TEXAS AGRICULTURAL EXPERIMENT STATIONS.

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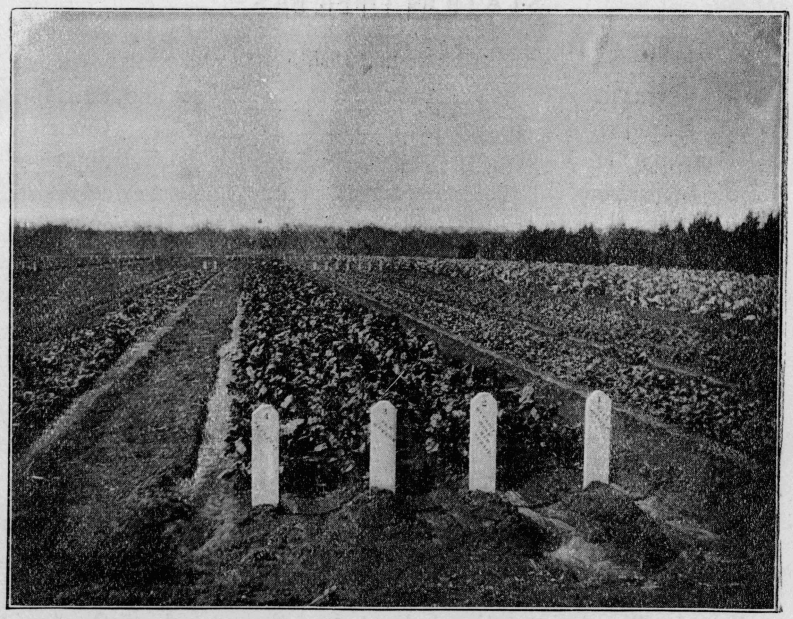
ONIONS AND BUNCH CROPS

AT BEEVILLE.

1. ONIONS
2. BEETS
3. RADISHES
4. LETTUCE
5. CARROTS AND TURNIPS.



View of some plats used in these experiments; variety beet test in the foreground.

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ONIONS AND BUNCH CROPS AT BEEVILLE.

BY J. K. ROBERTSON AND EDWARD C. GREEN.

As early as the year 1900 the growing of winter onions had become an industry of such promise as to warrant this Station in investigating some of the problems which confronted the grower of this crop. During that year detailed tests were made of the comparative cost of hand and horse culture, with the result that hand culture with appropriate gardening implements proved the more economical. Previous to 1900, and since then, repeated tests of varieties have shown that for general purposes the Bermudas are the most desirable and profitable; the Red Bermuda giving uniformly the best satisfaction. In Bulletin No. 5, of the Beeville Station, entitled "Growing Onions," the most approved methods of producing the crop were discussed and recommended, and definite results of the above mentioned tests were given. The demand for this report soon exhausted the edition, and consequently a press bulletin was published on the same subject.

Recently the increased practice of irrigation has brought another problem before the onion grower, and the question as to what extent irrigation pays, is one of lively interest to those who have made fair crops without irrigation, but now begin to feel the competition of growers who are equipped to supply water when drouth threatens injury to the onion field. The present bulletin treats in part of the cost, culture and yields of irrigated and unirrigated plats on the Station ground. Estimates have been eliminated as much as possible in favor of actual expenditures; the cost of labor, irrigation, etc., is the full actual cost, and the returns from sales are the net cash receipts subsequently turned into the treasury of the State of Texas.

The variety test of onions has been continued, and the results of the past season's work are here reported. This experiment is considered desirable and necessary, not only that the Station may be in the van in the investigation of new sorts of possible commercial importance, but, also, that there may be a reliable record for the guidance of the many strangers who are making their homes in South Texas. Of these, the majority have confidence in varieties which are standard in the old States, but which persistently fail with us, and the variety tests of onions and of other vegetables are reported that failure and discouragement may be averted from those who care to advise themselves.

Owing to the rapidly increasing interest in bunch crops and the meager fund of information available on the subject, the Station has taken up a series of what may be termed plain yield tests of the various kinds of vegetables involved. Plats were used of size sufficiently large to make results comparable to practical field condi-

tions, and accurate data on the operations, cost of same, returns, etc., were kept and are herewith recorded. When failure occurred the causes are set forth that others as well as ourselves may profit by them. In addition to the investigations on the cost of production, etc., variety tests were made with each of the crops under consideration, and the results with recommendations for the commercial grower are appended wherever warranted by the data in hand.

As recently as 1902 but few isolated boxes or barrels of bunch vegetables were shipped from points in South Texas, and up to the present time the writers are not aware that any solid carloads have been sent to Northern markets. It is safe to prophesy, however, that within a season or two the Beeville section alone will ship solid cars of radishes, beets, lettuce, turnips, spinach and other crops not now so commonly grown as the ones mentioned.

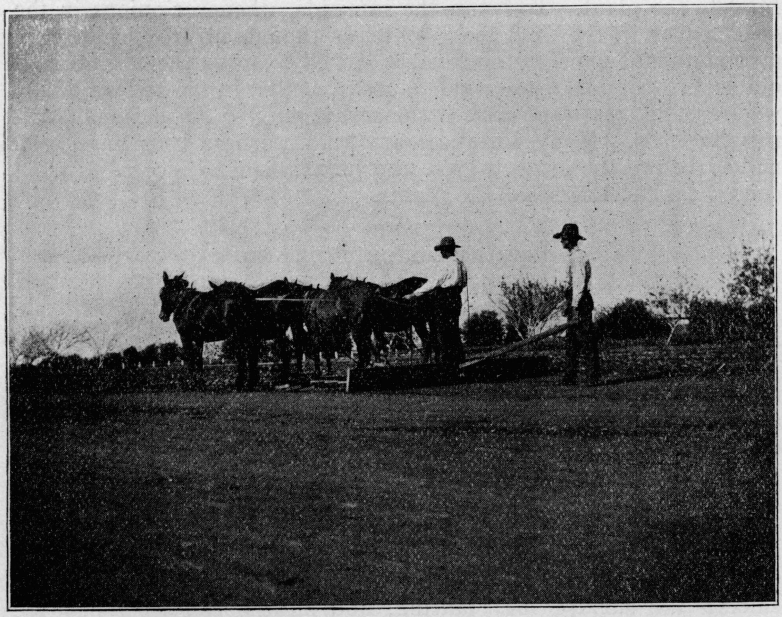
I. EXPERIMENTS WITH ONIONS.

SEED BEDS.

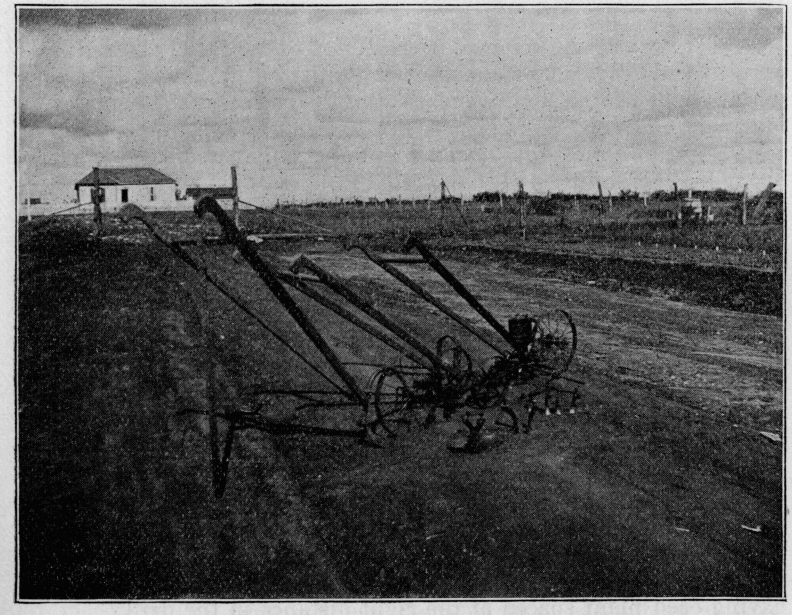
The seed beds for both the irrigation experiment and the variety test were prepared, seeded and cared for in the same manner. A rich, sandy, gray loam was selected and broken with a plow, after which it was worked over with a spading fork to the depth of four or five inches. No fertilizer was used, although had the soil been less fertile a good dressing of well-rotted cow-pen manure would have been applied. Excepting the varieties which of necessity had to be planted in short rows by hand, the seeds were drilled in with a planter lengthwise of the bed, and the rows spaced about three inches apart. The seeds were placed a half-inch deep in the drill, and six ounces were required to plant the 4x50 foot bed. Five or six such beds will furnish sufficient plants to set an acre of onions in fifteen inch rows, four inches apart in the drill. Whenever it appeared that water was needed the seed beds were sprinkled and thoroughly wetted, the application being made preferably about the middle of the day.

INSECTS.

Thrips appeared in the seed beds in December and were promptly destroyed by an application of two pounds of whale oil soap dissolved in six gallons of water. The solution was sprayed over the bed very thoroughly, and no further trouble was experienced. This insect appears frequently in the field as well as in the seed beds, and may be recognized by the whitish appearance of the parts attacked. When the infestation has reached an advanced stage the leaves have a sticky feeling when drawn through the fingers. This pest is by far the most common and the most serious foe of the onion, and on account of its minute size, being about that of the chicken mite, it is often overlooked, even when present in numbers



Leveling field for onion setting.



Tools used in the onion work.

Single wheel hoe at left. Double wheel hoe at center. Garden seed drill at right. Cultivator shovel, hoes and teeth in foreground.

fatal to the plant. To be on the safe side, whenever onions in the seed bed or in the field look sickly, as though injured by drouth, over-abundant moisture or frost, it is well to spray them with from one to two pounds of the whale oil soap melted in six gallons of hot water. The treatment costs little, and it may be the means of saving the crop. Many instances are known where beds have been ruined before the owner's eyes, and he has had no idea as to what caused the "sickness" of the plants.

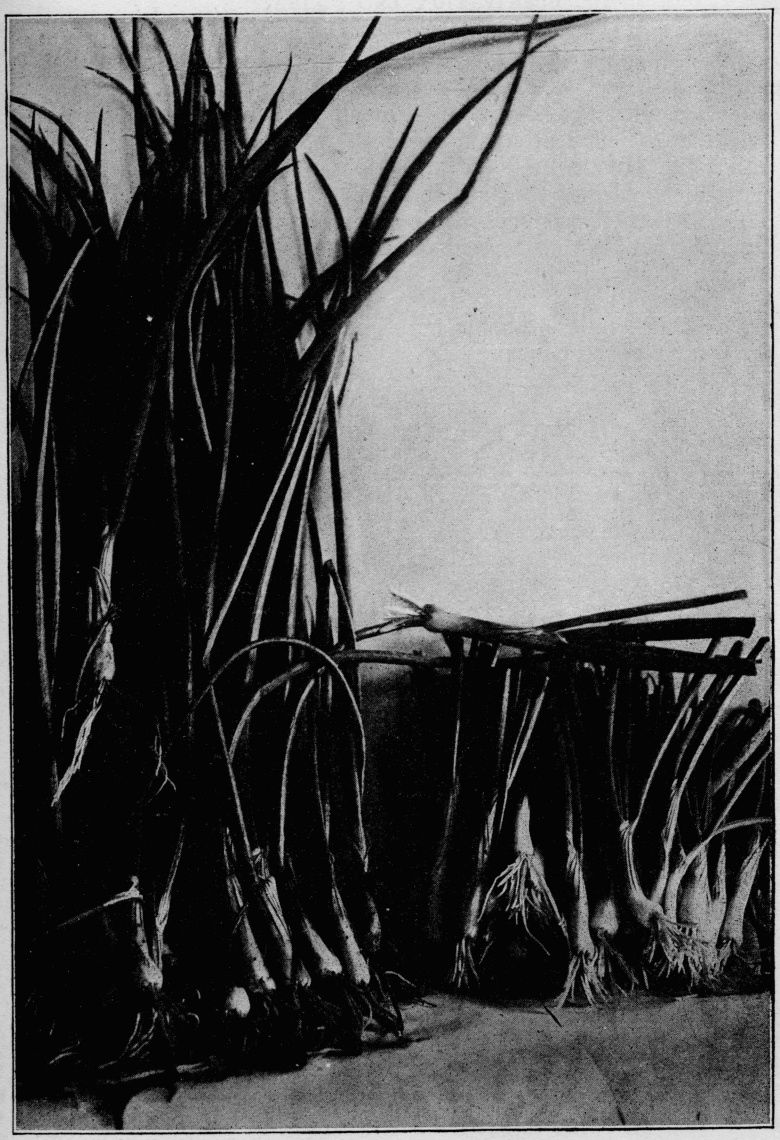
PREPARATION OF THE LAND.

The soil used for the onion field was a rich, black loam containing some sand, and, though naturally rich, it was not especially fertile at the time of the experiment, owing to the continuous cropping of previous years. During September the land was plowed seven inches deep with a single disk and harrowed thoroughly, and on December 17th it was again broken with a turning plow set six inches deep and harrowed. On January 30th furrows were laid off two and a half feet from center to center, using a twenty-four-inch sweep, and water applied at the rate of 40,000 gallons per acre. February 2d the field was leveled with an Acme pulverizer, cultivated three inches deep with a five-tooth cultivator, and planked to smooth the surface for planting, and on the following day the onions were set for both experiments.

SETTING.

Preparatory to the removal of seedlings to the field, the seed beds were soaked by flooding and the plants drawn by hand. The tops were trimmed to about five inches, and the roots cut to about three-fourths of an inch long. As a plant carrier while setting, a third of a bushel bean crate proved convenient and satisfactory. This box is 8x5x22 inches, and may be converted into an onion plant carrier by tacking on the piece usually used at a top and leaving off one of the eight-inch sides. A basket bail nailed on lengthwise makes a good handle, and the narrowness of the box allows it to sit between planted rows.

The rows are laid off with a line, but in making large plantings it would be more economical to use a four-runner slide marker, by which means three rows could be laid off in less time than required for one with a line. It has been advised for sandy soils that a good marker can be made of from two to four old buggy wheels adjusted on an axle to which handles for drawing and guiding have been attached. The wheel spokes should be cut down to within a few inches of the hubs and sharpened so that as the marker is drawn forward each spoke punches a hole every four or five inches along the line. By this means of marking it is claimed that much labor is saved in making holes, and that there is the further advantage of having each plant spaced at the right distance in the drill.



Onions prepared for setting.
On left as drawn from seed bed. *On right as trimmed for planting.*

CULTIVATION AND IRRIGATION.

As soon as planted a double wheel hoe was run over the rows to stir the soil, and double and single wheel hoes were used at frequent intervals until the first of May, about one week before harvesting. In all, eight cultivations and one hoeing were given the varieties, and a like treatment to the irrigated and unirrigated plats except that in the case of the former the hand hoeing was not necessary. The cultivation was such as is generally described as shallow and frequent with a view toward preserving a dust mulch. After each irrigation or rain the soil was stirred to break the crust and aid in the conservation of moisture. At no time was the cultivation deeper than one and one-half inches, and no attempt was made to draw earth toward or away from the plants.

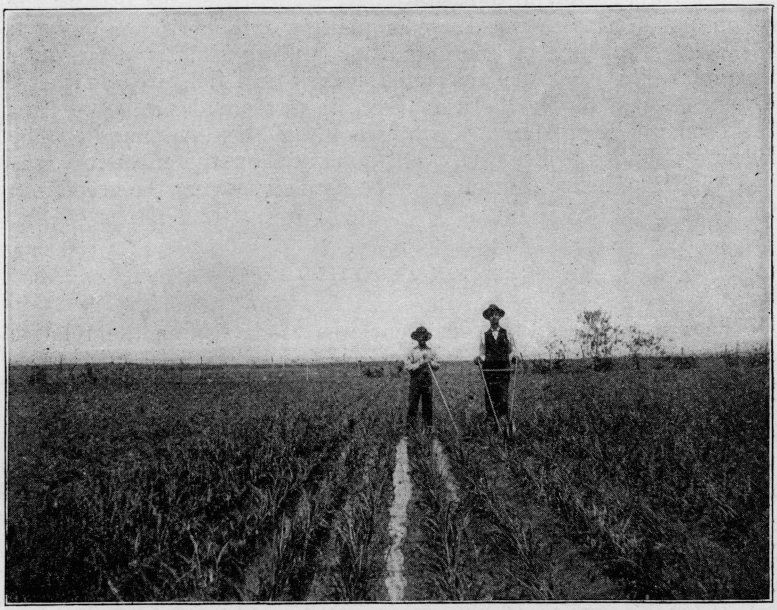
After the preparatory irrigation all except the check plat received four more, each of the first three being at the rate of 30,000 gallons per acre and the fourth 40,000 gallons. Although no exact rule can be given as to when to apply water, for experience alone can teach the beginner, yet it may be said that as long as the earth beneath the surface inch "balls" well under the pressure of the fingers (sticks together when pressed and does not crumble apart), the plants are not likely to suffer for a day of two, and it may be said further that an irrigation every ten days, with proper cultural treatment, will suffice an onion crop even through a dry season.

FERTILIZERS.

A fertilizer, mixed at the Station and containing 5 per cent nitrogen, 6 per cent phosphoric acid and 9 per cent potash, was applied March 4th at the rate of 500 pounds per acre, and worked in at each side of the rows by means of the two-wheeled fertilizer distributor. This treatment had a noticeably beneficial effect on the plants, and it is a question whether or not earlier application would have proved of greater value.

HARVESTING.

When, on May 10th, about 85 per cent of the onions, by the falling and whitening of the tops, showed a sufficient degree of maturity, the irrigation plats and some of the varieties were harvested. The onions were pulled by hooking the finger under one side of the bulb and drawing them from the ground, a wooden blade being used to assist the hand where the soil was hard. Three rows were drawn together in a windrow and the onions left to dry in the sun for a few hours before being topped and sacked. For topping and trimming a sharp knife is convenient, and when one becomes used to handling it the work goes on very rapidly. The top should be cut off about half an inch from the bulb, the onion reversed and the roots trimmed close. It is important that the knife be kept



Irrigating the onion field. Opening furrow with hand plow. Guiding the water.

Onions—desirable market size—4½ to 5 inches in diameter.

sharp as otherwise the tops are partly pulled off, thus tearing the onion and destroying the keeping qualities. Over-ripe onions and those left too long in the sun after pulling usually prove poor keepers. The crop was marketed locally and delivered in sacks. When shipped to Northern markets it is more desirable to pack the good grades in standard crates holding fifty-two pounds. The Bermuda onions bruise easily and quickly show the effects of careless handling, hence caution must be used in moving the crop from the field to market.

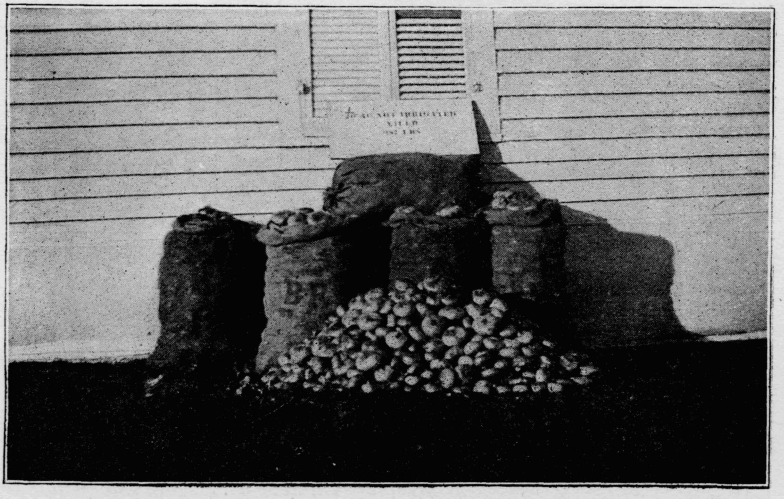
IRRIGATION AND YIELD TEST.

The purpose of this experiment was to determine the relative cost and yields of irrigated and unirrigated onion crops, with especial reference to the quantity, cost and value of water required. The plats employed contained one-twentieth acre each, and the seed used was imported Red Bermuda.

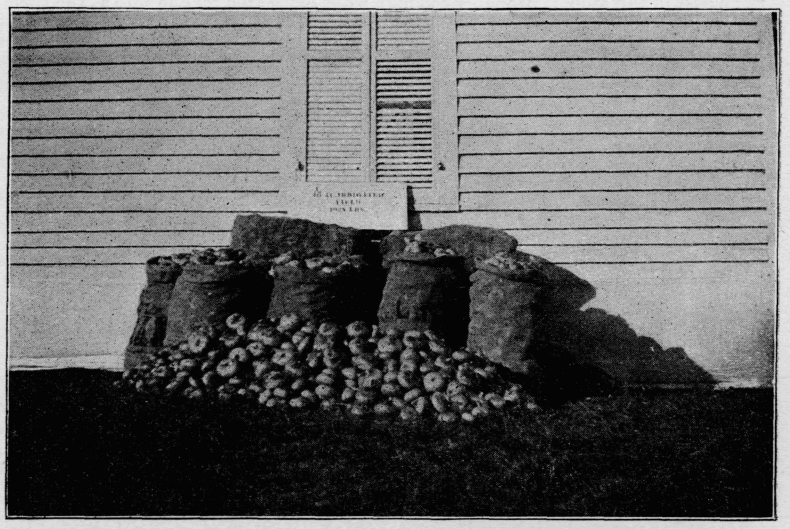
The rainfall for the winter and spring of 1903-1904 was as follows:

Nov. 5, 1903..... .30 inches.	Dec. 31, 1903..... .11 inches.	Apr. 3, 1904..... .16 inches.
Dec. 4, 1903..... 1.85 inches.	Jan. 2, 1904..... .03 inches.	Apr. 6, 1904..... .83 inches.
Dec. 12, 1903..... .20 inches.	Jan. 4, 1904..... .07 inches.	Apr. 29, 1904..... 1.22 inches.
Dec. 17, 1903..... .05 inches	Jan. 28, 1904..... .09 inches.	May 2, 1904..... .43 inches.
Dec. 18, 1903..... .03 inches.	Feb. 20, 1904..... .37 inches.	May 4, 1904..... .78 inches.
Dec. 25, 1903..... .15 inches.	Apr. 2, 1904..... .53 inches.	May 6, 1904..... 1.03 inches.

As the plants were not large enough to go to the field early in December, it was impossible to take advantage of the rain which occurred on the 4th of that month, and as there were no further rains of any consequence for weeks, it began to appear toward the end of January that the experiment would be impossible, owing to the continued drouth, which would have made the setting of the unirrigated plat wholly useless. When February came in and there was still no prospect of rain it was decided that one irrigation should be given each plat. This was accordingly done, and the onions set. Without this preparatory irrigation the planting of the check plat would have been impossible, and it may be said that during a season such as the one under discussion the production of onions without irrigation is practically impossible. However, the drouth of last winter is unusual in this section, and it seldom occurs that the rainfall is insufficient to enable the trucker to set his onions in the field. This being the case, it was not entirely unfair to allow the one preparatory irrigation given the check plat in lieu of the rain which usually occurs during the winter months.



Yield from 1-20 acre given only preparatory irrigation—987 pounds.



Yield from 1-20 acre irrigated plat—1928 pounds.

Irrigation and Yield Test of Onions.

Date.	Operations, etc., on $\frac{1}{20}$ acre plats.	Cost.			
		Irrigated plat.	Estimate for one acre.	Check, or unirrigated plat.	Estimate for one acre.
1903.					
Dec 17	Plowing and harrowing land	$ .10	$ 2 00	$ .10	$ 2 00
1904.					
Jan. 30	Laying off furrows and irrigating for planting	.10	2 00	.10	2 00
Jan. 30	2000 gallons water	.08	1 60	.08	1 60
Feb. 2	Leveling (Acme pulverizer, cultivator and planker)	.10	2 00	.10	2 00
Feb. 3	Transplanting to field	.45	9 00	.45	9 00
Feb. 3	13, 26, March 12, 28, April 9, 18 and May 3, cultivation.	.18	3 60	.18	3 60
Feb. 11	March 10, 25, and April 16, irrigation (labor)	.24	4 80	.....	.....
	8350 gallons water (4 irrigations) at 4 cents per 1000.	.33½	6 70	.....	.....
Mar. 4	Fertilizer at rate of 500 pounds per acre	.58	11 60	.58	11 60
May 10	Pulling, trimming, sacking and weighing crop	.71	14 20	.50	10 00
Apr. ...	Hand hoeing and weeding	.....	.....	.25	5 00
May 10	Sacks at 8 cents each	1.52	30 40	.80	16 00
	*Watering and labor on seed beds (estimated)	.25	5 00	.25	5 00
	†6 ounces imported Red Bermuda seed	.42½	5 06	.42½	5 06
	Totals	$5.07	$97 96	$3.81½	$72 86

*The cost of this item is probably too high when estimated for one acre as the time required to care for six beds would not be as great proportionally as that required for one.

†Much more seed was used for this experiment than was required, hence the reduced cost of seed estimated for one acre.

YIELDS.

The yield from the irrigated plat was 1928 pounds, of which only two pounds were not marketable; the yield from the unirrigated or checked plat was 987 pounds, 6 ounces, of which twelve pounds were not marketable. Estimated to an acre basis, the yields were, respectively, 676 bushels 28 pounds and 349 bushels and 54 pounds. The onions were sold at Beeville at 2 cents per pound, making the actual returns from the one-twentieth acre irrigated plat $38.52, and from the check plat $19.51, and the profits $33.45 and $15.69, respectively.

REMARKS.

The difference in yield would have been greater, in all probability, had the irrigation equipment of the Station been able to supply more water. As it was, difficulties with the old engine made strictest economy with water essential, and the onions, together with the other irrigated crops, did not receive as much as was necessary to best results. At times the plat suffered from need of moisture. The cost of water was determined by the quantity of gasoline required while pumping the amount used on the onion plats. The measurement of water was made at the reservoir, and recorded without allowance for loss by seepage in the seventy-five rods of carrying ditch between the reservoir and the plats.

THE VARIETY TEST.

The preparation of the land for this experiment was the same as

that given for the onion plats already discussed, and the cultivation, fertilization and irrigation were practically identical with that of the irrigated plat.

The old favorites, the Bermudas, have demonstrated again their superiority in point of earliness and yield. Some of the new varieties deserve further trial, though none can be recommended for commercial planting.

The seed of all varieties was sown October 30, 1903, and the sets moved to the field February 3, 1904.

Variety Test of Onions.

Plat Number.	Variety.	Seedsman.	Date vegetated.	Stand.	Date of harvest.	Pounds marketable.	Pounds small onions.	Yield of 50 foot row.
			1903		1904			
1	Mammoth Red Tripoli	Wm. Henry Maule.	Nov. 7	good	June 23	20	13	33
2	Southport Red Globe	Wm. Henry Maule.	Nov. 7	good	June 23	15	12¾	27¾
3	Neapolitan Marzajola	Wm. Henry Maule.	Nov. 7	good	June 1	42	6	48
4	White Bermuda	S. A. McHenry	Nov. 7	good	May 10	48	1¼	49¼
5	Red Bermuda	S. A. McHenry	Nov. 7	good	May 10	63½	.....	63½
6	Creole	S. A. McHenry	Nov. 8	good	May 18	35½	.....	35½
7	New Mammoth Silver King	W. A. Burpee	Nov. 8	fair	June 12	46	3	49
8	Large Red Weathersfield	W. A. Burpee	Nov. 7	good	June 23	20½	17	37½
9	Burpee's Australian Yellow Globe	W. A. Burpee	Nov. 7	good	June 23	11	13	24
10	El Paso	W. A. Burpee	Nov. 9	good	June 12	40	2½	42½
11	Australian Brown	W. A. Burpee	Nov. 9	good	June 23	14½	21	35½
12	Extra Early Red	W. A. Burpee	Nov. 8	good	June 23	.....	33½	33½
13	Maule's Prizetaker	Wm. Henry Maule.	Nov. 8	good	June 23	3	18½	21½
14	Round Danvers	Wm. Henry Maule.	Nov. 8	fair	June 23	.....	18	18
15	Extra Early Cracker	Wm. Henry Maule.	Nov. 10	poor	June 28	....	14	14
16	Maule's Yellow Globe Danvers	Wm. Henry Maule.	Nov. 10	fair	June 28	4½	23	27½
17	Southport Yellow Globe	Wm. Henry Maule.	Nov. 10	poor	.....	.....	....	.....
18	Giant White Tripoli	Wm. Henry Maule.	Nov. 10	very poor	June 28	.....	5	5
19	Giant Red Vesuvius	Wm. Henry Maule.	Nov. 10	very poor	.....	.....	.....	.....

DESCRIPTIONS.

Mammoth Red Tripoli.—Size medium; color red; fairly mild flavor; inclined to make thick necks; poor keeper.

Southport Red Globe.—Globe shape; skin red; strong flavor; thick neck; matures unevenly and a poor keeper.

Neapolitan Marzajola.—Size large; shape rather flattened; skin white and thin; mild flavor; fair keeper; follows the Creole in earliness.

White Bermuda.—Large size; shape flattened; straw color; very mild flavor; fair keeper.

Red Bermuda.—Similar to the White Bermuda except in color.

Creole.—Medium size; roundish in shape; red skin; strong flavor; can be especially recommended for keeping quality.

New Mammoth Silver King.—Roundish shape; white, with thin skin; rather strong flavor; fairly good keeper, but inclined to split or make double onions instead of perfect bulbs.

Large Red Weathersfield.—Shape roundish; color dark red; very thick neck; strong flavor and poor keeping qualities.

Australian Yellow Globe.—Globe shape; dull yellow in color; strong flavor; thick neck; poor quality.

El Paso.—Size large; creamy white in color; mild flavor; matures well and a good yielder, but poor keeper. Like Silver King, inclined to make double onions.

Australian Brown.—Color dull brown; otherwise similar to Australian Yellow Globe.

Extra Early Red.—Size small; color red; roundish shape; strong flavor; thick neck; no value.

Maule's Prizetaker.—Globe shape; color yellow; medium strong flavor; thick neck; great many scullions; poor keeper.

Round Danvers.—Size small; roundish shape; skin yellow; medium strong flavor; thick neck; poor keeper.

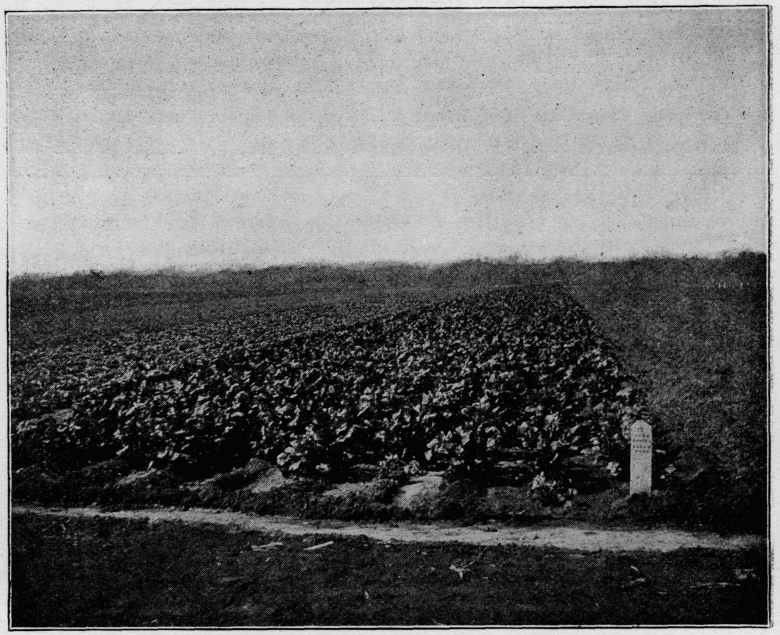
Extra Early Cracker.—Color yellow; strong flavor and poor quality; made no marketable onions.

Maule's Yellow Globe Danvers.—Similar to Round Danvers, but yellow in color and five days later.

Southport Yellow Globe.—Failed to make anything but scullions.

Giant White Tripoli.—Failed to make anything but scullions.

Giant Red Vesuvius.—Failed to make anything but scullions.



View of 1-10 acre yield test of beets.

II. BEETS.

Of the bunch crops perhaps none is considered by the South Texas truckers with more favor than the beet. It is easily grown, is less particular as to soil and stress of weather than other fall crops, and usually is in strong demand in the Northern markets throughout the winter. The bulk of the crop reaches market maturity from eighty to ninety days after seed is sown, though a less or greater time may be required according to the temperature of the winter months. With good culture and proper thinning two crops may be grown on the same soil during the interval from October to May. As a net profit of $500 per acre for a single crop is within the range of possibility, it is easily understood why this crop has become the subject of marked attention and special inquiry by those interested in truck gardens.

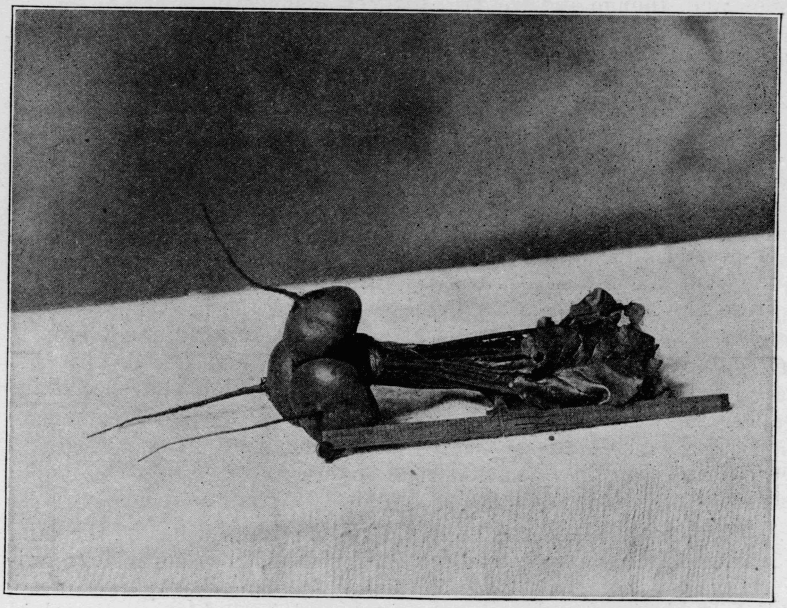
PREPARATION OF LAND.

For the yield and the variety tests the preparation of the land was as follows, except that for the yield test the preparatory irrigation was not given. In November the land was plowed deep, thoroughly harrowed and pulverized, and later furrows were laid off with a twelve-inch sweep and the land irrigated. Bat guano, at the rate of 500 pounds per acre, was sown broadcast and worked into the soil with a five-tooth cultivator.

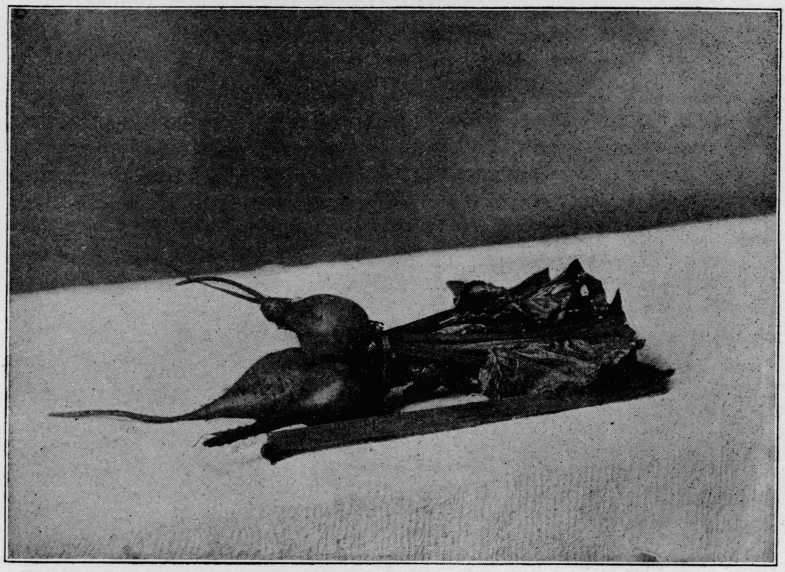
SEEDING, CULTIVATION AND IRRIGATION.

A heavy rain two days after the preparatory irrigation so soaked the ground that planting was much delayed. The seed was drilled a half inch deep in rows seventeen inches apart on December 15th, at the rate of five pounds per acre, and this operation was immediately followed by running a wheel hoe around the rows to cover with loose soil the packed track made by the planter. This is considered important for any garden crop after using the drill as it prevents the formation of a crust over the seeds, besides conserving moisture, and later, it enables the gardener to give the very small plants a cultivation without so much danger of destroying them as there would be if a crust had been allowed to form. The seed vegetated to a good stand in from six to nine days. When in third leaf the plants of the variety test were thinned to two or three inches apart in the drill. From the time of planting until the crop reached edible maturity less than one inch of rain fell, and this small amount was distributed in nine showers. Six irrigations were given, the applications varying from 18,000 to 30,000 gallons per acre, and more water would have been used had it been available. Nine cultivations were made with double and single wheel hoes.

During January and February frost and ice occurred twelve



Best type of bunch beets for winter market; small tap root, slender leaf stems and even size.



Undesirable type of bunch beets; strong tap root, coarse leaf stems and uneven size.

times, and, though the freezes were not sufficiently severe to seriously injure the crop, they had the effect of making growth slow and halting.

HARVESTING AND PACKING.

The beets of the variety test being thinned to one plant to every two or three inches matured evenly and were soon harvested, while the test yield, owing to having been grown the usual way in respect to thinning, was harvested through a period of sixty days. In harvesting the crop the beets as they reached market size (two or three inches in diameter) were pulled and conveyed to the packing shed. Here they were laid out on benches, dried and broken leaves stripped from them, tied into bunches of three to five according to size, and washed in tubs of water. After washing the tops were cut off about six inches from the crown of the beet and the bunches returned to the bench. Chipped, or ventilated, barrels were used as a shipping package, the bunches being layered in concentric rings from the center to the staves, with the roots toward the outside. From nineteen to twenty-five dozen bunches fill a barrel. For covering the top hoop was removed, burlap sacking spread over and the hoop driven back to place and nailed. No ice was used in packing, as experience has shown it to be unnecessary with this crop.

MARKETING.

The beets were sold by consignment to commission houses in Kansas City and St. Joseph, Mo., shipments being made on the following dates: March 15th, 18th, 24th, 25th, 30th, April 5th, 6th, 14th, 16th, May 1st and 15th. The best net returns were received from Kansas City sales made in March and April, and the smallest were from the same place in May. Through March and April the beets sold for 40 cents per dozen bunches, and in May at 25 cents. One shipment sent to St. Joseph in March brought 30 cents per dozen bunches at the time the Kansas City market was firm at 40 cents.

One-Tenth-Acre Yield Test of Bunch Beets.

Date.	Operations, etc.	Time required.	Cost.
1903.			
Nov. 19	Preparation of land	1 hour	$ .20
Nov. 19	Bat guano applied at the rate of 500 pounds per acre		.60
Dec. 15	½ pound Electric beet seed		.25
Dec. 15	Planting and cultivating	30 minutes	.0375
1904.			
Jan. 7	Cultivation with double wheel hoe	30 minutes	.0375
Jan. 14	Cultivation with single wheel hoe	25 minutes	.0312
Jan. 18	Laying off land for irrigation (labor)	80 minutes	.1166
Jan. 18	4000 gallons water at 4 cents per 1000		.16
Jan. 20	Cultivation with double wheel hoe	30 minutes	.0375
Jan. 29	Laying off land for irrigation (labor)	40 minutes	.0583
Jan. 29	1800 gallons water (irrigated alternate rows) 4 cents per 1000		.072
Feb. 2	Cultivation with single wheel hoe	30 minutes	.0375
Feb. 10	Irrigation, labor and 3000 gals. water at 4 cents per 1000	30 minutes	.17
Feb. 13	Cultivation with single wheel hoe	30 minutes	.0375
Mar. 8	Laying off land for irrigation (labor)	70 minutes	.1083
Mar. 8	4000 gallons water at 4 cents per 1000		.16
Mar. 10	Cultivation with single wheel hoe	40 minutes	.05
Mar. 25	Irrigation labor	40 minutes	.0666
Mar. 25	3000 gallons water at 4 cents per 1000		.12
Mar. 28	Cultivation single wheel hoe	30 minutes	.0375
Apr. 9	Cultivation single wheel hoe	40 minutes	.05
	Cost of harvesting, washing, packing, etc	98 hours	7.35
	4⅘ pounds twine		.64
	14 barrels and top sacking		2.85
	Total		$ 13.2780
	Total yield of plat was 309 dozen bunches.		
	Net returns from the 14 barrels shipped		67.51
	Profit		$ 54.23

The labor employed was that of the two Station hands, one of which received 75 cents per day and the other $1.00, which explains the difference in cost for equal amounts of time occupied in irrigation and in operating the wheel hoes. The time recorded was that actually spent on the beet plat. The total net returns of sales from this one-tenth acre plat were $67.51, and the total cost of production amounted to $13.28, leaving a profit of $54.23.

VARIETY TEST OF BEETS.

The preparation of the land, culture and irrigation was the same as that of the yield test. The qualities desired in a beet for the truck growers of this section are earliness to reach market maturity, evenness of development (so that a few pullings will gather the whole crop), slender leaf stems, small tap roots, rich red color, and good shipping properties. The size of the tap root is an especially essential point, as those with strong, thick ones do not pack well, and nineteen dozen bunches, or even less, will fill a barrel which would hold twenty-five dozens of a variety of better form. As the express rate is based on 110 pounds to the barrel, and as transportation charges form the most serious expense in marketing the crop, the practical advantage of the small tap root becomes apparent.

Of the new varieties tested the Crimson Globe and the New Meteor deserve special mention as being a great promise. The Electric is well established in the regard of the truckers as a commercial beet, and at present is the one that can be most safely recommended.

Variety Test of Beets.

Plat Number.	Variety.	Seedsman.	Planted.	Vegetated.	Reached edible maturity.	Reached market maturity.	Seeding to market maturity.	Yield of 100 foot row.	Rating, according to yield.	Per cent of crop on date of best pulling.	
										Date.	Per cent.
							Days	Bunches.			
1	Dark Stinson	Johnson & Stokes	Dec. 15, 1903	Dec. 24, 1903	Mar. 8, 1904	Mar. 17, 1904	93	94	6	Apr. 5	61
2	Detroit Dark Red Turnip	Johnson & Stokes	Dec. 15, 1903	Dec. 24, 1903	Mar. 2, 1904	Mar. 8, 1904	84	82	10	Apr. 5	38
3	New Meteor	Johnson & Stokes	Dec. 15, 1903	Dec. 24, 1903	Feb. 26, 1904	Mar. 2, 1904	78	84	8	Mar. 28	46
4	Electric	S. A. McHenry	Dec. 15, 1903	Dec. 22, 1903	Mar. 2, 1904	Mar. 8, 1904	84	95	5	Mar. 28	36
5	Edmands	Plant Seed Co	Dec. 15, 1903	Dec. 22, 1903	Mar. 13, 1904	Mar. 28, 1904	104	95	5	Apr. 5	54
6	Early Crimson Globe	Plant Seed Co	Dec. 15, 1903	Dec. 22, 1903	Feb. 26, 1904	Mar. 2, 1904	78	113	1	Mar. 28	38
7	Crimson Globe	Plant Seed Co	Dec. 15, 1903	Dec. 22, 1903	Feb. 26, 1904	Mar. 2, 1904	78	100	3	Mar. 28	40
8	Dewing	Plant Seed Co	Dec. 15, 1903	Dec. 22, 1903	Mar. 13, 1904	Mar. 28, 1904	104	98	4	Mar. 28	43
9	P. S. Co's. Improved Turnip	Plant Seed Co	Dec. 15, 1903	Dec. 21, 1903	Mar. 13, 1904	Mar. 28, 1904	104	79	11	Apr. 5	44
10	Eclipse	Plant Seed Co	Dec. 15, 1903	Dec. 21, 1903	Mar. 4, 1904	Mar. 10, 1904	86	104	2	Apr. 5	36
11	Crosby's Egyptian	Plant Seed Co	Dec. 15, 1903	Dec. 21, 1903	Mar. 8, 1904	Mar. 13, 1904	89	83	9	Mar. 28	35
12	Early Blood Turnip	Plant Seed Co	Dec. 15, 1903	Dec. 22, 1903	Mar. 13, 1904	Mar. 28, 1904	104	88	7	Apr. 5	51

DESCRIPTIONS.

Dark Stinson.—Skin dark red in color; flesh crimson with well-defined white rings; medium coarse leaves and stems; medium tap root; good, medium late variety.

Detroit Dark Red Turnip.—Medium leaf growth with slender dark red stems; small tap root; flesh dark crimson with small white rings; good second early variety.

New Meteor.—Flat turnip shaped with small tap root; skin very dark red; flesh very dark crimson and almost solid in color; sweet and tender; slender leaf stems; one of the best and earliest.

Electric.—Flat turnip shaped; flesh dark crimson with lighter rings; sweet and tender; small leaf growth and slender tap root; so far the most popular in this section for a bunch beet.

Edmands.—Inclined to globe in shape; flesh light crimson with well-defined white rings; quality poor; rank leaf growth and coarse stems; strong tap root; not desirable for shipping purposes on account of long tap root.

Early Crimson Globe and Crimson Globe.—Similar in size, shape and color; very smooth and from oblate to round in shape; flesh dark crimson, sweet and tender; very slender stems and extremely small tap root. On account of their earliness, small tap root and slender leaf stems either one is a very desirable beet for the market gardener and well worthy of a trial.

Dewing.—Pale red color; rank leaf growth and coarse stems; very coarse tap root; flesh light crimson with a good deal of white; not desirable.

Plant Seed Co.'s Improved Turnip.—Flesh light crimson, with wide white rings, coarse and woody; very large coarse leaves and stems; not desirable.

Eclipse.—Flesh light crimson; medium leaf growth and tap root; fairly good variety for home garden, but not desirable for shipping.

Crosby's Egyptian.—Flat turnip shaped; flesh very dark crimson, sweet and tender; medium leaf growth with small tap root; good variety.

Early Blood Turnip.—Flesh light crimson, almost white; rank leaf growth with stems from pale green to light red in color; strong tap root; not desirable.

III. RADISHES.

Of the bunch crops the radish is one of the most popular as it usually reaches market maturity within an average of thirty-five days from seeding, and on the same ground it is possible to raise

three profitable crops during the fall and winter seasons. A one-tenth acre yield test was conducted, and twenty-eight varieties were tested during the fall and winter of 1903-1904. The preparation of the soil was the same as that given the beets except that no fertilizer was applied.

THE YIELD TEST.

On December 10th the seed was drilled at the rate of eight pounds per acre in rows seventeen inches apart, and the planter followed by a wheel hoe. The distance between rows was greater than necessary, fifteen inches being the usual space, but unlevel ground at the time of planting made the wide rows desirable that irrigation water might be more easily handled. Cultivation was given entirely with wheel hoes, and one irrigation sufficed for the crop. Harvesting was practically the same as for the beets, except that the tops were not cut.

ICING.

To prevent heating during shipment and to preserve the crisp freshness on which the market value largely depends, it is necessary to use crushed ice in packing. The barrels are not ventilated as for beets, but four half-inch holes are bored in the bottom to allow an escape for the water from the melted ice. The radishes were packed in a manner similar to the beets, i. e., in concentric circles, tops towards the center and roots towards the staves. The layers were pressed in closely until the barrels were slightly over one-third full, when the first layer of ice was put in. The second layer of ice was placed when two-thirds full and the final layer was put on when the barrels were filled. Enough radishes were heaped on top of the last layer of ice to provide filling for the barrels as the ice melted so that on arrival at destination they would be about level full. The ice was broken up so that no lump was larger than a hen's egg, and fifty pounds per barrel were required. A little over one-fourth of the ice was used in the lowest layer and the remainder was divided equally between the upper ones. With the icing above described the radishes reached market in good condition without damage or loss.

MARKETING.

The crop harvested amounted to 169 dozen bunches of from twelve to sixteen radishes per bunch, and four barrels were required in packing them for shipment. Sales were made through commission houses at Kansas City and St. Louis, Mo., the best returns being from a barrel of thirty-nine dozens which netted $11.84, and the smallest being from a barrel of forty-six dozens which netted $5.82.

One-Tenth Acre Yield Test of Radishes.

Date.	Operations, etc.	Time required.	Cost.
1903			
Dec. 10	1 pound seed		$ .40
Dec. 10	Drilling seed	40 minutes	.07
1904			
Jan. 7	Cultivation, double wheel hoe	30 minutes	.0375
Jan. 14	Cultivation, single wheel hoe	20 minutes	.0250
Jan. 18	Laying off rows for irrigation	30 minutes	.0375
Jan. 20	Cultivation, double wheel hoe	30 minutes	.0375
Jan. 18	1 man irrigating	40 minutes	.07
Jan. 18	3000 gallons water at 4 cents per 1000		.12
Jan. 22	23 and 25, pulling radishes (75 cents per day labor)	16 hrs. 55 min.	1.2687
Jan. 22	23 and 25, washing and tying (75 cents per day labor)	22 hrs. 26 min.	1.6825
Jan. 22	23 and 25, packing ($1.00 per day labor)	1 hr. 45 min.	.175
	4 second hand sugar barrels at 15 cents		.60
	200 pounds ice at 50 cents per cwt.		1.00
	2 balls twine at 4 cents		.08
	Total		$ 5.6037
	Total net returns from sale of 4 barrels (169 dozen bunches)		39.27
	Profit per one-tenth acre		33.67

REMARKS.

On the night of January 25th the experiment was brought to a sudden termination by a freeze of sufficient severity to coat still water with a quarter inch of ice. The remaining radishes on the plat were pulled and it was estimated that about one and one-half barrels (sixty-five dozens) had been destroyed.

THE VARIETY TEST.

The experience of truck growers shows the turnip rooted varieties to be the most desirable for the Western markets, and of these the Scarlet White Tipped is the most popular owing to its attractive appearance. The results of this test of twenty-eight varieties give no reason for departing from the established practice of growing the above named variety, but some interesting facts were obtained as to the action of certain other sorts on our black, sandy soil which may be of value as an acquisition to the truckers fund of general information. The Round Scarlet Chinese and the Icicle are worthy of trial for the kitchen garden as they were of best table quality. Of the long-rooted varieties all became pithy or hard and woody before reaching suitable market size except Nos. 11, 15 and 22 of the following table. When a long-rooted sort is wanted for market, Nos. 15 and 22 are most to be recommended. All of the turnip-rooted varieties mature, as a rule, in from thirty to forty days, depending on conditions of temperature and moisture. In this test Nos. 2, 4, 5, 6, 14, 19 and 21 reached market maturity in thirty-six days from planting.

In the following table bunches are estimated on a basis of twelve to sixteen radishes of the turnip-rooted sorts and eight to twelve of the half long and long.

Variety Test of Radishes.

Plat Number.	Variety.	Seedsman.	Date of planting.	Date of market maturity.	No. bunches to 100 ft. row.
1	Vicks Scarlet Globe	Wm. Henry Maule.	Dec. 11, 1903	Jan. 18, 1904	36
2	New Lightning Scarlet Turnip	Wm. Henry Maule.	Dec. 11, 1903	Jan. 16, 1904	32
3	New Triumph	Wm. Henry Maule.	Dec. 11, 1903	Jan. 18, 1904	24
4	Early Scarlet Olive Shaped	Wm. Henry Maule.	Dec. 11, 1903	Jan. 16, 1904	92
5	Early Round Dark Red	Wm. Henry Maule.	Dec. 11, 1903	Jan. 16, 1904	110
6	Scarlet Turnip White Tipped	S. A. McHenry	Dec. 11, 1903	Jan. 16, 1904	106
7	French Breakfast	Plant Seed Co	Dec. 11, 1903	Jan. 18, 1904	72
8	Early White Turnip	Plant Seed Co	Dec. 11, 1903	Jan. 18, 1904	108
9	Early Half Long Bright French Breakfast	Plant Seed Co	Dec. 11, 1903	Jan. 18, 1904	66
10	Long White Spanish	Plant Seed Co	Dec. 11, 1903	Feb. 26, 1904	100
11	Market Gardeners' Long Scarlet	Plant Seed Co	Dec. 11, 1903	Jan. 24, 1904	183
12	Round Scarlet Chinese	Plant Seed Co	Dec. 11, 1903	Feb. 2, 1904	140
13	Golden Dresden	Plant Seed Co	Dec. 11, 1903	Jan. 20, 1904	68
14	Turnip Erfurt Dark Red	Plant Seed Co	Dec. 11, 1903	Jan. 16, 1904	53
15	Chartier	Plant Seed Co	Dec. 11, 1903	Jan. 24, 1904	115
16	Rose Colored China	Plant Seed Co	Dec. 11, 1903	Feb. 15, 1904	108
17	California White Mammoth	Plant Seed Co	Dec. 11, 1903	Feb. 26, 1904	150
18	Icicle	Plant Seed Co	Dec. 11, 1903	Jan. 20, 1904	112
19	Turnip Scarlet Globe	Plant Seed Co	Dec. 11, 1903	Jan. 16, 1904	102
20	The Gem	Plant Seed Co	Dec. 11, 1903	Jan. 19, 1904	86
21	Turnip Non Plus Ultra	Plant Seed Co	Dec. 11, 1903	Jan. 16, 1904	48
22	Early Short Top Long Scarlet	Plant Seed Co	Dec. 11, 1903	Jan. 24, 1904	180
23	Long Black Spanish	Plant Seed Co	Dec. 11, 1903	Feb. 26, 1904	112
24	Turnip Triumph	Plant Seed Co	Dec. 11, 1903	Feb. 2, 1904	30
25	Olive Shaped Deep Scarlet Forcing	Plant Seed Co	Dec. 11, 1903	Feb. 2, 1904	68
26	Early Scarlet Turnip	Plant Seed Co	Dec. 11, 1903	Jan. 28, 1904	60
27	Round Black Spanish	Plant Seed Co	Dec. 11, 1903	Feb. 26, 1904	65
28	Cardinal	Plant Seed Co	Dec. 11, 1903	Jan. 28, 1904	120

DESCRIPTIONS.

Vicks Scarlet Globe and New Lightning.—Similar in size shape and color; olive to roundish; color scarlet; flesh firm, and mild in flavor; medium leaf growth.

New Triumph.—Color white, white streaked with red, and red; of no value except as a novelty.

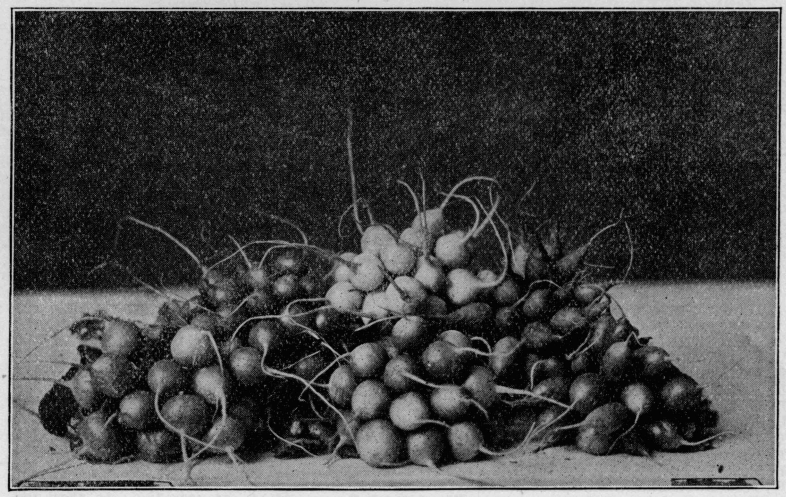
Early Scarlet Olive Shaped.—Color scarlet; roots from olive to half long; quality poor, not desirable.

Early Round Dark Red.—Color dark red; root roundish; flesh firm; mild; medium leaf growth; good variety.

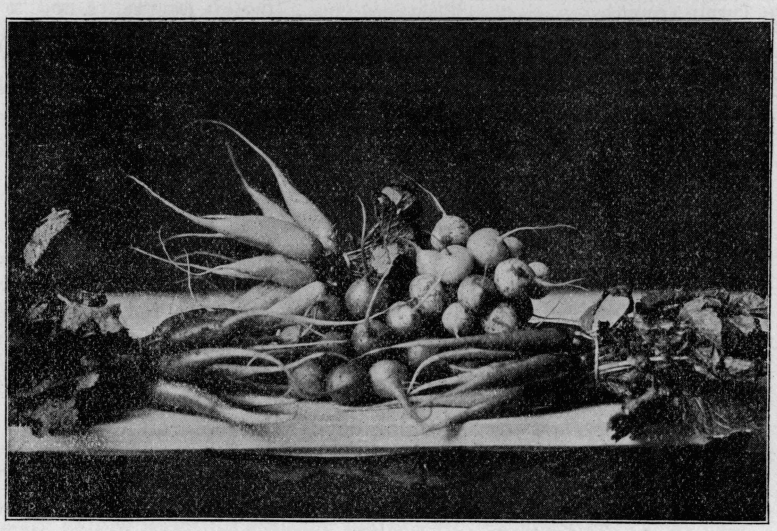
Scarlet Turnip White Tipped.—Color scarlet tipped with white; flesh firm and of good flavor; medium leaf growth; one of the best and most desirable for market gardeners on account of attractive appearance.

French Breakfast.—Color bright red, tipped with white; roots olive to obovate in shape and from one to two inches long; very attractive in appearance, but becomes pithy before attaining marketable size; flesh streaked with red.

Early White Turnip.—Color white; roots round; flesh firm and mild; small leaf growth; splendid variety for anyone who desires a white radish.



The turnip rooted radishes most desirable for winter market in the north.



In the lower part of illustration are Chartier and Long Scarlet Short Top, the most desirable long rooted sorts. Upper left of illustration shows the half long, White Icicle, a desirable white variety.

Center of illustration shows the Scarlet Turnip White Tipped, the most valuable market sort.

Upper right of illustration shows the New Triumph, an interesting novelty owing to its peculiar markings of red and white.

Early Half Long Bright French Breakfast.—Similar to French Breakfast.

Long White Spanish.—Color white; roots long and tapering; flesh hard and woody; flavor strong; growth too slow in black land.

Market Gardeners' Long Scarlet.—Color bright scarlet; flesh firm and white, sometimes streaked with red; flavor mild; root long and tapering with rather large leaf growth. One of the earliest and best long varieties for market.

Round Scarlet Chinese.—The largest of the turnip-rooted varieties; color scarlet; flesh very firm and mild; rank leaf growth; leaf stems of a reddish brown color; one of the best varieties for the home garden, remaining a long time in edible condition.

Golden Dresden.—Color dull yellow; oblong in shape; flesh white; nutty flavor; sweet and crisp; medium leaf growth; splendid variety.

Turnip Erfurt Dark Red.—Color dark red; root roundish, flattened on top; flesh firm, but of strong flavor; of no special value.

Chartier.—Light scarlet in color; roots from half long to long; flesh white and firm; slightly pungent in flavor; medium to large in size with rank leaf growth; very good variety.

Rose Colored China.—Color light scarlet to crimson; stump rooted; flesh firm and of strong flavor; leaves and stem similar to Round Scarlet Chinese; late variety and not desirable.

California White Mammoth.—Color white; long and tapering; flesh hard and woody; leaves large and coarse; not desirable.

Icicle.—Color white; root half long; flesh firm and sweet; small leaf growth; best half long white variety in the test.

Turnip Scarlet Globe.—Scarlet color; root roundish; flesh white; strong flavor; not desirable.

The Gem.—Light scarlet in color, tipped with white; roots roundish and rather small; evidently a poor strain of Scarlet Turnip White Tipped.

Turnip Non Plus Ultra.—Color scarlet; inclined to olive shape; flesh firm and of mild flavor; slender leaf growth; fairly good variety, but remains but a very short while in edible condition.

Early Short Top Long Scarlet.—Similar in every respect to Market Gardeners' Long Scarlet.

Long Black Spanish.—Color dark gray; root long and tapering; strong flavored, with flesh hard and woody; not desirable.

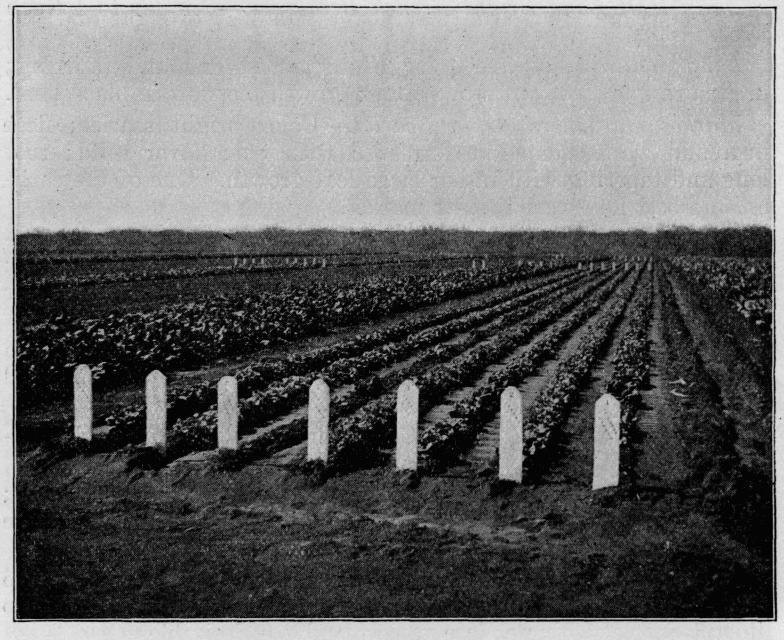
Turnip Triumph.—Similar to Maule's New Triumph; of no value.

Olive Shaped Deep Scarlet Forcing.—Similar to Non Plus Ultra in shape and color, but not of as good quality.

Early Scarlet Turnip.—Bright scarlet color; globe shaped; quality good; flesh firm and mild; medium leaf growth; good variety.

Round Black Spanish.—Similar to Long Black Spanish except in shape; roots from two to three inches long; short taper.

Cardinal.—Deep scarlet color; flesh streaked with red; strong flavor; rank leaf growth; of no special value.



View of the lettuce variety test.

IV. LETTUCE.

Variety and yield tests of lettuce were planned and started, but owing to poor soil, lack of sufficient irrigation water, and injury from white grubs, the latter failed and the variety test only is here reported.

In selecting soil for this crop it is recommended that a choice be made of land which has been under clean culture for at least two years, as under such conditions white grubs are not likely to be numerous. It may be further advised that the soil should be thoroughly enriched preferably with well-rotted barn lot manure, and that abundant water should be supplied when needed, but not in a manner that will bring it in contact with the lettuce leaves, as this tends to induce rot.

THE VARIETY TEST.

On October 5th the land was broken with a single disc and later, November 9th, rebroken with a turning plow and thoroughly harrowed. Bat guano at the rate of 500 pounds per acres was spread broadcast November 19th, and worked in with a five-tooth cultivator. A preparatory irrigation at the rate of 27,000 gallons per acre was given December 2d, and as a rain of 1.85 inches fell on December 4th, the ground became so wet that planting was delayed for a week. On the 10th of the month the soil was loosened with a double shovel and pulverized with an Acme harrow, and on the

following day seed was planted in drills seventeen inches apart. On January 29, 1904, the plants were thinned to eight and ten inches apart in the rows. During the season of growth the plat received four light irrigations, and was cultivated with wheel hoes eight times. All varieties suffered from lack of water and insufficient fertility, and none of the plain-leaved varieties headed up satisfactorily. The crinkled and loose sorts made the best heads, and were slower to run to seed.

The Variety Test of Lettuce.

Plat Number.	Variety.	Seedsman.	Date of planting.	Date of vegetation.	Date of market maturity.
1	St Louis Market	Plant Seed Co	Dec. 11, 1903	Dec. 22, 1903	Mar. 12, 1904
2	Iceberg	Plant Seed Co	Dec. 11, 1903	Dec. 19, 1903	Mar. 15, 1904
3	Tennis Ball	Plant Seed Co	Dec. 11, 1903	Dec. 22, 1903	Mar. 4, 1904
4	Denver Market	Plant Seed Co	Dec. 11, 1903	Dec. 22, 1903	Mar. 17, 1904
5	P. S. Co.'s Standwell	Plant Seed Co	Dec. 11, 1903	Dec. 25, 1903	Mar. 17, 1904
6	Trocadero	Plant Seed Co	Dec. 11, 1903	Dec. 22, 1903	Mar. 15, 1904
7	Royal Summer Cabbage	Plant Seed Co	Dec. 11, 1903	Dec. 19, 1903	Mar. 15, 1904
8	St. Louis Forcing	Plant Seed Co	Dec. 11, 1903	Dec. 19, 1903	.....
9	California Cream Butter	Plant Seed Co	Dec. 11, 1903	Dec. 19, 1903	Mar. 17, 1904
10	Grand Rapids	Plant Seed Co	Dec. 11, 1903	Dec. 25, 1903	Feb. 15, 1904
11	Passion	Plant Seed Co	Dec. 11, 1903	Dec. 23, 1903	.....
12	Maule's Improved Hanson	Wm. Henry Maule	Dec. 11, 1903	Dec. 19, 1903	Mar. 12, 1904
13	New York	Wm. Henry Maule	Dec. 11, 1903	Dec. 20, 1903	Mar. 10, 1904
14	Maximum	Wm. Henry Maule	Dec. 11, 1903	Dec. 19, 1903	Mar. 20, 1904
15	Maule's New Rossette	Wm. Henry Maule	Dec. 11, 1903	Dec. 21, 1903	Mar. 15, 1904
16	Myer's All Right	Wm. Henry Maule	Dec. 11, 1903	Dec. 23, 1903	Mar. 15, 1904
17	Stubborn Seeder	Wm. Henry Maule	Dec. 11, 1903	Dec. 19, 1903	Mar. 17, 1904
18	Early Prize Head	Wm. Henry Maule	Dec. 11, 1903	Dec. 19, 1903	Feb. 15, 1904
19	Mammoth Salamander	Wm. Henry Maule	Dec. 11, 1903	Dec. 19, 1903	.....
20	Defiance Summer or Perpignan	Wm. Henry Maule	Dec. 11, 1903	Failed to germinate.	.....
21	Big Boston	S. A. McHenry	Dec. 11, 1903	Dec. 19, 1903	Mar. 12, 1904

DESCRIPTIONS.

St. Louis Market.—Heads of medium size with plain leaves; light green in color, not wrapping closely over heads; quality poor, inclined to be bitter; large per cent went to seed before forming heads.

Iceberg.—Heads of medium size; outside leaves curly and yellow green in color with edges tinged with brown; crisp, and sweet in flavor; leaves wrap well over head, protecting it from sun and blanching it well in center; good loose-headed variety similar to Maule's Hanson.

Tennis Ball.—Small, solid heads of excellent quality; outer leaves rather dark green, but white in center; slow to go to seed; earliest variety in test.

Denver Market.—Color yellowish green with wrinkled leaves. Did not head up well.

Plant Seed Co.'s Standwell.—This variety germinated to a poor stand; seed was apparently mixed.

Trocadero.—A splendid variety making good, large heads; color pale green with plain leaves; crisp and sweet.

Royal Summer.—Good cabbage variety making large, solid, flat heads with yellowish green leaves folding well over them; white in center; crisp and of good flavor.

St. Louis Forcing.—All went to seed before forming marketable heads.

California Cream Butter.—Large solid heads; leaves yellowish green; crisp and sweet; similar to Royal Summer. One of the best plain-leaved cabbage heading varieties.

Grand Rapids.—Large leaf lettuce; pale green in color, with wrinkled leaves; sweet and tender; good variety.

Passion.—Small heads; very small, dark green leaves; did not head up well.

Maule's Improved Hanson.—Heads of good size, fairly solid; crisp and sweet; color light yellowish green with leaves curled around edges and folding well over heads; 100 per cent of this variety reached market maturity.

New York.—Medium sized heads; tender and of excellent quality; leaves much wrinkled; very dark green in color; good variety.

Maximum.—Large, plain, coarse; dark green leaves; tough and bitter; did not head well.

Maule's New Rossette.—Medium sized heads; pale green in color and not very solid; tender and sweet; good variety.

Myer's All Right.—Similar to New Rossette; heads not quite as large.

Stubborn Seeder.—Large, loose heads; medium green in color; of good flavor and quality; slow to run to seed.

Early Prize Head.—Not a head lettuce as its name implies, but a loose leaf variety forming a compact and very attractive bunch. Leaves very much wrinkled, of a dark purplish green; of fine flavor and texture and long standing quality. Splendid variety for the table.

Mammoth Salamander.—Leaves rather dark green with a bluish cast; not over 1 per cent made marketable heads.

Defiance Summer or Perpignan.—Failed to germinate.

Big Boston.—Good sized heads; yellowish green in color and one of the largest cabbage headed varieties; fairly good quality.

V. CARROTS AND TURNIPS.

Tests of ten varieties of carrots and sixteen of turnips, and a yield test of carrots came to grief from various reasons. Rice birds destroyed the carrots as soon as the tops appeared above the ground, thus bringing the experiments to an early close. Of the sixteen varieties of turnips the Purple Top White Globe and the White Dutch Strap Leaf are most to be recommended to the trucker as of market value, although the Purple Top Flat Strap Leaf and the Extra Early White Milan are very satisfactory.