

Oklahoma Agricultural Experiment Station.

BULLETIN NO. 52.

DECEMBER, 1901.

THE POTATO CROP.
VARIETY TESTS OF CABBAGE.

O. M. MORRIS.

BULLETINS OF THIS STATION ARE SENT FREE TO RESIDENTS
OF THE TERRITORY ON REQUEST.

STILLWATER, OKLAHOMA.

Oklahoma Agricultural and Mechanical College,

Agricultural Experiment Station.

BOARD OF REGENTS.

GOVERNOR THOMPSON B. FERGUSON, Ex-Officio.....	Guthrie
HON. F. J. WIKOFF, President.....	Stillwater
HON. C. J. BENSON, Treasurer.....	Shawnee
HON. J. P. GANDY.....	Alva
HON. H. C. R. BRODBOLL.....	Ponca City
HON. W. H. COYLE.....	Guthrie

A. C. SCOTT, A. M., L. L. M..... President of the College

STATION STAFF.

JOHN FIELDS, B. S.....	Director and Chemist
L. L. LEWIS, M. S., D. V. M.	Veterinarian
F. C. BURTIS, M. S.,	Agriculturist
O. M. MORRIS, B. S.....	Horticulturist
W. R. SHAW, Ph. D.	Botanist and Entomologist
A. B. McREYNOLDS, B. S.	Assistant in Chemistry
J. S. MALONE, B. S.	Assistant in Agriculture
H. M. HAND	Clerk
MISS G. M. HOLT.....	Stenographer

VISITORS ARE CORDIALLY WELCOMED AT ALL TIMES.

The publications of the Station are sent free to residents of the Territory on request. All communications should be addressed, not to individuals or departments, but to the

EXPERIMENT STATION, Stillwater, Oklahoma.

THE POTATO CROP.

O. M. MORRIS.

COMMERCIAL POTATO GROWING.

The largest district of commercial potato growing in Oklahoma is confined to the valley of the North Canadian river in Pottawatomie county. The soil in this district is well adapted to producing an early crop of potatoes and the work has been taken up by active, up-to-date farmers and pushed to its present high standing. It is now one of the best paying crops of that district. There are two crops grown each year, an early or spring crop, and a late or fall crop.

The soil of this district is a sandy loam and is an ideal potato soil. The subsoil is porous, containing a large proportion of sand. This insures good drainage and makes the land work easily and warm up early in the spring, which is a very essential feature for the spring crop. The clay loam lands will produce almost as large crops of potatoes but they will be later in season than those on sandy soil.

There is not much difference in the methods of planting and cultivation followed by the different growers. All the growers have almost the same kind of soil, grow the same variety of potatoes, and for the same market. They are all striving to attain the same results, a large crop at an early date; and for this reason they follow practically the same process in growing a crop. This fact also accounts for the success of most of the growers.

The land is plowed in the fall or early winter when preparing for the early crop. This gives the soil time to settle and catch the winter rains and prepare for the drouth that usually comes in March and April. This drouth catches most of the early crop just as it is coming up and the young plants are beginning to depend on their own roots for food. If the plants are not supplied with moisture at this time many will die and those living will be greatly weakened, even though plenty of rain should fall later on. This fall plowing keeps the soil in better condition and avoids turning under two or three inches of dry surface to help injure the crop. Deep plowing has uniformly given the best results.

PLANTING.

The planting is done as soon as danger of hard frosts and freezes is past. This is about from the middle of February to the first of March. There are frosts later than this but they are seldom heavy enough to harm potatoes. There has been some planting done in January but it has not proven to be any better and is but little if any earlier in maturing the crop than later planting. In some of the earlier plantings last spring the potatoes started into growth and the vines were killed back to the surface of the ground by frost, but came up again and made a good crop.

Most of the planting is done with planters. The potatoes are cut about two eyes to the piece and the pieces are dropped from twelve to eighteen inches apart in rows about three feet apart. The potatoes are planted about two inches below the surface of the soil. The soil is then ridged up over the row until the seed is covered four to six inches deep. The earlier the planting is done the more the rows are ridged. This is done to protect the seed from the cold and hasten sprouting.

The seed used for this planting is that produced by the second crop of the previous year, or else it is shipped in from the north. The seed from the previous spring crop is sometimes used but has not given as good results as either the fall crop or the imported potatoes. The first crop of potatoes is difficult to keep over the summer on account of rot, and those that escape the rot dry and wither until they make very poor seed potatoes. The Bliss Triumph is the only variety grown to any extent for shipping. This is a very early, medium-sized, red potato. Its special merit lies in its earliness and productiveness.

CULTIVATION.

The cultivation begins with smothering down the ridges over the potato row as soon as the potatoes begin sprouting and before they are up. This work is done with a light harrow or drag that will work down the ridges and not disturb the seed. The subsequent cultivation is level and shallow, forming a dust mulch on the surface of the ground without breaking and destroying the roots of the plants. The cultivation is just frequent enough to keep the land free from weeds and the soil in good condition. The soil is gradually worked to the rows again and the last cultivation forms a distinct ridge about three or four inches high along the row. The cul-

tivation is discontinued when the young potatoes are about a half inch in diameter. Cultivation later than this does no good and in some instances has done actual damage. The rows are sometimes cleaned with the hoe and this is about all of the hoe work that is done.

HARVESTING.

The crop is harvested while the potatoes are still green and growing. The chief object is to put the crop on the market at the earliest possible date. The digging is done with potato diggers and plows. The potatoes are simply thrown to the surface of the soil and gathered up by hand. The sorting is done in the field as the potatoes are gathered up. The marketable ones are placed in sacks and immediately taken to market. The culls are thrown to one side and covered with soil to protect them from the sun until they can be planted for the second crop.

THE SECOND CROP.

The culls from first crop form the seed for the second crop. The largest ones are usually cut about two eyes to the piece for planting and the smaller ones are planted whole. This seed sprouts very slowly on account of its being so green when dug and planted. The growth from this seed is very uneven, but this fault is overcome to a large extent by planting a large quantity of seed. Sometimes the seed rots badly, and gives a poor stand; when this happens the largest and ripest potatoes decay first and the smaller ones last.

The planting for the second crop is done during the last of June and the first of July. The method of planting and cultivating the second crop does not differ much from that of the first crop. The crop is usually allowed to mature before harvesting.

YIELDS.

The first crop yields from eighty to one hundred or more bushels of marketable potatoes per acre. Last summer most of this crop sold for from fifty to seventy-five cents per bushel delivered on the cars of the Choctaw, Oklahoma & Gulf railroad. The growers estimate the entire cost of the crop placed on the cars at ten to seventeen dollars per acre. This leaves a good profit for the grower. The second crop does not usually make as large yields but a higher

price is usually received for the crop. This crop, however, is well worth the growing if it only makes seed for the following spring crop.

Diseases and insects have done no noticeable harm as yet, and have not forced any thought or demand for spraying apparatus. The nature of the crop makes it convenient to crop the same land with potatoes year after year. This will rapidly reduce the value of the land for potato growing and hasten the spread of such diseases as scab and blight, after they are once started in the field. Some other crop should be grown on the land every other year. Such crops as corn, or wheat and cowpeas make good rotations with potatoes.

VARIETY TESTS.

A test of varieties of potatoes has been carried on at the station for the last two years. The land used in this test is a light upland loam. The seed was cut two eyes to the piece and planted two pieces to the hill, hills eighteen inches apart in rows three feet apart. The patch was given clean, shallow cultivation until the young potatoes were about one-half inch in diameter and then all cultivation ceased. The seed was all northern grown. The potatoes were all dug as soon as mature. The crop of 1901 was taken to the cave as soon as dug and placed in small boxes. The temperature of the cave ranged between 72 and 80 degrees Fahrenheit during July and August.

The following table gives the names and yields of the varieties grown. The potatoes of the crop of 1901 that were put in the cave were counted when placed in the cave and again on August 21 and September 24. The rotten potatoes were thrown out each time and from these counts the per cent. of rotten potatoes was estimated:

NAME	1900		1901		
	No. of Bush-els Per Acre	Per Cent of Crop Marketable	No. of Bush-els Per Acre	Per Cent of Crop Marketable	Per Cent of Crop Rotten Sept. 24
Acme.....			78	63.6	7
Beauty of Hebron.....	82	50	52	64.2	16
Bliss Triumph.....	66	80.9			
Bovee.....	56	40	44	47.9	1
Burbank.....	54	42.9	31	36.9	2
Burpee's Extra Early.....	58	57.6	94	61.3	
Burpee's Superior.....	59	57			
California Russet.....	45	62.3			
Carmen No. 1.....	121		30	69.3	6
Carmen No. 3.....	94		52	79.8	10
Country Gentleman.....			26	66	13.7
Early Six Weeks.....	213	82.4	69	56.4	3
Early Rose.....	123	62.8	61	63.3	10
Early Kansas.....	96	52.8	71	58.7	27
Early Ohio.....	90	49.3	83	63.4	5
Early Fortune.....			111	62.7	1
Early Norther.....	39	32.3			
Early Pingree.....			47	46.4	11
Early Puritan.....	49	27.7			
Empire State.....	92	95.5			
Extra Early Vermont.....	108	57.1			
Great Divide.....	95	42.1			
Good News.....			105	60.7	9
Ideal.....	16	57.1			
Irish Cobbler.....	161	80.7			
Joseph.....			18	30.3	29
Maggie Murphy.....	72	69			
Rural New Yorker.....	93	52.9	39	60.8	13
Secretary Wilson.....			97	44.2	11
Sir Walter Raleigh.....	23	40	43	49.7	
State of Maine.....	77	67.8	60	56.7	
State of Wisconsin.....			28	32.9	
Thoroughbred.....	139		101	35.1	
Vigorosa.....			66	66.6	
World's Fair.....			35	14	
White Star.....	116		79	68.9	
White Beauty.....			48	39.3	

NOTES ON VARIETIES.

Acme; small; short oblong, thick; eyes medium to large; skin pink, a little rough; very early.
Beauty of Hebron; large; oval; eyes few, shallow; skin white; early.
Bliss Triumph; medium to large; round, or a little flat; eyes deep; skin red; very early.
Bovee; medium to large; oblong, thick; eyes shallow; numerous; skin yellowish white with pink markings; early.
Burbank; medium size; long; eyes small; skin white; midseason.
Burpee's Extra Early; medium size; oval; eyes few, small; skin rose color; very early.
Burpee's Superior; large; long oval; eyes few, small; skin white; midseason.
California Russet; large; long; eyes few, medium size; skin white, covered with russet; late.
Carmen No. 1; a little above medium size; broad oval, flattened; eyes few, medium size; skin white; midseason.
Carmen No. 3; medium to large; broad oval, flattened; eyes few, medium size; skin white; late.
Country Gentleman; medium to large; oblong to long, flattened; eyes large, shallow; skin pink; late.
Early Six Weeks; medium size; round; eyes deep; skin rose color; very early.
Early Rose; medium size; oval to long; eyes medium size; skin rose color; early.
Early Kansas; medium size; long oval; eyes medium size; skin white, a little russet; early.
Early Ohio; medium size; oval; eyes medium size; skin light rose color; very early.

The Potato Crop.

- Early Fortune*; large; oblong; eyes few, medium size; skin white; early.
Early Northee; medium to large; oblong; eyes large, deep; skin white; early.
Early Pingree; medium size; oval to long; eyes few, small; skin white; early.
Early Puritan; medium to large; oval; eyes large, shallow; skin white; early.
Empire State; very large; long; eyes large, deep; skin white; late.
Extra Early Vermont; large; round to oval; eyes large, shallow; skin light rose; early.
Great Divide; large; oblong, slightly flattened; eyes small; skin white; midseason to late.
Good News; large; long, cylindrical; eyes shallow; skin smooth, white; late.
Ideal; small; long, slightly irregular; eyes few, small; skin light red; early.
Irish Cobbler; medium size; short, oblong; eyes medium deep; skin white; midseason.
Joseph; medium size; oval; eyes small; skin red; late.
Maggie Murphy; medium size; broadly oval; eyes few, medium size; skin light rose, netted; late.
Rural New Yorker No. 2; medium size; oblong, usually pointed; eyes few, shallow; skin white, netted; late.
Secretary Wilson; medium size; oval, flat; eyes large, shallow; skin white; midseason.
Sir Walter Raleigh; medium size; round to oval; eyes few, medium size; skin white; midseason.
State of Maine; large; round; eyes large, shallow; skin white; late.
State of Wisconsin; large; long; eyes medium size, deep; skin white; late.
Thoroughbred; medium size; oblong; eyes small, shallow; skin light rose; early.
Vigorosa; large; flat, oblong and sometimes irregular; eyes shallow; large; skin red; late.
World's Fair; medium size; oval; eyes shallow; skin white, very finely netted; late.
White Star; medium size; round to oblong; eyes medium size, shallow; skin white; late.
White Beauty; large; long to oval; eyes few, small, shallow; skin white; late.

FALL AND SPRING PLOWING.

The potato growers in Pottawatomie county generally agree that their experience and observation proves that the land should be plowed in the fall before the potato crop is planted in the spring. The soil in that district is a sandy loam. The soil on the experiment station farm is a light upland soil mixed with some hard pan or clay. The results of experiments in fall and spring plowing on this soil coincide with the results on the sandy loam.

The results of several experiments along this line differ so little that the result of only one test is given. The field was divided into forty-eight plats of equal size. Twelve plats were on land that was plowed in October before the crop was planted in March. These plats made an average yield of 95.5 bushels of marketable potatoes per acre. Twelve were on land that was plowed seven inches deep and subsoiled five inches deep just before the crop was planted. These plats made an average yield of 72.5 bushels of marketable potatoes per acre. The other twenty-four plats were on land that was plowed about seven inches deep just before the crop was planted. These plats made an average yield of 73 bushels of marketable potatoes per acre.

DEPTH OF PLANTING.

The depth at which the seed should be planted varies with the season and condition of the soil at the time of planting. In very

cold or very warm weather the seed should be covered a little deeper than at other times, or if the soil is very dry the seed may be planted a little deeper than would otherwise be advisable. The yield of the plats that were planted to test this point varied from those in which the seed was planted in furrows three to four inches deep and then filled level full of soil, which was 84 bushels of marketable potatoes per acre; to those planted in furrows about eight inches deep and covered with three inches of soil which made forty-seven bushels per acre. The deep furrows were gradually filled by cultivation.

The seed should always be planted in moist soil and covered immediately. The potato planters do almost ideal work in this respect, but in small patches where the rows are laid out with a plow and the seed dropped by hand, the soil in the open furrow is dried and the sprouting of the seed retarded thereby. This can be observed every year but it is especially noticeable if the planting is done during a dry spell. Last spring potatoes planted in furrows that had been left open for one to two days and exposed to the wind, were as much as two weeks later in coming up, than those planted in fresh furrows on the same day.

TIME OF PLANTING.

The best time for planting early potatoes varies with each season and no definite date can be named. The seed should not be planted until the soil is warm enough to start it into growth at once. If the seed lies in moist, or wet soil a week or two before growth starts, a good part of it will be destroyed by rot. Last spring, potatoes planted March 14 came up as early and matured the crop as early as those planted February 27. The crop planted about the middle of March has usually been as early as that planted in February and has made a larger yield by having a better stand of plants. On sandy soil and in the southern part of the territory, the planting can be done much earlier.

CULTIVATION.

Shallow cultivation, frequent enough to keep down the weeds and the surface of the soil well pulverized, is best. The early cultivation should leave the land as level as possible, but later on the soil should be drawn to the row enough to make a distinct ridge. The land must be kept free of weeds and grass. Small patches of midseason and late potatoes can be mulched profitably with old hay or straw. The early crop frequently can also be mulched with

profit. A comparison of the yield of cultivated and mulched plats shows greatly in favor of the mulched plats. Sixteen cultivated plats of the crop of 1899 made an average yield of eighty-four bushels of marketable potatoes per acre. Five mulched plats made an average yield of 111 bushels of marketable potatoes per acre. This was a midseason crop. The crop of 1900 gave practically the same results as that of the year before. In the crop of 1901 the mulched plats made about four times as large a yield as the cultivated plats. This, however, was an exceptionally dry season and such results are far out of proportion for the average season.

KEEPING POTATOES.

The early potatoes usually make a fair crop and there are few questions asked about methods of planting and cultivating them. The crop of midseason and late potatoes is usually very poor. There seems to be no method of cultivation that will enable any variety of late potatoes to make even a fair crop each year. Mulching the patch with old hay or straw gives the best results. The mulch should be from six to ten inches deep when first spread on the ground.

The trouble that confronts almost every farmer in Oklahoma is, how to keep a crop of early potatoes through the summer and early fall so that he can have his own potatoes for use during the winter. This year is an extreme but it illustrates the situation all the better.

In July potatoes sold for fifty cents per bushel in Stillwater and now, December 13, they are worth \$1.20 per bushel. If the farmer could have kept the early crop the price would not have been so low in July and August nor so high now. Most farmers lose a large per cent. of their potato crop each year by the rot and count on losing it. The result is that few farmers keep enough of their own crop for family use, others buy all they use during the winter and spring and many others are not using potatoes this year.

Many methods of keeping the early crop have been tried but only a few have been even partially successful. Several methods have proved quite satisfactory one year and have been entire failures the next year, and no method that can be used by the average farmer has to our knowledge given even a fair degree of satisfaction for two or three successive years.

Four different methods of keeping the potatoes through the summer in the soil where they grew have been advocated. The

first and most common method attempted is to let the potatoes remain in the soil undisturbed till fall. This plan is almost regularly a failure. The potatoes are only two or three inches under the surface of the soil and are heated through till they rot. A rain in the middle or latter part of the summer will cause most of the sound ones to sprout. Last summer one plat was treated this way and when the crop was dug early in the fall eighty per cent. of the potatoes were rotten, and the remaining twenty per cent. have not kept well since then. In 1900 the loss on a similarly treated plat was somewhat less. In some plats where the weeds and grass were very thick the loss was about forty per cent.

Another method is to leave the potatoes in the ground and go through the field with a lister or turning plow and throw up a ridge over the row. This, if well done, will cover the potatoes with six to eight inches of soil. This work should be done as soon as the crop is mature. In 1900 a plat treated in this manner lost twenty per cent. of the crop before fall. In 1901 this plat lost sixty per cent. of the crop before September 1. There was no appreciable loss either year from sprouting. This plan is better than leaving the land level but is a very poor method. It has given fair results on sandy soil but even there failures are frequent.

In the third method the land is left level and about the time the last cultivation is given or shortly before the crop is mature, a row of cowpeas is drilled on either side of the row of potatoes as close as the drill can be run to the vines. The peas will make a good growth over the row and shade the land and reduce the amount of moisture in the soil during the summer. This plan was followed with two plats in the summer of 1900 and about sixty per cent. of the crop rotted. No difference could be seen between these plats and those left without any covering. In 1901 this plan was followed again and about seventy-five per cent. of the crop rotted.

The fourth method of keeping the crop in the field is to mulch the patch with straw or old hay in the spring or in the summer after cultivation has ceased. Plats mulched in the spring of 1900 and the crop dug in the fall lost by rot about five per cent. Plats treated in the same way in 1901 lost about fifteen per cent. by rot. This is by far the best of the four methods just discussed. It is a practicable method to follow on farms where potatoes are grown only for use. The potatoes kept in this way in better condition and have a better appearance than those kept through the summer in a

cave. The mulched plats will on an average keep as many bushels per acre until fall as the cultivated plats will yield if dug as soon as the crop is mature.

Keeping the potatoes by packing them in sand in the cave resulted in a loss of twenty-five to fifty per cent. by rot. In the first lot the potatoes were packed in a box of sand so that no two touched each other or the sides or the bottom of the box. In the second lot each potato was wrapped in paper and then packed in the sand the same as the first lot. There was very little if any difference in the per cent. rotten in the two lots. Both lots sprouted worse than other potatoes in the cave. A few were wrapped in paper and placed in a box in the cave. This bunch lost about twenty per cent.; the same as other potatoes placed in the cave at the same time.

Quick or unslacked lime was pulverized and dusted over the potatoes, in a bin in the barn, so that every potato was covered with the fine dust. They were placed in the bin July 6, 1901, and the lime dusted on immediately. They were removed October 1, and had lost forty-one per cent. by rot. Another lot was dusted with lime in the same way at the same time and placed in the cave. This lot lost ninety per cent. by rot.

Copper sulfate (blue vitriol) was pulverized and dusted very lightly over one lot of potatoes on July 6 and they were immediately placed in a bin in the barn. This lot lost forty per cent. by rot by October 1.

Salt was pulverized and dusted over a lot of potatoes about the middle of July. They were placed in the cave where it took about four weeks for the entire lot to decay.

One lot of potatoes was coated with paraffin by dipping each one in melted paraffin. The temperature of the paraffin was 160 degrees Fahrenheit, and the potatoes were simply dipped in and lifted out immediately. This gave a very thin but practically air-tight coating to each one. The potatoes were all clean and sound. The work was done in July 1901 and the entire lot decayed in two weeks.

Dipping the potatoes in Bordeaux mixture, ammoniacal copper carbonate, and formaldehyde, was tried but the results indicate that the work does more harm than good. The potatoes dipped in any one of these solutions rotted two to six times as rapidly as those not treated.

Keeping potatoes in an open shed has been advocated and practiced by some farmers. Mr. J. W. Poling of Oklahoma City says: "I kept some potatoes one year by placing them in a corn crib as soon as they were dug. The crib was well covered and so situated that the sun could not strike the potatoes. They were simply placed on the floor of the crib in early summer and left there until fall, and kept in fair condition. The second trial, however, ended in a failure."

This method was tested here and resulted in a failure. The potatoes were sorted and only the good ones used. The sound potatoes were spread about two or three deep on the floor of a small bin in a closed shed at the north end of the barn. They were not handled or moved in any way during July, August and September. When they were taken from the bin, October 1, twenty-one per cent. were rotten. A similar test in the summer of 1900 resulted in about forty per cent. rotten.

Good results have been obtained at times by piling the potatoes on straw in the shade of trees and then covering the pile with about two feet of straw. A heavy rain will cause all of the potatoes to sprout or rot. The test of this method here last summer resulted in seventy-seven per cent. of the pile rotting. The test lasted from July 6 to September 30. There was not enough rain during the summer to wet through the covering and wet the potatoes.

The average cave will not keep the crop through the summer. The Bliss Triumph lost about fifteen per cent. of those placed in the cave early in the summer in 1901. The average temperature was 73 degrees. Those that did not rot sprouted badly and are now unfit for table use. There is a great difference, however, in results, depending upon the way the potatoes are handled and stored. Those piled on the floor of the cave rotted badly, those left in sacks kept somewhat better but are in a very bad condition now. Those kept in small boxes or crates did the best and justify the statement that in good caves good potatoes may be kept through the summer with little loss of properly handled.

If the potatoes are to be stored in the cave through the summer they should be dug as soon as growth has ceased. If they remain in the ground until they are ripe their keeping qualities will be greatly impaired. This is especially true if the patch is not mulched. The potatoes that are a little green when dug keep bet-

ter in caves than those that are mature. The green ones will wilt if kept in too dry a place but if the cave floor is a little moist they will keep in fair condition. They require ventilation but should not be in a direct draft of air.

The heat is no doubt the principal cause of decay. In testing this last summer, it was found that freshly dug potatoes were badly damaged by being heated to 110 Fahrenheit degrees while those that had been dug for some time and wilted a little could be heated to 120 degrees without any noticeable harm being done to their keeping qualities. Heating potatoes to 100 degrees for one hour each day did more harm than heating to 110 degrees for the same number of hours taken consecutively. Potatoes placed in closed or nearly air-tight vessels and heated to 100 degrees and left in these vessels decayed in two weeks.

The best method tested is to grow the potatoes under a mulch of hay or straw and leave them in the ground till fall. If rain should cause them to start to sprout or decay they should be dug and stored in small boxes or crates in a cave. If the patch is not mulched the crop should be dug as soon as matured and stored in a cave. The potatoes should not be left in the sun but should be taken to the shade as fast as they are dug.

VARIETY TESTS OF CABBAGE.

O. M. MORRIS.

A variety test of cabbage has been carried on for the last two years. The plants were started in the hot bed and set in the field as soon as the conditions of the weather would permit. The plants were set three feet apart in rows three and one-half feet apart in 1900, and in rows six feet apart in 1901. The following table gives the name and yield of each variety. In 1900 twenty-five plants of each variety were set. In 1901 thirteen plants of each variety were set.

	1900			1901		
	No. of Heads	Total Weight		No. of Heads	Total Weight	
		Lbs.	Oz.		Lbs.	Oz.
North Carolina Winter.....	18	65	14	Not Planted	.....	.....
Augusta Early Trucker.....	20	43	9	Not Planted	.....	.....
Early Jersey Wakefield.....	17	34	1	Failure	.....	.....
Early Winningstadt.....	5	4	6	Failure	.....	.....
Large Early York.....	10	15	1	Failure	.....	.....
Dwarf Early York.....	6	9	6	3	.....	6
Extra Early Etampes.....	7	11	10	Failure	.....	.....
Surehead.....	19	26	12	2	4	14
Early Express.....	6	6	5	Failure	.....	.....
Fottler's Impr'v'd Brunswick	8	11	1	Failure	.....	.....
Large Late Drumhead.....	16	25	4	3	6	9
Henderson's Early Summer.	13	25	10	5	4	2
Allseasons.....	20	50	10	1	.....	12
Premium Late Flat Dutch.....	16	24	.....	2	2	12
Drumhead Savory.....	2	1	5	Failure	.....	.....
Mammoth Rock Red.....	14	9	1	1	.....	6
Early Dwarf Flat Dutch.....	14	31	1	Failure	.....	.....
Mammoth Marble Head.....	17	24	4	1	.....	6
Excelsior.....	13	28	6	6	9	3
World Beater.....	18	20	4	Not Planted	.....	.....
Vandergraw.....	21	27	11	Not Planted	.....	.....
Henderson's Early Summer.	20	32	15	Not Planted	.....	.....
Lupton.....	22	44	11	Failure	.....	.....
Allhead Early.....	22	62	14	2	.....	9
Henderson's Succession.....	14	21	14	Not Planted	.....	.....
Green Glazed.....	1	.....	12	Not Planted	.....	.....
Safe Crop.....	20	35	13	Not Planted	.....	.....
Early Spring.....	17	27	11	Failure	.....	.....
Filderkraut.....	21	21	12	Not Planted	.....	.....
New Savory.....	6	1	11	Failure	.....	.....
Hollander.....	Not Planted	.....	.....	3	2	6
Succession.....	Not Planted	.....	.....	2	1	6
Golden Sugar Winter.....	Not Planted	.....	.....	Failure	.....	.....
Louisville Drumhead.....	Not Planted	.....	.....	Failure	.....	.....
Large Jersey Wakefield.....	Not Planted	.....	.....	Failure	.....	.....

NOTES ON VARIETIES.

North Carolina Winter; stem short; head nearly round, soft until almost grown; leaves large; midseason.
Augusta Early Trucker; stem short; head round to flat; medium firm throughout growth; rots badly at stem; midseason.
Early Jersey Wakefield; stem medium length; head long, conical, medium firm; sun-scalds badly, decays as soon as mature; early.

Variety Tests of Cabbage.

Early Winningstadt; stem medium length; head conical, firm; sunscalds and decays badly; early.

Large Early York; stem medium length; head long, firm, rots soon after maturity; early midseason.

Dwarf Early York; stem short; head long, very firm, decays and sunscalds badly; Very early.

Extra Early Etampes; stem short; head long, firm; early. A good variety.

Surehead; stem medium length; head round or flat, firm; late. A good variety.

Early Express; stem medium length; head conical to round, sunscalds badly; early. Very poor.

Fottler's Improved Brunswick; stem short; head flat, very firm; midseason.

Large Late Drumhead; stem long; head flat, firm when mature; late.

Henderson's Early Summer; stem very short; head flat, cracks badly, but does not rot; early midseason.

Allseasons; stem medium length; round or slightly flattened, very firm throughout growth; late. Good.

Premium Late Flat Dutch; stem short; head firm, flat; stands drouth very well. A very good late cabbage.

Drumhead Savory; did not head.

Mammoth Rock Red; stem tall; head round, firm; late.

Early Dwarf Flat Dutch; stem medium length; head round, very firm; early; sunscalds and rots badly.

Mammoth Marble Head; stem medium length; head round, firm, free from rot and sunscald, late.

Excelsior; stem medium to long; head, round firm, free from rot; late. Good.

World Beater; stem medium length; head round, very firm; late.

Vandergraw; stem short; head round, free from sunscald and rot; late.

Lupton; stem long; head flat, firm; midseason; good.

Henderson's Succession; stem medium length; head flat, firm; midseason.

Green Glazed; stem long; head small. Not good. Late.

Safe Crop; stem short; head flat, firm; late.

Early Spring; stem short; head flat, firm; early.

Filderkraut; stem medium length; head conical; late.

New Savory; stem short, head very small, soft. Not good.

Hollander; stem tall; head small, round, firm throughout growth; late.

Succession; see *Henderson's Succession*.