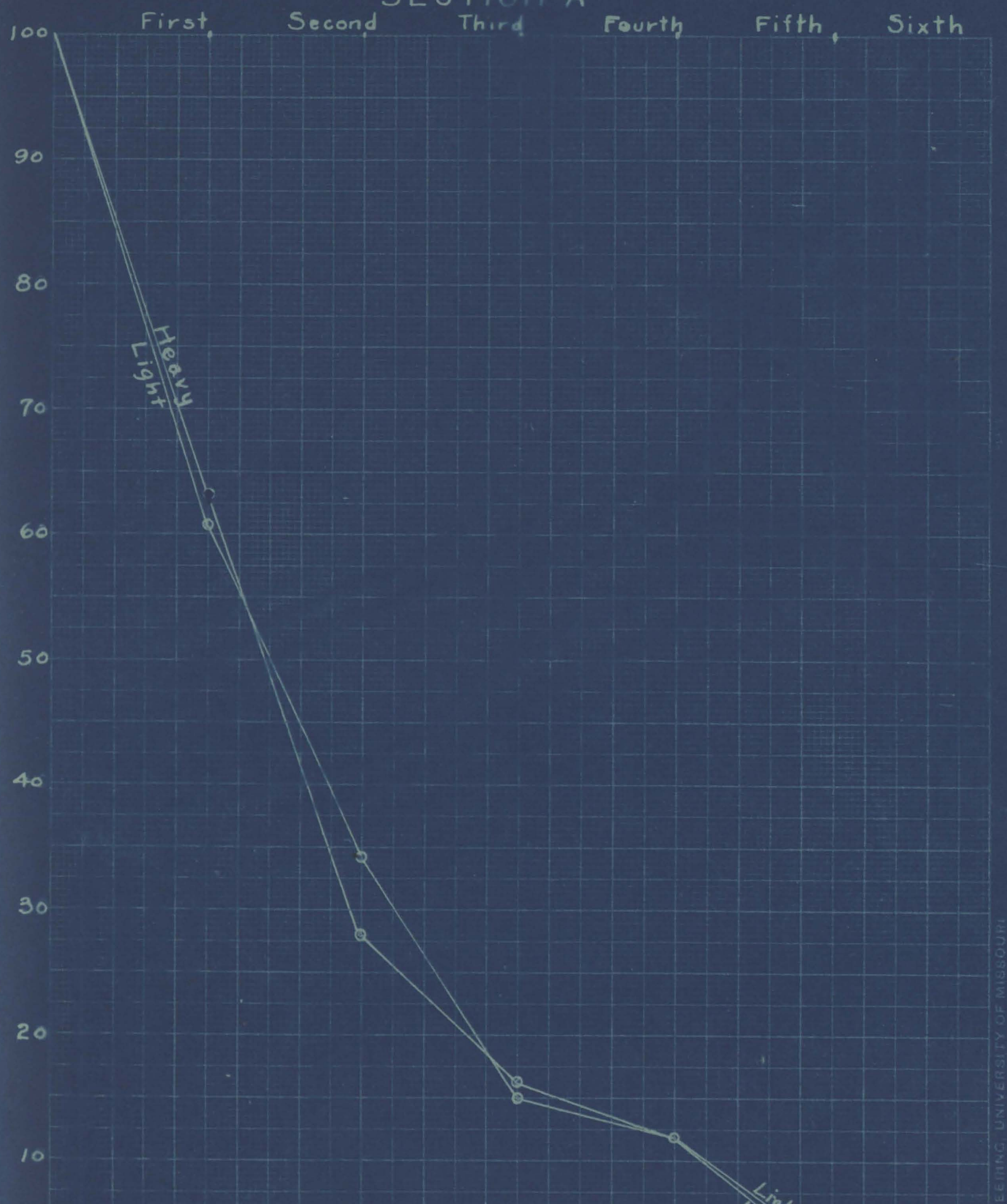


TABLE VI

Heavy vs Light Ears

SECTION B

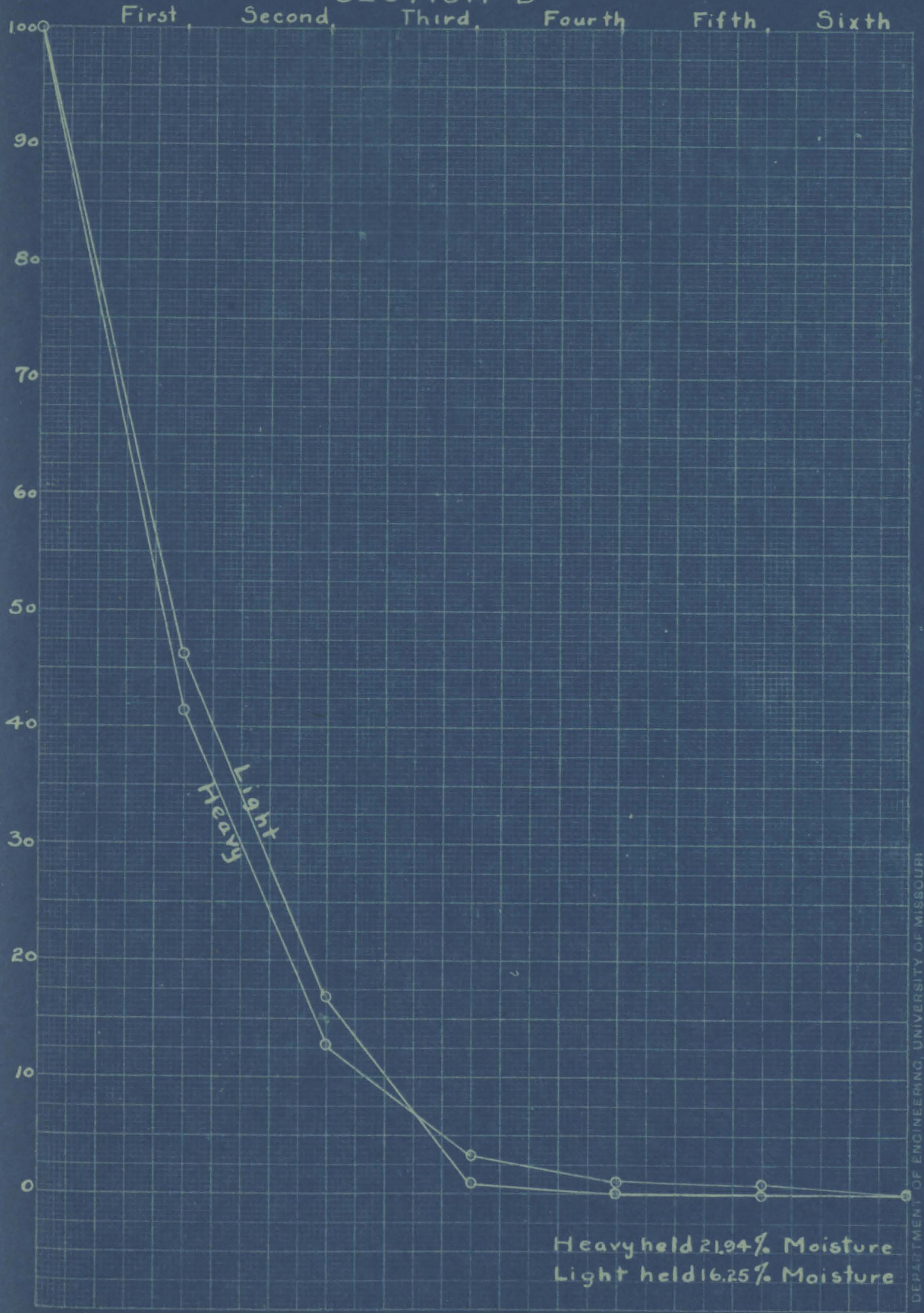


TABLE VII

Heavy vs Light Ears

SECTION C

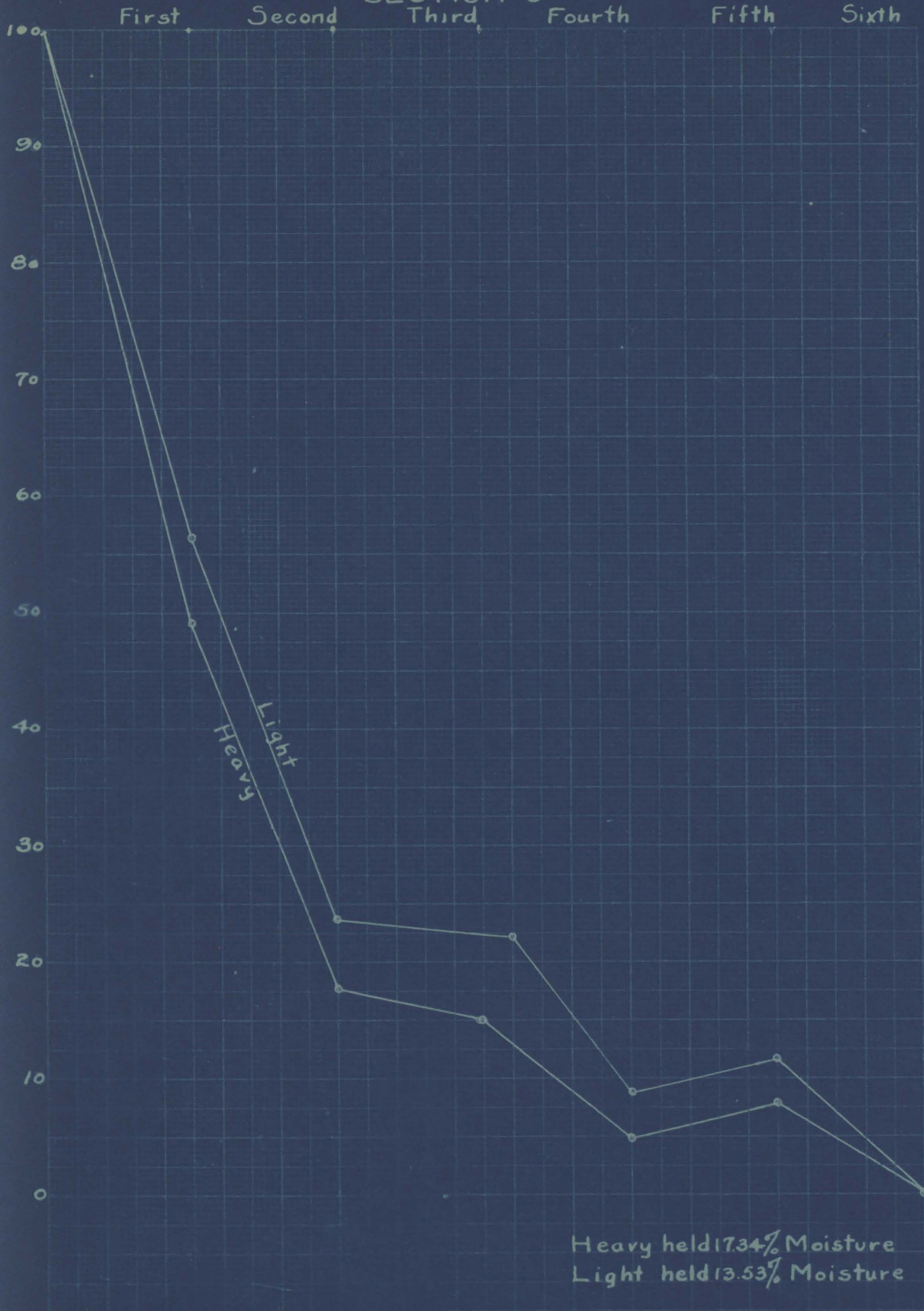


TABLE VIII.

Heavy vs. Light Ears.

SECTION F

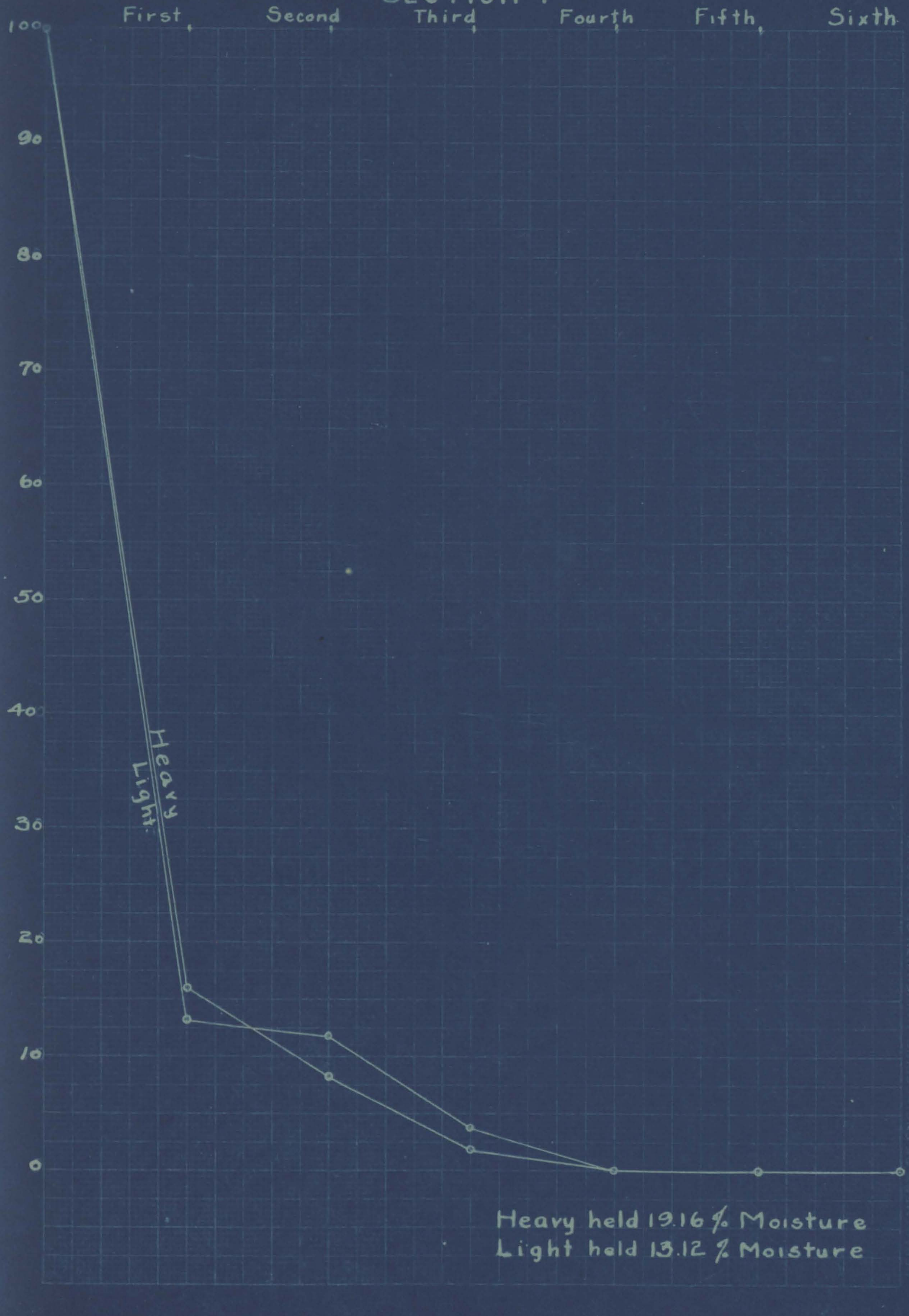
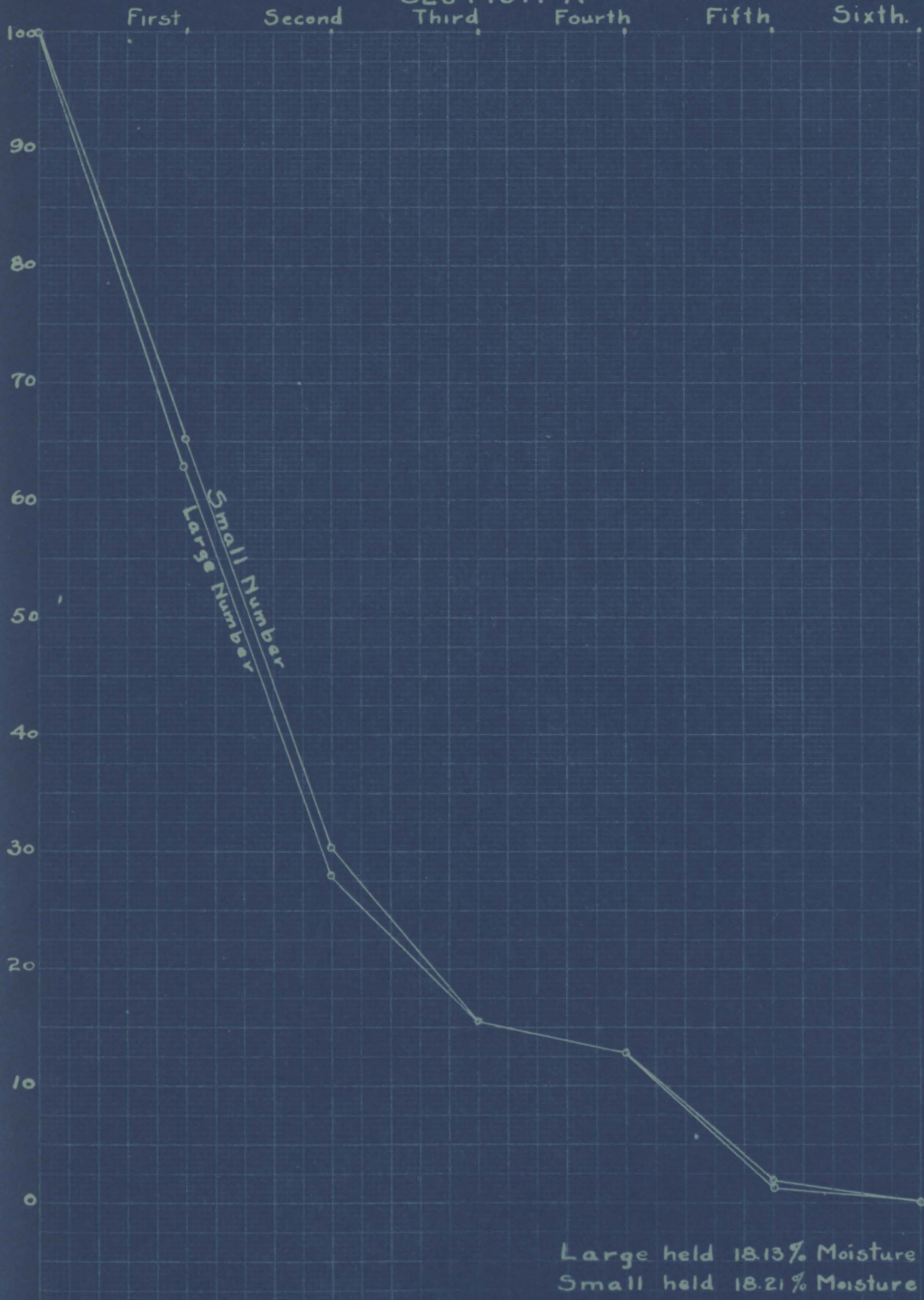


TABLE IX

Large vs Small No. Rows.

SECTION A



Large held 18.13% Moisture
Small held 18.21% Moisture

TABLE X

Large vs Small Number Rows.

SECTION B.

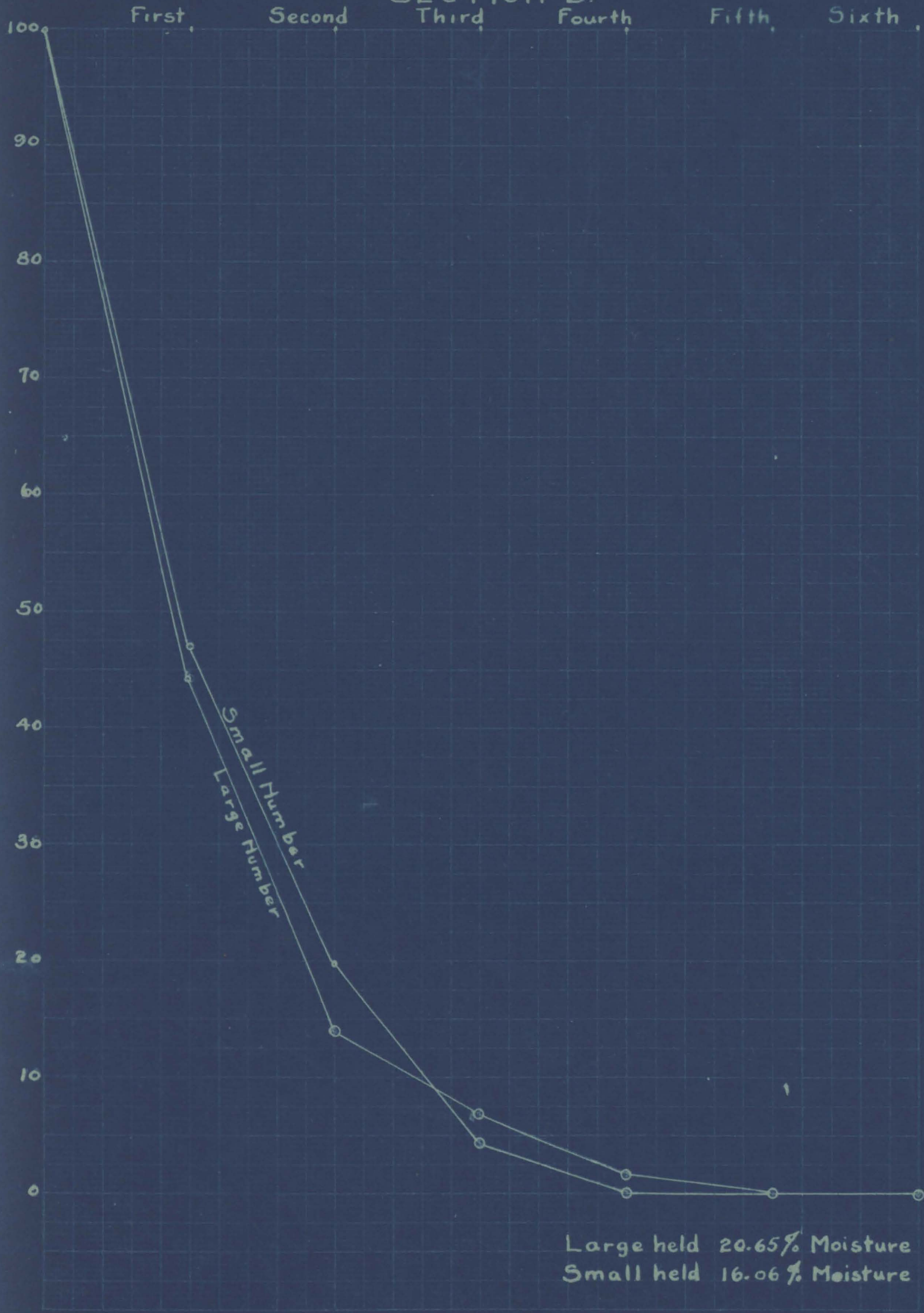


TABLE XI
Large vs Small Number Rows.
SECTION C

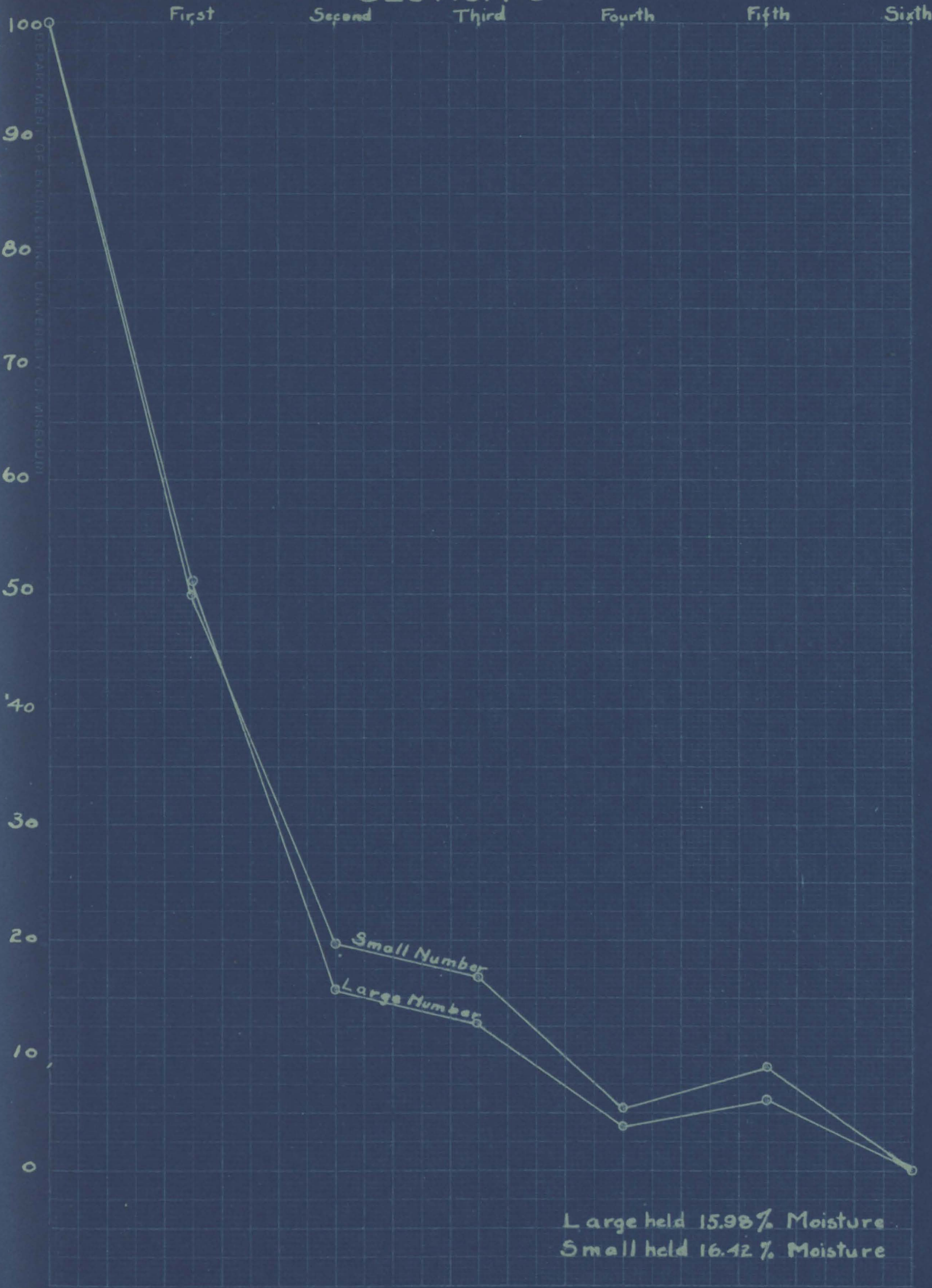


TABLE XII
Large vs Small Number Rows.
SECTION F.

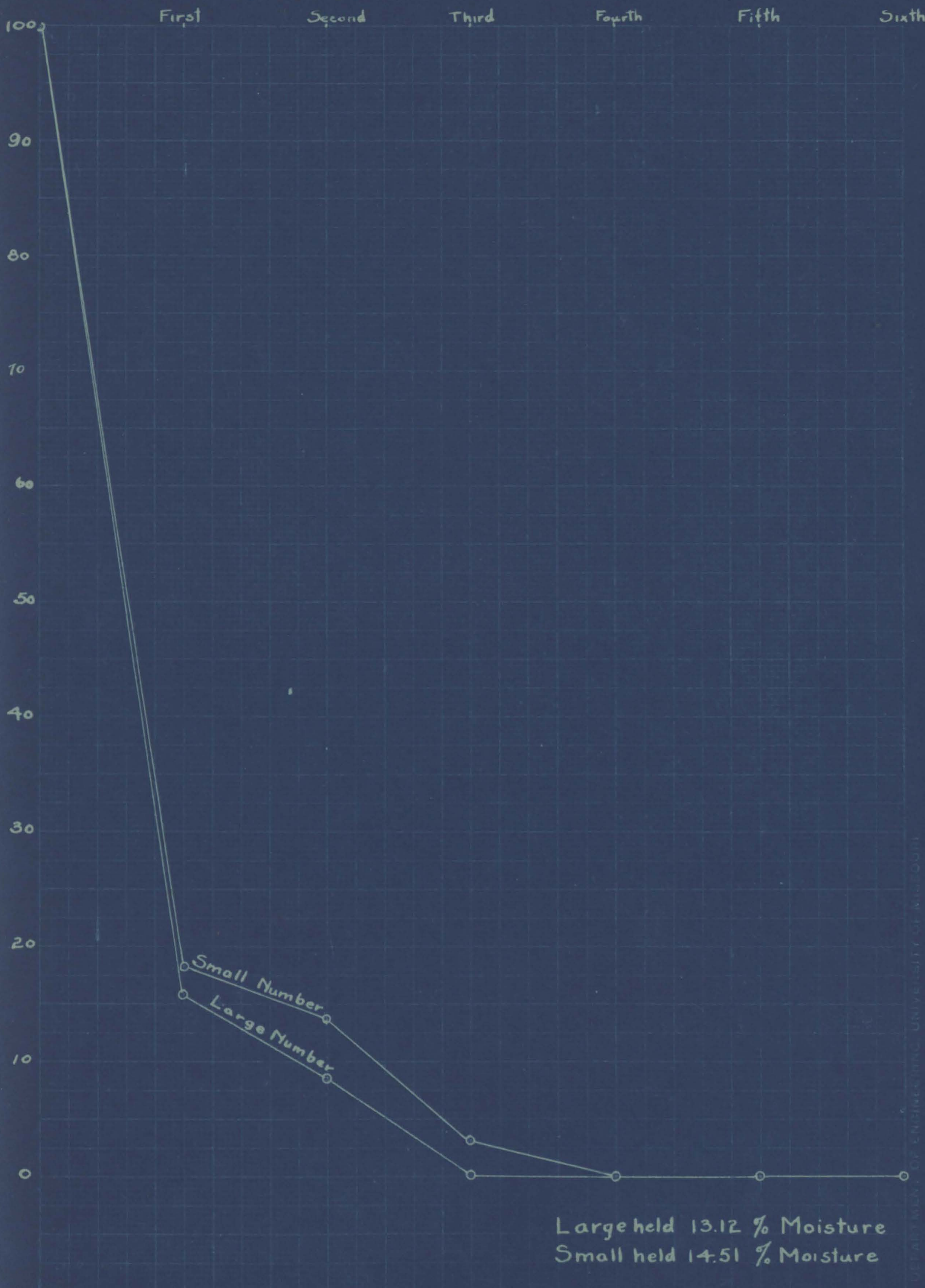


TABLE XIII
Rough vs Smooth Ears.
SECTION A

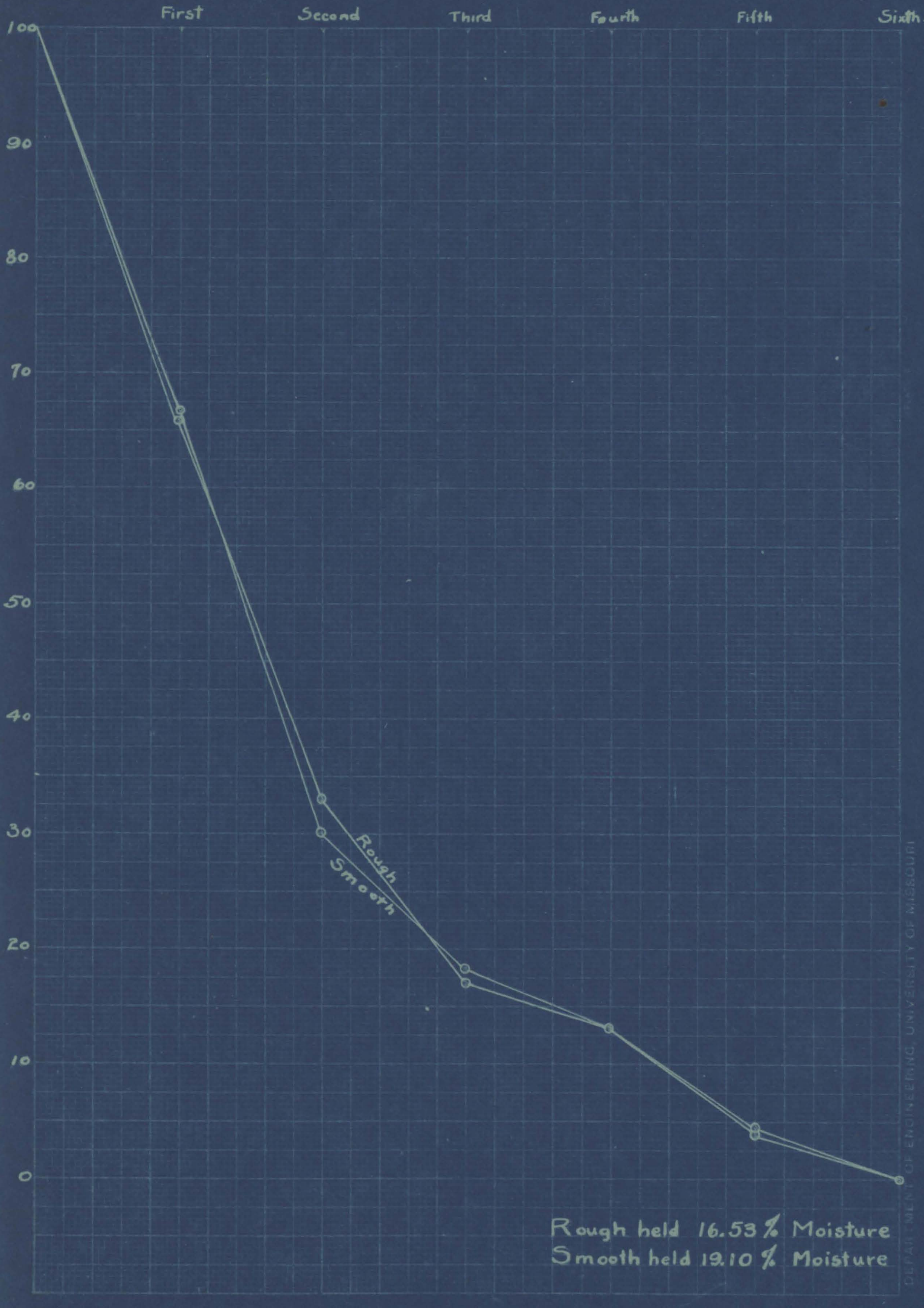


TABLE XIV.

Rough vs Smooth Ears.

SECTION B

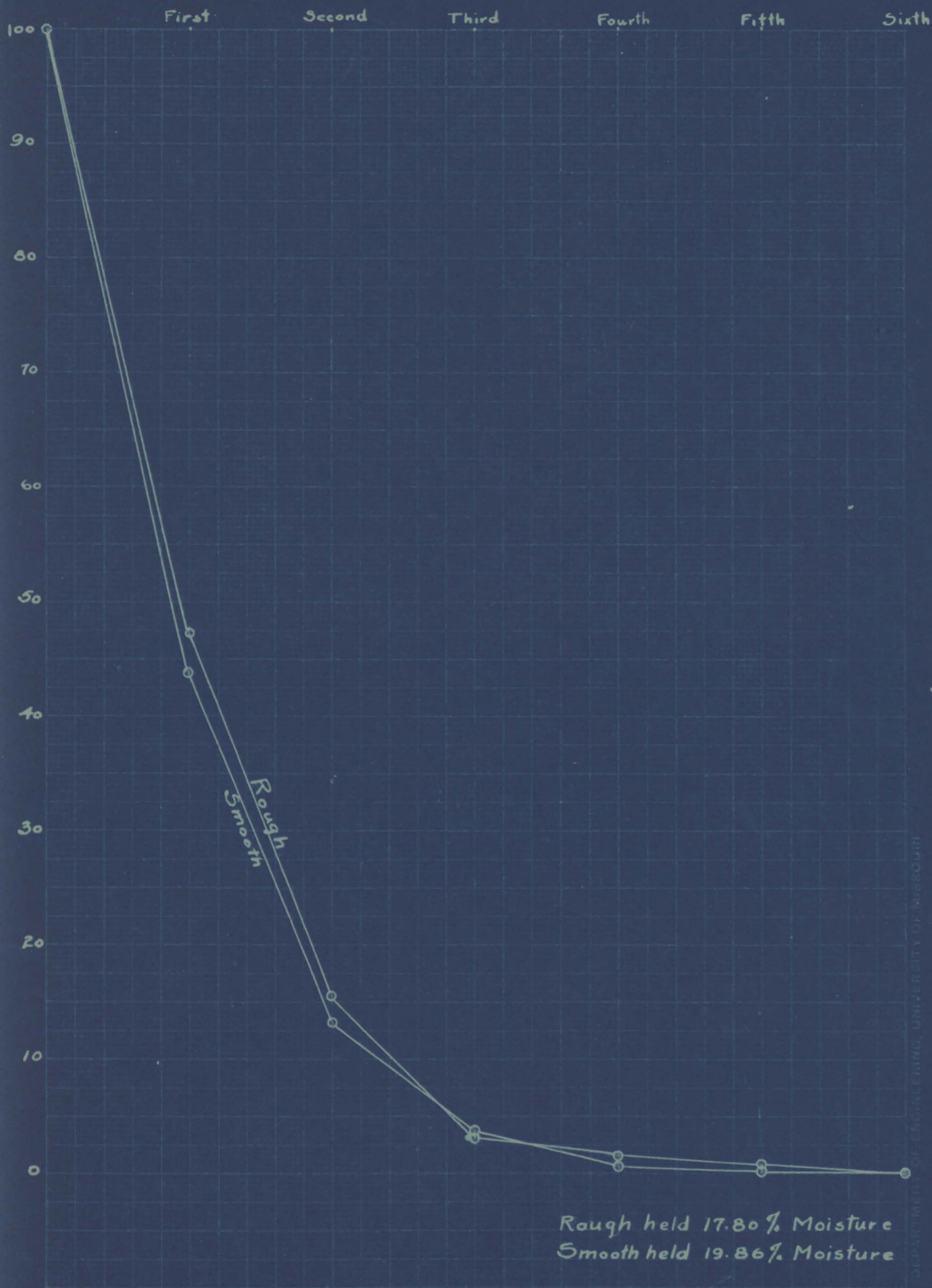


TABLE XV.

Rough vs. Smooth Ears.

SECTION C.

TABLE XVI
Deep vs. Shallow Kernels
SECTION A

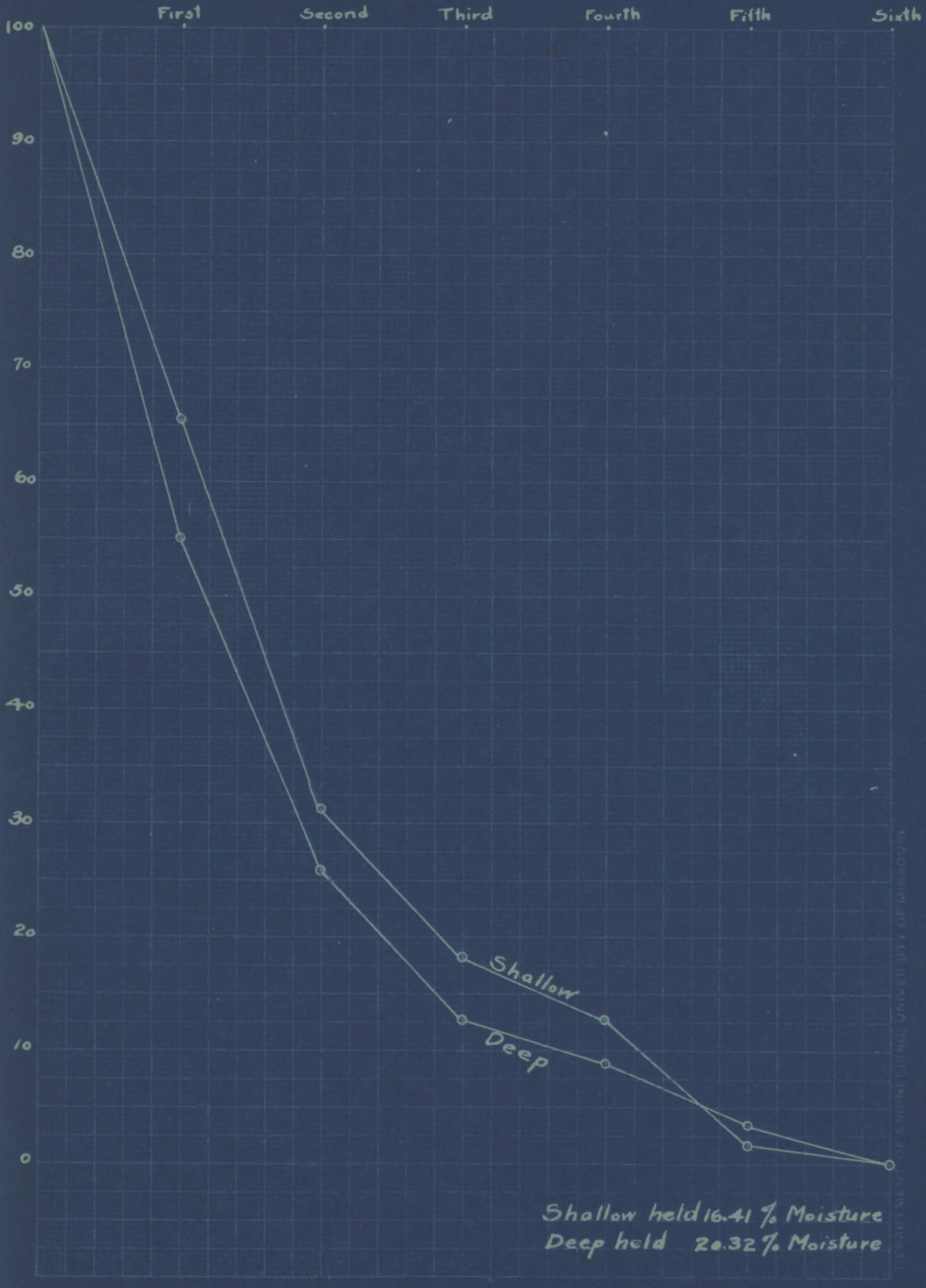


TABLE XVII

Deep vs. Shallow Kernels.

SECTION B

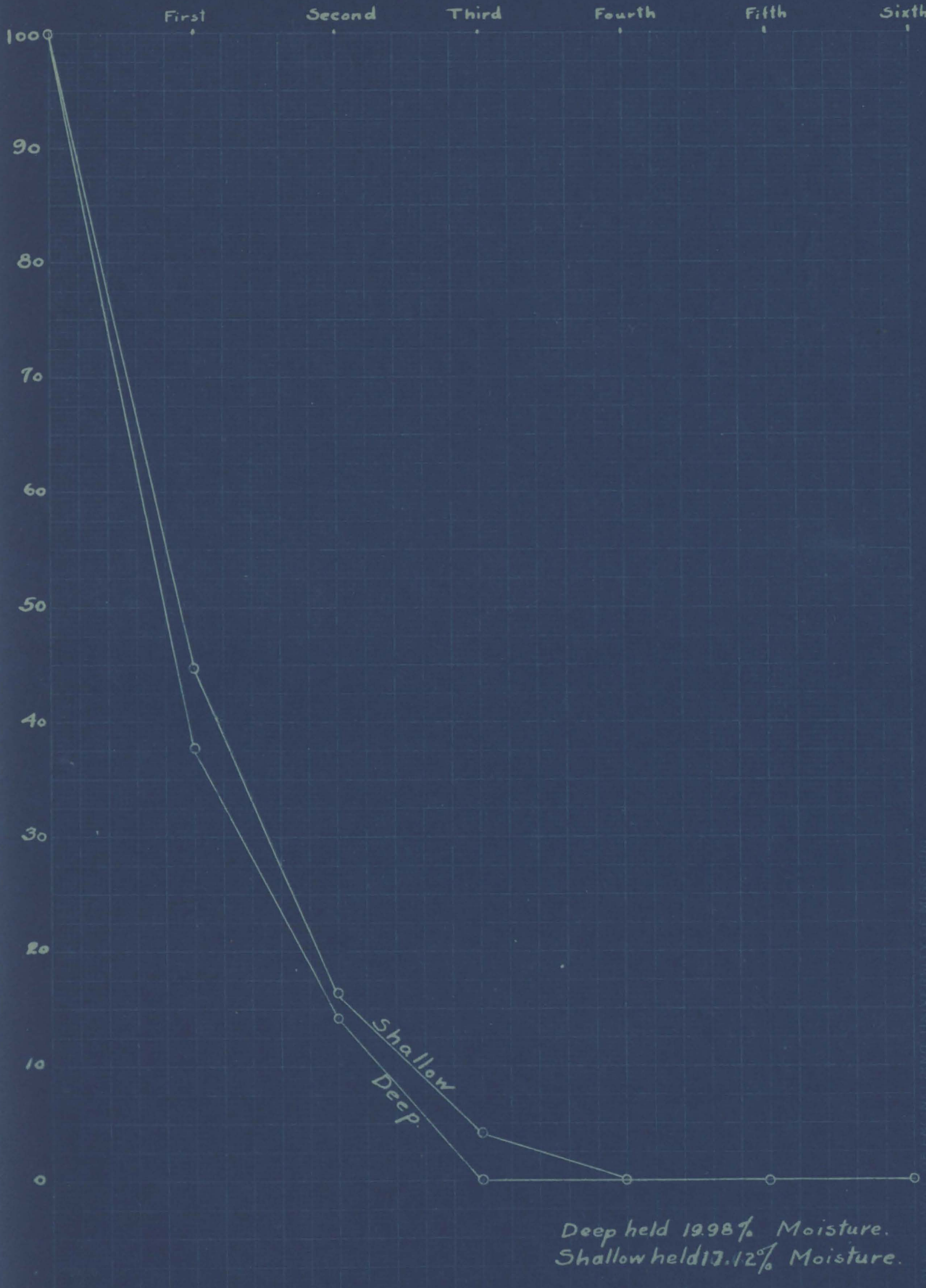
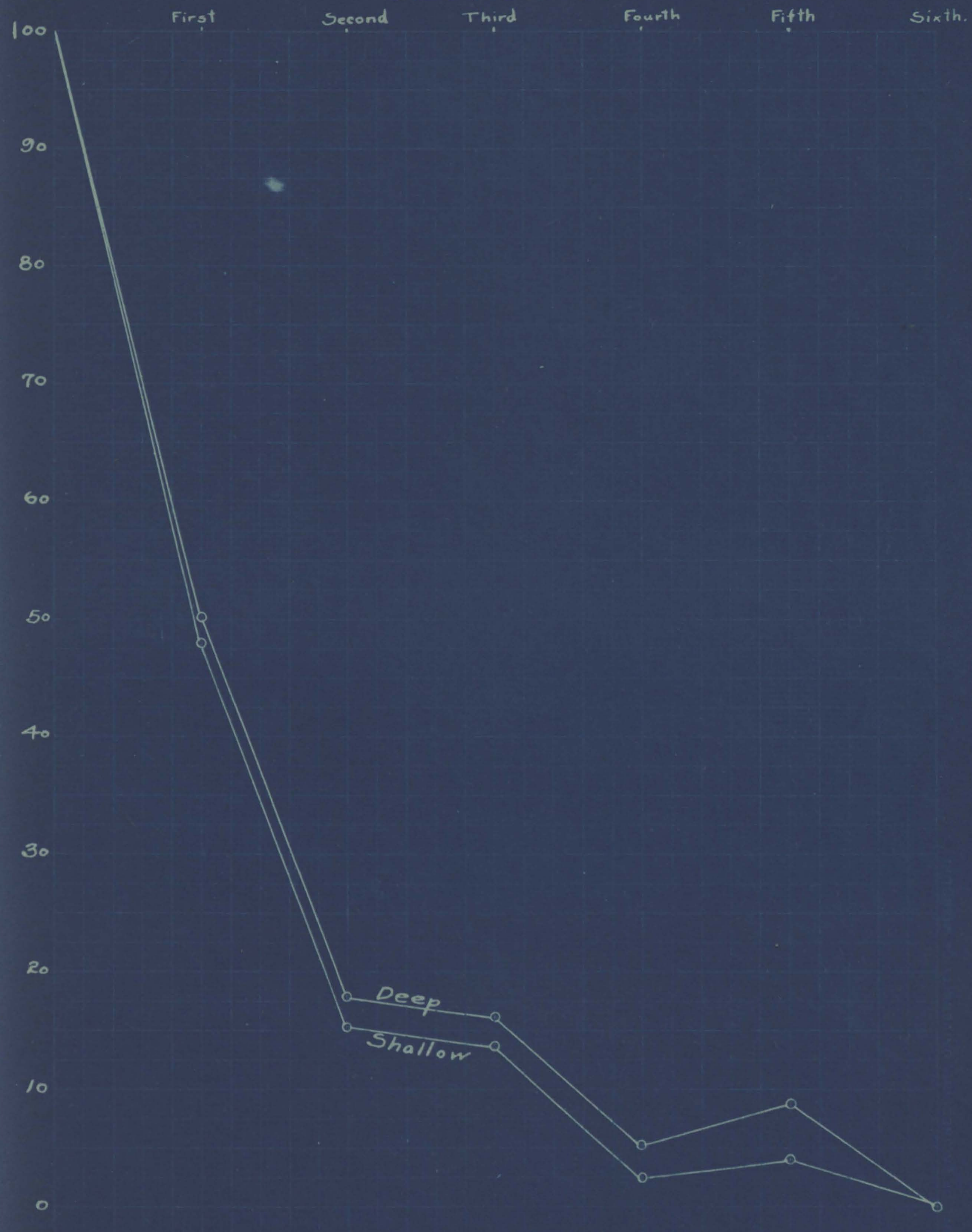


TABLE XVIII.
Deep vs. Shallow Kernels.

SECTION C.



Deep held 17.27 % Moisture
Shallow held 16.50 % Moisture

TABLE XIX
Deep vs. Shallow Kernels.
SECTION F

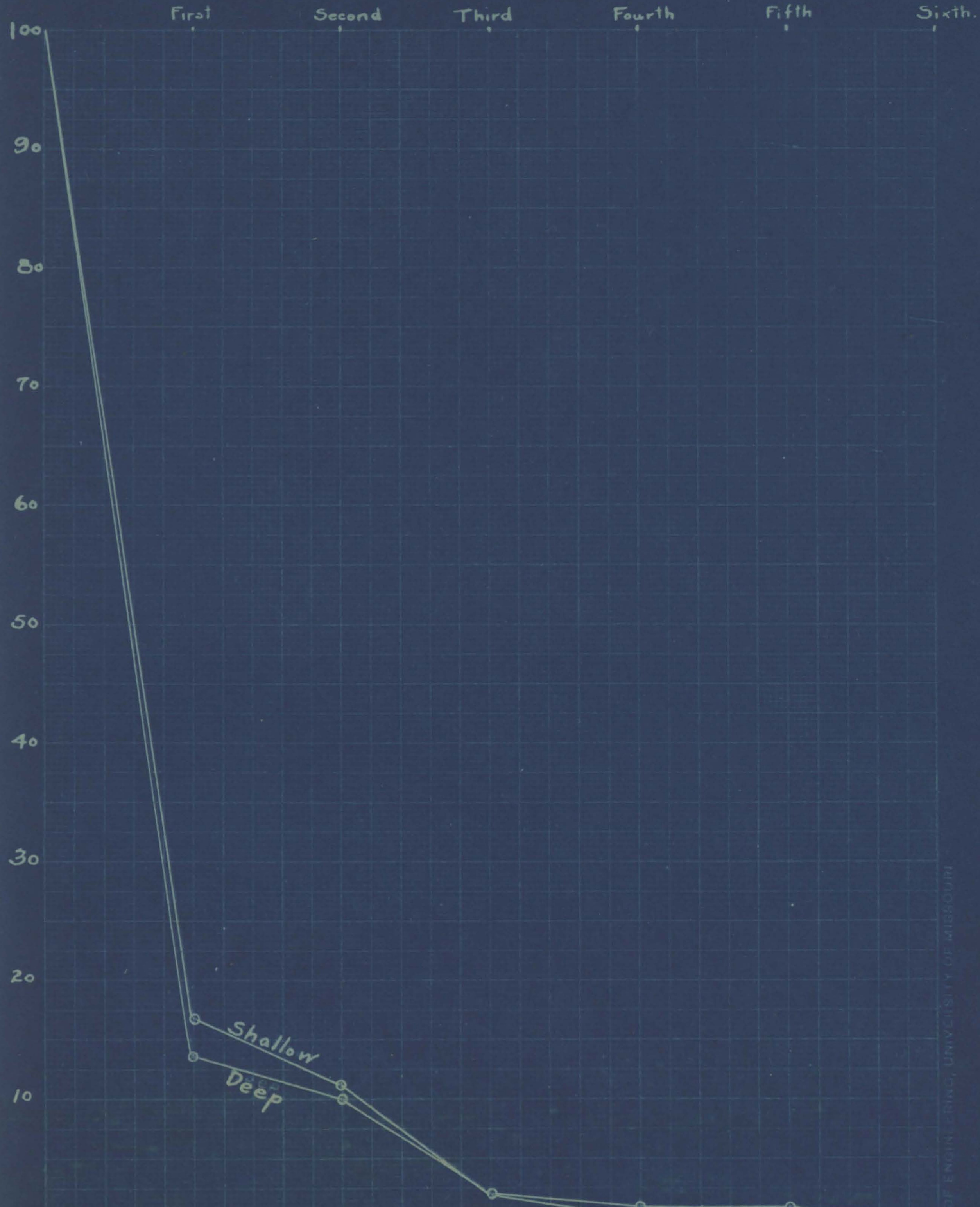


TABLE XX.

Starchy vs. Horny Kernels.

SECTION A

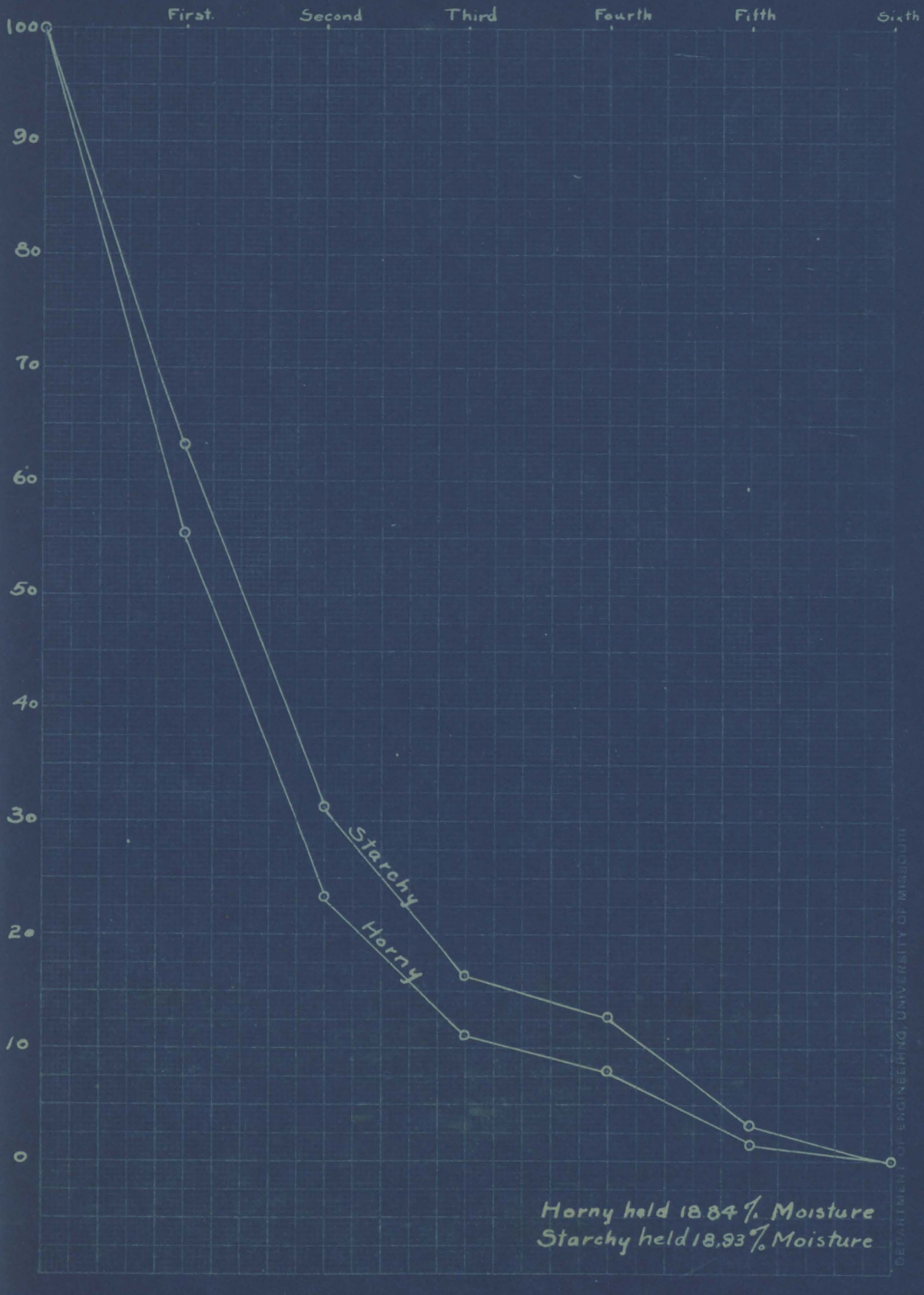


TABLE XXI
Starchy vs Horny Kernels.
SECTION B

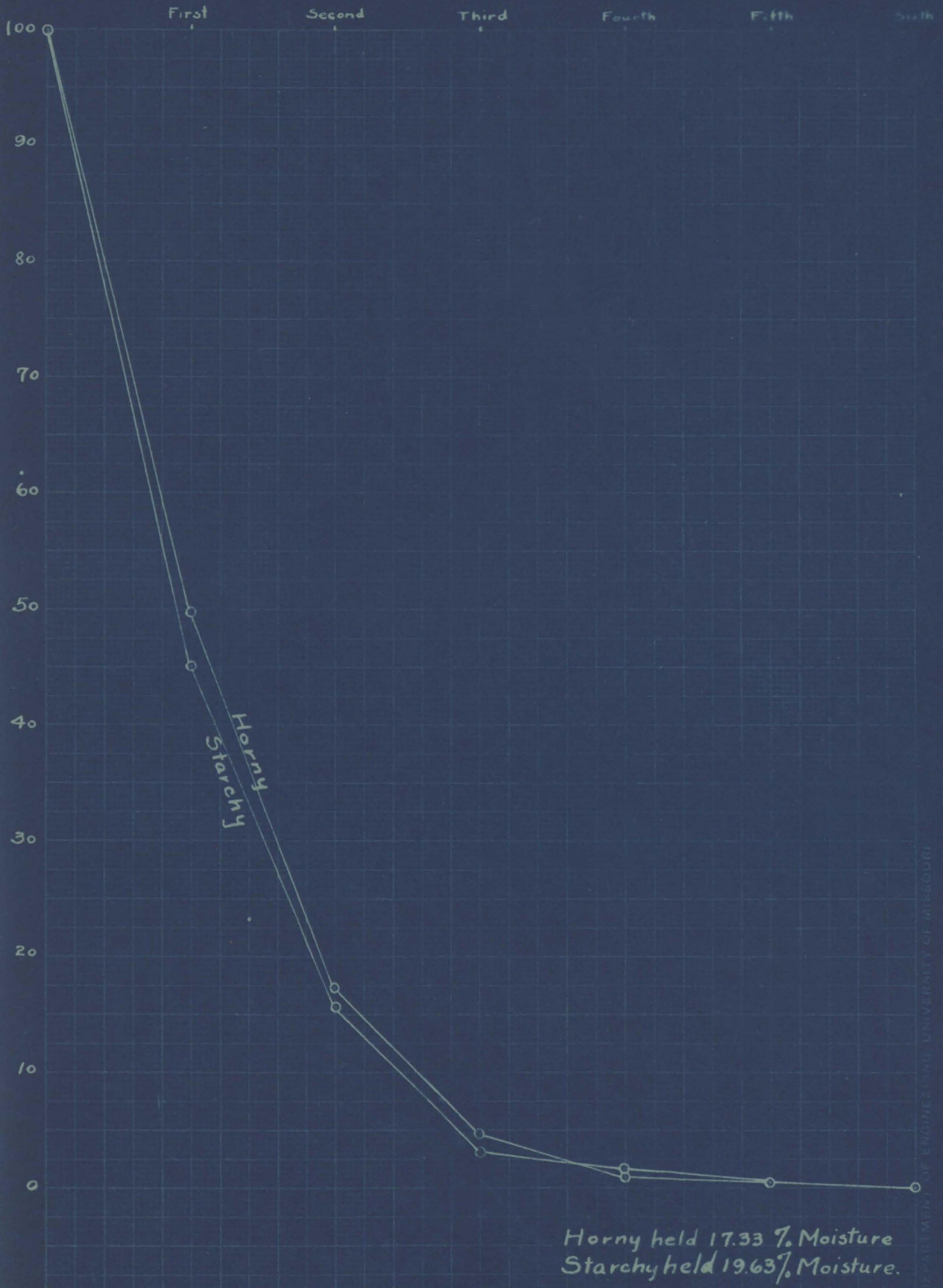


TABLE XXII.

Starchy vs Horny Kernels.

SECTION C.

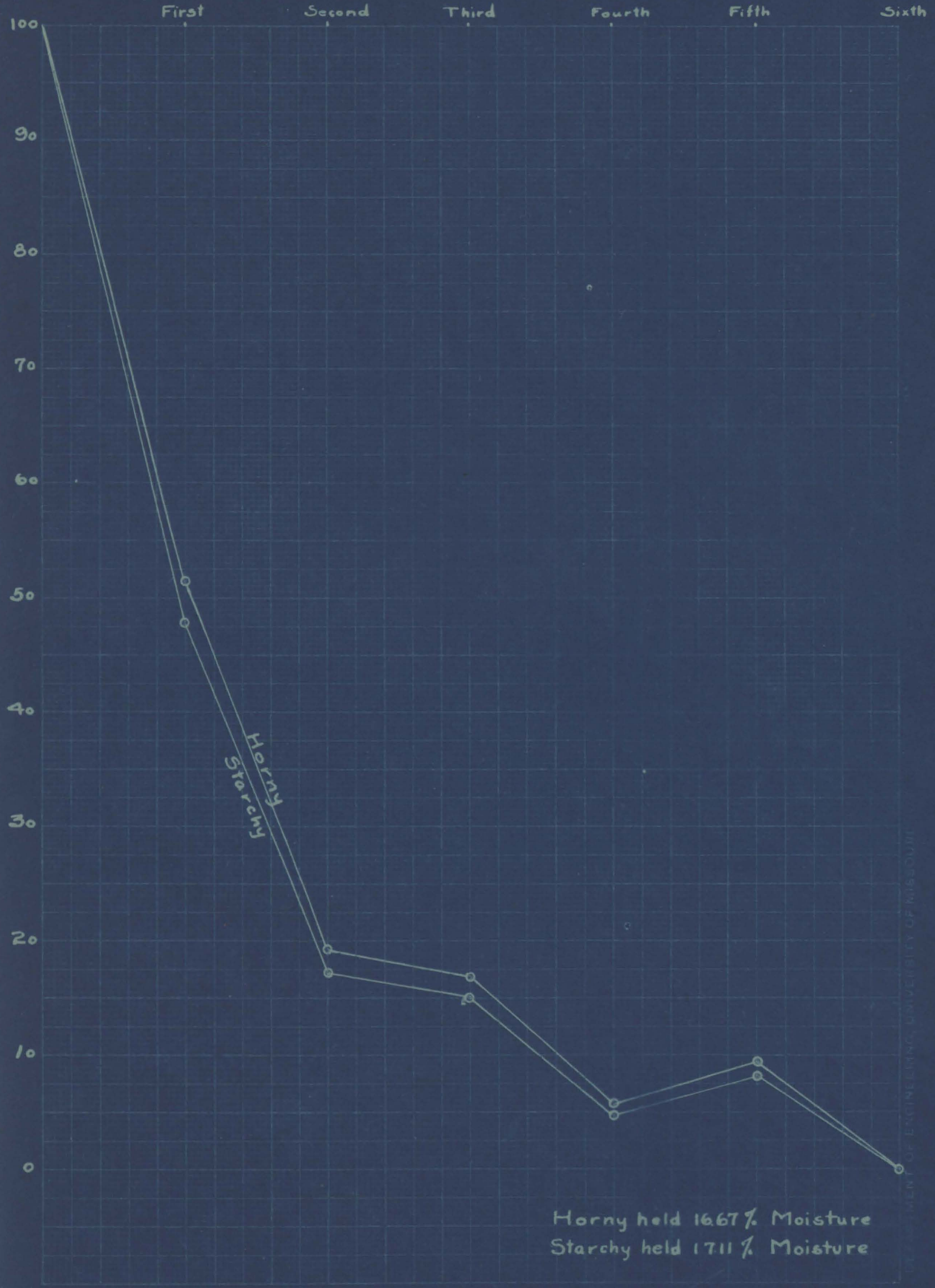
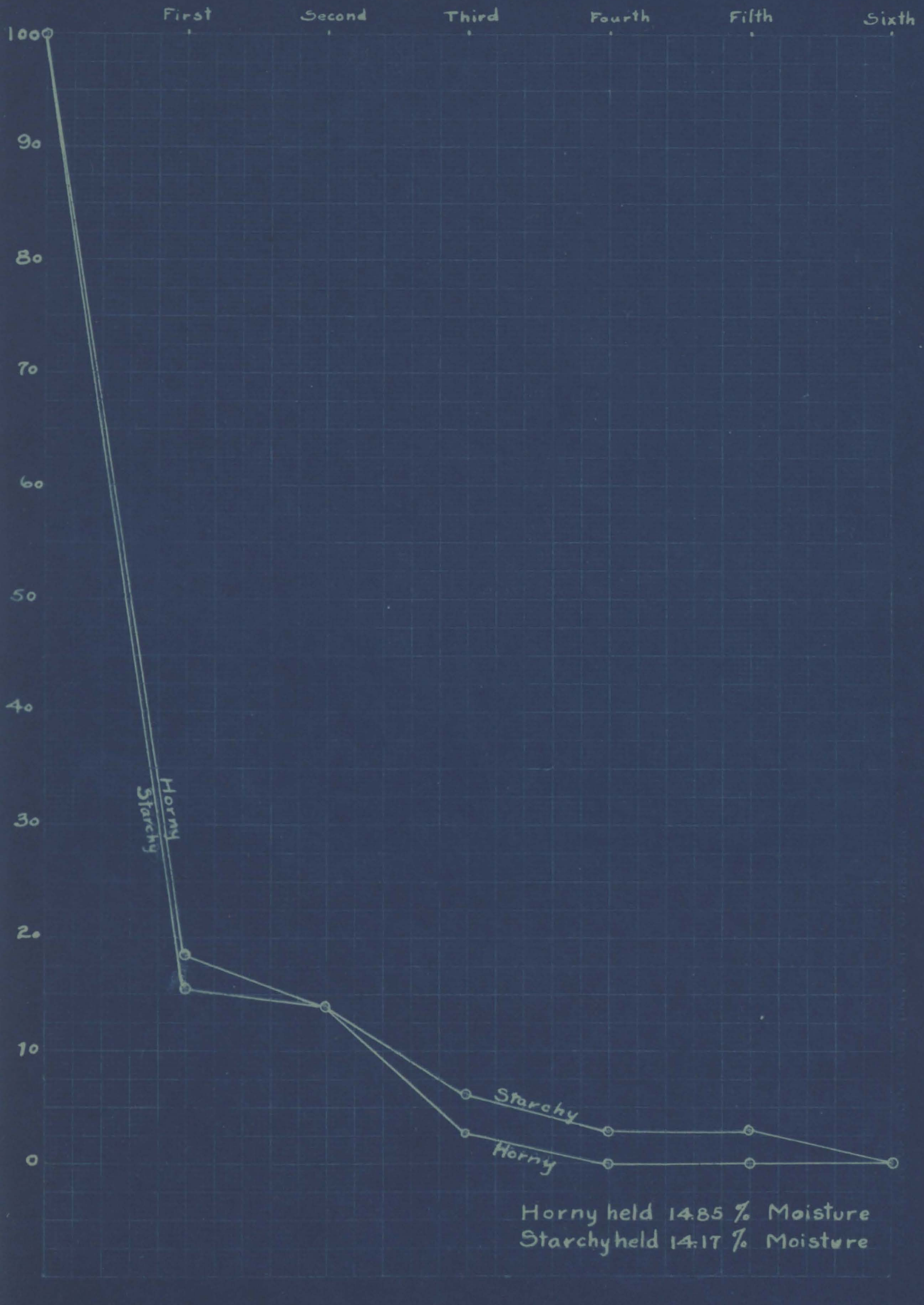


TABLE XXIII.
Starchy vs Horny Kernels.
SECTION F.



Horny held 14.85 % Moisture
Starchy held 14.17 % Moisture

SUMMARY.

Based upon the results herein given, and upon careful observations of the eleven-hundred and eighty-five ears of the medium large varieties of corn studied the following conclusions seem to be justified.

Part I.

1. Medium to short ears give a higher average shelling percent than do the longer ears.

2. Ears with a large number of rows and close space average a higher percent of corn than ears with a smaller number of rows but no certain number of rows seems to be uniformly the best.

3. There is practically no difference between the average shelling percent of cylindrical and tapering ears.

4. The rougher indentation seems to give slightly the higher average shelling percent, although the difference is not greatly variant.

5. For long ears, the tapering, rough ones have the advantage over both the cylindrical, rough and the tapering, smooth in average shelling percent.

6. The light ears have the advantage over the heavy in average shelling percent; size of ear and size of cob seem in general to be proportional.

7. The deep kernel has a distinct advantage over

the shallow, in average shelling percent.

8. The narrow kernel and close spaced ears shell a higher average percent than the wider kernel with open spaces.

9. The starchy kernel (usually the deep one) has a higher average shelling percent than the horhy, shallow kernel.

10. The size of germ is of secondary importance in shelling percent and does not have any very marked influence due to the fact that is so over-shadowed by other factors.

11. The long ear of large circumferance has as a general rule, the greater total weight of corn per ear although the average shelling percent is with the smaller ear.

12. The heavy ear with the large number of rows is as a rule the high yielder of corn although the average shelling percent does not always agree due to the cob weight.

13. Shape of ear again seems to be of minor importance, as to shelling percent and total weight of corn the differences shown being due to other characters which over-shadowe the effect of shape.

14. The ear with a rough indentation, a deep, narrow kernel of starchy composition has the highest average yield of corn both in absolute weight and shelling percent.

15. The large cob is again found as a rule with the larger total weight of corn but, as in size of ear, does

not agree with shelling percent. The effect of the heavy cob here obscures the effect of the other characters.

16. The deep kernel ~~is~~ averages heavier than the shallow although the shallow has an average higher density. This condition explains the occasional high shelling percent of shallow kerneled ears as the shallow kernel is more dense and therefore heavier ~~th~~ per unit volume.

17. The wide kernel, due to its breadth and thickness, is the heavy kernel although the density is not much different from that of the narrow, being slightly lower.

18. The smooth ears have kernels which are more dense and are as a rule heavier on account of their greater thickness.

19. The average weight of kernel is not much variant but the average density of the kernels of the different compositions is quite uniformly dependent upon the crown starch content running from light in the starchy to heavy or high in the horny kernel, the medium horny and medium starchy decreasing in the same ratio.

20. The kernels with large germs, are on the average heavier and more dense indicating that high crown starch content and large germs do not correlate well.

21. Ear length and circumference have no appreciable effect upon cob density.

22. Heavy ears have heavy cobs of high density, the cob and ear size correlating, on an average, quite closely.

23. Kernel and cob density are practically the same for cylindrical and tapering ears.

24. The smooth kerneled ears average higher kernel and cob density than the rough.

25. Low shelling percent ears have as an average, kernels of higher density and more dense cobs.

26. Shallow kernels with high density are correlated as a rule with cobs of high density.

27. Horny kernels are as a general rule, correlated with high kernel and cob density.

28. Germ size is a secondary matter in the kernel and cob density being too much influenced by the various other characters.

29. There seems to be no regular correlation between kernel and cob density and unit crushing stress of the cob so far as ear characters are concerned.

30. The shallow kernels usually associated with the open space and horny composition, seem to be correlated with high kernel and cob density and high unit crushing stress.

31. Cob characters seem to correlate kernel and cob density and unit crushing stress quite closely: (a) The unit crushing stress of cobs of high density and low shelling percent usually are found associated with high kernel and cob density; (b)Heavy cobs of low shelling percent are usually

found with high kernel and cob density and seem to indicate a high resisting power; (c) Heavy cobs of high density show, as a rule, much higher kernel and cob density, much greater resisting power per unit area, but a much smaller shalling percent than light cobs of low density.

Part II.

32. Dimension shrinkage in corn seems to be directly correlated with four things:

a. Size of ear.
b. Shelling percent of ear.
c. Composition of kernel.
d. Size of cob.

33. Rate of moisture loss seems correlated with size of cob. As a rule, the larger the cob, the more rapid will be the loss in the early part of the period.

34. Seventy-five percent of the total moisture lost during a three months period of drying will be lost the first month if good conditions are provided for drying.

CONCLUSIONS.

Based upon the investigational work represented in the foregoing pages, and upon the observations and results herein tabulated the following conclusions seem reasonable:

I. Since there is such a great number of active factors and characters in each ear of corn, a single factor or character must be quite pronounced not to have its effect obliterated by others.

II. The medium sized ear of corn, with the medium to narrow kernel gives an average higher shelling percent than the large ear although the large ear has, as a rule, more actual weight of corn.

III. Too much preference is probably being given the cylindrical ear as compared with the tapering. Except for uniformity of kernel, which of course is desirable in planting, there is no appreciable difference and considering the fact that the tapering ear is usually longer, it has the advantage generally in actual weight of corn per ear.

IV. The indentation is of minor importance, so far as its effect upon shelling percent is concerned, the rough indentation having a very slight advantage in the average shelling percent. The rough indentation ear, with deep narrow kernels of starchy composition is usually indicative of both high shelling percent and high total weight of corn per ear.

VI. The narrow kernel and the close space (Very closely correlated with deep kernels) are uniformly indicative of an average high shelling percent, although not always of heavy total weight of shelled corn per ear.

VII. The large ear which is generally correlated with large cobs of high density is indicative of heavy total weight of corn but comparatively low shelling percent.

VIII. The deep kernel averages considerably higher in shelling percent than the shallow, but this difference is somewhat equalized by the fact that the deep kernel, usually the medium to starchy kernel, is considerably lower in density than is the shallow or medium to horny kernel. The density of kernel decreases quite uniformly as the crown starch content increases.

IX. The large heavy ear with the heavy cob has generally the cob of high density and high unit crushing stress , while the light cob of low density averages much lower in unit crushing stress.

X. The cob density seems correlated with kernel density only, the cobs of high density being quite uniformly the cobs with high unit crushing stress.

XI. Great shrinkage in corn seems, as a rule, to be correlated with ears of large dimensions, high shelling percent, starchy composition and medium to large cobs.

XII. High moisture loss in corn seems as a rule to be correlated with large cobs of high density and low shelling percent.

XIII. Under favorable conditions and artificially dried, seventy-five percent of the "losable" moisture in seed corn will be lost the first month.

DUE	RETURNED
MAY 24 1987	FEB 23 1987

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~~This thesis is never to leave this room. Neither is it to be checked out over-night.~~